Population Projection and its Socio-Economic Implications in India: A State Level Projection Till 2020

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Abstract: *Population projections are imperative for national planning. Present paper attempts to examine implications of population growth by 2020 for two Indian States Uttar Pradesh (UP), and Tamil Nadu (TN) belongs to two different stages of demographic transition. The paper projects future population and socio-economic and demographic situations till 2020, assuming 2005 as base period, using data from various sources (Census, RCH, SRS, and Educational Statistics). On economic front, TN showing better prospect compared to UP. Secondary-school age population shows declining trend up to 2010 and thereafter a slight increase until 2020 in UP, while it remains unchanged in TN. Health care resources will required more in UP. Proportion of population at high health risk will increase substantially in UP while change is not significant in other states and accordingly, required health expenditure per person will be noticeably higher. Although, future situation is better, UP still remains disadvantageous in 2020.*

Background

The main and foremost objective of all planning and policies of any country is human development and to improve the quality of life of the human resources of the country. As the second most populous country of the world, India has only 2.5 percent of global land whereas it has to provide home for one-sixth of world's population. On examining the past trends of India's population, it may be observed that during the later half of the twentieth century, about 650 million populations were added to the country. Thus, living in a country with a high population density and high growth rate of population, which increases pressure on the existing resources of the country, planners perceived that there is a serious threat coming up on the way to achieve developmental goals. Demographic transition is that important phenomenon through which it was pretend. The transition is from a high fertility, high mortality to a low fertility, low mortality and towards a stable population situation.

In its first phase of demographic transition, India experienced a steep fall in the mortality rate due to increasing availability and accessibility of improved health care, whereas the fall in fertility rate was comparatively less and so the population grew at a rapid speed. In the next phase population continued to grow at a faster rate though the fall in mortality is not steep and fall in fertility continues, until the replacement level of fertility is achieved. Even if the replacement level of fertility is attained, then due to the "momentum" of population growth, it will take a long period to reach at the stable population situation. The

reason behind this is that, the large number of people in the reproductive age group will not be so less at the same time.

The Tenth Five Year Plan (2002-07) is aimed at achieving the Gross Domestic Product (GDP) growth rate of 8 percent, doubling the per capita income and creation of 100 million of employment opportunities in next 10 years (Planning Commission 2002). These targets are formulated based on the past growth trends and the vision of making India as a developed country by 2020. In the last decade the country has experienced higher economic growth, reduction in poverty ratio, enhances in foreign exchange reserve and achieved price stability. The growth rate of GDP was 6.1 percent in 1990s and the population below poverty line had declined from 39 percent in 1993-94 to 26 percent in 1999-2000 on a 30-day recall basis for the country. However, the goals of Tenth Five Year Plan are ambitious and the feasibility of these goals depends on demographic trends as well.

Now the question is what will be the size of India's labour force requirement of new jobs and GDP per capita if the targets of the Tenth Five Year Plan and National Population Policy are to be achieved? What will be the expected changes in the age and sex structure of the population? What will be the requirements for health and educational infrastructure? And also, what will be the family planning situations in the near future? Any serious attempt to understand the future Scenario of India for the coming years or any future year would have to confront these questions, and make a proper assessment of country's demographic prospectus. As it is a well-known fact that there exists state level or regional level disparity and there is a need to have a state specific planning. If a nation has to achieve any target or overall progress then, it becomes imperative to reduce state/regional level inequality. In India, all south Indian states, socio-economic, demographic and health scenario is better compared to North Indian states. Thus for state level planning it is required to know when and how all the backward states will reach in the same situation as better developed state? What will be the programme thrust areas for socio-economic development?

In this paper, an attempt has been made to project the population at state level under alternative assumptions in India. Two Indian states - one in early stage of demographic transition (viz. Uttar Pradesh located at the northern part of India) and another that have reached the replacement level of fertility (Tamil Nadu located at the southern part of India) has been chosen for that purpose. These two states also differ each other in terms of socio-economic development. The paper also tries to understand the economic and social significance of population growth in two states till 2020.

Previous studies

Many studies have focused on the population projection and its implications. Some of those important studies are mentioned here. In 1950, Kingsley Davis made a mathematical projection and assumed that mortality and fertility will behave the same as during the period 1921-1941 (i.e., high rate of natural increase will continue). The population of undivided India was estimated at 790 million in India and Pakistan combined for the year 2001 (Davis, 1951).

Coale and Hoover (1958) had examined the economic significance of reduction in fertility under alternative assumptions for the period of 1956 to 1981. They further converted the projected population to adult equivalent consumer and examined the relationship between per capita income and adult equivalent consumer. Their findings suggested that the per capita income as well as total GDP is higher under the low fertility assumptions.

Since 1971, various Expert Committees have been appointed by the Registrar General of India for population projection and for using the projected figures for various planning purposes. In 1971, the projected population was higher than the actual population, but in 1981, it was just the reverse. The projected population as estimated by the standing committee for that census was very close to actual population in 1991. For 2001 Census, there is a gap of around 14 million between the projected and actual population (Census of India, 2001, Provisional Population Totals).

The Technical Group on Population Projections constituted by the planning commission in 1996 based on the results of 1991 census had estimated probable year by which the replacement level fertility (Total Fertility Rate (TFR) of 2.1) will be achieved, if the recent pace of decline in TFR (observed during 1981-1993) continues in the future years. It was estimated that the country would achieve the replacement level fertility by the year 2026 (Report of the Technical Committee on Population constituted by Planning Commission 1996, RGI, India).

Visaria and Visaria (1996), in their paper, carried out projection on the basis of four assumptions about the course of fertility and taking 1991 Census population as the base year population. First one is the standard projection assumption: if fertility reaches the level of replacement level by 2016-21, then the population is expected to be 1222 million by 2016. Their second projection attempts to enlighten the implications of meeting the "unmet need" for contraception or eliminating the unwanted fertility by 1996-2001, where the expected population will be 1170 million by 2016. The population of India would be 1106 million under the third projection which seeks to estimate the momentum of population growth by

assuming that the fertility will drop to the replacement level in 1997 and the level is expected to hold through twenty-first century. The fourth projection illustrates the implications of fertility decline continuing beyond the replacement level, where the TFR of 1.8 is postulated for the country as a whole by 2021 and it presumed to continue thereafter, where the expected population would be 1222 million.

Natarajan and Jayachandran (2001) also made the population projection in 2000, taking the 1996 population (934.2 million) as the base year population and assuming the life expectancy of birth as 62.9 years for male and 64.9 years for female in 2001 and projected TFR as 3.1 in 2001. They estimated that India's population would be 1012 million by 2001 and 1264 million by 2016.

Kulkarni (2001) demonstrates the implications of the projection done by the Population foundation of India (PFI) for India and 15 major states. The PFI projection is based on the assumptions that the national TFR will fall to 2.1 in 2026 and it will not reach 1.6 by 2051. According to this projection, the size of the population is expected to reach 1345 million by 2021 and it will be around 1646 million by 2051 which is a growth of 84.5 percent since 1991 and hence is near doubling in 60 years.

Assuming to reach the fertility goals stated in the National Population Policy 2000, Srinivasan and Shastri (2001) projected that India's population will reach a size of 1330 million by the year 2026 and will continue to increase thereafter until 2046, when it reaches the peak of 1417 million. It will decline to 1416 million by the year 2051 and continuing its downward trend thereafter.

Dyson and Hanchate (2000) also made an attempt to estimate India's population by taking the same base year population as Natarajan and Jayachandran. They assumed Crude Birth Rate (CBR) as 24.8 and Crude Death Rate (CDR) as 8.9 in 2001, with the annual growth rate of population at 1.59 percent. According to their estimation, India's population would be 1011 million by 2001.

According to Bhat (2004), the population of India is expected to be around 1229 million in 2015, assuming whether India attains the National Population Policy 2000 goals of reaching in replacement level of fertility by 2010 (optimistic Scenario) and if replacement level of fertility is possible to obtain by 2020 (realistic Scenario) then the expected population of India will be around 1256 million by 2015. By 2025, India's population will still be growing at a rate of one percent per annum, even though the level of fertility required for long run population stabilization would have been achieved by that time. He also estimated

that by 2025, India would have begun to come out of the "demographic bonus" phase (this phase is expected to grow during 2000-2020).

In a recent projection, Dyson *et al*. (2004) estimated that the population of India is likely to be of 1.4 billion by 2026 and 1.6 billion by the year 2051. These projections are done by taking optimistic assumptions, such as the TFR will fall to around 2.1 births per woman during 2016-21, when life expectancy will be approximately 67 years for males and 70 years for females. The working age population will be approximately 1.5 times as large in 2026 as it was in 2001. If woman's participation increases, there will be an average annual addition of eight million population to the labour force annually between 2001 and 2026. If recent trends in economic growth and employment intensity continue until 2026, there will be a significant increase in the level of unemployment. Even an annual economic growth rate of eight percent up to 2026 will not avoid future increase in unemployment level.

In a recent study, we (Datta and Mohanty, 2005) showed that in country level projection the dependency ratio is expected to decline by 2015. On social front, it is found that the absolute number of children in the primary school age will decline and so will be the requirement of new primary schools. The absolute number of children in the secondary school age will not increase much, but the requirement of secondary schools as well as secondary school teachers will be more. On health front, the requirement of health professionals such as doctors and nurses and health infrastructures, such as hospitals, health centers are likely to be more for the coming years.

So far the studies dealing with the population projection are at the national level and only a few studies have shown the size of the population in the future at state level. There is dearth of studies on the state level population projections and its impact on state's socio-economic situation. On this background, the importance of this study is explained below.

Importance of the Study

Projection is a scientific attempt to speculation about the future population scenario by making certain assumptions using the data relating to the past available at present. Population is one of the most important items for which projections are often made. The population projection is a useful tool to demonstrate the magnitude of current problem and likely to estimate the future magnitude of the problem. The social and economic implications of population growth are useful for national planning of any country. Every development plans contain future estimates of a nations needs as well as for policy formulation for sectors such as labour force, education, health, urbanization, agriculture etc.

The economic projection for the sectors such as labour force will appraise the likely magnitude of supply of labour, employment as well as unemployment trends. Similarly, the GDP per capita will enable us to understand the economic progress of the country. On education, the projection of school going children, requirement of new schools as well as other infrastructure helps us to make the educational planning of the country. Similarly the health requirement with respect to the requirements of health professionals enables us to formulate the health sector planning. Finally, in the future to reduce regional or state level inequalities a comparative study like this will help the state government in formulating the policy for identifying the thrust areas to be emphasized to improve the overall socio-economic development and for a evenly developed country.

Objectives

The broad objective of the paper is to identify the social and economic implications of population growth for a less developed state by 2020 if it will reach in the same situation as a developed state. However the specific objectives are

1. To project the population of two Indian states falling in two different phases of transition following the past trend.
2. To examine the economic significance of population growth with respect to labour force and GDP per capita for both the states.
3. To estimate the educational and health requirements of those selected states of India

Data

The data for demographic, economic and social parameters are collected for the state of level. The base year refers to the period of 2001 or the latest available period. The main data sources used for this paper are- (a) National family Health Survey-III (2005-06), (b) Selected Educational Statistics (2000-2001), (c) Sample Registration System (2005), (d) Census of India (2001), (e) Tenth Five Year Plan (2002-2007) and (f) Reproductive and Child Health Project (2002-2004).

Methodology

The paper uses the SPECTRUM package of Future Group International for projection over a period of 20 years from 2001 to 2020. Spectrum has been designed to produce information that is useful for policy formulation and dialogue within a framework easy to use computer

programs. The focus is given on the generation of the information useful for policy and planning process. Spectrum is an integration package. The integration is based on DEMPROJ, which is used to create the population projections that support many of the calculations in the other components – FAMPLAN, RAPID, AIMS. RAPID is used in this present study to project the social and economic consequences of high fertility and rapid population growth for sectors such as labor force, education and health. A number of assumptions are made for the above projection with respect to economy, education, and health. The brief description on assumptions on economic and educational variables is given below.

Assumptions on fertility and mortality

1. Reaching the replacement level of fertility i.e., TFR will be 2.1 by 2020 in Uttar Pradesh from the current level of 3.82 and for Tamil Nadu as it already reached the replacement rate of fertility 1.8, it is assumed that TFR will not be less than 1.5 by 2020. TFR level is taken from the NFHS-III (2005-06) survey report.

2. Life expectancy at birth will increase according to the past trend for both the states. This data has been taken from the Expert Group Population Projection from Census of India.

Assumptions on Economic Parameters

1. Per capita GDP are 6.65 and 4.45 percent per annum for Tamil Nadu and Uttar Pradesh respectively and it will remain same till 2020. This is the actual growth rate of the economy that has been experienced during 8th and 9th Five Year plan.

2. Labour force participation of female population of 15-64 years will increase based on past trend during 2005 and 2020 while that of males will remain the same.

3. Labour force participation for 10-14 years population will remain the same.

Assumptions on Education and Health

1. The gross attendance ratios of children for primary school is taken and it is assumed that it will reach 100 percent by 2020 for both the states .

2. The secondary school enrolment will increase from the base year 2005 according to past trend. It is assumed that for UP it will increase to 75 percent while for Tamil Nadu it will be full enrollment.

3. All other parameters are assumed to be constant

Results and discussions

This exercise gives us an insight of economic and social implications of population growth from 2005 to 2020 in two state UP and TN from two different socio-economic and demographic setups. It may be viewed as an approximation of selected economic and social indicators for recent future. These estimates are also available on yearly basis.

- *Demographic scenario in Uttar Pradesh and Tamil Nadu by 2020*

Results show that if the assumptions for fertility follow i.e., if UP able to reach replacement level of TFR by 2020 and in TN the level of TFR decreases slightly from its current 1.8 to 1.5, still the total population of Up will be almost three times higher than that of TN in absolute number. There will be a decrease in the child population of age 0-4 and 5-14 and the decline will be outsized in UP, compared to the decrease in TN. It is known that with the demographic transition the proportion of old age people increases, which can also be evident from the results. The proportion elderly is higher is TN, than UP in 2005 and though it will rises in both the states, the proportion elderly in TN will be much more compared to UP. From table 1, it can be seen that in UP the proportion of women population of reproductive age 15-49 years will be raise to 55 percent in 2020 from its current 49 percent, while in TN the same will be seen as decreasing from around 57 percent in 2005 to 54 percent in 2020. The median age of population will be 26 years and 35 years respectively in UP and TN in 2020. The percentage change in population by age and sex in both the states can be clearly observed from the age-sex pyramids given below.
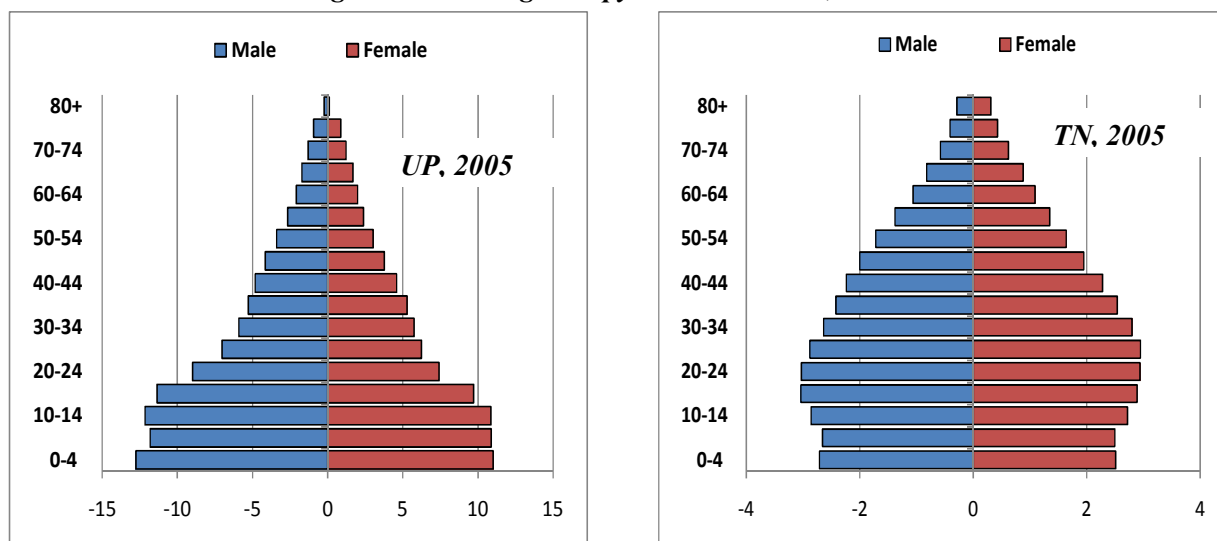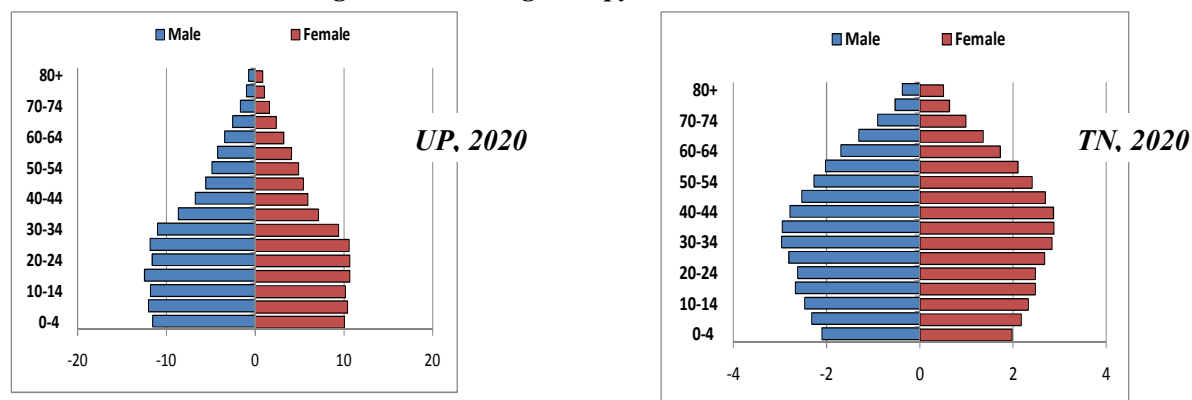
Figure 1a &1b: Age-sex pyramid UP & TN, 2005

Figure2a & 2b: Age-sex pyramid UP & TN, 2020

Birth rate will be decline in both the states but in Uttar Pradesh the death rate will reduce while in TN it seems to reach at threshold level. In current 2005 situation, the population of UP will be double in 41 years, while it will take 57 years even if it will reach TFR level 2.1. In 2005 there is a gap of 2 years in mean age of childbearing between UP and TN, but by 2020 the age at childbearing will be almost same (27-28 years). From the above explanations of results it is revealed that though the demographic situation of UP will be better by 2020 it will still remain a demographically backward state in comparison with TN.

▪ *Economic implication of population change in Uttar Pradesh and Tamil Nadu in 2020*
Population growth and its relation to economic development has been a matter of debate over a century. For the developing country like India, population growth is likely to impede economic growth resulting in reduction of per capita income and resources. In addition to this, the growth of labor force adds to the unemployment trends. In this section it is attempted to project and compare the economic parameters with respect to labor force, GDP per capita, new job requirements for the both the states UP and TN.

It is estimated that the total labor force will increase from 36 million in 2005 to almost 64 million by 2020 in UP and it will be between 22 to 29 million by 2020 in TN, though the volume of labour force is much more higher in UP compared to TN by 2020. In other words, there will be only 33 percent increase in labour force by the year 2020 in TN and it is 75 percent for UP by the year 2020. The annual requirement of new job will be approximately 2 million till 2020 in UP, while it will be only .42 million in TN by that time.

As it is observed from the Table 1 that the proportion of working age population is increasing in both the states and at the same time proportion elderly is decreasing while there

is a decrease in child population, this result is reflected through the dependency ratio. Dependency ratio is likely to reduce from 0.73 to 0.51 in UP from 2005 to 2020, while it will reduce to 0.40 by 2020 from 0.45 in 2005 in the TN. It can be easily explained by the fact that it is due to the increase in elderly population the old age dependency is more in TN compared to UP.

GDP per capita is usually taken as summary indicator of economic development of any state or country. It is found that the Gross State Domestic Product (GSDP) per capita will increase from Rs. 207.4 billion to Rs. 398.4 billion under constant growth trend and reduction of TFR to replacement level in 2020 in UP. On the other hand, the percent change in GSDP per capita from 2005 to 2020 will be 53 in UP while it is 143 for TN. The projected figures are given at 1999-2000 prices to make it comparable over the years. The essence of the findings is that even if it is assumed that TFR will reduced to replacement level in UP and though the growth rate of State GDP remain constant over the period, if the decline in the TFR varies over the same period then the increase in per capita GDP will also vary. Per capita GSDP will increase tremendously for the state of TN where the level of TFR is below replacement level and it will not decline much, when the growth rate of GSDP is assumed to be constant over the period.

- *Education and health care situation in Uttar Pradesh and Tamil Nadu in 2020*

The education and health are two critical and key component of human development. For this reason, variables like school enrollment rate, health infrastructures are important for all national and regional planning. For the projection of education, most of the parameters are assumed to be constant. However, it is only assumed that there will be increase in school enrolment rate for primary and secondary school. For primary school, the school enrolment rate for the age group of 6-10 years is used, and similarly for secondary school, school enrolment of children in the age group of 11-14 years is used.

Table 3 presents the future education scenario of both the states. It is projected that the children of primary school age will almost remain same from 2005 to 2020 in both the states. Similarly it is found that the total number of children of primary school going age are not going to school is also remain same (8 million) in UP over the period 2005 to 2020. It is projected that the requirement of primary schools will be about 76 thousand in UP and 36 thousand in TN by the year 2020 from 77 thousand and 41 thousand in 2005 in UP and TN respectively, even if the primary school enrolment is assumed to remain constant over the period in TN and it is expected to increase in UP.

In case of secondary school, there is not much change in the total number of children in secondary school going age and but number of secondary student as will be more for Up by 2020 while it will remain almost at same level in TN. The requirement of secondary schools will be increase to 52 thousand in UP by 2020, from its current situation in 2005, but in TN the requirement is remain same. Required teachers in secondary schools will be 219 thousand in UP in 2020 and it increases enormously from 2005 but, in TN the situation is just opposite, the requirement for secondary school teachers is less.

With respect to the health projection it can be seen that about 7.3 thousands doctors will be required in UP in 2005 and the demand for doctors will increase to 9.2 thousands in 2020, while for TN the requirements remain unchanged. There will be more requirements of nurses in both the states but the volume is more in case of UP compared to TN. More health centers and hospital beds will be required as reflected in Table 4. Proportion of population at high health risk will increase substantially over the period in Uttar Pradesh while in Tamil Nadu the trend is not showing any change. Required health expenditure per person will increase over time and that increase is noticeably higher for Uttar Pradesh as a result of large population, inadequate health infrastructure and higher proportion of population at high health risk.

Concluding remarks

The base of the age pyramid for UP and Tamil Nadu will decrease. Uttar Pradesh will be having more women in the reproductive age than Tamil Nadu and the aged will be more in TN. In view of the above argument there is a need to frame the policies of the states focusing more on their age structure. Focus should also be given towards full and proper coverage of maternal health services and Reproductive and Child Health services. The quality of services should be improved as the percentage of female population of reproductive age group of 15-49 will increase. Therefore, it can be helpful in a way or another to accelerate demographic transition and achieve population stabilization. UP needs to focus to fulfill the reproductive and child health requirements while TN should focus on the old age security and care factors.

The State Govt. of TN should invest less on primary as well as secondary education in future compared to 2005 as the requirements of schools, school teachers will be less in 2020, whereas UP needs to specially focus on the improvement of secondary education.

On the health front, the requirements of health infrastructures and health manpower will be more in both the states. The population in absolute number is increasing and as UP will be having a larger share of the population per capita requirement of health infrastructure

will be more in UP. The per capita requirement also increases for TN but because of the increase in the absolute number of elderly persons. The proportion of population at high health risk will be almost same in 2020 for UP compared to 2005, but TN will have a lesser risk in 2020 compared to 2005. It may imply that though the health care services in UP are there but it should focus more on the vulnerable section who are deprived or less utilizing the heath care services so that the proportion of population at higher health risk can be reduced.

References

Ministry of Human Resource Development .2001. Annual Report 2001-2002, Government of India

Bhat, P. N. Mari. 2004: Indian Demographic Scenario: Vision 2020. In India Vision 2020, The Report, Planning Commission, Government of India, New Delhi: Academic Foundation

Coale, A. J. and Edgar Hoover. 1958: *Population* Growth and Economic Development in Low-Income Countries, Princeton N. J.: Princeton University Press.

Datta, P. and Mohanty, S. K. 2005: India's future population and its socio-economic Implications by 2015, *Demography India,* 34(2), 167-184.

Davis, Kingsley.1951: Population of India and Pakistan, Princeton N. J.: Princeton University Press.

Dyson, T. 2004: India's Population: The Future, In Dyson *et al*. (Ed), Twenty-First Century India, New Delhi: Oxford University Press.

Dyson, T. and Amresh Hanchate. 2000: India's Demographic and Food Prospects-State level Analysis, *Economic and Political Weekly*, 35 (46),4021-36.

Future Group International.1999. Washington, Spectrum Version 4.

International Institute for Population Sciences (IIPS) and ORC Macro.2001. National Family and Health Survey (NFHS-III), India, 2005-06, Mumbai: IIPS.

Kulkarni, P. M. 2001: Perspective Challenges in the Size and Structure of India's Population: Implication of PFI Projections up to 2051*,* In K. Srinivasan and Michat Vlassott (Ed) Population Development Nexus in India – Challenges for New Millennium, New Delhi: Tata McGraw Hill.

Ministry of Finance, Economic Division, Government of India: Economic Survey, 2003-04.

Natarajan, K. S. and V. Jayachandran. 2000: Population Growth in 21st Century India, In K. Srinivasan and Michat Vlassott (Ed) Population Development Nexus in India – Challenges for New Millennium, New Delhi: Tata McGraw Hill.

Planning Commission. 2002. Tenth Five-Year Plan, 2002-2007, Vol. 1. , New Delhi: Planning Commission, Government Of India.

Registrar General of India.1996. Census of India 1991, Population Projections for India and States1996-2016, Report of the Technical Group of Population Projections constituted by the Planning Commission, August 1996, Government of India, New Delhi.

Registrar General of India. 2005. SRS based abridged life tables, 1998-2002, SRS Analytical Studies Report No 1, New Delhi: Office of the Registrar General and Census Commissioner.

Srinivasan, K and V. D. Shastri. 2001: A Set of Population Projections of India and the Larger States Based on 2001 Census Results, Population Foundation of India. (Available on: www.planningcommission.nic.in/reports/genrep/bkpap 2020.doc.)

Visaria,L. and Visaria, P. 1996: Perspective Population Growth and Policy Options for India,1991-2101, (Mimeo) Gujarat Institute of Development Research Ahmedabad, India, New York: The Population Council.

Table 1: Projected summary of demographic Indicators in 2020

Demographic Indicators	Base Year 2005		2020	
	UP	TN	UP	TN
Total Population in million	183.3	65.1	230.4	70.5
Percentage of population 0-4	13.0	8.0	9.4	5.8
Percentage of pop 5-14	24.9	16.5	19.3	13.2
Percentage of pop 15-64	57.7	68.8	66.2	71.6
Percentage of pop 65+	4.4	6.7	5.1	9.4
Percentage of female 15-49	49.3	56.6	55.1	53.8
Median age	20	29	26	35
Sex Ratio (M/F)	111.0	101.0	112.0	100.0
Birth Rate per 1000	26.0	15.9	18.4	11.3
Death rate per 1000	8.8	8.6	6.2	8.5
Annual growth rate (%)	1.7	0.7	1.2	0.3
Doubling Time in years	41	95	57	243
No of birth in millions	4.8	1.0	4.2	0.8
No of deaths in millions	1.6	0.6	1.4	0.6
GRR	1.8	0.9	1.0	0.7
NRR	1.5	0.8	0.9	0.7
Mean Age of child bearing	29.8	27.4	27.6	27.4
Child-woman ratio	0.56	0.28	0.36	0.22

Table 2: Results of Economic projections for UP and TN by 2020

Economic Indicators	Base Year 2005		2020	
	UP	TN	UP	TN
Labour force (million)	36.3	21.5	63.6	28.6
Percent Change in labour force			75	33
Dependency ratio	0.73	0.45	0.51	0.40
New job required (million)	1.64	0.53	2.02	0.42
Child dependants (million)	68.7	15.7	65.3	13.2
GDP in billion (1999-2000 prices)	207.4	169.5	398.4	445.1
GDP per capita in thousand	1.13	2.60	1.73	6.31
Percent Change in GDP per capita			53	143

Table 3: Projected primary and secondary school age population and requirement of teachers & schools

Educational Indicators	Base Year 2005		2020	
	UP	TN	UP	TN
Children of Primary School Age (million)	22.7	5.2	22.4	4.6
Primary Students (million)	14.8	5.2	14.5	4.6
Children primary school age out of school	8.0	0.0	7.9	0.0
Primary Schools ('000)	76.9	41.1	75.7	36.0
Primary Teachers ('000)	254.4	158.3	250.5	138.5
% of GDP spent on primary schooling	19.8	4.4	10.1	1.5
Children of Secondary School Age (million)	13.9	3.4	13.2	2.9
Secondary school students (million)	5.3	2.9	9.9	2.9
Children primary school age out of school	8.6	0.4	3.3	0.0
Secondary Schools ('000)	27.9	21.2	52.3	21.1
Secondary School Teachers ('000)	117.3	88.2	219.4	87.4
% of GDP spent on Secondary schooling	14.2	8.2	13.8	3.1

Table 4: Results of Health Projection in by 2020

Health Indicators	Base Year 2005		2020	
	UP	TN	UP	TN
Doctors ('000)	7.3	3.0	9.2	3.3
Nurse ('000)	165.4	87.7	208.0	94.9
Health Centres ('000)	5.1	2.6	6.4	2.8
Hospitals ('000)	1.1	0.5	1.4	0.5
Hospital Beds ('000)	69.2	57.4	87.1	62.1
Population at high health risk (million)	66.5	23.6	81.5	23.0
Percentage of population at high health risk	*36.3*	*36.2*	*35.4*	*32.6*
% of GDP spent on Health	8.1	8.7	5.3	3.6

Appendix 1: Assumptions on economic indicators for 2020

Indicators	Year & Source	Base year Value UP	Base year Value TN	Assumption for 2020
1. The LF participation rate (males 10-14)	Census of India	4.62	4.43	Remains constant
2. The LF participation rate (males 15-64)	Do	51.3	62.4	Do
3. The LF participation rate (Females 10-14)	Do	1.33	4.29	Do
4. The LF participation rate (females 15-64)	Do	14.0	32.5	30% in UP & 50% in TN (based on past trend)
5. Gross State Domestic Product (1999-2000 prices) in million	Handbook of Indian Statistics, RBI	207368	169462	Not Applicable
6. Annual growth rate of GSDP	10th Five year plan 2002-07	4.45	6.65	Remains constant

Appendix 2: Assumptions on Educational Indicators for 2020

Indicators	Year & Source	Base year Value UP	Base year Value TN	Assumption for 2020
1. Age of entry into primary school	Educational Statistics	6	6	Remains constant
2. Number of years of primary schooling	Do	5	5	Do
3. Primary school enrollment rate (%)	Do	64.9	100	Do
4. Students per primary teacher	Do	58	33	Do
5. Students per primary school	Do	192	127	Do
6. Recurrent expenditure per primary school student	Directorate of Economics and Statistics,	2779	1439	Do
7. Age of entry into secondary school	Educational Statistics	11	11	Do
8. Number of years of secondary schooling	Do	3	3	Do
9. Secondary school enrollment Rate (%)	Do	38.1	86.8	75 in UP & 100 in TN
10. Students per secondary school teacher	Do	45	33	Remains constant
11. Students per secondary school	Do	189	137	Do
12. Recurrent expenditure per secondary school student	Directorate of Economics and Statistics	5586	4749	Do

Appendix 3: Assumptions on Health Indicators for 2020

Indicators	Year & Source	Base year Value UP	Base year Value TN	Assumption for 2020
1. Population per doctor*	Health Information of India, Ministry of Health	25153	21637	Remains constant
2. Population per nurse*	Do	1108	743	Do
3. Population per health center*	Do	35972	25306	Do
4. Population per hospital*	Do	170263	135743	Do
5. Population per hospital bed*	Do	2647	1135	Do
6. Annual health expenditure per person	Planning Commission, Govt. of India	91.43	226.77	Do