

Population Studies
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Lecture - 06
Population Dynamics - II

Friends, now I will go deeper into Population Dynamics. In the previous lecture I said that in demographic dynamics or population dynamics we study relationship between age and sex composition of population on the one hand and demographic processes on the other. I also showed how composition of population or profile of population according to socio economic characteristics is shown and in this lecture, I will focus more on demographic processes.

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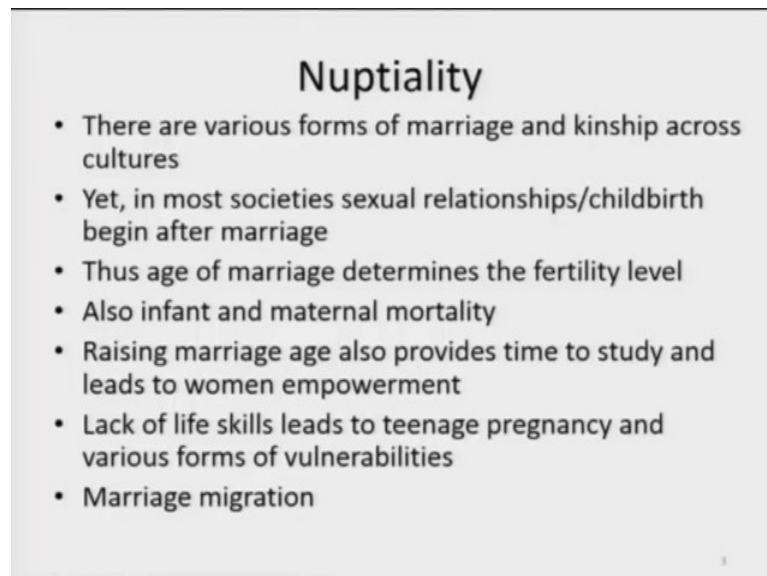
So, as I said earlier demographic processes are five; nuptiality or marriage, fertility, mortality, migration and social mobility. I may also add here that demographic studies are focused more on fertility and mortality. But, because nuptiality or marriage affects fertility, most of the studies of demography have been undertaken in 1950s and 60s when the world population was so, called exploding and everyone was worried what will happen to the future a world population, if fertility is not controlled in the less developed countries.

So, studies focus on fertility, studies also focus on mortality because mortality was one of the determinants of fertility. And, fertility depends on age of population at which commonly marriages take place or average age of marriage. If marriages take place early then there is much more reproductive time, a bigger reproductive time, a greater span of reproductive period available for childbirths and fertility will be high.

If age of marriage increases if people start marrying at say 25, 26 then the reproductive span shortened and fertility declines. And some of you may be knowing that government of India has fixed legal minimum is of 18 years for girls and 21 years for boys among other things, a major consideration in the raising age of marriage has been the concern about high fertility.

Migration is less studied, it is mostly in the context of rural to urban that migration has been studied interstate, international migration has been less studied except that some people have analyzed census figures. And, have seen which states are in migrating, which states are out migrating, what are the reasons, how does migration relate to employment and so on. Social mobility is one part of demographic processes which is rather ignored.

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Nuptiality

- There are various forms of marriage and kinship across cultures
- Yet, in most societies sexual relationships/childbirth begin after marriage
- Thus age of marriage determines the fertility level
- Also infant and maternal mortality
- Raising marriage age also provides time to study and leads to women empowerment
- Lack of life skills leads to teenage pregnancy and various forms of vulnerabilities
- Marriage migration

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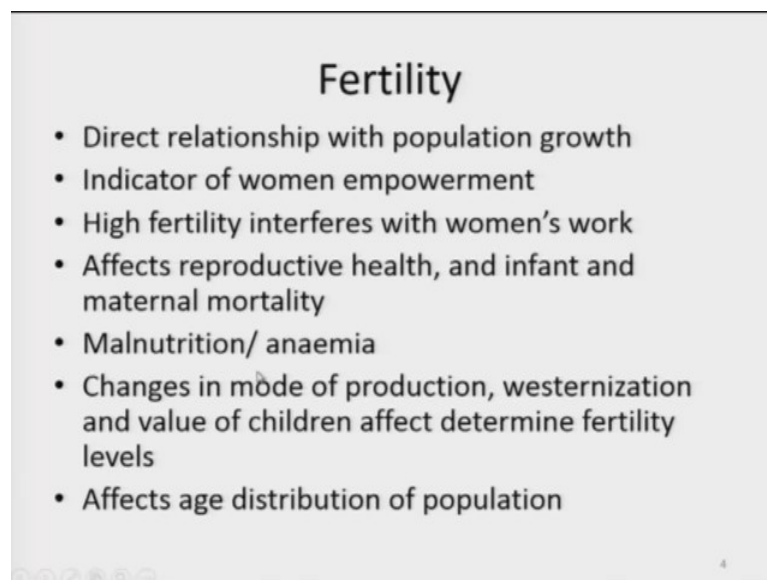
Now, in nuptiality there are various forms of marriage and kinship across cultures. For example, consanguineous marriages or marriages among relatives are quite prevalent in south India, but such marriages would be considered incest in north India. Kinship

patterns are different in different parts of the country and sociologists have extensively written on this. Yet, in most societies sexual relationships or childbirth begin after marriage and therefore, age of marriage is of immense importance to a study of fertility.

Also to study of infant and maternal mortality because, there is a relationship between age of marriage on the one hand and infant and maternal mortality. Maternal mortality refers to deaths of mothers during pregnancy and within a period of 42 days after childbirth. Raising marriage age also provides time to study and leads to women empowerment that is why nuptiality is of interest. Lack of life skills if marriages are early leads to teenage pregnancy and various forms of vulnerabilities among girls.

In India marriage also leads to migration because, in India according to our social institutions, marriage is cast endogamous, within cast and village exogamous outside the village. So, an overwhelming majority of cases marriage of a girl will make her migrant because, she cannot marry in the same village, urban areas are different. In urban area large urban areas marriages within the metropolitan city or within urban areas are possible, but in case of villages marriage leads to migration.

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Fertility

- Direct relationship with population growth
- Indicator of women empowerment
- High fertility interferes with women's work
- Affects reproductive health, and infant and maternal mortality
- Malnutrition/ anaemia
- Changes in mode of production, westernization and value of children affect determine fertility levels
- Affects age distribution of population

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Regarding fertility there is a direct relationship of fertility with population growth, you have seen that natural growth equal to birth rate minus death rate. So, if birth rate is high then population growth rate is also high; fertility is also seen as an indicator of women empowerment. High fertility interferes with women's work it affects reproductive health,

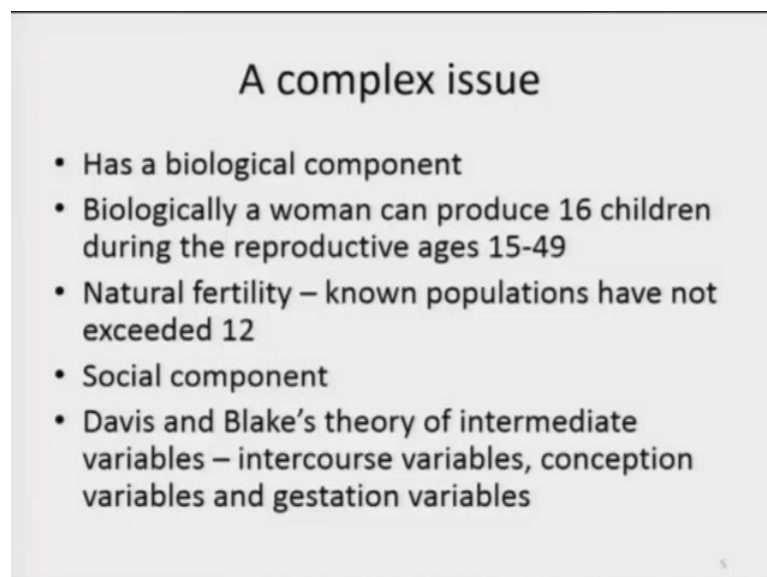
which is of a great concern now in 2019 and infant and maternal mortality. For high fertility also leads to malnutrition among women, roughly half of our women suffer from malnutrition and high fertility is one of the reasons why they have anaemia or why they suffer from malnutrition

Changes in mode of production, westernization and value of children affect or determine fertility levels how? For example, according to one social theorist in the past when fertility was high most people were on the family farms or in the family business, but where with changes in mode of production from familiar mode of production to non-familiar mode of production, children looking outside for employment they need to be educated and parents have to spend money on them.

Parents have to spend money on their education, training for preparing them to get a job outside family and so, the costs of children rises. And in modern society there is very little benefit of children and therefore, this change in net flow of wealth there is some flow of wealth from parents to children some children to parents. This change in the net flow of wealth between parents and children leads to fertility decline and fertility also affect the age distribution of population.

The major reason why the developed countries are facing aging is not so, much the rise in life expectancy as is commonly believed to be the case, it is actually the decline in fertility; when fertility declines then the percentage of older population starts rising.

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A complex issue

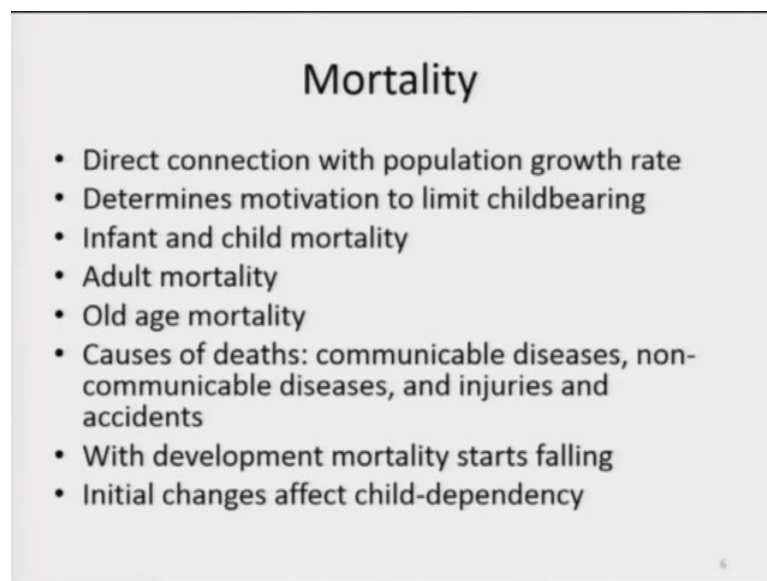
- Has a biological component
- Biologically a woman can produce 16 children during the reproductive ages 15-49
- Natural fertility – known populations have not exceeded 12
- Social component
- Davis and Blake's theory of intermediate variables – intercourse variables, conception variables and gestation variables

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Fertility is a complex issue, it has a biological component and biologically a woman can have somebody may ask a question how many children a woman can produce. Biologically a woman can produce 16 children during the reproductive period 15 to 49 easily. Some people even estimate that a woman can produce 30 35 children. Now, natural fertility means what has been observed on the basis of surveys or a fieldwork is that, it was a tribe population tribal population of the United States in which maximum fertility of average of 12 children was found.

There is a social component in fertility and there is an interesting theory I thought I should talk to you about this theory of intermediate variables Davis and Blake Davis is Kinsler Davis our famous sociologist who wrote a basic textbook of sociology human society. And, Judith Blake his wife they wrote a theory of intermediate variables in terms of which you can analyze what impact sociological or economic or psychological variables may have on the fertility overall fertility levels in the country.

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Mortality

- Direct connection with population growth rate
- Determines motivation to limit childbearing
- Infant and child mortality
- Adult mortality
- Old age mortality
- Causes of deaths: communicable diseases, non-communicable diseases, and injuries and accidents
- With development mortality starts falling
- Initial changes affect child-dependency

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The mortality has a direct connection with population growth rate like fertility. It because natural growth rate equal to birth rate minus death rate so; obviously, if death rate declines then the growth rate of population natural growth rate increases. Now in mortality also determines motivation to limit childbearing. If mortality is high then due to the fear that some children might die either people will produce more children or if some children had have died, then they would like to replace them.

So, fertility would be higher. Decline in infant mortality, decline in child mortality have been a major motivational factor in reduction of fertility. Similarly, adult mortality is of special importance and the factors of adult mortality are different from factors of child mortality and maternal mortality. Old age mortality has other special issues it requires geriatric care, it requires a specialization for treatment of diseases of old age.

Now, causes of death are often divided into categories like communicable diseases, non communicable diseases and injuries and accidents. In the past when mortality was high it was largely because of communicable diseases kala ajar, smallpox, tuberculosis, malaria, chicken pox, diarrhoea, dysentery, various kinds of fevers communicable diseases were a major factor in mortality when mortality was high.

Now, in developed countries about 300 years ago, and in less developed countries about 70 years ago mortality started declining and that was largely initially it was largely due to control of communicable diseases. Then there are non communicable diseases cancer, cardiovascular disease and diseases of old days, stroke etcetera blood pressure they are diseases which come under non communicable diseases and they are often called lifestyle diseases also. Among which is stress can be a factor, age can be a factor and which are more difficult to treat as compared to communicable diseases communicable diseases are easier to treat.

I remember that in Sri Lanka around 1945, in just 1 year death rate reduced by 50 percent and the reason was simple spray of DDT. A DDT spray control malaria and the death rate declined by half. There is no such panacea for cancers and cardiovascular diseases and other lifestyle or non communicable diseases then injuries and accidents also take some toll of life in all countries.

Now, with development socio economic development, education some people said due to state formation rise of nation is states, mortality started declining. And initial changes in mortality affects child dependent initial because decline in infant mortality means that the number of children expands immediately.

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Less complex

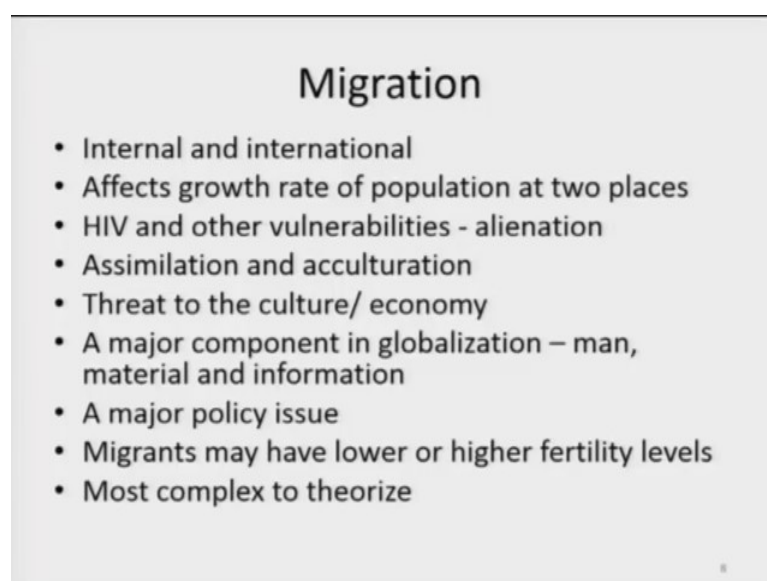
- Mainly a biological issue
- All governments spend on health
- Health and longevity are universal values

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It's mainly a biological issue and all governments want to expand on health, they want to raise life expectancy, everybody wants to achieve life expectancy of the developed countries do you know what is the life expectancy of India? Life expectancy of females in some of the developed countries is as high as 82 or 83. But in India our life expectancy is still around 70.

We will talk about life expectancy later, when it comes to measure some mortality.

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Migration

- Internal and international
- Affects growth rate of population at two places
- HIV and other vulnerabilities - alienation
- Assimilation and acculturation
- Threat to the culture/ economy
- A major component in globalization – man, material and information
- A major policy issue
- Migrants may have lower or higher fertility levels
- Most complex to theorize

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Then migration; migration is divided into two parts internal migration or within the country and international migration or migration between countries. It affects growth rate of population at two places unlike fertility and mortality migration affects the growth rate of population of place of origin and also a place of destination.

If people migrate from India to Canada, then growth rate of both the countries India and Canada are affected. Migrants are particularly susceptible to certain vulnerabilities and alienation. It takes time to have acculturation or assimilation, but for initial period they suffer from alienation and in some studies have shown that migrants are vulnerable to infections like HIV.

Migrants are often seen as a threat to the culture and economy because when people migrate maybe they migrate for the reason of employment, but they also carry their own language, their culture, their religion along with them to a new country. And the countryman of this new country place of destination may find the increasing number of alien people belonging to another language, another culture, another religion, quite threatening.

The example of Germany where Turkish migrants form an increasing proportion is one such example. There are some Gulf countries where almost half of their population consists of migrants and mostly migrant from Asia. And resolving conflicts between migrants and natives becomes a major issue there. Migration is a major component in globalization which is defined as movement of men, material and information. It is a major policy issue for some countries like China rural to urban migration is controlled in United States in the recent past they have put lots of restrictions on issuing green cards or in giving citizenship to foreigners because of the apprehension that, if more jobs go to outsiders then the insiders suffer from heavy unemployment.

Now, in some countries migrants have lower fertility, in some countries higher fertility. So, migration and fertilities are also associated, it is most complex to theorize because it is purely social most complex issue.

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Most complex

- Most complex as it has no biological component
- Is purely a sociological issue
- Is connected with characteristics of place of origin and place of destination
- Depends on personality of migrants

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It is purely social sociological issue, it depends on push factors, pull factor, personality of migrants and is connected with the characteristics of place of origin and place of destination.

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Social mobility

- All societies have are stratified and are characterized by various forms of inequality
- Poor countries are more rigidly stratified
- Social mobility refers to intergenerational or intra-generational movement from one social stratum to another
- Degree of openness
- Individual and group mobility
- Mobility – a factor in fertility decline (social capillarity theory of Arsene Dumont)
- Industrialization and mobility

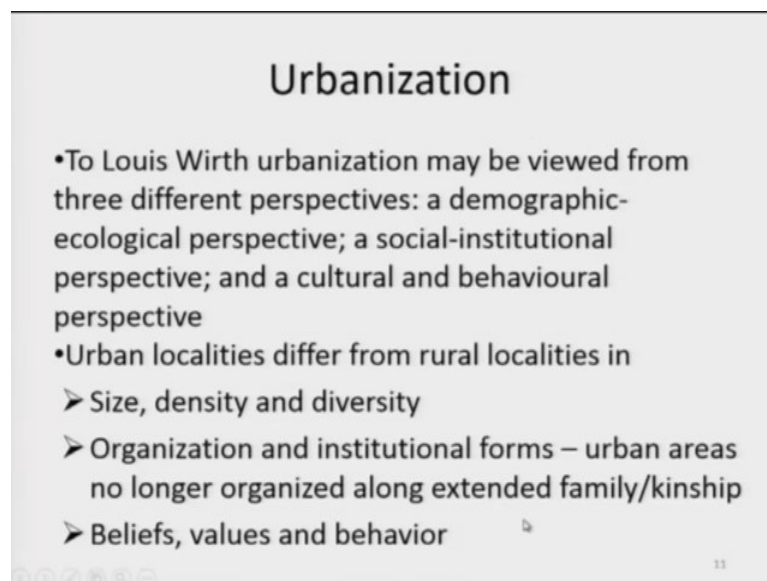
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Social mobility I said is less studied, but all societies are stratified to different extent some are more open some are more closed, poor countries are relatively rigidly stratified. Social mobility social mobility refers to intergenerational or intergenerational intra means in the same generation movement of people from one social stratum to another.

Degree of openness varies from country to country, mobility can be of individuals, mobility can be of groups and mobility is often a factor in fertility decline. According to a famous theory by Dumont, fertility started declining in European countries largely because of the possibility of mobility and because people felt that now there are lots of opportunities and if they have a small number of children, that will be good for the children and also for themselves.

So, this is one explanation of fertility, this is not the only explanation and industrialization leads to mobility is obvious, industrialization leads to rural urban migration, industrialization leads to globalization migration from one country to another and migration from one part of the country which is industrially deficient to another part of the country where more industries are located like migration from Bihar to Maharashtra; because Maharashtra is more industrialized Bihar is less industrialized. So, people move from Bihar to Maharashtra.

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Urbanization

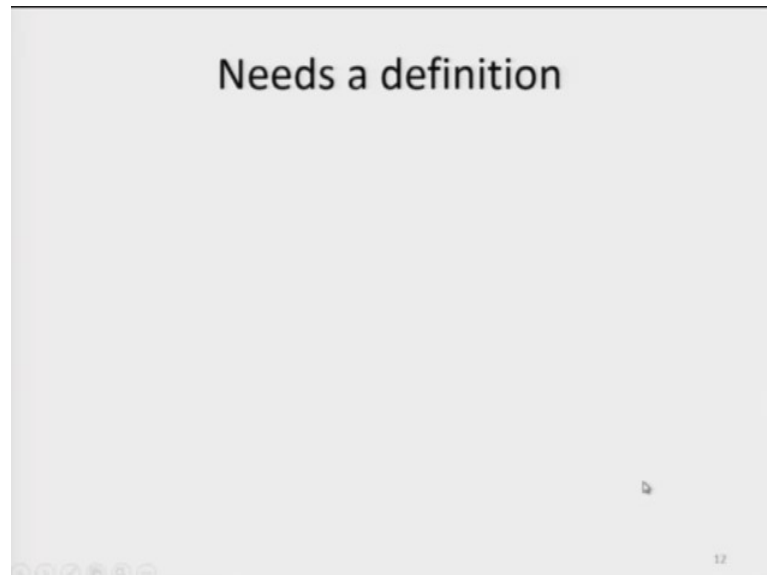
- To Louis Wirth urbanization may be viewed from three different perspectives: a demographic-ecological perspective; a social-institutional perspective; and a cultural and behavioural perspective
- Urban localities differ from rural localities in
 - Size, density and diversity
 - Organization and institutional forms – urban areas no longer organized along extended family/kinship
 - Beliefs, values and behavior

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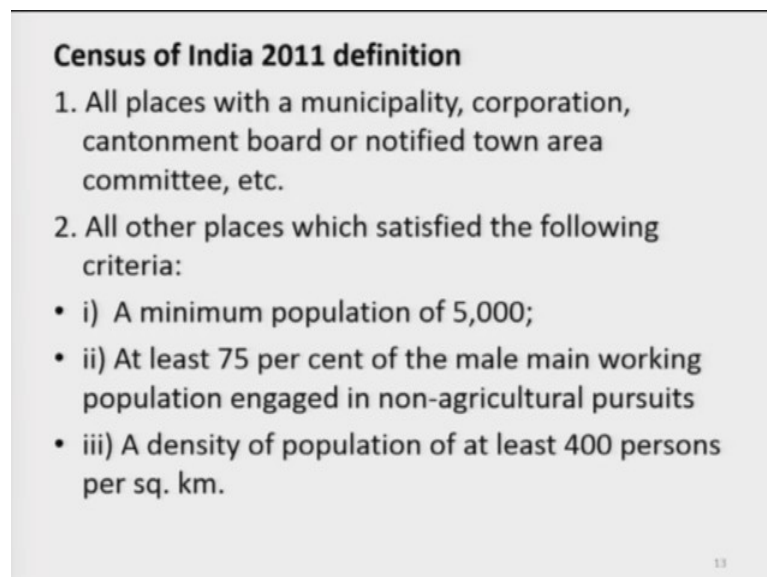
And one of the consequences of migration internal migration is urbanization. To Louis Wirth urbanization may be viewed from three different perspectives demographic which mean percent is rise in urban population and this percentage rise in urban population also leads to a socio institutional change and cultural and behavioural changes at the individual level, at the group level. Urban localities differ from rural localities usually in

terms of size, density, diversity, organizational and institutional forms, beliefs values and behaviour.

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Urbanisation needs a definition in the context of our country there are two definitions one is called statutory definition, this is first definition all places with a municipality, corporation, cantonment board or notified town area are statutorily urban areas. Then there are census definition or demographic definitions according to which a minimum population of 5000 at least 75 percent of male working population engaged in non

agricultural pursuits and density of population of at least 400 persons per square kilometre defines a locality as urban

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Statutory and census definitions

- The first category of urban units is known as Statutory Towns. These towns are notified under law by the concerned State/UT Government and have local bodies like municipal corporations, municipalities, municipal committees, etc., irrespective of their demographic characteristics as reckoned on 31st December 2009. Examples: Vadodara (M Corp.), Shimla (MCorp.) etc.
- The second category is known as census definition

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So, these are statutory and census definitions of urbanisation; now, you may like to have some basic idea of what is happening to level of urbanization in the country.

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PERCENTAGE OF POPULATION IN URBAN AREAS AND URBAN POPULATION, 1995-2025

World/ Region	Percentage urban			Urban population (millions)			Annual growth rate (U)
	1995	2000	2025	1995	2000	2025	
World	45	51	65	2.6	3.2	5.5	2.5
LDRs	38	45	61	1.7	2.3	4.4	3.5
MDRs	75	75	83	0.9	0.9	1.1	0.8

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Now, in around 2000 you see percentage urban 2050 2000 is the year when first time world population becomes majorly urban. So, more than half population of the world was living in urban areas, but there are differences between less developed and

developed. In less developed countries only 45 percent while in more developed countries on the average 75 percent population was living in urban area. World population is urbanising, annual growth rate of urban population is 2.5, more developed country 0.8 due to fall in fertility and less developed countries urban areas are growing at 3.5 percent.

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Year	Total (million)	Rural (million)	Urban (million)	Level of urbanization
1901	238	213	26	10.84
1911	252	226	26	10.29
1921	251	223	28	11.18
1931	279	246	33	11.99
1941	319	275	44	13.86
1951	361	299	62	17.29
1961	439	360	79	17.97
1971	548	439	109	19.91
1981	683	524	159	23.34
1991	846	629	218	25.71
2001	1029	742	286	27.81
2011	1210	833	377	31.16

This is trend of urbanization in India. I said that in the beginning of the last century nearly 10 percent population only 238 million were living in urban areas, while today this is 2011 census; so, in 11 census 31.16 percent population or 1210 million 1.210 million people of India. Out of this population of 1210 million in India 377 sorry I said that 238 million were living in 1901 in urban area it should be seen 26, 26 million people were living in urban areas in India in 1901.

This is total population, this is rural, this is urban and this urban population of India has increased from 26 million to 377 million. Such a rise that in the beginning of the last century only 10 percent population of India was living in urban areas, in terms of size it were 26 million today I said 33, but in 2011 census 31.16 percent population was living in urban areas and in terms of absolute size, it was 377 million.

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DECADAL GROWTH AND NATURAL GROWTH OF POPULATION, INDIA, 2001-2011			
Population/growth rate	Total	Rural	Urban
Population, 2011 (million)	1,210	833	377
Decadal growth rate (percent)	17.64	12.18	31.80
Natural growth rate (SRS), 2006 (per thousand)	16.0	17.2	12.8
The difference between decadal growth rate and natural growth rate (per thousand per year)	1.64	-5.02	19.0
Ratio of natural growth rate to the decadal growth	90.70	141.21	40.25

These are some other characteristics of urban population, population decadal growth rate 31.80, natural growth rate 12.8, the difference between decadal growth rate and natural growth rate 19.0 which is mostly due to migration. So, natural growth rate of urban areas is 12.8 percent, contribution of migration in 19 percent and thus the ratio of natural growth to decadal growth is 40.25; that means, migration is contributing more to urbanization of the country.

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Questions

- To what level fertility may decline?
- How long people can live?
- Can migration be stopped?
- Can all belong to the same class? If not, what percentage of population can join the upper class?
- Can India become 100% urban?

Now, at the end I ask you a few questions think about them to what level fertility may decline. Demographic processes are fertility mortality etcetera let us raise some questions about them to what level fertility may decline, how long people can live, expectancy in India today 70, can it be 80, can it be 90, can it be 100, can migration be stopped, can all people belong to the same class if not what percentage of population can join the upper class. Can India become 100 percent urban or at least 85 or 90 percent urban as is the case with the developed countries?

Think about these questions and answers partial answers at least to these questions will be found in the subsequent lectures.

Thank you very much.