
Unit 2: Trends In Demographic Transition

Structure

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2.0 INTRODUCTION

Population dynamics have a significant influence on sustainable development. In this unit we will try to understand the relevance of population dynamics in the light of the demographic transition theory and look at the historical trends of mortality and fertility rates to understand the dynamics of population growth in the world. It not only highlights the important historical events under which population underwent a transition, it also gives a brief understanding of the population dynamics which will influence the future population growth to conceptualize policies to address population dynamics.

2.1 OBJECTIVES

After reading this unit, you will be able to:

1. To understand the key concepts and definitions to study the various dynamics of population growth.
2. To know the determinants of fertility and how they are calculated.
3. To understand and analyse the demographic transition theory.

4. To study and analyse the spatiotemporal trends of fertility and mortality in the developed and the developing world.
5. To study and analyse the spatiotemporal trends of fertility and mortality in India.
6. To understand the implications of demographic transition in sustainable development.

2.2 DEMOGRAPHIC TRANSITION THEORY

The term demographic transition was coined by Frank W. Notestein. The demographic transition theory is known as the modern theory of population growth which states: “population condition is a function of birth rate and death rate. Population growth experiences a transition from one stage to another stage. This transition is called demographic transition.” This theory aims to understand population change taking into consideration three aspects:

- i) *Descriptive generalisation* which aims to empirically explain the trends of fertility and mortality over time.
- ii) *Ex-post facto explanation* which analyses the casual mechanisms which create the pattern of change.
- iii) *Prediction* which states what will happen in the future.

This theory has no one statement. Earlier demographers Adolphe Landry in 1909 and Warren S. Thompson in 1929 constructed a typology to describe the transition from conditions of high mortality and high fertility to conditions of low mortality and low fertility. Thompson argued that there were differences of population structures of major world regions, and those differences were in a stage of flux but eventually all regions will follow a pattern of decline in death rate followed by decline in birth rate.

In 1945, Frank W. Notestein presented the demographic transition theory in its matured form with explanations for the change in fertility. He suggested the three stages in the transition:

1. *High growth potential* where mortality is high and variable and is the chief determinant of growth. Fertility is also high showing no decline.
2. *The transitional growth* where birth and death rates are still high and population growth is rapid, but the decline of birth rate is well underway.

3. *The incipient decline* is the stage where fertility has fallen or is about to fall below replacement level.

Demographic transition theory is clearly inductive that provides a model of historical trends of population dynamics. The real importance of Notestein contribution is that he outlines the mechanism by which the demographic transition had occurred and could take place in future. So, in the next section let us see how the change in population growth happened in the world in order to understand the demographic transition at the global level.

2.2.1 Global demographic transition

While so far, we can tell from the available evidence that no substantial part of the modern population growth has come from a rise in fertility but rather from the decline of mortality. The initial decline in mortality was caused, at least in Europe, by a period of peace being followed by a series of agricultural innovations that greatly increased the food supply which was further augmented by the vast resources of the new world. Industrial innovation began to bring spectacular increase in production. Finally sanitary and medical advances brought control over the diseases of childhood and adult life. In short, the whole process of modernisation in Europe and Europe overseas brought rising levels of living, new controls over diseases and reduced mortality.

According to Notestein fertility decline did not immediately follow that of mortality because the high mortality level of pre-transition society would have required the creation of social organizations with goals and equipment for the maintenance of high fertility merely to enable the population to survive. These propositions were removed gradually. Birth rates were reduced largely by means of contraception, but in response to drastic changes in the social and economic setting that radically altered the motives and aims of people with respect to family size. The essential stimuli came from the joint process of industrialization and urbanization and modernization so that under the impact of urban life the social aim of the health, education and material welfare of the individual child, family limitation became widespread and at the end of the period of growth came in sight.

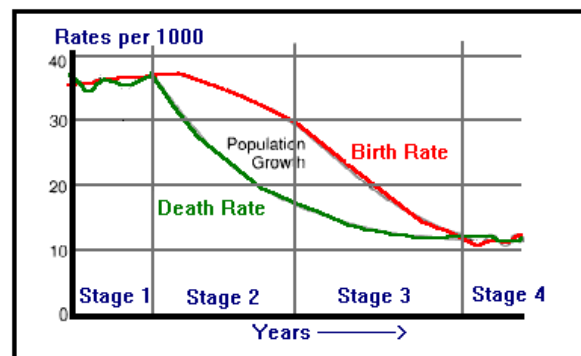
2.2.2 Stages of demographic transition: a historical background

We can sum up the stages of demographic transition as stated by Notestein by four simple

propositions.

1. The demographic revolution is initiated by the secular decline in mortality.
2. Mortality decline is caused by the cumulative influences of the agricultural, industrial and the sanitary revolutions which respectively led to better food supplies, an improvement in the factors of production and the standard of living in general and improvements in public health.

The Demographic Transition



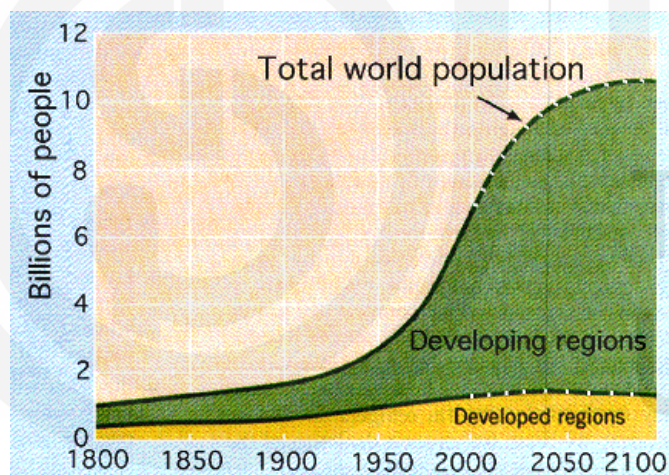
3. Rapid population growth is the result of the temporal lag between the decline of mortality and that of fertility.
4. Fertility decline eventually occurs because of social and economic supports to high fertility are removed. The materialism and individualism associated with the urban way of life give impetus to the rational control of fertility by means of contraceptive processes.

The broad outline of the descriptive model incorporated in the demographic transition theory is being followed by many developing countries today. The death rates have fallen, and the birth rates are beginning to fall. Empirical evidence show that many developing countries are now passing through the final stage of demographic transition from high to low death and birth rates. The death rate declined first, so initiating a period of rapid population growth before the birth rate began to fall, but just as there were leads and lags in the way that pattern emerged in the west so there are also temporal and spatial variations to be seen in Africa, Asia, and Latin America.

We can make several distinguishing observations between the demographic experiences of today's developed and developing countries. The death rates in today's developing countries began a slow but significant decline during the late eighteenth and the nineteenth century. You must note two important points here. Firstly, the period of time required for lowering the death rate was longer for developed than for the developing nations. Secondly, by the time the death rate began its rapid decline for the developed nations, the birth rate also began its decline but the same is not for the developing nations. The result is that the developed countries overall never

had the explosive growth rates of today's developing countries. Added to that the European countries also have the safety valve in the form of migration opportunities (at the time of their high growth stage) is not available for today's high growth nations. Scholars have argued that the slow growth rate at which the death rate declined in the developed nations was a function of the need to discover, invent and diffuse medical technology. In today's world, reducing the death rate is a less matter of discovery and more a matter of diffusion of medical technology. In addition, at present the developing countries experience a long stage II and a stage III during which major economic developments are curtailed. Most of the developing countries have not experienced an economic growth at a similar rate but they are experiencing population growth at a much higher rate. Moreover, the base population is so high in these nations that even with falling fertility rates; a large (absolute) number of populations are added every year to the current population. Thus, at present about 80% of the world's population live in the developing world.

2.2.3 Global trends in population growth



It is not an unknown fact to us that most of the incidences of so called 'population explosions' are in the developing regions of the world. Over the past 150 years, improvements in health care and sanitation around the world have led to a drop in the death rate all over the world. While birth rates have dropped in developed world, birth rates are still high in the developing

regions which are contributing to the total population growth of the world. In the next section we will see some of the historical trends in mortality and fertility trends in the developed as well as the developing regions to understand the current pattern of population growth and understand the future projections.

The COVID-19 pandemic has devastated human communities all over the world. Even though, the magnitude of COVID-19 mortality or case-fatality ratio (CFR) is complicated due to lack of definition of a "COVID-19 death", procedure of data collection and under-notification, there is no doubt that will have long term impact on demographic dynamics of the world. Hypothetically, 1 million deaths in the COVID-19 epidemic means Life expectancy for 2020 would drop by 2.9

years all over the world. In other words, those dying would lose an average of 11.7 years of expected remaining life. However, we must keep in mind that the distribution of COVID-19 deaths has not been uniform across regions, race, and ethnic groups. Disproportionate death rates have the potential to change population composition of the regions of the world. With high mortality from COVID-19 in most developed countries especially in Europe and North America, among the old population, the age sex composition will get affected. However, concerns have been raised that global lockdown and economic crisis will have direct consequences on fertility and family planning decisions. Fertility may increase due to unmet needs and lack of access to family planning methods. At the same time families may postpone having children or having less children due to family's economic situation. The most important question is how long-lasting this impact will be or how will it change the demography of the nation and the world for the foreseeable future? We will understand as more time passes and new data become available.

Check Your Progress 2

Note: a) Use the space given below for your answer

b) Compare your answers with those given at the end of the unit

1. The first and the last stage of demographic transition theory have low population growth. What is the reason?

2. What determines the population growth trends in the developing world?

2.3 REGIONAL ANALYSIS OF MORTALITY AND FERTILITY

In this section let us understand the regional analysis of population growth by studying the trends of mortality and fertility in the developed and developing regions of the world.

2.3.1 Trends of mortality in the developing world: Past, Present, and future

Mortality in the developing countries dropped remarkably during the period from 1950 to 1975. The implementation of relatively inexpensive public health and disease control programmes brought a sudden and dramatic drop in the death rate. This rapid decline in mortality was experienced by many developing countries after the Second World War. It was independent of economic development as health and disease control measures were imported from the developed countries. This includes DDT spraying, use of antibiotics like penicillin and vaccines. Scientific communication and international cooperation have made it possible for the developing countries to import techniques developed by the economically advanced countries and apply them in mass public health programmes at relatively small cost. The assistance provided by the world health organization to eradicate such mass killers as malaria, smallpox enormously contributed to the mortality decline. Dramatic improvements happened in the infant mortality rate which was more than 200% in nearly all developing countries. By 1975, this rate was well under 100 in many of these countries.

Once the easily controllable diseases were reduced, however, the pace of mortality decline slackened. Degenerative diseases are difficult to control and rose in prominence as the cause of death. By 1975, many countries in the Latin America, Asia and Polynesia recorded a life expectancy above 60 years. Improvement in mortality conditions after this point requires more investments and hence more time and thus is becoming difficult to accomplish for many developing countries.

By 2000 most of the developing countries have reached a life expectancy of about 60 years similar to those of the developed world in 1950s. The major consequence of this rapid decline in mortality in the developing world has thus led to a steep increase in population growth as fertility continued to rise for a longer period and a simultaneous trend of falling mortality led to an enormous population growth.

Although some individual countries have already achieved same level of life expectancy as that of the developed world, but there are many concerns. The AIDS epidemic, the return of other infectious diseases such as malaria and increasing uncertainty about future food supply, environment problems and disasters have significantly questioned the optimistic view of mortality decline. Local political crisis and environmental damages along with distributional

problems may cause temporary famines leading to excess mortality in several regions of Africa and Asia.

2.3.2 Trends of mortality in the developed world: Past, Present, and future

In the developed countries, continuous economic progress resulting from agricultural and industrial revolutions have been the main reasons for the reductions in the mortality rates which first began to decline rather weakly in the seventeenth century, and then with an increase tempo throughout the eighteenth and nineteenth century and now slowly in the twentieth century. One of the most important factors affecting the decline in mortality was the increase in the food supply. With the agricultural revolution, the productivity of land and labour began to increase. The incidence of crop failure reduced, and the supply of food became steady. Further a system of crop rotation, improvement of farm machinery, introduction of high-quality seeds in the wake of agricultural revolution improved the availability of quality and quantity food which arrested the death rates due to hunger. With development of better transport facilities, it was possible to transport and distribute surplus food from regions of surplus productions to scarcity, leading to mitigation of local famines and hence deaths due to famines.

Sanitary reforms introduced in the nineteenth century brought about major changes in public health measures and sanitary improvements such as public utilities for provision of water supply, purification of water, sewage disposal etc. By twentieth century drainage system developed. As disinfection of water came into practice many communicable water borne diseases such as cholera, diarrhoea and dysentery were brought under control. The growing importance of personal cleanliness led to fall in mortality. Social reforms in the nineteenth and twentieth century made people conscious and working conditions in factories improved. The immunization of diseases like smallpox was introduced. Better medical facilities shot up the life expectancy. As the income of people increased with better standard of living, they were able to avail nutritious food, better clothing, and housing. With more technological innovations and research and development, health services and medical facilities improved leading to further decline in mortality.

The advances in life expectancy took place prior to 1965, after which it was only a slow improvements till 2000 by only 0.6%. A very little room exists for further reduction in mortality. Heart diseases, cancer and stroke are the three main causes of death in the developed world.

These primarily affect the aged. Currently deaths due to accidents and violence are far greater than communicable diseases. Recent deaths due to Covid 19 will be another factor.

Here I must tell you a very interesting fact. Because the developed world is experiencing both a very slow rate of improvement in life expectancy and gradual ageing of its population due to declining mortality, a curious phenomenon is taking place. The crude death rates are increasing in the developed nations approximately from 9.4% to 10.1%. This increase is in opposite direction from the actual mortality conditions and is more likely in the developed countries in the last stage of demographic transitions showing an aging population. It will be interesting to see how this dynamics have changed since large number of mortality happened among aging population in the developed world.

The decline in mortality has led to two different phenomenon in the developed and developing countries because of different fertility conditions. Decline in mortality in developed world has led to aging population and same decline in developing world is leading to population explosion. Population phenomenon cannot be studied by only studying the variations and trends in mortality; it needs to be studied with an understanding of changing levels of fertility. So now let us look at the trend in fertility in developing and developed world.

2.3.3 Trends of fertility in the developing world: Past, Present, and future

The fertility of population in the developing world is generally higher than the developed world, but by no means spatially uniform. There is evidence that in more urbanised and economically developed regions fertility have declined in recent decades. Between the period 1950 to 55 to 1970 – 75 there was a 15% decline in the third world birth rate. Not all regions participated in this declining trend. The birth rate for Africa declined very little and that for south Asia dropped only slightly more. Most of the decline in the developing world was in fact due to the 35% decline in Chinese birth rate. Scholars argue that in the developing countries there are higher returns from larger numbers of children, in terms for their value as labour and assurance for old age and that the cost of child rearing are much lower. It is projected and empirically validated that all the countries are moving toward lowering of their fertility rates although the rate of decline varies.

Socio-economic and cultural factors may retard the onset of fertility decline and slow its pace in certain areas for example in sub-Saharan Africa. Active support for fertility reduction

programmes by government is also assumed to have affected the speeding up of the process in especially in South Asia. It is estimated that the transition from high fertility replacement level will take only thirty years for some countries and as many as ten years for others. However, it is further envisaged that fertility decline will come with three preconditions. Firstly, fertility must be subjected to rational decision making. Secondly birth control methods must be known, and thirdly reduced fertility must be regarded as advantageous within the perceived socio-economic environment.

2.3.4 Trends of fertility in the developed world: Past, Present, and future

In the pre-industrialised Europe, economic and social structure of fertility was relatively low. This was achieved by the Malthusian preventive checks as large numbers of women remained unmarried even at the end of their reproductive period. During the nineteenth and twentieth century marital fertility in the developed countries was itself restricted by the mass application of the birth control technology. After 1930's low fertility rates were as a result of curbing marital fertility rate like in North America, Australian and New Zealand. In 1940's and 1950's there was an upsurge of marriages throughout Europe, North America, and Australia. Women's average age at first marriage dropped by two to three years. This period is popularly known as the 'baby boon'. However, this was a temporary trend and a downward trend started again after 1970's called the 'Birth dearth' which continues even now.

Check Your Progress 1

Note: a) Use the space given below for your answer

b) Compare your answers with those given at the end of the unit

1. What do you think will be the determining factor of mortality rates in Africa in the next decade?

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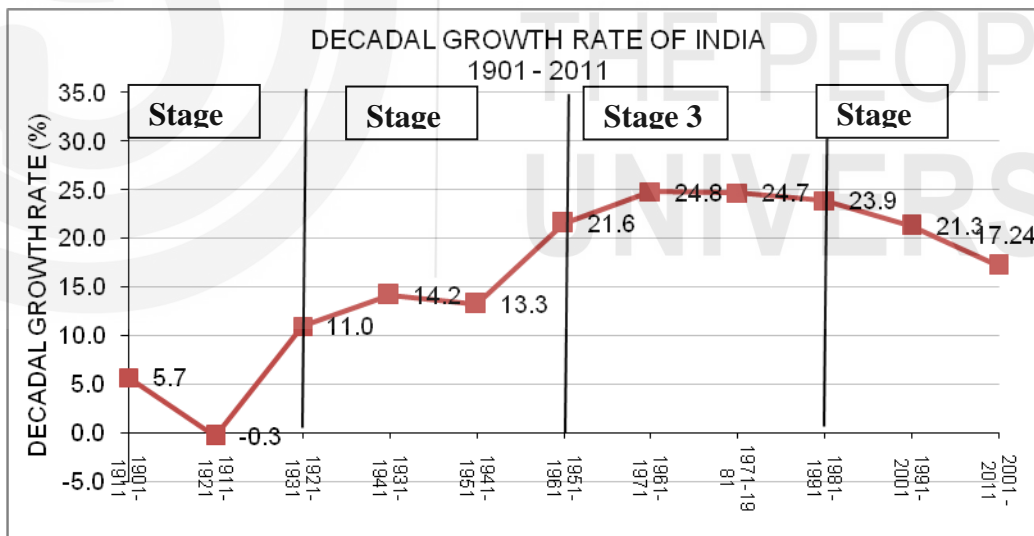
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2. Why do you think most of the European countries did not experience a ‘population explosion’ like many countries in Asia did?

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2.4 INDIA’S DEMOGRAPHIC TRANSITION: NATIONAL TRENDS IN POPULATION GROWTH

India is the second most populous country in the world after China. Its population reached I billion on May 11, 2000, and according to last census. it has reached 1210.2 million from 1028.6 million in 2001. Presently every 6th person in the world is an Indian whereas India accounts for only 2.4% of the total world area. Population of India has increased three times after independence.



We can see in the diagram above that historical trend of population growth in India since 1901. In light of the demographic transition, India's population growth can be divided into four distinct phases.

Stage 1 Stagnant population (1901 to 1921)–This is the stage where there is not much population

growth as there is an incidence of high birth rate and high death rate keeping the population growth low.

Stage 2 Steady growth of population(1921 to 1951) – In this stage there is steady growth of population because of falling mortality rates.

Stage 3 Rapid high growth of population(1951 to 1981) - In this stage there is steady growth of population because of falling mortality associated with high fertility.

Stage 4 High population growth but signs of slowing down (1981 onwards) –In this stage the population growth is declining mostly because of falling fertility rates.

The history of India's population growth can be markedly divided into two distinct parts, one is before 1981 and the other is after 1981. While the first period is characterised by rapid population growth, the second registers definite signs of slowing down. The decline in death rate became sharper after independence in 1947, with the result that the population doubled in 34 years from an estimated 347.5 million in 1947 to 683.3 million in 1981. In the beginning of 1970's decline in birth rate was observed. But it is in the past three decades that have witnessed decline in birth rate along with that in the death rate. Decline in the birth rate seems to be slightly faster during the second half of 1980's than the decline in the death rate resulting in a slight decline in the 1981-91 population growth rates. The first decade of the 21st century has shown a faster decline in birth rate and consequently in the growth rate.

The recent data released in National Family Health Statistics (NFHS) of 2019-21 showed that the TFR of India has declined from 2.2 to 2.0. Fertility rate is 1.6% in urban and 2.1 in rural India. This data has raised several debates, and this is definite that India's population is stabilizing because India is now experiencing below-replacement fertility which is lower than 2.1 children per woman. In other words, a generation is not producing enough children to replace itself, eventually leading to an outright reduction in population. This decline in fertility is attributed to reasons like family planning practices, older age of marriage and women's empowerment. With the exception of Punjab, there has been a substantial increase in the overall Contraceptive Prevalence Rate (CPR) from 54 % to 67 %, the total unmet need for family planning has dropped to 9.4%, uptake of female sterilization has gone up to 38 % and institutional births saw a substantial increase from 79 % to 89 % at the pan-India level with near universalization of C

section births. However, some scientists believe that though use of condoms in India has increased from 5.6 % to 9.5 %, men are not participating in the process of birth control and “shrugging responsibility”.

However, population size will not shrink immediately due to population momentum because “even if this cohort produces one or two children per couple there will still be an absolute increase in total population”. Many young women have not reached child-bearing age and 30.9% of population in India is in the age group of 10 to 24 who are fecund or soon will become. However, this lower fertility rate has bust the myth of population explosion. Population will peak sooner, not in 40 years at more than 1.7 billion, as was predicted, but probably a decade earlier, at 1.6 billion. Population stabilization is a big opportunity for India to accelerate development for the next two-three decades provided the country invests in public health and education with skills.

2.4.1 Regional analysis of Stages of demographic transition

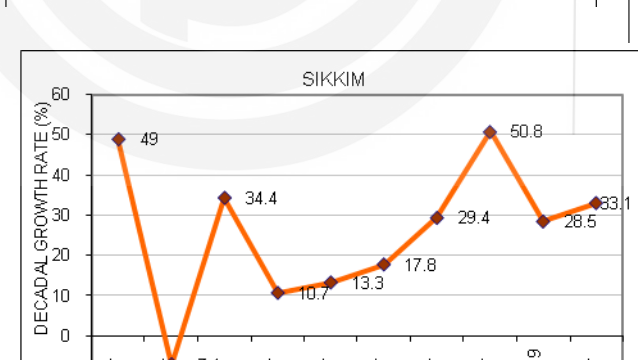
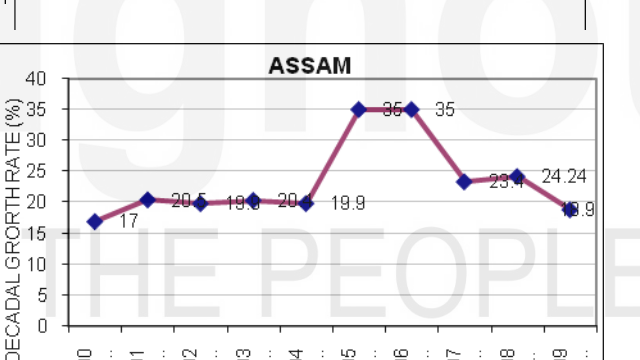
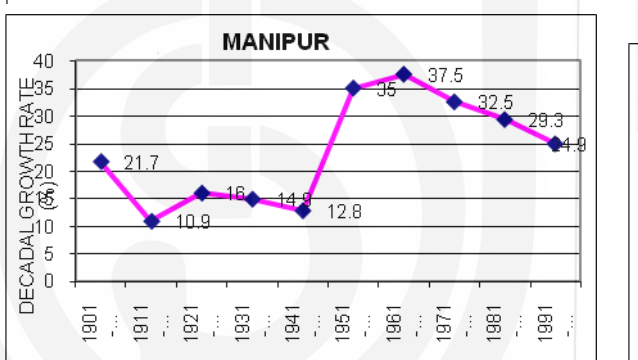
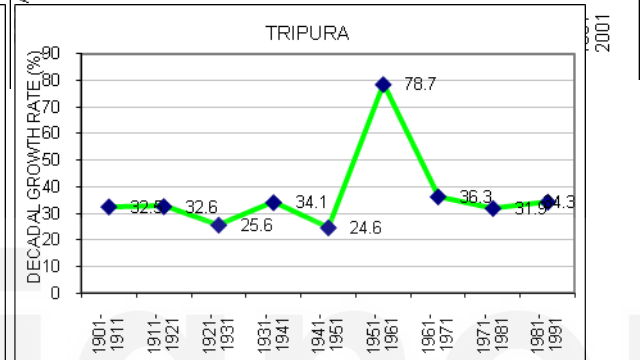
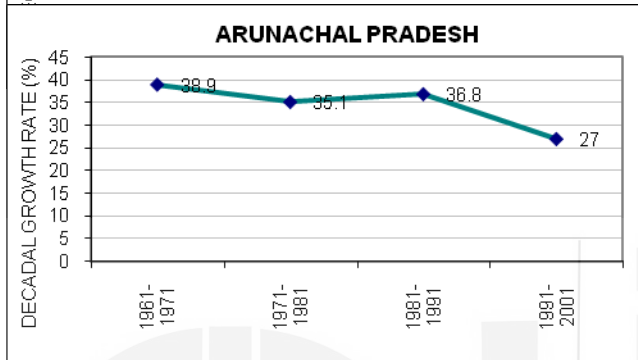
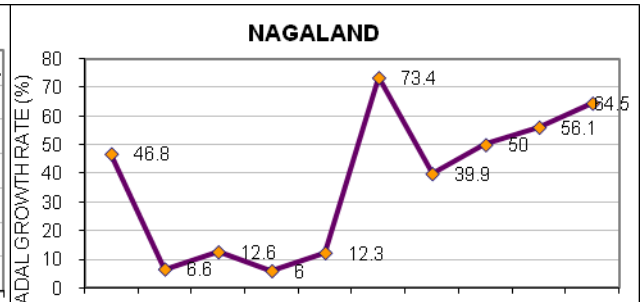
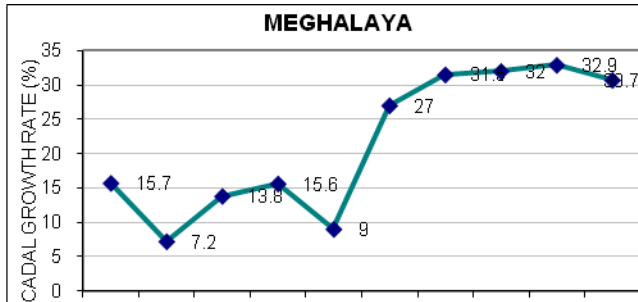
The different regions of the country are in a different stage of demographic transition. I will further clarify this point with the help of trends of decadal growth rates of different states from 1901 to 2011. Although India is one of the first countries to formulate a population policy, decline in fertility has been a slow process with moderate achievements. However, some localised areas have shown remarkable changes in fertility decline which is getting reflected in the average value of decadal growth rate of the country.

Let us analyse the regional variations in population growth in the post-independence period.

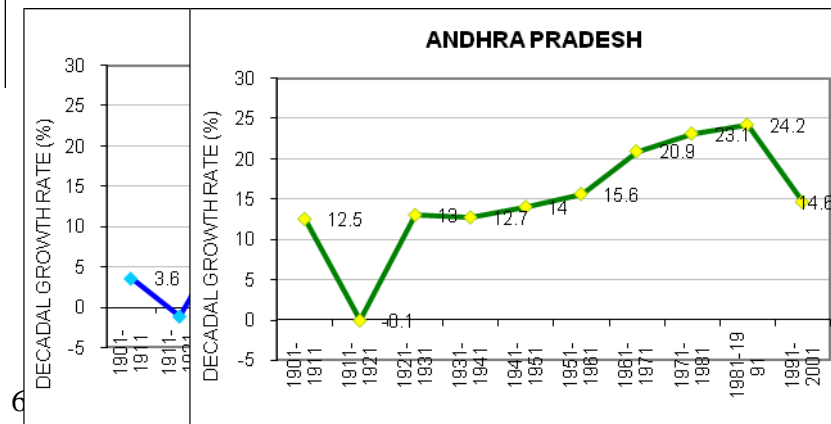
Population growth during 1951 to 1981

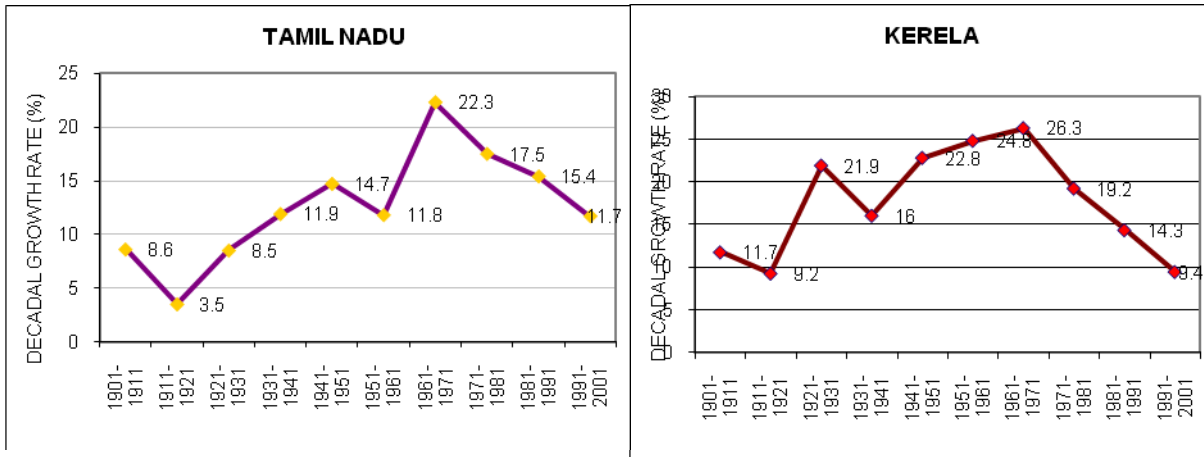
During the thirty years from 1951 to 1981, India’s population almost doubled increasing from 361.1 million to 683.3 million. The north-eastern states experienced highest growth rate of 141.2 % followed by northern zone which is 107.8%. At the regional level, northern, north-eastern, and north-western zones had their population more than doubled in the thirty years’ time. The southern zone showed the lowest growth rate of only 74.8% which was also had lower than average fertility of the nation.

Decadal growth rates of the North-eastern states



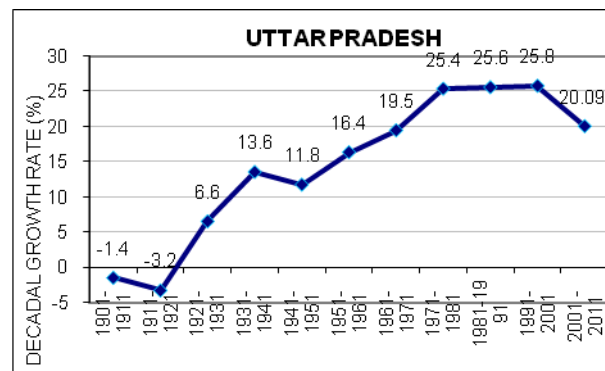
Decadal growth rates of the Southern states

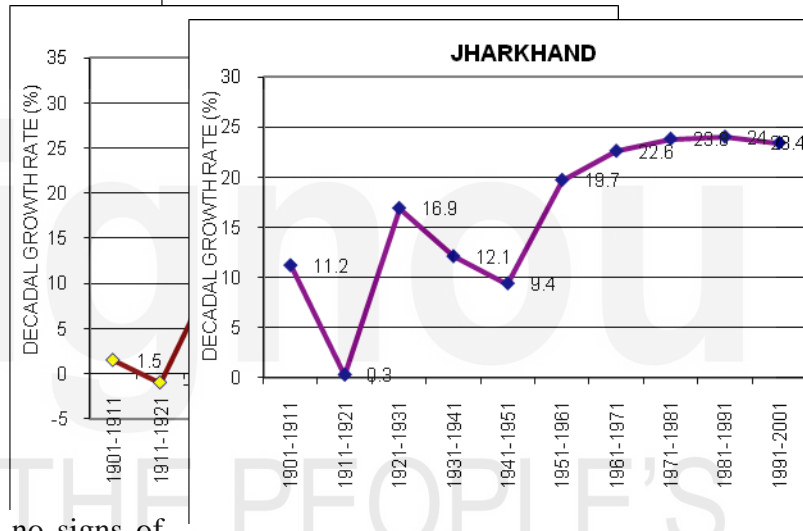
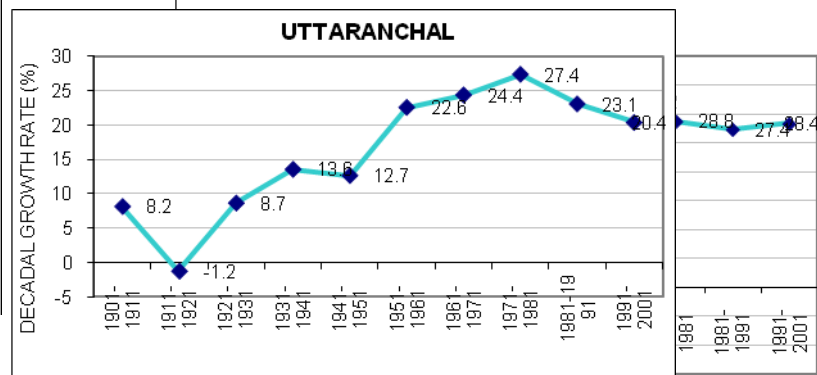
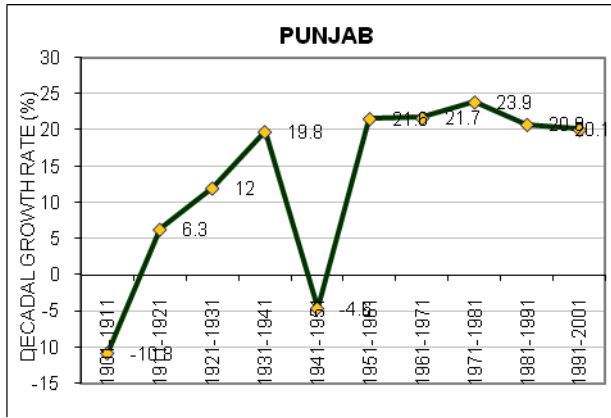




While high fertility was noticed in the north-eastern states during 1950-55, the low to moderate areas were the states of south India consisting of southern Kerala and Tamil Nadu and the mountainous districts of Lahaul, Spiti and Leh in the Himalayas. Low and moderate fertility was also noticed in the interior Deccan in the rural districts central parts of India stretching across Maharashtra and Madhya Pradesh baring Bhopal and Nagpur because of low fertility among the tribal population.

Post 1956 recorded decline in the death rate but fertility was still high. This period can be compared to that of the period in the pre industrialised European societies. Fertility showed an increasing trend in all parts of the country till 1960's apart from the areas of low to moderate fertility as mentioned earlier. Beginning of the fertility decline came after 1960 in some pockets in south India. Please see the changes in decadal growth rate in the south Indian states in Kerala and Tamil Nadu. The first fertility decline was noticed in the Coimbatore and Madras region of Tamil Nadu, southern tip of India and Centred at Alappuzha. These initial areas of fertility decline within a decade spread into south Karnataka and Andhra Pradesh.

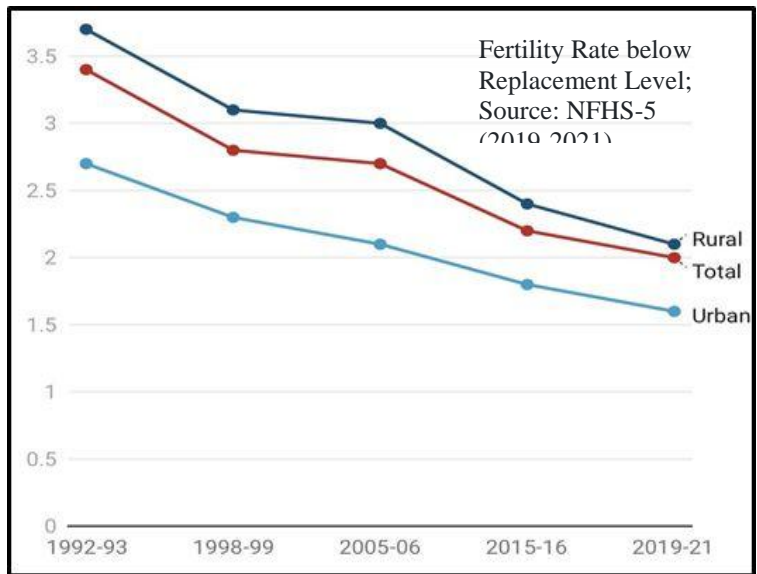




While fertility was declining in south India, the green revolution belt consisting of the states of Punjab, Haryana and western Uttar Pradesh further recorded high fertility trends. Some scholars argue that the Malthus theory of population growth with increase in food production holds true in this case. There were no signs of decline in fertility in the states of Rajasthan, Madhya Pradesh, Bihar, and Uttar Pradesh.

Even the north-eastern states did show and decline in fertility trends till late 1960's. 1970's was the era of forced family planning. The forced fertility control showed later effects in gradual fertility decline in Gujarat and West Bengal especially centered around Kolkata. There were pockets of fertility reduction especially seen along the industrial belt like Surat to Ahmedabad in Gujarat, coastal areas, urban and industrial regions in Punjab especially around Ludhiana and Chandigarh and Kumaon region in Himachal.

After 1980, the regional picture becomes much complex. The high fertility zones and the high rates of population growth rates are centered around the states of Bihar, Jharkhand, Madhya Pradesh, Chhattisgarh, Rajasthan, and Uttar Pradesh. Even the urban areas show no response to any fertility decline. The western districts of Assam and Arunachal Pradesh show lower fertility than the eastern states of Manipur, Mizoram, Tripura, and Meghalaya records steady decline. In the south all the states show a declining trend, but the Kochi, Alappuzha and Kottayam triangle has the lowest fertility levels.



Although the decadal growth rate at the national level is declining, at regional level northern states continue to lead other zones while the southern zones record the lowest growth rates. In the last decade the central zone had the highest decadal growth of 20.4%. While the southern zone shows consistent decline in the past three decades the northern zone had shown a remarkable decline of almost ten percentage points in the last decade.

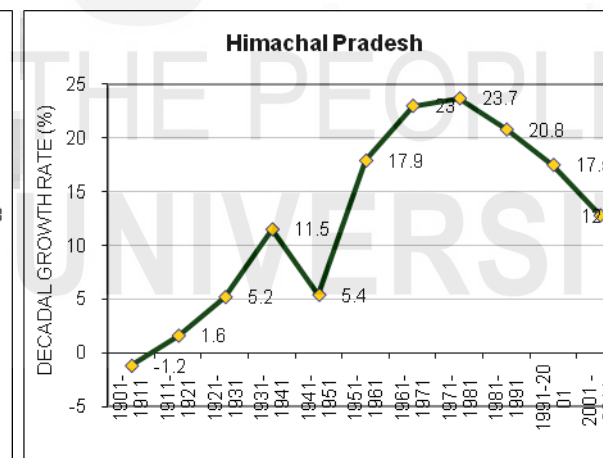
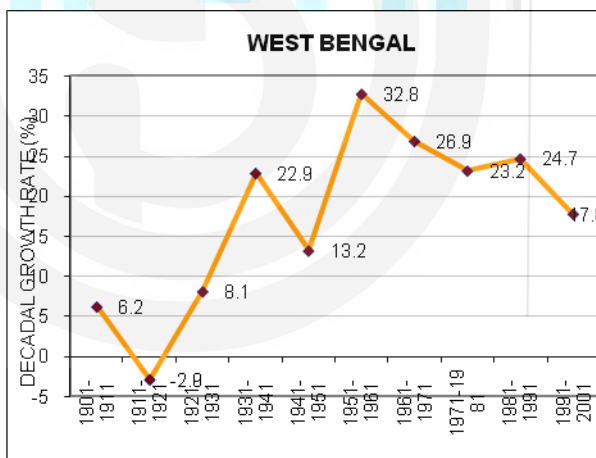
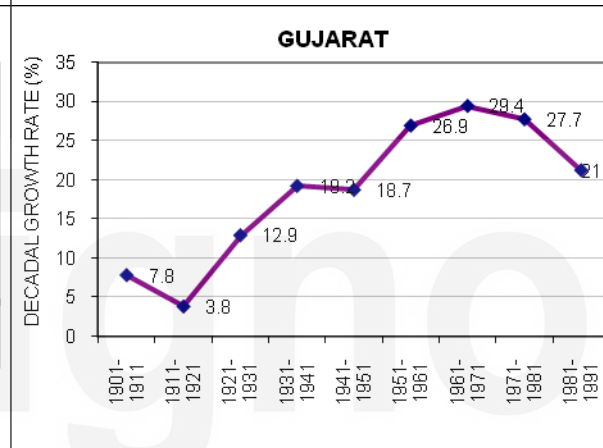
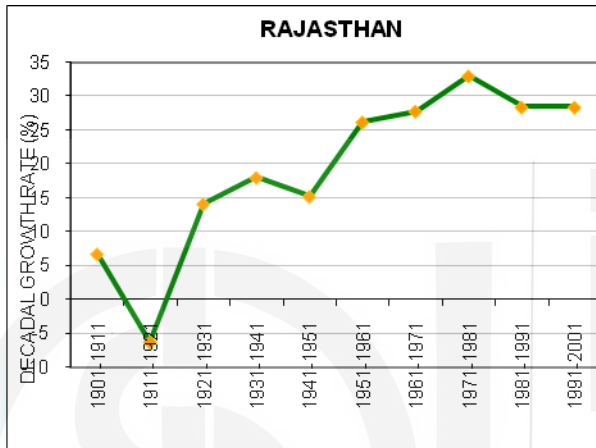
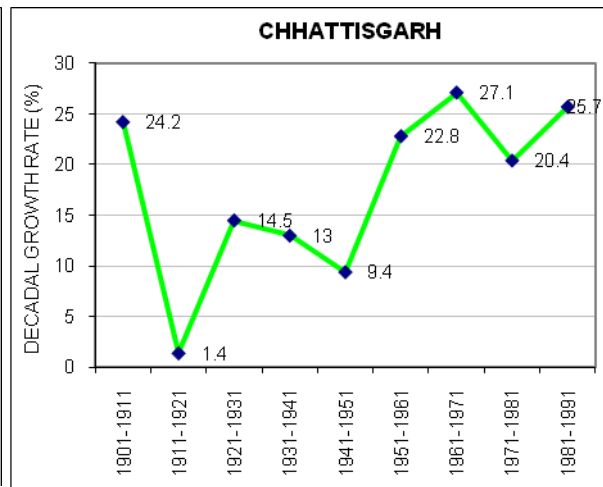
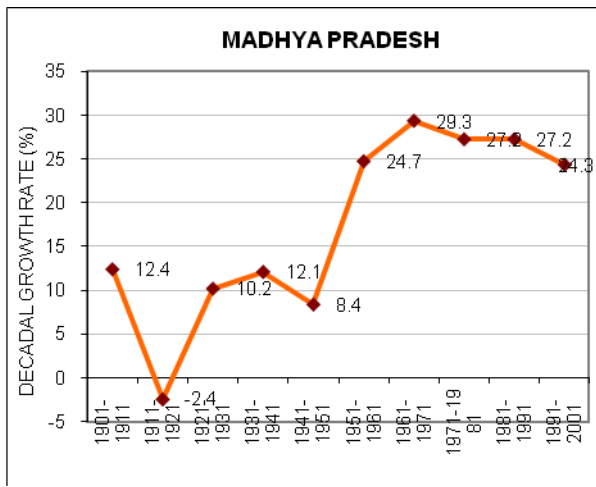
The decline in total fertility rate in the recent times also has a large regional variation even though it has recorded decline in all the states barring Kerala and Tamil Nadu. Five states with highest fertility rates are Bihar, Meghalaya, Uttar Pradesh, Jharkhand, and Manipur that has recorded a TFR of above 2. The Southern states continue to have low TFR. Besides access to

LOWEST FERTILITY RATE IN J&K

STATES	NFHS-5	NFHS-4	Reduction
	2019-21	2015-16	
Jammu & Kashmir	1.4	2.0	0.6
West Bengal	1.6	1.8	0.2
Delhi	1.6	1.8	0.2
Punjab	1.6	1.6	0.0
Andhra Pradesh	1.7	1.8	0.1
Himachal Pradesh	1.7	1.9	0.2
Karnataka	1.7	1.8	0.1
Maharashtra	1.7	1.9	0.2
Kerala	1.8	1.6	-0.2
Telangana	1.8	1.8	0.0
Chhattisgarh	1.8	2.2	0.4
Odisha	1.8	2.1	0.3
Tamil Nadu	1.8	1.7	-0.1
Assam	1.9	2.2	0.3
Gujarat	1.9	2.0	0.1
Haryana	1.9	2.1	0.2
Uttarakhand	1.9	2.1	0.2
Madhya Pradesh	2.0	2.3	0.3
Rajasthan	2.0	2.4	0.4
Jharkhand	2.3	2.6	0.3
Uttar Pradesh	2.4	2.7	0.3
Bihar	3.0	3.4	0.4
India	2.0	2.2	0.2

family planning practices, women in south India have greater decision-making power, access to money and income, ownership of assets, degree of freedom than their sisters in north India.





2.4.2 Implications of demographic transition and future population projections

Globally, over the past decades, life expectancy has been increasing and fertility rates have been falling in most of the developing world, with some exceptions, particularly among the least developed countries. But even if fertility were to fall immediately to replacement level, populations would continue to grow for some time. This is explained by the population momentum, or inertia in population growth: Because of high fertility in the past, many countries now have a relatively large number of women in reproductive age, and even if each woman has a

relatively small number of children, countries will continue to have a growing population for years to come like I have discussed in case of India.

In the developed world, the ability to plan families is taken for granted, but well over 200million women in the developing world continue to lack access to family planning methods. Universal access to sexual and reproductive health care and family planning for women of all ages is an essential and integral aspect of their empowerment even being taken up as a goal in sustainable Development 5. The decisions of how many children to have and when to have them are two of the most fundamental and consequential decisions of anybody's life. It affects people's health and education, and can influence their participation in economic, social, and political life, their earnings, and their living standards.

It is widely accepted that policies can direct individual choices and opportunities through incentives rather than controls, and can address population dynamics by enlarging, rather than restricting, individual choices and opportunities. Better access to health care services, including sexual and reproductive health care and education beyond the primary level not only contribute to falling infant, child and maternal mortality and help to arrest the spread of communicable diseases, but also contribute to the empowerment of women and falling fertility levels. Improving access to sexual and reproductive health care is particularly important in the world's least developed countries, which continue to have high fertility and a large unmet need for family planning. But even in the poorest countries, there are considerable inequities as regards access to sexual and reproductive health care. In general, access is better for women in urban areas, and for those from higher economic and social strata, than for women in the rural areas or who live in poverty.

Countries must take conscious steps to empower women not only to decide on the number and timing of their children, by providing adequate access to sexual and reproductive health care, but also to promote their active participation in economic, social, and political life. For economic and cultural reasons, many countries continue to effectively exclude women from many economic and political positions. Greater gender equality requires changes in mind sets and legislation, but it can also be furthered through practical investments, policies, and laws. Because many households are not connected to power and water supplies, many women continue to spend a considerable share of their time fetching firewood and water. Women who lack education and economic opportunities often have more children, and because they have more children many

women lack education and economic opportunities. In sum, while changes in population size have important implications for sustainable development, other population dynamics, needs attention, like how many people will be added to the world matters; it also matters where they will live, how old they are and what they do, produce, and consume.

Before ending our discussion on the demographic transition theory, I would like to draw your attention to some of the very pertinent and thorny issues which needs to be addressed while discussing about the desired fertility decline as being the ideal situation. First of all, there is no dearth of evidence to believe that demographic transition is taking place in all Indian states though at varying rates, total fertility rate will plateau for long at a level that is far above replacement level. The issues which we may be concerned are varied. First, the process of sterilization among young women many times suffers from lack of proper healthy health care. Incidences of AIDS may be on a rise as once the women are sterilized there will be little incentive for their partners to use condoms. With an aspiration to have a small family with sons' preferences, sex selective foetus abortions will be at its peak even with the existing PNMT act in place. In spite of all these challenges it is a fact that Indian couples have changed their fertility in a whole range of different economic, social, cultural and kinship contexts. There is no denying fact that today women throughout the country desire few children to whom they can provide a good education and health care. Therefore, a comprehensive package of care and well executed health programs will go long way in changing perceptions of a small family norm.

Check Your Progress 2

Note: a) Use the space given below for your answer

b) Compare your answers with those given at the end of the unit

1. India is in which stage of demographic transition?

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2. Compare the population policies of China and India. If India followed a ‘one child’ policy like China, would it have made any change in the population dynamics in India?

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3. What are the reasons that attribute to the demographic divide between the northern and southern states in India?

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4. Growing population in a nation attributes to “more hands to work” or “more mouths to feed”. Explain your concerns and suggestions in light of population growth and sustainable development of the nation.

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2.5 LET US SUM UP

Demographic transition theory is a modern theory of population growth which states: “population condition is a function of birth rate and death rate. Population growth experiences a transition from one stage to another stage. This transition is called demographic transition.” The

demographic revolution is initiated by the secular decline in mortality. Mortality decline was caused by the cumulative influences of the agricultural, industrial and the sanitary revolutions which respectively led to better food supplies, an improvement in the factors of production and the standard of living in general and improvements in public health in the developed world. In the developing world rapid population growth is the result of the temporal lag between the decline of mortality and that of fertility. The materialism and individualism associated with the urban way of life give impetus to the rational control of fertility by means of contraceptive processes.

Although India is one of the first countries to formulate a population policy, decline in fertility has been a slow process with moderate achievements especially in the states of Indo Gangetic plains. However, some areas have shown remarkable changes in fertility decline like the south Indian states, which is getting reflected in the average value of decadal growth rate of the country which is consistently declining with time. India has now reported fertility below replacement level which indicates to an early stabilization of population.

2.6 KEY WORDS

Mortality: The term mortality is used to describe the occurrence of death among a definite population. According to United Nations mortality has been defined as ‘permanent disappearance of all evidence of life at any time after birth has taken place’. For statistics on death in the population cross classified by age sex and cause of death are of great importance for the formulation, implementation, and evaluation of public health programmes.

Crude Death rate (CDR): It is expressed as a ratio of the total number of deaths during one year among a population per thousand total population of the middle of the year at a particular place over a specified time.

$$\text{CDR} = \frac{\text{Number of total deaths in a year}}{\text{Mid-year population}} * 1000$$

It is the simplest widely available measure of mortality rates that provides the basis for calculating the rate of natural increase or decrease in population. However, it can be misleading, for temporal and spatial comparisons.

Life expectancy: The term life expectancy represents the average number of years of life which

a cohort of new-born babies may be expected to live if they are subjected to the risks of death at each age according to the age specific mortality rates prevailing in the country at the time to which the measure refers.

Fertility: Fertility is a term used to refer to the actual number of live births produced by a female. Fertility is a major component of population growth because generally all over the world, fertility rates are higher than the mortality rates or migration.

Crude Birth rate (CBR): It is the simplest and perhaps the most widely quoted measure of fertility. The number of live births in a time period, usually a year, is expressed as a ratio of the average population alive during that period in units of parts per thousands.

$$\text{CBR} = \frac{\text{Number of live births in a year}}{\text{Average population alive in that year}} * 1000$$

Technically it is not a measure of fertility. But it is widely used as a basic demographic indicator along with net migration rates to estimate general population growth rates.

Total fertility rate (TFR): It is an expression of the number of births that would occur to a woman who has experienced a particular set of age specific fertility rates as she has passed through the reproductive period. It is obtained by summing of age specific fertility rates for women at each age.

2.7 REFERENCES AND SUGGESTED FURTHER READINGS

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2.8 KEY TO CHECK YOUR PROGRESS

Check Your Progress 1

1. The first stage of demographic transition theory has low population growth because of high birth rate and high death rate and the last stage of demographic transition theory has low population growth because of low birth rate and low death rate
2. Falling death rates determines the population growth trends in the developing world.

Check Your Progress 2

1. Mortality due to AIDS is going to be the determining factor of mortality rates in Africa in the next decade.
2. Most of the European countries did not experience a 'population' explosion' like many countries in Asia did because they experienced the second stage of demographic transition for a longer time than the Asian countries. These developing countries got the advantages of medical science discoveries by technology transfer and hence reduced mortality very soon, but the birth rates remained high for a continued period of time leading to a population explosion.
3. Different states in India are in different stage of demographic transition. While the northern states are still in the stage of falling mortality and high birth rate, the southern states show both trends of falling death rate and birth rate.