

USE OF DISPARITY INDEX FOR IDENTIFYING RURAL - URBAN LITERACY PATTERN OF PUNE DISTRICT, MAHARASHTRA

NITIN N. MUNDHE¹, DHONDIRAM B. PAWAR² & PRIYANKA D. ROKADE³

¹Assistant Professor, Department of Geography, Sir Parashurambhau College, Pune, Maharashtra, India

²Assistant Professor, Department of Economics, Sir Parashurambhau College, Pune, Maharashtra, India

³Research Scholar, Department of Economics, Maharashtra Education Society's Abasaheb Garware College, Pune, Maharashtra, India

ABSTRACT

Literacy has been considered as one of the prime indicators for socio-economic development of the people of a region. In world scenario, spread of literacy is generally associated with importance of modern civilization such as modernization, urbanization, industrialization, communication and commerce. Literacy rate of any district, state and country reflects the social, economic and political status of respective region. Literacy rate vary from region to region and it increases with time. According to the 2011, Census of India, average literacy rate of India is 74.04 % and average literacy rate of Maharashtra state is 82.91 %. In Maharashtra, uneven spatial distribution of literacy rate in all districts during the year of 2011. In Maharashtra, especially in Pune District, there is significant variation in rural - urban literacy rate and male - female literacy rate due to cities attract large number of male for education as well as job opportunities. The male-female literacy disparity as well as rural-urban literacy variation is witness to be highly variable throughout the district. Therefore, the present study is attempts to identifying rural - urban literacy pattern of Pune district, Maharashtra using disparity index technique. This study is to investigate the tahsil-wise disparity of rural - urban literacy in Pune District during 2001 to 2011. The data source for this paper is from district statistical handbook and census. The methodology adopted is mainly statistical analysis where the rural- urban distribution of literacy has been measured with the help Disparity Index.

KEYWORDS: Disparity Index, Literacy, Modernization, Urbanization, Industrialization, Rural-Urban, Male-Female

INTRODUCTION

Education is clearly recognized as one of the key components of policies aimed at solving issues of paramount importance. Without educational policies, policies aimed at improving poverty, public health, reducing infant mortality protecting the environment, strengthening the human rights, alleviating international relations and seeking to gain (UNESCO, 2010). Illiteracy, on the other hand, takes away from man his dignity, perpetuates ignorance, poverty and mental isolation, deters peaceful and friendly international relations and hampers social advancement, economic growth and political maturity (Sawant and Athawale, 1994).

Literacy is playing an important role to determine the level of the society not only the economic point of view but also a good sign for healthy environment (Coulombe et al., 2004). In general, the higher literacy is a good indicator for the sound economy as well as quality of life (Sundaram, 1985). The lower the literacy is hurdle for not only the economy but also the society (Mulimani and Pujar, 2015).

Literacy denotes the most basic and essential education for eradicating poverty and mental isolation, for cultivating peaceful and friendly international relations and for permitting the free play of demographic processes (Chandna & Sidhu, 1980). The definition of literacy varies from one country to another country in the world on their historical milieu and social development. Literacy defined by UNESCO as the “ability to identify, understand, interpret, create, compute and written material associate with varying contracts. According to the census enumeration, ‘a person, who can read and write with understanding in any language, is considered to be ‘literate’ (Joshi, 1999; Hassan, 2005; Dutta and Sivaramakrishnan, 2013).

The trends in literacy are indicative of the pace at which the society is being transformed. In India, literacy has made remarkable steps since independence. In 1901, a little over 5 % of the Indian population was literate, which increased to around 16 % in 1950, a mere increase of 11 % in the literacy rate during the first half of the century (Dutta and Sivaramakrishnan, 2013). The rate of literacy in India has increased from 18.33 % in 1951 to 74.04 % in 2011. This increase has been even more dramatic for the female literacy that has increased from 8.86 % to 65.46 % during the same period. India recorded a quantum jump in its literacy rate during 1991-2011 in case of both male and females. Female literacy for 2011 is comparable to 1991's level for males (Chandna, 2016). Three fourth of the male and more than half of the female population aged 7 and over are literate in the country today.

The country level data masks large variations across states and locations. Maharashtra stands at the top in the Literacy Rate in India. According to 2011, Census of India, the literacy rate in Maharashtra has increased from 27.91 % in 1951 to 82.91 % in 2011, which is far above the national average. Maharashtra revealed high literacy rates as compared to its neighboring states of Gujarat, Karnataka, Madhya Pradesh and Rajasthan. The levels of literacy vary from district to district in Maharashtra (Bhakare and Hudale, 2011). The highest literacy rate is 90.90 % in Mumbai Suburban District. The lowest literacy rate is registered in 63.04 % in Nandurbar District during the year of 2011. In Maharashtra regional disparity of literacy observed in district to district. Therefore, present research paper highlights regional disparity in pattern of rural-urban literacy of Pune District from 2001 to 2011. Thus, study of literacy level, trends and patterns is being taken as one of the catalytic aspect for a population geographer. The investigation of geographical variation of rural-urban gap in literacy helps to identify the areas with deficiency, which can help the policy makers to come up with proper developmental strategies for those regions.

STUDY AREA

Pune district lies in the Western Ghats or Sahyadri mountain range and it extends on to the Deccan Plateau on the east. Pune stands on the leeward side of the Western Ghats. Pune district lies between latitudes 17° 54' N and 19° 24' N and longitudes between 73° 19' E and 75°10' E. Pune district occupies an area of 15642 sq. km, which is 5.10 per cent of the total geographical area of the state. Among the 36 districts of the state, Pune is the second largest district in terms of area. Out of 15021 sq. km area comes under rural and 621 sq. km comes under urban area. Pune is at an altitude of 560m. The landscape of Pune district is distributed triangularly in western Maharashtra at the foothills of the Sahyadri Mountains and is divided into three parts: Ghatmatha, Maval and Desh. Pune District is bound by Thane District on the northwest, Raigad District on the west, Satara District on south, Solapur District on the southeast and Ahmadnagar District on northeast (Mundhe and Jaybhaye, 2014^a).

According to 2011, Census of India the total population of Pune District had total population of 94.29 lakhs, which is share of 8.39 per cent of total Maharashtra population. Pune has a sex ratio of 915 females for every 1000 males. In Pune District, there are two Municipal corporations, 3 cantonment boards and 14 revenue tahsil's namely Ambegaon, Baramati, Bhore, Daund, Haveli, Pune City, Indapur, Junnar, Khed, Maval, Mulshi, Purandar, Shirur and Velhe (Figure 1).

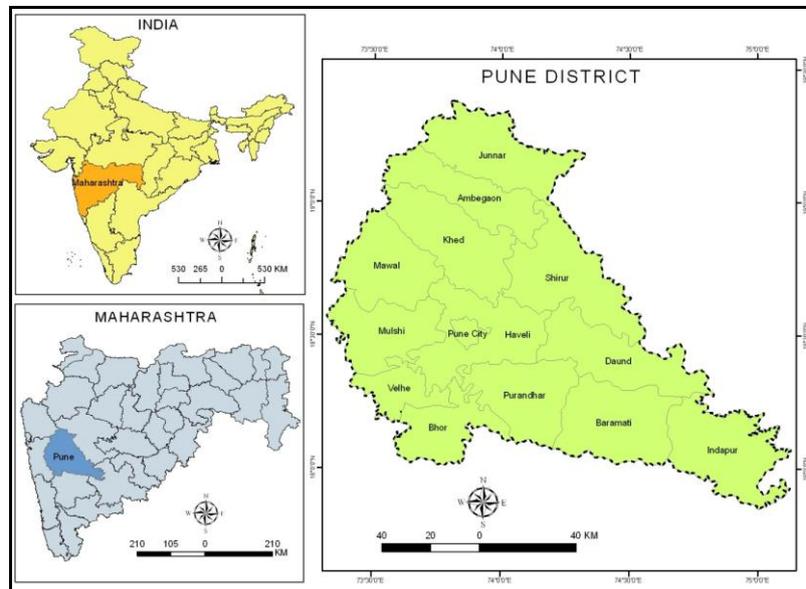


Figure 1: Location Map of Study Area

OBJECTIVE

This paper makes a modest attempt in mapping out the Tahsil level literacy pattern in Pune district, Maharashtra. It aims to identifying the spatio-temporal aspects of literacy gap between rural-urban areas using Disparity Index.

MATERIALS AND METHODS

The present study is based on secondary data obtained mainly from the publications of Census of India. The main census publications of different periods of time from where data has been collected include the General Population Tables, Socio Cultural Tables, District Census Handbooks of Pune Districts, Primary Census Abstract, Final Population Tables etc from 2001 to 2011. In addition to the sources indicated above, information and data have been collected from the Gokhale Institute of Politics and Economics, Pune and Statistical Department, Pune District. A large number of books, research studies including dissertations, published and unpublished works from different sources have been studied thoroughly for the present study. Relevant web sites were visited from time to time for authentic information and data.

METHODS

The present research work is an attempt to examine the regional disparity in pattern of rural-urban literacy of Pune District from 2001-2011 using Sopher's Disparity Index. Tahsil has been considered the most appropriate unit of study for which data are available. There were 14 tahsils in the district in 2011. The disparity index measures disparity between two groups in their possession of a particular property in terms of the logarithm of the odds ratio. The objective of taking log is

to reduce the leveling off effect i.e. regions with higher literacy rate may show a lower level of disparity than the region having low literacy rate even though the gap is the same for both region (Sopher, 1980; Ramotra, 1988, Husain, 2010).

Sopher's Disparity Index (Sopher DI_s, 1974) is a well-accepted measurement technique to identify the disparity between rural-urban literacy group by using the following formula (Kundu & Rao, 1986; Mulimani & Pujar, 2015; Biswas, 2016).

$$DI = \text{Log} (X_2 / X_1) + \text{Log} (100 - X_1) / (100 - X_2)$$

Where, DI = Disparity Index

X_2 = Percentage of Urban Literates.

X_1 = Percentage of Rural Literates.

i.e. $X_2 \geq X_1$

Disparity Index technique is useful in measuring relative disparity between two variables. The value of DI is zero in case of perfect equality. Thus, greater the value of DI, the higher the extent of disparity and lower the value, the lower the disparity (Raju, 1991; Biswas, 2016).

RESULTS AND DISCUSSION

Trends of Literacy Rate

India is the second largest country after China in population and is projected to cross China's population with 1.6 billion by 2050. The total number of population has increased from 23.84 crores in 1901 to 121 crores in 2011 (Mundhe and Jaybhaye, 2014^b). Whereas, literacy rate of India has increased from 28.3 % in 1961 to 74.04 % in 2011 (Table 1). India's literacy rate at the time of independence was mere 14 %, after 1991, difference of literacy rate from 1991 to 2001 was near about 13 % that is highest among all last five decades. Over the years, literacy rate has been increasing but with varied rates in different states namely like Kerala and Mizoram well above national average and Bihar with a depressing rate of 63.8 %.

Table 1: Trend of Literacy in India, Maharashtra and Pune district

Census Year	India	Maharashtra	Pune
Total Literates (%)			
1971	34.45	45.77	44.62
1981	43.57	57.24	54.03
1991	52.21	64.87	71.05
2001	64.83	76.62	80.45
2011	74.04	82.91	86.15

Source: Census of India, Census Handbook from 2011

Census of India, 2001 and 2011 Maharashtra: General Population Table part II-A Series

Literacy in Maharashtra was never below the national average during the period 1961-2011 due to improvement of educational facilities especially in the growing rural areas. In Maharashtra, literacy rate improved from 35.08 % in 1961 to 82.91 % in 2011 but there were large regional variations (Table 1). As per 2011, Census of India, the highest literacy rate recorded such as Mumbai Suburban (90.9%), Nagpur (89.52%), Mumbai City (88.48%) and Amaravati (88.23%)

Districts. The very low literacy rate observed in the Nandubar (63.04%) and Gadchiroli (70.55%) Districts of Maharashtra due to large concentration of tribal population, inadequate education facilities, rugged topography and difficult terrain as compared with the rest of the state.

Literacy in Pune District was cross the state average from the period of 1991 to 2011 (Table 1). In 1971, there was only 44.62 % literate person. However, after 1991, 2001 and 2011 literacy rate were increased rapidly by 71.05 %, 80.45 % and 86.15 % respectively. The male and female literacy also increased in last four decades. The high literacy gap is observed in Velhe (13.64%), Indapur (10.49%) and Mulshi (10.43%) during the period of 2001 to 2011. As per 2011, Census of India, the highest literacy rate observed in Pune City (89.70%) tahsil due high degree of industrialization and urbanization and lowest literacy rate was recorded in Velhe (75.96%) tahsil due to poor educational facilities.

Patterns of Rural - Urban Literacy in Pune District: 2001-2011

The study conceptualizes provincial development in terms of literacy rate of rural and urban vicinity. The economic opportunities promote the growth and social opportunities add the humanistic values to it leading to overall development of the region. Regional disparities in the levels of educational development has been measured based on disparity index of rural - urban literacy. Table 2 explains the pattern of literacy in rural and urban areas during 2001 and 2011. Rural-urban disparity in literacy is observed 0.350 in 2001, which comes down 0.299 in 2011. It clearly reveals that people in rural areas have become aware of education.

Table 2: Rural - Urban Disparities of Literacy in Pune District, 2001-2011

Sr. No.	Name of Tahsils	2001				2011			
		Rural	Urban	*Tahsil Literacy Rate (%)	Disparity Index	Rural	Urban	*Tahsil Literacy Rate (%)	Disparity Index
1	Ambegaon	73.46	82.15	74.02	0.221	82.36	89.66	82.94	0.269
2	Baramati	74.02	84.20	75.44	0.272	80.61	90.22	82.27	0.346
3	Bhor	73.76	87.44	75.22	0.394	80.33	91.17	81.42	0.403
4	Daund	72.20	84.68	73.76	0.328	77.64	87.32	79.09	0.297
5	Haveli	76.16	85.64	83.63	0.271	85.24	89.16	88.18	0.154
6	Indapur	70.47	79.57	71.04	0.213	81.05	88.22	81.53	0.243
7	Junnar	74.29	87.24	75.16	0.374	83.36	90.40	83.80	0.274
8	Khed	69.86	85.48	72.48	0.405	77.34	89.50	80.77	0.397
9	Mawal	69.09	85.26	76.04	0.413	77.04	89.65	82.38	0.412
10	Mulshi	68.08	65.37	67.91	-0.053	77.05	85.88	78.34	0.258
11	Pune City	75.32	86.57	86.57	0.325	87.86	89.72	89.70	0.081
12	Purandar	72.26	84.60	77.34	0.324	80.94	87.52	82.55	0.218
13	Shirur	62.32	82.72	73.17	0.462	81.57	86.50	82.37	0.161
14	Velhe	72.44	NA	62.32	NA	75.96	NA	75.96	NA
	Pune District	73.46	86.11	80.45	0.350	80.98	89.45	86.15	0.299

Source: Calculated by Author from <https://mahasdb.maharashtra.gov.in/adhocpopulation.do>

*0-6 age group has been excluded

NA: Not Applicable because there is no urban population

The present research work is an attempt to identify the spatial pattern of rural - urban literacy of Pune District

during 2001-2011. Tahsil has been considered the most appropriate unit of for analysis of disparity index. In Pune District, there are 14 tahsils. There are five types of region have been identified for rural - urban literacy pattern based on Disparity Index as given below (Table 3).

- Region of very low disparity index (below 0.10)
- Region of low disparity index (0.11 - 0.20)
- Region of medium disparity index (0.21 - 0.30)
- Region of high disparity index (0.31 - 0.40)
- Region of very high disparity index (above 0.41)

Region of Very Low Disparity Index (Below 0.10)

The rural - urban gap in literacy is marked with notable variation in its distribution among the tahsils of Pune district. It varies from 0.462 in Shirur tahsil to -0.053 in Mulshi tahsil in 2001. In 2001 there is only one tahsil found very low disparity index (< 0.10) of rural - urban literacy i.e. Mulshi (-0.053). In 2011, only one tahsil, namely Pune City (0.081) falls in this category mainly due to awareness of people as well as highly decentralized good education facility all over the tahsil.

Region of Low Disparity Index (0.11 - 0.20)

Pune District is predominantly developed in character, where agricultural and industrial development is at its peak, which is reflected in the rural-urban gap of literacy. In 2001, there was no single tahsil in this category. However, in 2011 there are two tahsils fall under very low (0.11 - 0.20) categories comprising tahsils are Shirur (0.161) and Haveli (0.154) because of increasing educational facilities in these rural - urban areas and the rural population is more aware about the benefit of literacy.

Region of Medium Disparity Index (0.21 - 0.30):

As per the analysis in 2001, there were four tahsils under this category like Baramati (0.272), Haveli (0.271), Ambegaon (0.221) and Indapur (0.213) tahsils (Figure 2). In 2011, there were six tahsils fall under this category (Figure 3). These districts namely Daund (0.297), Junnar (0.274), Ambegaon (0.269), Mulshi (0.258), Indapur (0.243), Purandar (0.218).

Region of High Disparity Index (0.31 - 0.40)

In 2001, Bhore (0.394), Junnar (0.374), Daund (0.328), Pune City (0.325) and Purandar (0.324) tahsils were observed under this class (Figure 2). During 2011, Khed (0.397) and Baramati (0.346) tahsils are observed high literacy gap between rural-urban areas due to inadequate educational infrastructure in rural areas.

Region of Very High Disparity Index (above 0.41):

The tahsils like Shirur, Mawal, Khed and Bhore shows very high literacy gap between rural and urban area of the district. Out of 14 tahsils above mentioned three tahsils recorded very high disparity index in 2001 and 2 tahsils in 2011 (Figure 2 & 3). The reasons for these disparities are the inadequate educational infrastructure, late start of educational in

rural areas, low level of urbanization, primarily traditional agricultural economy and high concentration of socio-economically backward sections of the society.

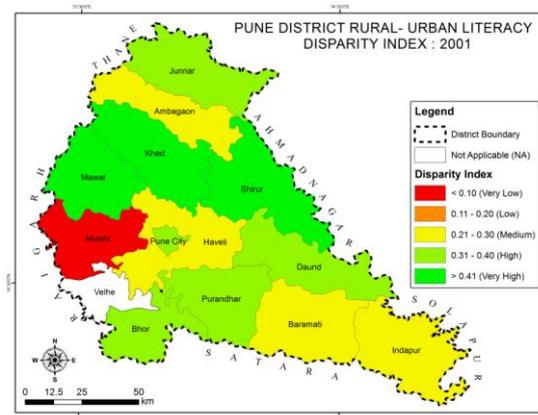


Figure 2: Pattern of Rural - Urban Literacy in Pune District, 2001

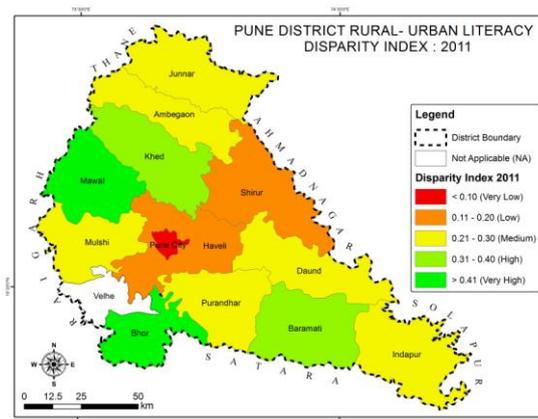


Figure 3: Pattern of Rural - Urban Literacy in Pune District, 2011

Table 3: Classes of Disparities Index of Pune District

Category	2001		2011	
	Name & Number of Tahsils	Tahsils in %	Name & Number of Tahsils	Tahsils in %
Very Low DI (<math>< 0.10</math>)	Mulshi (1)	7.7	Pune City (1)	7.7
Low DI (0.11 - 0.20)	-	-	Shirur, Haveli (2)	15.4
Medium DI (0.21 - 0.30)	Baramati, Haveli, Ambegaon, Indapur (4)	30.8	Daund, Junnar, Ambegaon, Mulshi, Indapur, Purandar (6)	46.2
High DI (0.31 - 0.40)	Bhor, Junnar, Daund, Pune City, Purandar (5)	38.5	Khed, Baramati (2)	15.4
Very High DI (>0.41)	Shirur, Mawal, Khed (3)	23.1	Mawal, Bhor (2)	15.4
Total	13	100	13	100

Source: Compiled from result

CONCLUSIONS

This paper provides an insight into the existing pattern of the literacy rate and the levels of disparity in rural-urban area. The analysis clearly shows that there is a wide range of variations in rural- urban disparity in literacy among the tahsils of Pune district, Maharashtra. In detail, although the literacy gaps have declined from 2001 to 2011, yet the literacy rates of the rural population still protect far behind that of the urban population for the most of tahsils. Each tahsils suggests a sense of vigorous disparities in literacy. The quantitative analysis highlights that low rural-urban disparity in literacy is characteristics of regions marked by relatively adequate educational facilities, high degree of urbanization, medical facilities, modernization of agriculture and good transport facilities. The study additional includes that the rural - urban disparity index in the northern and southern tahsils are relatively medium and high as compared to the western and eastern tahsils of Pune district. This kind of disparity in the field of literacy is serious problem in the study area, which needs an immediate attention and long-term action plan. In the context, the result of the present research work proves of immense importance of planners, researchers, and administrator, educationist and decision makers.

ACKNOWLEDGMENTS

We thanks to Department of Geography, Sir Parashurambhau College, Pune for providing laboratory facilities. We thank anonymous referees for their critical review, comments and suggestions, which helped in improving the research work.

REFERENCES

1. Bhakare, P. and Hudale, S. (2011). Spatio-temporal Patteren of Literacy in Pune Division. *The Goa Geographer* 8: 90-98.
2. Biswas B. (2016). Regional Disparities Pattern of Literacy in Rural and Urban Area of West Bengal, India. *Global Journal of Multidisciplinary Studies* 5(7): 105-112.
3. Census of India (2011). Final population totals series 1: India Registrar General and Census Commissioner India.
4. Chandna, R. C. and Sidhu M.S. (1980). *Introduction to Population Geography*, New Delhi.
5. Chandna, R. C. (2016). *Geography of Population Concept Determinants and Pattern*, Kalyani Publishers Pvt. Ltd., New Delhi.
6. Coulombe, S., Tremblay, J. F. and Marchand, S. (2004). *Literacy scores, human capital and growth across fourteen OECD countries* (pp. 89-552). Ottawa: Statistics Canada.
7. Dutta S., and Sivaramakrishnan L. (2013). Disparity in the Literacy Level among the Scheduled and Non-Scheduled Population: Indian Scenario in the 21st Century, *Transactions* 35(2): 185-200.
8. Hassan, M. I. (2005). *Population Geography*, Rawat Publication, Jaipur.
9. Husain, Z. (2010). Gender Disparities in Completing School Education in India Analyzing Regional Variations. *MPRA* 25748:1-28.
10. Joshi, H. (1999). Spatial Variation in Crude Literacy Development Index (Raj.) 1991, *Transaction* 21 (1): 23-44.

11. Kundu, A., and Rao, J. M. (1986). Inequity in educational development: Issues in measurement, changing structure and its socio-economic correlated with special reference to India. *Educational planning: A long term perspective*.435-466.
12. Mulimani, A. A. and Pujar, L. M. (2015). Spatial Disparity of Rural-Urban Literacy in Haveri District, *Research Directions* 3 (6): 1-10.
13. Mundhe, N. N. and Jaybhaye, R. G. (2014^a). A Study of urbanization in pune district using Geoinformatics approach, *International Journal of Advance and Applied Research (IJAAR)* 2(1): 45-55.
14. Mundhe, N. N. and Jaybhaye, R. G. (2014^b). Monitoring Level, Trends and Patterns of Urbanisation In Maharashtra (1991-2011), *Indian Streams Research Journal* 4 (6): 1-12.
<http://www.isrj.net/ViewPdf.aspx?ArticleID=5089>
15. Raju, S. (1991). Gender and Deprivation: A Theme Revisited with a Geographical Perspective. *Economic and Political Weekly*, 26 (49): 2827-2839.
16. Ramotra. K. C. (1988). Scheduled Caste Literacy in North Western India: A Spatial Perspective, *National Geographer* XXIII (2):148.
17. Sawant, S. B. and Athawale, A. S. (1994). *Population Geography*. Mehta Publishing House, Pune, pp.118-119.
18. Sopher, D. E. (1974). A Measure of Disparity. *The Professional Geographer*26(4): 389-392.
19. Sopher, D. E. (1980). *Sex disparity in Indian literacy*. In D. E. Sopher (Ed.), *An exploration of India: Geographical perspectives on society and culture*. NewYork: Cornell Press. 130-188.
20. Sundaram, K.V. (1985). *Population Geography*, Contribution to Indian Geographer -VI (Ed).
21. UNESCO (2010). Report on Human development.
22. <http://en.wikipedia.org/wiki/Maharashtra>.
23. <https://mahasdb.maharashtra.gov.in>
24. <http://www.censusindia.net> OR censusindia.gov.in/2011.

