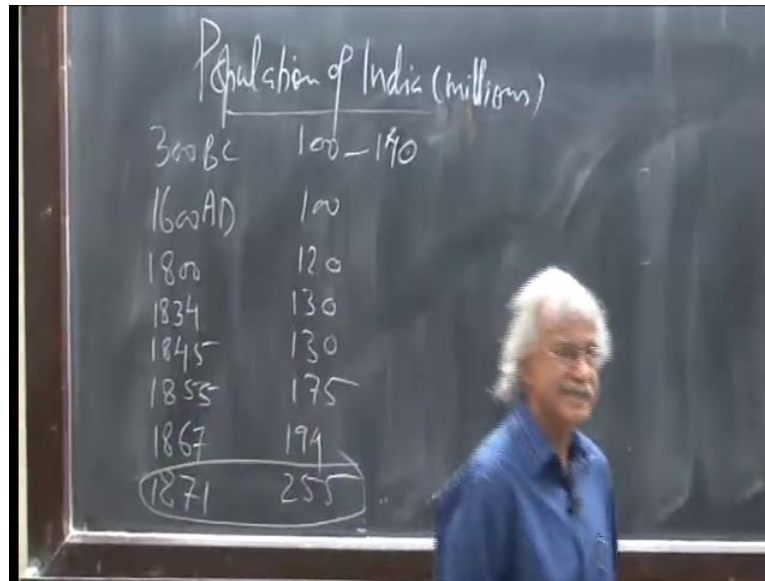


**Introductory Sociology**  
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**Lecture - 35**  
**Population-II: Population and society**

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Year	Population (million)
300 BC	100-140
1600 AD	100
1800	120
1834	130
1845	130
1855	175
1867	199
1871	255

Now, we will spend one hour on population of India and Demographic Transition Theory. The first population census in India was taken in 1871, but it was not a synchronous census it was the first population census of India and conducting census in a large and diverse country like India was a difficult task, to count total number of persons at one point of time in a vast country like India vast diverse, which means living in people living in coastal areas, in hilly regions, in snowy areas, in Himachalpradesh, in Sikkim, in Odisha remote tribal areas to conduct census in India is not a easy task. So, in 1871 a beginning was made and the figures of population from 1881 onwards are therefore, more realistic these are tentative estimates.

In 300BC means about 2300 years ago the size of population is estimated to be around 100 to 1040 million and these figures are taken from estimates prepared by different people not one person several demographers anthropologist historians made estimates of population figures and according to them the population of India fluctuated between 100 and 200 in much of the history till 1871 as recent date as 1871 virtually till the end of

19th century the population of India was around 255 million, but when it comes to 20th century in 1901.

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Year	Population (Millions)	Population (Millions)
1901	238	81
11	252	91
18	251	2001
31	278	2011
41	318	
51	361	
61	439	
71	548	
81	683	
91	846	
2001	1028	
2011	1210	

Percentage (O/o):

51	361	125%
61	439	
71	548	
81	683	
91	846	
2001	1028	
2011	1210	

Additional notes: 1971-81 (222), 2.16, 70 = 40

Our census gave a figure of 238 million, 11 census gave a figure of 252 million, 21 census 251, 31 census 278, 41 census 318, 51 census 361, 61 census 439, 71 census 548, 81 census we have a figure of 683, 91 census 846 and 2001 census 1028 and 2011 census 1210. This is India's population India's population in much of human history was fluctuating around 100 sometime it increase sometime it decrease and 1871 census give the maximum figure when you adjust these figures for change of boundaries of India's political administrative area then in 1901 census we have this is the large undivided India for the present day India these figures are more reliable these are from censuses and adjusted for changes in political boundaries of India so, in 1901 our population was 238 and then 11 census 252 and then there is a decline.

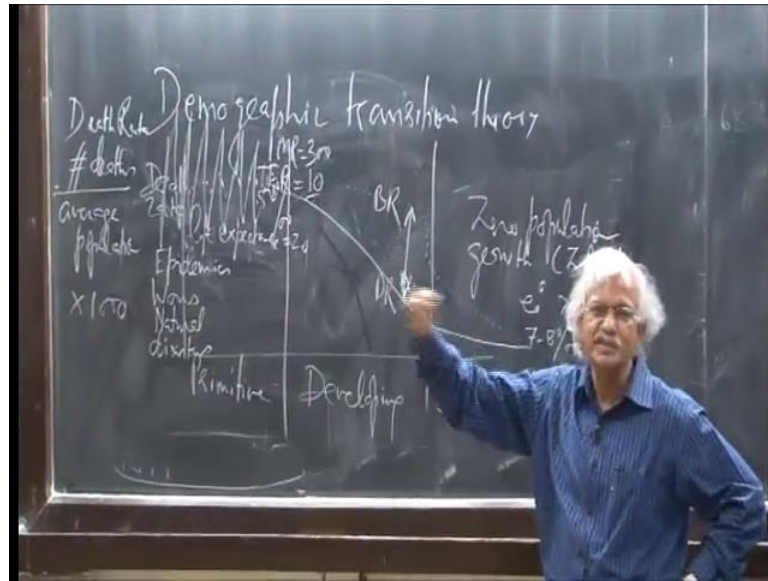
Actually we can say that in the past population remained stationary sometimes it increase at a slow rate, sometimes it decrease also this decrease in population is because, in 1918 there was a big influenza epidemic, which affected most parts of India and in which lakes of people died so, because of epidemics and food shortage people will die this situation continued more or less till 1941 the rate of growth of population in 1941 was 1.33 1951 actually 9 you can say till 1951 the rate of growth percent per year on the basis

of these two figures if you calculate rate of growth of population then 1951 population figure showed a rate of growth of 1.25 percent per year.

Before around this time you can say almost zero percent or point something percent rate of growth before 1901 population of India was more or less stable 100 to 255 on a double in more than 2000 years time population nearly doubled so, population grew at a very small pace sometime increase, sometime decrease after 1951 population starts rising. 1951 census gave the rate of growth of 1.25 percent 1961 census gave 1.96 then 2.20 then 81 census gave a growth rate of 2.2 percent which was the highest then it declined to 2.16 then 1.97 and now it is 1.64.

So the highest rate of growth of India's population which was ever observed was 2.22 percent per year during 1971 to 81 now growth rate has started decline 2011 growth rate is 1.64, India's population is still growing according to these figures at rate 1.64 percent per year and if a population continues to grow at rate 1.64 percent per year then 70 by rough calculations 1.64 nearly 40 year in 40 years time population will double, that means 40 years from now in 2050 the population of India has potential to become 2.4 billion, in 2001 first time India's population gave a figure of more than one billion in 2001 India's population was of the same size as the world population in 1820 this is the rate at which population is increasing and this is the meaning of population explosion unprecedented rise in rate of growth of population and that is the reason why population became a subject of research in the second part of the last century population was never research so much as in the second part of the last century. Issues have been changing, but why population grows at such a rate?

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Now one theory that explain this rise and fall in population is called Demographic Transition Theory I will just give a brief description of demographic transition theory and show the difference between developed and developing countries according to demographic transition theory you can divide the history of population growths demographic transition theory primitive society developing developed if you broadly divide population or history of development or a society into three parts a primitive stage, a developing stage, and a developed stage. Different countries are at different stages at different times, but these are broadly three stages of development primitive, developing, and developed.

In primitive society our death rate may be defined as number of deaths in a year divided by average population. Death rate: death rate is number of deaths, divided by average population and multiplied by thousand so, in primitive stage death rates were high and fluctuating on the average death rates were around 50 per 1000, but sometime death rates will go up to 250,300,400,500 also for those cities in which in some year plague eliminated half of the population then death rate was 500 per 1000 population so, death rate was high and fluctuating, if there is no epidemic, if there is good rainfall, if there is no war, then death rate is low maybe 30,40,20 when there is epidemics or war pestilence death rate goes up maybe up to 500 very high fluctuation and gradually with socio-economic development first these fluctuations go and the death rate becomes more smooth and gradually it starts declining.

It will never become zero death rate is like death rate was 50 per 1000 in developed society, it is 7 to 8 per 1000. So, death rate has decreased this is the reason why population started growing at a fast rate that at one time maybe not in very distant past only in 300 years ago our death rate was as high as 50 per 1000 population so, people died and population was kept under check when death rate is started declining and it has declined to a level of 728 per 1000 when death rate was 50 at that time life expectancy average life of a new born baby was as low as 20 years now it has gone up to more than 80 years life expectancy denoted by e zero has gone beyond 80.

Now a new born child can be expected to live for 80 years at one time out of all the children born nearly one 3rd died before celebrating their 1st birthday infant mortal this called infant mortality rate number of deaths of infants divided by total number of total number of children born so death rate was very high 300 now death rate in several countries infant mortality rate is as low as three when 1000 children's are born hardly 2 or 3 die in infancy and almost everyone celebrates his or her first birthday. Actually today in the developed countries almost all are assured of surviving up to 50 people start dying only after 50 all children's born today in the developed countries have a very high probability of surviving up to 50 after that heart diseases, cardiovascular, cancer, neoplasm, accidents, and diseases of old age diabetes kidney blood pressure they will appear and people will start dying, but at least up to 50 almost all are secured that is the reason why population grows at a fast rate.

Now during this time when death rate was high the reasons are epidemics, wars, natural disasters so, for mankind to survive it was important that maximum number of children's are produced, otherwise human population will not survive so, you find in religious literature in philosophy in mythology in folklores in folk literature there is always encouragement for producing more children in all religions in Islam, in Christianity, be fruitful and multiply women are like your fields you cultivate them and produce more children bath in milk and produce hundred sons was the blessing that Hindu couples received at the time of marriage because, otherwise if fertility is not put at the maximum level human society was not surviving for the survival of human society it was must that fertility is maintained at the highest level.

So, the average number of children we call in demographic language we call it total fertility rate this was may be around ten children there are records to show that maximum

number of children ever produced per woman could be as high as 11 to 12 children in the last century in one tribe of united states called (( )) average fertility of eleven point something was found this is average some women had 20 some women had 2 average was 11.

In Uttar Pradesh when I was a student and first time, I did any fieldwork as a sociologist and my fieldwork was done in a neighboring district Etawah in rural areas at that time of Etawah district total fertility rate was 8.2 children this on the average. A woman before reaching 45years had produce 8.2 children. So, that was fertility is also high birth rate is high there are complications like when death rate is low birth rate may be high, when death rate is high birth rate may be low, and so on, but since, we are only talking in a very general sense so, in this situation birth rate was also high.

Now what happened here when death rates started declining birth rates remained high for some time and there was a time when the gap between this gap between birth rate and death rate is high. This is the cause of population explosion death rate has declined birth rate has not declined birth rate remains high, if birth rate also declines then you again reach a position when population stops growing a condition of zero population growth.

In sociological language there was an equilibrium a social order equilibrium both birth and death rates were high and population was in equilibrium population did not grow and no serious disturbance was created in the institutional framework of society now disturbance is created disequilibrium is created by the decline in death rate and it takes some time for birth rate also to decline it is easier to control death rate, than to control birth rate when death rates decline death rates decline universally in all parts of the world there was no opposition there is no opposition to d d t spray there is no opposition to antibiotics there is no opposition religious or political opposition to sulfa drugs there is no religious opposition to anesthesia or surgery no religion, no culture, oppose only maybe in some rare cases like in India due to political reasons or mistrust some Muslims opposed administration of polio drops, but that is not such an important issue.

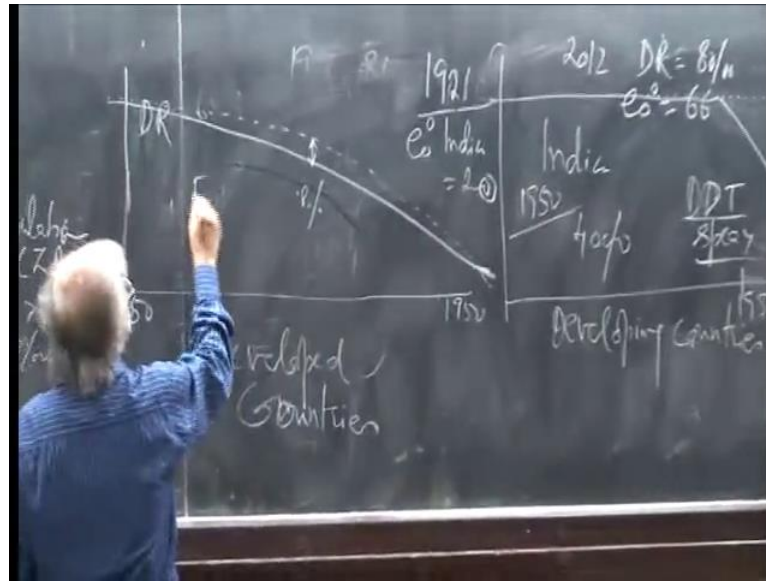
There were reports that minorities as they are suspicious of the intention of government may react in this way, so at some places there was opposition to polio drops and Muslims thought that government of India is doing something through which Muslim children boys and girls will become sterile and they will not be able to produce any child so, in

villages of Muslim majority district like Rampur, Bedaun, Bareilly there was opposition to polio, but by enlarging human history you do not find end because nobody wants to die

All of us will die that is a fact, but nobody wants to die and no religion, no political state ever opposed programs for reducing mortality, but when it comes to fertility then people will become very (( )) I am not saying that any community was at fault we know that during emergency period excesses were committed and the fault if there was a fault certainly that is with the state, but just to give an example of how people differ in attitude towards this and this in Muzaffarnagar district in family planning program when the state machinery was involved in family planning program which means sterilization at that time there were violent conflicts, riots and more than 50 Muslims were killed in police firing because they did not want to get sterilized these excesses so, on the one hand there was excess on the part of state and similar incidences to place it became international news and prime minister had to mention this and define this in the parliament.

There was never such an opposition to death rate in no country Muslim, Christian, Hindu anything. So, death rates could be reduced birth rate cannot be reduced so, easily so, there is of time when difference between birth rate and death rate is high so, in the past both were high and therefore, population was not growing or growing at a very slow phase and this remained the situation for lakhs of years only during last 200 years also this equilibrium between birth and death rate was disturbed and more so, in the developing countries. Developed countries, I must say something about the differences between developed and developing countries.

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In developed countries Germany, France, UK, death rates started declining sometime around 1750, and it took a long period of time say up to 1950 and death rates are still declining 200 years more than 200 years in developed countries it took more than 200 years time for death rates to decline. So, the change in death rate was slow and birth rate also declined almost simultaneously now birth rate is in several countries birth rate is lower than death rate. So, this population did not explored certainly there were periods when population growth was positive and the intellectuals and philosophers in the developed countries they started talking about population growth.

In 1820 world population reaches 1st billion, 1930 2<sup>nd</sup> billion up to 1930 the growth of world population was mainly because of decline in death rate in the developed countries. So, population was growing only in the developed countries and roughly 20 percent of the world population lived in developed countries 80 percent lived in less developed countries Asia, Africa, Latin America, broadly. In less developed countries or developing countries including India what happened that if this is 1950, till 1950s death rates remain very high, in some countries there may have been some decline, but by enlarge death rate remained high and around 1950 suddenly, there is a reduction birth rate was high it should have been high for equilibrium birth rate remained same and birth rate starts declining around 1970s.



So, during this time 1950s and 60s there is population explosion. During this time between 1950s and 1970 there is population explosion this is the time when you find that India's population is growing at rate 2.2 percent per year. In the developed countries the maximum rate ever observed in any country would be in decimal points, 0.8 percent maximum in some countries like France, both birth and death rates declined almost simultaneously so, there was no problem, there was no population explosion and Paul Ehrlich and other demographers biologists ecologists who were writing on concepts like population explosion, population bomb, they had the situation of less developed countries in mind where in around 1950 death rates declined suddenly.

One year it did not take 200 years, one year in some country like Sri Lanka around 1945 in just one year time, death rate fell by 50 percent and the cause was DDT spray, DDT spray alone by controlling malaria and maybe controlling some other infectious diseases also or attacking at malnutrition infections syndrome infection leading to malnutrition, malnutrition making you more prone to infectious diseases DDT spray, in just one year time in Sri Lanka death rate declined by 50 percent, but otherwise in all the developing countries in 1950s death rates fell and death rates fell irrespective of their economic development, social development, political institutions, religion language, culture, irrespective of everything in all the less developed countries death rates decline. So, there is population explosion birth rate has not decline.

In India itself at the time of independence or even up to 1950 death rate of India was 40 per 1000. So, a high death rate continued in India for a long time as late as 1950s death rate of India was 40, but then suddenly after that after 1950 thanks to health infrastructure developed by government of India primary health center, community health centers, district hospitals, super specialties, gradually we started developing health infrastructure improvement in doctor population, radio awareness campaigns fight against superstitions magic witchcraft education development, urbanization, with all those things our death rates have declined further.

So, today India also has a very low death rate of around date and our life expectancy in 2012 our death rate in India is around eight slightly less than 8 per 1000 and our life expectancy is around 66 in 1901 in the beginning of the century up to 1920 one actually in 1920 one life expectancy of India was only 20 years a new born child in India. In 1920

one was expected to live for 20 years, only today a new born child in India is expected to live for 66 years there is still a gap.

There is a big gap between developed countries and India, but when you compare India of 2012 with India of last century there is remarkable improvement. So, our life expectancy has gone up from 20 to 66 our death rate has declined from 40 to less than 8, our infant mortality has declined from nearly 150 to 50 per thousand child births this is the reason and this is what demographic transition theory says. Demographic transition theory says that in ancient society death rates are high and fluctuating the reasons are epidemics wars natural disasters, and for mankind to survive it is important that fertility levels are maintained at the highest level.

So, you find that there is encouragement to fertility. If fertility was as low as it is today, and death rate was as high as it was then human society would not survive then we will not be here there will be no population today, no IIT's, no Education. So, it was important that fertility must be kept at a high level equilibrium to maintain the equilibrium fertility was maintained at a high level. Now, due to several reasons fertility versus due to several reasons mortality starts declining nobody knows exactly why mortality decline.

In layman's attention may be drawn towards improvement in medical sciences, but the demographers and sociologists who have studied this phenomenon say that mortality decline not because of invention in medical sciences, but because of other factors. Only later improvement in medical sciences and health infrastructure may played a role, but mostly the factors are related to rise of nation state, one big factor rise of nation state is it rise of nation state means that there is more order political order there is a big country and the fights violent bloody fights between small kingdoms go away.

We may not realize how important this factor I would say that even in the less developed countries and in the context of India this rise of nation state Indian nationalism is a major contributory factor to decline in mortality what happened thousand years ago or even later small small kingdoms and for regions unrelated to well-being of people it was like a king of Kanpur abducts daughter of the king of Karnos or Unnao or Lucknow and that leads to war and in the war thousands of people die.

Now today we have a nation state India abduction still takes place, but there is a lot to deal with them and they are so, few that they make a national view they are very few there have been communal riots in India in and some of them quite violent Bhagalpur. Gujarat, Punjab suffered from communal tension, but maximum of a few 100s rarely number of deaths in communal riots touches a figure of 100. So, rise of nation state earlier because of small kingdoms conflicts between kingdom kingdoms war intense war between tribes small small tribes often fighting with each other death rate this was one major factor

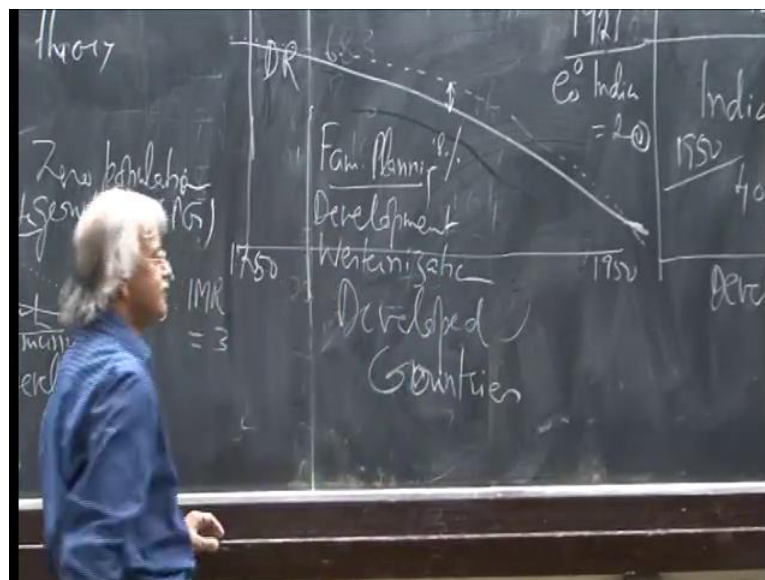
Then labor laws protection of the condition of workers at one time there was no protection to workers and a large number of deaths took place in urban areas and centers of industry because of industrial hazards, industrial accidents, long working hours, low income, some researchers have shown that in Bombay, at anytime Bombay was a small industrial place majority of people were migrants and migrants of recent tourism because as it was said that people used to go to Bombay to die, people from rural areas will go to Bombay to work in industries and the rate of accidents in industry was so, high and working hours were so, long that within a few years the new migrants to Bombay will die and they will be replaced by new people.

Unlike the situation of today urban areas had very high death rates as compared to rural areas. So, improvement in labor laws, improvement economic condition, economic development, transport and communication, today if there is a famine in some small part of the world immediately the whole world knows about that, your major TV channels starts showing deaths and devastations when they occur in any small part of the world medical science is important, but that played a minor role in improvement in death rate.

Why did birth rate decline? birth rate decline again it is not very clear why did birth rate decline, in the western countries birth rate declines because, the parents, the couples ,realize with education, with economic development, with structural changes, they realize that it will be more conducive for them and for their children to have a small number of children I remember in population and development review a long back an article was published which use the metaphor of social capillary that social capillary was the reason why birth rate declined in European countries. Capillary you know in physics the idea of capillary in capillary tube the height of a column of liquid will be more if the radius inner radius of the tube is less.

So, using that idea a social scientist was arguing that people realize that if they have a small number of children like the radius, inner radius of the capillary tube then the possibility of movement of their own and also of their children will be more. So, at a time economic development was taking place in developed countries on their own, sometime despite of position from government in catholic states government put all kinds of bans on use of contraceptive methods unlike India where we are propagating family planning method in European states due to Christianity catholic belief state often restricted propaganda about family planning by use of contraceptive method, but on their own people felt so intensely that for their own development and for the development of their children it is important that they have less number of children and this is how fertility decline.

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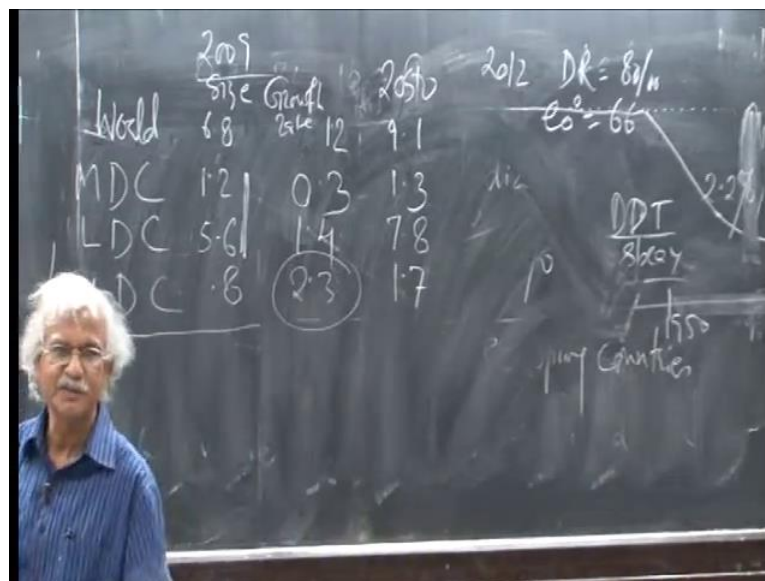
In developing countries family planning program is an important factor in decline of fertility. India was the first country in the world to launch a government sponsored family planning program. Indian state for the first time in the world anywhere launch family planning program. China did not have family planning program for ideological reasons in the beginning moa Zedong, and Chinese leader communist leaders thought that population problem is a problem of capitalist society Burjuva society.

In socialist society these problems will not exist so any discussion of population trends in china in Mao's time and during Cultural Revolution was considered to be a kind of

revisionism in socialist theory a Burjuva attempt a reactionary philosophy. So, demographer's, sociologist's family planning experts those who talked of population growth in Mao's china were punished several of them lost their jobs several of them were put behind bars demographic and sociology departments dealing with population were destroyed. So, china that was the reason ideological reason why china at that time did not go for family planning India was the first country to go for family planning program.

So, family planning is one factor, development is another factor, change of values westernization, and may be many other factors, not yet completely understood may be biological factors, may be some psychological factors, not fully dependent on these things have been responsible for decline in fertility now where do we stand today with respect to demographic conditions where do we stand today, today at the end I would like to give these a few figures to show the world situation.

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World this is the data pertaining to 2009, world more developed countries, less developed countries, and there is a category of least developed countries. The size of population of the world is 6.8 billion, 1.2 billion are living in more developed countries, 5.6 are living in less developed countries, we are part of less developed countries, and 0.8 are living in least developed countries. Least developed countries are a part of this otherwise these two must add to this 6.8. This is the world situation a certain number of

countries of Africa, mostly Africa they are classified as the least developed countries. So, 0.8 billion population of the world is living in least developed countries.

Growth rate, growth rate of the world as a whole is 1.2 percent per year the whole world population is growing it is still growing Malthusian fear of over population as such has not become (( )) world population is still growing at 1.2 and if 1.2 is maintained then in 60 years time we will double, will become more than 13 billion. The world cannot sustain natural resources of this planet cannot sustain, but the good news is that this growth rate is declining.

In the more developed countries this growth rate has declined to 0.3 percent per year, in less developed countries it is 1.4, and least developed countries 2.3, least developed countries are still growing at malthusian rate, malthus rate doubling in 25 years. So, the least developed countries of Africa are still growing at a very high rate 2.3 projected population what will happen. In 2050 the world would be 9.1 more developed countries would be 1.3, less developed countries will be 7.8 and least developed would be 1.7.

Some of the developed countries like Germany, Austria there are developed countries where the growth rate of population has already become negative and they are facing problem of not explosion, but implosion of population, another type of risk low fertility implosion of population on the average to maintain equilibrium we need an average family size of 2.1 2 children, 2.1 children if all the couples have 2.1 children then the population becomes stationary in the long run, but some of the developed countries have such a low fertility that total fertility rate or average number of children for them has gone down to 1.2, 1.1, 2 persons are getting replaced by 1.1 percent in the next generation leading to a negative rate of growth of population so, their problems are different.

Less developed countries as they become more advanced they are also going to face the similar problem as a whole, in India we still have high fertility and some of our states have still very high fertility more than four UP, Bihar, Rajasthan, Madhya Pradesh for which earlier Ashish Bose use the acronym Bimaru states, Chhattisgarh was cause from Bimaru, BI for Bihar, MA for Madhya Pradesh, R for Rajasthan, and U for Uttar Pradesh. It makes Bimaru. so, 40percent roughly, 40percent population of India lives in bimaru states and their average number of children is still very high, but more and more

states of India are entering the below replacement fertility phase the latest state to enter in this phase is Himachal Pradesh.

Nobody earlier thought that any north Indian state will also have low fertility, but the last sample registration scheme data are showed an (( )) data that Himachal Pradesh also has a fertility level much below two. So, more and more states are having less than two, the overall India is divided into two major parts Vindhya divides India into two parts on the south of Vindhya we have the Europe and more so, Kerala state in demographic terms in population terms Kerala can be called the Europe of India and on the north of Vindhya you have the Africa of India and UP and Bihar are the most Africans of India.

So, there is a diversity India is because of this demographic transition India is passing through a phase of demographic diversity we expect that the more socio-economic development with further reduction in death rate infant mortality rate and maternal mortality rate and with more awareness fertility will decline in UP and Bihar also so, very powerful government sponsored, civil society sponsored, family planning programs are going on and we are hopeful that India will also attain a situation of equilibrium so, some diversity may remain there may be deficit of children in Kerala, Andhra Pradesh Goa, Karnataka, Maharashtra there will be some surplus of children in UP, Bihar, Rajasthan, but in India as a whole we are more moving towards the condition of equilibrium. I think we stop here