



Geographical Review of Sex Ratio in Solapur District, Maharashtra: A Spatial Analysis with Special Reference to 2018–2019

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ABSTRACT:

Sex ratio is an important demographic indicator that reflects the demographic, social, economic and cultural characteristics of a population. The spatial distribution of females and males is not uniform and is influenced by fertility, mortality, migration, socio-economic development, literacy, urbanisation and prevailing social attitudes towards women. The present study examines the geographical variation of sex ratio in Solapur District of Maharashtra with special reference to the 2018–2019 study period. Since India did not conduct a population census in 2018–2019, the study uses the latest available official Census of India 2011 data as the principal demographic baseline and supplements it with published secondary sources and district-level statistical information. The study examines variations in sex ratio among the eleven tahsils of Solapur District and considers rural–urban differences. According to Census 2011, Solapur District had a sex ratio of 938 females per 1,000 males, compared with 971 in Solapur North Tahsil and only 912 in Madha Tahsil. The rural sex ratio was 922, whereas the urban sex ratio was considerably higher at 972. Tahsil-level differences reveal substantial spatial inequalities. Solapur North, Akkalkot and South Solapur recorded relatively favourable sex ratios, while Madha, Karmala, Mohol and Pandharpur recorded comparatively lower ratios. The study concludes that the geography of sex ratio in Solapur is associated with differences in migration, urbanisation, literacy, employment opportunities, agricultural conditions and socio-cultural practices. The findings underline the need for geographically targeted policies for improving women's social and economic status and reducing gender inequalities.

Keywords: *Sex Ratio, Spatial Variation, Rural–Urban Difference, Geographical Factors Affecting Sex Ratio, Social and Cultural Factors.*

INTRODUCTION:

Population is one of the fundamental elements of geographical analysis. The composition of population according to age, sex, literacy, occupation and other characteristics provides an understanding of the social and economic structure of a region. Among these characteristics, sex composition occupies a particularly important position because it influences marriage patterns, household structure, labour supply, dependency, migration and future population growth.

Sex ratio is generally defined in India as the number of females per 1,000 males:

$$\text{Sex Ratio} = \frac{\text{Female Population}}{\text{Male Population}} \times 1000$$

A balanced sex ratio is important for sustainable demographic development. An unusually low sex ratio may indicate a combination of factors such as sex-selective practices, differential mortality, female disadvantage, migration of males or females, and socio-economic inequalities.

Solapur District is located in south-western Maharashtra and has a diverse geographical and socio-economic structure. The district contains agricultural areas, drought-prone regions, irrigation-based agricultural areas, industrial centres and urban settlements. Such differences have an important influence on demographic characteristics.

According to the Census of India 2011, Solapur District had a population of 4,317,756, consisting of 2,227,852 males and 2,089,904 females. The district's overall sex ratio was 938 females per 1,000 males. The District Census Handbook reports considerable intra-district variation, with the sex ratio ranging from 971 in Solapur North to 912 in Madha.

The present study therefore attempts to examine the geographical distribution and spatial disparities of sex ratio in Solapur District and interpret their possible geographical and socio-economic causes.

OBJECTIVES:

1. To examine the geographical distribution of sex ratio in Solapur District.
2. To analyse tahsil-wise variations in sex ratio.

3. To identify relatively high and low sex-ratio regions within the district.

STUDY AREA:

Solapur District is situated in the south-eastern part of Maharashtra, forming an important geographical link between western Maharashtra and the neighbouring state of Karnataka. The district lies approximately between 17°10' and 18°32' North latitudes and 74°42' and 76°15' East longitudes.

The district is surrounded by Pune and Ahmednagar districts to the north, Osmanabad (Dharashiv) to the north-east, Kalaburagi and Vijayapura districts of Karnataka to the south and south-east, Sangli district to the south-west, and Satara district to the west. Solapur city is the administrative headquarters and the principal urban and commercial centre of the district.

Solapur District is situated in the south-eastern part of Maharashtra. It occupies an important geographical position between the western and southern parts of the state and has connections with neighbouring districts and Karnataka.

The district has considerable geographical diversity. Agriculture is an important economic activity, but rainfall is uneven and several areas are drought-prone. Irrigation development has produced spatial differences in agricultural productivity and employment. Solapur city is the principal urban centre, while other towns provide regional services and employment.

The official Census District Census Handbook provides demographic information at village, town and tahsil levels, making it an important source for geographical analysis of sex composition.

DATABASE AND METHODOLOGY:

A. Sources of Data:

The study is based primarily on secondary data. The principal sources include:

Census of India 2011, District Census Handbook, Solapur, Primary Census Abstract, District-level statistical publications, Published geographical research papers, and Relevant demographic literature. The Census of India District Census Handbook contains both census and non-census information for

rural and urban areas and provides population data at relatively small administrative units.

B. Method:

The study uses descriptive and comparative geographical methods. Tahsil-wise sex ratios are compared with the district average.

The basic formula used is:

$$SR = \frac{F}{M} \times 1000$$

Where:

- SR = Sex Ratio
- F = Female population
- M = Male population

The study also compares rural and urban sex ratios to identify spatial differences.

HISTORICAL BACKGROUND OF SEX RATIO:

Sex ratio is not a static demographic characteristic. It changes over time according to mortality, fertility, migration and social conditions.

Available historical analysis indicates that Solapur experienced considerable fluctuations in sex ratio during the twentieth century. Research based on Census data shows a long-term decline during the early decades, followed by some improvement in the later census periods. By 2011, Solapur's sex ratio had reached 938 females per 1,000 males.

Table 1. Historical Sex Ratio of Solapur District

Census Year	Sex Ratio (Females/1,000 Males)
1901	985
1911	988
1921	981
1931	975
1941	985
1951	935
1961	936
1971	933
1981	942
1991	934
2001	935
2011	938

(Source: Census of India; compiled from published geographical studies.)

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The broad pattern indicates that the district's sex ratio remained below the ideal demographic balance for much of the period, although the improvement between 2001 and 2011 suggests some positive change.

TAHSIL-WISE SPATIAL DISTRIBUTION OF SEX RATIO:

One of the most important geographical characteristics of Solapur District is the substantial variation in sex ratio among tahsils.

Table 2. Tahsil-wise Sex Ratio in Solapur District, 2011

Sr. No.	Tahsil	Sex Ratio
1	Karmala	918
2	Madha	912
3	Barshi	923
4	Solapur North	971
5	Mohol	919
6	Pandharpur	920
7	Malshiras	931
8	Sangola	936
9	Mangalwedha	922
10	Solapur South	944
11	Akkalkot	950
—	District	938

(Source: Census of India 2011; District Census Handbook, Solapur.)

Solapur North recorded the highest sex ratio at 971, followed by Akkalkot (950) and Solapur South (944). Madha recorded the lowest value at 912, followed by Karmala (918) and Mohol (919).

Table No.3 Classification of Tahsils

Category	Sex Ratio Range	Tahsils
Very High	950 and above	Solapur North, Akkalkot
High	940–949	Solapur South
Moderate	930–939	Malshiras, Sangola
Low	920–929	Barshi, Pandharpur, Mangalwedha
Very Low	Below 920	Karmala, Madha, Mohol

(Sources:- compiled by researcher)

This classification illustrates the existence of a marked spatial pattern rather than a uniform distribution throughout the district.

RURAL–URBAN VARIATION:

The rural–urban dimension is particularly important in understanding sex ratio. Census 2011 data show that Solapur District's rural sex ratio was 922, while its urban sex ratio was 972.

Table 4. Rural–Urban Sex Ratio, Solapur District

Area	Sex Ratio
Rural	922
Urban	972
District Total	938

(Source: Census of India 2011.)

The difference between rural and urban areas is striking. The urban sex ratio is 50 points higher than the rural sex ratio.

This may partly reflect migration patterns. Employment-related migration can alter the sex composition of rural and urban settlements. Areas from which male workers migrate may show a relatively higher female proportion, while employment centres may attract either male or female migrants depending on the occupational structure.

Published geographical research on Solapur also identifies substantial rural–urban differences and associates them with migration, employment opportunities, agricultural development and urbanization.

Table 5. Rural and Urban Sex Ratio by Tahsil, 2011

Tahsil	Rural	Urban
Karmala	915	949
Madha	909	956
Barshi	910	953
Solapur North	914	978
Mohol	919	—
Pandharpur	911	953
Malshiras	925	967
Sangola	936	937
Mangalwedha	917	665
Solapur South	944	—
Akkalkot	941	987
District	922	972

(Source: Census of India 2011, as compiled in geographical studies of Solapur District.)

The data show that most tahsils had a higher urban than rural sex ratio. Akkalkot recorded a particularly high urban sex ratio of 987, while Solapur North recorded 978. The rural sex ratio was highest in South Solapur at 944. Madha had one of the lowest rural values at 909.

The very low reported value for urban Mangalwedha should be treated cautiously and checked against the original Census table before publication, because small urban populations can produce unusually volatile ratios.

GEOGRAPHICAL FACTORS AFFECTING SEX RATIO:

A. Migration:

Migration is one of the most important geographical explanations for variations in sex ratio.

Employment opportunities are unevenly distributed across Solapur District. Industrial, commercial and service-sector centres attract migrants. At the same time, drought-prone rural areas can experience out-migration of working-age males. Consequently, migration may alter the local sex composition substantially.

B. Urbanisation:

Urban areas generally have greater access to education, healthcare, employment and public services. These factors can contribute to improved female survival and participation in economic activity. The significantly higher urban sex ratio in Solapur—972 compared with 922 in rural areas—demonstrates the importance of the urban environment in explaining spatial differences.

C. Agricultural Conditions:

Solapur contains both irrigated and drought-prone agricultural areas. Differences in agricultural productivity and employment opportunities influence migration.

Regions with limited agricultural opportunities may experience greater migration of economically active males, while irrigated areas may have different demographic patterns.

D. Literacy:

Education is an important social determinant of demographic behaviour. Higher female literacy may be associated with improved awareness regarding healthcare, reproductive health, legal rights and employment. Earlier research

examining Solapur District found a positive, though moderate, relationship between literacy and sex ratio, reporting a Spearman rank correlation of approximately 0.33.

This suggests that literacy alone cannot explain the sex-ratio pattern, but it is an important component of the broader socio-economic environment.

E. Social and Cultural Factors:

Demographic statistics cannot be understood entirely through physical geography. Social and cultural practices also influence sex composition. preference for male children, differential treatment of girls and boys, female infant and child mortality, maternal health, early marriage, differences in educational opportunities, unequal participation in employment, sex-selective practices, differences in access to healthcare. Earlier geographical studies of Solapur have identified several of these factors as possible contributors to low sex ratios, including child neglect, selective abortion, son preference and the relatively disadvantaged social position of women.

However, such factors should be interpreted carefully. A low sex ratio in a particular tahsil does not by itself prove that any one specific social practice is responsible. Multiple demographic processes—including migration—can produce the same statistical pattern.

CONCLUSION:

Sex ratio is a significant indicator of demographic and social development. The geographical review of Solapur District demonstrates considerable spatial variation in the distribution of females relative to males. The Census 2011 data reveal that Solapur District had an overall sex ratio of 938 females per 1,000 males, but tahsil-level values varied from 912 in Madha to 971 in Solapur North. The rural–urban contrast was also substantial, with rural and urban sex ratios of 922 and 972 respectively. The geographical pattern cannot be attributed to one factor. Migration, urbanisation, agricultural conditions, literacy, employment, healthcare and socio-cultural practices interact to produce the observed spatial differences. The low child sex ratio of 883 is particularly significant because it indicates the need for greater attention to the demographic position of girls. Finally, it is important to emphasise that 2018–2019 should be presented as the review/study period rather than as a Census year. The absence

of a 2018–19 population census means that the paper should clearly identify Census 2011 as its principal official demographic baseline. This will make the methodology more defensible in peer review.

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