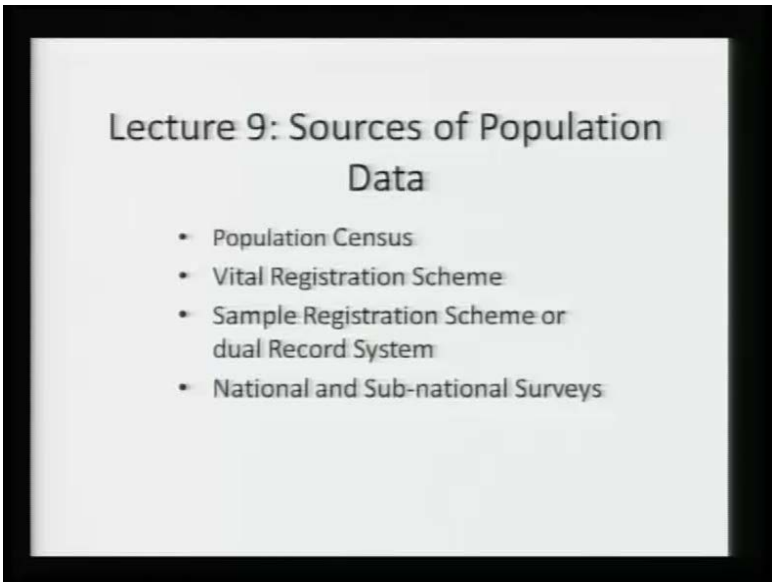
Population and Society
Prof. A. K. Sharma
Department of Humanities and Social Sciences
Indian Institute of Technology, Kanpur

Lecture No. # 09
Sources of Population Data

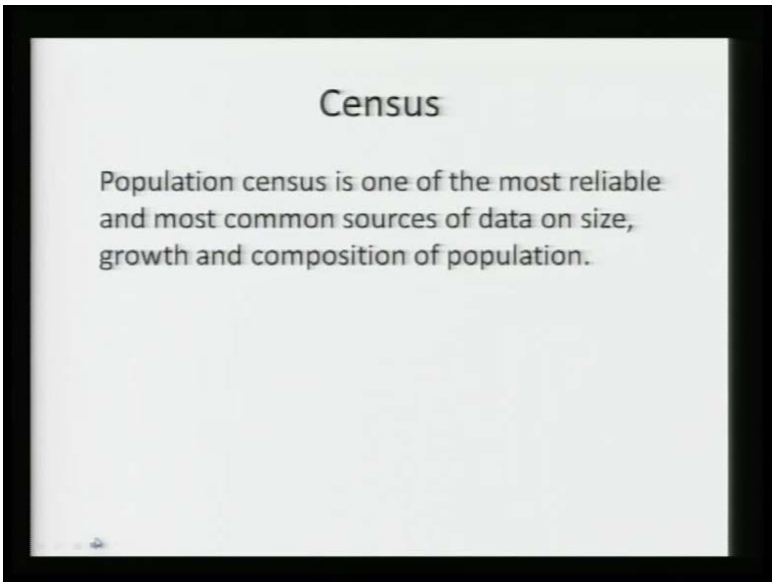
(Refer Slide Time: 00:28)



So, friends in the last two lectures we done with the issue of quantitative verses qualitative methods, what are relative merits and demerits of each; and we have also discussed various types of tools and techniques of data collection, that are used by sociologists in general and population researchers in particular to collect data, on population trends, on social characteristics and relationship between population and social variables. Today in this lecture, I will focus on what are various sources of data on population trends.

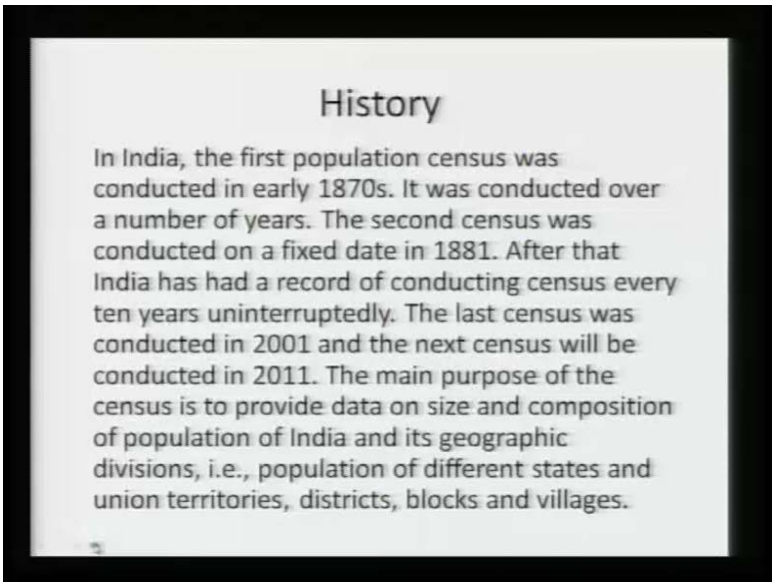
Every time I talk about population issues, I refer to population census; census is the one of the most important sources of population data. Other sources are vital registration scheme, sample registration scheme or dual record system, actually it is called dual record system, but in our country for some reason, I will explain what that reason is it is called sample registration scheme. And then there are national and sub national surveys

(Refer Slide Time: 01:34)



Census is the most reliable and most commonly used source of data, which provides information on size of population growth of population as well as composition of population; size means number what is the total number of person inhabiting a particular area or a particular region or a particular country. Composition of population means what is the back up of the number according to age, sex, marital status, religion, caste or community. And growth means at what rate the size is growing like somebody can say that the population of India today is around 1.2 billion. And the growth rate of India's population is 1.7 percent, and then can further discuss that 35 percent of India's population is below the age of 15, something like this. So, census gives us data on size, growth and composition of population.

(Refer Slide Time: 02:39)



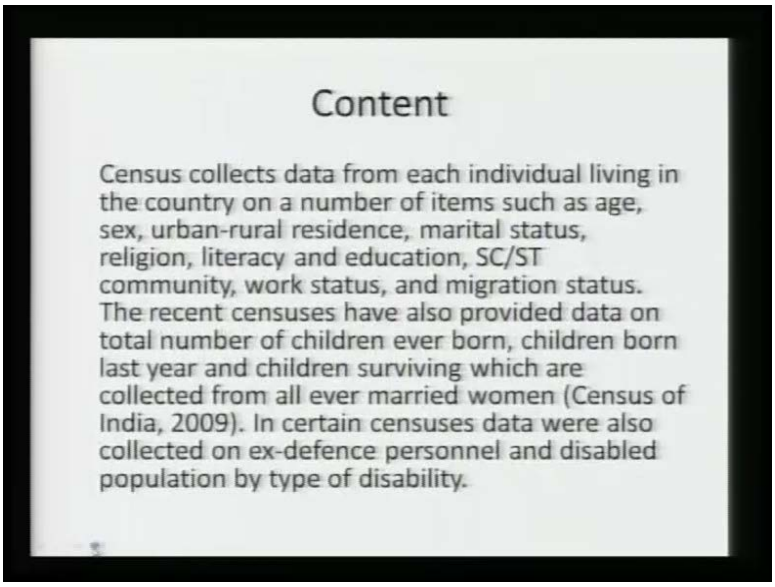
India is one of the very few countries, which have a long record of conducting census in uninterrupted manner, first census in India was conducted in early 1870s, since it was not a synchronous census in the sense that emigration was not done at the same point of time in all parts of the country. In some parts, it was 1871, some parts 1872, in some parts 1873. So, we do not assign a date to this census. But after that starting from 1881, 1881 to 2001 we all had uninterrupted decadal censuses.

Very few countries in the world have this record of conducting census continuously for over a centuries. It is a remarkable thing to achieve. And the main purpose of census is to provide data on size, composition of population, geographic divisions means state in India governmental will be interested in knowing what is the size of population of different states, different regions, union territories, districts, blocks and villages. So far generally demographic data is shown mostly at the national level and state level, but not due to demand of planning. We are also going down to district level, and an attempt is being made to estimate birth rate, death rate, infant mortality rate, another parameters of population at the district level. And it is recommended or at the trend show may be in coming decade or in 10 to 15 years time will be at times to calculate these rates at the block and ultimately at the village level.

All ready some discussions is going on in planning commission you know that human development index of UNDP. So, initially these human development indices were prepared by UNDP at the national level, for a number of countries for which data on

literacy, life expectancy and income existed they have computed human development index. Now, countries of our size have also attempted to calculate human development index at the state level. So, today we have human development index for almost all states of India and attempts are being made to calculate human development index for districts may be in the future, if we can make human development indices available at the block and village level that will help us a lot in macro and micro planning.

(Refer Slide Time: 05:40)



So, census data ultimately we need at block and village level, census collects data from each individual living in the country on a number of items. I think you should also know, what are the items on which we collect information in census, there are some items last time there were 22 items on which we collected data in census through individual slips, sometimes students think that as though all kinds of data are collected in censuses.

And the first thing that comes to sociologists mind either we have data on poverty or income forms census figure, here we do not have question on income, we do not have a question on poverty, but there are other things very important for planning on which we have data. We have data on age distribution. So, in individual slip we ask question on age, age in completed years what is your age. And we can make single year distribution or we can make distributions in age groups, we know about sex distribution, sex composition of population, urban rural residence, what number of peoples are living in urban areas, what in rural areas and in urban areas further we can divide into classes of cities and towns. Then marital status married, unmarried, separated, widow, divorced.

Religion from religious data from census you know that about 82 percent population of India belongs to Hindu religion, this percentage belongs to Muslim, that 2 percent belongs to Sikhs or Christians and the pareses are very small in number. Working status; how many are working and how many are not working and among those who are working what are the industrial and occupational classification of the workers.

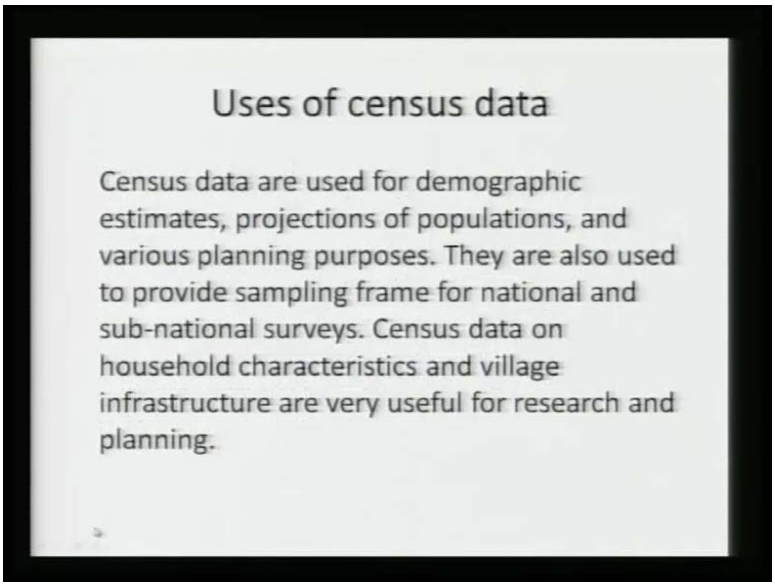
Industry means; the major activity at the work place. And occupation means the activity of the person. In manufacturing industry for example, there can be clerical works. So, those who are indulge in clerical works for them occupation is clerical, but industry is manufacturing. Industry can be service, somebody is working in health or insurance or transport in communication you can say that he is working in service industry, but exact occupation is what that person is doing.

Migration status there are a number of Christians on migration place of birth, place of last residence, duration of residence and region for move. The recent censuses have also provided data on total number of children ever born this question is asked in India only to married women. it can be very embarrassing. India is not Germany or island, in some of these developed countries as once we saw where I was discussing world population trend.

In some of these countries 60 to 70 percent children are born outside the wedlock, but India it is not that, in India children outside wed lock will be considered illegitimate. So, this question is asked only to married women, whether any child was born last year and the total number of children ever born and children surviving, by comparing children born and children surviving you can estimate child mortality rate.

A certain censuses we also collect a data on ex-defense personnel, in certain censuses we collect data on school enrollment rate, in certain censuses we collected data on disabled population but type of disability, last time we collected data on disability and we have a fairly good estimate of what is total the total number of persons physically challenged, according to a nature of challenge or nature of disability.

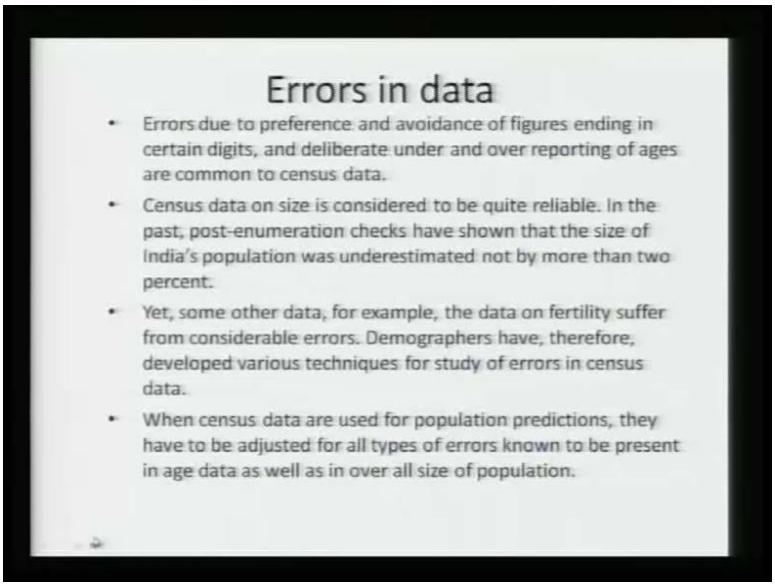
(Refer Slide Time: 09:40)



Census data are used for demographic estimates, which includes estimate of size, growth, fertility, mortality, projections of populations what is going to be India's population 5 years from now, 10 years from now, 50 years from now and various planning purposes. They are also used to provide sampling frame for national and sub-national surveys for PHD students like this use of census is more important when PHD students go to collect their data on sample basis, to collect sample they will need a sampling frame, if they go for simple random sample, these days in social sciences more people are going for theoretical sampling and no sampling frame may be required, but in national level survey and NFHS, RCS, youth survey, tobacco survey, the issue of representation of sample always arises and you will find that most of the time this national and sub-national surveys have used census wards maps for selecting the sampling frame.

Then census data are also collected on household correct, normally in population field we analyze data collected through individual slips which means age sex, marital status, labor migration, fertility, mortality, but there is huge amount of data in census which is about the households or houses on amenities, house, house, electricity, toilet, number of rooms, material of walls, so many things; whether there is a separate room for married couple, which can be important for family planning related issue.

(Refer Slide Time: 11:38)



So, lot of these data are there; then you can make use of, when you are using census data then you will also like to assess the quality of data So, the issue of errors in census data. Errors may rise due to preferences or avoidance of figures like in age data, the age data suffers from the problem of age heaping, there are errors due to preference and avoidance of figures ending in certain digits. So, your age may be say 19 and when census enumerator goes to your house and ask a question to your mother or to your father what your age is in place of 19 they may say 20, this is what preference for digit 0 mean.

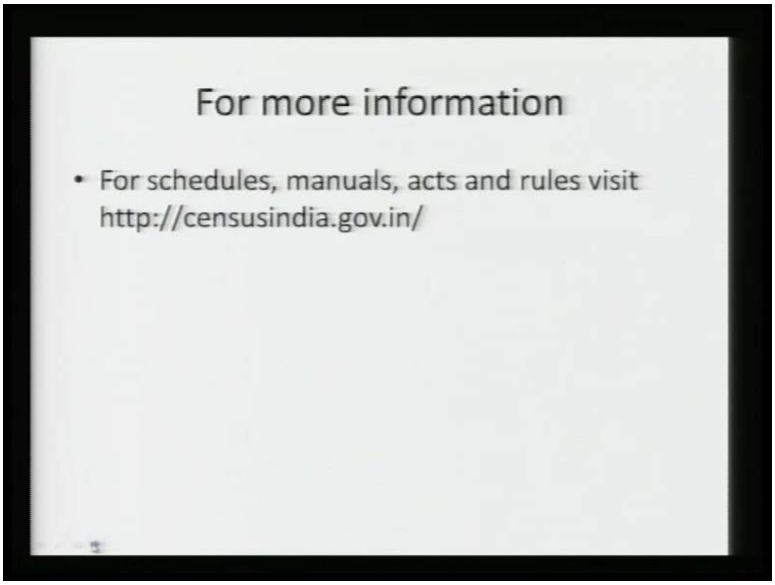
So, those who are of age 19 or those who are of age 21 may be reporting of age twenty. So, there is usually a preference for 0 and 5 and avoidance of 9 and 3 sometimes 7 is in a different culture and different digits are preferred or avoided, in groups also like in age group 0 to 5 there is usually under enumeration, in age group 5 to 10 there is generally an over enumeration, but 0 to 10 is more or less. So, there are demographers have shown what kind of errors creep in census data, and how can (( )) be adjusted from (( )) in the past post numeration checks have shown that the size of India's population was (( )) by about 2 percent in it. Despite corruption had (( )) census figures of India are believed to be quite accurate, and post enumeration checks also shows that there is not more error than 2 percent in any census.

In some censuses it was 1 percent, some censuses it 1.7 percent, some census 1.2 percent, but generally that error, extent of error Indian census total size of population is

less than 2 percent. It is because in village set up people of India live in villages and in villages everybody knows everybody. So, even if an enumerator does not go door to door, sits at one place and writes about records of all the people. Names may be wrongly written many things may be wrongly written, but as far as total number of persons is concerned family members children, old, there is very high chance that the numbers are collected reported and there is not much error. Some other items suffer from errors; data on fertility for example, suffer from errors. So, estimate of total fertility rate from census would not be accurate.

And demographer, therefore develop various analytical statistical or mathematical techniques for estimating total fertility rate more exactly using census age distribution or data on number of children. When census data is used for population predictions they have to be adjusted for all types of errors known to be present in the age data as well as in all other items or other contents of population.

(Refer Slide Time: 15:02)



You want to know more about census then this is the site and you can get a lot of data from 2001 census, now you know that 2011 census is going on. Household survey is almost completed, individual slips enumeration will start in January, they wanted to start early, but this year, but due to that issue of caste, whether caste should be included or not in census or not the census operation may be slightly delayed. So, far on the issue of caste you know that we have only whether somebody belongs to schedule caste or tribe if yes then whether to schedule caste or schedule tribe.

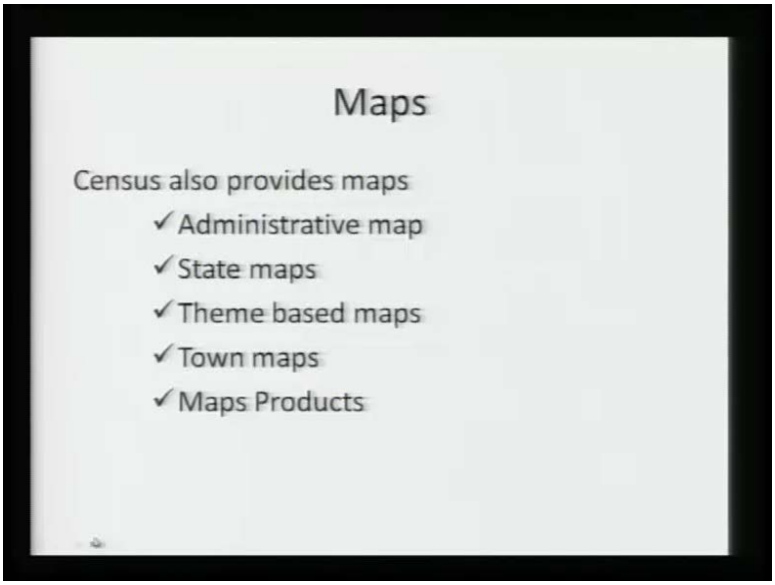
In census we do not ask what your exact cast is. So, census can tell you that this percentage of people belong to schedule caste, this percentage to schedule tribe, but census cannot tell you how many are schedule caste are crammers, how many schedule caste are [FL] the idea is that we do not want to go deeper into the caste issue, we think that such things can this feeling already cast in everyday life. So, we do not want to ask exact question about caste, now regarding OBC a consensus in developing that we will ask whether you belong to OBC and including the same model as of schedule caste and schedule tribe we will only find out what is the total percentage of OBCS in India and in different states of India.

(Refer Slide Time: 16:50)

We are not interested in specific caste whether somebody is this or that. Data products of census are these administrative divisions you get data for different administrative divisions, you get data on population, economic activity, socio cultural, socio cultural means education, education is a socio cultural, marital status that is socio cultural, then migration; migration on the basis of place of birth you get how many people are moving from where to where and what are the causes and you can using certain analytical techniques also calculate the net migration rate which in states like U P and Bihar are two net out migrating states in India and certain other states Maharashtra, Delhi and Karnataka they are net in migrating states.

Then we have data on disability; last census gave you lot of data on disability, languages, mother tongue, we ask questions on mother tongue we also ask question on another language known then household populations size of household from household data, area profile of India states districts village directory, which can be of special interest to sociologists. We have complete village directory; that means, complete information about socio economic characteristics of population of each village in India. This also includes whether some fears are held which months where then list of towns with population and we also have census references which you can see from the website.

(Refer Slide Time: 18:30)



Census also provides maps, some maps are present on net, but if you want detailed maps. You know in our studies when we require maps of villages or blocks or districts we often take the help of census, you can go to registrar's general office and ask for maps of country, states, districts, blocks, villages like in the study of mapping of highest groups we require detailed maps of districts, blocks and villages. So, that we could exactly identify how many high risk groups are there and where they are located. So, census provides lot of maps; administrative maps, state maps, theme based maps, they also develop theme based maps, means the map will show what is the position of literacy in different regions of the country; town maps and other map products.

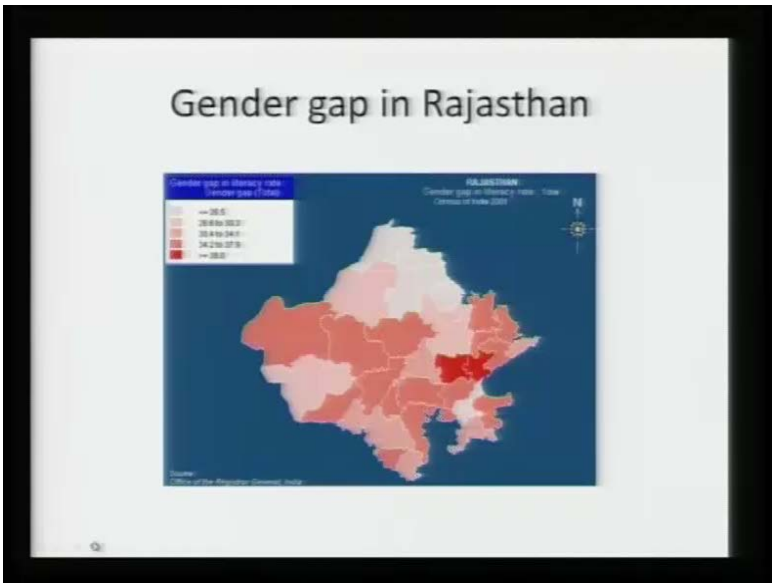
(Refer Slide Time: 19:28)

I thought, I must show you some examples of maps, which I have taken from the net. Your sources also given; this is census India (( )) this is a map of population of India. This is kind of a thematic map this is a map of India which shows the differences in growth rates of population in different states of India, more the color is dark higher is the rate of growth of that population.

The rate of growth of India's population in different states and union territories goes from less than 20, 20 for the whole decade, means 1991 to 2001. So, 20 will mean that 2 percent per year. So, there are states and union territories where rate of growth has been less than 2 percent per year. And there are states and union territories or small parts where rate of growth could be as high as 5 percent per year. 5 is a big number and you see a dark point here in north east.

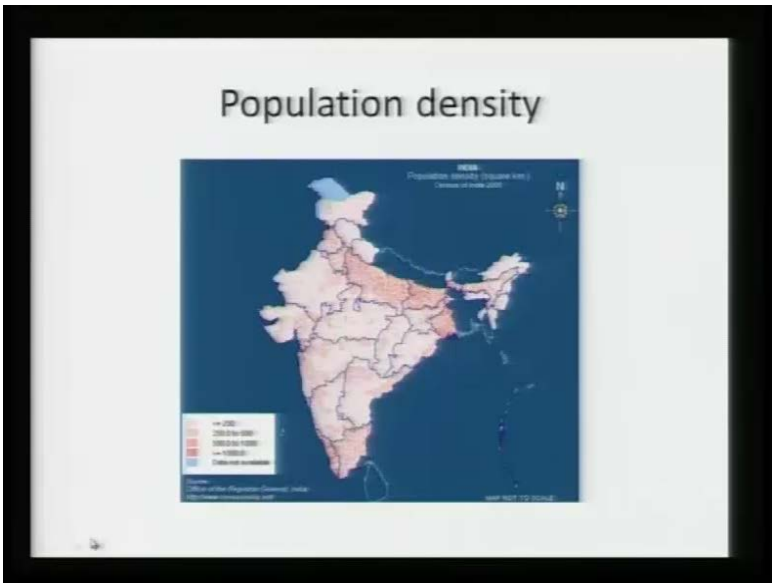
In north east you find dark color in certain portion and that is because of illegal migration from Bangladesh. You cannot have a rate on growth for 5 percent per year, simply due to natural growth of fertility minus mortality, wherever you have very high rate of growth in India there are some places and mostly they are the border districts of India that is mostly because of illegal migration of people from Bangladesh, or they must be large cities like Delhi. Delhi or Bangalore or Chennai which are growing at a fast rate, they will show these map will show them in darker color, then otherwise census has made these kind of maps which can be used by sociologists

(Refer Slide Time: 21:27)



And demographer's gender gap, this is an interesting map for you students of sociology. This is gender gap and this shows gap in literacy means male literacy, minus female literacy rate, this is not male literacy or female literacy this is gender gap in literacy, and darker is the color of some area, greater is the gap between male and female literacy are there and you find that very red part here, where you have high gap in much of extreme north there is very little gap, in extreme south also towards Kerala also there is very little gap, in states like Kerala gap is little, because female literacy has advanced to high level and in states like Bihar there is big gap because female literacy is particularly low, male literacy has improved, female literacy has not improved, but this if one looks at this map then it is obvious that there is a big gender gap in literacy in the country.

(Refer Slide Time: 22:51)

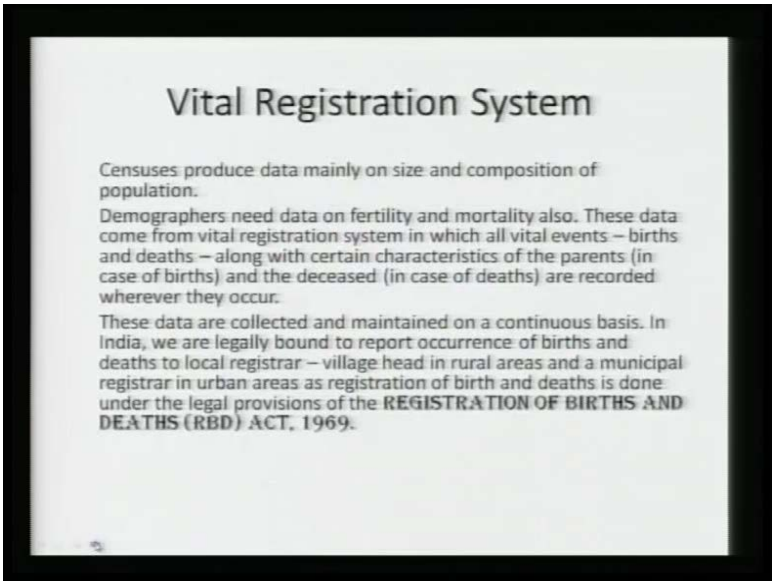


However there are significant differences in gender gap according state region or district, and this map shows that quite clearly. Population density; though we calculate the population density at the national level and India's density of population is quite high not as high as of say Europe, but as not as low also as in African countries it is something in between, but there are significant variations. You can see that there are some areas where density of population is more than 1000 per square kilometer, and there are areas where density of population is less than 250 per square kilometer, light color shows low density, and dark color shows high density of population. U P belongs to that area where density of population is high. In south India Kerala you find Kerala also has high density of population.

Actually when some 1520 years ago; when everybody was talking about Kerala model in demographic transition I said that Kerala model is not good, it cannot be replicated anywhere else for two reasons one that socio economic conditions are of other states are not same as of Kerala and second Kerala has the highest density of population. So, you can also imagine that when Madhyapradesh or Gujarat or Rajasthan reach that density of population there will be some inbuilt response of the population to reduce their birth rate, it is not unpredictable that Kerala has a low birth rate of population today, among sociologists, Sorokin who related birth rate to density of population.

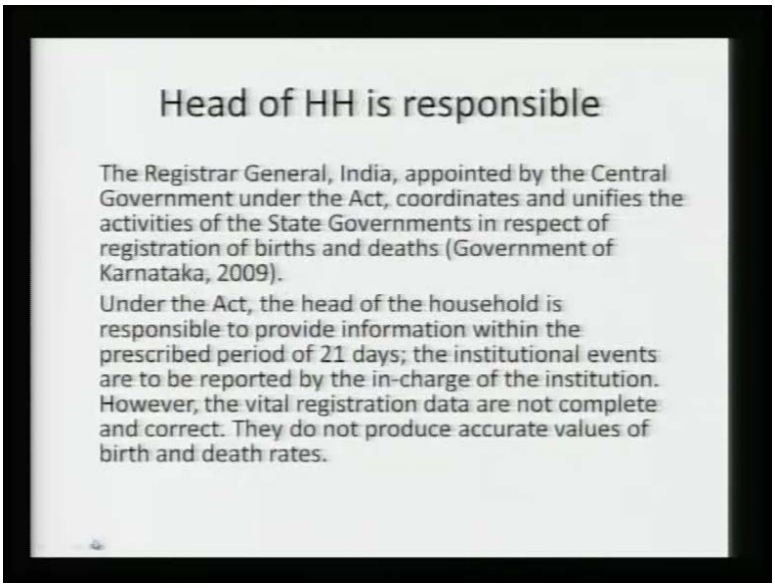
He said that once the density of population goes up then birth rate will come down that may be the reason why Kerala today has below replacement fertility, but U P much of this north India much of this part on the northern eastern side has high density of population and this is also the place where fertility is high, but there is no perfect connection between the two. U P, Bihar has high density of population and also fertility is high, but you can also see that the other areas where density of population is high, but fertility is not so high.

(Refer Slide Time: 25:37)



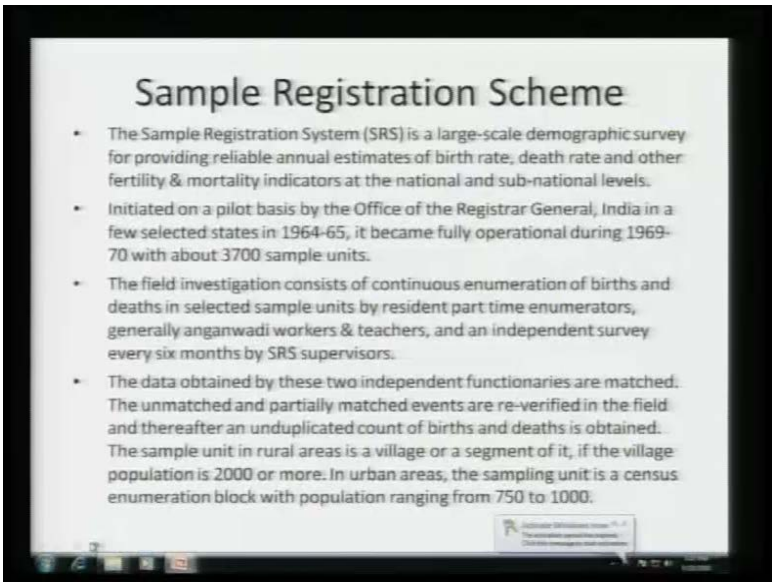
Then another source is Vital registration system, Vital registration system maintains data on births and deaths on a continuous basis, demographers need data on fertility and mortality also direct data and vital registration system is the source of direct data on births and deaths, these data come from vital registration system in which all vital events birth and deaths along with certain characteristics of parents in case of birth and the deceased in case of death are recorded. Age sex in case of death, cause of death, in case of birth, order of birth so there is some standardized performer, some schedules for this and apart from births and deaths some other information is also available these data are collected and maintained on a continuous basis. In India we are legally bound to report occurrence of births and deaths to local registrar, village head, village headman or [FL] in rural areas, and a municipal registrar in urban areas, and the act is registration of births and death rate birth and death act RBD act 1969.

(Refer Slide Time: 26:55)



But despite this our vital registration data is not very good, the coverage and quality or the extent of reporting they are quite poor and because in the past people did not require birth certificate or death certificate in urban areas today if you are go to admit your child in school they will immediately ask for birth certificates. So, in urban areas now people are becoming more conscious and data on births and deaths is also improving, but in rural areas still in backward regions quality of data is not so good. Head of house hold is responsible, in case of institutional births and deaths, institutions are or in charge of institutions are expected to report these events to local registrar and since vital registration system is the only and direct source of data on births and deaths and despite this act of birth and death registration act we do not have good quality data.

(Refer Slide Time: 28:17)



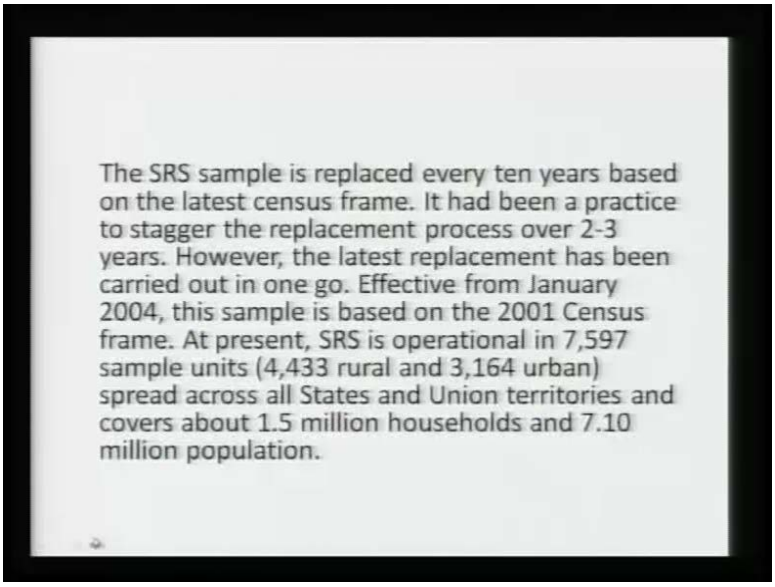
So, India has come up with an innovative idea to collect data on births and deaths on a continuous basis is called sample registration scheme, this is also called a dual registration or dual record system. Why dual because the sample registration system is a large scale demographic survey for providing reliable annual estimates of birth rates, death rate death rate and other fertility and mortality indicators at the national and sub national level.

It was initiated in the 1964 1965 on a pilot basis and gradually by 1969 70 it became fully operational in most parts of the country. What is done is that certain units from different states of India are selected as samples and field investigators maintain continuous records of births and deaths and this will be done by local [FL] workers, teacher's, primary school teachers and then an independent survey is conducted by team of investigators and from Delhi.

So, you have two sources two sources update on births and death on a continuous basis, one the data that are recorded by the [FL] workers or teachers or some other people at the local, grass root workers, village level workers may actually assign this and then data collected through a sample survey six monthly by team of investigators and from Delhi. And births and death events are matched in the two sources in cases you find mismatch that there is an event reported by the [FL] worker. But you did not find this event in the survey or there is some event which you found in the survey, but not reported by [FL]

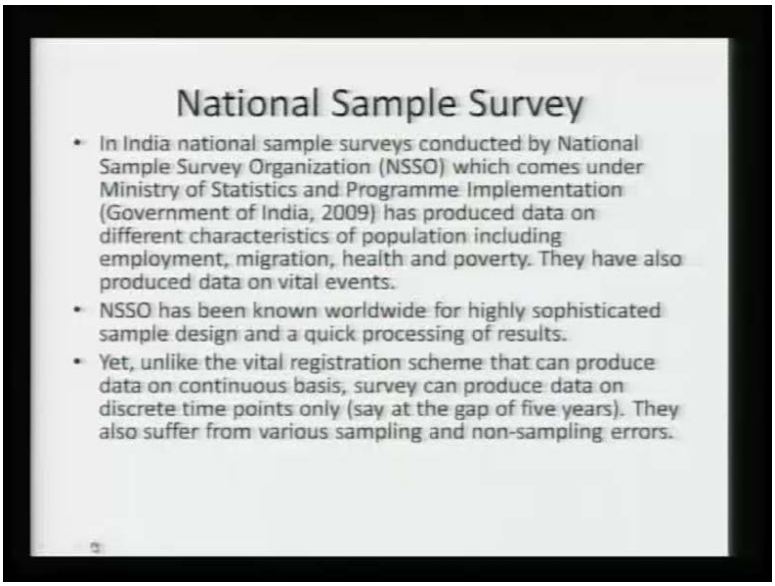
worker, these mismatches are re verified and in this way we try to obtain a more accurate picture of births and deaths.

(Refer Slide Time: 30:22)



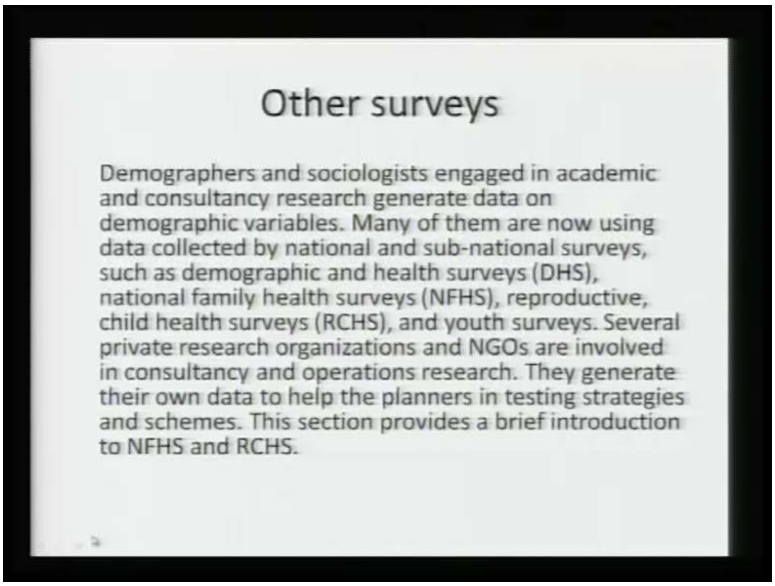
SRS sample is replaced every ten years, last time it was done in 2004 on the basis of 2001 censuses, but it should have been revised after that, but it has not been revised so far, there are 4433 rural areas and 3164 urban areas, which cover 1.5 million households and 7.10 million populations. So, we have our for practical purposes and sample size of SRS is 71 lakh population of India, and with this large sample we are able to provide estimates of birth rates and death rates, infant mortality rate and maternal mortality ratio and many other things on national and state level.

(Refer Slide Time: 31:16)



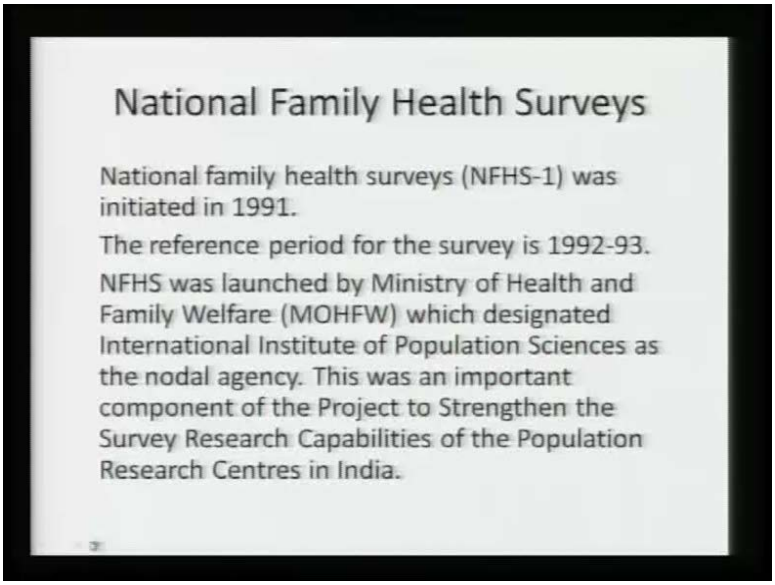
In addition we have national sample surveys NSSO, economists are bigger user of NSSO data, but sociologists have also made use of NSSO data on poverty, unemployment, consumption expenditure, migration, health from time to time NSS there are certain items fixed on which in every round an NSSO collects some data, and there are some items on which data are collected periodically. So, morbidity or health or migrations are such issues on which periodically data are collected on NSSO. And you can get lot of secondary data from NSSO unfortunately in our country most students work with their own primary data, in sociology this is the trend, but lot of very good quality of data is lying with census office and NSSO

(Refer Slide Time: 32:15)



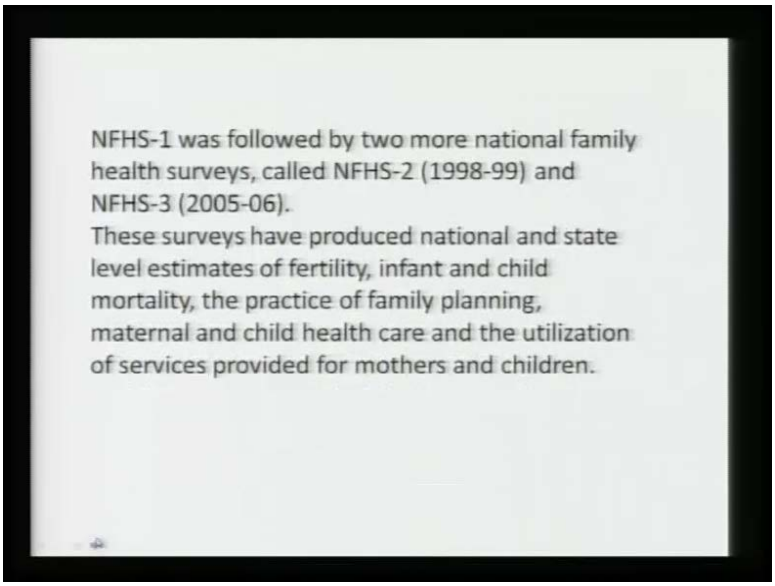
and you need not collect in place of wasting your time and resources on collecting data you can just borrow your raw data and go for a deeper analysis, in addition you have some other national level surveys, national family health survey, reproductive and child health survey, there have been three national family health surveys 1 2 3, there are NFHS provides data at the state level, since we also require data at the district levels. So, NFHS was supplemented by reproductive and child health surveys, and then youth survey was done, now tobacco survey, substance youth surveys, (( )) surveys are going on, which will help the planners in estimating incidence of HIV risk behavior and making proper plans to deal with them.

(Refer Slide Time: 33:13)



National family health survey first time it was done in 92, 93

(Refer Slide Time: 33:17)

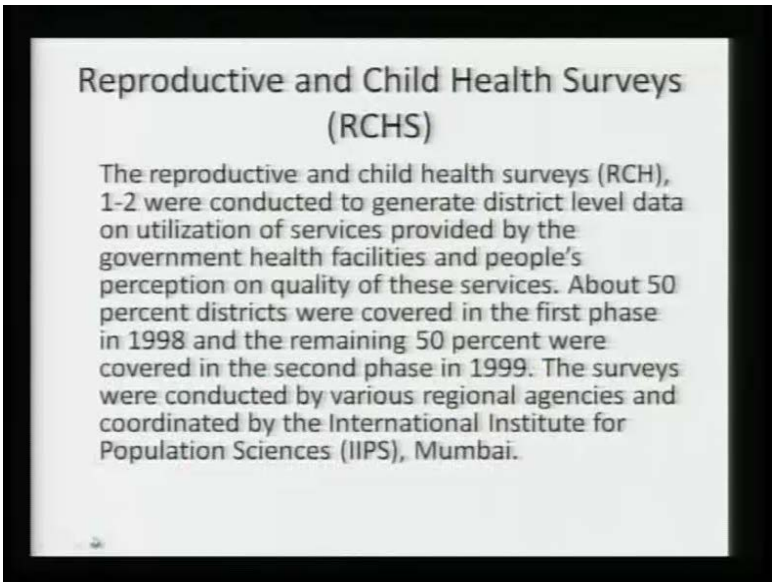


Then 98, 99 and third survey was done in 2005 06 NFHS 3 is marred for one additional thing that for the first time in India somebody used biomarker in the survey. Biomarker means that in addition to ask in questions on different socio economic demographic characteristics on sample basis with the consent of the respondents their blood was collected.

And anemia and HIV test were done. So, now, we can say with greater confidence that this is the rate of anemia among women of India, and these are state wide variances or what is the real prevalence rate of HIV, before that the estimate of HIV was around 55 lakhs and after this NFHS 3 on the basis of biomarkers then it came down to a figure in thirties.

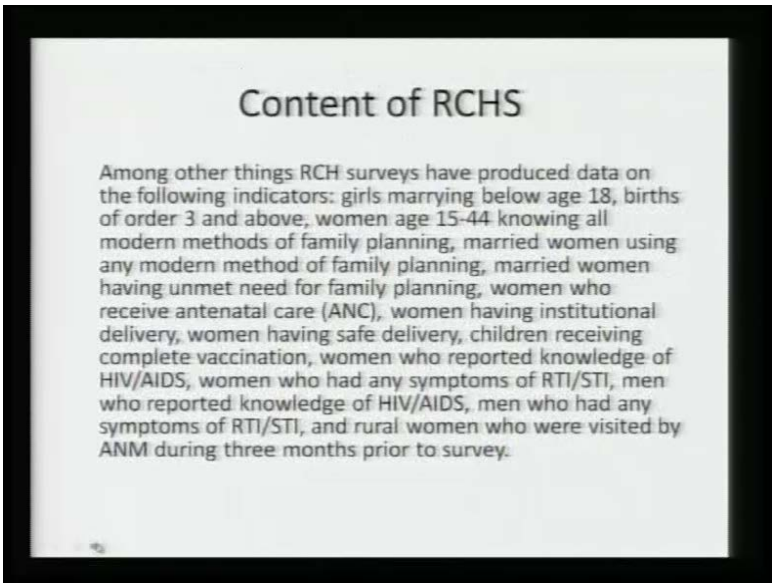
So, the estimate of HIV prevalence was reduced by about by 40 percent, this is a new phenomenon and may be some of you when you do your PHD or you take a research you can also think of innovative things like use of biomarker in your surveys.

(Refer Slide Time: 34:54)



Reproductive child health surveys provide data at the district level and these are the items on

(Refer Slide Time: 35:00)

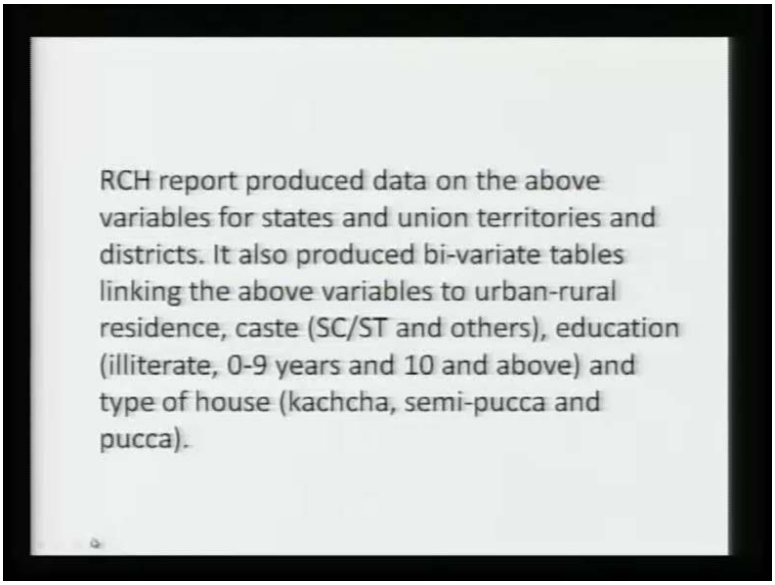


which you can get data from RCHS surveys. You get data on use of family planning methods, women using modern, methods of family planning, married women having unmet need for family planning means they do not want additional children, but they are not using family planning methods why?

Then antenatal care, institutional delivery, safe delivery, children receiving complete vaccination, knowledge of HIV aids, symptoms of RTI, STI, knowledge of HIV

comprehensive knowledge of HIV aids, then among men symptoms of RTI, STI and rural women who are visited by AMN during three months prior to the survey. RCHS report produce data on the above variables for states and union territories and districts.

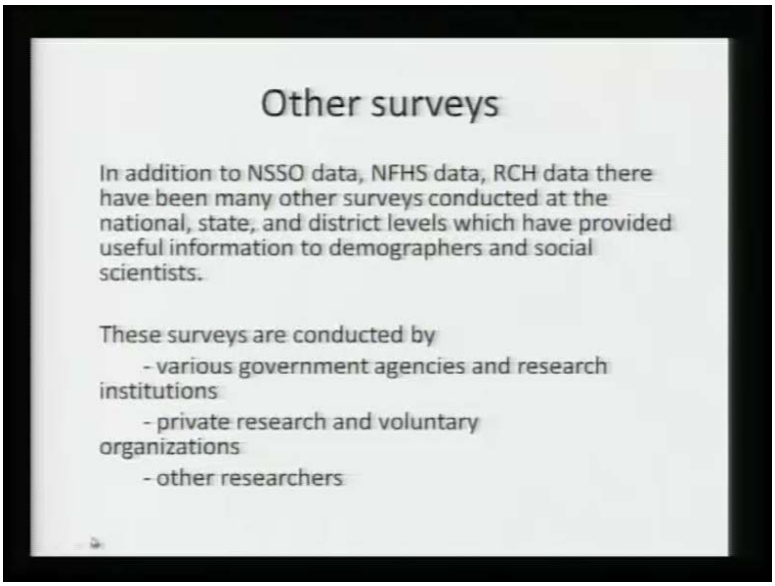
(Refer Slide Time: 35:51)



District was the main concern, it also produce bi-variety tables, linking our variables to urban rural residence, caste, schedule caste, schedule tribe and others, education three categories were made illiterate 0 to 9 years education 10 and above 10 and above is very interesting. Although we have high fertility in India, but if you look at figures of fertility by education you find that among women who are high school pass, we are already at the level of 2.1.

So, among women in all states of India urban rural among women who are high school pass our total fertility rate has already come down to replacement level and that is why you see in our population policy and announcements, policy announcements by ministers, concern ministers we want to raise education level among women to 10 or more once you have 10 and more than our population problems can be solved without spending. So, much time and money on family planning program.

(Refer Slide Time: 37:08)



Then there are other survey in addition to NSSO, NFHS, RCH, you have surveys conducted by various government agencies and research institutions; these government agencies are operations research growth, path finder's, mode, margh, priya, care, extenuates. These organizations are also conducting service; some of them are big, some are small, some sometimes government organizes some ministries, rural development ministries or ministry of youth or travel of a they also collect. Actually in the field of population, some of these national and sub national surveys are done by private agencies have played a very important role.

I remember that the first family planning survey in India was done by operation research group, not by any government agency. Similarly these organizations like mode, margh, priya, extenuates, there are some donor organizations, there are some research organization, purely research organizations, they are constantly collecting data on various aspects. And in this age of internet, even data collected by smaller researchers university and colleges can be accessed, some data are available on the net, and about some data you have reference on the net, and you can write to researchers and get raw data or analyze data from them, and use those data in your research. So, this is all I wanted to say.

Now, you may ask some questions I believe that I will be able to answer it.

Sir, with reference to the census I would like to ask you two questions you said census had 22 items.

Yes,

In lists 22 items. So, is this a fixed number or it can be increased or decreased year wise, every census has this fixed number.

And the next question.

And the next is that; you said that census provides us with the sampling field.

Yes

Would you elaborate on what is this sampling field?

Ok. As far as this number of questions is concerned it is not fixed, there are some questions which have always been asked they are concerned, they are supposed to be of great importance to demographers and planners age, sex, marital status, but from time to time planning commission or different ministries or different research institutions they can suggest that for the planning purposes or for understanding some important natural phenomena, some new questions are to be added or some questions can be dropped

Like at one time question on school enrollment was added then it was dropped, because at that time it was though that the data of education coming from ministry of education may not be so reliable it was biased and it came out to be biased, because when censor data on enrollment came we found that there were several states and several districts and particularly among women enrollment rates were very low.

Ministry of education was showing that enrollment is universal, then at 1 time we collected data on different person ex-army person in subsequent censuses it was dropped, then we collected data on physically handicapped first time we collected data on physically handicapped people last time. So, there are questions which are added and dropped and in 2011 censuses for the first time we are asking question on caste.

I do not know what final decision will be taken but you know with regard to migration there was a feeling among demographers that place of birth is ok, but place of last residence or either you ask place of birth or you ask place of last residence it is wastage of resources to ask both the questions place of birth and place of last residence.

Before a census operation starts five years ten years before that preparation starts and there are conferences and seminars of data users in which members of planning commission as per sociologists, economists, political scientists, civil society people, activists, journalists, administrators all kinds of people participate and they propose that in the next census these questions must be included because there is some national need to understand which we require data.

Finally some consensus is reached, you cannot ask 50 questions in census, for more questions or in depth information it depend on surveys. Second question was about sampling frame because census can give you exact maps demographic and geographical maps of all parts going up to the minutest details of village level, and these ward these maps can be used by you for drawing your simple random or stratified random sample.

Thank you for the informative percentage. We have 2 doubts the clarification I want, first of all with regard to the definition of sex ratio in the census, actually in my understanding in India there are definition of sex ratios number of male females for 1000 (( )), but I think only in India what is (( )). I don't know what if any specific reason for this (( )) definition, what is the reason

And this is to this to a sex ratio is defined in two ways, sex ratio traditionally it was in India it was defined a number of females per 1000 males in most other countries it is defined in number of males per 1000 females. I do not know how Indian census started in computing sex ratio in this way.

But what we know that India is one of those very few countries where number of females is less than number of males, but there is no harm if you want to calculate number of males per thousand females that can also be done that is not a problem this is one over all sex ratio.

If I say that India's sex ratio is 935 it means that on average 1000 males we have 935 females; that means, there is a shortage of 65 females, but these days we are sociologists are more interested in juvenile sex ratio, last time in 2001 census we found that over all sex ratio is that juvenile sex ratio is.

Juvenile sex ratio means sex ratio in the age group 0 to 6 implied, this was more worrisome. So, the overall sex ratio is improving because in overall terms life

expectancy for females is now more than life expectancy for males which confirms to general universal pattern, earlier this was not the case in India.

But juvenile sex ratio is declining and unfortunately the juvenile sex ratio is declining more in socioeconomically advanced states and regions. I was shocked to see when I found they have also calculated juvenile sex ratio for social groups, I did not imagine that juvenile sex ratio for gents would be lowest, when I read 11th 5 year plan draft the first time I noticed this that sex ratio female to male among gents is lowest, gents who are believed to be most supporter of non violence.

So, they practice they religion they practice otherwise, but they do not consider female feticide to be part of [FL]. This culture or this is the property related (( )). So, in India sex ratio is defined in 2 ways, overall sex ratio which tells us about overall situation of gender in the country and 0 to 6 of juvenile which tells us specifically about sex determination test, illegal sex determination test which are going on and problem of female feticide.

Thank you Sir, I have 3 questions 1 is you talked about sample registration system you cross checked in sources of data

So, what I am asking is that when you have that one source and there is conflict between two sources which is the one that ultimately prevails how do you resolute this problem.

In India sample registration system as I said is it dual record system. So, on a sample basis in selected samples urban and rural continuous vital registration system is maintained as in other parts of the country, but in these samples periodic 6 monthly checks are made through surveys and events are matched and better estimates of birth and death rates come.

So, in India we accord highest importance to estimates obtained from sample registration scheme SRS. In India because the rates which come from census they come censor data on fertility is not useful it is it gives a an overall idea of fertility, but it is deficient there is a lot of under reporting and the quality of data in census scale can be questioned.

Vital registration system is particularly unreliable. So, in terms of reliability vital registration system in India which is the real source of data on births rate deaths, that is

at the bottom census somewhere in between in census by using analytical methods and data generated through asking questions child born last year total number of children ever born.

We try to arrive at some estimate of total fertility rate, but SRS estimates are believed to be of sufficiently higher reliability, the last time SRS given us the data it was in the 2009 SRS bulletin in 2009 is the latest bulletin, I have some data on birth rate and rates and this tells that India as a whole today birth rate had declined to 22.8 per 1000 population death rate has declined to 7.4 per 1000 population and the natural growth rate of India is 15.4 per 1000i mean 1.5.

Census growth rate decade of 91 to 2000 was more than 2 percent, but this natural growth rate is for 2008 given in 2009 bulletin. And this is a more realistic. So, if you do not go deeper into the question of reliability and validity you can blindly collect data from SRS and use them.

There is very high reliability and acceptance of SRS data worldwide when it comes to estimation of rates in India. By Indian experts or foreign experts they depend largely on SRS and SRS gives us state wide differences in birth rates, death rates, infant mortality rate they also give us confidence intervals and from time to time some specific issue like maternal mortality have also been taken.

.

You know the census data census framework is used when you go for.

Sir you said us that when we use census data when we use the normal types of sampling, but then how do where do we use the what is theoretical sampling then we talked about some theoretical sampling discussions you just illustrate upon theoretical sampling method.

It is a very interesting sampling have been used by both quantitative researches and qualitative researches, quantitative researches go for probability and non probability sampling and in case they go for probability sampling then they need a complete list of all the units, if they go for simple random for example, or (( )) or other samples also they may require the listing.

That listing of people and areas comes from census information, because censuses is a complete information up to the village or wards of the village level, census tells you exactly location of wards, households and people and with the help of you can know thet Kanpur city for example, consists of so many wards, and within wards these are the further divisions.

So, you can decide that 20 percent or 10 percent of the wards will be selected on random basis, and we have the complete listing of wards, similarly within wards also you have complete data regarding patterns of habitation that is to use quantitative or probability kind of sampling which is part of quantitative research.

Theoretical sampling term is used by qualitative researcher, and by theoretical sampling they mean selecting respondents in a manner that all kinds of variations can be covered, for example, somebody working on the problem of menopausal problem among women now in theoretical sampling with the help of doctors or randomly at random or with the help of friends or that I know or somebody (( )) some domestic servant or somebody approaches me and discuss over menopausal problems. So, I know that there is a case and I interview her, then I will ask her that does she know any other woman who is facing post menopausal problem of different kinds.

So, this different kind is very important here. So, in theoretical sampling an attempt is made to cover all varieties of social phenomena

Then is it not very similar to snowball sampling.

Snowball sampling snowball sampling is also part of quantitative research and in snowball yes snowball is something similar, but in theoretical sampling this emphasis on differences there, in snowball like one of my PHD student's who collected data on MSM community from Mumbai he used the snowball sampling method once he reached the communities use snowball, with the help of NGOS or CBOS, he could identify some people, take them into confidence and collect data and then he will ask, can they help him in collecting him some other MSM in the community for collection of data that is snowball that is snowball.

So, you keep on collecting data and the size of your data expands, but in theoretical sampling, we want to include all possible variations, like if I use theoretical sampling in

the study of MSM, suppose so far I have collected data from one particular variety of MSM say [FL] so all my entire samples are [FL]. Then I will ask my respondent does he know any [FL] also any MSM of a different type [FL] or bisexual or double Decker. I will ask whether he knows about any double Decker, so that I am consciously trying to make an effort to cover all types of MSM [FL] and double Decker MSM that is theoretical. Here how many [FL], how many double dickers is not important, but at least representation of all possible varieties of phenomenon is unsure.

Sir, this can be called (( )) something? Is this the same?

Yes,

We can

Yes,

Call it

Yes,

Thank you Sir,

So we stop here, we have had three lectures on methods so far. On the first day, I made a distinction between quantitative and qualitative paradigms. On the second day, I took up various types of tools of data collection; and I discuss survey, focus group discussion, key respondents interviews, I structured and unstructured interviews, field work and participant observation method or participative methods. Today, I have focused on different sources of data different sources of data on population in the Indian context particularly. And in the next lecture, I will focus on participatory rural appraisal or participatory techniques of data collection. Thank you.