

Growth, Distribution and Density of World Population

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INTRODUCTION

Population is the total number of people living within an area with a qualitative and quantitative change, which can be described on different scales—global, continental, national, and local. One of the important features of population is the rate of growth. Growth is regarded as the change in the size of population in relation to births, deaths, and migration.

In early period, population was not considered as a problem. Today population explosion is a serious problem all over the world, especially in developing countries. But in early period it was not. Thus, it is necessary and important to understand analytically the growth process of world population, to evaluate recent situation of the population and also to estimate or project future population.

HISTORICAL GROWTH OF WORLD POPULATION

The history of population growth is indicative of the constant struggle between man and nature, and the success of man in adjusting, controlling and modifying his environment. At each stage of human development along with man's increasing ability to adjust and control his environment, profound demographic changes have taken place. Therefore, it is necessary to study the course of population growth in the context of human development.

Today, world population can be known easily through the population censuses and surveys conducted by all countries in the world. But it is difficult to know the size of the population in ancient/early period due to the lack of evidences which was based on speculation. It is estimated that human beings have been around at least one million years. The world population growth was negligible during 99 percent time period of human history (i.e. 9,90,000 years). But there has been a remarkable change in the rate of growth of world population since last 300 years. Since the end of the World War II, population problems have increasingly become a matter for public debate and discussion. The reason for this lies in the sharp rise in the annual rate of population growth and the concomitant tremendous increase in the number of people living in the world.

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It is believed that agriculture was unknown before about 8000 years B.C. From this date world population starts to increase, when they started agriculture and animal husbandry. Prior to that date, all human groups made their living by hunting and gathering food without permanent settlement. No more than 20 million square miles of Earth's total land area of some 58 million square miles could have been successfully utilised by our early ancestors.

The date 8000 B.C. is usually associated with the agricultural revolution and represents a time at which population growth began to accelerate slightly. Around 8000 years B.C. the world population was estimated about 8 million and it reached 250 million in A.D. 1, with a doubling time of 1650 years. Table 1 highlights the history of world population growth from 8000 B.C. to 2025 A.D.

Table 1
Estimated World Population and Growth Rate (8000 B.C.-2025 A.D.)

Year	Population in Million	Annual Growth Rate (percent)	Doubling Times (Years)
8000 B.C.	8*	-	-
1 A.D.	250@	-	-
1650	500@	0.042	1650
1750	700@	0.34	204
1850	1200@	0.54	128
1930	2000@	0.64	108
1950	2516#	1.15	60
1975	4076#	1.95	36
1985	4837#	1.73	40
2000	6122#	1.58	44
2025	8206#	1.18	59

Source: *John R. Weeks, Population, Wadsworth Publishing Company, California, 1978.

@Asha A. Bhande and Tara Kanitkar, Principles of Population Studies, Himalaya Publishing House, Bombay, 1985.

#United Nations, World Demographic Estimates and Projections 1950-2025, United Nations, New York, 1988.

Table 1 shows that the population growth was very low in early period of human development. Population grew very slowly during the first 99 percent of human history. The reason was that death rate was very high, and the risk of death was particularly high among infants and young children. Thus, people were forced to have a large number of children even if they wanted to have two or three surviving to adulthood. The balance between high birth rate and high death rate led over time to only slight increase in population size.

The date 8000 B.C. is usually associated with the agricultural revolution and represents a time when population growth began to accelerate/increase slightly. From 8000 B.C. to A.D. 1 population increased very slowly. Again, from A.D. 1 to the early period of industrial revolution (1750 A.D.), the growth rate picked up and the world's population reached 700 million. Since that time, the size and rate of growth have increased dramatically which accompanied the industrial revolution and which was almost due to decline in the death rate and birth rate remaining more or less constant. In the relatively short span of time between 1750 to 1950, the population increased three times and reached about 2.5 billion. In 1985 the world's population reached almost about 5 billion with a doubling time of 37 years. At present, the world population is increasing by the rate of 1.7 percent per annum. If this rate of growth remains constant, the world population will be doubled in 40 years.

If the world population grows continually by the same rate as now, it is difficult to find even a few square feet of Earth per person and the comfort which is available now will be cut off in near future and there will be a wide spread famine occurred.

REGIONAL DISTRIBUTION OF WORLD POPULATION

The distribution of population has been affected by various factors such as: availability of natural resources, favourable climate, transport and communication, job opportunity, fertility, mortality and migration, etc. It is found that there has been uneven distribution of world population since times immemorial because of the fact that all the factors which influence the distribution of population differs in each country of the world. Thus, the density of population all over the world has never been the same. Generally, it has always been less in the deserts and hill area, but has been more in plains.

Table 2 presents the average annual rate of population growth for the developed and developing countries. The growth rate of developed as well as developing regions was very low in early period due to the high birth rate and high death rate. But the growth rate of the developed regions was high up to 1920 mainly because of the industrial revolution in this region. On one hand, when industrial revolution started in this region, they needed more manpower to work in factory. Thus, to fulfill the demand of working manpower of those countries, large number of people were migrated from developing countries. On the other hand, due to invention of new medicines and vaccination death rate started to decline but birth rate did not decline as death rate. In this region, highest growth rate is found during 1950-70 due to 'baby boom' in western countries. On the contrary, in comparison to the developed regions, developing region had low growth rate of population up to 1920 and it exceeded the growth rate of developed region after 1920. High birth rate, high death rate and migration to developed regions for better employment opportunities are the main factors responsible to low growth rate. On the other, declining death rate (because of new medical facilities invented by developed nations), high and constant birth rate and restriction to the flow of migrants caused to high growth rate after 1920 in developing region.

Table 2
Population Growth in Developed and Developing Countries (1650-1990)

Period	Average Annual Growth Rate (Percent)	
	Developed Region	Developing Region
1650-1750	0.33	0.34
1750-1800	0.62	0.47
1800-1850	0.83	0.31
1850-1900	1.05	0.53
1900-1920	0.92	0.52
1920-1930	0.91	1.11
1930-1940	0.85	1.28
1940-1950	0.35	1.44
1950-1960	1.30	2.03
1960-1970	1.06	2.31
1970-1975	0.81	2.24
1975-1980	0.67	2.21
1980-1985	0.60	2.00
1985-1990	0.50	2.10

Source: Upto 1980, Asha A. Bhande and Tara Kanitkar, Principles of Population Studies, Himalaya Publishing House, New Delhi, 1983, p. 60.

From 1980 to 1990, United Nations World Population Chart 1985 and 1988, United Nations New York.

In 1950, the percentage of population residing in developed countries to the world population was estimated about 21 percent and reached 33.85 percent in 1920. After 1920 it starts to decline and is estimated that by the end of this century the share of the developed countries to the world population will be again about 21 percent and in 2025 it will be 17 percent. On the other hand, the share of developing countries decline up to 1950 and starts to increase and is estimated that in 2025 it will be about 83 percent (see Table 3).

CONTINENTAL DISTRIBUTION

From the beginning of the human history the distribution of world population in different continents or micro-regions is not equal. More than 50 percent of the Earth's population is concentrated in Asia, and Oceania has lowest proportion of the world population. The percentage of popula-

Table 3
World Population and Its Distribution by Developed and Developing Regions
1950-1988

Period	Population in Million			Percentage of World Population		
	World	Developed Regions	Developing Regions	Developed Regions	Developing Regions	
Estimates of Carr-Saunders and Wilcox	1650	507	106	401	20.91	79.09
	1750	711	147	564	20.67	79.33
	1800	912	200	712	21.93	78.07
	1850	1131	302	829	26.70	73.30
	1900	1590	510	1080	32.08	67.92
Estimates of United Nations	1920	1811	613	1198	33.85	66.15
	1930	2015	677	1338	33.60	66.40
	1940	2249	730	1519	32.46	67.54
	1950	2513	832	1681	33.11	66.89
	1960	3027	945	2082	31.22	68.78
	1970	3678	1050	2628	28.55	71.45
	1975	4033	1093	2940	27.10	72.90
	1980	4415	1131	3284	25.62	74.38
	1985*	4837	1174	3663	24.27	75.73
	1988*	5112	1193	3919	23.34	76.66
	2000@	6112	1277	4845	20.86	79.14
2025@	8205	1396	6809	17.01	82.99	

Source: Upto 1980, Asha A. Bhande and Tara Kanitkar, Principles of Population Studies, p. 62.

*United Nations World Population Chart, 1985 and 1988.

@United Nations, World Population Estimates and Projections, 1950-2025.

tion to the world population increased in Asia and Africa and decreased in Europe and USSR, whereas America and Oceania has more or less constant (Table 4). On the other hand, annual growth rate at present is highest (3.05 percent) in Africa followed by Asia (1.87 percent), America (1.70 percent) and Oceania (1.50 percent) and found lowest in Europe (0.28 percent) followed by USSR (0.83). Table 4 shows that the annual growth rate of population is declining in all continents except Africa.

RURAL-URBAN DISTRIBUTION

Recently, urban dwellers are rapidly becoming a majority of the population. Most of them live in developing countries and an ever-higher proportion in the biggest cities. Most of the largest cities of the world are now concentrated in developing countries and they are growing to sizes never experienced before. The urban population is growing several times faster as in the rural areas, either through natural growth or through migration from rural areas. But rural population in developing countries will continue to grow.

Table 4
Continental Distribution of World Population

	Population in Thousand				
	1950	1960	1970	1980	1988
World Total	2515652 (100.00)	3018878 (100.00)	3693221 (100.00)	4449567 (100.00)	5112298 (100.00)
		[1.84]	[2.04]	[1.88]	[1.75]
Africa	224361 (8.89)	280051 (9.28)	360751 (9.77)	479456 (10.78)	609718 (11.93)
		[2.24]	[2.56]	[2.89]	[3.05]
America	330885 (13.15)	415417 (13.76)	509972 (13.81)	613329 (13.78)	701712 (13.73)
		[2.30]	[2.07]	[1.86]	[1.70]
Asia	1375729 (54.69)	1668165 (55.26)	2102044 (56.92)	2583891 (58.07)	2995812 (58.60)
		[1.95]	[2.34]	[2.09]	[1.87]
Europe*	391955 (15.58)	425129 (14.08)	459425 (12.44)	484547 (10.89)	495632 (9.69)
		[0.82]	[0.78]	[0.53]	[0.28]
Oceania	12647 (0.50)	15782 (0.52)	19329 (0.52)	22850 (0.51)	25742 (0.50)
		[2.24]	[2.05]	[1.69]	[1.50]
USSR	180075 (7.16)	214335 (7.09)	241700 (6.54)	265493 (5.97)	283682 (5.55)
		[1.76]	[1.21]	[0.94]	[0.83]

*Excluding USSR.

Note: Figures in () shows the percentage of the world population and [] shows the annual growth rate.

Source: United Nations, World Demographic Estimates and Projections (1950-2025) and World Population Chart, 1988).

From Table 5 it is clear that the proportion of rural population to the total population is declining every year in the world as a whole and all its regions and micro-regions/continents. On the other hand, the annual rate of growth of rural population in comparison to urban population is negligible.

In 1950, only 2.5 percent of the world population were living in urban areas and remaining 97.5 percent in rural areas. But currently the proportion of urban population to the total population increased and reached about 42 percent and it is estimated that the proportion of rural and urban population may be equal shortly after the turn of this century.

Table 5
Rural-Urban Distribution of Population

	(Population in million)											
	1970		1980		1985		1990		2000		2025	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
World	2332 (63.1)	1361 (36.9)	2674 (60.1)	1776 (39.9)	2824 (58.4)	2013 (41.6)	2960 (56.4)	2286 (43.6)	3170 (51.8)	2952 (48.2)	3099 (37.0)	5107 (63.0)
Developed countries	352 (33.6)	695 (66.4)	335 (29.5)	802 (70.5)	325 (27.7)	849 (72.3)	313 (25.9)	897 (74.1)	285 (22.3)	992 (77.7)	204 (14.6)	1192 (85.4)
Developing countries	1980 (74.8)	666 (25.2)	2339 (70.1)	974 (29.9)	2499 (68.2)	1164 (31.8)	2647 (65.6)	1389 (34.4)	2886 (59.6)	1959 (40.4)	2894 (42.5)	3915 (57.5)
Africa	279 (77.3)	82 (22.7)	342 (71.4)	137 (28.6)	378 (68.1)	177 (31.9)	416 (64.5)	229 (35.5)	502 (57.6)	370 (42.4)	659 (40.8)	958 (59.2)
America	180 (35.3)	330 (64.7)	190 (31.0)	423 (69.0)	192 (28.7)	476 (71.3)	193 (26.6)	533 (73.4)	191 (22.6)	653 (77.4)	164 (14.6)	960 (85.4)
Asia	1608 (76.5)	494 (23.5)	1986 (73.4)	688 (26.6)	2020 (71.7)	798 (28.3)	2230 (72.9)	828 (27.1)	2282 (64.3)	1267 (35.7)	2135 (47.1)	2400 (52.9)
Europe	155 (33.8)	304 (66.2)	141 (29.1)	344 (70.9)	131 (26.6)	361 (73.4)	123 (24.6)	376 (75.4)	107 (20.9)	405 (79.1)	71 (13.5)	453 (86.5)
Oceania	5 (26.3)	14 (73.7)	7 (30.4)	16 (69.6)	7 (28.0)	18 (72.0)	7 (26.9)	19 (73.1)	8 (26.7)	22 (73.3)	7 (18.4)	31 (81.6)
USSR	105 (43.4)	137 (56.6)	97 (36.6)	168 (63.4)	94 (33.7)	185 (66.3)	90 (30.8)	202 (69.2)	81 (25.7)	234 (74.3)	62 (16.8)	306 (83.2)

*Excluding USSR.

Source:- Calculated from World Demographic Estimates and Projections and Asia-Pacific Population Journal, Vol. 1, No. 1, 1986.

Note:- Figures in parentheses indicate percent.

Table 6
Density of World Population

	Land Area 000' km ²	Density									
		1950	1960	1970	1976	1980	1986	1988	2000	2025	
World Total	135793 (100.00)	19	22	27	30	33	36	38	45	60	
Developed Region	57194	15	17	18		20	21		22	24	
Developing Region	78599	21	26	34		42	43		62	87	
Africa	30307 (22.32)	7	9	12	14	16	19	20	29	53	
America	42060 (30.97)	8	10	12	14	15	16	17	20	27	
Asia	27582 (20.31)	50	60	76	84	94	104	109	129	164	
Europe*	4933 (3.63)	80	87	94	86	99	100	100	105	107	
Oceania	8059 (6.27)	1	2	2	3	3	3	3	4	4	
USSR	22402 (16.50)	8	10	11	11	12	13	13	14	16	

*Excluding USSR.

Source: 1. United States, World Demographic Estimates and Projections 1950-2025.
2. United States, Demographic Year Book.

Figures in parenthesis show percentage of the world total.

Developed countries have more than 50 percent urban population since the mid of the 20th century, whereas developing countries are expected to pass the mark in the first quarter of the 21st century.

DENSITY OF WORLD POPULATION

In the past, the density of world population was very low and the entire land area of the Earth was not occupied by mankind. The density of population starts to increase with the agricultural and industrial revolution.

The distribution of population with respect to land area is not equal in all continents and in between developed and developing countries/regions. Asia occupies only 20 percent land area of the earth, where about 59 percent of the world population is concentrated. In 1980 the density of world population was 33 per square kilometre where it reached 38 per square kilometre in 1988 (see Table 6). From the evidence it is found that Europe has highest density followed by Asia and lowest in Oceania. But in 1988 Asia exceeded Europe in respect to population density.

CONCLUSION

For thousands of years, the world's population grew very slowly. The industrial revolution was accompanied by a decline in the death rate which allowed population to grow much faster than ever before. Since World War II, the decline in the death rate has produced rapid population growth in developing countries, which has led to an incredible increase in the size of human population.

The growing population affects in the economic development of the world, especially in developing countries and it creates problems of food, drinking water, energy, environment, mineral resources, etc. Thus, it is necessary to balance population growth and economic development all over the world.

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