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## RESEARCH ARTICLE

# A GEOGRAPHICAL STUDY OF SPATIO-TEMPORAL VARIATION IN SEX - RATIO OF DROUGHT- PRONE TAHSILS IN JALGAON DISTRICT (MAHARASHTRA)

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**ABSTRACT**

Sex ratio is the one of the good indicator or a way to know the women status in the society and even socio-economic conditions of a region. If sex ratio of an area is under stood then we can easily plan and comprehend demographic dynamism in terms of mortality, migration, economic characteristics, marital status etc. Sex ratio is a term used to define number of females per 1000 males. In this paper the present study reveals the tahsil wise sex ratio in the study region during 1901-2011. It has studied on the basis census of 1901-2011.The present paper deals with trend in sex ratio as well as sex differential in decadal viz 1901 to 2011. The sex ratio has large variation from one tahsil to another tahsil in the study region. The study region has overall sex ratio of 932 females per 1000 males. It has increased from 932 to 936 during last decade. Sex ratio in the study area has declined over the period 1901-2001 from 968 to 932. To explain the consistently decreasing trend of sex ratio, some of the common reasons put forward are son preference, neglect of girl child resulting in higher mortality at younger age. Tables, graphs and maps are used to explain the change in sex ratio over the period in the study region.



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## INTRODUCTION

Sex ratio is one of the important demographic characteristics of society depending directly on incidence of birth, death and marriage. Sex ratio is a powerful indicator of the social health of any society and is a sensitive indicator of women's status as it conveys a great deal about the state of gender relations Patel, (2004), especially in terms of women's health and position in any society Barakade, (2012). Imbalances in sex ratio reflect the unequal position of females in a highly sexist, gender discriminatory social order. It shows that much artificial interventions and asymmetrical social placement have distorted the biological trend and natural balance in terms of number of females per thousand males. The release of the Population Census, 2011 in India unleashed a huge wave of debate among researchers and program and policy makers about the declining child sex ratio (0-6 years). The report reinforces the debate on biological determinants in general, and on the socio cultural and behavioral aspects of the sex ratio in particular, which is defined as the number of females per 1000 males in a population. Primarily, the sex ratio is affected by trends in fertility, mortality and sex ratio at birth (Malhotra and Kant 2006). Insufficient socioeconomic development in India does not necessarily explain the differential in female-to-male ratio of birth as reviewed by the study (Subramanian and Corsi, 2011), where households with high education and wealth were found to have a concentration of an imbalanced sex ratio. Usually the sex ratio at birth is 934-961 female births per 1000 male births (104-107 male births per 100 female births) (Ganatra 2008).Sex ratio is one of the important indices to comprehend women's health and position in any society. According to the Registrar General of India (RGI) recorded some big countries across the globe have reported a sharp decline in the number of women. China is a country sex ratio in 2001 was 944 and drastically it fell to 926 in 2011. While Nigeria's sex ratio stood at 987 in 2011 as against 1016 in 2001. The sex ratio in India is 940 fe-males per thousand males as per 2011 census and Maharashtra has 925. In India five States of or Union Territories decline in the female sex ratio Haryana (877), Delhi (866), Chandigarh (818), Dadar and Nagar Haveli (775) and Daman and Diu (618) In India Kannur district in Kerala State has a sex ratio of 1133 female per 1000 male. Jammu and Kashmir State has also a Ladakh district very low sex ratio of 583 females per 1000 male. In Arunachal Pradesh State in Tawang district has a sex ratio of 701 females per 1000 male.Sex ratio in Maharashtra has declined over the century from 972 in 1901 to 927 in 2011. Some of the reasons

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commonly put for-ward to explain the consistently low levels of sex ratio are son preference, neglect of the girl child resulting in higher mortality at younger age. There are several factors responsible for discrimination against the girl child such as preference for son, low status of women, social and financial security associated with sons, socio-cultural practices like dowry and violence against women. Census 2011 also showed that the net deficit of females widened from 9.9 million in 1951 to 37 million. This shows that India's gender ratio has been unfavorable to females. Indian society thus, has a marked feature of being highly masculine. Declining gender ratio emphasizes that female's low status fall in gender ratio causes a serious threat to the cultural, socio-economic and ethical structures and values of Indian Society.

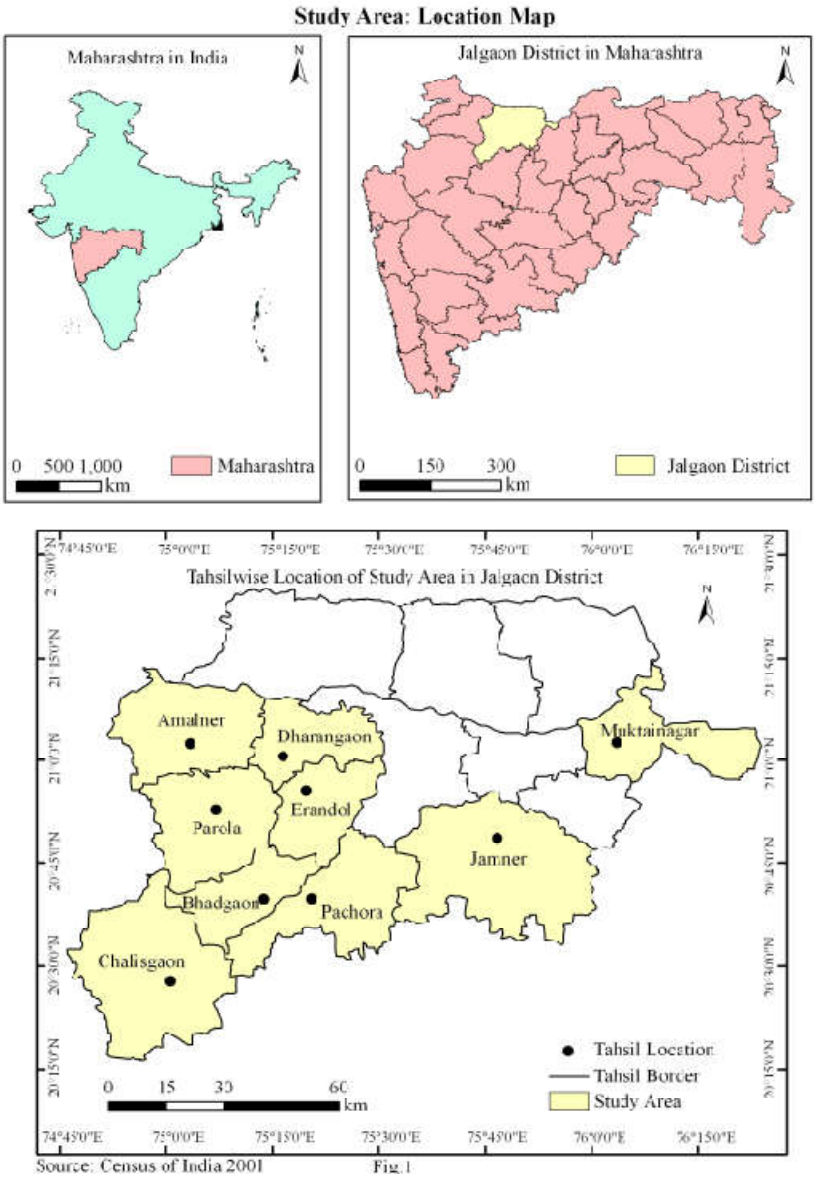


Fig.1

## The study area

The region selected for the study is the drought-prone tahsils. They are located in the Jalgaon district of Maharashtra State. There are 09 drought-prone tahsils identified by V. Subramaniam, (Review Committee, 1987). These tahsils are Amalner, Dharangaon, Parola, Erandol, Chalisgaon, Bhadgaon, Pachora, Jamner and Muktainagar. Looking into its delicate ecology and poor socio- economy,the study region is one of the most vulnerable regions ofMaharashtra State. The topography of the region is hilly,plateau, undulating and rolling. The degraded soils withexposed rocks resulted from severe erosion is the commonlandscape. It covers an area of about 6994.54 km2. It lays between $20^{o}11^{'}$ to $21^{o}13^{'}$ North latitudes and $74^{o}46^{'}$ to $76^{o}24^{'}$ East longitudes (Fig.1). Average rainfall is 682.8 mm in the said area. Also, temperature and relative humidity varies $18^{o}C$ to $35^{o}C$ and 45% to 72% over the years respectively.

## Hypothesis

The sex ratio in the last century has declined gradually in the Jalgaon district of Maharashtra state.

## Objectives

- To find out the changing pattern of population sex ratio in the study region during 1981-2011.
- To explore the possible causes and consequences of decline in sex ratio in the study area.
- To analyze the trends of sex ratio in all tahsils of the study region.

## Data Base and Methodology

The present study is primarily based on secondary data collected from decennial census Reports of Government of

India. Covering sex ratio, of twelve decades (1901-2011) of nine droughts – prone tahsils in Jalgaon district of Maharashtra state based on census of India data. The data have been analyzed for sex ratio as the number of females per 1000 males. Sex ratio is measured in terms of number of females per thousand males. The sex ratio is measured given the following formula.

$$\text{Formula} = \text{Sex Ratio} = \frac{\text{Female Population}}{\text{Male Population}} \times 100$$

As far as the spatio – temporal analysis of the variation in sex ratio in the study region is concerned; statistics in terms of measures of central tendency such as minimum (min), maximum (max), average (mean), standard deviation (S.D.) and coefficient of variation (CV) is calculated across both tahsils and decadal Censuses. However, it is coefficient of variation which has been used for analysis of spatio temporal variation in sex ratio in the study region. Changing trend in sex ratio is explained in terms of increase or decline in number of females across the census decades. Decline or fall in sex ratio is conceptualized as decline or fall in number of females per thousand males and improvements /increase or positive trend in sex ratio as increase in number of females per thousand males. To explain the temporal trend in sex ratio, figures are calculated by subtracting the figures of current census year from preceding census year and decline in sex ratio is made explicit as numbers with negative sign whereas the increase in the same with positive sign. However as far as spatial distribution of decline in sex ratio is concerned, analysis of the trend is explained not only at regional level but also at tahsil level.

**Spatio –Temporal distribution and Variation Sex Ratio in the study area**

Sex ratio is one among the demographic characteristics of a population of any region and this demographic variable can never remain unaffected by the changes that take place in the socio- economic conditions of a particular region at a particular period of time and over a period of time. Therefore, it is necessary to have a look at the pattern of its distribution and variation across the tahsils in a particular decadal census as well as across decadal censuses in a particular tahsil of the study region.As far as the analysis of variation in sex ratio across the tahsils in a particular decadal census as given in Table – 1 is concerned; it is the census of 1971 which depicts larger variation with CV (0.011) whereas census of 2011 reported least variation with CV (0.004). Moving away from the analysis of variation in sex ratio across the tahsils in a particular decadal census to analysis of variation in sex ratio across decadal censuses in a particular tahsil of the study region, it has been found that, it is the Amalner tahsil which has reported larger variation in sex ratio with CV value (0.016) whereas the tahsils which have reported least variation in sex ratio are Jamner and Chalisgaon tahsils with CV value (0.010) for each tahsils. Amalner tahsil is the urban dominated tahsil whereas Jamner tahsil is rural dominated tahsils and Chalisgaon tahsil is agricultural dominated. In these tahsils females outnumber men in the first five census decades, i.e. 1901, 1911, 1921, 1931 and 1941 but what is abysmal is that it is also the same tahsils which has now reported the lowest sex ratio in the study region in 2001 and again uplifted sex ratio in 2011.

**Table 1. Tahsil wise spatio temporal variation in sex -ratio's in the study region (1901-2011)**

| Tahsil | 1901 | 1911 | 1921 | 1931 | 1941 | 1951 | 1961 | 1971 | 1981 | 1991 | 2001 | 2011 | Min | Max | M | SD | CV |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Amalner | 974 | 963 | 964 | 960 | 955 | 952 | 950 | 940 | 935 | 930 | 928 | 932 | 928 | 974 | 949 | 15 | 0.016 |
| Dharangaon | 975 | 974 | 970 | 965 | 963 | 961 | 955 | 953 | 951 | 943 | 934 | 939 | 934 | 975 | 957 | 13 | 0.014 |
| Parola | 969 | 965 | 957 | 954 | 951 | 948 | 936 | 940 | 948 | 945 | 932 | 937 | 932 | 969 | 949 | 11 | 0.012 |
| Erandol | 972 | 967 | 965 | 962 | 960 | 958 | 954 | 950 | 950 | 952 | 939 | 940 | 939 | 972 | 956 | 10 | 0.011 |
| Chalisgaon | 956 | 948 | 946 | 942 | 940 | 935 | 929 | 918 | 935 | 940 | 936 | 939 | 918 | 956 | 939 | 10 | 0.010 |
| Bhadgaon | 973 | 960 | 955 | 950 | 950 | 948 | 942 | 940 | 945 | 946 | 935 | 938 | 935 | 973 | 949 | 10 | 0.011 |
| Pachora | 971 | 969 | 969 | 966 | 960 | 953 | 953 | 950 | 943 | 944 | 934 | 936 | 934 | 971 | 954 | 13 | 0.014 |
| Jamner | 955 | 952 | 950 | 948 | 945 | 940 | 938 | 935 | 933 | 930 | 925 | 931 | 925 | 955 | 940 | 10 | 0.010 |
| Muktainagar | 968 | 956 | 950 | 948 | 946 | 948 | 945 | 940 | 942 | 940 | 926 | 929 | 926 | 968 | 945 | 11 | 0.012 |
| Region | 968 | 962 | 958 | 955 | 952 | 949 | 945 | 941 | 942 | 941 | 932 | 936 | 932 | 968 | 948 | 11 | 0.012 |
| SD | 7 | 8 | 9 | 9 | 8 | 8 | 9 | 10 | 7 | 7 | 5 | 4 | | | | | |
| Mean | 968 | 962 | 958 | 955 | 952 | 949 | 945 | 941 | 942 | 941 | 932 | 936 | | | | | |
| CV | 0.008 | 0.009 | 0.009 | 0.009 | 0.008 | 0.009 | 0.010 | 0.011 | 0.007 | 0.008 | 0.005 | 0.004 | | | | | |
| Source- Census of India 1901-2011 | | | | | | | | | | | | | | | | | |

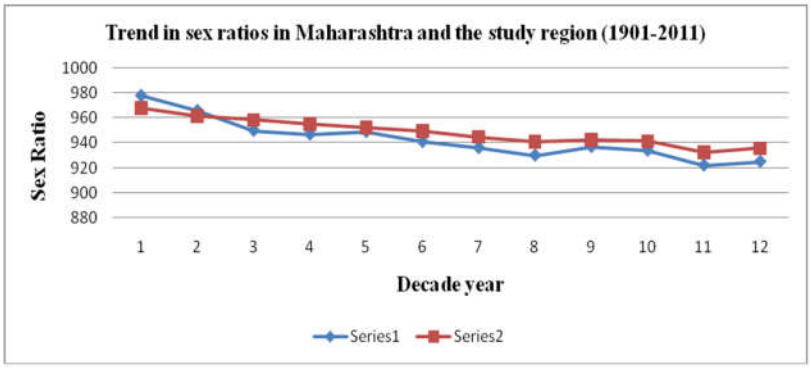


**Fig.2.**

Though the Census of India has not fully released all the census data but the information provided is sufficient for exploring the pattern and trend in sex ratio in the study region.

Such kind of a situation necessitates an intervention on the part of researchers to find out the causes of such a sharp decline and its consequences for the referred geographical area.

**Changing trend in sex ratio in the study region**

The changing trend in sex ratio in Maharashtra state and the study region is made clear in Table 2 and Fig. 2. It can be noticed from Table 2 that the sex ratio or female – male ratio reported in 2001 census in the study region is 932 which is lower than the sex ratio at Maharashtra state level i.e. 922 by 10 females per thousand males. Census information that is available reveals that since the independence of India Maharashtra state sex ratio has fallen from 978 in 1901 to 922 in 2001.Whereas in case of the study region, it has first shown an upward trend from 942 in 1981 and 936 in 2011 and decline from 968 in 1901 to 941 in 1971 and again decline from 941 in 1991 to 932 in 2001.This is the time period in which the study region on the one hand has remained disturbed due to the males get preferential treatment while females are neglected and on the other, has moved ahead on the path of socio-economic development especially education.Some of the important reasons commonly as given below; Neglect of the girl child, High maternal mortality, Sex selective, female infanticide.With small family norms, many young couples do not for a second child happens to be a male. Higher female life expectancy is likely to initiate a new trend and tilt the scale in favor result in sex ratio.

Furthermore, the study region has always lagged behind the Maharashtra state in terms of the sex ratio, though the gap showed a downward trend from 1921 to 2011. However, what is important to note is that the sex ratio in the study region has improved from 936 in 2011 this is a healthy sign as far as the status of women in the study region is concerned.While moving away from the comparative analysis of changing trend in sex ratio in Maharashtra state and the study region, it is felt necessary to explain the changing trend in sex ratio across the tahsils of the study region. Having a glance at Table – 3 reveals that Sex Ratio is highest in Erandol tahsil (940), Chalisgaon (939), and Dharangaon tahsil (939) and lowest in Muktainagar tahsil (929). The decadal growth rate has observed negative from beginning census which is -66 in 1911 and it slowly decline up to -40 in 1971.

The decadal growth rate is increase 18 in 1981 and again it declines abruptly -90 in 2001. During the decade 2011 the growth rate increased up to 36 due to social development, education.Though census figures from 1901-2011 for sex ratio across the tahsils of the study region are available in the present study, focus of discussion is status and changing trend in sex ratio in 1901 and 2011. Analysis of the data for the period of study i.e.1901-2011 depicts that there is decline in sex ratio in the study region.

**Conclusion**

The Major finding in this research that the maximum sex ratio is noted in all tahsils from beginning census 1901 to1951. The minimum sex ratio has observed during 1961 to 2001 censuses. Jamner and Chalisgaon tahsils have recorded low sex ratios. Whereas, Amalner, Dharangaon and Bhadgaon tashils have recorded highest sex ratios. The remaining tahsils have observed moderate sex ratios. We can say that the son preference mentality exists behind this low sex ratio. The economic security is also related to son preference mentality. In order to remove these reasons of low sex ratio, the Government has initiated many policy and program but the desired result have not come yet. There is a negligible increase in the sex ratio of the study region from 2011.The sex ratio for the study region has large variation during the study period. Proportion of females per thousand males is not satisfactory in the study region. According to 2011 there are 936 females per thousand males. Attitude of preference of male child and neglecting female child result this type imbalance. The paper examined inter temporal and spatial trends and socioeconomic of the spatial variations in the relative neglect of girl child in the study region. The argument is that economic value of women increases, higher educational attainment and participation in economic activity. Rather, the aggregate evidence could be interpreted as the improving female education and despite the improving socioeconomic characteristics. The existence of gender discriminatory practices which starts even before birth, which requires urgent attention of public policy, as improving literacy and economic value of women is necessary but not sufficient for enhancing relative life chances of girl child.

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