

Demographic Transition in India

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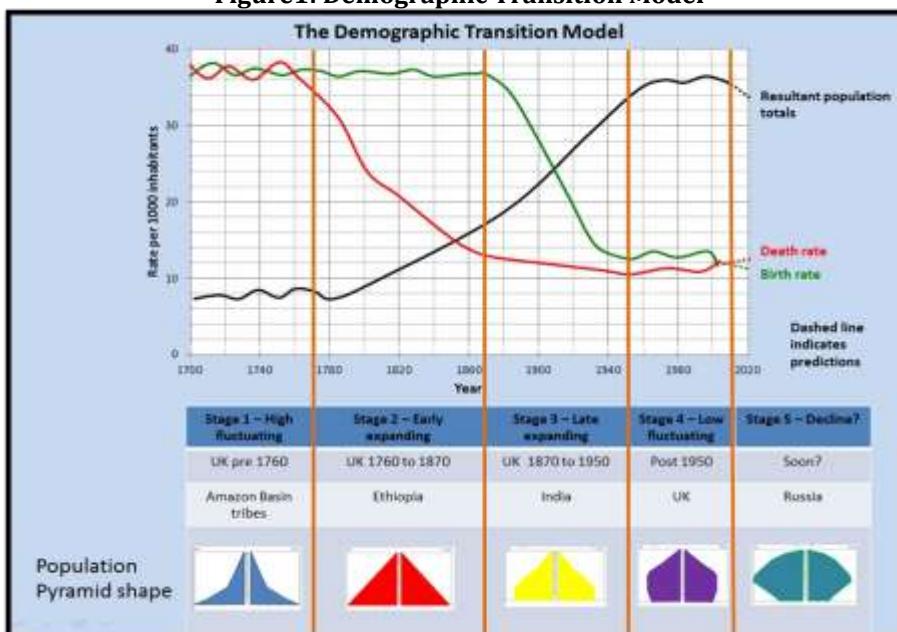
ABSTRACT

Population growth is very significant demographic characteristic feature associated with all other aspects of society. India is passing through the late expanding stage of demographic transition. It means that total population of the country is increasing but with declining growth rates. From 1921 onwards, the mortality rates declined at a faster pace as compared to fertility rates. The fertility goals fixed in different five year plans and policies have been missed and postponed time and again. The non-EAG (Empowered Action Group) states and UTs were able to pass through the population explosion stage far earlier than EAG states. Even at present the fertility rates in the EAG states are more than replacement rate. The long term objective of the new National Population Policy (NPP, 2000) is to achieve stable population by 2045, at a level consistent with the requirements of sustainable economic growth, social development, and environment protection. The objectives of present paper are – (i) to provide a brief introduction of demographic transition model; (ii) to describe the trend of population growth in India; (iii) to explain demographic transition stages in population growth of India; and (iv) to describe the demographic transition differentials in EAG and Non-EAG states and UTs.

Key Words: Demographic Transition, Fertility, Mortality, EAG, Stable.

Population growth is an important demographic characteristic feature associated with all other aspects of society. At world level, population growth is a function of differential rates of fertility and mortality. Demographic transition model is used to describe population growth over time (past, present and future). The model effectively describes and analyses the transition from a stable population characterized by high fertility, high mortality, high infant mortality and low life expectancy to a stable population with just reverse characteristic features. Although there is difference of opinion among demographers but generally four distinct stages of demographic transition are commonly accepted (Figure 1).

Figure1: Demographic Transition Model



Source:http://www.coolgeography.co.uk/GCSE/AQA/Population/Demographic%20Transition/Demographic_Transition_Model.jpg

The first stage of demographic transition is known as high stationary stage. In this stage mortality and fertility rates remain high, especially infant mortality rates. The low level of technology and lack of health, medical, transport and communication facilities result into high death rates. With the passage of time, technological advancement takes place to control deaths as well as births. But the factors determining

mortality are different from factors determining fertility. In case of threat of death technology adoption becomes compulsory irrespective of socio-cultural and political differences. Therefore, death rates decline at a faster pace but due to limited socio-cultural changes the birth rates remain high with only a marginal decline. Improved public health and food supply result into sharp decline in mortality rates, but birth rates remain high due to poverty, low level of literacy and limited access to health and contraceptive services. This results into population expansion or population explosion. This first phase of population explosion is known as early expanding stage of demographic transition.

After some time period, the socio-cultural and economic changes take place. These changes are reflected in preference for small size family. The infant mortality and total fertility rates decrease rapidly. This situation represents the second half of phase of population explosion and this third stage of demographic transition is known as the late expanding stage. In this stage as birth rates are higher than death rates population increases but with time the gap between birth and death rates decreases. Therefore, in this late expanding stage of demographic transition the total population increases but with declining growth rates. Finally, gradually the stage of low fertility and low mortality and low or negative growth rate or overall stable population comes. This is known as low stationary or low fluctuating stage of demographic transition.

The long term objective of the new National Population Policy (NPP, 2000) is to achieve stable population by 2045, at a level consistent with the requirements of sustainable economic growth, social development, and environment protection. Earlier in first National Population Policy 1976, the objective was to reduce crude birth rate to 25 per thousand by 1985 but it was around year 2002. Similarly, the medium term goal of new NPP, 2000 to bring total fertility rate at replacement rate (i.e. TFR, 2.1) could not be achieved till date. It means determinants of high fertility could not be transformed at the rates projected in population policies. The 1976 policy was based on the assumption that contraceptive development is the best development and the new one on assumption that 'development is the best contraceptive'. In the following section the focus is on the spatio-temporal dimensions of demographic transition in India.

India has been the home of a considerably large population since ancient times. Though census taking in the country started in relatively recent past, scholars have tried to construct the trends in population growth since ancient times on the basis of archaeological and historical evidences. One estimate puts India's population in the range of 100 to 140 million in 300 B.C. The population size, however, appears to have remained more or less static for almost another two thousand years. The underlying reason for this static population size was the high mortality rates. According to Davis, the population of the country remained in the neighbourhood of 125 million until the middle of the nineteenth and thereafter a gradual acceleration in the growth rate began taking place. The first census was conducted during 1867-72. However, it was neither synchronous nor did it cover the whole country. This was followed by another census count in 1881, which was synchronous and covered much wider area. Since then, every ten years, census enumeration has been conducted in the country.

Population of India has been growing continuously since the beginning of the twentieth century. Total population of the country in 1901 was 238 million and it grew to 1,210 million over a period of one century and a decade. It was only during 1911-21 that population recorded a marginal decrease and ever since 1921 it has been continuously rising. The year 1921 is considered a great divide in the growth rate of population of India. Before 1921, the growth rate of population had been very low and fluctuating and this year onwards till 1981, the population grew with an accelerating growth rate. The growth rate of population in 1901-11 was only 0.56 per cent falling to -0.03 per cent in the following decade. The population grew at a rate of 1.04 per cent during the following decade of 1921-31 and the growth rate mounted to 2.22 per cent during 1971-81. There has been a marginal decline in the growth rate of population since 1981, though the growth rate is still 1.64 per cent. Another decade during which the growth rate showed a marginal decline from 1.33 per cent of 1.25 per cent has been the period of 1941-51. However, in spite of these marginal declines in the growth rate, the aggregate numbers added to the population have been increasing since the great divide of 1921. The variations in the decadal growth rate and average annual exponential growth rate during various census decades since 1901 are given in Table 1.

Table 1: Growth Rate of Population in India

Census Year	Total Population	Decadal Growth Rate (%)	Average Annual Exponential Growth Rate (%)
1901	23,83,96,327	-	-
1911	25,20,93,390	5.75	0.56
1921	25,13,21,213	-0.31	-0.03

1931	27,89,77,238	11.00	1.04
1941	31,86,60,580	14.22	1.33
1951	36,10,88,090	13.31	1.25
1961	43,92,34,771	21.64	1.96
1971	54,81,59,652	24.80	2.22
1981	68,33,29,097	24.66	2.20
1991	84,64,21,039	23.87	2.14
2001	1,02,87,37,436	21.54	1.95
2011	1,21,01,93,422	17.64	1.64

Source: Census of India 2011, Provisional Population Tables, P-41

A perusal of the statistics in Table 1 shows that not only has the population of the country been growing since 1921, the rate of growth for half a century had been rising. The growth rate of population increased from 11 per cent in 1921-31 to 24.8 per cent during 1961-71. The population of the country more than doubled itself during the half century from 1921 to 1971 and within 80 years (1921-2001) it grew four times. Such a growth in population is phenomenal by any standards. Population of Uttar Pradesh and Maharashtra, the two most populous states in 2011 have population today equal to the population of the whole country just 70 years back in 1941. Population of Uttar Pradesh is slightly more than the population of Brazil, which ranks fifth in top ranking countries in population in the world.

One positive aspect of the growth rate since 1971 has been a slow but steady decline in the decadal growth rate of population. During the last four census decades the decadal growth rate has come down from 24.80 per cent to 17.64 per cent. However, it does not mean that the growth in the population in the country has come down in absolute terms. Since the base population had been increasing during every decade, the total number of people added per decade during these last forty years has also been increasing. While about 13.5 million people were added to the population during 1971-81, the number of people added during 2001-2011, in spite of a lower growth rate has been about 19 million. Thus the absolute number of people added during successive decades has been increasing even though the rate of growth shows some slackening.

The history of growth of India's population can be divided into four distinct phases – (i) the stagnant growth stage (1901-1921), (ii) the steady growth stage (1921-1951), (iii) the rapid growth stage (1951-1981) and (iv) the high growth with definite signs of slowing down (1981-2011).

(i) The Period of Stagnant Population (1901-1921) or High Stationary Stage of Demographic Transition

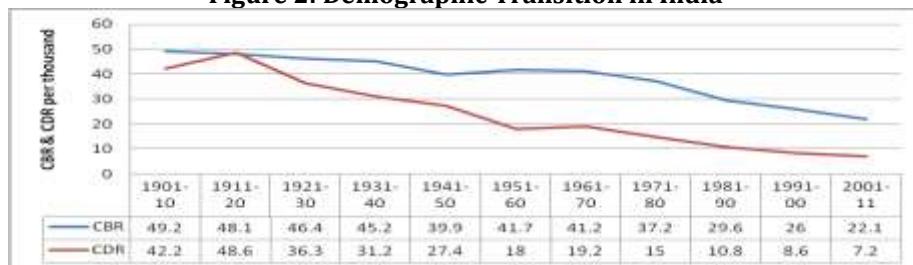
During most of the 19th century India witnessed sporadic, irregular and slow growth of population which drifted into twentieth century until 1921. Thus the population growth during this period can be termed more or less stagnant. The high birth rate was counterbalanced by high death rate. In fact, the census year 1921 registered a negative growth rate of -0.31 per cent which happened only once throughout the demographic history of India. It is because of this decline it is called the year of Great Demographic Divide. The first twenty years of the twentieth century, thus, witnessed a growth rate of only 5.4 per cent in India's population. It may be recalled here that the decade 1901-1911 was struck by several local famines. For instance, one such famine occurred in 1907 in areas what later came to be known as Uttar Pradesh.

The northern zone suffered from plague and malaria and recorded a negative growth in its population during the decade. The situation was even worse during 1911-21 when India's population recorded a virtual shrink in its size in the wake of influenza epidemic, which has struck in 1919. It has been estimated that the epidemic claimed the life of nearly 7 per cent of the population in the country. In Uttar Pradesh, the decadal growth rates for 1901-1911 and 1911-1921 decades were -1.36 per cent and -3.16 per cent and in Bihar also it was negative in 1911-1921 at -0.97 per cent for Bihar and also for West Bengal (-2.91 per cent). But the north-eastern zone registered a very high population growth rate mainly due to migration and lesser sufferings from famines and epidemics. The southern zone recorded normal population growth rates. However, Kerala was an exception with 11.75 per cent and 9.16 per cent decadal growth rates in 1901-1911 and 1911-1921 decades, respectively.

Overall, India was in the high stationary (high births and high deaths) stage of demographic transition up to 1921 (Figure 2). The period from 1921 to 1981, represents phase of gradual change in crude birth rates and sharp decline in crude death rates. This represents first phase of population expansion or population explosion stage of demographic transition called early expanding stage. In Indian context, it is logical to divide this into two stages, the first one from 1921 to 1951 and second one from 1951 to 1981. In the first part phase of *mortality induced* population expansion the average annual exponential growth rate is on an average about 1.2 per cent. In the second phase (1951 to 1981) of *fertility induced* population growth the

average annual exponential growth rate becomes about 2.1 per cent. Therefore, the first stage represents population expansion at low and steady rates and second as phase of rapid high growth of population.

Figure 2: Demographic Transition in India



Source: Sample Registration System, Bulletin 2014, Volume 49, No.1.

(ii) The Period of Steady Growth (1921-1951)

From 1921 progressive control of epidemics like cholera, plague and malaria resulted in acceleration in the rate of population growth. Over a period of thirty years population grew at moderately increasing rate. The northern zone witnessed exceptionally high growth rate. Strikingly, the central zone recorded a consistently lower growth rate than the nation's average perhaps because of a persistently higher incidence of mortality and substantial out-migration. It may be recalled that this was the period of initial industrial growth in the western zone, particularly in the areas of Bombay Presidency and to some extent, in the state of Baroda, which attracted migrants from different parts of the country. After 1921, India entered into the early expanding stage of demographic transition with declining deaths and relatively higher births. The crude death rate which stood at a high of 48 per thousand in 1921 declined to 27 per thousand in 1951 (Figure 2). On the contrary, the crude birth continued to stay at an abnormally high level and declined only to 41 per thousand in 1951 as against 48 per thousand in 1921. Decline in death rate was also achieved partly through the improvement in the distribution system as a result of improved transportation so that timely supplies of food could be made available to drought and famine stricken areas. The combined effect of these factors was that the population started increasing steadily. Since crude death rate declined considerably and crude birth rate remained very high the population growth during this period is called *mortality induced growth*.

(iii) The Period of Rapid High Growth (1951-1981)

The year 1951 marks the beginning of a rapid growth in the population of the country as a result of a sharper decline in death rate but fertility remained stubbornly high. Therefore, this period is often referred to as the period of population explosion. This unprecedented growth rate was due to the accelerated developmental activities and further improvement in health facilities. The living conditions of the people improved enormously. Death rates declined much faster than the birth rates. This situation resulted in high natural increase. Thus, it was *fertility induced growth*. The average annual exponential growth increased from 1.21 per cent during 1921-1951 to 2.13 per cent during 1951-1981. Though all the zones witnessed increase in pace of population growth, the northern zone recorded the largest acceleration. The next highest growth rate was recorded in the western zone.

(iv) The Period of High Growth With Definite Signs of Slowing Down (1981-2011)

The year 1981 can be called yet another year of great divide in the demographic history of the country. With this India entered into the late expanding stage of demographic transition. The spatial pattern in the growth of population in the country during the 1990s, thus, again reveals a marked 'north-south' divide. On an average, the northern parts of the country are found to have recorded faster growth in population during the decade as compared to their counterparts in the south. If a straight line is drawn connecting the southernmost tip of Gujarat in the west and the southern limit of Murshidabad district of West Bengal in the east, one comes across a generally higher growth in population to the north of this line. The only exception to this can be seen in some areas in Punjab plains, in hilly districts of Himachal Pradesh and Uttarakhand. Almost the whole of Kerala and Tamil Nadu, major parts of Karnataka, Maharashtra and Andhra Pradesh have witnessed a lower growth than the nation's average. A remarkably lower annual growth rate in the states of Kerala, Tamil Nadu and Goa is indicative of the fact that they have reached an advanced stage of demographic transition. With substantial decline in the birth rates during the post-independence period, these states have already reached replacement level (RR) fertility in the country (Table 2). The continuing deceleration in the pace of population growth in the country over the last two decades is indicative of the fact that India's population is closing towards the end of the third of late expanding stage of demographic transition.

Table 2: Total Fertility Rates, 2015

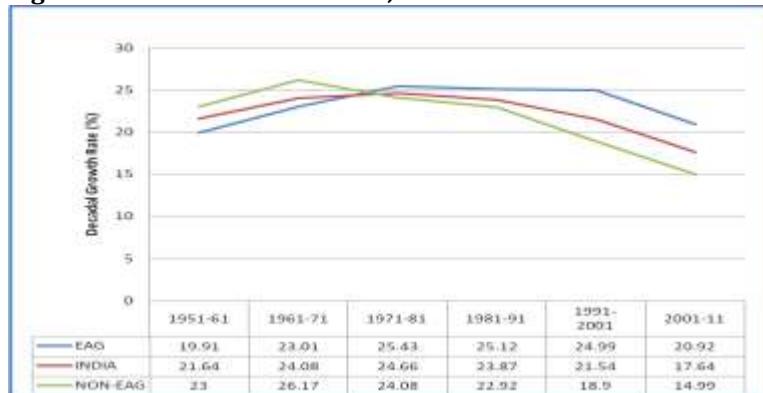
State	TFR (>RR)	State	TFR (<RR)
Bihar	3.2	Jammu and Kashmir	1.6
Uttar Pradesh	3.1	Karnataka	1.8
Madhya Pradesh	2.8	Andhra Pradesh	1.7
Rajasthan	2.7	Maharashtra	1.8
Jharkhand	2.7	Kerala	1.8
Chhattisgarh	2.5	Punjab	1.7
Assam	2.3	Himachal Pradesh	1.7
Gujarat	2.2	Tamil Nadu	1.6
Haryana	2.2	West Bengal	1.6

Source: Compendium of India's Fertility Indicators, 2015, SRS, Registrar General, India.

The demographic scenario at the aggregate national levels, however, conceals many of the regional peculiarities. India is a vast country with a great amount of regional diversity in terms of its geography, historical experience and socio-cultural attributes including demographic situation. On the one extreme, states like Kerala, Tamil Nadu and Goa are on the verge of completing the transition. In addition, some of the smaller states like Manipur, Mizoram and Tripura are also found to be very close to the completion of the transition. Remarkably, these states are located in the northeastern parts and have a substantial proportion of Christian in their population. A rapid transition in fertility and mortality rates in these states can be attributed to the works of Christian Missionaries.

On the other extreme, the so called 'BIMARU' (term introduced in 1990s in demographic discussions) states- Bihar (including Jharkhand), Madhya Pradesh (including Chhattisgarh), Rajasthan and Uttar Pradesh (including Uttarakhand) – in the Hindi belt of the north are still in the early expanding stage of transition. The death rates in these states are low but birth rates are still high. As a result of this, the natural rate of growth in these states is still above 1.75 per cent per annum. These states have now been identified as EAG (Empowered Action Group) states along with Odisha. In the EAG states decadal growth rate for 2001 to 2011 was 20.92 per cent whereas the non-EAG states growth rate was 14.99 per cent and national average was 17.64 per cent. Among these states Bihar has the highest average annual exponential growth rate of 2.26 per cent, followed by Chhattisgarh (2.06), Jharkhand (2.04), Rajasthan (1.96), Madhya Pradesh (1.87), Uttar Pradesh (1.85) and Uttarakhand (1.77). The EAG group states, from 1951 to 2011, have constituted about 43 to 46 per cent population of the country.

During 1951 to 1971, increased population growth rates of non-EAG states and UTs and EGA states contributed in population explosion in India. It is noteworthy that during this time period the growth rates were about 3 per cent higher in non-EGA states as compared to EAG states (Figure 3). From 1971 onward in non-EAG states and UTs decadal growth rate declined to about 3 per cent in first two decades and then 8 per cent in the next two decades i.e. 1981-91 to 2001-11. This is result of sharp decline in total fertility rates in these states. Initially it was limited to southern states but in last decade Punjab, Himachal Pradesh, Maharashtra and West Bengal have also achieved below replacement rate (2.1 children per women) TFR. The fertility transition in all these states have been achieved overwhelmingly through an increase in the use of modern contraceptive methods, especially female sterilization.

Figure 3: Growth Rates of India, EAG and Non-EAG States and UTs

Source: Census of India 2011, Provisional Population Tables, P-41

The growth rates of EAG and Non-EAG states and UTs converged at about 24.5 per cent during 1976 and at this time the first National Population Policy was introduced with focus on reduction in fertility rates as a

national commitment. Even after introduction of this policy in EAG states population growth rates increased and stabilized at about 25 per cent from 1971 to 2001. In the last decade both EAG and Non-EAG states and UTs recorded same drop of 4 per cent in growth rates but the gap of 6 per cent between them still prevails.

In terms of average annual exponential growth rates significant changes have taken place in the last two decades. In the decade 1991-2001, 16.6 per cent population increased at growth rate of less than 1.5 per cent and in 2001-2011 about 44.6 per cent population recorded this rate of growth (Table 3). The high population growth rate of more than 2 per cent prevailed for about 58 per cent population of the country in 1991-2001 but in share of population declined to just 15 per cent. All these statistics indicate that India is passing through the last phase of expanding population and in near future will enter into low stationary stage of demographic transition with new challenges such as ageing of population.

**Table 3: Number of States and UTs by range of Average Annual Exponential Growth Rates
1991-2001 and 2001-2011**

Growth Rate (%)	1991 – 2001		2001 – 2011	
	Number of States and Union Territories	Percentage of Population to Total Population	Number of States and Union Territories 1991 - 2001	Percentage of Population to Total Population
< 1.0	1	3.10	5	3.08
1.0 – 1.4	3	13.61	10	41.52
1.5 – 1.9	11	25.32	10	40.35
2.0 – 2.4	8	39.35	8	15
2.5 – 2.9	7	16.97	0	0
≥3.0	5	1.66	2	0.05

Source: Census of India 2011, Provisional Population Tables, P-56.

Conclusion

Over the period of time India has moved from high stationary stage to late expanding stage of demographic transition. The mortality rates declined at a faster pace as compared to fertility rates. The fertility goals fixed in different five year plans and policies have been missed and postponed time and again. The non-EAG states and UTs were able to pass through the population explosion stage far earlier than EAG states. Even today the fertility rates in the EAG states are more than replacement rate. The 2001-11 decade for the first time since 1921 added lesser number of persons as compared to the previous decade. The EAG states also recorded a steep fall in growth rates during this decade, especially Uttar Pradesh and Rajasthan. In Chhattisgarh and Tamil Nadu states in this decade growth rates increased may be due to migration. The EAG states and Assam collectively account for the highest rates of fertility, infant mortality, child mortality and maternal mortality rates in India. Therefore, for the transition of India into a low stationary stage to achieve the long term goal of stable population focus on reproductive, maternal, newborn, child and adolescent health, female literacy and women empowerment is required especially in EAG states.

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