



Spatio-Temporal Pattern of Literacy in West Bengal, 2001 - 11

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Abstract

Being one of the most important indicators of socio-economic change, study of literacy pattern and trend of an area is quite important. Therefore, the present paper is aimed to analyze the spatio-temporal pattern of literacy in the state of West Bengal (state). The study reveals that overall there is significant increase in literacy rates in the state, which has increased from 68.64 % to 77.08 % between the years 2001 to 2011. There is a significant difference in literacy rates between males and females in the both rural and urban area of the district. Male literacy rates are substantially higher compared to females in both rural and urban area in every district. However, in rural area male literacy rates are more than the corresponding female's literacy rates. Thus, females are lagging far behind males in literacy in both rural and urban areas.

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Introduction

Education is the mirror of our modern society. The government policy- "Literacy for all" has always enlightened the human beings in our present society. Literacy is one of the most important parts to measure Human Development Index (HDI) at international, national and regional levels. High rate of literacy will always ensure and increase the progress of any modern human society. According to UNESCO literacy is the ability to identify, understand, interpret, create, communicate, compute and use printed and written materials associated with varying context". Education does not only mean literacy but also transfer of knowledge to improve communication skills, and capability to improve the environment and to utilize the scarce resources for the development of the nation". In spite of there being countrywide Govt. literacy programmes such as National Literacy Mission (NLM) launched in 1988, Sarva Shiksha Abhiyan launched in 2001 and International literacy Day, the literacy rate of India has not fulfilled expected condition till the present day at national, state or district levels because of the

huge concentration of illiterate population in the rural area.

Literacy refers to the capability of a person to read and write with understanding in at least one language. According to the Census of India, a person who can read and write with understanding in any language is considered as literate. All children below the age of 6 years have been treated as illiterate (Census of India). Literacy is considered as a fairly reliable index of socio-cultural and economic advancement. It is essential for social reconstruction, improvement in quality of life and preparation of manpower for rapid development. Literacy is essential for eradicating poverty and mental isolation for cultivating peaceful and friendly international relations and for permitting the free play of demographic process. Literacy influences such attributes of population as fertility, mortality, mobility, occupations etc. The developing country/countries like India are not only characterized (x not only) by low literacy level but also by a great disparity in literacy level between rural and urban, between males and females and between young and the aged. Therefore, the study

of literacy pattern and trends is of immense significance.

Objectives

1. To analyze the spatial pattern of literacy in rural and urban areas in West Bengal.
2. To study the spatial pattern of gender differences in literacy in the state.
3. To find out the trend of literacy rate during the decade 2001 to 2011 in the state.
4. To study the rural-urban and male-female disparity in literacy rate in the state

Methodology

The present study is mainly based on secondary data, which is collected from District Census Handbook, Census of Haryana and Statistical Abstract of Haryana. 2001 (and) to 2011 period is selected for study purpose. An attempt has been made to tabulate process, analyze and interpret the data by applying suitable statistical and cartographic techniques. District wise spatial variation in literacy rates have been shown on maps by using choropleth method. Literacy rate has been calculated by using the following formula:

$$\text{Literacy (\%)} = \frac{(\text{Literate} > 6 \text{ years} \times 100)}{\text{Total Population}}$$

For the measurement of male-female and rural-urban disparity in literacy, Sopher's Disparity Index (1974) modified by Kundu and Rao (1983) has been employed:

$$Ds = \log(X_2/X_1) + \log(100 - X_1)/(100 - X_2)$$

Kundu and Rao's modified disparity index formula, as follows:

$$Ds = \log(X_2/X_1) + \log(200 - X_1)/(200 - X_2)$$

X_2 = male literacy rates and X_1 = female literacy rates.

Study Area

The state of West Bengal has been selected as a study area which is located between 21°25' North to 26°50' North latitudes and 86°30' East to 89°58' East longitudes with three international boundaries i.e., Bangladesh, Nepal and Bhutan. It occupies a geographical area of about 88,752 sq. km. (2.70% of the India's total geographical area) and extends from the Himalayas in the north to the Bay of Bengal in the south. It is surrounded by Sikkim and Bhutan in the north, Assam and Bangladesh in the east, the Bay of Bengal in the south and Orissa, Jharkhand, Bihar and Nepal in the west. The agriculture area of the state is 51,675.40 sq. km in 2008-09 and ranks the first in production of rice and jute, and second in production of tea in the country viz., 16.10 per cent of the total rice production from the 13.43 per cent total rice producing area, 79.53 per cent of the total jute production from 68.13 per cent of total jute producing area and 19.56 per cent of total tea production from about one-fourth of the area of the

country respectively. The total population of the state is 91347736 and density of population is 1029 in 2011.

The Table -1 presents an overall picture of literacy rate and district-wise %age change in literacy between 2001 to 2011 in the state. The proportion of literates to total population in the state has gone up from 68.64 % in 2001 to 77.08 % in 2011. Fig. 1 and fig. 2 gives a visual impression of the inter-district variations in literacy rate in the state. The lowest literacy rate in 2001 as well as in 2011 has been recorded in Uttar Dinajpur district at 47.68 % and 60.13 % respectively. It is because of the pre-dominance of backward Muslims population in the districts that less attention is paid towards education. In 2001 highest literacy rate is found in Kolkata district (80.86 %). In 2001 highest literacy rate is found in Purba Medinipur district (87.66 %) High literacy rate is observed in the districts of Darjeeling, North 24 Parganas, Hugli, Haora, Kolkata and Purba Medinipur in 2001 as well as in 2011. Literacy rate is comparatively low in the districts of Uttar Dinajpur, Malda and Murshidabad in 2001. Highest %age change in literacy rate (13.18 %) is observed in Murshidabad district between 2001 to 2011. Jalpaiguri, Uttar Dinajpur, Dakshin Dinajpur, Malda and Murshidabad also have experienced high %age change in literacy rate above 10 %.

The Table-2 shows trend, pattern and %age change in literacy rate among male and female population of West Bengal for both the study periods. For the state as a whole, the literacy rate for males is much higher than that of females, 77.02 % of males are literates, while females account only 59.61 % in 2001 where as the literacy rate among male and females are recorded 82.67 % and 71.16 % respectively in the year 2011. It indicates that gap between male and female literacy rate is narrowing down from 11.55 % in 2001 to 5.65 per cent in 2011. The pattern of literacy reveals that highest and lowest literacy rate for males is registered in Purba Medinipur (89.13 %) and Malda (58.80 %) districts respectively in 2001, while for female, it is found in Kolkata (77.30 %) and Purulia (36.50 %) districts respectively. In 2011, Purba Medinipur district tops in male literacy (93.14 %), while in case of female Kolkata stands at top with (84.98 %) literacy rate. Uttar Dinajpur and Purulia district stands at bottom with (66.65 %) and (51.29 %) male and female literacy rates respectively. It is clear from the pattern of literacy that the districts adjoining to State Capital have recorded high literacy rate during both study periods. It is because of better educational facilities and awareness of people towards education.

It is clear from the table that highest percentage of change in literacy rate for males is experienced in Murshidabad (10.31 %), while for females in Uttar Dinajpur (16.64 %) district. Those districts, which have low literacy rates, have registered high %age of change in literacy rate for both male and females, which include Uttar Dinajpur, Malda, Murshidabad, Dakshin Dinajpur,

etc. Districts having higher rate of literacy have experienced lesser %ages change in literacy rate for both male and females, including Kolkata, Hugli, Haora, Purba Medinipur, etc.

The Table 3 shows the sex-wise differences in literacy rates in rural and urban areas during 2001-2011. In 2001, male-females literacy rate in rural areas is 71.13 % and 53.16 % respectively, while in urban areas, it is 86.13 % and 75.75 % for male and females respectively. In the state as a whole, 79.51 % and 89.15 % male literacy rate is registered in rural and urban areas respectively in 2011, while female literacy rate in rural and urban areas is recorded 66.08 % and 81.70 % respectively. Thus there is a wide gap between male-female's literacy rates in rural and urban areas.

In 2001, highest literacy rate in rural and urban areas is recorded in Purba Medinipur (89%) and (90.53%) district respectively for males and Purba Medinipur (70.19%) and Koch Behar (79.77%) districts for females. In 2011, highest male and females literacy rates in rural areas is found in Purba Medinipur (93.1 %) and (81.45) district respectively, while in urban areas highest literacy rates among male and females is found in Purba Medinipur (93.41%) and North 24 Parganas (86.66) districts respectively.

Male-Female Disparity, 2001-2011:

The traditional view point regarding the importance of female literacy, as it seems, has not got much importance even at the end of the 20th century, especially among backward communities. It is because there has been still a very large disparity between male and female literacy rates (Ramotra, 2003). The male-female disparity in the state as a whole is observed 0.169 in 2001, which comes down as much as 0.106 in 2011.

The male-female disparity in the study area is very high as the disparity index is as high as 0.417 in Purulia district in 2001, while lowest in Kolkata (0.059) district. The maximum male-female disparity in 2011 is observed in Purulia (0.276) district and minimum in Kolkata (0.036) in 2011. It is observed that there are eleven districts in the state, which have male-female disparity above the state average (0.169) in 2001 and (0.106) in 2011. Disparity in literacy generates a number of social, economic and political problems which may threaten the very foundation of development (Singh and Chauhan, 2010). Hence, the male-female disparity found in the study area is cause of concern and should be a prime priority in the development planning

Table-5 explains the pattern of literacy in urban and rural areas during 2001 and 2011. Literacy rate is higher in urban areas as compared to rural areas. It reveals that in rural and urban area of the state during 2001, the literacy rate is marked 63.42 % and 81.25 % respectively. Purba Medinipur district has the highest (79.83 %) rural literacy (2001) rate and lowest rural literacy rate is seen in Uttar Dinajpur (42.86 %) district.

There is a significant difference in literacy rates between rural and urban areas of the district. During 2001, highest and lowest literacy rate in urban areas is observed in North 24 Parganas (85.19%) and Purulia (75.40%) districts respectively. During 2011 literacy rates in rural and urban areas is recorded 72.92 % and (85.54 %) respectively. Inter-districts variation is also prevailing in rural as well as urban areas. In the year 2011, the highest and lowest literacy rate in rural area is recorded in Purba Medinipur (87.47) and Purulia (63.75) districts respectively, while in urban areas, it is found in North 24 Parganas (89.8%) and Murshidabad (72.65%) respectively. To find out the rural-urban differences in literacy rates, disparity index has been calculated. In 2001, rural-urban disparity in literacy is observed 0.168, which comes down 0.115 in 2011. It indicates that people in rural areas have become aware of education. Highest and lowest disparity in rural-urban literacy is registered in Uttar Dinajpur (0.393 and 0.228) and Purba Medinipur (0.036 and 0.015) districts for both the study periods. In 2001, nine districts have disparity index above state average (0.168), while in 2011, only eight districts have disparity index above state average (0.115).

Conclusion

The above discussion reveals that on an overall basis, there is significant increase in literacy rates in the state, which has increased from 68.64 % to 77.08 % between the years 2001 to 2011. There is a significant difference in literacy rates between males and females in the both rural and urban area of the district. Male literacy rates are substantially higher as compared to females in both rural and urban area in every district. However, in rural area, male female literacy rates disparity is higher than the corresponding male-female's literacy rates as compared to urban areas. Thus, females are lagging far behind males in literacy in both rural and urban areas. Disparity in literacy generates a number of social, economic and political problems which may threaten the very foundation of development (Singh and Chauhan, 2010). Hence, the male-female disparity found in the study area is cause of concern and should be a prime priority in the development planning. The female literacy level affair as a whole thus needs to be restructured, reorganized and subsequently increased as to bring them at par for their overall development.

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Table – 1: Pattern of Literacy and its Decadal Changes in West Bengal, 2001 – 2011

Districts	2011	2001	Change In Literacy (%)
Darjiling	79.92	71.79	8.13
Jalpaiguri	73.79	62.85	10.94
Koch Bihar	75.49	66.3	9.19
Uttar Dinajpur	60.13	47.89	12.25
Dakshin Dinajpur	73.86	63.59	10.26
Maldah	62.71	50.28	12.43
Murshidabad	67.53	54.35	13.18
Birbhum	70.90	61.48	9.41
Barddhaman	77.15	70.18	6.97
Nadia	75.58	66.14	9.45
North-24 Parganas	84.95	78.07	6.89
Hugli	82.55	75.11	7.44
Bankura	70.95	63.44	7.52
Puruliya	65.38	55.57	9.81
Haora	83.85	77.01	6.84
Kolkata	87.14	80.86	6.28
South-24 Parganas	78.57	69.45	9.12
Paschim Medinipur*	79.04	70.41	8.63
Purba Medinipur*	87.66	80.16	7.5
West Bengal	77.08	68.64	8.44

Source: Census of India, 2001 and 2011

Table – 1a: Spatial Pattern of Literacy Rates in West Bengal, 2001-2011

Category	2001	2011
High	Darjeeling, North 24 Parganas, Hugli, Haora, Kolkata, Purba Medinipur	Darjeeling, North 24 Parganas, Hugli, Haora, Kolkata, Purba Medinipur.
Medium	Jalpaiguri, Koch Behar, Dakshin Dinajpur, Birbhum, Bankura, Barddhaman, Nadia, Purulia, Paschim Medinipur, South 24 Parganas	Jalpaiguri, Koch Behar, Dakshin Dinajpur, Bankura, Barddhaman, Nadia, Paschim Medinipur, South 24 Parganas
Low	Uttar Dinajpur, Malda, Murshidabad	Uttar Dinajpur, Malda, Murshidabad, Birbhum, Purulia.

Source: Compiled by the Authors

Table – 2: District-wise Male and Female Literacy Rates in West Bengal, 2001-2011

Districts	2011		2001		% Change in Literacy	
	Male	Female	Male	Female	Male	Female
Darjiling	85.94	73.74	80.05	62.94	5.89	10.80
Jalpaiguri	80.61	66.65	72.83	52.21	7.78	14.44
Koch Bihar	81.52	69.08	75.93	56.12	5.59	12.96
Uttar Dinajpur	66.65	53.15	58.48	36.51	8.17	16.64
Dakshin Dinajpur	79.63	67.81	72.43	54.28	7.20	13.53
Maldah	67.27	57.84	58.8	41.25	8.47	16.59
Murshidabad	71.02	63.88	60.71	47.63	10.31	16.25
Birbhum	77.42	64.07	70.89	51.55	6.53	12.52
Barddhaman	83.44	70.47	78.63	60.95	4.81	9.52
Nadia	79.58	71.35	72.31	59.58	7.27	11.77
North-24 Parganas	88.66	81.05	83.92	71.72	4.74	9.33
Hugli	87.93	76.95	82.59	67.21	5.34	9.74
Bankura	81.00	60.44	76.76	49.43	4.24	11.01
Puruliya	78.85	51.29	73.72	36.5	5.13	14.79
Haora	87.69	79.73	83.22	70.11	4.47	9.62
Kolkata	89.08	84.98	83.79	77.30	5.29	7.68
South-24 Parganas	84.72	72.09	79.19	59.01	5.53	13.08
Paschim Medinipur	86.66	71.11	81.28	59.11	5.38	12.00
Purba Medinipur	93.14	81.81	89.13	70.70	4.01	11.11
West Bengal	82.67	71.16	77.02	59.61	5.65	11.55

Source: Census of India, 2001 and 2011

Table – 3: Sex-wise Literacy Rate in Rural and Urban Areas of West Bengal, 2001-2011

Districts	2011				2001			
	Rural		Urban		Rural		Urban	
	Male	Female	Male	Female	Male	Female	Male	Female
Darjiling	82.50	67.2	91.23	83.65	76.12	55.39	87.66	78.52
Jalpaiguri	78.31	62.43	86.69	77.78	69.91	47.24	85.54	74.07
Koch Bihar	80.25	67.07	92.41	85.54	74.39	53.56	90.38	79.77
Uttar Dinajpur	64.06	49.77	84.31	76.69	54.21	30.77	85.52	74.86
Dakshin Dinajpur	77.42	64.61	92.61	86.15	69.93	50.30	87.82	78.55
Maldah	65.37	55.18	78.71	74.71	56.58	38.41	84.43	73.85
Murshidabad	69.52	62.84	77.51	68.02	58.53	45.67	75.17	60.75
Birbhum	76.01	62.18	86.75	76.55	69.51	49.70	84.73	70.20
Bardhaman	80.05	66.39	88.43	76.63	74.97	56.10	84.52	69.29
Nadia	75.65	67.08	89.63	81.98	68.24	54.96	86.89	75.70
N. 24 Parganas	82.86	73.08	92.79	86.66	76.66	60.99	89.58	80.37
Hugli	85.71	72.50	91.34	83.95	79.93	62.09	87.84	77.46
Bankura	80.06	58.66	90.97	79.24	75.81	47.56	88.11	71.91
Puruliya	77.96	48.93	84.68	67.21	72.37	33.24	85.03	64.91
Haora	86.06	75.29	88.61	82.3	80.72	64.55	85.47	75.78
Kolkata			89.08	84.98			83.79	77.30
S. 24 Parganas	83.59	69.59	87.93	79.09	77.94	56.15	85.41	73.70
Paschim Medinipur*	85.97	69.54	91.61	82.25	80.21	56.78	88.75	75.73
Purba Medinipur*	93.10	81.45	93.41	84.52	89.00	70.19	90.53	76.33

Source: Census of India, 2001 and 2011

Table – 4: Disparities in Male and Female Literacy Pattern of West Bengal, 2001-2011

Districts	2011		2001		Disparity Index	
	Male	Female	Male	Female	2011	2001
Darjiling	85.94	73.74	80.05	62.94	0.111	0.162
Jalpaiguri	80.61	66.65	72.83	52.21	0.131	0.210
Koch Bihar	81.52	69.08	75.93	56.12	0.115	0.196
Uttar Dinajpur	66.65	53.15	58.48	36.51	0.140	0.267
Dakshin Dinajpur	79.63	67.81	72.43	54.28	0.110	0.183
Maldah	67.27	57.84	58.8	41.25	0.095	0.205
Murshidabad	71.02	63.88	60.71	47.63	0.069	0.144
Birbhum	77.42	64.07	70.89	51.55	0.127	0.199
Bardhaman	83.44	70.47	78.63	60.95	0.119	0.170
Nadia	79.58	71.35	72.31	59.58	0.076	0.125
N. 24 Parganas	88.66	81.05	83.92	71.72	0.068	0.112
Hugli	87.93	76.95	82.59	67.21	0.099	0.143
Bankura	81	60.44	76.76	49.43	0.196	0.278
Puruliya	78.85	51.29	73.72	36.5	0.276	0.417
Haora	87.69	79.73	83.22	70.11	0.071	0.121
Kolkata	89.08	84.98	83.79	77.3	0.036	0.059
S. 24 Parganas	84.72	72.09	79.19	59.01	0.115	0.195
Paschim Medinipur	86.66	71.11	81.28	59.11	0.142	0.213
Purba Medinipur	93.14	81.81	89.13	70.7	0.100	0.167
West Bengal	82.67	71.16	77.02	59.61	0.106	0.169

Source: Calculated By Authors

Table – 5: Disparities in Rural and Urban Literacy Pattern of West Bengal, 2001-2011

Districts	2011		2001		Disparity Index	
	Rural	Urban	Rural	Urban	2011	2001
Darjiling	74.97	87.48	66.00	83.34	0.113	0.161
Jalpaiguri	70.55	82.33	58.93	80.02	0.108	0.203
Koch Bihar	73.87	89.01	64.27	85.18	0.137	0.195
Uttar Dinajpur	57.15	80.67	42.86	80.50	0.228	0.393
Dakshin Dinajpur	71.18	89.42	60.38	83.28	0.165	0.217
Maldah	60.42	76.82	47.76	79.28	0.159	0.321
Murshidabad	66.27	72.65	52.28	68.34	0.061	0.166
Birbhum	69.25	81.74	59.88	77.65	0.116	0.172
Bardhaman	73.39	82.75	68.83	77.39	0.085	0.080
Nadia	71.50	85.88	61.82	81.41	0.131	0.186
N. 24 Parganas	78.11	89.8	69.07	85.19	0.104	0.148
Hugli	79.22	87.75	71.02	82.95	0.076	0.110
Bankura	69.6	85.23	62.04	80.22	0.143	0.173
Puruliya	63.75	76.24	53.24	75.40	0.119	0.222
Haora	80.82	85.58	72.81	81.02	0.043	0.075
Kolkata	-	87.14	-	80.86	-	-
S. 24 Parganas	76.78	83.62	67.40	79.84	0.062	0.116
Paschim Medinipur	77.92	87.01	68.71	82.43	0.082	0.127
Purba Medinipur	87.47	89.14	79.83	83.79	0.015	0.036
West Bengal	72.92	85.54	63.42	81.25	0.115	0.168

Source: Calculated By Authors

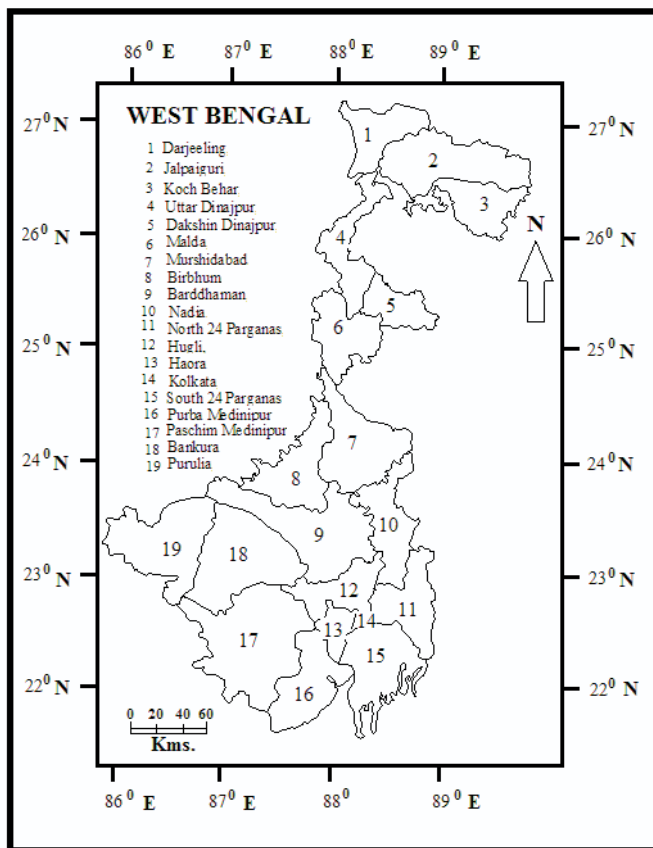


Fig. 1: Location and Administrative Divisions of West Bengal

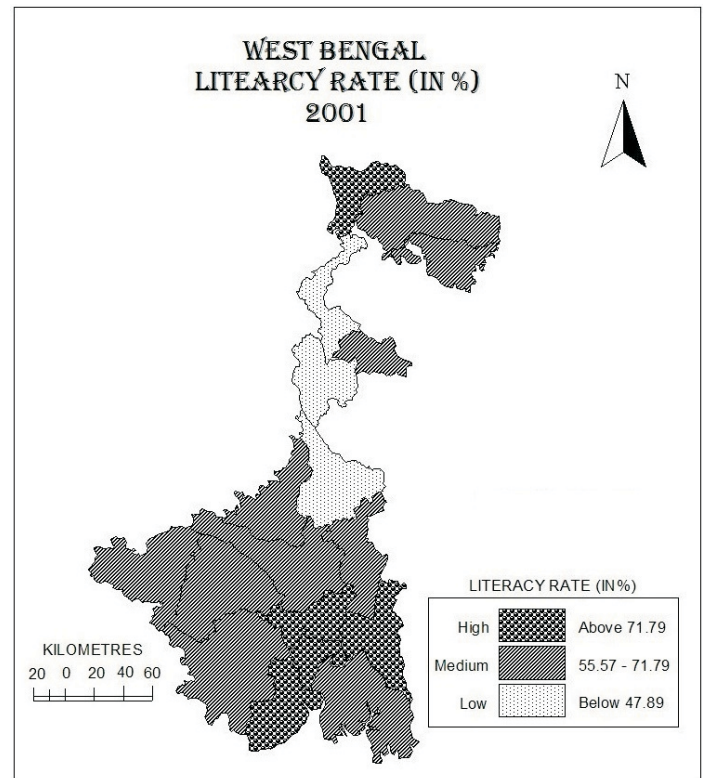


Fig. 2: Literacy Rates in West Bengal, 2001

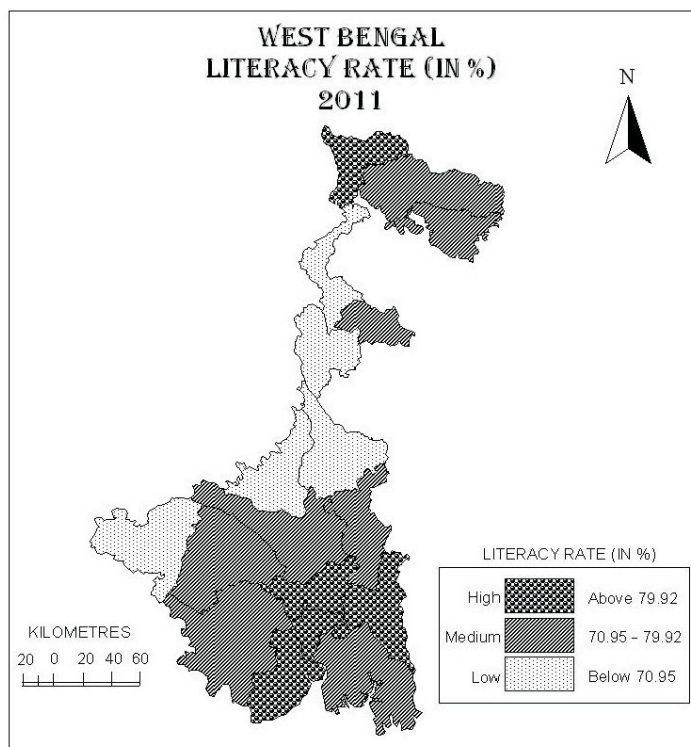


Fig. 3: Literacy Rates in West Bengal, 2011

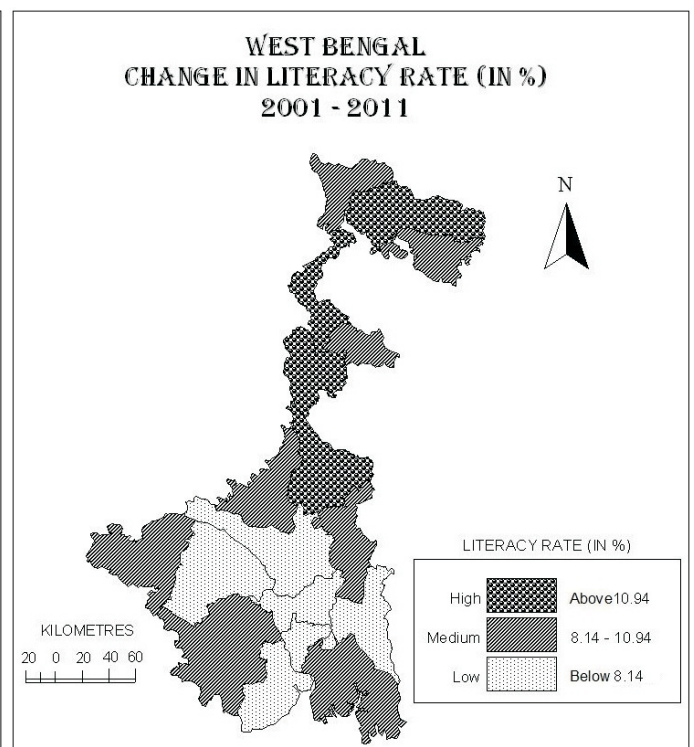


Fig. 4: Changes in Literacy Rates, West Bengal 2001 - 2011

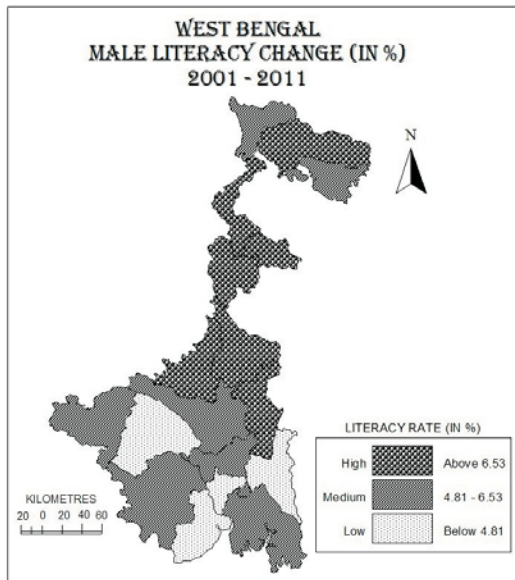


Fig. 5: Changes in Male Literacy Rates, 2001 - 2011

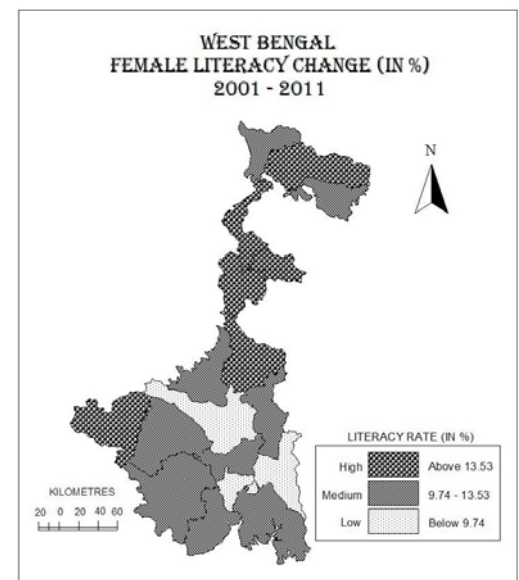


Fig. 6: Changes in Female Literacy Rates, 2001 - 2011

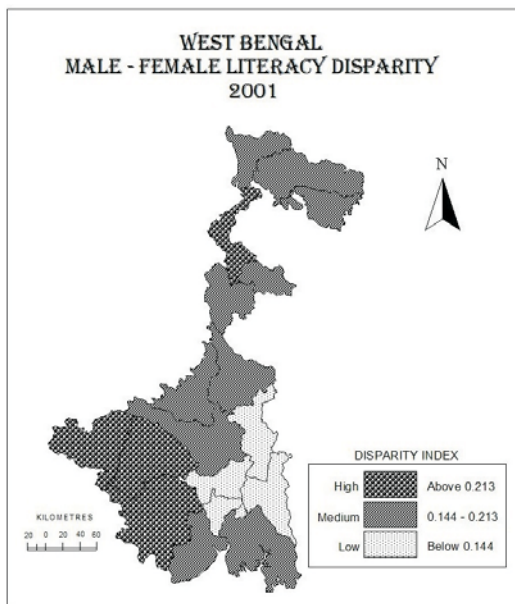


Fig. 7: Male - Female Disparity in Literacy, 2001

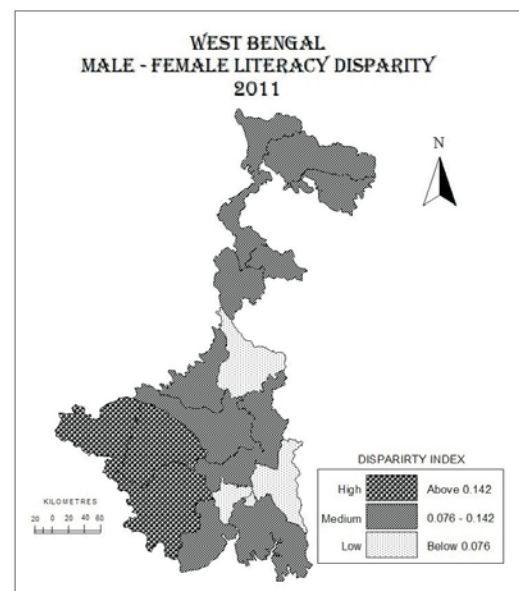
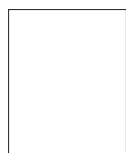
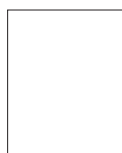


Fig. 8: Male - Female Disparity in Literacy, 2011



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