CHAPTER - II

DEMOGRAPHIC CHARACTERISTICS OF RURAL POPULATION

The study of population characteristic is one of the most important topics in the geographical analysis of any region. The element of man has many facts, but the most fundamental is its **number, distribution** and **movement aspects**. All these are the fabric of demography. It is therefore, essential to study the human groups composed of man, as a molecule of the society, in terms of **distribution of rural population, literacy, sex ratio, workforce** and other various demographic aspects (Chandna, 2001). Population can change through three processes: fertility, mortality, and migration. Fertility involves the number of children that women have and is to be contrasted with fecundity (a woman's childbearing potential). Mortality is the study of the causes, consequences, and measurement of processes affecting death to members of the population. Demographers most commonly study mortality using the Life Table, a statistical device which provides information about the mortality conditions (most notably the life expectancy) in the population.

Demography is today widely taught in many universities across the world, attracting students with initial training in social sciences, statistics or health studies. Demography offers tools to approach a large range of population issued by combining a more technical quantitative approach that represents the core of the discipline with many other methods borrowed from social or other sciences.

In the present chapter, population characteristics like **distribution, concentration, literacy rates, sex ratio** and **workforce** of rural population in respect of total rural population, scheduled castes and scheduled tribes population in the study region have been discussed.

DISTRIBUTION OF RURAL POPULATION

Distribution of population helps to understand the geo-economic prospects and potentiality of the area and hence different methods of investigation into the distributional

pattern of population need proper attention (Mandal, 1980). Distribution of population is, in fact, a process, ceaselessly operating between the land resources and human aspirations. It is not only a static assessment of number between different nuclei of human habitations and the integrated growth of a geographic region. The importance of these phenomena has underlines by many scholars. Steel (1955) stated that the distribution of population over space is governed by the general habitability of the area and its occupancy in historical perspective. The direct impact of the physical environment depicts the patterns of population spread.

In 1971, Kumar described that "Economy of a region, stage of production and activities of society are the major components of cultural aspects of population distribution. The temporal factor intermits plays on important role in shaping the size and location of a population, thus it forms the changing human influences and values. Therefore, Clark (1972) stated that "population distribution is a dynamic process which is ever changing and cause and effect vary in time and space." The regional disparities in the population distribution may broadly be classified into three major categories that is physical factors, socio-cultural factors and demographic factors (Chandna, 2001).

Hence, it is population as a resource, which propels social progress and determined the economic pattern of resource utilization. Since man is a dynamic factor as a creator and also a consumer guiding the entire development, therefore the study of demographic characteristics and population trails in gaining importance in the planning of development processes.

The pattern of distribution of rural population as per 2001 census is shown in the map by dot method (Fig 2.1). In its distribution, the Indian population has an overwhelmingly rural bias. It is observed that more than three fourth of its population lives in the countryside and largely from the fertile land. Population distribution in India shows wide variations. The map reveals that Gangetic Plain contains high concentration of rural population while central India comprises with moderate size of population. Hard climatic regions and hilly areas encompass with low concentration of population. However coastal regions merged in moderately high concentration of rural population.

It is also observed that Uttar Pradesh is the most populous state in India with a population of more than 166 million persons, which is more than the population of sixth most populous country in the world. Nineteen states of India have population of over ten million. On the other hand there are eight states and union territories in the country which have a population of less than one million. Almost half of India's population lives in five major states, namely, Uttar Pradesh, Maharashtra, Bihar, West Bengal, and Andhra Pradesh.

CONCENTRATION OF RURAL POPULATION

Concentration of population is one another way to describe population distribution which is generally defined as the ratio between the actual population of a region and the average population size. Average population is obtained by dividing the total population in the study area or region by the number of units used for the analysis. Table 2.1 reveals that Medinipur (W. Bengal) is the most thickly populated district with a concentration index of 6.79 followed by South Twenty Four Parganas (4.58), Murshidabad (4.04), Barddhaman (3.42), and North Twenty Four Parganas (3.21). All these districts confined with West Bengal while East Delhi is the most thinly populated district with a concentration index of 0.01 only.

Table No. 2.1- INDIA: Concentration Index of Rural Population: 2001

Concentration Index	No. of Districts	Rural Population	Per cent	Average Size of Rural Population
> 3.00	5	28012992	3.77	5602598
2.51-3.00	15	51606812	6.95	3440454
2.01-2.50	38	106557686	14.35	2804150
1.51-2.00	66	143706065	19.35	2177365
1.01-1.50	118	180425646	24,30	1529031
0.5-1.0	180	178602942	24.05	992239
< 0.50	162	53578496	7.22	330731
Nil	9	0	0.00	0
INDIA	593	742490639	100	1271388

Source: Compiled by Author.

The concentration index of rural population is less than 0.5 is confined to 162 (28 %) districts and is up to one in 342 (59 %) districts in India, which covered 31.27 per cent of rural population. It reveals that more than half of the districts are sparsely populated, while 184 (31.03 %) districts are moderate and moderately high concentrated and rest of the districts are peopled crowdedly. The sparsely populated districts are confined with the interior heart land and the Himalayas, the crowded districts are located largely in the alluvial belts of Gangetic and Krishna rivers.

After discussing the distribution and concentration of population at district level it is to analyse their status with respect to literacy, sex ratio and working force.

LITERACY

Literacy is considered as a fairly reliable index of socio cultural and economic advancement in population geography (Chandna 2001). Literacy is an important indicator of socio-economic and political development of a country. It is essential for eradicating poverty and mental isolation, for cultivating peaceful and friendly international relations and for permitting the free play of demographic processes (Chandna and Sidhu, 1980) especially is a developing country like India. It helps in raising the standard of people in every aspect of life. So a minimum level literacy is essential for a person to get out of ignorance and backwardness (Singh, 1998).

The concept of literacy, that varies from country to country, generally refers to the minimum level of literacy skills, like the united Nation's population commission considers the ability to both read and write a simple massage with understanding in any language. (Chandna, 2001). The above said has been followed by Indian Census. For the first three censuses ending with 1891 census, three categories were used to classify the population according to literacy status; **Learned, Literate and Illiterate**. This classification was obviously faulty for educated persons, who were still students, are reported themselves as being just literate.

From 1901 and onwards, the population was dichotomously classified as literate and illiterate. From 1901 to 1931 the definition of literacy varied to some extent, though the basic criteria, was the ability to read and write (Bhende, Asha and Tara Kanithar,

1985). Literacy rates for 1951 relate to population aged five years and above. According to 1971 census, "A person who can both read and write with understanding in any language has been considered in literates while children 0-5, years considered as **illiterate**". But it has been changed in 1981 census and children 0-6 years aged are treated as 'illiterate'. In census 2001 the criteria of literate has been unchanged and still children 0-6 years aged are treated as 'illiterate'.

However, the length of schooling has often been considered as a basis of distinguishing between a literate and illiterate. According to Trewartha, 1969 the basis of length of schooling is not a valid measurement of educational accomplishments. He also disapproves of the ability to read and write one's name in the language of his country as the criterion for defining a literate.

Review of Literature

Studies on literacy are not a new field in geography. Gosal (1964) studied the spatial distribution of literacy and delivered the importance of literacy in his presidential address to the Indian Council of Geographers. Sabar 2010 examined the issues relating to education of Chuktia Bhunjia tribe of Orissa, and highlighting the major factors determining girls' education in this society. While looking at the low literacy of the girl child, factors like material culture, life cycle rituals and customary cultural norms are found largely responsible for high drop out from school. However, poverty, school timings and need of girl children in household chores are other causes of this. Many studies about literacy has been carried out by geographers and other scholars from time to time like Gosal (1967), Krishan and Shyam (1973), Krishan and Chandna (1974), Siddique (1975), Ahmad (1977), Chandna and Sindhu (1980), Mishra and Puri (1998), Chandna (2001), Chugh (2009) and Patra (2010).

In the present study literacy has been calculated as, literate in proportion to total rural population above six years in a district. In the present context total rural literacy, male and female literacy, like wise in the category of schedule castes and scheduled tribes, literacy rate have also been discussed.

Patterns of Rural Literacy

As per 2001 census, the total rural literacy rate is 58.74 percent in which male literacy is 70.70 per cent and female literacy is 46.13 per cent. The pattern of literacy is represented in the map (Fig. 2.2). The range of total rural literacy varies from 26.17 per cent to 95.80 per cent. The whole range of literacy rate is divided in to the following five broad categories.

I Very high literacy (more than 75 per cent)
II High literacy (65 per cent to 75 per cent)
III Moderate literacy (55 per cent to 65 per cent)
IV Low literacy (45 per cent to 55 per cent)
V Very low literacy (less than 45 per cent)

I Areas of very high literacy: (> 75 Per cent)

The very high literacy rate is found in 67 districts mainly in the states of Kerala, Himachal Pradesh, Maharashtra and Delhi, which covered 6.17 per cent of the total rural population. The highest literacy rate is found in Kotayam (95.80 %) of Kerala followed by Pathanamthitta (94.78 %) of Kerala, Aizawl (94.20 %) and Serchhip (94.08 %) of Mizoram state. This is due to socially developed area, availability of means of good transport network, communication and educational facilities etc.

II Areas of high literacy: (65-75 Per cent)

High literacy of rural population is found in 134 (23 %) districts. This covered 15.72 per cent of the total rural population. Areas of high literacy rate are observed in the districts of Thiruvarur (74.28 %) followed by Bhadrak (74.27 %) and The Nilgiris 74.26 per cent. This category mainly found in the coastal areas and Sikkim state due to developed educational facilities etc. It is also observed that historical background like British Christian Missionaries have a great roll behind the high literacy rates of north-eastern states, western coastal region and central part of rural India (Chugh, 2009). The rural literacy rate among total population shows in the table 2.2.

Table No. 2.2 – INDIA: Rural Literacy Rate: 2001				
Category %	No. of Districts	Total Rural Population (> 0-6 years)	Rural Literate Population	In Per cent
>75	67	45522531	38015532	6.17
65 – 75	134	138434011	96846452	15.72
55 – 65	188	200914407	120187213	19.51
45 – 55	123	148836341	74815014	12.14
< 45	72	82312852	32006606	5.20
Nil	9	0	0	0.00
INDIA	593	616020142	361870817	58.74
Source: Compiled by Author.				

III Areas of moderate literacy: (55-65 Per cent)

The areas of moderate literacy are found in the form of patches in whole of the study region. It occupied by 188 districts which is 31 per cent of the study area. Fairly educational facilities and adjoing areas of high literacy are responsible factors for moderate literacy in this region.

IV Areas of low literacy: (45-55 Per cent)

The low literacy is found in hard climatic regions like Rajasthan, Arunachal Pradesh and lower and middle Gangetic Plain, north-eastern coastal and semi arid southern region in the form of patches. This category of low literacy is occupied by 123 districts which covered 12.14 per cent of total rural literates. Low literacy in these districts is mainly due to less fertile soil, lack of irrigational facilities and lack of transport and educational facilities.

V Areas of very low literacy: (< 45 Per cent)

The very low literacy is found in 72 districts of Bihar, Uttar Pradesh, Orissa Karnataka and part of Arunachal Pradesh. Very low literacy in these areas is mainly due to lack of basic infrastructural facilities and social awareness about education. The lowest rural literacy rate is observed in Dentewada (Chhattisgarh) 26.17 per cent preceded by Koraput (Orissa) 27.30 per cent, Kishangani (Bihar) 27.81 per cent, and Malikangiri (Orissa) 27.86 per cent.

Patterns of Rural Male Literacy:

As per census 2001, about 70.70 per cent of males in proportion to total males are found literate against the average literacy rate of 58.74 per cent in rural India. The pattern of rural male literacy is shown in the map (Fig 2.3). The range of male literacy rate varies from 35 per cent to more than 95 per cent and divided into following five broad categories. The category wise rural male literacy is shown in the table 2.3.

I Very high literacy (more than 85 per cent)

II High literacy (75 per cent to 85 per cent)

III Moderate literacy (65 per cent to 75 per cent)

IV Low literacy (55 per cent to 65 per cent)

V Very low literacy (less than 55 per cent)

I Areas of very high literacy: (> 85 per cent):

The very high literacy among the male is found in 66 districts of Kerala, Maharashtra, Mizoram, Tamil Nadu, Karnataka, Orissa, Himachal Pradesh, Pondicherry, Goa, Lakshadweep, Daman and Diu, Nagaland and Uttrakhand. The highest male literacy rate is also found in Kottayam (97.30 %) district of Kerala followed by Pathanamthitta (96.37 %) and Alappuzha 96.11 per cent. The very high literacy rate among males is due to proximity of city and towns, availability of means of good transport, communication, educational facilities and awareness towards education.

II Areas of high literacy: (75 - 85 per cent)

The category of high literacy is found in 183 districts and covered most of southern part of study area, northern Himalaya region and southern part of North East states. It covers about 23.21 per cent rural male literates. The high literacy rate in these districts is mainly due to better transport, educational facilities and social awareness.

III Areas of moderate literacy: (65 - 75 per cent)

The pattern of moderate literacy rates are found in whole of the study area in the form of continuous patches. It occupied 182 districts and covered 24.03 per cent of rural male literates. Moderate literacy rate in these areas is due to fertile soil, educational and other infrastructural facilities.

Table No. 2.3– INDIA: Rural Male Literacy Rate: 2001

Category (%)	No. of Districts	Total Rural Male Population (> 0-6 years)	Rural Literate Male Population	In Per cent
> 85	66	25774526	23080159	7.30
75 – 85	183	92369525	73389802	23.21
65 – 75	182	10838258	75975552	24.03
55 – 65	100	61658097	37314984	11.80
< 55	53	28354620	13791144	4.36
Nil	09	0	0	0.00
INDIA	593	316195026	223551641	70.70
Source: Compiled by Author.				

IV Areas of low literacy: (55 - 65 per cent)

Low literacy is also found in the form of patches. It occupied 100 districts and covered only 11.08 per cent of total male literates. Low literacy in these areas is due to lack of social awareness towards education and hard climatic conditions.

V Areas of very low literacy (< 55 per cent)

Areas of very low literacy mainly found in Bihar, Uttar Pradesh, Orissa, Arunachal Pradesh and Jharkhand. It occupied by 53 districts and covered only 4.36 per cent rural literates. The lowest (35.54 per cent) literacy among males is found in Dantewada districts of Chhattisgarh preceded by Malkangiri (37.37 %) of Orissa and Pakaur (37.95 %) of Jharkhand states. Very low literacy rate in these areas are due to lack of infrastructural facilities and dominated by tribal population.

Patterns of Rural Female Literacy

Literacy rate in general and female literacy rate in particular are regarded as good indicators of development (Misra, Puri, 1998). On these criteria the districts of Kerala has done extremely well in comparison with other districts. In the districts of Bihar, Madhya Pradesh, Rajasthan, and Uttar Pradesh, rural female literacy rate ranged from 29 per cent to 42 per cent.

About 46.13 per cent of female in proportion to total females are found literate in 2001. The pattern of rural female literacy is shown in the map (Fig 2.4). The range of

rural female literacy varies from 15 per cent to 94 per cent and divided into following five broad categories;

I Very high literacy (more than 65 per cent)

II High literacy (55 per cent to 65 per cent)

III Moderate literacy (45 per cent to 55 per cent)

IV Low literacy (35 per cent to 45 per cent)

V Very low literacy (less than 35 per cent)

I Areas of very high literacy: (> 65 per cent)

The very high literacy rate among females is found near to the coastal areas, Sutlej-Ravi Plain and some patches in central and north-eastern India. Highest literacy is found in Kottayam districts of Kerala about 94.34 per cent followed by Pathanamthitta (93.35 %) Kerala, Aizawal, (93.12 %) and Serchip (93.10 %) of Mizoram and 71 districts have literacy rate more than 65 per cent which covered 6.68 per cent of female literates. The very high literacy is due to towards female education, social awareness towards education, availability of means of good transport network, communication, historical background and educational facilities.

II Areas of high literacy: (55 - 65 per cent)

The category of high literacy rates of rural females are mostly found in southern part of India and around the areas of very high literacy rates. It occupied 113 districts and occupied 11.59 per cent of rural female literates. The rural female literacy rate of category wise is highlighted in the table 2.4.

III Areas of moderate literacy: (45 - 55 per cent)

The moderate literacy rate is found in scattered form in the study area. This category occupied 136 districts and 10.73 per cent literates. Moderate literacy rate in these areas is due to adjoining areas of high and very high literacy rate, agricultural, industrial and other infrastructural development.

Table No. 2.4– INDIA: Rural Female Literacy Rate: 2001				
Category (%)	No. of Districts	Total Rural Female Population (>0-6years)	Rural Literate Female Population	In Per cent

> 65	71	26296596	20017664	6.68
55 – 65	113	58540537	347589339	11.59
45 – 55	136	64892012	32183386	10.73
55 – 45	140	8220321	31881438	10.63
< 35	124	69875650	19477349	6.50
Nil	9	0	0	0.00
INDIA	593	299825116	138319176	46.13
Source: Compiled by Author.				

IV Areas of low literacy: (35 - 45 per cent)

The low literacy is found mainly in central part of India. It occupied 140 districts and 10.63 per cent literates. Low literacy rate in these areas are due to lack of social awareness towards female education.

V Areas of very low literacy: (< 35 per cent)

The category of very low literacy occupied 124 districts and 6.50 per cent of rural female literates. The very low literacy is found in western, Northern and some patches in southern part of India. The lowest literacy is found in Kishanging (15.39 %) district of Bihar preceded by Sharawasti (Uttar Pradesh) 17.70 per cent, Dantewada (Chhattisgarh) 17.06 per cent and Koraput (Orissa) 15.61 per cent. Very low literacy is found in this sector mainly due to economic backwardness and lack of infrastructural facilities.

Patterns of Rural Schedules Castes Literacy

Indian sociological literature is characterized by its emphasis on castes based analysis. Two fundamental and primary strata within the Hindu society are the ritually higher castes and the untouchables, officially called the 'scheduled castes'. The vast majority of the members of the scheduled castes have been associated with certain unclean or menial hereditary occupations which the higher castes consider socially degrading. Current measures taken by the Indian government to ameliorate conditions of the scheduled castes included the reservation of Job vacancies and assistances is acquiring land for agriculture, such efforts and well-intentional legislation, the problem remain far from solved because most member of these castes are illiterate and are locked

in rural, socio-economic system from which scope is difficult (Bhardwaj and Harvey 1975). So, it becomes important to study the scheduled castes literacy rate of rural area.

As per 2001 census, the Scheduled castes rural literacy rate is 51.16 per cent in which male literacy rate is 63.66 per cent and female literacy rate is 37.84 per cent. The literacy rate of rural scheduled castes population is represented in map (Fig 2.5).

The range of rural scheduled castes literacy is 16 per cent to 100 per cent. The whole range of literacy is divided into five broad categories as divided in the pattern of total rural literacy. The rural scheduled castes literacy is shown in the table 2.5.

I Areas of very high literacy: (>75 per cent)

Only 64 districts have more than 75 per cent rural scheduled castes literacy rate (Table 2.5). It covered only 3.04 per cent of rural Scheduled castes literates. The highest (100 per cent) literacy rate is found in 9 districts namely Pulwama, Annantnag of Jammu and Kashmir, Serchhip, Kolasib, Lunglei, Lawngtlai and Saiha of Mizoram, East Kameng and Upper Subansiri of Arunachal Pradesh. These districts have very low population. Mainly western coastal region, Eastern Maharashtra, Mizoram, Jammu and Kashmir and some patches of Arunachal Pradesh, Punjab and Tamil Nadu covered this category.

Table No. 2.5– INDIA: Rural Scheduled castes Literacy Rate: 2001

Category (%)	No. of Districts	Total Rural Scheduled castes Population (>0-6 years)	Rural Scheduled castes Literate Population	In Per cent
> 75	64	4134501	3318374	3.04
65 – 75	93	12371442	8489713	7.78
55 – 65	149	28088572	16930982	15.52
45 – 55	121	27230877	13678033	12.54
< 45	144	37253084	13389164	12.27
Nil	22	0.00	0	0.00
INDIA	593	109078410	55806266	51.16

Source: Compiled by Author.

II Areas of high literacy: (65 - 75 per cent)

The high literacy of rural scheduled castes found in the adjoining areas of very high literacy rate in Scheduled castes' and mainly concentrated in the southern region. This category occupied by 93 districts and covered 7.78 per cent of literates. Fairly educational facilities and social awareness are the responsible factors for high literacy rate in these areas.

III Areas of moderate literacy: (55 - 65 per cent)

The areas of moderate literacy are mainly found in the eastern coast. Some patches are also seen in the central part of India. This category occupied by 149 districts and 15.52 per cent rural scheduled castes literates.

IV Areas of low literacy: (45 - 55 per cent)

The low literacy is found in central and western part of India. This category of low literacy occupied by 121 districts and 12.54 per cent of rural schedule castes literates. Low literacy of these areas is due to less fertile soil and educational facilities.

V Areas of very low literacy: (< 45 per cent)

The areas of very low literacy are found in Ganga Plain, western Rajasthan and Punjab and some patches in Andhra Pradesh and Karnataka. This category occupied by 144 districts and 12.27 per cent of rural scheduled castes literates. The lowest literacy rate among scheduled castes is Madhepura 16.24 per cent preceded by Purnia 16.63 per cent and Sheohar 16.91 per cent of Bihar state. This is mainly due to low level of development and lack of basic infrastructural facilities. As per 2001 census 22 districts have nil scheduled castes population

Patterns of Rural Scheduled Castes Male Literacy

As per census 2001, 63.66 per cent of rural scheduled castes male found literates as against the rural male literacy rate of 70.70 per cent in the study area. The difference between total rural male literates and scheduled caste rural male literates is observed 7.04 per cent. The range of male literacy varies from 24 per cent to 100 per cent and divided into five broad categories as in total rural literates (Fig. 2.6).

I Areas of very high literacy: (> 85 per cent)

Very high literacy among the males of scheduled castes is found in 61 districts of Kerala, Jammu and Kashmir, Mizoram, Maharashtra, Gujarat, Himachal Pradesh and Arunachal Pradesh. The cent percent male literacy is found in nine districts namely Pulwama, Annantnag of Jammu & Kashmir, Serchhip, Kolasib, Lunglei, Lawngtlai and Saiha of Mizoram, East Kameng and Upper Subansiri of Arunachal Pradesh. These districts have very few scheduled castes population in rural areas and all are literate.

II Areas of high literacy: (75 - 85 per cent)

The category of high literacy is found in 136 districts which covered 14.66 per cent of rural scheduled castes male literates. Most of the districts under high literacy rate are found in central and western coast of India. A major part comprising the states of Uttrakhand, Punjab and Tripura also covered with this category. High literacy in these areas is due to better infrastructure and social advancement. The category wise rural scheduled castes male literacy rate is shown in the table 2.6.

III Areas of moderate literacy: (65 - 75 per cent)

The next category is found in whole of study area in the form of patches. It occupied 160 districts and 19.91 per cent male literates. In these areas moderate literacy rate is due to educational facilities and better transport network.

Table No. 2.6– INDIA: Rural SC Male Literacy Rate: 2001

Category (%)	No. of Districts	Total Rural SC Male Population(>0-6 years)	Rural SC Literate Male Population	In Per cent
> 85	61	2086152	1833733	3.26
75 – 85	136	10490408	8248755	14.66
65 – 75	160	16059716	11206942	19.91
55 – 65	110	14437663	8646038	15.36
< 55	104	13202353	5888417	10.46
Nil	22	0	0	0.00
INDIA	593	56276292	35823885	63.66

Source: Compiled by Author.

IV Areas of low literacy: (55 - 65 per cent)

The low literacy rate is observed in 110 districts in the form of patches, which covered 15.36 per cent of rural male literates. Low level of literacy among rural scheduled castes male literates is due to lack of social advancement and poor economic condition of the people in these areas.

V Areas of very low literacy: (< 55 per cent)

Generally areas of very low literacy rate of rural SC male are confined with high birth rate and low level of economic status. Main areas are Bihar, Uttar Pradesh, and Rajasthan, some patches of Karnataka, Andhra Pradesh and Orissa. It occupied 104 districts and 10.46 per cent rural male literates. The lowest literacy is found in Purnia (24.45 %) and Sheohar (24.45 %), followed by Madhepura (24.88 %), Saharsa (25.77 %) and Araria 26.76 per cent. All the districts are situated in Bihar state.

Patterns of Rural Scheduled Castes Female Literacy

Scheduled castes female rural literacy rate is 37.84 per cent as per census 2001. The pattern of rural scheduled caste female literacy in shown in the map (Fig.2.7). The range of rural female literacy varies from seven per cent to 100 per cent which is divided into five broad categories as categorized in total rural female literacy rate.

I Areas of very high literacy: (> 65 per cent)

The very high literacy among rural scheduled castes female literacy is found in the western coast, central part and some patches of Jammu and Kashmir, Himachal Pradesh and north eastern region. It occupied 49 districts and covered 3.10 per cent of rural scheduled castes female literates. Highest literacy is found in Tawang (Arunachal Pradesh) i.e. 100 per cent followed by Baramula (J & K) i.e. 94.44 per cent. The very high literacy is due to better transport network, communication and social awareness.

II Areas of high literacy: (55 - 65 per cent)

The next category of rural scheduled castes female literacy is found in the form of patches around the areas of very high literacy rates due to their basic infrastructural facilities. It occupied 73 districts and 4.75 per cent literates.

III Areas of moderate literacy: (45 - 55 per cent)

The moderate literacy is found in the form of patches in the study region except northern plain. It occupied 115 districts and 10.78 per cent literates of female scheduled castes. Moderate literacy in these areas is due to industrial development and moderate economic status of the people.

IV Areas of low literacy: (35 - 45 per cent)

The low literacy is mainly confined in the central and western regions of the study area. About 123 districts covered with this category, which involves 8.48 per cent literates of rural female scheduled castes.

V Areas of very low literacy: (< 35 per cent)

This category of literacy is occupied by 198 districts and 10.74 per cent of literates. The very low literacy is confined to northern plain, Karnataka and Andhra Plateau, some parts of Kashmir and Mahanadi valley, Assam and Himalayan region. Lowest literacy rate is found in Madhepura (7.11 per cent) preceded by supaula (7.29 per cent) Saharsa (7.85 per cent), and likewise all the districts of Bihar state are covered in this category. This is mainly due to lack of awareness, social system and backwardness of economic structure. On the other hand 13 districts out of 35 districts have nil scheduled castes female population in rural areas in India as per 2001 census. The category wise rural scheduled castes female literacy rate is shown in the table 2.7.

Table No. 2.7 – INDIA: Rural - Scheduled Castes Female Literacy Rate: 2001

Category (%)	No. of Districts	Total Rural Scheduled Castes Female Population(>0-6 years)	Rural SC Literate Female Population	In Per cent
> 65	49	2255669	1634511	3.10
55 – 65	73	4270416	2507806	4.75
45 – 55	115	11407911	5692133	10.78
35 – 45	123	11375206	4478162	8.48
< 35	198	23492982	5669769	10.74
Nil	35	0	0	0.00
INDIA	593	52802184	19982381	37.84

Source: Compiled by Author.

Patterns of Rural Scheduled Tribes Literacy

Scheduled Tribes are the weakest section of India's population from the ecological economic and educational point of view, constitute the matrix of India's poverty (Sinha, 2006).

Ecologically the tribes are isolated and demographically, the tribes are concentrated in certain continuous geographical areas, economically, they are tied up with land and forest, culturally, they enjoy a distinct style of life characterized by a distinct language and heritage, love for freedom and self identity.

The word 'tribe' is generally used for a 'socially cohesive unit, associated with a territory, the members of which regard them as politically autonomous" (Mitchall, 1979). Often a tribe possesses a distinct dialect and distinct cultural traits despite the protection given to the tribal population by the constitution of India. It remains the most backward ethnic group in India, on the three most important indicators of development: **Health, Education and Income**. The tribal's are more backward not only compared with the general population but also compared to the scheduled castes. They are overwhelmingly illiterate. The literacy rate of the tribes is 45.02 per cent. This is lower then that of total rural literacy (58.74 %) and the average scheduled castes literacy rates i.e. 51.16 per cent, another backward social group with constitutional protection.

The scheduled tribe rural male literary rate is 57.39 per cent and female literary is 32.44 per cent. The pattern of literacy rate of rural scheduled tribes is represented in map. (Fig. 2.8) The range of rural scheduled tribe literary is zero per cent to more than 94 per cent. The whole range of literary is divided into five broad categories as considered in the total literary rate and Scheduled Castes literacy rate.

I Areas of very high literary: (> 75 per cent)

Only 30 districts have more than 75 per cent literacy rate among the scheduled tribes in rural India and 1.16 per cent literates. The highest literary rate is 94.67 per cent found in Serchhip of Arunachal Pradesh followed by Aizawl (Mizoram) 94.42 per cent Almora (Uttrakhand) 92.69 percent, Kottayam (Kerala) 90.70 per cent, Champhai (Mizoram) 90.51 and Kolasib 90.39 per cent. Areas of very high literacy rate are found in extreme south, north-eastern states and part of Uttrakhand and Himachal Pradesh.

II Area of high literacy: (65 - 75 per cent)

The high literacy rate among rural Scheduled Tribe population found in the form of patches in Uttrakhand, Himachal Pradesh, Jharkhand, Maharashtra, Karnataka, Kerala, Tamilnadu and north eastern states of the study area. This is due to social awareness towards education and contribution of Christian Missionaries also remarkable. It is occupied by 53 districts and 4.30 per cent literates.

III Areas of moderate literacy: (55 - 65 per cent)

Areas of moderate literacy rate are observed in the form of patches from south to north and east to west. This category occupied by 84 districts and 7.61 per cent rural scheduled tribe literates. It is also observed that only 167 (28.60 %) districts covered very high to moderate category which reflects moderately better condition of Scheduled Tribes.

IV Areas of low literary (45 - 55 per cent)

The low literacy is found in the southern part of the study region. Low literacy occupied 95 districts and 12.96 per cent literates among scheduled tribes. The category wise rural scheduled tribe literacy rate is shown in the table 2.8.

Table No. 2.8– INDIA: Rural Scheduled Tribes Literacy Rate: 2001

Category (%)	No. of Districts	Total Rural Scheduled Tribes Population (>0-6 years)	Rural Scheduled Tribes Literate Population	In Per cent
> 75	30	885479	730883	1.16
65 – 75	53	3902877	2699436	4.30
55 – 65	84	8040584	4782663	7.61
45 – 55	95	13677526	8141966	12.96
< 45	271	33636436	11939801	19.00
Nil	60	0	0	0.00
INDIA	593	62842902	28294749	45.02

Source: Compiled by Author.

V Areas of very low literary: (< 45 per cent)

The areas of very low literacy are found in whole of the study region except some central part, western coast and Himalayan region. This category occupied by 271 districts and covered 19.00 per cent rural scheduled tribe literates. This is due to very low economic status and most of the population of these areas is living in below poverty line they remain out from the main stream of the society. The lowest literacy rate i.e. zero per cent is observed in Jalaun and Jyotiba Phule Nagar, while Jaunpur have 8.42 per cent and Chandauli 9.04 per cent. It is also noted that all these districts situated in Uttar Pradesh state. About 60 districts have no scheduled tribes population.

Patterns of Rural Scheduled Tribes Male Literacy

As per census 2001, only 57.39 per cent of rural scheduled tribes male are found literate as against the average rural male literacy rate of 70.70 per cent and scheduled castes male literacy rate of 63.66 per cent in the study area. The range of male literacy varies from zero per cent to 100 per cent that divided into five broad categories as divided in total rural male literates and scheduled castes male literates.

I Areas of very high literary: (> 85 per cent)

The very high literacy among the males of rural scheduled tribes is found in only 25 districts and only 1.14 per cent literates confined mainly to the northern Himalayan region (Fig. 2.9). The highest male literacy is found is Hamirpur (100 per cent) and Banda (100 per cent) districts of Uttar Pradesh followed by Almora (96.73 per cent) Uttrakhand and Serchhip (96.20 per cent) Mizoram. The very high Literacy is due to better infrastructural facilities and nearness to the towns and urban areas.

II Areas of high literacy: (75 - 85 per cent)

The next category of male literacy is found in 65 districts and 6.15 per cent literates from all over the study region in the form of small patches. The high literacy rate in these areas is due to nearness to the urban centers.

III Areas of moderate literacy: (65 - 75 per cent)

The moderate literacy rate is found in 94 districts and covered 11.49 per cent literates mainly confined with central and western cost of the region. Some patches are also found in the north-eastern states and north-western states. The moderate literacy rate is due to availability of educational facilities and better transport system. The category wise rural scheduled tribe male literacy rate is shown in the table 2.9.

Table No. 2.9– INDIA: Rural Scheduled Tribes Male Literacy Rate: 2001

Category (%)	No. of Districts	Rural Scheduled Tribes Male Population (>0-6 years)	Rural ST Literate Male Population	In Per cent
> 85	25	409297	360823	1.14
75 – 85	65	2470538	1949215	6.15
65 – 75	94	5231522	3643890	11.49
55 – 65	115	9916348	5966178	18.82
< 55	234	13674888	6272660	19.79
Nil	60	0	0	0.00
INDIA	593	31702593	18192766	57.39

Source: Compiled by Author.

IV Areas of low literacy: (55 - 65 per cent)

In the same way low literacy is found in the entire study region in the form of small patches. It is confined with 115 districts and covered 18.82 per cent literates.

V Areas of very low literacy: (< 55 per cent)

A large part of the study region confined with very low literacy rate. Northern plain, western region and eastern costs of the region covered 234 districts under this category and 19.79 per cent of rural literates.

It is also noticed that the category of low and very low literacy rate covered more than 60 per cent districts of the study region. This is due to backwardness of social structure. The zero literacy rates is observed in Jalaun and Jyotiba Phule Nagar from Uttar Pradesh state preceded by Jaunpur (11.33 %) Uttar Pradesh, Samistipur (11.46 %) Bihar, Hardoi (16.67 %) Uttar Pradesh and Chandauli (16.67 %) Uttar Pradesh.

Pattern of Rural Scheduled Tribes Female Literacy:

Rural Scheduled Tribe female literacy is 32.44 per cent as per census 2001, which is lowest of all the social groups. The pattern of rural scheduled tribes' female literacy rate is represented in the map (Fig. 2.10). The range of rural female literacy is varies from zero per cent to 100 per cent that is divided into five broad categories as categorized same in total rural female literacy rate.

I Areas of very high literary: (> 65 per cent)

The very high literacy rate among rural Scheduled Tribes female literacy is found in the northern Himalayan region, eastern hilly areas and extreme southern patch of the study region. It occupied only 31 districts and 1.79 per cent rural female scheduled tribes' literates. The highest literacy is found in Kannauj (100 per cent) in Uttar Pradesh which has only one person belong to scheduled tribe in this district followed by Aizawal (Mizoram) 78.09 per cent, Serchip (Mizoram) 76.53 per cent and Kattoyam 89.16 per cent of Kerala state. The very high literacy rate is due to social and educational awareness and better infrastructure facilities in these districts. The category wise rural scheduled tribe female literacy rate is shown in the table 2.10.

Table No. 2.10 – INDIA: Rural Scheduled Tribes Female Literacy Rate: 2001

Category (%)	No. of Districts	Rural Scheduled Tribes Female Population (>0-6 years)	Rural ST Literate Female Population	In Per cent
> 65	31	765659	558242	1.79
55 – 65	53	1601689	955962	3.07
45 – 55	57	2922629	1441945	4.64
35 – 45	86	6189146	2444638	7.84
< 35	304	19662002	4701196	15.10
Nil	62	0	0	0.00
INDIA	593	31141125	10101983	32.44

Source: Compiled by Author.

II. Areas of high literacy: (55 - 65 per cent)

The category of high literacy rate among rural Scheduled Tribes females is found in the form of small patches. This category occupied by 53 districts and 3.07 per cent of

rural scheduled tribes female literates. The areas of high literacy rate are due to nearness to the urban centers.

III Areas of moderate literacy: (45 - 55 per cent)

The moderate literacy rate is found in 57 districts and covered 4.64 per cent literates. It is found in the form of small patches on all over the study area.

IV Areas of low literary: (35 - 45 per cent)

The areas of low literacy are found especially in the central area and patches are also observed in all over the study region. It occupied 86 districts and 7.84 per cent female literates of rural scheduled tribes.

V Areas of very low literary: (< 35 per cent)

The category of female literacy occupied 304 districts and covered 15.10 per cent literates. A large part of the study region confined with very low literacy among rural female scheduled tribe literates. It is also observed that seven districts have zero literacy rates namely Meerut, Shahjahanpur, Auraiya, Jalaun, Hamirpur, Kaushambi, Chandauli, and these districts have very low proportion of population. Lowest literacy rate is found in Lakhisarai of Bihar have only 4.74 per cent preceded by Pratapgarh 5.26 per cent, Kushingar 5.36 per cent, Jaunpur 5.44 per cent, and Shrawasti 5.59 per cent. All these districts are situated in Uttar Pradesh state. This is due to far from main stream of the society and lack of awareness towards education. Mostly tribes lived in hard climatic region and lack of basic infrastructures is also responsible for the very low literacy rate.

It is important to compare all the categories of literacy rate and gender wise difference among the total population, scheduled castes and scheduled tribes population. A comparative analysis of rural literacy rate among total, scheduled castes and scheduled tribes population is shown in the table 2.11. It is observed that difference of percentage in the number of districts in the range of very high literacy rate is very low i.e. less than one per cent among total population and scheduled castes population. Likewise literacy rate is higher in the percentile difference of districts i.e. 5-6 per cent in the range of moderate to high while it is just double in the range of very low literacy rate among total population and scheduled castes population. It is also important to be note

that the difference in percentile number of districts of literacy rate is more than double among both the deprived section of the society i.e. scheduled castes and scheduled tribes.

Table No. 2.11– INDIA: Comparative Analysis of Rural Literacy Rate: 2001			
Range of Literacy Rate (%)	No. of Districts (Total Literacy Rate)	No. of Districts (SC Literacy Rate)	No. of Districts (ST Literacy Rate)
>75	67 (11.23)	64 (10.79)	30 (5.06)
65 – 75	134(22.06)	93 (15.68)	53 (8.94)
55 – 65	188(31.70)	149 (25.13)	84 (14.16)
45 – 55	123(20.74)	121 (20.41)	95 (16.02)
< 45	72(12.14)	144 (24.28)	271 (45.70)
Nil	9(1.52)	22 (3.71)	60 (10.12)
INDIA	593 (100)	593 (100)	593 (100)
Source: Compiled by Author. Note: Bracket figures are in per cent.			

Table No. 2.12– INDIA: Comparative Analysis of Rural Male Literacy Rate: 2001			
Range of Literacy Rate (%)	No. of Districts (Total Male Literacy Rate)	No. of Districts (SC Male Literacy Rate)	No. of Districts (ST Male Literacy Rate)
>85	66 (11.13)	61 (10.22)	25 (4.22)
75 – 85	183 (30.86)	136 (22.93)	65 (10.96)
65 – 75	182 (30.69)	160 (26.98)	94 (15.85)
55 – 65	100 (16.86)	110 (18.55)	115 (19.39)
< 55	53 (8.94)	104 (17.54)	234 (39.46)
Nil	09 (1.52)	22 (3.71)	60 (10.12)
INDIA	593 (100)	593 (100)	593 (100)
Source: Compiled by Author. Note: Bracket figures are in per cent.			

Table No. 2.13– INDIA: Comparative Analysis of Rural Female Literacy Rate: 2001			
Range of Literacy Rate (%)	No. of Districts(Total Female Literacy Rate)	No. of Districts (SC Female Literacy Rate)	No. of Districts (ST Female Literacy Rate)
> 65	71 (11.97)	49 (7.93)	31 (5.23)
55 – 65	113 (19.06)	73 (12.31)	53 (8.94)
45 – 55	136 (22.93)	115 (19.39)	57 (9.61)
55 – 45	140 (23.61)	123 (20.57)	86 (14.50)
< 35	124 (20.91)	198 (33.90)	304 (51.26)
Nil	9 (1.52)	35 (5.90)	62 (10.46)
INDIA	593 (100)	593 (100)	593 (100)
Source: Compiled by Author. Note: Bracket figures are in per cent.			

The results of comparative analysis of districts among total rural male literacy rate and scheduled castes male literacy rate shows similarity with the comparative analysis among total rural and scheduled castes literacy rate. The total rural male literacy rate dominates the range up to moderate level while low and very low ranges are observed higher in scheduled tribe.

Similarly districts of rural female literacy rate are more than the double of scheduled tribe rural female literacy rate in very high, high and moderate range. However it is also observed that the districts are in range of very low have more than 1/5 in total rural literacy rate, the 1/3 in scheduled castes and more than 1/2 in scheduled tribe.

According to comparative analysis it is observed that in all the ranges of literacy, scheduled tribe have very low literacy rate and maximum concentration of the districts found in the very low range of the literacy rate. Scheduled castes have moderate literacy rate in all ranges of literacy rate. The total rural has high concentration in high literacy rate. The highest concentration of the districts among total population, scheduled castes and scheduled tribes is found in the categories of low and very low level of literacy rate. It is also observed that the total number of districts covered under the range of very high and high is just half of the districts of covered under the ranges of low and very low. It shows that a large number of districts are covered under the range of low and very low level of literacy while majority of the districts are from scheduled tribes' and scheduled castes which shows the backwardness of these societies.

SEX RATIO

Sex ratio is an important social indicator to measure the extent of prevailing equality between males and females in a society at a given point of time. Sex ratio is generally divided into four:

1. Primary sex ratio — ratio at fertilization
2. Secondary sex ratio — ratio at birth
3. Tertiary sex ratio — ratio in sexually active organisms
4. Quaternary sex ratio — ratio in post-reproductive organisms

Measuring these is a problem since there are no clear boundaries between them. Because primary sex ratio is the ratio at the time of conception, secondary sex ratio is the ratio at time of birth, and tertiary sex ratio is the ratio of mature organisms, while quaternary sex ratio is the ratio in post reproductive organisms (Coney and Mackey 1998).

Trewartha (1953) rightly remarked that the "proportion of two sexes is fundamental to the geographic analysis of an area because it is not only an important feature of the landscape but it also influences the other demographic elements significantly and as such provides an additional means for analysing the regional landscape"

Review of Literature

As stated earlier, sex composition of a population holds a very important place in any demographic analysis. Among various elements of population composition, sex composition holds a prime place for population geographers. In the words of Franklin (1956) "A knowledge of how population is distributed amongst the various age groupings and between the sexes is fundamental to the understanding of that population and community it forms. A knowledge of the pattern of sex ratio helps to explain the employment and consumption pattern, social needs of the people and perhaps the psychological characteristics of a community." Declining sex ratio has attracted attention of researchers, planners and policy makers. One of the earliest attempts by a geographer on sex composition of India's population is by Gosal (1961). He attributed the imbalance in sex composition in Indian population due to sex ratio at birth and differential mortality of males and females. The deficit of females in India's population attributed mainly due to the preponderance at birth and a comparatively higher death rate among females. Likewise Benerjee (1977) discussed the decadal and regional variation in sex ratio of Singhbhum district and analysed the causes behind this variation. Correlation coefficient had been worked out to study the impact of urbanisation and tribal concentration on the sex ratio. She found that regional variation in sex ratio was affected by the nature and volume of migration which in its turn was affected by the economy activity offered by the region. The quality of census data has also improved and therefore some researchers

studied sex ratio from time to time like Kundu and Sahu (1991), Agnihotri (1995), Gupta (1996), George and Dahiya (1998), Bhat (2000) Gill ((2000), Gosal (2001) Hasan (2000, 2002 and 2008).

Patterns of Rural Sex Ratio

As per census 2001, the sex ratio of rural India is 946 females per thousand males. The pattern of rural sex ratio in India is represented in the map (Fig. 2.11). As per Chandna, it is most evident from the map that India can be divided between north to south. Aryan north has comparatively lower sex ratios than the Dravidian south (Chandna 2001).

The range of rural sex ratio varies from 485 to 1189 female per thousand male; and divided into five broad categories:

I. Very high sex ratio: (>1025 females/1000 males)

II. High sex ratio: (975-1025 females/1000 males)

III. Moderate sex ratio: (925-975 females/1000 males)

IV. Low sex ratio: (875-925 females/1000 males)

V. Very low sex ratio: (<875 females/1000 males)

The very high sex ratio in rural India is found in only 39 districts comprising of western coast, Uttrakhand and some small patches are also found in Mahanadi plain and Ganga plain (Fig 2.11). The highest sex ratio is found in Almora i.e. 1189 females per thousand males. This is due to socially developed area, male out migration and local customs. Literacy rate of this area is also counts in very high category.

High sex ratio that is 925 to 1025 females per thousand males is found in 128 districts. The high sex ratio mainly confined with southern and eastern part of the study area.

The next category of sex ratio i.e. moderate sex ratio, ranging 925 – 975 females per thousand males found in western and north eastern part of the study area. It occupied

by 213 districts which are more than 35 per cent districts of study area and it constitutes more than 40 per cent rural female population of India.

Low sex ratio is found in northern Ganga plain. This category of low sex ratio is occupied by 116 districts. The category wise sex ratio shows in table 2.14.

Table No. 2.14 – INDIA: Rural Sex-ratio: 2001

Sex Ratio (Females /1000 Males)	No. of Districts	Total Rural Male Population	Total Rural Female Population	Average Sex-ratio
> 1025	39	22050785	23468542	1064
975 – 1025	128	83199984	82764869	995
925 – 975	213	155296690	147673580	951
875 – 925	116	73793833	66663363	903
< 875	88	47261382	40317611	853
Nil	9	0	0	0
INDIA	593	381602674	360887965	946

Source: Compiled by Author.

Very low sex ratio i.e.less than 875 females /1000 males is observed in 88 districts. It is found in the upper Ganga plain, part of Thar desert and Himalayan region of north east and north west of study area. The lowest sex ratio is found in Daman i.e. 425 female par thousand males and preceded by Chandigarh i.e. 621 female par thousand males Very low sex ratio in these areas are due to nearness to the urban centers therefore a large strength of male workforce observed in these areas. Some evils like ***female foeticide*** also in practice which is the main cause of very low sex ratio. Likely family planning programs also motivate to fetal sex determination. Literacy rate of these areas are also observed in very low category.

It is also observed that the pattern of rural sex ratio found in continuous belts while the spatial pattern of rural literacy rates found in small patches. Therefore there is some another factors which forces the sex ratio high and low.

Sex Ratio among Scheduled Castes

As per census 2001, the scheduled cast sex ratio is 939 females per thousand males. The sex of ratio of rural scheduled castes is shown in the map (Fig. 2.12). The range of rural scheduled castes sex ratio is from 35 to 1667 females per thousand males. The whole range of sex ratio is divided into five broad categories.

I. Very high sex ratio: (>1025 females/1000 males)

II. High sex ratio (975-1025 females/1000 males)

III. Moderate sex ratio (925-975 females/1000 males)

IV. Low sex ratio (875-925 females/1000 males)

V. Very low sex ratio (<875 females/1000 males)

The area of very high sex ratio in rural scheduled casts is found in only 34 districts. The area under very high sex ratio is found in form of small patches in the all over the study area except western part of the area .The highest sex ratio is found in Tirap of Arunachal Pradesh i.e. 1667 Female per thousand male while average sex ratio is 1048 females per thousand males. This is due to a few population proportions. The other patches are due to nearness to the urban areas so male population migrated for employment. The literacy rates of these districts are also found in very high category.

The next category of sex ratio is found mainly in the southern part of India. It occupied 125 districts and average sex ratio is 995 females per thousand males.

The area of moderate sex ratio is confined with a belt in central and north western part of the study area. It occupied by 192 districts which is more than 32 per cent of the total districts units and average sex ratio is 952 females per thousand males.

Low sex ratio is found in form of continuous belt in north western part and in between the moderate and very low sex ratio. Low sex ratio is observed in only northern part of India.

The area of low sex ratio is observed in 113 districts of western border of India. While very low sex ratios are found in 94 districts. The very low sex ratio in Himalayan regions is due to hard climate and poor medical facilities. While very low sex ratio in

upper Ganga plain just due to economically development of area and the in migration of male for gainful employment. It is also observed that Himalayan region have high literacy and low sex ratio in scheduled castes while Gangetic Plain have low literacy and low sex ratio. The category wise sex ratio shows in table 2.15.

Table No. 2.15 – INDIA: Rural Scheduled Castes Sex-ratio: 2001

Sex Ratio(Females /1000 Males)	No. of Districts	Scheduled Castes Rural Male Population	Scheduled Castes Rural Female Population	Average Sex-ratio
> 1025	34	2793375	2927290	1048
975 – 1025	125	13559539	13495703	995
925 – 975	192	27685958	26359304	952
875 – 925	113	14496306	13058483	901
< 875	94	10067841	8566756	851
Nil	13	323	0	0
Nil	22	0	0	0
INDIA	593	68603342	64407536	939

Source: Compiled by Author.

Sex Ratio among Scheduled Tribes

The rural scheduled tribe's sex ratio is 981 females per thousand males. The range of rural scheduled tribe's sex ratio is from 165 to 1500 females per thousand males (Fig. 2.13). The whole range of sex ratio is divided into five broad categories i.e.

I. Very high sex ratio: (>1025 females/1000 males)

II. High sex ratio: (975-1025 females/1000 males)

III. Moderate sex ratio: (925-975 females/1000 males)

IV. Low sex ratio: (875-925 females/1000 males)

V. Very low sex ratio: (>875 females/1000 males)

The area of very high sex ratio in rural scheduled tribes is found in 55 districts with 1048 average females per thousand males in the form of small patches in all over the study area except a belt in central part of India (Table 2.16). The highest sex ratio is found in Hamirpur District of Uttar Pradesh i.e. 1500 females per thousand males. This is

due to out migration of males. This section of the society is far from the developed and social evils like female feticide. The literacy rate of these areas is observed in low category.

Table No. 2.16– INDIA: Rural ST Sex-ratio: 2001

Sex Ratio (Females / 1000 Males)	No. of Districts	Scheduled Tribes Rural Male Population	Scheduled Tribes Rural Female Population	Average Sex-ratio
> 1025	55	2787118	2895038	1039
975 – 1025	166	22802391	22674001	994
925 – 45	185	11067407	10577701	956
875 – 925	69	2155571	1949976	905
< 875	56	233152	196231	842
Nil	2	11	0	0
Nil	60	0	0	0
INDIA	593	39045650	38292947	981

Source: Compiled by Author.

The area of high sex ratio is confined with western coastal belt, Mahanadi – Godavari - Damodar basin and a large part of north eastern states. It occupied by 166 districts and 995 average females per thousand males. Most of the population is engaged is engaged in agricultural activities and have low literacy rate. Southern part India has high literacy rate and low productivity of land which encouraged mainly male out migration in search of employment.

The next category of sex ratio is confined with 185 (more than 31 per cent districts) districts with 956 average females per thousand males. Most of the districts are observed in central part of India in a continuous belt.

The areas of low sex ratio is found in only in 69 districts (905 average females/1000 males) of north western and western part of the region. While very low category of sex ratio is confined with only 56 districts (842 average females per thousand males) of Northern Plain in the form of small patches while 60 districts do not have scheduled tribe population. These areas have low literacy and low sex ratio. It is also

observed that two districts namely Jyotiba Phule Nagar and Firozabad have only one and ten male persons respectively.

Comparative Analysis of Sex Ratio

A comparative analysis of rural sex-ratio among total population, scheduled castes, and scheduled tribe population has also been studied in India.

While studying a comparative analysis of sex ratio in (Table 2.17), it is observed that sex ratio is high among scheduled tribes moderate in total and moderately low in scheduled castes category. It is also observed that spatial pattern among all the sections of the society near to similar each other. The pattern of total rural sex-ratio influences the scheduled castes.

Table No. 2.17– INDIA: Comparative Analysis of Rural Sex-Ratio: 2001

Sex Ratio (Females / 1000 Males)	No. of Districts (Rural Population)	No. of Districts (Scheduled Castes Population)	No. of Districts (Scheduled Tribe Population)
> 1025	39 (6.58)	35 (5.90)	55 (9.28)
975 – 1025	128 (21.59)	124 (20.91)	166 (27.99)
925 – 975	213 (35.91)	193 (32.55)	185 (31.20)
875 – 925	116 (19.56)	113 (19.06)	69 (11.63)
< 875	88 (14.84)	93 (15.68)	56 (9.44)
Nil	9 (1.52)	35 (5.90)	62 (10.46)
INDIA	593 (100)	593 (100)	593 (100)

Source: Compiled by Author.

NOTE: Brackets figure are in per cent.

So it is concluded that the sex ratio is high in those areas where literacy rate is also high, like Kerala state and some southern Indian districts. These areas have low agricultural potential and males have migrated outward for gainful employment to urban center or in another place therefore sex ratio observed high near to urban areas and low sex ratio observed in low urbanized districts.

WORKFORCE

The total work force in any economy, conceptually, includes all those who contribute to the gross domestic product (GDP) of the economy. That is, there is always a correspondence between the GDP generated in the economy and the total workforce that constitutes to its generation. One of the major functions of labour force statistics is to net all the workers in the workforce statistics comprehensively. Some how, this simple looking point does not get translated into reality, particularly in developing countries, due to various conceptual, definitional and methodological problems. One important aspect of the history of labour statistics in India is the continuous efforts made for netting comprehensively the workforce in the country. Though considerable successes have been achieved in these efforts, the fact remains that even today the size of the workforce in India, and particularly of women workers, is underestimated.

In the case of Census of Population the term `work' has been defined as "any productive work for which remuneration is paid and is market related", and "worker" is a person employed in "work". If a person worked for a major part of the reference year he/she was a "main worker", and if he/she worked for less than half a year he/she was a "marginal worker".

The concept of worker was firstly introduced in India in 1961. The definition of worker in India has been changing from census to census. According to census of India 2001, any person whose main activity was participation in any economically productive activity with or without compensation of wages or profit by his physical or by his mental activity was classified as ***worker*** **(**census of India, 2001). Thus, work involves not only actual physical work but also includes effective supervision and direction of work. It even includes part time help or unpaid work on farm, family enterprise or in any other economic activity.

REVIEW OF LITERATURE

The study on workforce is not a new field but different scholars have studied in different ways. As a broad thing educationist, economists, demographers and geographers have studied it. Geographers and other scholars have carried out many studies from time

to time. Siddiqui (1975) examined occupational structure of population in Haryana. He focused on the following three major points: (i) Occupational groups and their distribution; (ii) Analysis of male/ female participation rates and their spatial distribution; and (iii) rank difference correlation coefficients of male participation and their regional variations. Bardhan (1978) examined that the tribal and untouchable women constitute the largest and most visible section of India's workingwomen. They belong to even poorer families than male labourers. She observed that these women seem to be less subjected to patriarchal restrictions. It has been established in several studies that female work participation in rural India is positively correlated with presence of scheduled castes and scheduled tribe population. Likewise Gopal Kishan (1980) illustrated that the percentage of non-agricultural workers in India is low. Ramotra (1989) also delved the 'female work participation' in economic activity in India in general and in Marathwada region of Maharashtra state in particulars. He discussed some of the issues and constraints related to the female participation and tried to identify the plausible casuals factors responsible at macro and micro regional variations.

Chaudhary (1993) correlated different aspects of female work participation and levels of development in rural Haryana. Rahman (1994) also studied the workforce situation of a slum in Dhaka city. He found a positive correlation between the constantly increasing number of workers per household with rising household size, which is a sign of low per capita income and higher dependency ratio. He explained the household workers low female participation in terms of migration. Gaur (2005) studied the occupational structure in rural Haryana on the bases of Census 2001. She observed that male high working force is found in fertile land while industry base economy and high literacy rates are responsible for low working force in the northeastern part of the state. She also analyzed the specialized and deficient functions.

Patterns of Rural Work Participation Rate

The study on work force holds immense significance in the economy of an area irrespective of its being agricultural, industrial or semi industrial. The work participation rate determines the level of economic development and entire process of its development. The size of working force of an area depends upon a variety of demographic, social and

economic factors operating over the geographical space. A majority of Indians live in villages with 72.18 percent of India's population which resides in 6.39 lakh villages and 31.18 lakh sq. km. area. Out of the total rural population 41.75 percent is the working force (main and marginal). In terms of sex, it was 52.1 percent in the case of rural male and 30.8 percent in the case of rural female. Different districts have different level of workers and hence these have been grouped into five categories of workers

I. Very High Work Participation Rate (> 50 per cent)

II. High Work Participation Rate (45 -50 per cent)

III. Moderate Work Participation Rate (40 - 45 per cent)

IV. Low Work Participation Rate (35 - 40 per cent)

V. Very Low Work Participation Rate (< 35 per cent).

The very high workforce is found in 118 districts (Table 2.18), which covered 9.51per cent of the total rural workers (Fig. 2.14). The highest workforce is found in Serchhip (Mizoram) i.e. 64.80 per cent. The southern districts of Andhra Pradesh and Tamil Nadu are having very high rural workers. The districts of Himachal Pradesh, Mizoram and Chhattisgarh also come under this category. Some patches are also important in other parts of the country.

Table No. 2.18 INDIA: Rural Work Participation Rate, 2001

Category (%)	No. of Districts	Rural Population	Rural Workers	In Per cent
> 50	118	134148657	70583719	9.51
45 – 50	154	169943982	80752773	10.88
40 – 45	115	113678859	48514803	6.53
35 – 40	72	111326060	42447019	5.72
< 35	125	213393081	67657756	9.11
Nil	9	0	0	0
INDIA	593	74742490639	309956070	41.75

Source: Compiled by Author.

Central part of Maharashtra and Chhattisgarh southern part of Madhya Pradesh, northern and western parts of Karnataka and Gujarat, western part of Jammu and

Kashmir and almost whole Manipur lies in the high category of rural work force. The high workforce is found in 154 districts, which covered 10.88 per cent of the total rural workers. Both the tow categories i.e. very high and high cover almost half districts of the country.

Moderate levels of rural workers are founding 115 districts mainly in western, central and internal parts of eastern India. Districts of Punjab, Uttrakhand and Haryana are also having moderate level of workers.

Low level of rural work force is mainly found in northern region extending from Punjab to Arunachal Pradesh in only 72 districts. While, Very low levels of rural work force are found in 125 districts of Ganga and Brahmaputra's plain area. Eastern Orissa, Delhi and Kerala too have very low level of rural workers.

One thing can also be highlighted that the Hilly areas and tribal areas have high concentration of rural workers while low lands and plain areas have low concentration of rural workers. In this way we can say that hard climatic regions have high proportion of workers than favorable climatic regions.

Patterns of Rural Male Work Participation Rate

On the bases of the rural male work participation rates in 2001, five macro-regions with very high, high, medium, low and very low participation rate have been identified in India as depicted on the map (Fig. 2.15). The very high workforce is found in only 37 districts (Table 2.19), which covered 3.11per cent of the total rural male workers. The highest workers are found in Daman (UT) i.e. 76.34 per cent. Male work participation rate is very high (above 60per cent) in most of the south India comprises the districts of Karnataka and Tamil Nadu. Except these districts some districts of Himachal Pradesh Andhra Pradesh and Concentration of male workers.

High male workers (55-60 per cent) are found in 141 districts of Gujarat, Andhra Pradesh, Eastern Tamil Nadu, Southern Orissa and some parts of Madhya Pradesh, Chhattisgarh, Jammu Kashmir, Punjab and West Bengal are also confined with this category.

Moderate Category of male work participation rate (50-55 per cent) are confined with 217 (36.59 per cent) districts of central Maharashtra, Madhya Pradesh and Chhattisgarh, western and southern Rajasthan, Haryana, Punjab, Northern West Bengal and some parts of Uttar Pradesh also include in this category

Table No: 2.19 – INDIA: Rural Male Work Participation Rate: 2001

Category (%)	No. of Districts	Rural Male Population	Rural Male Workers	In Per cent
> 60	37	17971044	11124765	3.11
55 – 60	141	93266891	53242774	12.41
50 – 55	217	143639683	75225406	19.71
45 – 50	153	99019558	47371733	13.95
< 45	36	27705498	11874475	2.92
Nil	9	0	0	0
INDIA	593	381602674	198839153	52.11

Source: Compiled by Author.

The region of low male work participation rate (45-50 per cent) is in 153 districts of Ganga-Brahmaputra plain which covers 13.95 per cent rural male workers. Districts of Uttaranchal and Eastern Uttar Pradesh have very low (below 45 per cent) concentration of male workers which confined with only 36 districts and 2.92 per cent rural male workers.

Patterns of Rural Female Work Participation Rate

The women's participation in economic activity is essential for their personal advancement and their status in the society. It has been suggested that the women must enter into the labour force of the country on an equal footing with men and get integrated into the system. Women held high position in the society and they enjoyed equality with men during the Vedic period. They were educated and enjoyed an honored place in the society and economic activities.

About two thousand year ago, the position of women in Hindu society underwent a tremendous change. This was cogently emaciated in the laws of Manu. Manu, the low

giver gave an injection that a woman has to be under the authority of her father during childhood, under her husband during youth and under her son during the old age. These bindings have affected her social and economic status in the society.

After independence, there have been some changes in the status of women in India. Plans initiate for raising the status of women and for ensuring their full involvement and integration in the process of development at all levels, helped at last to focus attention on the problems specific to women such as their participation in workforce at macro and micro regional levels.

The female participation in economic activity in India is lowest as compared to the western countries. The district level data of India being projected and important feature comes as division of north-south in the extent of rural female work participation (Fig. 2.16).

Similarly to female work participation here also five categories have been adopt i.e. very high, high, moderate, low and very low.

Table No: 2.20 – INDIA: Rural Female Work Participation Rate: 2001

Category (%)	No. of Districts	Rural Female Population	Rural Female Workers	In Per cent
> 50	40	14470159	7525308	2.09
40 – 50	174	97301750	43601768	12.08
30 – 40	149	81563630	29083785	8.06
20 – 30	98	71564899	17788819	4.93
< 20	123	95987527	13117237	3.63
Nil	9	0	0	0
INDIA	593	360887965	111116917	30.79

Source: Compiled by Author.

Very High: (50 per cent and above) the hard climatic regions of Himachal Pradesh and Mizoram likewise tribal areas have very high rural female work participation rate. Only 40 districts and 2.09 per cent rural female workers are confined with this category (Table 2.20). The southern part of Tamil Nadu, Andhra Pradesh and

Maharashtra' 174 districts and 12.08 per cent rural female workers considers in the high category (40-50 per cent) of rural female work participation.

Mostly western Rajasthan, Central Madhya Pradesh, Gujarat and north eastern district comes under the moderate category (30-40 per cent) of Rural Female Work Participation Rate. The moderate work force is found in 149 districts and 8.06 per cent rural female workers.

District of Punjab, Uttar Pradesh and Bihar have low (20-30 per cent) concentration of rural female work participation. The low work participation rate is found in 98 districts and 4.93 per cent rural female workers. The rural female work participation rate is Very Low (Below 20 per cent) in the Ganga-Brahmaputra plain. The very low work participation rate is found in 123 districts and 3.63 per cent rural female workers.

Concentration of Rural Work Participation

Unevenness of rural workers distribution is another typical feature of India's workers mentioned above. It is observed that sparsely workers' districts are confined with the interior heart land and the areas adjoining China and Myanmar, the relatively high concentration of workers are located largely in the alluvial belts of Ganges, Godavari and Krishna rivers. Besides these, some highly industrialized districts distributed sporadically also displayed high worker concentration index of more than 1.5 at places crossing 2.0 in 115 districts (Table 2.21).

Table No: 2.21 – INDIA: Concentration of Rural Workers: 2001

Concentration Index	Number of Districts	Rural Workers	In per cent
2.0 <	49	67698660	21.84
1.5-2.0	66	60680821	19.58
1.0-1.5	136	88130200	28.43
0.5-1.0	190	75406472	24.33
<0.5	143	18039917	5.82
Nil	09	0	0.00
Total	593	309956070	100

Source: Compiled by Author.

The study reveals that the various districts of Rural India, Medinipur (W. Bengal) is the most thickly working population district with a concentration index of 6.49 and East (Delhi) is the also most thinly populated district with a concentration index of 0.01 only. It is also observed that moderate size of concentration of workers have highest proportion of workers i.e. 28.43 per cent. The concentration index of working population is less than 0.5 in about 143 districts in rural India and is less than one in about 333 (57 per cent) districts in rural India. It is also observed that concentration index up to 1.5 is about 80 per cent districts of the study area.

Patterns of Scheduled Castes Rural Work Participation

Indian sociological literature is characterized by its emphasis on caste-based analysis; a reflection of the obliquity and profound significance of hierarchical stratification in that society. Two fundamental and primary strata within the Hindu society are the ritually higher castes and the untouchables, officially called the "scheduled caste". The vast majority of the members of the scheduled castes have been associated with certain unclean or menial hereditary socially degrading. Consequently, they have remained at bottom of the caste hierarchy and usually at a very low economic level.

Independent India, whose social and political philosophy is secular and egalitarian, inherited in 1947 a highly stratified society, with deep roots in Hinduism. Consequently, the government of India initiated broad constitutional and legislative measures to help remove the stigma of untouchables from an under privileged segment, which numbered over 133 million in 2001. This problem is of staggering proportions as the scheduled castes constitute, perhaps, the largest "minority group" of any country in the world.

Regional patterns have been shown in the map (Fig. 2.17). All districts have been grouped into five categories. Districts of very high work participation rate (above 50 per cent) is comprises by the areas of Tamil Nadu, Andhra Pradesh, Karnataka, Jammu Kashmir, Himachal Pradesh, Mizoram, Meghalaya and Madhya Pradesh with the strength of 131 districts and 9.95 per cent rural SC workers. The highest work participation rate is

found in 12 districts (Table 2.22) of Jammu and Kashmir, Mizoram, Manipur, and Arunachal Pradesh i.e. 100 per cent.

Central part of India in which a major part of Maharashtra, Orissa and some patches from all over the study region comes under the high (45-50 per cent) concentration of work participation rate. The high level of workers is found in 127 districts and 8.58 per cent workers.

Table No. 2.22: INDIA: Rural Scheduled Castes Work Participation Rate: 2001

Category (%)	No. of Districts	Rural Scheduled Castes Population	Rural Scheduled Castes Workers	In Per cent
> 50	131	24709630	13228378	9.95
45 – 50	127	24070726	11418139	8.58
40 – 45	138	33404897	14172671	10.66
35 – 40	82	22069149	8335646	6.27
< 35	93	28756476	9372116	7.05
Nil	22	0	0	0
INDIA	593	133010878	56526950	42.50

Source: Compiled by Author.

Moderate size of work participation rates are also found in the form of patches. Total numbers of districts 138 are engaged in this category with 10.66 per cent rural SC workers. It is also observed that from very high to moderate more than 67 per cent districts are engaged. Likewise low and very low level of scheduled castes work participation mainly observed in the northern plain. The lowest work participation rate is found in Diu (24.73 per cent), UT and preceded by Tirap (25.00 per cent), from Arunachal Pradesh state.

Patterns of Scheduled Castes Rural Male Work Participation

During the post-independence period, some readjustment of the country's male working force has been observed partly due to a gradual decline of some of the occupations and services and partly due to emergence of others.

Broadly speaking the areas of very high (>60 per cent) concentration of rural male scheduled castes workforce are Jammu Kashmir, Arunachal Pradesh, Mizoram, Manipur and North Eastern part of Tamilnadu. Only 39 districts are confined with this category (Table 2.23). The highest concentration of rural SC male workers is in 14 districts of Jammu and Kashmir, Mizoram, Manipur, and Arunachal Pradesh i.e. 100 per cent (Fig. 2.18).

The areas experiencing high category of rural WPR of Scheduled Castes male working force is southern in their location. These included Andhra Pradesh, Karnataka and Tamil Nadu. Some patches of Himachal Pradesh, Maharashtra, Madhya Pradesh, Chhattisgarh, Orissa and Rajasthan.

Table No: 2.23 – INDIA: Rural Male Scheduled Castes Work Participation Rate: 2001

Category (%)	No. of Districts	Rural Male Scheduled Castes Population	Rural Male Scheduled Castes Workers	In Per cent
> 60	39	754913	483543	0.70
55 – 60	112	15530909	8824235	12.86
50 – 55	240	27773454	14584343	21.26
45 – 50	147	19397817	9275318	13.52
< 45	33	5146249	2197639	3.20
Nil	22	0	0	0
INDIA	593	68603342	35365078	51.55

Source: Compiled by Author.

Punjab and the adjacent parts of Haryana and Rajasthan, parts of Madhya Pradesh, Gujarat, Maharashtra, Orissa, Jharkhand, West Bengal and some north eastern districts constitute the most compact region displaying moderate concentration of workforce. The moderate size of work force is found in 240 district i.e. more than 40 per cent districts of the study region.

Parts of eastern Uttar Pradesh, Madhya Pradesh, Rajasthan and Maharashtra confined with area of low concentration of workforce. Districts of Uttar Pradesh, Rajasthan and Uttrakhand are displaying very low concentration of rural scheduled castes

male work force. The lowest workforce is found in Diu (40.21 per cent), UT and preceded by Ballia (40.28 per cent), Azamgarh (40.57 per cent), Deoria (40.85 per cent), Mau (40.96), and Jaunpur (40.98 per cent) all are confined to Bihar state.

Patterns of Scheduled Castes Rural Female Work Participation

Female workers belongings to scheduled castes, the former untouchables are not only socially deprived, they also rank very low on the ladder of economic prosperity by virtue of their low social status most of them engaged in very low paid, predominant menial jobs. Though the scheduled castes generally relative to the "general population in the same area, denoting low sub-economic status, the differences in female employment levels between the two groups is not simply a matter of economics. It is also a matter of different caste mores.

The covariance of male and female employment among scheduled castes workers is not difficult to understand in view of their place in the hierarchical structure of Indian society. The educational and skill attainments of the scheduled castes males are not drastically different from those of their female counterparts.

The social restrictions are, moreover, less severe for their women, so that their occupational structure is restricted more by job availability than by sex discrimination, although within a given occupation the sex roles may be clearly defined. It is not uncommon to see husbands and wives of this class working in public in the same occupations; construction sites provide a good example.

An over view of geography of scheduled castes female work participation in the rural area shows that southern districts have more concentration of workers them northern districts. It can be observed clearly in the given map (Fig. 2.19) Districts of Andhra Pradesh and Tamil Nadu have very high participation (above 50 per cent) rates of scheduled castes rural female workers. The highest concentration of rural scheduled castes female workers is found in Chandel of Manipur state i.e. 65.88 per cent followed by East Garo Hills (58.33 per cent) of Meghalaya, Dakshina Kannada (58.26) of Karnataka, and Erode (58.26 per cent) of Tamilnadu state (Table 2.24).

Table No: 2.24 – INDIA: Rural Female Scheduled Castes Work Participation Rate: 2001				
Category (%)	No. of Districts	Rural Female Scheduled Castes Population	Rural Female Scheduled Castes Workers	In Per cent
> 50	51	51411481	2759621	4.28
40 – 50	158	16129396	7281244	11.30
30 – 40	154	16005446	5601105	8.70
20 – 30	92	15269963	3912037	6.07
< 20	99	11861231	1607865	2.50
Nil	39	19	0	0
INDIA	593	64407536	21161872	32.86
Source: Compiled by Author.				

A large part of the southern India comes under the category of high work force. The rural scheduled castes female work participation rate is found in 158 districts and accounts 11.30 per cent female workers. Like wise the moderate size of rural scheduled castes female work participation rate is found in 154 districts and accounts 8.70 per cent female workers. A large part of western India and patches from all over the region is confined with moderate size of workers.

Low and very low concentration of scheduled castes female workers spread over the northern and eastern part of India i.e. Uttar Pradesh, Punjab, West Bengal, Assam, Meghalaya and Coastal Orissa. The lowest workforce is found in Leh (Ladakh) i.e.5.55 per cent (Jammu and Kashmir) precede by Shahjanpur (5.92 per cent), Pilibhit (6.16 per cent), Mainpuri (6.90 per cent) all are confined to Uttar Pradesh state.

Patterns of Scheduled Tribes Rural Work Participation Rate

Tribes are the bottom of social and political ladder in India. Development projects have not only bypassed them, but have often harmed them by taking away their lands and other resources on which their livelihood was based. From the viewpoint of policy, it is important to understand that tribal communities poor, asset less and illiterate compared to the general population; often their district vulnerability arises from their inability to negotiate and cope with the consequences of their forced integration with the main stream

economy, society cultural and political system from which they were historically projected as the result of their relative isolation.

Indian tribes have been living between two worlds: their own tribal world which is in transition, and the new social order which opens up vistas for their transformation. India today displays a very high degree of social and ethnic diversity. The population of India subsumes within it a multitude of caste and tribal groups representing different stages in the social evolution of the humankind. The word tribe in the Indian context, however, conveys a sense of meaning which evades clarity. Generally it refers to ethnic as well as political.

The Indian tribes display a very high degree of ethnic diversity both in their racial composition and the dialectal and linguistic affinity. The fact that the scheduled tribes include as many as 285 different communities is an important index of their ethnic diversity. No less impressive is the pattern of their spatial distribution. It has been commonly observed that the tribes reveal strong tendencies of clustering and concentration in the hilly, forested and the geographically inaccessible tracts of the country.

Patterns of scheduled tribe work force have been shown in the map (Fig. 2.20) work participation rate of rural scheduled tribes display a high tendency of clustering and concentration in the hilly and forested tracts of the country.

All districts have been grouped into five categories. The districts of very high work force (above 50 per cent) and the districts of high (45 - 50 per cent) work force are found in 234 and 133 districts respectively (Table 2.25). Both the categories of workforce are comprised by 367 districts that are 61.88 per cent districts of the total districts. The highest workforce is found in Jyotiba Phule Nagar, Firozabad, Kannauj, and Hamirpur districts of Uttar Pradesh as cent per cent.

Moderate size of work participation rate is also found in the form of Patches. The moderate size of workers is found in 93 districts and covers 5.02 per cent rural scheduled tribe workers. Likewise low and very low level of scheduled tribe work participation mainly observed in the northern plain. The lowest work participation rate is found in Meerut (7.69 %) of Uttar Pradesh.

Table No. 2.25– INDIA: Rural Scheduled Tribes Work Participation Rate, 2001				
Category (%)	No. of Districts	Rural Scheduled Tribes Population	Rural Scheduled Tribes Workers	In Per cent
> 50	234	46745894	25006062	32.33
45 – 50	133	18783672	8980447	11.61
40 – 45	93	9039734	3881449	5.02
35 – 40	34	1834967	698209	0.90
< 35	39	934330	387878	0.50
Nil	60	0	0	0
INDIA	593	77338597	38954045	50.37
Source: Compiled by Author.				

Rural Scheduled Tribes Male Work Participation Rate:

The areas of very high (above 60 per cent) concentration of rural scheduled tribes male workforce are found in the form of patches in north India and a large part confined with south India (Fig. 2.21). The category of very high workers is found in 72 districts. The highest workforce is found in Jyotiba Phule Nagar, Firozabad, Kannauj, and Hamirpur districts of Uttar Pradesh as 100 per cent (Table 2.26).

Table No: 2.26– INDIA: Rural Male Scheduled Tribes Work Participation Rate: 2001				
Category (%)	No. of Districts	Rural Male ST Population	Rural Male ST Workers	In Per cent
> 60	72	1995041	1231505	3.15
55 – 60	144	12719653	7296666	18.69
50 – 55	180	17992014	9470729	24.26
45 – 50	103	5528419	2660710	6.81
< 45	34	810523	340984	0.87
Nil	60	0	0	0
INDIA	593	39045650	21000594	53.78
Source: Compiled by Author.				

The areas experiencing high category of rural work participation rate of scheduled tribe male work force is in southern states. The category of high workers is found in 144 districts and covers 18.69 per cent rural scheduled tribe male work force.

A large part of Maharashtra, Madhya Pradesh, Rajasthan, Orissa and adjacent areas have moderate size of work force. The moderate size of work force is found in 180 districts and covers 24.26 per cent rural scheduled tribes' male work force. A large part of north-eastern states and Rajasthan confined with area of low concentration of workforce.

While some small patches of very low concentration of rural scheduled tribes male work force is found in Ganga plain and hilly region. The lowest workforce is found in Kaushambi (11.76 %) and preceded by Meerut (16.67 %) both are confined to Uttar Pradesh state.

Rural Scheduled Tribes Female Work Participation Rate:

An over view of scheduled tribes female work participation in the rural area shows that eastern coast and a belt from Maharashtra to eastern Rajasthan have very high (above 50 per cent) concentration of workers even some small patches also found all over the study region (Fig. 2.22). The highest concentration of rural scheduled tribe female workers is found in Kannauj and Hamirpur as cent per cent and both the districts are from Uttar Pradesh (Table 2.27).

Table No: 2.27 – INDIA: Rural Female Scheduled Tribes Work Participation Rate: 2001

Category (%)	No. of Districts	Rural Female ST Population	Rural Female ST Workers	In Per cent
> 50	129	12865384	6870714	17.94
40 – 50	203	19361427	8999446	23.50
30 – 40	121	5007657	1817306	4.75
20 – 30	40	897191	240463	0.63
< 20	33	161171	25522	0.07
Nil	67	117	0	0
INDIA	593	38292947	17953451	46.88

Source: Compiled by Author.

A large part of India comes under the category of high (45-50 per cent) work force. The rural scheduled castes female work participation is found in 203 districts and 23.50 per cent female workers. Both the categories of very high and high concentration of workers are confined with more than 55 per cent districts. Like wise the moderate size of rural scheduled tribe female work participation rate is found in 121 districts and 4.75 per cent female workers. Some small patches from all over the region are confined with moderate size of workers.

The category of low and very low level of concentration of scheduled tribes' female workers spread all over the study area. Both the two categories of low and very low concentration of workers are found in small patches on all over the study region except central part. The lowest workforce is found in Mainpuri i.e.1.10 per cent (Uttar Pradesh) and preceded by Sonbhadra (2.84 per cent), and Andamans (4.82 per cent).

A comparative analysis of work participation rate among total, scheduled castes, and scheduled tribe population is needed spatially for betterment of the society.

While studying a comparative analysis of working force it is observed that large number of districts found in very high and high category of scheduled tribes rural work participation rate. The number of districts of low category of total rural work participation rate is near to three times higher than the number of districts of low work participation rate of scheduled tribe. Even the number of districts in scheduled castes work participation rate is more than the double number of districts is found as compare to the number of districts in scheduled tribe work participation rate.

Table No. 2.28 INDIA: Comparative Analysis of Rural Work Participation Rate: 2001

Category (%)	Districts of Total WPR	Districts of SC WPR	Districts of ST WPR
> 50	118	131	231
45 – 50	154	127	132
40 – 45	115	138	93
35 – 40	72	82	34
< 35	125	93	43
Nil	9	22	60
INDIA	593	593	593

Source: Compiled by Author.

TABLE: 2.29 – INDIA:Comparative Analysis of Rural Male Work Participation Rate: 2001			
Category (%)	Districts of Total Male WPR	Districts of SC Male WPR	Districts of ST Male WPR
> 60	37	39	72
55 – 60	141	112	144
50 – 55	217	240	180
45 – 50	153	147	103
< 45	36	33	34
Nil	9	22	60
INDIA	593	593	593
Source: Compiled by Author.			

Table: 2.30 - INDIA: Comparative Analysis of Rural Female Work Participation Rate: 2001			
Category (%)	Districts of Female WPR	Districts of SC Female WPR	Districts of ST Female WPR
> 50	40	51	129
40 – 50	174	158	203
30 – 40	149	154	121
20 – 30	98	92	40
< 20	123	99	33
Nil	9	39	67
INDIA	593	593	593
Source: Compiled by Author.			

It is also noticeable that the number of districts in male work participation rates is recorded in very high and high percentages in entire the three categories i.e. total, scheduled castes and scheduled tribe work participation rates. Likewise female working force is also recorded in very high (129 districts) and high (203 districts) percentages in the scheduled tribe while it is recorded one fourth (1/4) in the very high (40 districts) category of total female working force.

Levels of Demographic Development

Here an attempt has been made to identify the levels of demographic development in India with the help of 'Z' Score. Recently one study had been done by 'Lin YC, 2005' with this method on bone density of the elderly in Taiwan was assessed by quantitative ultrasound bone densitometry of the heel in the Elderly Nutrition and Health Survey in Taiwan (1999-2000). Broadband ultrasound attenuation (BUA) was measured, and the

corresponding Z-score was calculated. The results show that in elderly Taiwanese males, higher BMI and intake of dietary calcium is positively associated with a higher BUA Z-score. Advancing age and living in the second stratum in the southern areas appeared to be negatively associated with BUA Z-score in elderly females. BMI, height, years of education, and intake of dietary calcium were positive predictors of BUA Z-score. Further analysis was performed by grouping subjects according to the gender-specific medians of intake levels of dietary calcium, protein, and sodium. The results revealed that for both genders, those in the "high calcium/high protein" group had a higher mean BUA Z-score. The results of the current analysis show that in Taiwan, BMI and dietary calcium intake are positive predictors of BUA Z-score in elderly males, whereas BMI, height, years of education, and dietary calcium intake are positively associated with BUA Z-score in elderly females.

Similarly an attempt has been made with the ‘Z’ Score to identify the levels of demographic development, through the following indicators;

I. Rural Male Literacy Rate.
II. Rural Female Literacy Rate.
III. Rural Scheduled Castes Male Literacy Rate.
IV. Rural Scheduled Castes Female Literacy Rate.
V. Rural Scheduled Tribes Male Literacy Rate.
VI. Rural Scheduled Tribes Female Literacy Rate.
VII. Rural Sex Ratio.
VIII. Rural Scheduled Castes Sex Ratio.
IX. Rural Scheduled Tribes Sex Ratio.
X. Rural Male Work Participation Rate.
XI. Rural Female Work Participation Rate.
XII. Rural Scheduled Castes Male Work Participation Rate.
XIII. Rural Scheduled Castes Female Work Participation Rate.

XIV. Rural Scheduled Tribes Male Work Participation Rate.

XV. Rural Scheduled Tribes Female Work Participation Rate.

First of all the indicators have been calculated in percentage then 'z' scores have been calculated, lastly the demographic development has been identified on the basis of composite scores of all the districts in the rural area.

Regional patterns have been shown in the map. All the districts have been grouped into five categories. The districts of very high demographic development ('Z' score Index, above 10) and the districts of high (5 - 10) level are found in 56 and 86 districts respectively. The highest level of demographic development in index is found in Aizwal as 23.41 followed by Serchhip as 22.31 both the districts are from Mizoram. The very high and high level of development mainly confined with southern region, western coast, central India, north-western Himalayan region and Mizoram. The levels of development is showen in the map (Fig. 2.23)

Moderate size of development is found in the western, central, and north-eastern region in the form of patches. The moderate size of development is found in 274 districts and covers 46.21 per cent districts. Likewise low and very low level of development mainly observed in the northern plain and it covers remaining 168 districts. Broadly the low literacy rate, low sex ratio and low work participation rate is observed in this region mainly due to gender discriminations.

GENERALIZED REGIONS

On the basis of demographic characteristics and the level of demographic progress the study region divided broadly into five zones i.e.

I. Western Himalayan Zone (Zone 1)

II. North-Eastern Zone (Zone 2)

III. Ganges Plain's Zone (Zone 3)

IV. Arid and Semi-Arid Zone (Zone 4)

V. Coastal and Island's Zone (Zone 5)

The general picture of zones described in table no. 2.31 and shown in the map (Fig. 2.24) It reveals that zone one is smallest in terms of administrative units i.e. 38 districts. The total rural population of this zone is **184.18 lakh (2.48 per cent)** out of which male constitutes **93.4 lakh (2.45 per cent)** and female **90.7 (2.51 per cent)** persons as per 2001 census. The total rural working population constitutes ***78.9 lakh (42.87 per cent)*** of the total rural population, in which male workers are ***46.6 lakh (49.86per cent)*** and female workers are ***32.3 lakh (35.68 per cent)*** persons. The rural literacy rate of this zone found 63.25 per cent which is 4.51 per cent higher than the Indian rural literacy rate. Likewise male and female literacy rates are 74.72 per cent and 51.51 percent respectively while sex ratio is 971 females per thousand males. Uttrakhand, Himachal Pradesh and Jammu & Kashmir are the prominent states under this zone, which are considered in western Himalaya. It is sparsely populated zone and low level of concentration of rural workers. Overall the table reveals that this zone have moderate or moderately high demographically characteristics.

Likewise the zone two is second smallest zone with 79 districts. The total rural population of this zone is ***389.07*** **lakh (5.24 per cent)** out of which male constitutes ***200.13*** **lakh (5.24 per cent)** and female ***188.94 lakh*** **(5.24 per cent)** persons as per 2001 census. The total rural working population constitutes ***149.66 lakh (38.47 per cent)*** of the total rural population, in which male workers are ***100.32 lakh (50.13 per cent)*** and female workers are ***49.33 lakh (26.11 per cent)*** persons. The rural literacy rate of this zone found 61.20 per cent which is higher than the Indian rural literacy rate. Likewise male and female literacy rates are 69.63 per cent and 52.22 percent respectively. The male literacy rate is lower than the national male literacy rate while female literacy rate is higher than the national average which represents the higher social status of women while its sex ratio is lower the national average i.e. 944 females per thousand males. Northeast India refers to the easternmost region of India consisting of the contiguous Seven Sister States i.e. Arunachal Pradesh, Assam, Meghalaya, Nagaland, Manipur, Tripura and Mizoram, except these states whole Sikkim and some part of West Bengal also consider in this zone. Mainly it is a tribal zone and politically unrest is also there. Northeast India is ethnically distinct from the other states of India. Northeast India has a predominantly humid sub-tropical climate with hot, humid summers, severe monsoons and mild winters.

Along with the west coast of India, this region has some of the Indian sub-continent's last remaining rain forests. India shares 4096 km of border with Bangladesh and more than half of the border shares with this zone. Bangladesh has the highest density of population in the world, the density of its population is 982 persons per/sq km. North Eastern States on the other hand are sparsely populated with over 26 million Bangladeshi illegal migrants are there in India. The table reveals that zone two have moderate level of demographic characteristics.

Zone three basically known for Gangetic alluvial plain or Great Plain of India. This is the largest zone in terms of administrative units as well as population i.e. 191 districts. The total rural population of this zone is ***3161.58*** **lakh (42.58 per cent)** out of which male constitutes ***1651.91*** **lakh (43.29 per cent)** and female ***1509.67 lakh*** **(41.83 per cent)** persons as per 2001 census. The total rural working population constitutes ***1138.51 lakh (36.01 per cent)*** of the total rural population, in which male workers are ***814.70 lakh (49.32 per cent)*** and female workers are ***323.81 lakh (21.45 per cent)*** persons. The rural literacy rate of this zone found 53.60 per cent which is 5.14 per cent lower than the Indian rural literacy rate. Likewise male and female literacy rates are 66.34 per cent and 39.63 per cent respectively while sax ratio is 914 females per thousand males. The overall picture towards literacy rate and sex ratio shows poor social development of this zone. The northern Plains also known as the Indo-Gangetic Plain and The North Indian River Plain is a large and fertile plain encompassing most of northern and eastern India. The plain's population density is very high due to the fertile soil for farming.

The Indo-Gangetic plain is bound on the north by the abruptly rising Himalayas, which feed its numerous rivers and are the source of the fertile alluvium deposited across the region by the two river systems. The southern edge of the plain is marked by the Vindhya- and Satpura Range, and the Chota Nagpur Plateau. The plains are one of the world's most intensely farmed areas. The main crops grown are rice and wheat, which are grown in rotation. Others include maize, sugarcane and cotton. The Indo-Gangetic plains rank among the world's most densely populated areas. The region holds great importance socially and economically but looser in terms of literacy, sex ratio, and workforce. The

region has lowest level of female literacy rate and sex ratio. While moderate concentration of workforce is also legging this region.

Table No. 2.31 – INDIA: Zone wise Picture of Demographic Characteristics: 2001						
Zones	**R. India**	**Zones 1**	**Zones 2**	**Zones 3**	**Zones 4**	**Zones 5**
Total Districts	593	38	79	191	159	126
Rural Population	742490639 (72.18 %)	18418744 (2.48 %)	38907724 (5.24 %)	316435014 (42.58 %)	198174310 (26.69 %)	170831675 (23.01 %)
Male Population	381602674 (71.71 %)	9344277 (2.51 %)	20013461 (5.24 %)	165333890 (41.83 %)	101192536 (26.87 %)	85861385 (23.54 %)
Female Population	360887965 (72.69 %)	9074467 (2.55 %)	18894263 (4.83 %)	151101124 (36.73 %)	96981774 (30.75 %)	84970290 (25.15 %)
Total L. Rate	58.74	63.25	61.20	53.60	57.17	68.39
Male L.Rate	70.70	74.72	69.63	66.34	71.00	78.08
Female L. Rate	46.13	51.51	52.22	39.63	42.80	58.67
SC L. Rate	51.16	64.94	64.38	45.16	52.31	61.00
Male L. Rate	63.66	76.65	74.82	58.09	66.49	71.50
Female L. Rate	37.84	52.86	53.29	30.94	37.42	50.44
ST L.Rate	45.02	44.55	58.98	38.03	43.65	43.29
Male L.Rate	57.39	46.07	55.14	42.64	45.96	44.94
Female L. Rate	32.44	26.63	42.22	18.67	24.04	26.46
T.S. Ratio	946	971	944	914	958	990
SC S. Ratio	939	965	944	914	951	989
ST S. Ratio	981	935	972	964	985	988
Total WPR	41.75	42.87	38.47	36.01	48.11	45.62
Male WPR	52.11	49.86	50.13	49.32	53.70	56.33
Female WPR	30.79	35.68	26.11	21.45	42.28	34.80
SC WPR	42.50	44.78	37.83	38.11	48.08	48.41
Male WPR	51.55	50.77	52.99	49.66	52.07	56.07
Female WPR	32.86	38.57	21.78	63.75	43.90	40.67
ST WPR	50.37	45.62	44.71	48.62	51.26	52.99
Male WPR	53.78	51.88	49.01	53.68	54.05	56.45
Female WPR	46.88	38.92	40.28	43.36	48.43	49.50
Source: Complied by Author						

Nomenclature; L-Literacy, S-Sex, WPR-Work Participation Rate, SC-Scheduled Castes, ST-Scheduled Tribes.

Zone four geographically known for arid and semi-arid climatic conditions. This group consists of regions where the rate of evaporation of water is higher than the rate of moisture received through precipitation. This region also known for Deccan Plateau long stretch of land situated to the south of Tropic of Cancer and east of the Western Ghats and the Cardamom Hills experiences this climate. It includes Karnataka, western Andhra Pradesh and central Maharashtra. This area receives minimal rainfall due to being situated in the rain shadow. This zone is the second largest zone in respect to administrative unit i.e. 159 districts.

The total rural population of this zone is ***1981.74*** **lakh (26.69 per cent)** out of which male constitutes ***1011.92*** **lakh (26.52 per cent)** and female ***969.81 lakh*** **(26.87 per cent)** persons as per 2001 census. The total rural working population constitutes ***953.02 lakh (48.09 per cent)*** of the total rural population, in which male workers are ***543.12 lakh (53.67 per cent)*** and female workers are ***409.90 lakh (42.27 per cent)*** personsas. The rural literacy rate of this zone found 57.17 per cent which is 1.57 per cent lower than the Indian rural literacy rate. Likewise male and female literacy rates are 71.00 per cent and 42.80 percent respectively. The male literacy rate is observed higher than the national average while female literacy rate is observed lower then the national average. It shows hard-up social states of women. The table reveals that this zone has moderately high demographic characteristics in respect of sex ratio, literacy and workforce.

Last but not least zone five has 126 districts and total rural population of this zone is ***1708.32*** **lakh (23.01 per cent)** out of which male constitutes ***858.61*** **lakh (22.50 per cent)** and female ***849.70 lakh*** **(23.54 per cent)** persons as per 2001 census. The total rural working population constitutes ***779.39 lakh (45.62 per cent)*** of the total rural population, in which male workers are ***483.65 lakh (56.33 per cent)*** and female workers are ***295.73 lakh (34.80 per cent)*** personsas. The rural literacy rate of this zone found 68.39 per cent which is 9.35 per cent higher than the Indian rural literacy rate. Likewise male and female literacy rates are 78.08 per cent and 58.67 per cent respectively. Likely sex ratio is 990 females per thousand males also higher the national average which represents the privileged social development of the area. All of the coastal plains of India cover this zone India is bounded to the southwest by the Arabian Sea, to the southeast by the Bay of Bengal, and to the south by the Indian Ocean. Kanyakumari is the southern tip

of the Indian peninsula. The southernmost point in India is Indira Point, in the Andaman and Nicobar Islands. The Maldives, Sri Lanka and Indonesia are island nations to the south of India. Sri Lanka is separated from India by the Gulf of Mannar and the narrow channel of Palk Strait. The territorial waters of India extend into the sea to a distance of 12 nautical miles. This zone has high literacy rate, high sex ratio and high concentration of rural workers. Likewise conditions of females are also empowered in this region resultant this region considered in socially developed region.

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