DEMOGRAPHIC TRANSITION AND AGE STRUCTURAL CHANGES IN INDIA: A COMPARATIVE PERSPECTIVE

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***Abstract*: Age structural transition is a process of shifting age structure from a young population to an old population. This is an inevitable consequence of demographic transition. This paper is an attempt to study the nature and process of age structural transition in the regions of India like, (Northern Region states of Uttar Pradesh, Haryana, Punjab, Madhya Pradesh) and (Eastern Region states of West Bengal, Odisha, Bihar, Assam) and (Western Region states of Gujarat, Maharashtra, Rajasthan) and the (Southern states of Kerala, Tamil Nadu, and Andhra Pradesh). The Data required for this study were taken from the both census and SRS indicators namely the life expectancy at birth, Total Fertility rate the age distribution of the population of the broad age groups such as 0-14, 15-59 and 60+ has been mainly taken from various Census Report in the period from 1971 to the latest period of 2011 and the information for the projected period of 2011-2051. The main aim of the study is to analyze and compare the demographic transition and age structural changes in the all four regions of states in India.**

***Keywords*: Demographic transition, Fertility Trend, Life Expectancy, Estimates and Projections, Census and Sample Registration System.**

INTRODUCTION

Age structural transition is a process of shifting age structure from a young population to an old population. This is an inevitable consequence of demographic transition. However, during the process of age structure transition, there is an interim period during which the working age population grows at a more rapid pace than of children and the elderly population. Fertility and mortality are constant during the early stages of a demographic transition resulting in a constant age structure. Age- sex structure is one of the most important characteristics of population composition. Almost all population characteristics vary significantly with age. Age statistics form an important component of population analysis, as most of the analysis is based on age-sex structure of the population. The usefulness of age data is more noticeable. Apart from purely demographic concerns, the age-sex data structure is required for age specific analysis of data for planning. The dependency ratio, which is the ratio of economically active to economically inactive persons, is dependent completely on age composition. Age structural transition- a process and consequence of shifting age structure from a young aged population to old aged population- is an integral part of a demographic transition whose trajectories are determined by the timing and speed of fertility and mortality declines.

Fertility and mortality are constant during the early stages of a demographic transition resulting in a constant age structure. However, when mortality declines and fertility is constant in the later stages of a demographic transition, a large share of a country's population is young, leading to a high dependency ratio. During the final stage of the demographic transition, when both fertility and mortality reach the lowest level, the share of old aged population increases as cohorts of the high fertility regime age and are followed by a stable age distribution. Thus, the dependency ratio increases during the final stage of Demographic transition due to an increase in the elderly population.

As the timing and pace of fertility and mortality transitions vary between states in India, the age structural transition would also vary among them. The regional differences in demographic trajectory pose serious competing challenges across the states in India. Ting Yu (1990) He concluded that age structure transition is a new way of looking at population change, and it offers considerable promise for aiding economic development and general planning.

REVIEW OF LITERATURE

A study was conducted by **A. Subbiah , Krishna Murthy Ponnapalli , Ramani Ponnapalli (2013)** on the title "**Ageing And The Demographic Transition In India And Its State: A Comparative Perspective'.** This study attempted to give a comparative perspective about the ageing of the population and the demographic transition taking place in India and its15 major states. Data required for the study indicators namely the life expectancy at birth, the total fertility rate, the age distribution of the population of the broad ages 0-14, 15-59 and 60+ has been collected mainly from various publications of the 'Sample Registration System' (SRS) of the Registrar General of India for the forty years starting from 1970s to the year latest period 2010. Information for the projected periods of 2011-16 to 2096-2101 about the above same indicators was collected from the single source PRB's 2007 publication entitled "The future POPULATION of India: A Long-range Demographic View". Result of the analysis was indicated that India and its major states was well in progress in their demographic transition and was different stages of their demographic transition based on the progress made in their fertility and mortality transitions as a result of different progress made in their health and socio-economic development. Consequently it is seen while some of the states has at very advanced stage of

the ageing process; others was seemed lagging behind them. States in south of India namely Kerala, Tamil Nadu, Andhra Pradesh and Karnataka in the same sequenced always seen in the advanced stage of their mortality, fertility and demographic transitions when compared to their counterparts the northern states namely, the states of Uttar Pradesh, Bihar, Madhya Pradesh and Rajasthan.

The study was conducted by **Navaneetham K. and Dharma lingam A.(2012)** conducted a study titled **'A Review of Age Structural Transition and Demographic Dividend in South Asia: Opportunities and Challenges'.** In their study, the unfolding age structural transition and its potential for demographic dividend in South Asia were critically reviewed, analyzed and synthesized. After a brief description of demographic transition in the countries of South Asia, the first demographic dividend using the accounting framework was estimated. This was followed by a discussion of the socioeconomic development opportunities and challenges arising from age structural transition in South Asian countries. They focused on the five major South Asian countries, namely Bangladesh, India, Nepal, Pakistan and Sri Lanka. In their study they found out that, with rapid reduction in fertility, Bangladesh had greater potential to benefit from first demographic dividend. Nepal and Pakistan began to reap the benefits from the window of opportunity. Sri Lanka was already past the period that was available for first dividend, but opportunities were becoming available to benefit from the second demographic dividend. With the right institutional contexts, social and public policies, there was most likelihood for South Asia to experience high economic growth and increased standard of living.

A study was conducted by **Utsav Kumar (2010)** on the title **'India's Demographic Transition: Boon or Bane? A State-Level Perspective'**. This study dealt with the age structure and its dynamics had the critical to understand the impact of population growth on a country's growth prospects. The state level data from India, that the pace of demographic transition from varies across the state, and that these difference had likely to be exacerbated over the period from 2011-2026. The study shows that BIMARU states (Bihar, Madhya Pradesh, Rajasthan, and Uttar Pradesh) had likely to see a continued to increase in the share of the working age population at total population. The BIMARU states was expected to contribute a 58% of the India's working age population become increased. The BIMARU states had traditionally been the slow-growing states and had performed poorly on different accounts of social and physical infrastructure. Whether India can turn demographic dividend into a boon or whether the dividend will become a bane will critically depend on the ability of the BIMARU states to exploit the bulge in the working-age population.

Objectives Of The Study

- To analyze the age structural transition of India and selected states during the period 1971-2011.
- To study the future perspective of the population changes and the demographic transitions that take place in India. using the projected figures relevant to the time periods from 2011 to 2051.
- To study the impact of demographic transition on age structure of the population.

Hypotheses

- Age structural transition is not uniform in all region of the country.
- Among the wide age group, child population shows a rapid decline compared to the two group of the population.
- The impact of demographic transition on age structure is higher in the state of Kerala compared to other state.

Data

Secondary data were used for the analysis. Required data is selected from Various Census and SRS Report.

The main data for the study were obtained from the following sources:

- The data were taken from census 1971-2011 India
- The TFR and Life Expectancy were taken from the SRS report.
- States which are selected has to study accounting to region wise. regions like, the Northern region states of Uttar Pradesh, Haryana, Punjab, Madhya Pradesh) and the (Eastern Region states of West Bengal, Odisha, Bihar, Assam) and the (Western Region states of Gujarat, Maharashtra, Rajasthan) and the (Southern states of Kerala, Tamil Nadu, and Andhra Pradesh).

Methodology

The population pyramid of India and selected regions like, Northern region states of Uttar Pradesh, Haryana, Punjab, Madhya Pradesh) and the (Eastern Region states of West Bengal, Odisha, Bihar, Assam) and the (Western Region states of Gujarat, Maharashtra, Rajasthan) and the (Southern states of Kerala, Tamil Nadu, and Andhra Pradesh). From 1971 to 2011 population trend has constructed. And also the population for the year 2011 to 5051 projected population of India and selected states population were constructed. With the help of these population pyramids, the past history and future population trend are also mentioned the above study. And the spectrum software is used for this study.

Spectrum

DemProj: Demography. DemProj projects the population for an entire country or region by age and sex, based on assumptions about fertility, mortality, and migration. A full set of demographic indicators can be displayed for up to 100 years into the future. Default data needed to make a population projection is provided from the estimates produced by the Population Division of the United Nations. DemProj is a required module for all projections created in Spectrum since its population projection is utilized by most of the calculations in the other modules.

Impact of Demographic Transition on Age Structure of the Population

demographic transition period can be classified into the end on four phase both pre-transition and post- transition period. The population multiple M is a function of the duration of the transition D and it is height, it (maximum rate of increase reached by the population). The average and post-transition as. The role of multiplayer

$M=e^{A}$

Where A is it is are under the growth curve:

Phase 1 Pre-transition

Phase 2 Decline mortality, high fertility

Phase 3 Peak population growth

Phase 4 Birth rate decline faster than death rate slow growth rate.

Phase 5 Post-transition

It is also assumed that the birth rate and death rate are linear during these phase.

Age Pyramid

The age and sex distribution of a population is diagrammatically represented by placing histograms corresponding to male and female age distributions on either side of vertical line. The population distribution by age and sex takes the shape of a pyramid, unless mortality and fertility levels are irregular, or the population in question has experienced important levels of migration. When the population is displayed by five years of age, it may also show age misstatement, if the pyramid displays peaks at certain ages, most frequently ages ending with 0 and 5.

ANALYSIS AND FINDINGS

PART I

The first part of the analysis section is mainly portrays that the study of age structural transition Among the regions of India and state. like the northern region states of (Uttar Pradesh, Haryana, Punjab, and Madhya Pradesh) and the eastern region of(West Bengal, Odisha, Bihar, Assam) and furthermore the western region of (Gujarat, Maharashtra, and Rajasthan) and the southern region states of Kerala, Tamil Nadu and Andhra Pradesh. The progress that countries with a youthful age structure have made along the demographic transition is evident in their population profiles which reflect a less dramatic proportional increase in the size of each successively younger age group. The most significant aim of the of the study is to compare the population changes and demographic transition among the all-region of India and states. The findings are given in following section.

Table No.1. Broad Age Group Of Population In India 1971-2051 (In Percent).

Broad Age Group Of Population In India 1971-2051 (In Percent)									
	Year								
Age Group	**1971**	**1981**	**1991**	**2001**	**2011**	**2021**	**2031**	**2041**	**2051**
0-14	42.02	39.55	37.25	35.35	30.76	26.17	23.33	21.03	19.27
15-59	51.99	53.91	55.43	56.93	60.29	63.55	63.94	63.48	61.86
60+	5.97	6.49	6.76	7.45	8.58	10.27	12.73	15.49	18.87

The above table is shows the age structural changes of India in the period of 1971-2051. The total population of India in the year of 1971 the 0-14 population is 42.02% after the year of 2051 the 0-14 population will expected to decline at 19.27%. this figures are shows the declining trend of births in India. The 15-59 working age population of India is shows the increasing trend. The 60+ aged population is also shows the increasing trend. In the projected year of 2051 the Indian workforce is expected to dominate in the expected year of 2051 it will reached as 61.86%.

Broad Age Group Of Population In Northern Region States of India 1971-2051 (In Percent).

Table No.2. Broad Age Group Of Population In Uttar Pradesh 1971-2051 (In Percent)

Broad Age Group Of Population In Uttar Pradesh 1971-2051 (In Percent)									
	Year								
Age Group	**1971**	**1981**	**1991**	**2001**	**2011**	**2021**	**2031**	**2041**	**2051**
0-14	41.9	41.7	40.7	40.9	36.6	32.38	30.97	24.33	21.11
15-59	51.4	51.5	52.8	51.6	55.7	59.66	60.2	64.83	65.38
60+	6.7	6.8	6.5	7.6	7.7	7.96	8.84	10.83	13.51

Table No.3. Broad Age Group Of Population Haryana 1971-2051 (In Percent)

Broad Age Group Of Population Haryana 1971-2051 (In Percent)									
	Year								
Age Group	**1971**	**1981**	**1991**	**2001**	**2011**	**2021**	**2031**	**2041**	**2051**
0-14	46.2	41.7	32.1	36	29.8	25.34	21.36	18.12	16.46
15-59	48.5	51.9	61.6	56.4	61.5	65.12	66.31	65.74	61.94
60+	5.8	6.4	6.3	7.6	8.7	9.54	12.33	16.14	21.6

Table No.4. Broad Age Group Of Population Punjab1971-2051 (In Percent)

Broad Age Group Of Population Punjab1971-2051 (In Percent)									
	Year								
Age Group	**1971**	**1981**	**1991**	**2001**	**2011**	**2021**	**2031**	**2041**	**2051**
0-14	41	37	28.2	31.4	25.5	21.78	18.2	15.28	14.3
15-59	51.6	55.2	65.6	59.6	63.9	66.37	66.27	64.85	60.41
60+	7.4	7.8	6.2	9.4	10.6	11.86	15.52	19.87	25.59

Table No.5. Broad Age Group Of Population Madhya Pradesh1971-2051 (In Percent)

Broad Age Group Of Population Madhya Pradesh1971-2051 (In Percent)									
	Year								
Age Group	**1971**	**1981**	**1991**	**2001**	**2011**	**2021**	**2031**	**2041**	**2051**
0-14	43.7	41.2	39.3	38.6	33.5	30.28	27.68	22.78	20.6
15-59	50.5	52.3	54	54.3	58.5	61.29	61.92	64.68	63.85
60+	5.8	6.5	6.7	7.1	8.3	8.43	10.4	12.54	15.55

The northern region states is the highest population states in India. the (table no.2) Uttar Pradesh 0-14 population is 41.9% in 1971 it will be declined at 21.11% .this figure is mainly shows the Uttar Pradesh 0-14 population will still higher in the period of 2051 compared to all four region states of India. The overall northern states of 0-14 population is very higher in 1971 it will be dramatically declined in the projected period of 2051. The overall 15-59 working age population of Northern region states are continued to increasing and also the same trend are shows in the 60+ population. The 60+ population of Punjab and Haryana in the expected year of 2051 the 60+ population is very higher than that of 0-14 population.

Broad Age Group Of Population In Eastern Region States of India 1971-2051 (In Percent).

Table No.6. Broad Age Group Of Population West Bengal 1971-2051 (In Percent)

Broad Age Group Of Population West Bengal 1971-2051 (In Percent)									
	Year								
Age Group	**1971**	**1981**	**1991**	**2001**	**2011**	**2021**	**2031**	**2041**	**2051**
0-14	42.9	38.9	35.4	33.2	27.1	22.05	19.05	16.32	14.95
15-59	51.7	55.5	57.1	59.6	64.3	67.09	66.03	64.54	60.58
60+	5.4	5.6	7.5	7.1	8.6	10.86	14.92	19.14	24.47

Table No.7. Broad Age Group Of Population Odisha 1971-2051 (In Percent)

Broad Age Group Of Population Odisha 1971-2051 (In Percent)									
	Year								
Age Group	**1971**	**1981**	**1991**	**2001**	**2011**	**2021**	**2031**	**2041**	**2051**
0-14	42.35	40.4	35.75	33.17	28.77	22.98	20.1	18.19	17.36
15-59	51.61	53.93	56.55	58.4	61.45	64.55	64.11	63.39	60.39
60+	6.02	6.39	7.2	8.26	9.49	12.46	15.79	18.42	22.25

Table No.8. Broad Age Group Of Population Bihar 1971-2051 (In Percent)

Broad Age Group Of Population Bihar 1971-2051 (In Percent)									
	Year								
Age Group	**1971**	**1981**	**1991**	**2001**	**2011**	**2021**	**2031**	**2041**	**2051**
0-14	42.4	41.67	40.83	42.02	40.08	33.7	29.23	24.28	20.95
15-59	51.3	51.49	51.92	51.14	52.13	59.7	63	64.99	65.22
60+	6.3	6.8	6.26	6.63	7.4	6.6	7.77	10.73	13.83

Table No.9. Broad Age Group Of Population Assam 1971-2051 (In Percent)

Broad Age Group Of Population Assam 1971-2051 (In Percent)									
	Year								
Age Group	**1971**	**1981**	**1991**	**2001**	**2011**	**2021**	**2031**	**2041**	**2051**
0-14	46.87	-	40.22	37.4	32.84	26.36	23.08	20.42	19.08
15-59	48.4	-	54.08	56.63	60.44	63.32	64.13	64.18	62.12
60+	4.73	-	5.33	5.85	6.66	10.32	12.79	15.4	18.8

(The 1981 census of Assam is not Available).

The eastern region state of Bihar is a highest populated state in this region. The Bihar 0-14 and 15-59 age group of population is slightly higher in the period of 1971 it will be remained to highly enhance in the expected year of 2051. The eastern states the 0-14 age group of population are continued to decline in the period from 1971 to 2051. The 15-59 population the northern region is continued to enhancing in the year of 1971 to 2051. The middle periods of 2001 to 2031 the overall population is fluctuating. The significant phenomena of the above tables of northern region states of West Bengal and Odisha in the year of 1971 the (0-14) age group of the population are higher than that of the 60+ population. after the coming periods of 2051, the 60+ population will expect to increase than that of 0-14 population. The projected the year of 2051 the Youth population and aging population will expect to increase than that of the child population.

Broad Age Group Of Population In Western Region States of India 1971-2051 (In Percent).

Table No.10. Broad Age Group Of Population Gujarat 1971-2051 (In Percent)

Broad Age Group Of Population Gujarat 1971-2051 (In Percent)									
	Year								
Age Group	**1971**	**1981**	**1991**	**2001**	**2011**	**2021**	**2031**	**2041**	**2051**
0-14	42.95	38.74	35.63	32.81	28.86	24.82	21.56	18.94	17.48
15-59	51.68	55.27	57.85	60.19	62.82	63.61	63.69	63.45	61.43
60+	5.27	5.95	6.39	6.91	7.92	11.57	14.75	17.62	21.09

Table No.11. Broad Age Group Of Population Maharashtra 1971-2051 (In Percent)

Broad Age Group Of Population Maharashtra 1971-2051 (In Percent)									
	Year								
Age Group	**1971**	**1981**	**1991**	**2001**	**2011**	**2021**	**2031**	**2041**	**2051**
0-14	41.4	38.3	28.8	32.1	26.6	22.70	19.02	16.27	14.87
15-59	52.9	55.3	65.6	59.2	63.1	65.91	66.44	64.70	60.15
60+	5.7	6.4	5.6	8.7	10.3	11.39	14.54	19.03	24.98

Table No.11. Broad Age Group Of Population Rajasthan 1971-2051 (In Percent)

Broad Age Group Of Population Rajasthan 1971-2051 (In Percent)									
	Year								
Age Group	**1971**	**1981**	**1991**	**2001**	**2011**	**2021**	**2031**	**2041**	**2051**
0-14	44.2	42.5	33.6	40.1	34.7	30.29	26.86	21.68	19.43

15-59	50.3	51.5	61.3	53.1	57.8	61.5	63.09	65.8	64.54
60+	5.5	6	5.1	6.8	7.5	8.21	10.05	12.52	16.03

The western region state of Rajasthan the 0-14 age group of population in 1971 are very low compared to Gujarat and Maharashtra. from the projected period of 2051 the 0-14 age group of the population of Rajasthan will highly enhancing compared to other two states. In case of the 60+ age group of the population of the western region is continuing to increase. the overall 15-59 working age group of population is also continued to increase from the period of 1971 to 2051. The 0-14 child population of western states shows the declining trend. The 60+ population of western states is showing the increasing trend. The year of 2051 the state of Maharashtra is the highest 60+ population compared to other two states.

Broad Age Group Of Population In Southern Region States of India 1971-2051 (In Percent).

Table No.11. Broad Age Group Of Population In Kerala 1971-2051 (In Percent).

Broad Age Group Of Population In Kerala 1971-2051 (In Percent)									
	Year								
Age Group	**1971**	**1981**	**1991**	**2001**	**2011**	**2021**	**2031**	**2041**	**2051**
0-14	40.26	34.97	29.71	8.68	23.44	17.71	15.73	14.40	14.17
15-59	53.51	57.52	61.21	7.99	63.90	65.12	61.21	60.31	56.89
60+	6.22	7.50	8.82	9.38	12.55	17.17	23.06	25.29	28.95

Table No. 12. Broad Age Group Of Population In Tamil Nadu 1971-2051 (In Percent)

Broad Age Group Of Population In Tamil Nadu 1971-2051 In Percent									
	Year								
Age Group	**1971**	**1981**	**1991**	**2001**	**2011**	**2021**	**2031**	**2041**	**2051**
0-14	36.5	35	30.8	26.8	23.6	19.87	17.28	15.38	14.25
15-59	56.5	59	61.5	63.9	65.9	66.88	65.18	62.36	58.11
60+	7.0	6.4	7.7	8.8	10.5	13.25	17.54	22.26	27.64

Table No. 13. Broad Age Group Of Population In Andhra Pradesh 1971-2051 (In Percent)

Broad Age Group Of Population In Andhra Pradesh 1971-2051 In Percent									
	Year								
Age Group	**1971**	**1981**	**1991**	**2001**	**2011**	**2021**	**2031**	**2041**	**2051**
0-14	40.4	38.6	35.9	32	25.7	21.41	19.13	16.35	15.11
15-59	53.3	54.8	57	60.2	63.5	67.20	66.29	64.43	59.68
60+	6.3	6.6	7.1	7.8	9.8	11.39	14.57	19.22	25.21

The southern region states of Kerala, Tamil Nadu, and Andhra Pradesh the both states is the lowest child population (0-14) and the highest ageing population compared to other regions of Indian States. The future year of 2051 the state of Kerala is expected to reach the low 0-14 population and also the highest 60+ population compared to India as a whole. The 15-59 population of southern regions of Indian states are continued to increase. In the future the southern states is expected reach at lowest child population and the northern states will expected to reach high 0-14 population compared to India as a whole. In the future the southern states will higher chances to reach and change the aged population sates.

POPULATION PYRAMIDS

The age and sex distribution of a population is diagrammatically represented by placing histograms corresponding to male and female age distributions on either side of vertical line. The population distribution by age and sex takes the shape of a pyramid, unless mortality and fertility levels are irregular, or the population in question has experienced important levels of migration.

When the population is displayed by five years of age, it may also show age misstatement, if the pyramid displays peaks at certain ages, most frequently ages ending with 0 and 5.

The study age pyramids are mainly illustrate the intervals between two decades. those pyramids are given below.

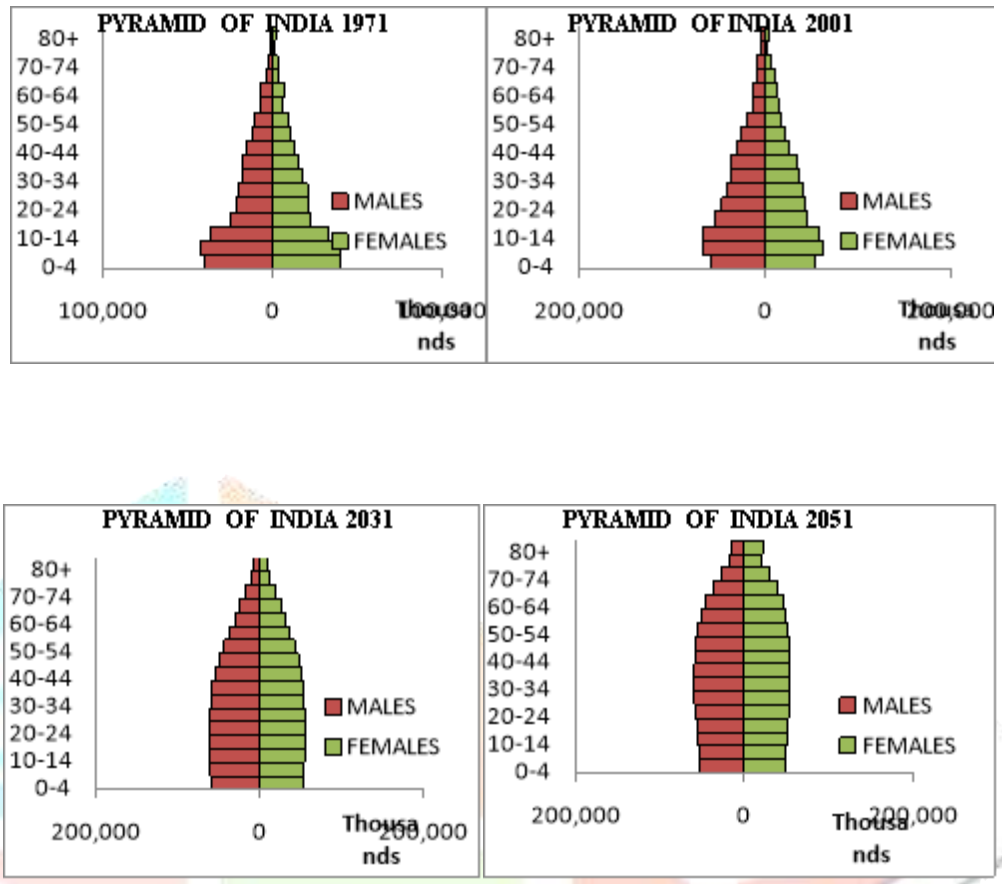


Figure.1. Population Pyramid of India in 1971-2051.

Population Pyramid of Northern Region States of India in 1971-2051.

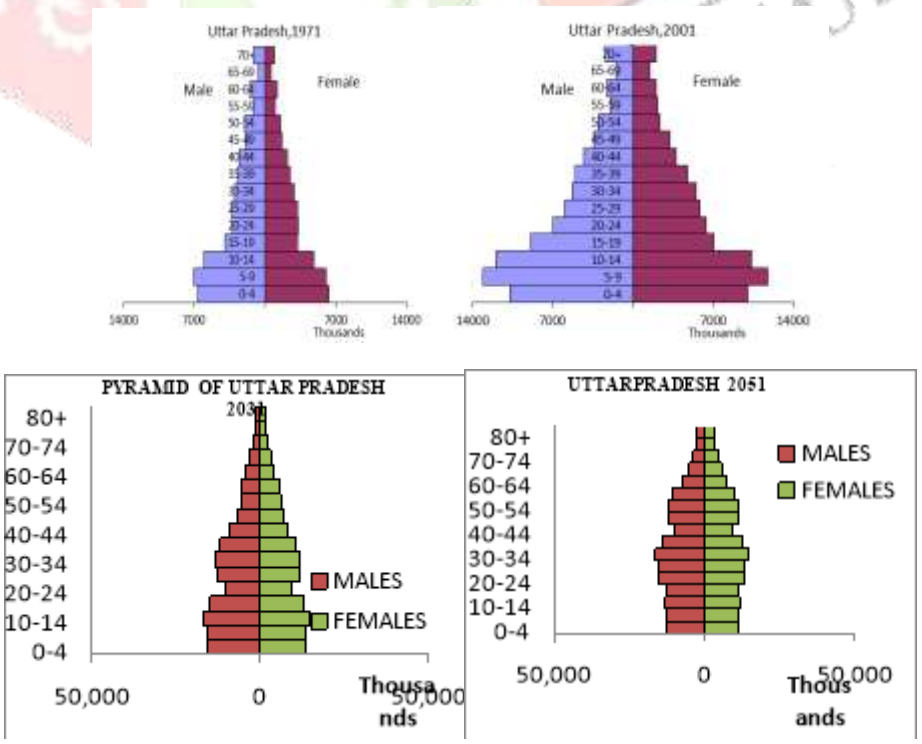
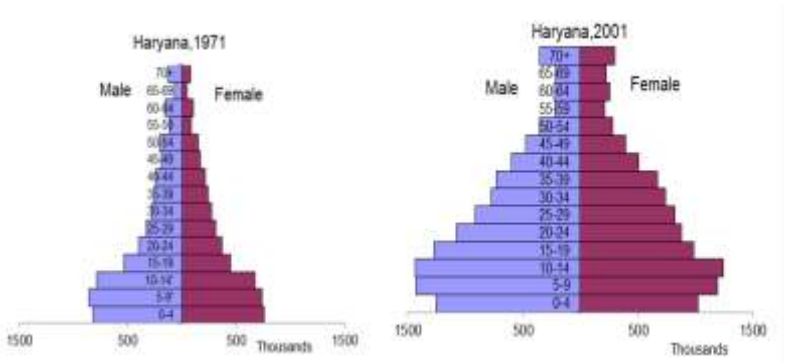


Figure.2. Population Pyramid of Uttar Pradesh 1971-2051.



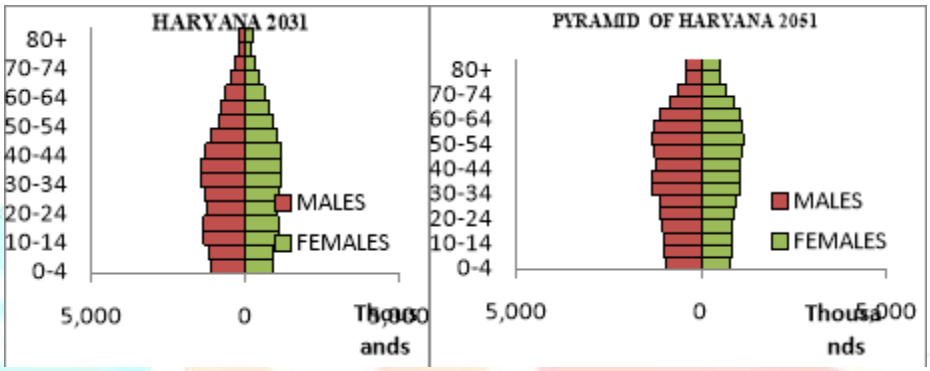


Figure.3. Population Pyramid of Haryana 1971-2051.

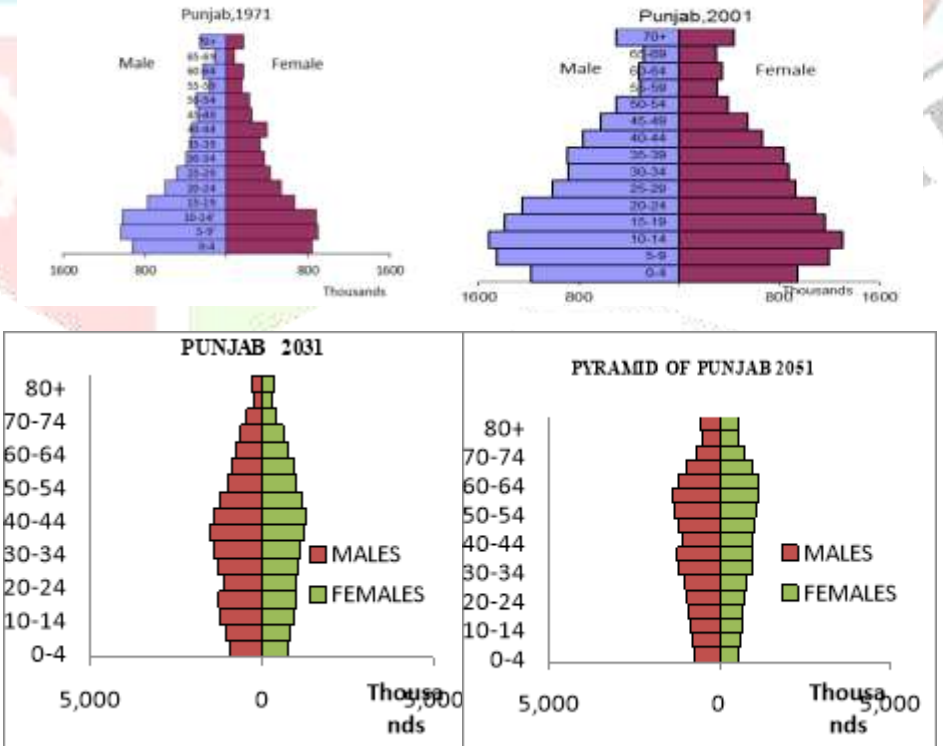
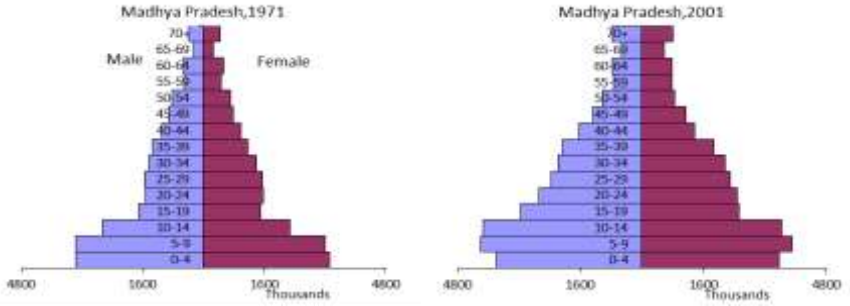


Figure.4. Population Pyramid of Punjab 1971-2051.



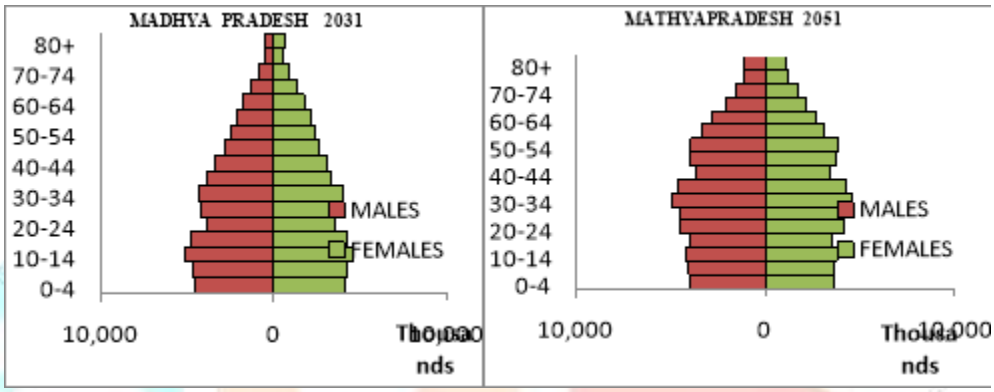


Figure.5. Population Pyramid of Madhya Pradesh 1971-2051.

Population Pyramid of Eastern Region States of India in 1971-2051.

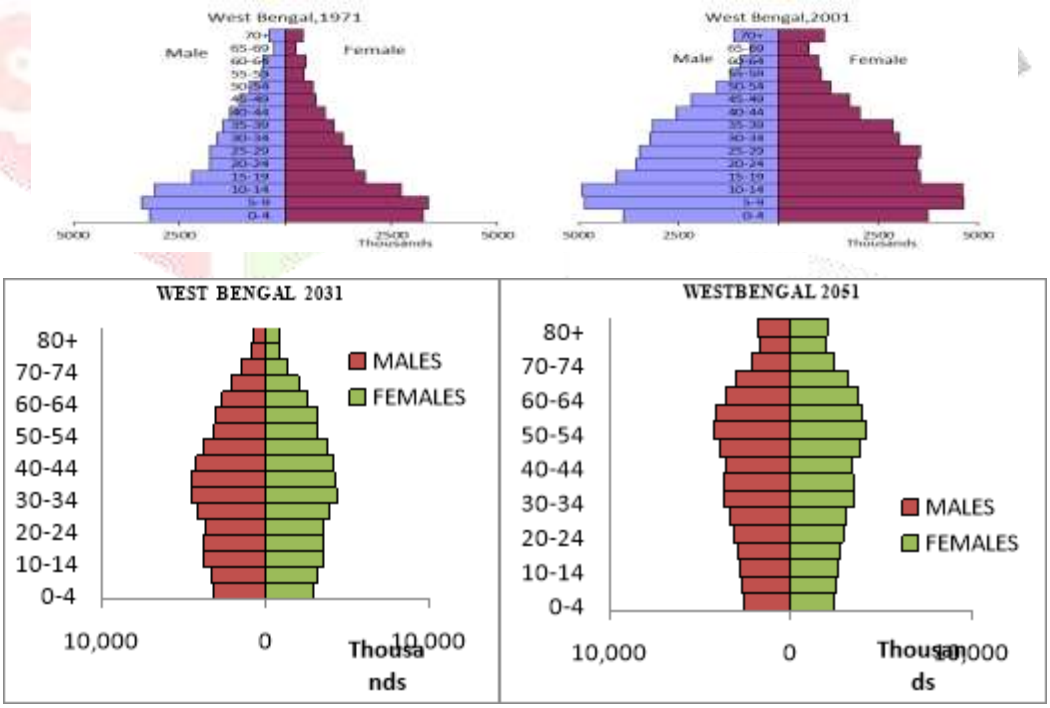


Figure.6. Population Pyramid of West Bengal 1971-2051.

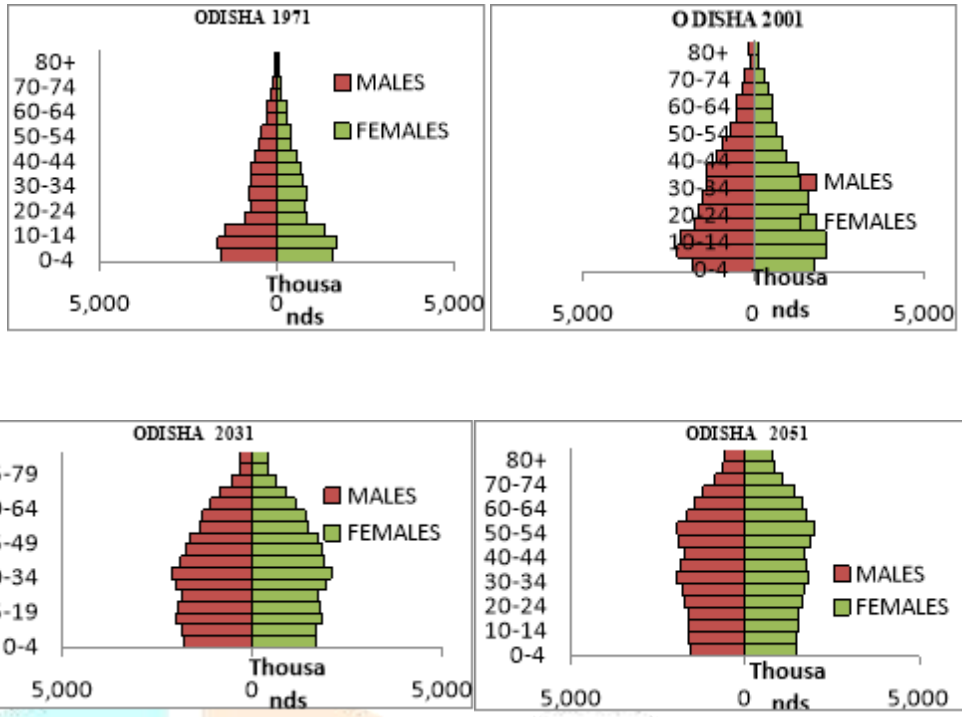


Figure.7. Population Pyramid of Odisha 1971-2051.

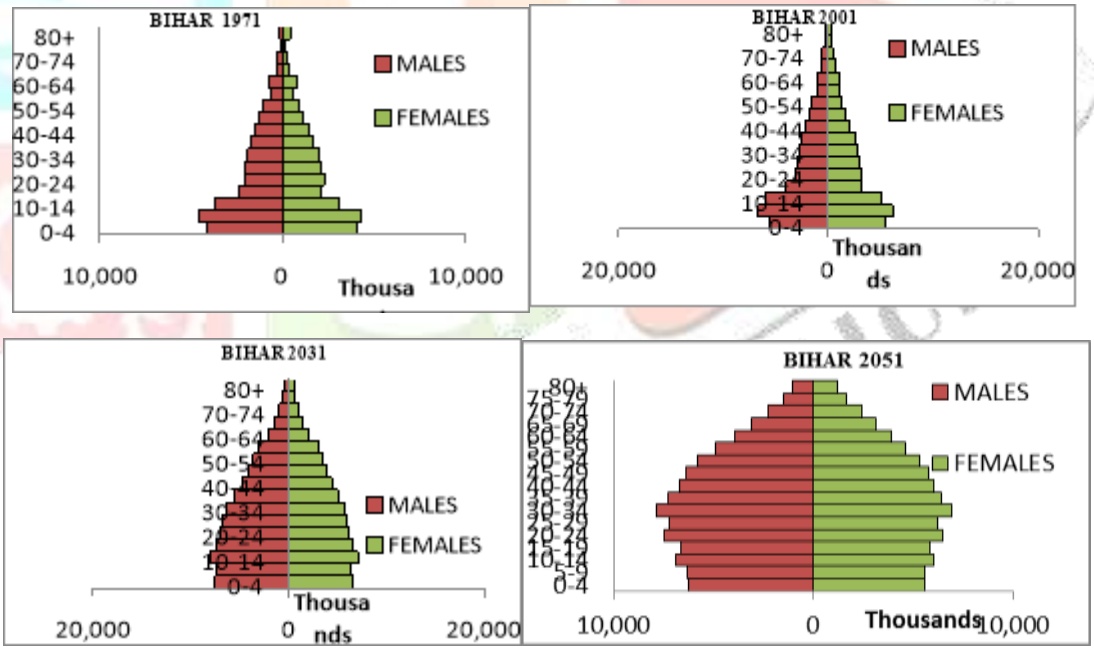
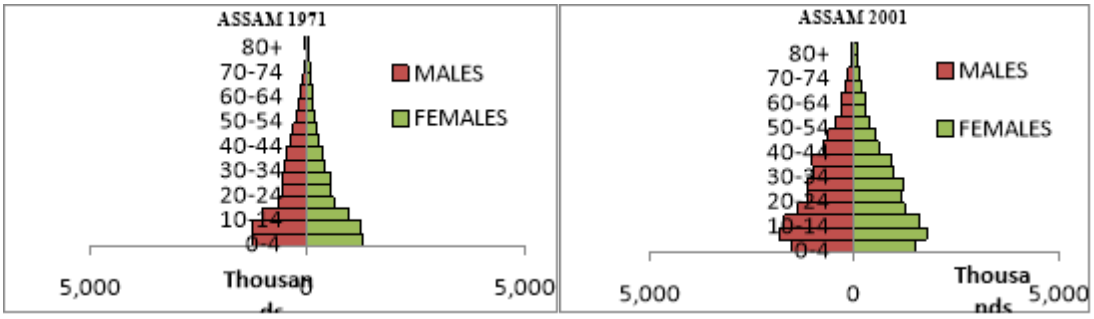


Figure.8. Population Pyramid of Bihar 1971-2051.



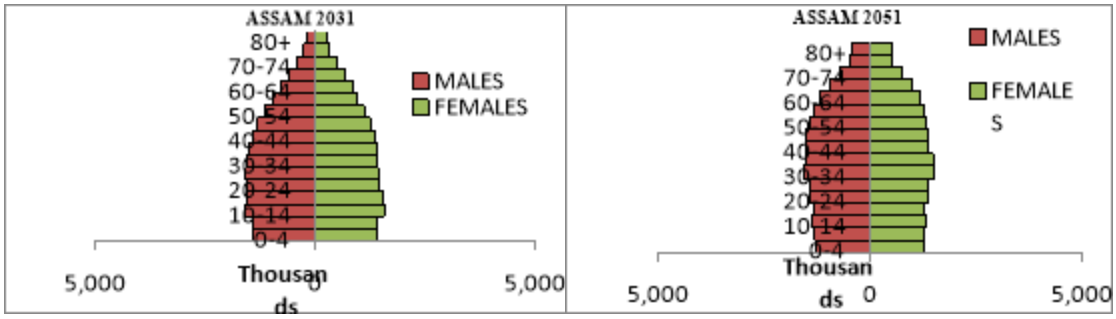


Figure.9. Population Pyramid of Assam 1971-2051.

Population Pyramid of Western Region States of India in 1971-2051.

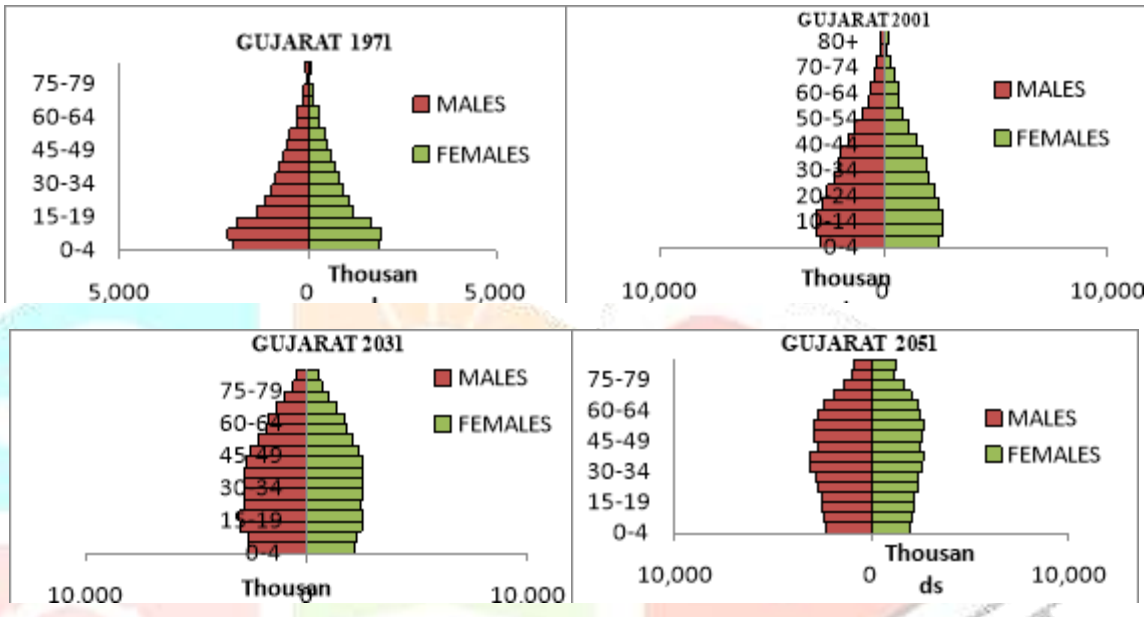
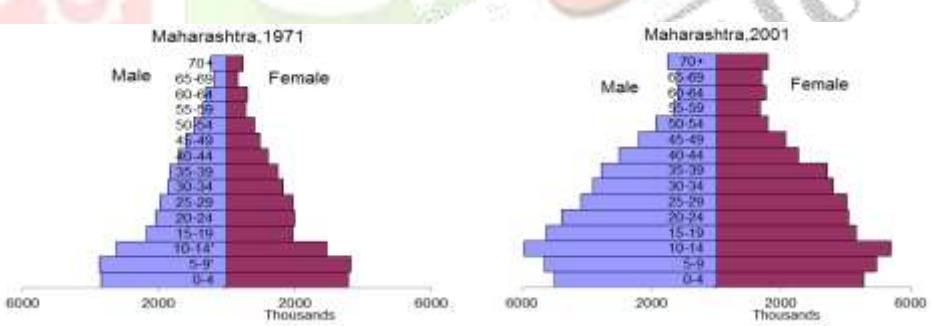


Figure.10. Population Pyramid of Gujarat 1971-2051.



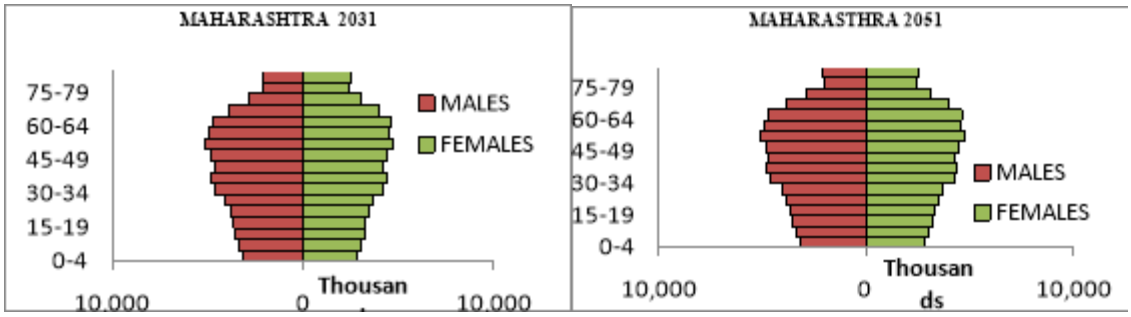


Figure.11. Population Pyramid of Maharashtra 1971-2051.

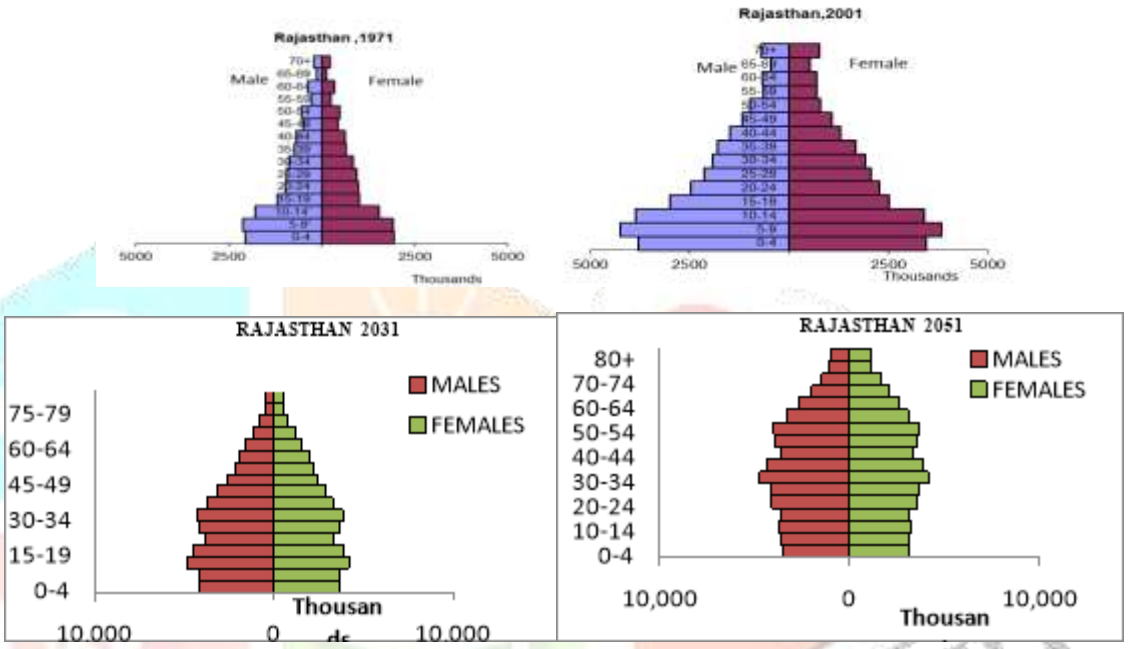


Figure.12. Population Pyramid of Rajasthan 1971-2051.

Population Pyramid of Southern Region States of India in 1971-2051.

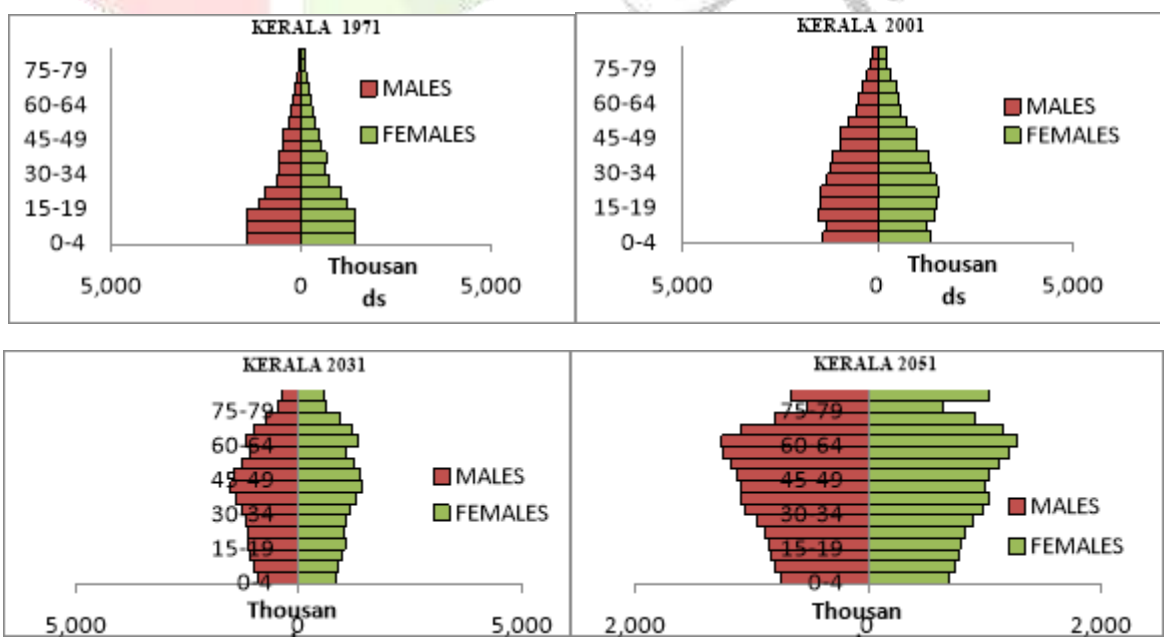


Figure.13. Population Pyramid of Kerala 1971-2051.

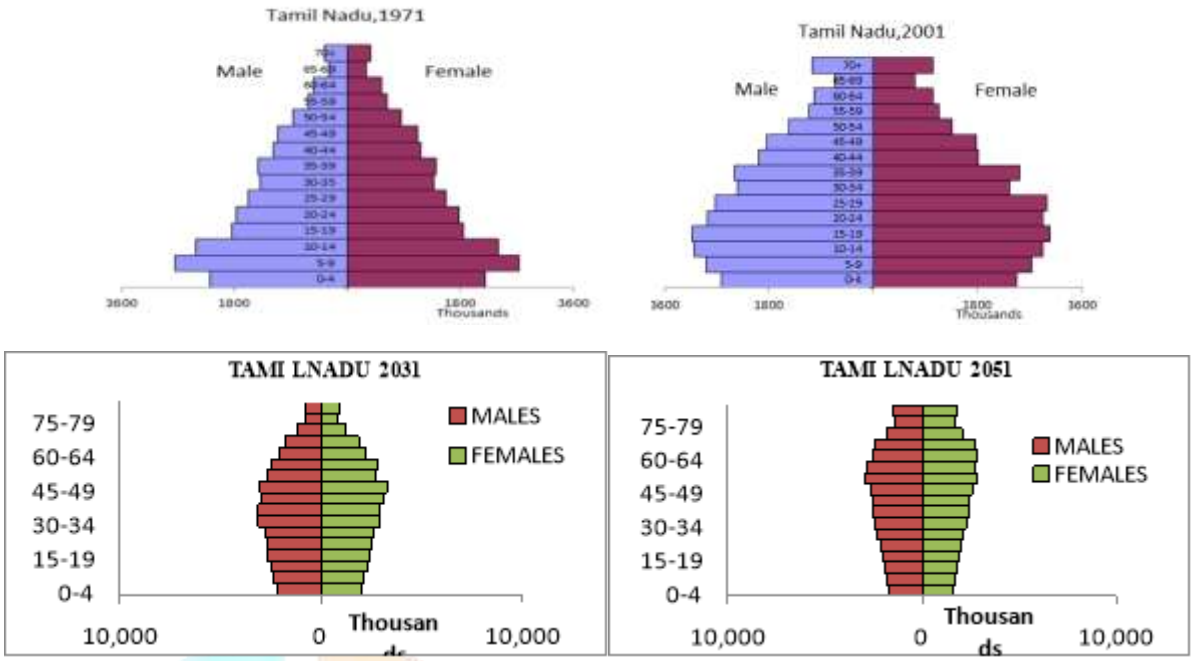


Figure.14. Population Pyramid of Tamil Nadu 1971-2051.

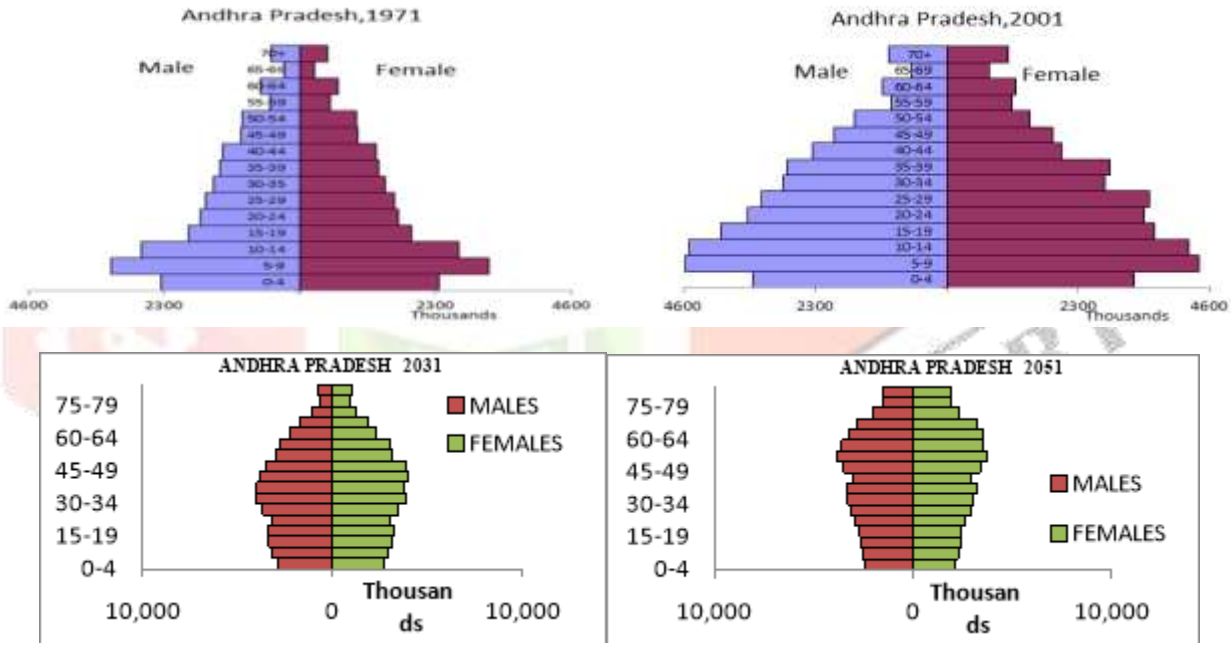


Figure.15. Population Pyramid of Andhra Pradesh 1971-2051.

The above age pyramids of Northern, Eastern, Western regions of India are mainly showing the age structure changes in the period of 1971 to 2051. These major three regions of Indian states are lost their shape of pyramids in the projected the year of 2051. The 0-14 population is rapidly diminishing in the year of 2051. The 1971 year of the 0-14 child population is rapidly changing to the 60+ ageing population in 2051. These are the age Structure changes are making a huge impact on the future population of the country. The southern region states of India are completely different compared to other three regions. because of the southern region states of Kerala, Tami Nadu, and Andhra Pradesh are early lost their structure of pyramid shapes. The southern region states are early expected to reach the aging population in the year of 2021. These structural changes will make a severe impact on the Social and Economic in the projected the year of 2051.

ANALYSIS AND FINDINGS
PART II
IMPACT OF DEMOGRAPHIC TRANSITION ON AGE STRUCTURE OF POPULATION.

The second part of the analysis section mainly explains the stages of demographic transition of India and States of Kerala. furthermore this section is most significantly to explain the life expectancy of birth and Total Fertility Rate (TFR) of Northern, Eastern, Western and Southern Regions of the states of India .those analysis are given below.

DEMOGRAPHIC TRANSITION

Demographic transition period can be classified into the end on four phase of both pre-transition and post- transition period. The population multiple M is a function of the duration of the transition D and it is height, it (maximum rate of increase reached by the population). The average and post-transition as. The role of multiplayer

$M=e^{A}$

Where A is it is are under the growth curve:

Phase 1 Pre-transition

Phase 2 Decline mortality, high fertility

Phase 3 Peak population growth

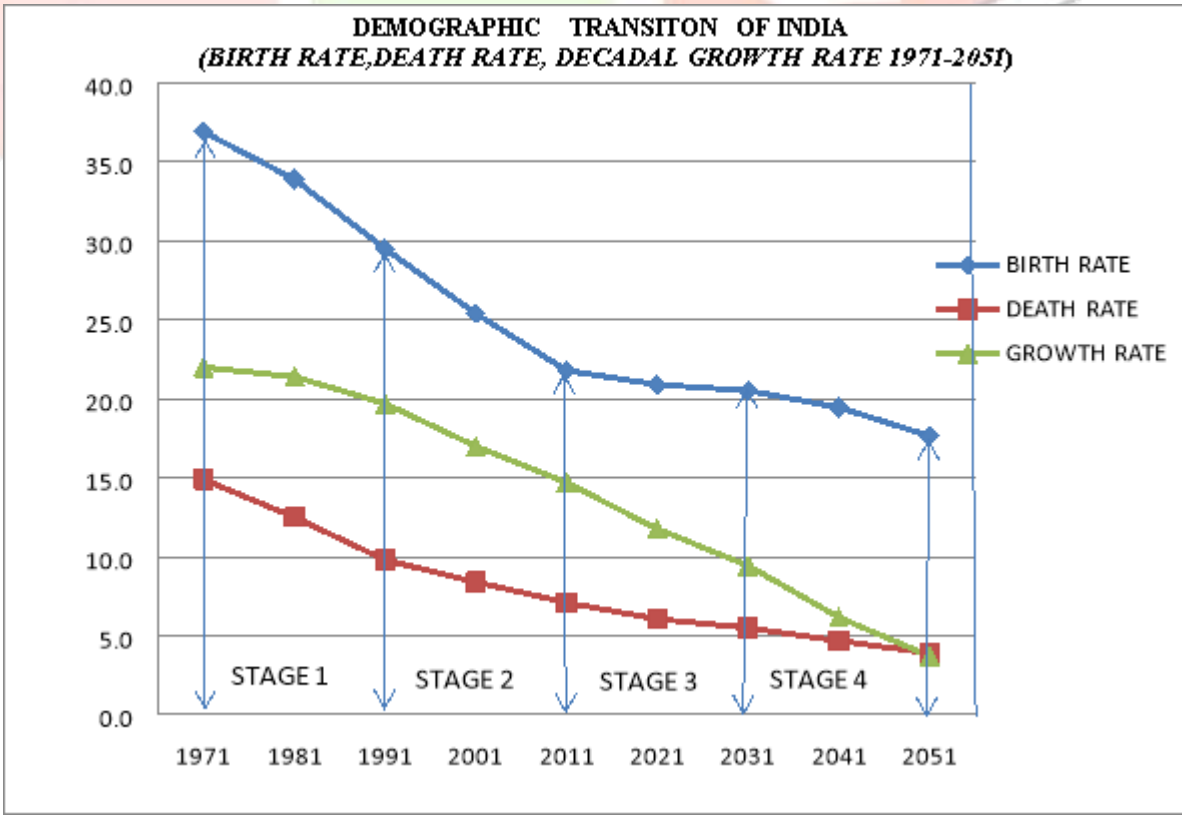
Phase 4 Birth rate decline faster than death rate slow growth rate.

Phase 5 Post-transition

It is also assumed that the birth rate and death rate are linear during these phase.

Demographic Transition Of India

Figure.1. Demographic Transition Of India



The above demographic transition curve of India is mainly illustrate the four stages of demographic transition.

Phase 1

The (stage 1) of the demographic transition is happens in the period of 1971 to 1981. In the year of 1971 period of India have a high birth and high death, this stage is mainly called the pre-transition stage.

Phase 2

The (stage 2) of the demographic transition is 1991 to 2011 this stage is the declining of mortality and high fertility rate.

Phase 3

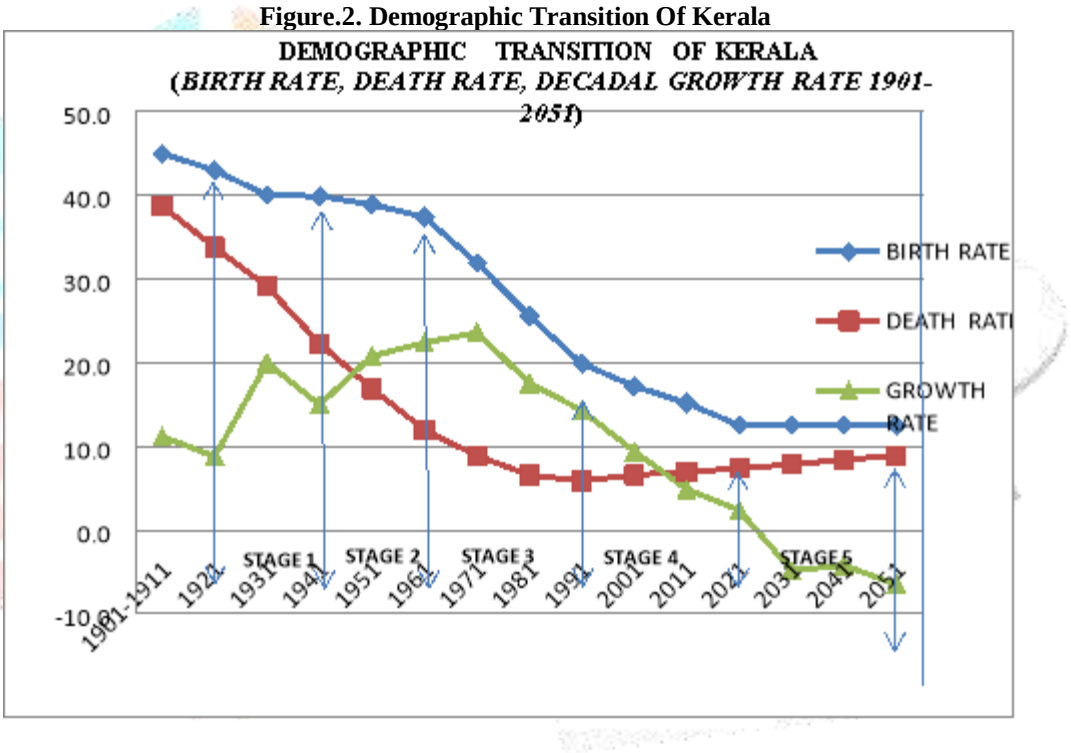
The (Stage 3) of the demographic transition of India in the period of 2011 to 2031. The period of population is mainly showing the peak population growth. The projected the year of 2031 the population of India is dramatically increasing.

Phase 4

The fourth stage of the demographic transition of India in the period of 2041 to 2051. This year of population changes is the birth rate decline faster than the death rate slow growth rate.

Demographic Transition Of Kerala

Figure.2. Demographic Transition Of Kerala



The most significant reason for selecting a state of Kerala is, because of Kerala is the only state to reach the 5th stage of demographic transition compared to India as a whole. Those five stages are given below

Phase 1

The first stage of the Kerala's demographic transition in the period of 1901 to 1941. for this period the Kerala's population is seems the pre-transition transition stage.

Phase 2

The second stage of Kerala's demographic transition is in the period of 1941 to 1961. For this time period, the state is facing the declining of mortality and high fertility.

Phase 3

The third stage of the demographic transition of Kerala has faced the peak population growth. The state population is enhanced in a dramatic manner. The period of the third stage of demographic is 1961 to 1991.

Phase 4

The fourth stage of Kerala's demographic transition is the birth rate is started to decline faster than that of death rate and slow population growth rate. This change has mainly happened in the period of 1991 to the projected the year of 2021. In the year of 2021, the population growth rate of Kerala is stated declining in a negative manner.

Phase 5

The fifth stage of demographic transition of the Kerala population is expected to reach the Post-transition period. the post-transition period of Kerala is expected to reach in the year of 2021 to 2051.

Table No. 14. Life Expectancy Of India And Southern States 1971-2051

	LIFE EXPECTANCY OF INDIA AND SOUTHREN STATES 1971-2051									
India/states	**Sex**	**1971**	**1981**	**1991**	**2001**	**2011**	**2021**	**2031**	**2041**	**2051**
INDIA	**M**	50.5	55.4	59.7	63.1	64.4	66.6	68.4	70	71
	F	49	55.7	60.9	65.6	67.8	70.2	72.3	74	75.3
KERALA	**M**	60.3	64.9	68.5	70.3	73.3	75.3	76.9	78.2	79.2
	F	62.7	70.9	75.3	76.3	77.6	78.6	79.6	80.4	81
TAMIL NADU	**M**	49.6	56.5	62.3	64.3	67.8	69.8	71.6	73.2	74.2
	F	49.5	57.4	64.4	66.5	68.5	71.2	73.6	75.6	77.2
ANDHRA PRADESH	**M**	48.4	57.2	60.3	62.2	66.2	68.9	71.1	73.1	74.7
	F	49.3	59.8	62.8	64.8	68.8	71.5	73.7	75.7	77.3

Table No. 15. Life Expectancy Of Northern States 1971-2051

	LIFE EXPECTANCY OF NORTHERN STATES 1971-2051									
states	**Sex**	**1971**	**1981**	**1991**	**2001**	**2011**	**2021**	**2031**	**2041**	**2051**
UTTARPRADESH	**M**	45.4	51.38	57.31	60.60	64.1	67.6	70.0	72.0	73.8
	F	40.5	48.5	56.038	61.12	63.7	68.5	72.0	74.7	76.9
HARYANA	**M**	59.0	61.48	63.0	65.0	68.0	70.0	71.6	73.2	74.2
	F	55.6	58.98	64.0	68.19	69.1	71.8	74.0	75.8	77.4
PUNJAB	**M**	59.0	62.6	66.13	67.49	69.6	71.4	73.0	74.0	75.0
	F	56.8	63.63	68.35	70.22	72.3	74.5	76.3	77.9	78.9
MADHYA PRADESH	**M**	47.6	51.49	54.67	58.85	62.2	66.2	68.9	71.1	73.1
	F	46.3	51.94	54.62	60.51	60.9	64.9	68.9	71.6	73.8

Table No. 16. Life Expectancy Of Eastern States 1971-2051

	LIFE EXPECTANCY OF EASTERN STATES 1971-2051									
states	**Sex**	**1971**	**1981**	**1991**	**2001**	**2011**	**2021**	**2031**	**2041**	**2051**
WEST BENGAL	**M**	56.36	60.2	61.531	65.66	67.0	69.5	71.3	72.9	73.9
	F	58.01	61.2	62.782	68.93	69.0	71.7	73.9	75.9	77.5
ODISHA	**M**	45.4	51.8	55.2	58.6	62.6	66.6	69.1	70.9	72.5
	F	44.9	51.6	55.6	58.7	63.7	68.5	72	74.7	76.9
BIHAR	**M**	52.9	59.8	61.6	64.1	65.6	68.6	70.6	72.2	73.5

	F	50.8	58.2	59.7	63.7	63.8	67.7	70.7	73.1	75.1
ASSAM	**M**	45.5	51.7	55.4	57.8	61.8	65.8	68.8	70.8	72.4
	F	44.7	51.5	55.6	58.3	62.3	66.3	69.8	72.5	74.5

Table No. 17. Life Expectancy Of Western States 1971-2051

	LIFE EXPECTANCY OF WESTERN STATES 1971-2051									
states	**Sex**	**1971**	**1981**	**1991**	**2001**	**2011**	**2021**	**2031**	**2041**	**2051**
GUJARAT	**M**	47.7	53.7	59.6	62.5	66.5	69.2	71.6	73.4	75
	F	47.6	56.1	53.3	64.6	69.4	72.9	75.3	77.3	79.1
MAHA RASHTRA	**M**	54.5	59.6	63.53	66.33	68.2	70.2	71.8	73.1	74.1
	F	53.3	62.13	65.80	69.67	70.6	73.0	75.0	76.3	77.3
RAJAS THAN	**M**	49.2	53.29	58.31	63.0	64.7	68.2	70.2	71.8	73.1
	F	49.2	53.84	59.38	66.0	65.8	69.3	72.0	74.2	76.0

The life expectancy of all the region sates is showing the increasing trend. The southern states life expectancy is rapidly higher than that of India as a whole. Especially the Kerala states have an high female and male life expectancy compared to India as a whole.

Table No. 18. Total Fertility Rate of India And Southern States 1971-2051

	Total Fertility Rate of India And Southern States 1971-2051			
YEAR	**India**	**Kerala**	**Tamil Nadu**	**Andhra Pradesh**
1971	5.41	4.1	3.9	4.6
1981	4.6	2.8	3.4	4
1991	3.79	1.8	2.2	3
2001	3.08	1.8	2	2.3
2011	2.53	1.62	1.6	1.7
2021	2.27	1.6	1.6	1.6
2031	2.09	1.6	1.6	1.6
2041	1.97	1.6	1.6	1.6
2051	1.9	1.6	1.6	1.6

Table No. 19. Total Fertility Rate of Northern States 1971-2051

	Total Fertility Rate of Northern States 1971-2051			
YEAR	**Uttar Pradesh**	**Haryana**	**Punjab**	**Madhya Pradesh**
1971	6.6	6.7	5.2	5.6
1981	5.8	5.0	4.0	5.2
1991	5.1	4.0	3.1	4.6
2001	4.5	3.1	2.4	3.9
2011	3.4	2.3	1.8	3.1
2021	2.85	1.88	1.64	2.46
2031	2.22	1.80	1.60	2.04
2041	1.89	1.80	1.60	1.85
2051	1.81	1.80	1.60	1.80

Table No. 20. Total Fertility Rate of Eastern States 1971-2051

	Total Fertility Rate of Eastern States 1971-2051			
YEAR	**West Bengal**	**Odisha**	**Bihar**	**Assam**
1971	4.3	4.7	5.8	5.7
1981	4.2	4.3	5.7	4.1
1991	3.2	3.3	4.4	3.5
2001	2.4	2.6	4.4	3.0
2011	1.7	2.2	3.6	2.4
2021	1.61	1.87	2.69	2.11
2031	1.60	1.80	2.15	1.90
2041	1.60	1.80	1.88	1.81
2051	1.60	1.80	1.80	1.80

Table No. 21 Total Fertility Rate of Western States 1971-2051

	Total Fertility Rate of Western States 1971-2051		
YEAR	**Gujarat**	**Maharashtra**	**Rajasthan**
1971	5.6	4.6	6.3
1981	4.3	3.6	5.2
1991	3.1	3.0	4.6
2001	2.9	2.4	4.0
2011	2.4	1.8	3.0
2021	1.99	1.67	2.31
2031	1.84	1.60	1.92
2041	1.80	1.60	1.81
2051	1.80	1.60	1.80

The TFR of the all regions of the Indian states are continued to declining in the period of 1971 to 2051.

SUMMARY AND CONCLUSIONS

This chapter mainly portraits the core ideas and findings derived from the analysis of. Demographic Transition And Age Structural Changes In India: A Comparative Perspective. Analysis reveals the decadal variation of socio-economic and demographic development of India in general, further study of this paper is an attempt to study the nature and process of age structural transition in the regions of India like, (Northern Region states of Uttar Pradesh, Haryana, Punjab, Madhya Pradesh) and (Eastern Region states of West Bengal, Odisha, Bihar, Assam) and (Western Region states of Gujarat, Maharashtra, Rajasthan) and the (Southern states of Kerala, Tamil Nadu, and Andhra Pradesh).

The Data required for this study were taken from the both census and SRS indicators namely the life expectancy at birth, Total Fertility rate the age distribution of the population of the broad age groups such as 0-14, 15-59 and 60+ has been mainly taken from various Census Report in the period from 1971 to the latest period of 2011 and the information for the projected period of 2011-2051. The main aim of the study is to analyze and compare the demographic transition and age structural changes in the all four regions of states in India. For the projected population of India in general and southern states of Kerala, Tamil Nadu, and Andhra Pradesh in the year of 2011 to 2051, the researcher used the tool 'spectrum projection software'.

The most significant findings of this chapter are the projected the year of 2051 the country will go to face the very severe situations, because of the huge impact in the changing the age structure of the population. For instance, the 0-14 child population of the Indian states are dramatically declining for this reasons the ageing population is higher chance to increase. Further, the 15-59 working-age population is also expected to enhance in the future decades for this cause of changes are making to enhance the unemployment problems in the future scenario. And the southern region states of Kerala, Tamil Nadu, and Andhra Pradesh is early to reach the low births and high population growth and also enhance the ageing population. The low rate of TFR and higher numbers of Life Expectancy at birth is the most important factor to enhance the ageing population. These changes have early happened in southern region states.

The ageing population of India and southern states of Kerala, Tamil Nadu, and Andhra Pradesh is reached the higher numbers of aged persons in the projected year of 2051 its compared to an India as a whole. The Tamil Nadu reach at (27.64%) aged population in the expected year of 2051. And the Andhra is reached at (25.21%), and the states of Kerala reached in very

vulnerable position because the states will expected to reach at (28.95%) in 2051 this is higher than that of India as a whole. The both states have a low birth and high life expectancy in the year of 2051.

The Indian government should implement the proper policy for the youths they are needs the good employment today and also the future. And the proper population policy to stabilize the Indian population as whole. Furthermore, the Older persons should aid much more health facility and care from the family and community in the future Scenario of 2051 .Furthermore the Older persons will aid good health care for physical, mental and emotional well-being and also the health of illness. Therefore the government should perspective to take the effort to develop new schemes and better care policy for elderly persons in the future scenario of 2051. Because of 2011ageing population is very lower than that of 2051. The continuously changing of age structure of population of all regions of Indian states in the year of 2011-2051. Those states are in the future scenario of ageing persons are assist better and affordable medical care to home based care with institution-based services, the good trained staff and the family home based rehabilitation services are must to enhance in the futures.

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