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Gender Imbalance in Population Composition of Maharashtra

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I. INTRODUCTION

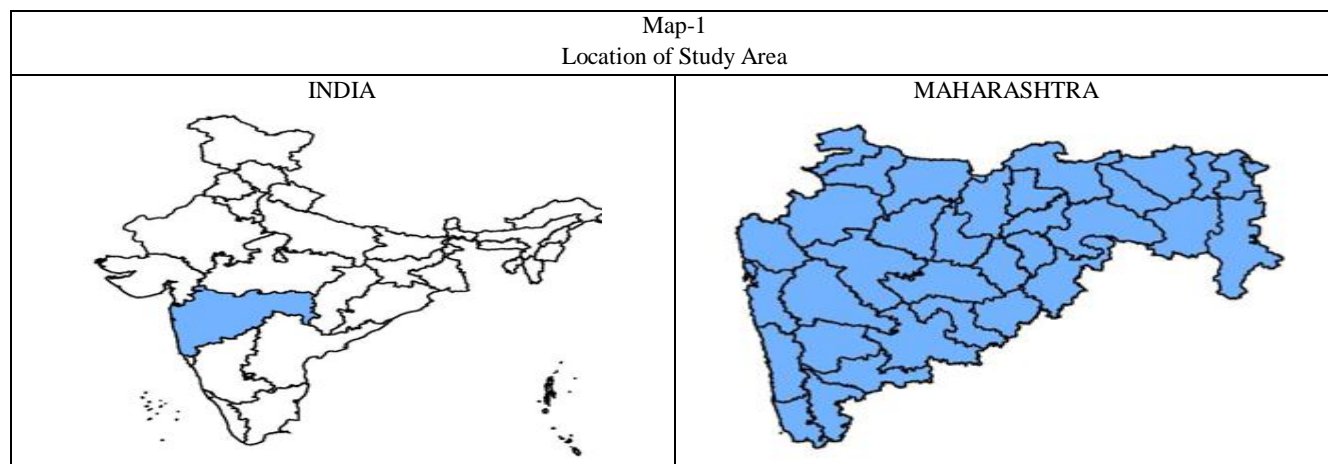
The composition of population by gender is one of the basic demographic characteristics of human population, which is important for meaningful analysis. Gender balance or equity in a population can be measured by different tools. Sex ratio is one such widely used tool. It is one of the best social indicators of women status in society. It is a function of three basic factors- sex ratio of birth, mortality of two sexes and sex selectivity of migrants. Changes in sex ratio largely reflect the underlying socio-economic and cultural pattern of a society in different ways. In developed countries there are slightly more females than males e.g. USA-1025, Japan-1055, Russian Fed.-1167, Brazil-1042 etc. In India, sex ratio continues to be reverse with a persistent marginal increased trend i.e. from 933 in 2001 to 940 in 2011. This indicates a disturbing gender imbalance in India. Since independence (1947), child sex ratio has declined all over India, but the performance of different states and the different districts within the states has been highly variable. Maharashtra has the fifth lowest child sex ratio among the states of India. Within the state itself, there is found a large inter-district variation in the decadal rates of decline in child sex ratio. In the present paper an attempt has been made to explain inter-district variation in sex ratio levels in 2011 and changes that occurred in them during 1901 to 2011. This paper highlights data mainly from two points of view: firstly, the sex ratio of population of all ages and secondly, the sex ratio among children below age seven years.

A. Concept of Sex Ratio and Gender Imbalance

Demographic practice for defining sex ratios varies throughout the world. In some countries like Russia, it is expressed in terms of percentage of male or female population. In some countries, like the United States, a sex ratio is calculated as the number of males per 100 females. In the Census of India, sex ratio has been defined as the number of females per 1,000 males in the population. Gender imbalance is a disparity between the number of male and females in a population.

B. Study Area

Maharashtra is one of the most socio-economically developed states in India. It is situated in the western peninsular part of the Indian sub-continent. It occupies an extensive part of the Deccan Plateau. Its latitudinal extent is between 15°48' North and 22°06' North and longitudinal extent is from 72°36' East to 80°54' East. It is bounded on the north by Madhya Pradesh and Gujarat states; on the east Chhattisgarh state; on the south by Karnataka, Andhra Pradesh and Goa states; and on the west by Arabian Sea. The average rainfall over Maharashtra is 135 cm, which is more than the average rainfall of India (98cm), and even that for the entire world (88cm).



Maharashtra is the third largest state in respect of area and second most populated state in India. Its north-south distance is approximately 700 kms. and the east-west distance is 800 kms. It has a triangular shape and 307713 sq. kms area. Administratively, the state is made up of 35 districts grouped into six administrative zones. According to the 2011 Census, population of Maharashtra is 11.237 crores contributing to 9.29 percent of the total country's population. Of this, 5.83 crores are males and 5.40 crores are females.

II. OBJECTIVE OF THE STUDY

The basic purpose of this study is to analyse the district level pattern and trend of sex ratio in Maharashtra state from 1901 to 2011.

A. Database and Methodology

This paper covers the entire state of Maharashtra as its study area. Therefore, the analysis of quantitative data is purely collected from different secondary sources like the census of India, district gazetteers, and other published or unpublished records. District-wise sex ratio and decadal growth rates have been computed for the study. A comparative analysis has been done for the study to trace the major changes in child sex ratio. The entire discussion of this paper is divided into two major sections. Section-I discusses trend of overall sex ratio in Maharashtra. Section-II contains child sex ratio of Maharashtra, including trend and decadal growth of district's sex ratio.

In this paper, the sex ratio have computed by applying following formula-

$$\text{Sex Ratio} = \frac{\text{Number of females}}{\text{Number of males}} \times 1000$$

And the decadal variation of sex ratio have calculated by following formula-

$$\text{Decadal Variation of Sex Ratio} = \frac{SR_1 - SR_0}{SR_0}$$

Where,

SR₁- Sex Ratio of Later/Current Census Year

SR₀- Sex Ratio of Initial/Previous Census Year

B. Sex Ratio in Maharashtra: A Temporal Analysis (1901-2011)

From the beginning of the 20th century, the sex ratio in Maharashtra is always adverse to females. Interestingly, it has suffered a consistent decline all through the present century except during the decades of 1931-41, 1971-81 and 2001-11. Similarly, since 1981 the child sex ratio of Maharashtra is always adverse to females and lower than the national average.

Table-1 reveals the trends in sex ratio for 110 years in between 1901 and 2011 in respect of Maharashtra and India. The sex ratio of Maharashtra at the beginning of the twentieth century was 978 and thereafter showed continuous decline until 1931. In 1941 there was a marginal increase of 2 points. After 1941, the sex ratio again dropped for three consecutive decades to reach 930 in 1971. During 1971-81, a highest improvement of 7 points (in 20th century) was noticed in contrast to the declining trend. But, this growing trend was also disturbed by the results of the sex ratios of 1991 and 2001 census. Between 1991-01, the state saw the sharpest decline of 12 points in sex ratio. However, during 2001-11, a slight improvement of 3 points is observed. This improvement in sex ratio of 2011 is a welcome improvement and it is hoped that the same trend will continue in the coming decades. In 2011 census, 4.35 million less females than males (i.e., there were 58361397 males and 54011575 females).

The child sex ratio of the state was 972 in 1971, 956 in 1981, 946 in 1991, 913 in 2001 and 883 in 2011. It is rapidly decreasing since 1971. During forty years (1971-2011), it decreases by 89 points. Between 1991-01, the highest decline of 33 points in child sex ratio is observed.

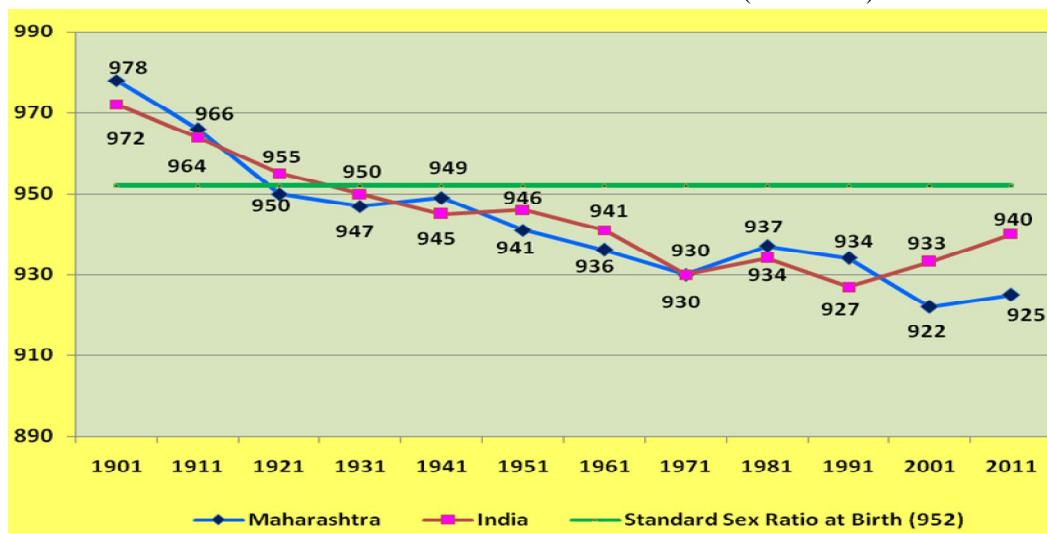
Table-1 Child and Total Sex Ratio in Maharashtra and India

Census Year	Sex Ratio				Decadal Absolute Change in Sex Ratio			
	Maharashtra		India		Maharashtra		India	
	Total	Child	Total	Child	Total	Child	Total	Child
1901	978	-	972	-	-	-	-	-
1911	966	-	964	-	-12	-	-8	-
1921	950	-	955	-	-16	-	-9	-
1931	947	-	950	-	-3	-	-5	-
1941	949	-	945	-	2	-	-5	-

1951	941	-	946	-	-8	-	1	-
1961	936	-	941	976	-5	-	-5	-
1971	930	972	930	964	-6	-	-11	-12
1981	937	956	934	962	7	-16	4	-2
1991	934	946	927	945	-3	-10	-7	-17
2001	922	913	933	927	-12	-33	6	-18
2011	925	883	940	914	3	-30	7	-13

Figure-1

Total Sex Ratio in Maharashtra and India (1901-2011)



C. Causes of Low and Declining Sex Ratio of India and Maharashtra-

Following are some of the important factors responsible for low and declining sex ratio in India and Maharashtra-

- 1) *Differences in Sex Ratio at Birth-* The imbalance in the number of males and females begins in the beginning. It is now a well established law of nature that the males exceed females at the time of birth. It is believed that generally 943-952 female births take place for every 1000 male births, which in effect would mean that there is a deficiency of about 50 females per 1000 males in every birth cohort.
- 2) *Greater Neglect of Females or Girls-* Especially at the Earlier or Younger Ages
- 3) Premature Cohabitation and Child Bearing Coupled with unskilled midwifery
- 4) Male Sex Preference or Discrimination of Female Sex
- 5) Sex Selective Abortions
- 6) Female Infanticide
- 7) Uneven Sex Migration Patterns
- 8) Hard work for Females
- 9) High Female (Maternal) Mortality
- 10) Small Family Norms
- 11) Dowry System

D. District Level Trends in Sex Ratio

Trends in sex ratio explain the movement of sex ratios over a period of time. With the help of the movement of these trends one can forecast these ratios for the future if left free.

E. Sex Ratio of Population: During 20th Century

During 1901-2001, the sex ratio of Maharashtra has been adverse to females, the number of males exceeding in all districts except in Ratnagiri and Sindhudurg. In Raigarh, Satara and Gondiya, the sex ratio which was in favour of females till 1981 has now changed in favour of males. In Nandurbar district the sex ratio mostly stable over a period of time and Solapur, Kolhapur and Sangli also

have a generally a stable sex ratio. There are many ups and downs in sex ratio over a period of time since 1901 in Akola, Nagpur, Bid, Latur and to some extent in Osmanabad. Raigarh and Satara through they have a relatively higher sex ratio but there are frequent and sharp fluctuations. There is a steady decline in sex ratio in Ahmadnagar, Aurangabad, Buldana, Jalgaon, Jalna, Nashik, Pune, Thane and Wardha. Though Bhandara and Chandrapur always have a better sex ratio but there is a declining trend in these two districts over a period of time.

Table-2
District-wise Total Sex Ratio in Maharashtra

Sr. No.	District	Sex-Ratios (Number of females per 1000 males)											
		1901	1911	1921	1931	1941	1951	1961	1971	1981	1991	2001	2011
1	Nandurbar	980	978	976	969	969	973	975	968	982	975	977	972
2	Dhule	980	978	976	969	969	968	961	948	954	945	944	941
3	Jalgaon	975	983	971	968	970	971	957	948	950	940	933	922
4	Buldana	992	985	979	971	972	981	959	954	957	953	946	928
5	Akola	968	968	958	952	957	953	926	931	939	934	938	942
6	Washim	968	968	958	952	957	971	956	957	963	946	939	926
7	Amravati	960	959	953	939	946	958	933	931	936	936	938	947
8	Wardha	987	983	973	975	978	983	964	949	948	939	935	946
9	Nagpur	991	981	967	953	955	956	929	922	924	922	932	948
10	Bhandara	1071	1038	1024	1017	1010	1005	993	984	989	980	981	984
11	Gondiya	1071	1038	1024	1017	1010	1004	1000	989	1004	995	1005	996
12	Gadchiroli	1023	1005	1004	990	989	1000	998	986	981	976	976	975
13	Chandrapur	1023	1005	1004	990	989	994	979	963	959	948	948	959
14	Yavatmal	988	980	968	966	978	989	972	961	958	951	942	947
15	Nanded	1004	995	981	966	965	983	970	955	960	945	942	937
16	Hingoli	996	992	978	963	960	989	975	968	966	952	953	935
17	Parbhani	996	993	978	963	960	974	969	954	968	954	958	940
18	Jalna	998	989	988	966	957	976	970	959	970	958	951	929
19	Aurangabad	998	988	991	967	957	974	955	935	936	922	925	917
20	Nashik	974	984	960	963	953	956	946	940	937	940	927	931
21	Thane	939	947	937	935	940	920	919	894	883	879	858	880
22	Mumbai (Suburban)	652	570	561	592	616	712	744	769	801	831	822	857
23	Mumbai	652	570	561	592	616	574	626	670	729	791	777	838
24	Raigarh	1000	1023	1028	1009	1036	1040	1058	1056	1046	1010	976	955
25	Pune	979	977	957	952	948	939	944	933	937	933	919	910
26	Ahmadnagar	1005	983	978	971	969	971	962	956	959	949	940	934
27	Bid	985	980	963	949	941	957	969	954	965	944	936	912
28	Latur	980	965	940	943	941	947	950	942	959	942	935	924
29	Osmanabad	980	964	939	942	942	948	948	947	958	937	932	920
30	Solapur	985	967	943	934	942	945	936	933	942	934	935	932
31	Satara	1031	1025	1030	1006	1035	1051	1047	1037	1061	1029	995	986
32	Ratnagiri	1119	1164	1187	1129	1158	1239	1264	1263	1258	1205	1136	1123
33	Sindhudurg	1111	1154	1174	1119	1148	1200	1194	1213	1205	1137	1079	1037
34	Kolhapur	975	967	946	952	968	964	961	953	962	961	949	953
35	Sangli	984	952	942	950	954	968	957	949	967	958	957	964
MAHARASHTRA		978	966	950	947	949	941	936	930	937	934	922	925

F. Sex Ratio of Population in 21st Century

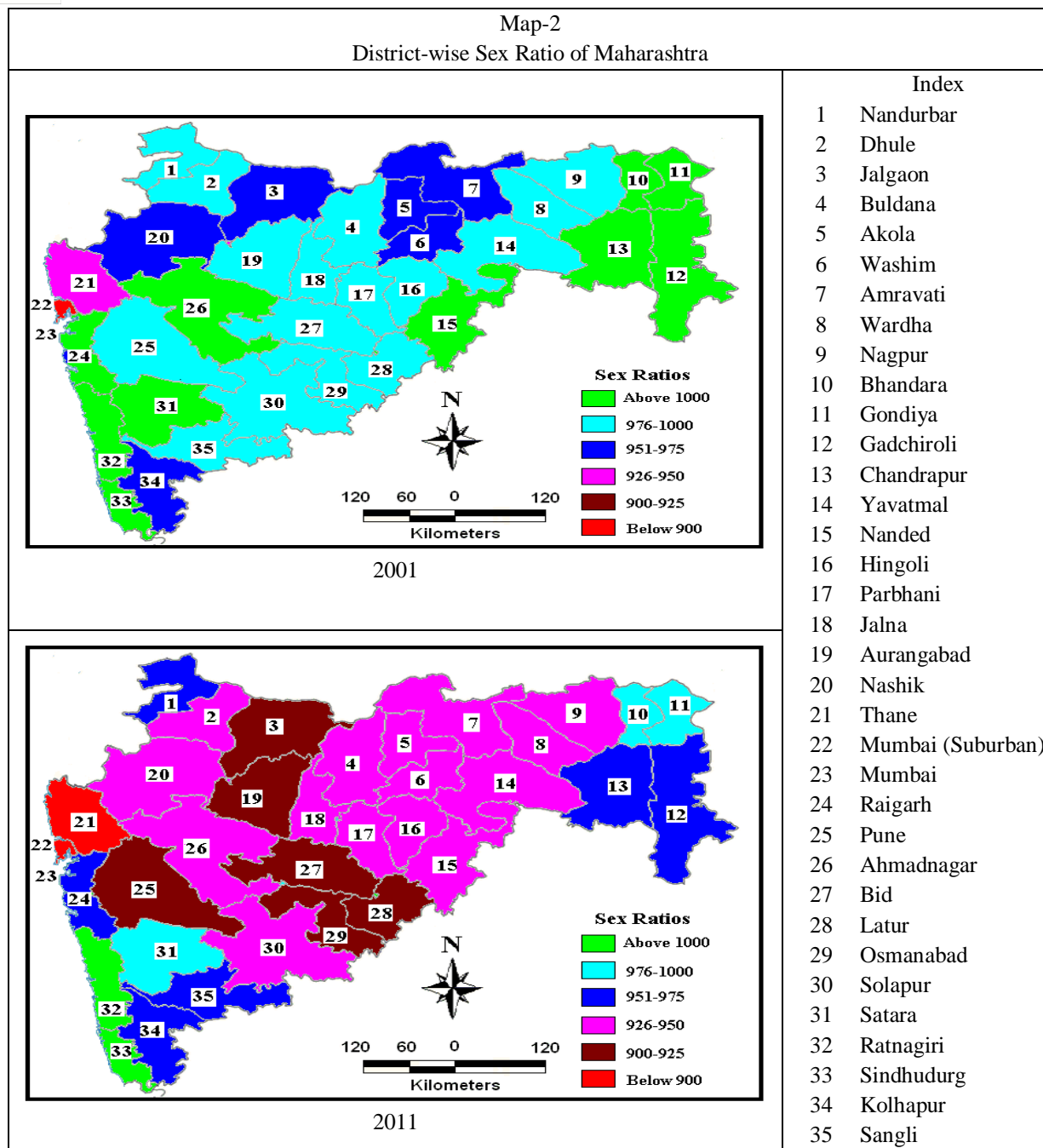
Average sex ratio of Maharashtra 925 females per 1000 males is much below the national average (940) in 2011. Maharashtra occupies twentieth place with respect to sex ratio among Indian states.

At state level the sex ratio has increased from 922 to 925, showing an incremental of 3 females per 1000 males during 2001-11. There are three critical districts with sex ratio below 900 in 2001 viz. Greater Mumbai, Mumbai Suburban and Thane where the sex ratio is 838, 857 and 880 respectively. However, as compared to 2001 census, in these districts also there is some improvement in sex ratio. It is up by 61 in Greater Mumbai, 35 in Mumbai Suburban and 22 in Thane. There are six districts where the sex ratio is above 900 but less than 925. These are Aurangabad (917), Bid (912), Jalgaon (922), Latur (924), Osmanabad (920) and Pune (910). But the trend indicate that the sex ratio in all these districts has decreased during 2001-11 ranging from 24 points in Bid to 8 points in Aurangabad. There are 9 districts within the range of sex ratio below 1000 and above 950, Gondiya (996) and Satara (986) on the above and Kolhapur (953) and Raigarh (955) on the below, but these 9 districts, it has decreased in five districts and the decrease is very sharp (by 21) in Raigarh.

In 2011, Ratnagiri and Sindhudurg districts reported above unity sex ratio. Both these districts have shown considerable decrease in 2011. The number of districts registering an upward trend has risen from 10 in 2001 to 61 in 2011. The increase ranged from three points in Bhandara to 61 points in the highly urbanised Mumbai district. In 6 districts, the increase has been over ten points during 2001-2011. The decline ranged from 1 point in Gadchiroli to 42 points in Sindhudurg. Perceptible increase has been observed in the major urbanized districts such as Mumbai and Mumbai Suburban. A point to be noted is that the districts having historically low sex ratio such as Thane, Nagpur, Chandrapur and Wardha have shown appreciable increase in the sex ratio in Census 2011.

All the districts of Maharashtra state are classified into six categories on the basis of their sex ratio in 2011 and shown in the following table-

Category	District (sex ratio)	No of Districts
1. Worst Sex Ratio (below 900)	Mumbai (838), Mumbai (Suburban) (857) and Thane (880)	3
2. Low Sex Ratio (900-925)	Pune (910), Bid (912), Aurangabad (917), Osmanabad (920), Jalgaon (922), Latur (924)	6
3. Medium Low Sex Ratio (926-950)	Washim (926), Buldana (928), Jalna (929), Nashik (931), Solapur (932), Ahmadnagar (934), Hingoli (935), Nanded (937), Parbhani (940), Dhule (941), Akola (942), Wardha (946), Amravati (947), Yavatmal (947), Nagpur (948)	15
4. Medium Sex Ratio (951-975)	Kolhapur (953), Raigarh (955), Chandrapur (959), Sangli (964), Nandurbar (972), Gadchiroli (975)	6
5. Medium High Sex Ratio (976-1000)	Bhandara (984), Satara (986), Gondiya (996)	3
6. High Sex Ratio (Above 1000)	Sindhudurg (1037), Ratnagiri (1123)	2



G. District Level Pattern of Sex Ratio

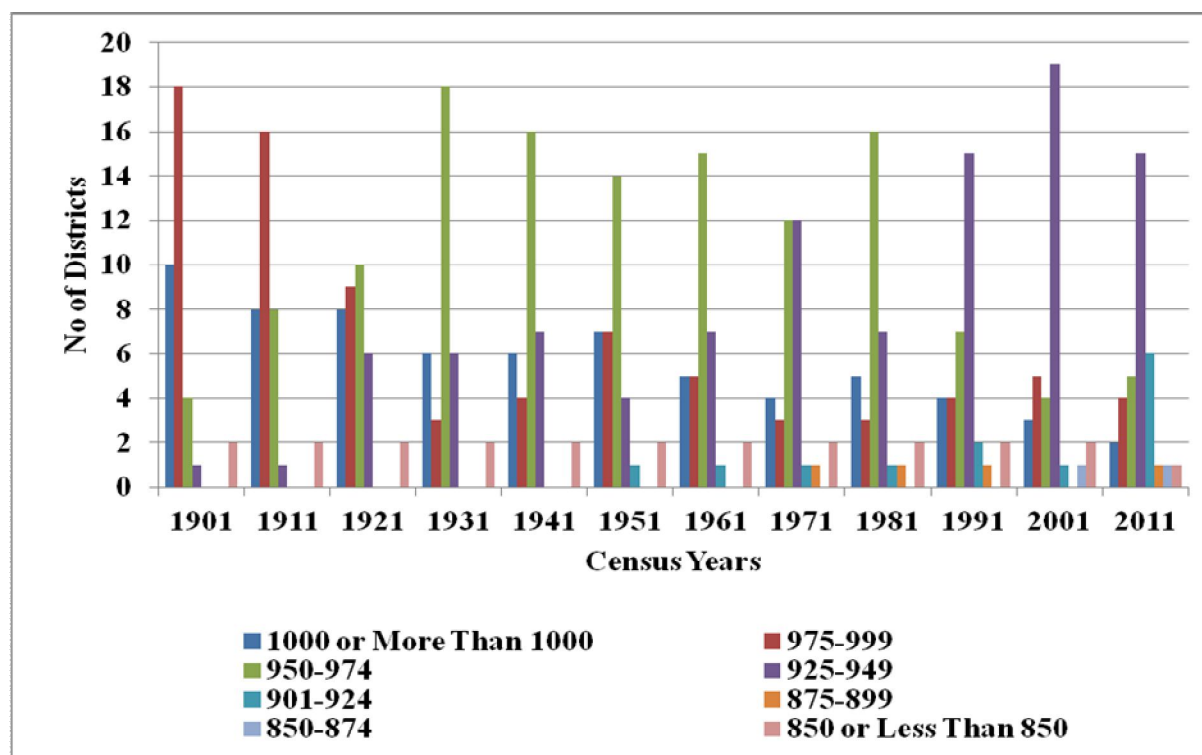
In every census, out of a total of 35 districts in Maharashtra, approximately 7 districts have less sex ratio than the state average. Since 1901, Mumbai and Mumbai Suburban districts have very low sex ratio of below 875 females per thousand males.

Table reveals that in 1901, there were as many as ten districts that had sex ratio of more than unity or above 1000. This number declined to seven in 1951, five in 1961, four in 1971 and three in 2001 and two in 2011. Ratnagiri and Sindhudurg districts always have above unity sex ratio. From 1901 to 2011 census, minimum 23 districts have sex ratio varying from 901 and 999.

A look at the distribution pattern of sex ratio in 35 districts of Maharashtra in 2011 reveals that 26 districts record sex ratio above 925. In other words, 75 percent of the total districts record sex ratio above the state average. Remaining 9 districts have sex ratio less than the state average (925). The top three districts recording the highest value of overall sex ratio are Ratnagiri (1123), Sindhudurg (1037) and Gondiya (996). The lowest sex ratio among the districts has been recorded in Mumbai (838), Mumbai Suburban (857) and Thane (880).

Table-3
Distribution of districts by Sex-Ratio of Population

Sex Ratio	Census Year											
	1901	1911	1921	1931	1941	1951	1961	1971	1981	1991	2001	2011
1000 or More Than 1000	10	8	8	6	6	7	5	4	5	4	3	2
975-999	18	16	9	3	4	7	5	3	3	4	5	4
950-974	4	8	10	18	16	14	15	12	16	7	4	5
925-949	1	1	6	6	7	4	7	12	7	15	19	15
901-924	-	-	-	-	-	1	1	1	1	2	1	6
875-899	-	-	-	-	-	-	-	1	1	1	-	1
850-874	-	-	-	-	-	-	-	-	-	-	1	1
850 or Less Than 850	2	2	2	2	2	2	2	2	2	2	2	1
Below State Average	9	7	8	7	9	4	6	4	6	6	4	9
Above State Average	26	28	27	28	26	31	29	31	29	29	31	26



H. District Level Pattern of Child Sex Ratio

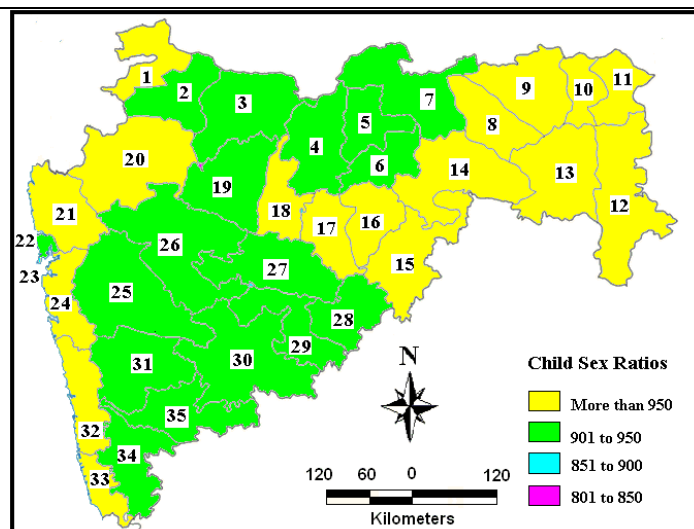
The child sex ratio in overall Maharashtra has declined drastically since 1971, from 972 to 946 in 1991 and 883 in 2011. The decline of child sex ratio is so widespread that of the 35 districts only four seem to be free from this socially harmful and degrading phenomenon.

As per 2011 census, the proportion of child sex in all districts of Maharashtra except in Gadchiroli is lower than the standard sex ratio (952). Gadchiroli has recorded highest child sex ratio 956 and next is Chandrapur with 945. The highest reduction of about 93 is found in Bid and such steep fall is also noticed in Buldana (66), Hingoli (59), Washim (59), Parabhani (57), Jalna (56) and Jalgaon (51). The reduction in sex ratio is found in 31 districts ranging from 50 to 93 in seven districts, 30 to 50 in ten districts, and 9 to 30 in fourteen districts. Only in four districts viz., Satara, Chandrapur, Kolhapur and Sangli there is a nominal increase (from 3 to 11 only).

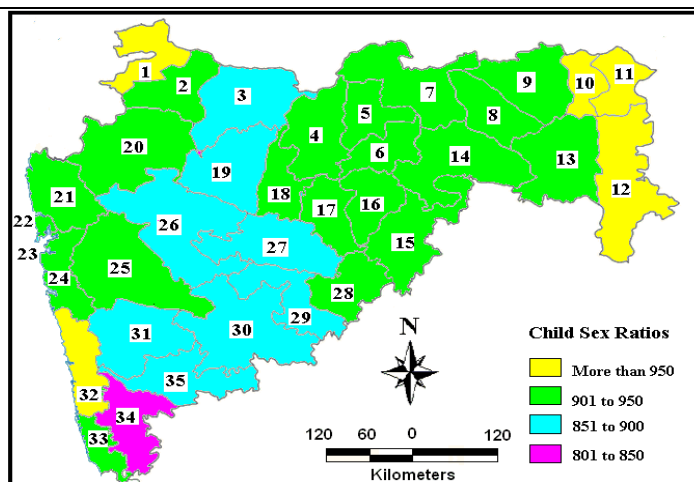
Table-4
District-Wise Child Sex-Ratio of Maharashtra

Sr. No.	State/District Name	Sex Ratio of 0-6 Age			Difference in Child Sex Ratio	
		1991	2001	2011	1991-01	2001-11
1	Nandurbar	977	961	932	-16	-29
2	Dhule	947	907	876	-40	-31
3	Jalgaon	925	880	829	-45	-51
4	Buldana	945	908	842	-37	-66
5	Akola	929	933	900	4	-33
6	Washim	941	918	859	-23	-59
7	Amravati	950	941	927	-9	-14
8	Wardha	952	928	916	-24	-12
9	Nagpur	951	942	926	-9	-16
10	Bhandara	964	956	939	-8	-17
11	Gondiya	978	958	944	-20	-14
12	Gadchiroli	980	966	956	-14	-10
13	Chandrapur	965	939	945	-26	6
14	Yavatmal	961	933	915	-28	-18
15	Nanded	960	929	897	-31	-32
16	Hingoli	953	927	868	-26	-59
17	Parbhani	956	923	866	-33	-57
18	Jalna	951	903	847	-48	-56
19	Aurangabad	933	890	848	-43	-42
20	Nashik	954	920	882	-34	-38
21	Thane	952	931	918	-21	-13
22	Mumbai (Suburban)	930	923	910	-7	-13
23	Mumbai	942	922	874	-20	-48
24	Raigarh	961	939	924	-22	-15
25	Pune	943	902	873	-41	-29
26	Ahmadnagar	949	884	839	-65	-45
27	Bid	939	894	801	-45	-93
28	Latur	947	918	872	-29	-46
29	Osmanabad	947	894	853	-53	-41
30	Solapur	935	895	872	-40	-23
31	Satara	941	878	881	-63	3
32	Ratnagiri	961	952	940	-9	-12
33	Sindhudurg	963	944	910	-19	-34
34	Kolhapur	931	839	845	-92	6
35	Sangli	924	851	862	-73	11
	Maharashtra	946	913	883	-33	-30

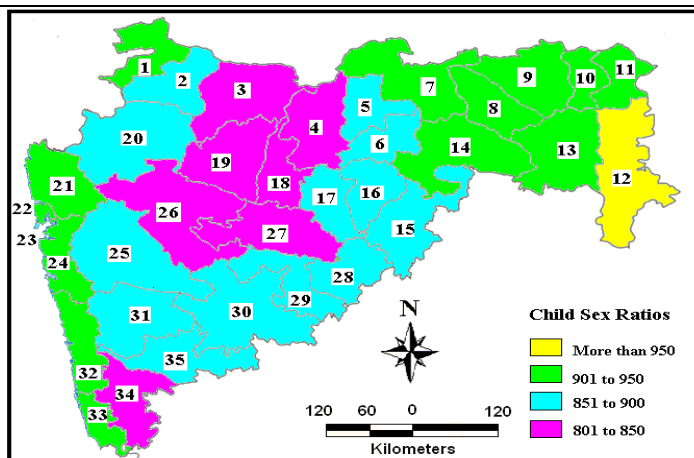
Map-2
District-Wise Child Sex Ratio in Maharashtra



1991



2001



2011

Index

- 1 Nandurbar
- 2 Dhule
- 3 Jalgaon
- 4 Buldana
- 5 Akola
- 6 Washim
- 7 Amravati
- 8 Wardha
- 9 Nagpur
- 10 Bhandara
- 11 Gondiya
- 12 Gadchiroli
- 13 Chandrapur
- 14 Yavatmal
- 15 Nanded
- 16 Hingoli
- 17 Parbhani
- 18 Jalna
- 19 Aurangabad
- 20 Nashik
- 21 Thane
- 22 Mumbai (Suburban)
- 23 Mumbai
- 24 Raigarh
- 25 Pune
- 26 Ahmadnagar
- 27 Bid
- 28 Latur
- 29 Osmanabad
- 30 Solapur
- 31 Satara
- 32 Ratnagiri
- 33 Sindhudurg
- 34 Kolhapur
- 35 Sangli

All the districts of Maharashtra state are classified into four categories on the basis of their child sex ratio in 2011 and shown in the following table-

Category	District (sex ratio)	No of Districts
Worst Child Sex Ratio (below 850)	Bid (801), Ahmadnagar (839), Jalgaon (829), Buldana (842), Jalna (847), Aurangabad (848), Kolhapur (845)	7
Worse Child Sex Ratio (850-900)	Pune (873), Osmanabad (853), Latur (872), Washim (859), Nashik (882), Hingoli (868), Nanded (897), Satara (881), Mumbai (874), Dhule (876), Sangli (862), Parbhani (866), Solapur (872), Akola (900)	14
Medium Low Child Sex Ratio (901-925)	Mumbai (Suburban) (910), Thane (918), Wardha (916), Sindhudurg (910), Yavatmal (915)	5
Medium Child Sex Ratio (Above 925)	Bhandara (939), Gondiya (944), Amravati (927), Nagpur (948), Raigarh (955), Chandrapur (945), Nandurbar (932), Gadchiroli (956), Ratnagiri (940)	9

III. CONCLUSIONS

- A. The composition of population by gender is not uniform and shows diverse patterns across different districts of Maharashtra.
- B. The sex ratio in Maharashtra has declined drastically since 1901, from 978 to 922 in 2001.
- C. During 2001-11, the sex ratio of state has increased from 922 to 925.
- D. In districts like Mumbai (838), Mumbai (Suburban) (857) and Thane (880) the ratio has declined to less than 900 girls per 1000 boys.
- E. In 2011, Ratnagiri and Sindhudurg districts reported above unity sex ratio. 26 districts record sex ratio above the state average and remaining 9 districts have sex ratio less than the state average (925).
- F. In every census, out of 35 districts in Maharashtra, approximately 7 districts have less sex ratio than the state average.
- G. Since 1901, Mumbai and Mumbai Suburban districts have very low sex ratio of below 875 females per thousand males.
- H. As per 2011 Census, Ratnagiri stands top in Maharashtra with 1123 females per 1000 males and Mumbai has the lowest sex ratio of only 838 females per 1000 males.
- I. Maharashtra has the fifth lowest child sex ratio among the states of India.
- J. The child sex ratio in overall Maharashtra has also declined drastically since 1971, from 972 to 946 in 1991 and 883 in 2011.
- K. The child sex ratio (0-6 years) in Maharashtra has decreased at a rate of 3.29% during the last decade (2001-2011).
- L. During forty years (1971-2011), child sex ratio in Maharashtra decreases by 89 points.
- M. A glance at the trend will show that in Census 2011, child sex ratio (0-6 years) has registered an increasing trend only in four districts.
- N. There are only 4 out of 35 districts in Maharashtra where the child sex ratio is above 940.
- O. In 2011, Gadchiroli district has the highest child sex ratio (956) in Maharashtra.
- P. The lowest child sex ratio (0-6 years) among the 35 districts has been observed in Bid district (801).
- Q. The factors essentially responsible for contributing towards the gender imbalances were son preference and dowry.

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