STUDIES

No. 23-07

Male-female Imbalance in the Indian Population: 120 Years Perspective 1901-2011

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Abstract

This paper analyses the male-female imbalance in the Indian population over a period of 120 years using data from the decennial population censuses since 1901 and annual estimates of population by sex prepared by the United Nations for the period 1950-2021. The analysis shows that the trend in the male-female imbalance in population has changed frequently during the period 1950-2021. The analysis also reveals that the level and the trend in the male-female imbalance at the country level masks the remarkable variation in the male-female imbalance across states and Union Territories and districts. The frequent changes in the male-female imbalance in the country has largely been due to the fluctuations in the male-female imbalance in the number of deaths. Before 1981, the male-female imbalance in the number of deaths in the country contributed to increase the imbalance in favour of males but, after 1981, it contributed to decrease the population imbalance in favour of males. On the other hand, the male-female imbalance in the number of births contributed to decrease the population imbalance in favour of males before 1991, but, after 1991 it contributed to increase the imbalance in favour of males. The decrease in population imbalance in favour of males in recent years is attributed to the increase in male mortality in the adult ages.

Key Words

India, Population, Male-Female balance, Trend, Regional variation

Introduction

The male-female imbalance in the Indian population has always remained favourable to males. The population enumerated at 2011 population census in India suggests that there were around 106 males for every 100 females in the country in 2011. There has been no population census in India since 2011, but estimates prepared by the United Nations suggest that this number has increased to around 107 males for every 100 females in 2021 (United Nations, 2022). India ranks 213 in terms of the proportion of females in the population among the 236 countries and areas of the world for which United Nations has prepared latest estimates of population (United Nations, 2022). The male-female imbalance favouring males also appears to have increased over time in India. Population enumerated at the 1901 population census in India suggests that there were around 103 males for every 100 females in the country in 1901, which increased to 106 males for every 100 females in 2011. The United Nations estimates also suggest that the number of males for every 100 females in India increased from almost 106 males for every 100 females in 1950 to almost 107 males for every 100 females in 2021 (United Nations, 2022). The increase has, however, been slower than the in the world as the number of males for every 100 females increased from around 99 to 101 between 1950 and 2021 in the world (United Nations, 2022). United Nations estimates also suggest that the number of males for every 100 females in India has started decreasing since 2003 whereas the number of males for every 100 females in the world started decreasing only after 2015.

The persistence of the exceptionally high male-female imbalance in favour of males in the India has been the subject to intensive research because of its implications to both population transition and social and economic development including status of women. Many reasons have been suggested for the persistence of male-female imbalance favouring males in India. These include male-female imbalance at birth that favours males, under-enumeration of females in the population census, and relatively higher mortality in females compared to males, especially in younger ages (Visaria, 1972; Bardhan, 1974; Miller, 1981; Sen, 1990; Kishor, 1993; Agnihotri, 2000; Croll, 2000; Das Gupta, 2005; Bhat, 2002; Arokiasamy, 2007; Guilmoto, 2009, Griffiths et al, 2000, Guillot, 2002). The male-female imbalance in the population also varies widely across different regions of the country and attempts have been made to explain this variation in terms of the social and cultural diversity of the country which is very strong, and which has persisted over time (Dyson and Moore, 1983; Murthy et al, 1993).

Recently, the Government of India has made available the population enumerated by sex at different decennial population censuses since 1901 in each of the 640 districts of the country as they existed at the 2011 population census. The database made available by the Government of India provides a unique opportunity to analyse the evolution of the male-female imbalance in the population in the districts of the country over a period of 120 years. The United Nations has also made available, for the first time, annual estimates of the population of 236 countries and areas of the world by sex along with estimates of annual number of births, deaths, net migrants and annual estimates of fertility and mortality. The United Nations estimates permit a comprehensive analysis of the trend and determinants of the male-female imbalance in the population at the national level. United Nations estimates also permit decomposition of the change in the male-female imbalance into changes in the proximate factors of the male-female imbalance in the population. United Nations estimates are, however, not available for the states/Union Territories and districts of the country. At state/Union Territory and district levels, the only source of data to analyse the male-female imbalance in the population is the decennial population census.

In this paper we present 120 years perspective of male-female imbalance in India by analysing the variation and the change in the male-female imbalance in the population in the districts and states/Union Territories of the country as they existed at the time of 2011 population census during the period 1901-2011. At the time of the 2011 population census, there were 640 districts and 35 states/Union Territories in India. This number has now increased to more than 800 because of the formation of new districts due to political and administrative considerations. There has also been the reorganisation of the states and Union Territories after the 2011 population census so that the number of states and Union Territories in the country has now increased to 36.

The paper also analyses the trend and the change in the male-female imbalance in the population at the national level during the period 1951-2021 using the annual estimates of population prepared by the United Nations. Since United Nations provides annual estimates of fertility, mortality, and migration also, it is possible to carry out a deeper analysis of the demographic factors responsible for the change in the male-female imbalance in the population in the country over a period of 70 years beginning 1951. The analysis highlights the complexities in characterising the male-female imbalance in the Indian population. The spatio-temporal variation in the male-female imbalance in population suggests that the male-female imbalance in population is influenced strongly by local level social, cultural, and economic factors.

The paper is organised as follows. The next section of the paper describes the data source used in the analysis. The paper uses the number of males and the number of females enumerated in districts and states/Union Territories of the country at different decennial population censuses since 1901 through 2011. The paper also uses annual estimates of the number of males and the number of females in the country during the period 1951 through 2021 along with estimates of annual number of births, deaths, and net migrants prepared by the United Nations. The third section of the paper describes the methodology used in the analysis. The change in the male-female imbalance in population in population is the result of the difference in the growth rate of male and female population. The male-female imbalance in population in India has not been uniform. We have, therefore, used the joinpoint regression analysis to characterise the trend in the male-female imbalance in the population. The fourth section analyses variation in the male-female imbalance in population in the districts and states/Union Territories of the country during the period 1901-2011. Trend in the male-female imbalance in population in India is analysed in the fifth section of the paper using United Nations estimates for different years of the period 1951-2021. based on the data available from different decennial population censuses for the period 1901-2011 and annual estimates of male and female population prepared by the United Nations for the period 1950-2021. The results of the decomposition of the change in the male-female imbalance in the districts, states/Union Territories and in the country are presented in the sixth section of the paper. The last section of the paper summarises the main findings of the analysis in the context of reducing the male-female imbalance in India which continues to be exceptionally highly favourable to males by international standards.

Data Source

We have used two data sources for the present analysis. The first data source is the decennial population censuses conducted in India since 1901 through 2011; there was no decennial population census in the country in 2021. These decennial population censuses provide enumerated number of males and females in India right up to the village level in the rural areas and up to the municipal ward level in the urban areas of the country as defined at the time of the population census which have been grouped into 640 districts as they existed at the time of the 2011 decennial population census to arrive at the enumerated population by sex in each district at every 10 years interval for the period 1901-2011. The decennial population census is the only source in India which provides count of males and females up to the lowest administrative level – village in the rural areas and municipal wards in the urban areas.

The count of males and females from the population census is known to be associated with several errors including the omission rate which is different at different census. Prior to the 1951 decennial population census, there was no system of estimating the omission rate in the census. Since 1951, the omission rate in each decennial population census in the country is estimated through the post enumeration survey, although no attempt is made to adjust the enumerated data for the omission rate. The omission rate in the 1991 population census was estimated to be 17.6 per 1000 population which increased to 23 per 1000 population in the 2001 population census and virtually remained the same in the 2011 population census (Chatterjee and Mukherjee, 2016). There was, however, no significant difference in the net omission rate in males and females at the national level (Government

of India, 2014). Mukherjee (1982) has analysed the impact of under-enumeration in decennial population censuses in India, 1901-1981 and has concluded that the omission rates in population censuses have not been too large to have a telling impact on population growth trend in the country. In view of the above observations, we have used the enumerated data available from different population censuses in the country since 1901 through 2011 in the present analysis.

The second data source that we have used in the present analysis is the annual estimates of male and female population in India prepared by the United Nations for the period 1950-2021 as part of its latest revision of world population prospects (United Nations, 2022). The number of males and the number of females estimated by the United Nations are not the enumerated ones but are estimates based on assumptions about fertility, mortality, and migration. United Nations first estimates the 1950 base population using a Bayesian hierarchical model of population reconstruction (Wheldon et al, 2016) and then estimates annual population by sex taking into consideration annual estimates of fertility and mortality, and annual rate of net migration. The annual estimates of male and female populations prepared by the United Nations, however, permit analysing how changes in the proximate determinants of male-female imbalance have contributed to the change in male-female imbalance in the population of the country as United Nations also provides estimates of annual number of births, deaths, and net migrants. The annual estimates of male and female population prepared by the United Nations also allows analysing the trend in the male-female imbalance in the population during the 70 years between 1950 and 2021. The advantage of using estimates provided by the United Nations is that these estimates are free from errors which are generally associated with the counts of males and females at the population census. United Nations estimates are, however, not available for the constituent states/Union Territories, and districts of the country so that they permit country level analysis only.

Estimates of the number of females for every 100 males for the country and for states, Union Territories and districts of the country are also available from the National Family Health Survey, 2019-2021 (Government of India, 2022). Estimates of male and female population of the country and its constituent states/Union Territories are also available from the National Sample Survey, 2020-2021 (Government of India, 2023). These estimates also permit analysing male-female imbalance in the population, although, they are based on the survey of a sample of households. These surveys, however, do not provide information related to the proximate determinants of the male-female imbalance in the population.

Methods

The male-female imbalance in the population can be measured in terms of either the ratio of the number of males to the number of females or the difference between the number of males and the number of females in the population. The ratio of the number of males to the number of females is commonly termed as the population sex ratio and is widely used to measure male-female imbalance in the population. If this ratio is equal to 1, the number of males is equal to the number of females. When this ratio deviates from 1, there is male-female imbalance and the larger the deviation, the higher the imbalance. When the population sex ratio is greater than 1, the male-female imbalance favour males. When the population sex ratio is less than 1, the male-female imbalance favours females. Similarly, the deviation from zero in the difference between the number of males and the number of females male-female imbalance. If the difference is greater than zero, the male-female imbalance favours males, otherwise it favours females. We have measured the male-female imbalance in the population in terms of the population sex ratio. It is rare that the number of males and the number of females is the same in a population. At the same time, the natural male-female imbalance in the population is difficult to discern as it depends upon male-female differences in fertility, mortality, and net migration in the population. In general, population sex ratios tend to fall in the narrow range of 95 to 102 males for every 100 females, barring special circumstances. Population sex ratio outside the range of 90 to 105 males for every 100 females may be viewed as extreme (Hobbs, 2004).

We have measured the trend in the population sex ratio through the joinpoint regression analysis (Kim et al, 2000) assuming that the trend in the population sex ratio has changed over time. There are three steps in the joinpoint regression analysis. The first is to test whether there has been a change in the trend. The second step is to identify point(s) of inflexion in the trend or joinpoints. The third and the last step is to fit a regression line between two successive joinpoints. If there is no change in the trend, then the joinpoint regression analysis is the same as the simple linear regression analysis. If there are k joinpoints, then the entire trend period is divided into $k+1$ time-segments and the annual per cent change (APC) in the different time-segments is different. The APC in a time-segment provides a complete characterisation of the trend in that time-segment. APC in different time-segments can be compared to examine how the trend has changed over time. The weighted average of APC in different time-segments with weights equal to the length of the time-segment gives the average annual per cent change (AAPC) during the entire trend period. AAPC is a better measure to describe the long-term trend that changes over time compared to the average annual per cent change calculated from the slope of the regression equation (Clegg et al, 2009). The AAPC best summarises the trend that varies over time (Marrot, 2010).

The joinpoint regression analysis requires identification of joinpoint(s) in advance. The joinpoint(s) can be set arbitrarily or can be determined statistically. There are different methods to identify joinpoints or point(s) of inflexion in the trend statistically. These include permutation method (Kim et al., 2000); Bayesian Information Criterion (BIC) (Kim et al, 2009); BIC3 method (Kim and Kim, 2016); and modified BIC (Zhang and Siegmund, 2007). The grid search method is commonly used to identify joinpoint(s) (Lerman, 1980) which allows a joinpoint to occur exactly at a particular point in time. A grid is created for all possible positions of joinpoint(s) or combination of joinpoint(s) and the model is fitted for each possible position. That position of joinpoint(s) is selected which minimises the sum of squared errors (SSE) of the model.

Let S_i denotes population sex ratio for the year t_i such that $t_1<t_2<\ldots<t_n$ and $k_1<k_2<\ldots<k_j$ are the joinpoints. Then, the trend in population sex ratio can be modelled as

$$\ln(S_i) = \alpha + \beta_1 t_1 + \delta_1 u_1 + \delta_2 u_2 + \cdots + \delta_j u_j + \in_j \quad (1)$$

$$u_j = \begin{cases} (t_j - k_j), if\ t_j > k_j \\ 0,\ otherwise \end{cases} \quad (2)$$

Actual calculations have been carried out using the Joinpoint Regression Program version 5.0.2 (National Institute of Health, 2023). The Program requires, in advance, specification of minimum number (0) and maximum number of joinpoints (>0). It may be noted that even if the final model has k joinpoint(s), the slope of regression functions in any time-segment may not be statistically significantly different from zero which means that there is no statistically significant change in the trend during the time-segment. The identification of k joinpoints in the joinpoint regression analysis simply means that the model describing the trend with these joinpoint(s) has the best fit compared to all other models.

The change in the population sex ratio in a time period is the result of the difference in the growth of male and female population during the period. If male population grows faster than female population, the population sex ratio increases, otherwise it decreases. If male population growth is the same as female population growth, there is no change in the population sex ratio. The change in the population sex ratio, S, between time t_1 and t_2 ($t_2>t_1$) may be written as

$$\Delta S = S_2 - S_1 = \frac{S_2 - S_1}{\ln(S_2/S_1)} \times \ln(S_2/S_1) = L_S \times \ln(S_2/S_1) \quad (3)$$

where,

$$L_S = \frac{S_2 - S_1}{\ln(S_2/S_1)} \quad (4)$$

is the logarithmic mean of S_2 and S_1 (Carlson, 1972). If M denotes the male population and F the female population, then,

$$\ln\left(\frac{S_2}{S_1}\right) = ln\left(\frac{M_2/F_2}{M_1/F_1}\right) = ln\left(\frac{M_2}{M_1}\right) - ln\left(\frac{F_2}{F_1}\right) = r_M - r_F \quad (5)$$

where

$$r_M = ln\left(\frac{M_2}{M_1}\right) \quad (6)$$

$$r_F = ln\left(\frac{F_2}{F_1}\right) \quad (7)$$

are measures of male and female population growth respectively. Equation (3) can now be written as

$$\Delta S = (L_S \times r_M) + (-L_S \times r_F) = \Delta S_M + \Delta S_F \quad (8)$$

It is possible to expand the equation (8) in two ways. The first expansion considers the difference in the growth of male and female population in different ages. We can write,

$$r_M = ln\left(\frac{M_2}{M_1}\right) = \frac{ln\left(\frac{M_2}{M_1}\right)}{(M_2 - M_1)} \times (M_2 - M_1) = \frac{(M_2 - M_1)}{L_M} = \frac{\Delta M}{L_M} \quad (9)$$

where L_M is the logarithmic mean of M_2 and M_1. If M_a denotes the male population aged a, then,

$$M = \sum_a M_a \quad (10)$$

Therefore, the growth of the male population can be written as

$$r_M = \frac{(\sum_a M_{a2} - \sum_a M_{a1})}{L_M} = \frac{\sum_a (M_{a2} - M_{a1})}{L_M} \quad (11)$$

Similarly, growth of the female population between time t_1 and t_2 can be written as,

$$r_F = \frac{(\sum_a F_{a2} - \sum_a F_{a1})}{L_F} = \frac{\sum_a (F_{a2} - F_{a1})}{L_F} \quad (12)$$

Equation (8) can now expend as

$$\Delta S = L_S \times \left[\frac{\sum_a (M_{a2} - M_{a1})}{L_M}\right] + (-L_S) \times \left[\frac{\sum_a (F_{a2} - F_{a1})}{L_F}\right]$$

$$\Delta S = \left[\frac{L_S}{L_M} \times \sum_a \nabla M_a\right] + \left[\left(-\frac{L_S}{L_F}\right) \times \sum_a \nabla F_a\right] \quad (13)$$

The second approach of expanding equation (8) takes into consideration the change in the proximate determinants of population growth – births, deaths, in-migrants, and out-migrants. If B_M denotes number of male births, D_M denotes number of male deaths, I_M denotes number of male in-migrants, and O_M denotes the number of male out-migrants during the period t_1 and t_2 ($t_2 > t_1$), then, the change in the male population between time t_1 and t_2 may be written as

$$M_2 - M_1 = \nabla M = B_M + (-D_M) + I_M + (-O_M) = B_M + (-D_M) + N_M \quad (14)$$

where

$$N_M = I_M + (-O_M) \quad (15)$$

is the number of net male migrants during the period t_1 and t_2. Hence

$$r_M = \frac{r_M}{\Delta M} \times \Delta M = \frac{\Delta M}{L_M} = \frac{B_M + (-D_M) + N_M}{L_M} = \alpha_M + \beta_M + \gamma_M \quad (16)$$

where,

$$\alpha_M = \frac{B_M}{L_M} \quad (17)$$

$$\beta_M = \left(\frac{-D_M}{L_M}\right) \tag{18}$$

$$\gamma_M = \left(\frac{N_M}{L_M}\right) \tag{19}$$

Similarly, growth of the female population between time t_1 and t_2 can be decomposed as

$$r_F = \frac{r_F}{\Delta F} \times \Delta F = \frac{\Delta F}{L_F} = \frac{B_F + (-D_F) + N_F}{L_F} = \alpha_F + \beta_F + \gamma_F \tag{20}$$

Hence

$$\nabla S = \{L_S \times (\alpha_M - \alpha_F)\} + \{L_S \times (\beta_M - \beta_F)\} + \{L_S \times (\gamma_M - \gamma_F)\} \tag{21}$$

$$\nabla S = C_B + C_D + C_N \tag{22}$$

$$C_B = \{L_S \times (\alpha_M - \alpha_F)\} \tag{23}$$

$$C_D = \{L_S \times (\beta_M - \beta_F)\} \tag{24}$$

$$C_N = \{L_S \times (\gamma_M - \gamma_F)\} \tag{25}$$

C_B, is the contribution of the difference in male and female births, C_D is the contribution of the difference in male and female deaths, and C_N is the contribution of the difference in male and female net migrants. The number of births in the population is determined by the level of fertility and the population age composition. Similarly, the number of deaths is determined by the population age composition and the level of mortality while the number of net migrants is determined by the population age composition and net migration rate. This means that the change in population sex ratio is determined by the change in sex ratio at birth, sex ratio of deaths and sex ratio of net migrants in addition to the change in the population age composition. If b_M denotes the male birth rate and P_M denotes the male population, then,

$$B_M = P_M \times b_M \tag{26}$$

Similarly, if b_F denotes the female birth rate and P_F denotes the female population, then,

$$B_F = P_F \times b_F \tag{27}$$

Now, following Kitagawa (1955), the difference between number of male births and number of female births can be decomposed as

$$B_M - B_F = \frac{1}{2}(b_M - b_F) \times (P_M + P_F) + \frac{1}{2}(b_M + b_F) \times (P_M - P_F) \tag{28}$$

If d_M denotes male death rate, D_F denotes female death rate, n_M denotes male net migration rate, and n_F denotes female net migration rate, then the difference between the number of male deaths and the number of female deaths can be decomposed as

$$D_M - D_F = \frac{1}{2}(d_M - d_F) \times (P_M + P_F) + \frac{1}{2}(d_M + d_F) \times (P_M - P_F) \tag{29}$$

and

$$N_M - N_F = \frac{1}{2}(n_M - n_F) \times (P_M + P_F) + \frac{1}{2}(n_M + n_F) \times (P_M - P_F) \tag{30}$$

Equations (26) and (27) may be expanded as

$$B_M = \sum_a P_{Ma} \times b_{Ma} \tag{31}$$

$$B_F = \sum_a P_{Fa} \times b_{Fa} \tag{32}$$

where, P_{Ma} is the male population aged a, P_{Fa} is the female population aged a, b_{Ma} is the male birth rate to population aged a, and b_{Fa} is the female birth rate to population aged a. Now

$$B_M - B_F = \sum_a P_{Ma} \times b_{Ma} - \sum_a P_{Fa} \times b_{Fa} \quad (33)$$

$$B_M - B_F = \frac{1}{2}\sum_a (b_{Ma} - b_{Fa}) \times (P_{Ma} + P_{Fa}) + \frac{1}{2}\sum_a (b_{Ma} + b_{Fa}) \times (P_{Ma} - P_{Fa}) \quad (34)$$

It should be noted that the age-specific birth rate, b_a, is different from the commonly used age-specific fertility rate, f_a. If B_a is the number of births in age a, P_a is the population aged a, and W_a is the number of women aged a, then b_a is defined as

$$b_a = \frac{B_a}{P_a} = \frac{B_a}{W_a} \times \frac{W_a}{P_a} = f_a \times w_a \quad (35)$$

f_a is the conventional fertility rate in age a, and w_a is the proportion of females in population aged a.

Similarly, if d_{Ma} is the male death rate in male population aged a, and d_{Fa} is the female death rate to female population aged a, then,

$$D_M - D_F = \frac{1}{2}\sum_a (d_{Ma} - d_{Fa}) \times (P_{Ma} + P_{Fa}) + \frac{1}{2}\sum_a (d_{Ma} + d_{Fa}) \times (P_{Ma} - P_{Fa}) \quad (36)$$

Finally, if n_{Ma} is the male net migration rate in age a, and n_{Fa} is the female net migration rate in population aged a, then the difference between male net migration rate and female net migration rate can be decomposed as

$$N_M - N_F = \frac{1}{2}\sum_a (n_{Ma} - n_{Fa}) \times (P_{Ma} + P_{Fa}) + \frac{1}{2}\sum_a (n_{Ma} + n_{Fa}) \times (P_{Ma} - P_{Fa}) \quad (37)$$

Population Sex Ratio in India, 1901-2011

Estimates of population sex ratio for the period 1901-2011 in 640 districts of the country as they existed at the 2011 population census are presented in the appendix table. The spatio-temporal variation in district population sex ratio is depicted in figures 1 through 12 and summarised in table 1. The male-female imbalance is classified as favourable to females if population sex ratio is less than 95 males for every 100 females. The male-female imbalance is classified as favourable to males if population sex ratio is at least 105 males per 100 females. The male-female imbalance is classified as normal if population sex ratio ranges between 95-105 males per 100 females. This classification suggests that male-female imbalance in 1901 was favourable to females in 74 districts but favourable to males in 136 districts. In 2011, male-female imbalance was favourable to females in only 19 districts but favourable to males in 345 districts. The median population sex ratio increased from 102 in 1901 to 107 males for every 100 females in 1991, remained virtually unchanged in 2001, and decreased to 105 males for every 100 females in 2011. In 1901, population sex ratio was the lowest in district Siwan of Bihar (83 males for every 100 females) but the highest in district South Andaman of Andaman and Nicobar Islands (509 males for every 100 females). In 2011, population sex ratio was the lowest in district Mahe of Union Territory of Puducherry (84 males for every 100 females), but the highest in district Daman of the Union Territory of Daman Diu (187 males for every 100 females).

The regional pattern in male-female imbalance across districts has been very similar over the 110 years. Districts with favourable-to-male male-female imbalance have always been clustered in the north-west and north-east corners of the country. In rest of the country, male-female imbalance has generally varied within the normal range of 95-105 males for every 100 females with a few pockets - with favourable-to-male male-female imbalance and few pockets of favourable-to-female male-female imbalance. In 1991, there was an increase in the districts with favourable-to-male male-female imbalance, but this increase was not confined to north India alone. Districts with favourable-to-male male-female imbalance increased in south India also. Similarly, the decrease in the number of districts with favourable-to-male male-female imbalance after 1991 was not confined to south India only. There has been a decrease in the number of districts with favourable-to-male male-female imbalance in north India also. In 2011, the number of districts with favourable-to-female male-female imbalance were distributed almost equally between north and south India.

The appendix table also presents the coefficient of variation in the population sex ratio during the period 1901-2011 in each of the 640 districts. The coefficient of variation varies widely across the districts. In district Nandurbar of Maharashtra, the population sex ratio has virtually remained unchanged during 110 years between 1901 and 2011. On the other hand, the maximum variation in the population sex ratio is observed in the North and Middle Andaman district of Andaman and Nicobar Islands where population sex ratio decreased from 687 males for every 100 females in 1921 to 108 males for every 100 females in 2011. There are only 17 districts in the country where the population sex ratio has fluctuated very widely during the period 1901-2011.

Table 1: Distribution of the population sex ratio (number of males per 100 females) across 640 districts of India as they existed at the 2011 population census, 1901-2011.

Males per 100 females	Year											
	1901	1911	1921	1931	1941	1951	1961	1971	1981	1991	2001	2011
	Frequency distribution (number of districts)											
< 90	12	14	18	14	8	14	11	9	6	4	6	7
90-95	62	48	36	29	33	24	23	10	10	10	13	12
95-100	137	133	123	102	87	112	103	63	62	41	58	78
100-105	138	152	140	159	173	180	167	187	190	157	159	198
105-110	56	78	94	96	100	92	117	143	133	186	197	176
110-115	72	58	62	63	68	69	86	95	100	126	112	124
>=115	64	88	98	104	99	109	123	133	112	116	95	45
No data	99	69	69	73	72	40	10	0	27	0	0	0
N	640	640	640	640	640	640	640	640	640	640	640	640
	Summary measures of distribution											
Minimum	83	83	81	80	86	81	74	79	79	83	87	84
Q1	98	98	99	100	100	100	101	102	102	104	103	102
Median	102	102	104	104	105	104	105	106	106	107	107	105
Q3	110	110	111	112	112	112	113	113	113	113	112	110
Maximum	509	508	687	287	231	204	189	174	154	140	169	187
IQR	12	12	12	12	11	12	12	11	10	10	9	9
N	541	571	571	567	568	600	630	640	613	640	640	640

Source: Author

Estimates of the population sex ratio for the states and Union Territories of the country as they existed at the 2011 population census are presented in table 2. There has been virtually little change in the male-female imbalance in the population in Andhra Pradesh and Karnataka during the 110 years period between 1901 and 2011. In Andhra Pradesh, the number of males for every 100 females ranged between 101 and 103 while that in Karnataka ranged between 102 and 104 over more than 100 years. On the other hand, population sex ratio decreased very rapidly in the Union Territory of Andaman and Nicobar Islands, although it was highly favourable to males even in 2011. There are 16 states/Union Territories where the population sex ratio in 2011 was lower than that in 1901. In Manipur, Mizoram, Odisha and Chhattisgarh, population sex ratio was less than 100 before 1961, but it increased to more than 100 after 1961. The most rapid increase in the population sex ratio is observed in the Union Territory of Daman and Diu during 1991-2011 from 103 males for every 100 females to 162 males for every 100 females. During the period 2011-2021, the population sex ratio increased in Jammu and Kashmir, Daman and Diu, Dadra and Nagar Haveli, and Lakshadweep indicating that the male-female imbalance in population in these states and Union Territories has turned more favourable to males. Kerala is the only state/Union Territory in the country where the population sex ratio was always less than 100 males for every 100 females during the 110 years between 1901 and 2011. After 1991, the population sex ratio in Kerala has decreased markedly from 96 males for every 100 females in 1991 to 92 males for every 100 females in 2011. The estimates of population sex ratio obtained from the population enumerated at different population censuses are, however, subject to usual errors and omissions associated with the population census.

Table 2: Population sex ratio (number of males for every 100 females) in states and Union Territories of India as they existed at the 2011 population census, 1901-2011.

State/Union Territory	1901	1911	1921	1931	1941	1951	1961	1971	1981	1991	2001	2011
India	103	104	105	105	106	106	106	108	107	108	107	106
Jammu & Kashmir	113	114	115	116	115	114	114	114	112	112	112	113
Himachal Pradesh	113	112	112	111	112	110	107	104	103	103	103	103
Punjab	120	128	125	123	120	119	117	116	114	113	114	112
Chandigarh	130	139	135	133	131	128	153	134	130	127	129	122
Uttarakhand	109	110	109	109	110	106	106	106	107	107	104	104
Haryana	115	120	118	119	115	115	115	115	115	116	116	114
NCT OF Delhi	116	126	136	139	140	130	127	125	124	121	122	115
Rajasthan	111	110	112	110	110	109	110	110	109	110	109	108
Uttar Pradesh	107	109	110	111	110	110	110	114	113	114	111	110
Bihar	94	95	98	100	100	100	99	105	105	110	109	109
Sikkim	109	105	103	103	109	110	111	116	120	114	114	112
Arunachal Pradesh	nd	nd	nd	nd	nd	nd	112	116	116	116	112	107
Nagaland	103	101	101	100	98	100	107	115	116	113	111	107
Manipur	96	97	96	94	95	97	98	102	103	104	103	102
Mizoram	90	89	90	91	94	96	99	106	109	109	107	102
Tripura	114	113	113	113	113	111	107	106	106	106	105	104
Meghalaya	97	99	100	103	103	105	107	106	105	105	103	101
Assam	109	109	112	114	114	115	115	112	110	108	107	104
West Bengal	106	108	111	112	117	116	114	112	110	109	107	105
Jharkhand	97	98	100	101	102	104	104	106	106	108	106	105
Odisha	96	95	92	94	95	98	100	101	102	103	103	102
Chhattisgarh	96	96	96	96	97	98	99	100	100	101	101	101
Madhya Pradesh	103	103	105	106	106	106	107	109	109	110	109	107
Gujarat	105	106	106	106	106	105	106	107	106	107	109	109
Daman & Diu	101	96	88	92	93	89	86	91	94	103	141	162
Dadra & Nagar Haveli	104	103	106	110	108	106	104	99	103	105	123	129
Maharashtra	102	104	105	106	105	106	107	107	107	107	108	108
Andhra Pradesh	102	101	101	101	102	101	102	102	103	103	102	101
Karnataka	102	102	103	104	104	103	104	105	104	104	104	103
Goa	92	90	89	92	92	89	94	102	103	103	104	103
Lakshadweep	94	101	97	101	98	96	98	102	103	106	105	106
Kerala	100	99	99	98	97	97	98	98	97	96	94	92
Tamil Nadu	96	96	97	97	99	99	101	102	102	103	101	100
Puducherry	nd	95	95	nd	nd	97	99	101	102	102	100	96
Andaman & Nicobar Islands	314	284	330	202	174	160	162	155	132	122	118	114

>=115
110-115
105-110
100-105
95-100
90-95
<90

Source: Author

Table 2 also suggests that the period 1901-2011 can be divided into the period before 1971 and the period after 1971 as far as the trend in the population sex ratio in the states/Union Territories is concerned. During the period 1901 through 1971, the male-female imbalance in population was favourable to females in at least one decennial population census in 12 states and Union Territories of the country. However, during the period 1971 through 2011, the number of states/Union Territories where the population sex ratio was favourable to females in at least one decennial population census was only 4. At the 2011 decennial population census, the population sex ratio was less than 100 in only Kerala and Puducherry. On the other hand, there were 162 males for every 100 females in the Union Territory of Daman and Diu, 129 males for every 100 females in the Union Territory of Dadra and Nagar Haveli, and 122 males for 100 females in the Union Territory of Chandigarh at the time of 2011 decennial population census. Between 2001 and 2011, the population sex ratio decreased in 25 states and Union Territories, although the quantum of the decrease varied across states/Union Territories. On the other hand, the population sex ratio remained almost unchanged in 6 states/Union Territories between 2001 and 2011, leaving only 4 states/Union Territories – Jammu and Kashmir, Daman and Diu, Dadra and Nagar Haveli, and Lakshadweep - where the population sex ratio increased between 2001 and 2011. However, the population sex ratio in India and in its 18 states and Union Territories was extremely unfavourable to females by international standards – higher than 105 males for every 100 females.

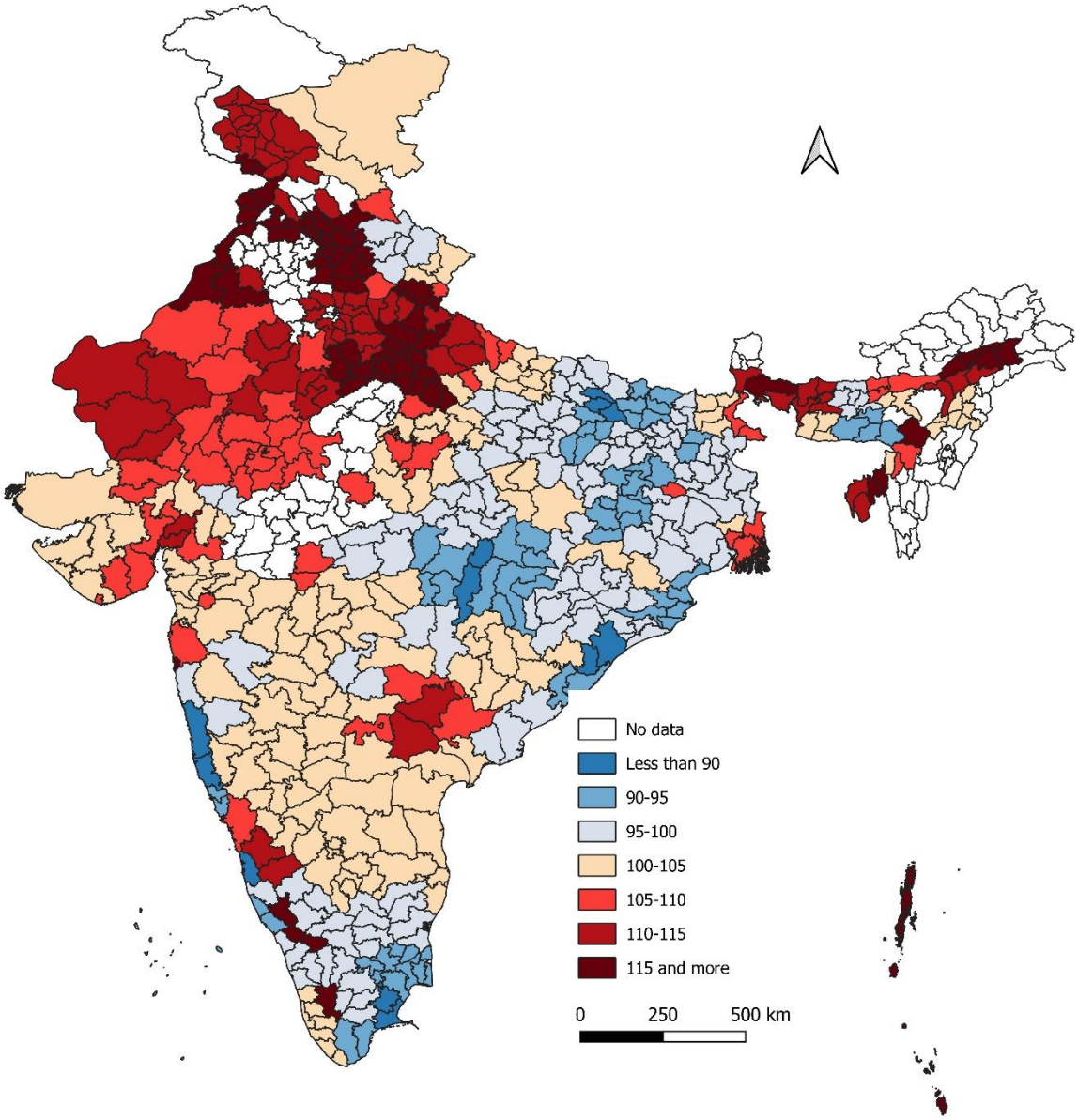

Figure 1: Population sex ratio (males for every 100 females) in districts of India, 1901.
Remarks: The number of districts is 640 as they existed at the time of the 2011 population census.
Source: Prepared by the author based on the data made available by the Registrar General and Census Commissioner of India.

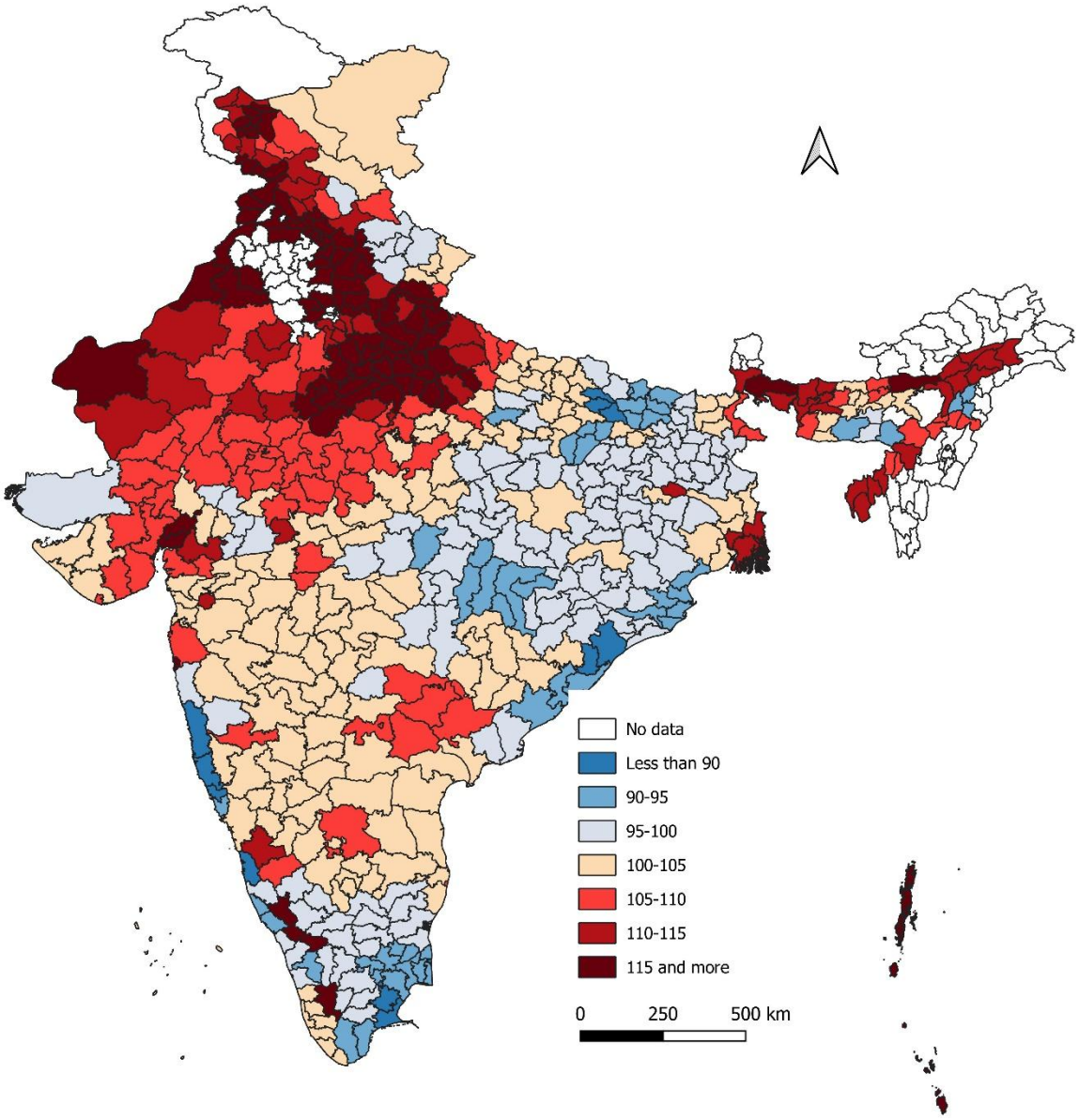

Figure 2: Population sex ratio (males for every 100 females) in districts of India, 1911.
Remarks: The number of districts is 640 as they existed at the time of the 2011 population census.
Source: Prepared by the author based on the data made available by the Registrar General and Census Commissioner of India.

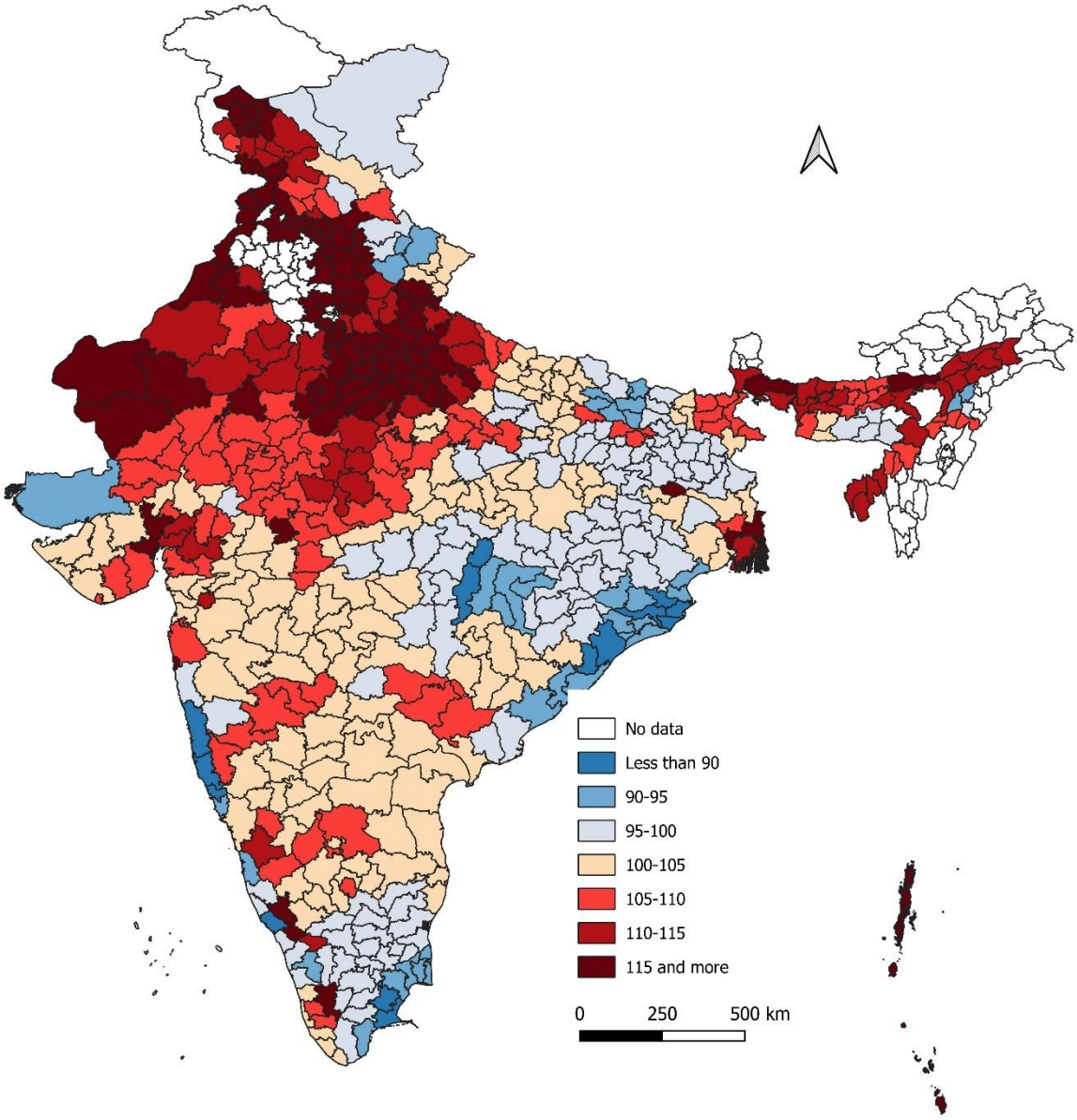

Figure 3: Population sex ratio (males for every 100 females) in districts of India, 1921.
Remarks: The number of districts is 640 as they existed at the time of the 2011 population census.
Source: Prepared by the author based on the data made available by the Registrar General and Census Commissioner of India.

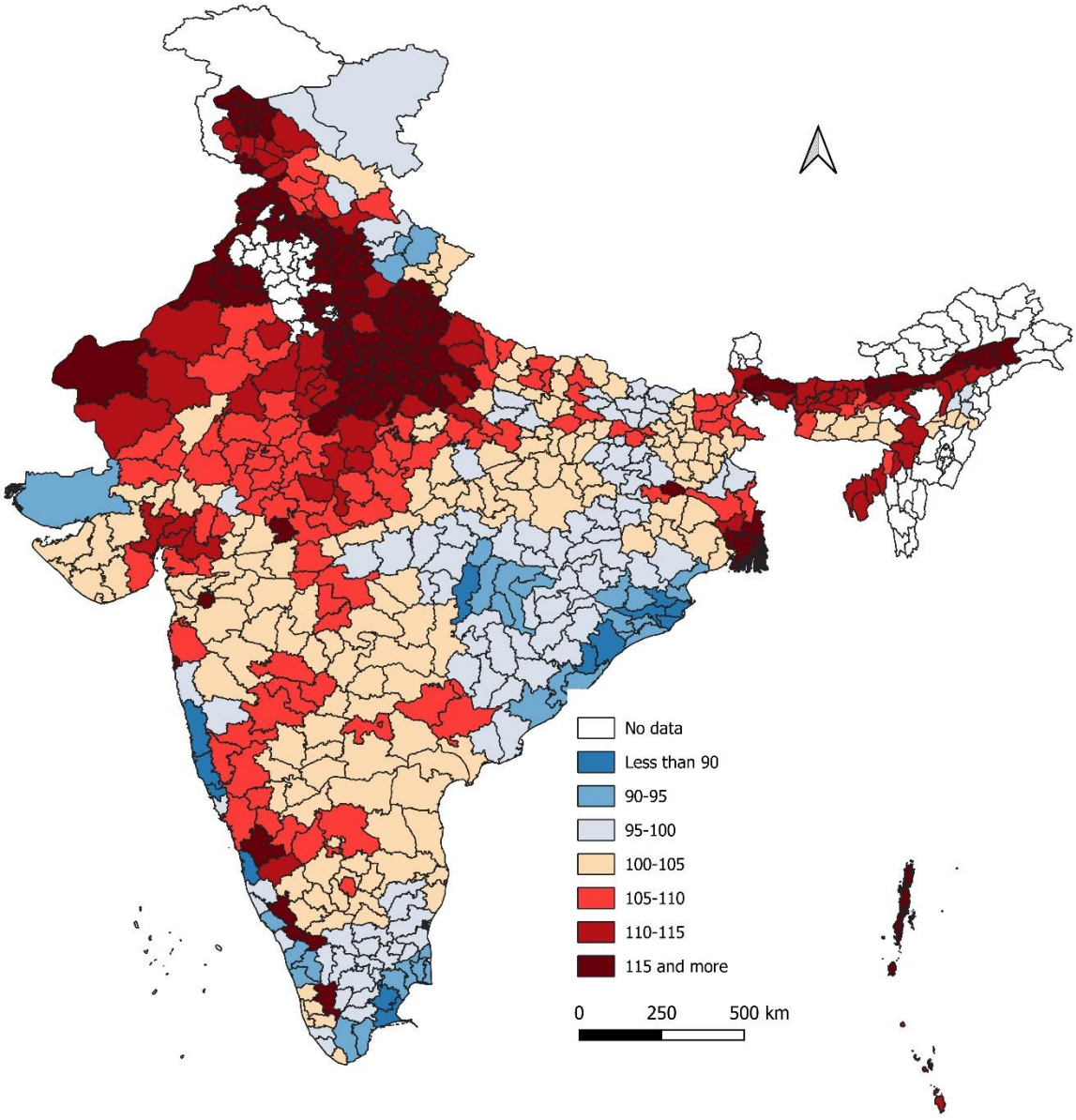

Figure 4: Population sex ratio (males for every 100 females) in districts of India, 1931.
Remarks: The number of districts is 640 as they existed at the time of the 2011 population census.
Source: Prepared by the author based on the data made available by the Registrar General and Census Commissioner of India.

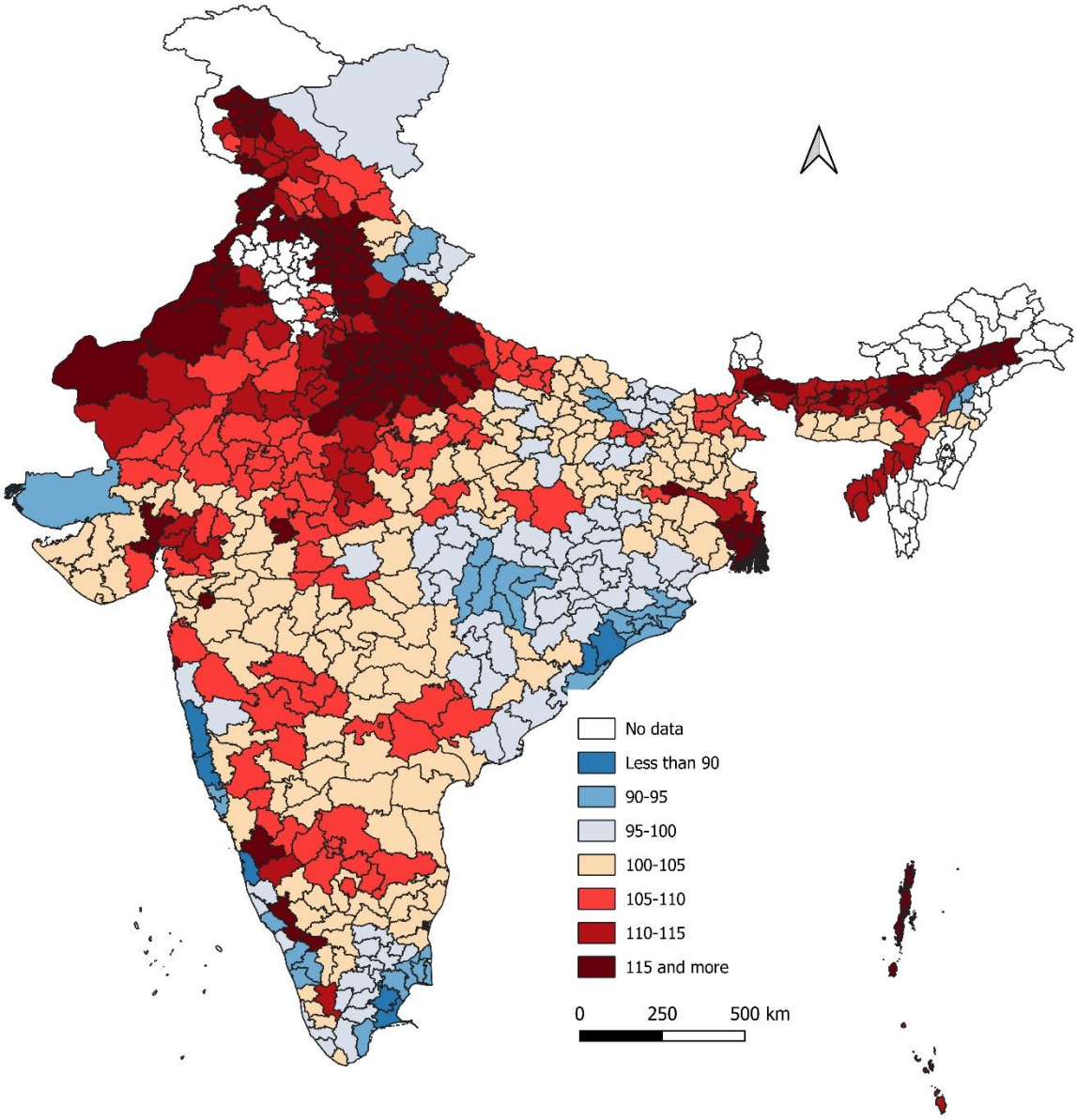

Figure 5: Population sex ratio (males for every 100 females) in districts of India, 1941.
Remarks: The number of districts is 640 as they existed at the time of the 2011 population census.
Source: Prepared by the author based on the data made available by the Registrar General and Census Commissioner of India.

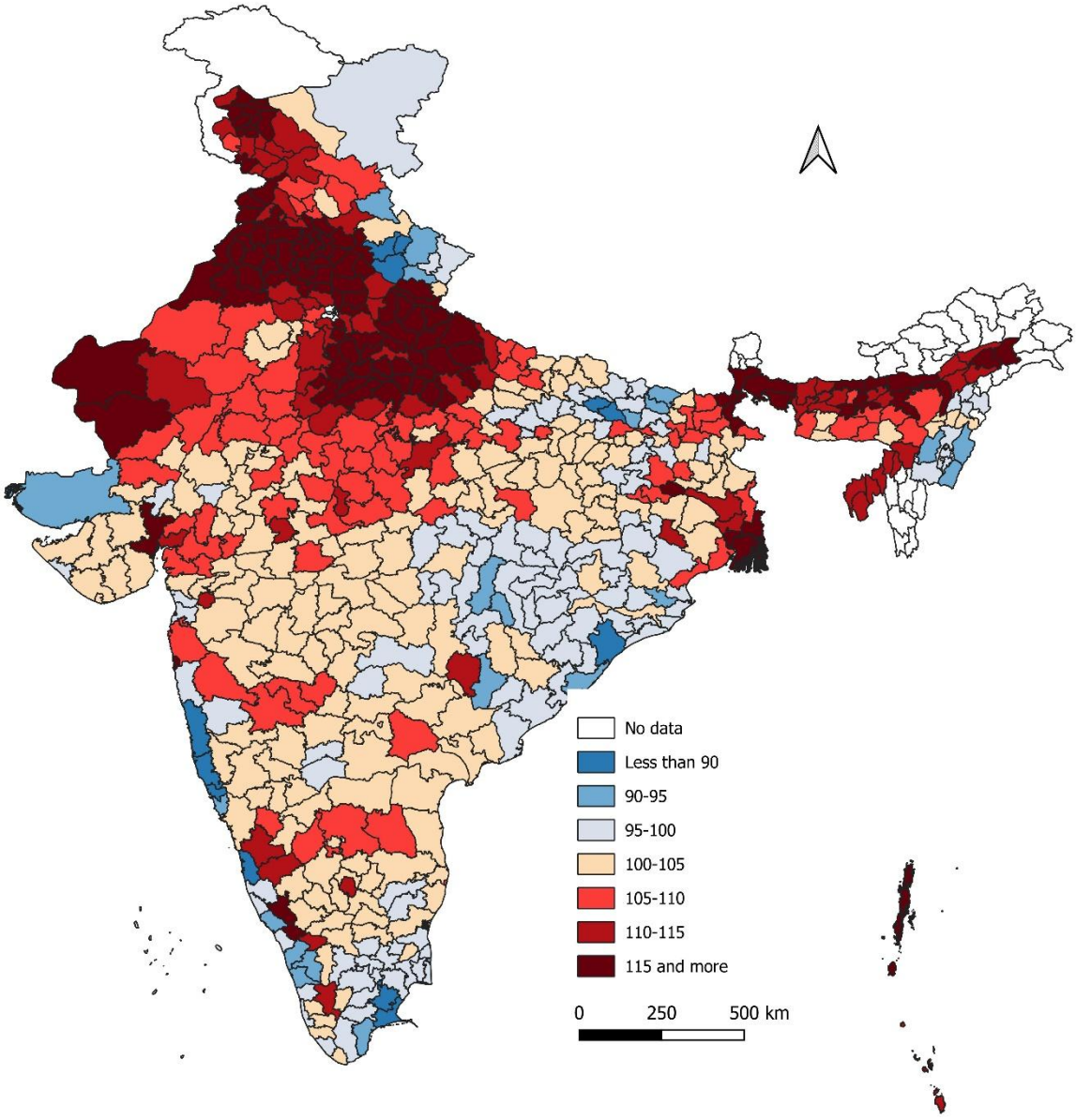

Figure 6: Population sex ratio (males for every 100 females) in districts of India, 1951.
Remarks: The number of districts is 640 as they existed at the time of the 2011 population census.
Source: Prepared by the author based on the data made available by the Registrar General and Census Commissioner of India.

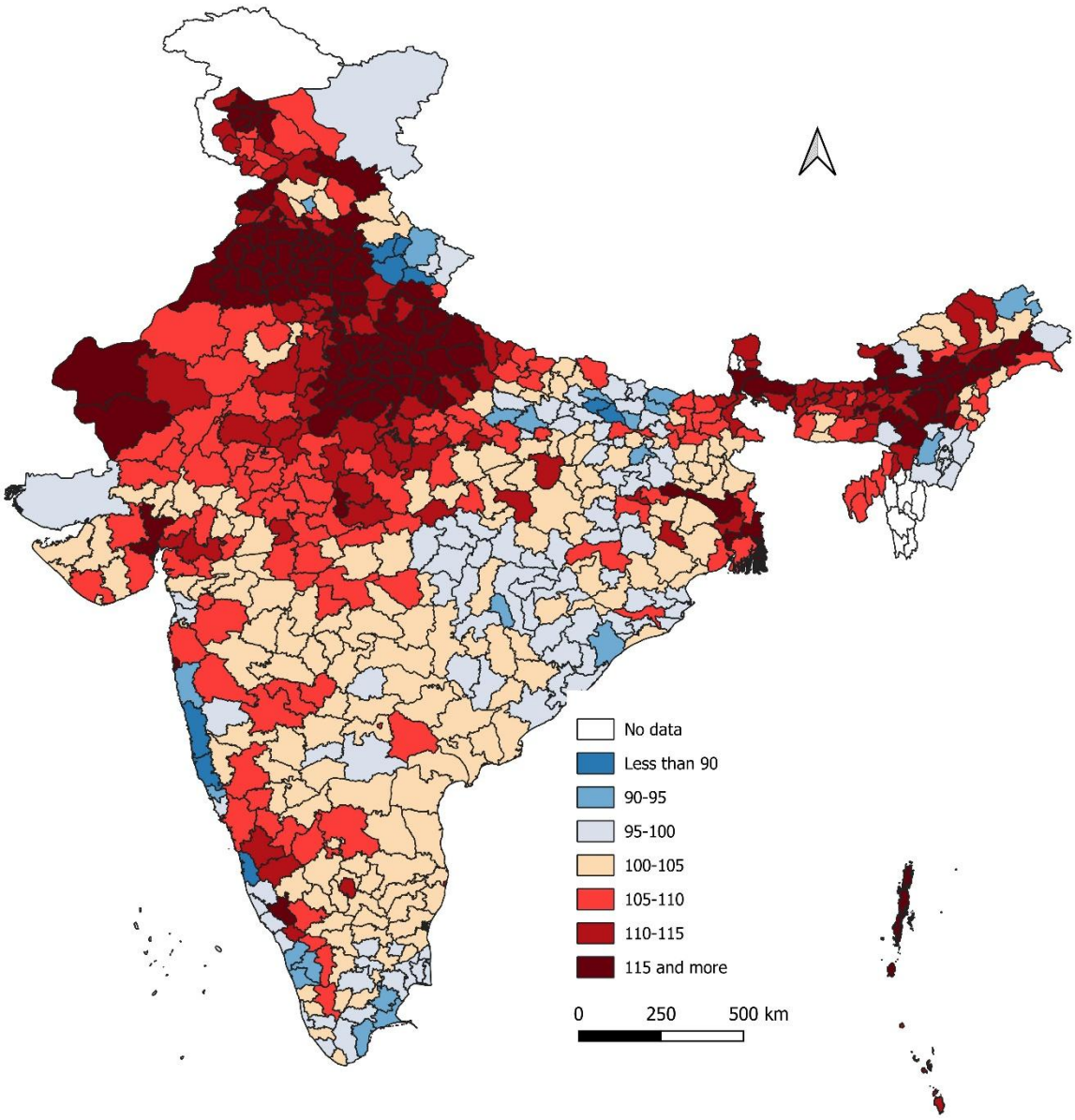

Figure 7: Population sex ratio (males for every 100 females) in districts of India, 1961.
Remarks: The number of districts is 640 as they existed at the time of the 2011 population census.
Source: Prepared by the author based on the data made available by the Registrar General and Census Commissioner of India.

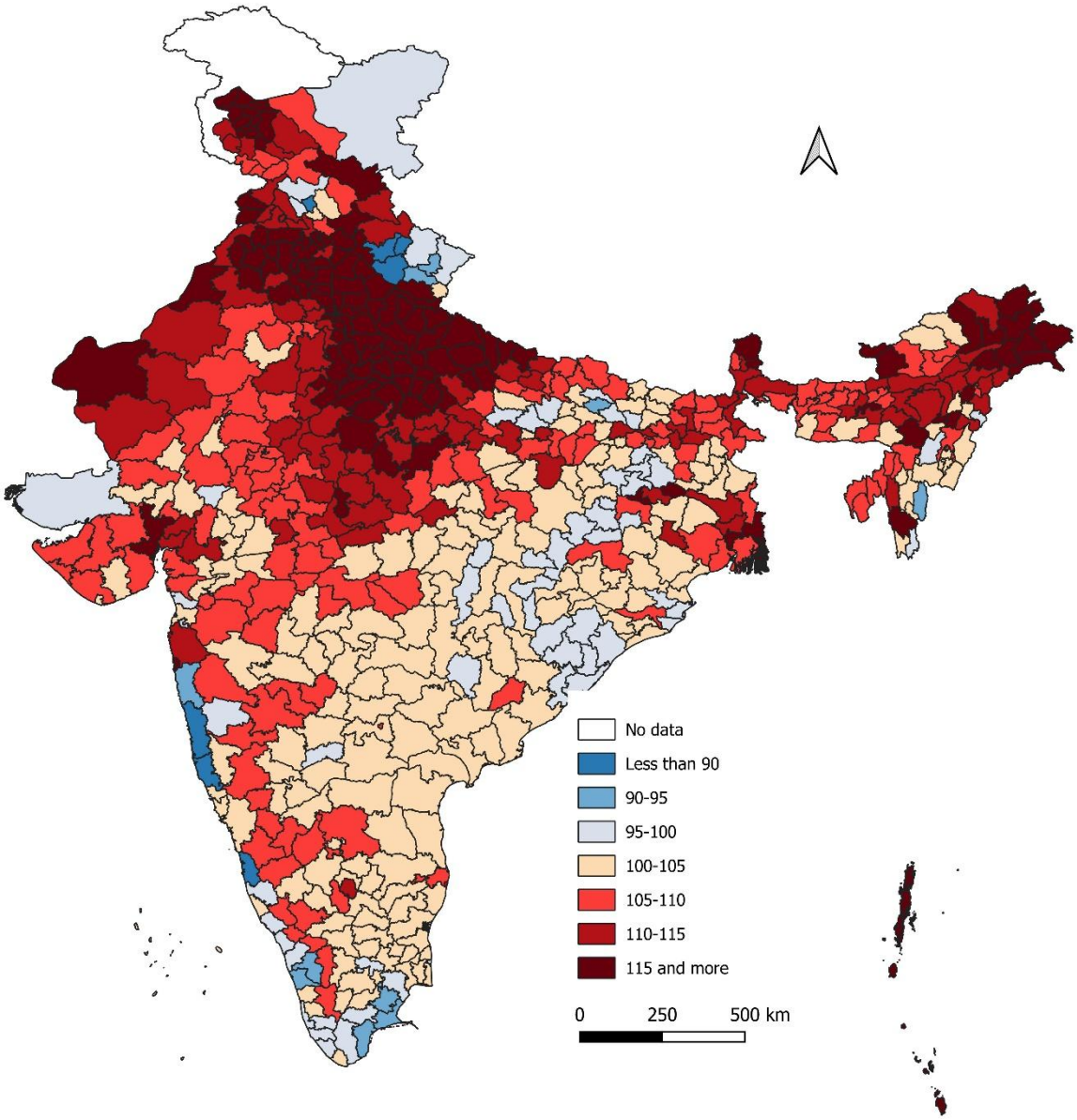

Figure 8: Population sex ratio (males for every 100 females) in districts of India, 1971.
Remarks: The number of districts is 640 as they existed at the time of the 2011 population census.
Source: Prepared by the author based on the data made available by the Registrar General and Census Commissioner of India.

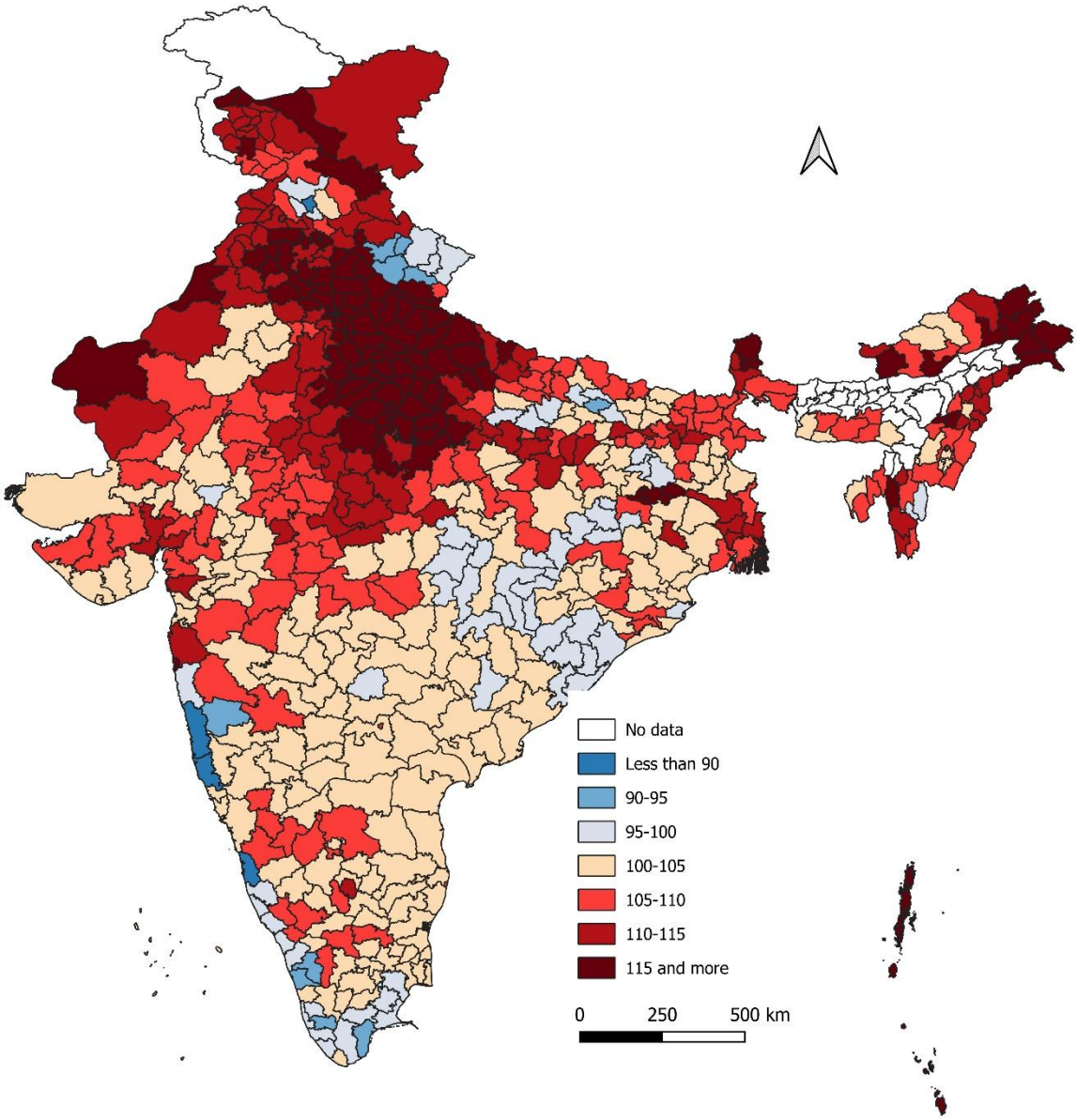

Figure 9: Population sex ratio (males for every 100 females) in districts of India, 1981.
Remarks: The number of districts is 640 as they existed at the time of the 2011 population census.
Source: Prepared by the author based on the data made available by the Registrar General and Census Commissioner of India.

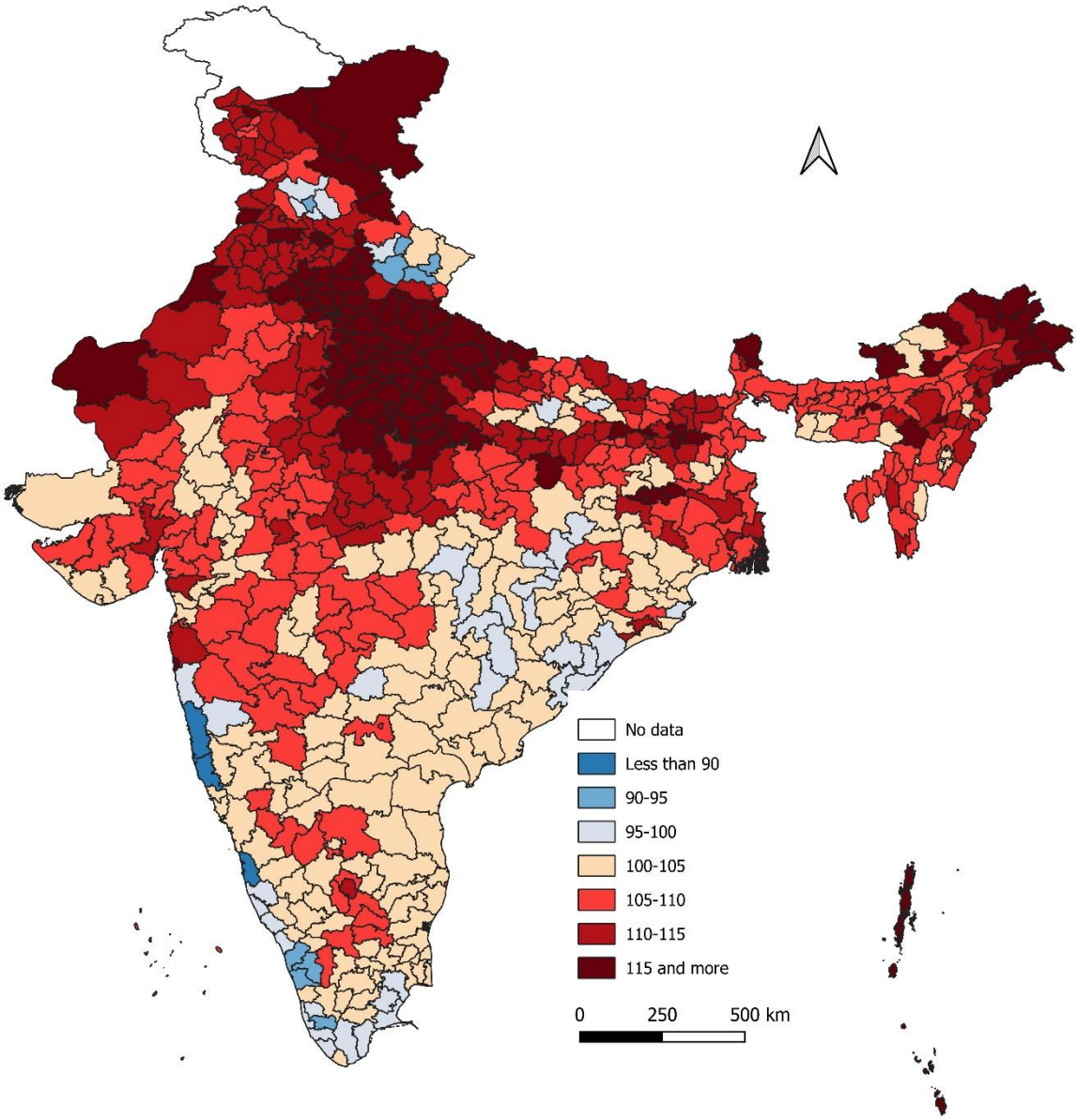

Figure 10: Population sex ratio (males for every 100 females) in districts of India, 1991.
Remarks: The number of districts is 640 as they existed at the time of the 2011 population census.
Source: Prepared by the author based on the data made available by the Registrar General and Census Commissioner of India.

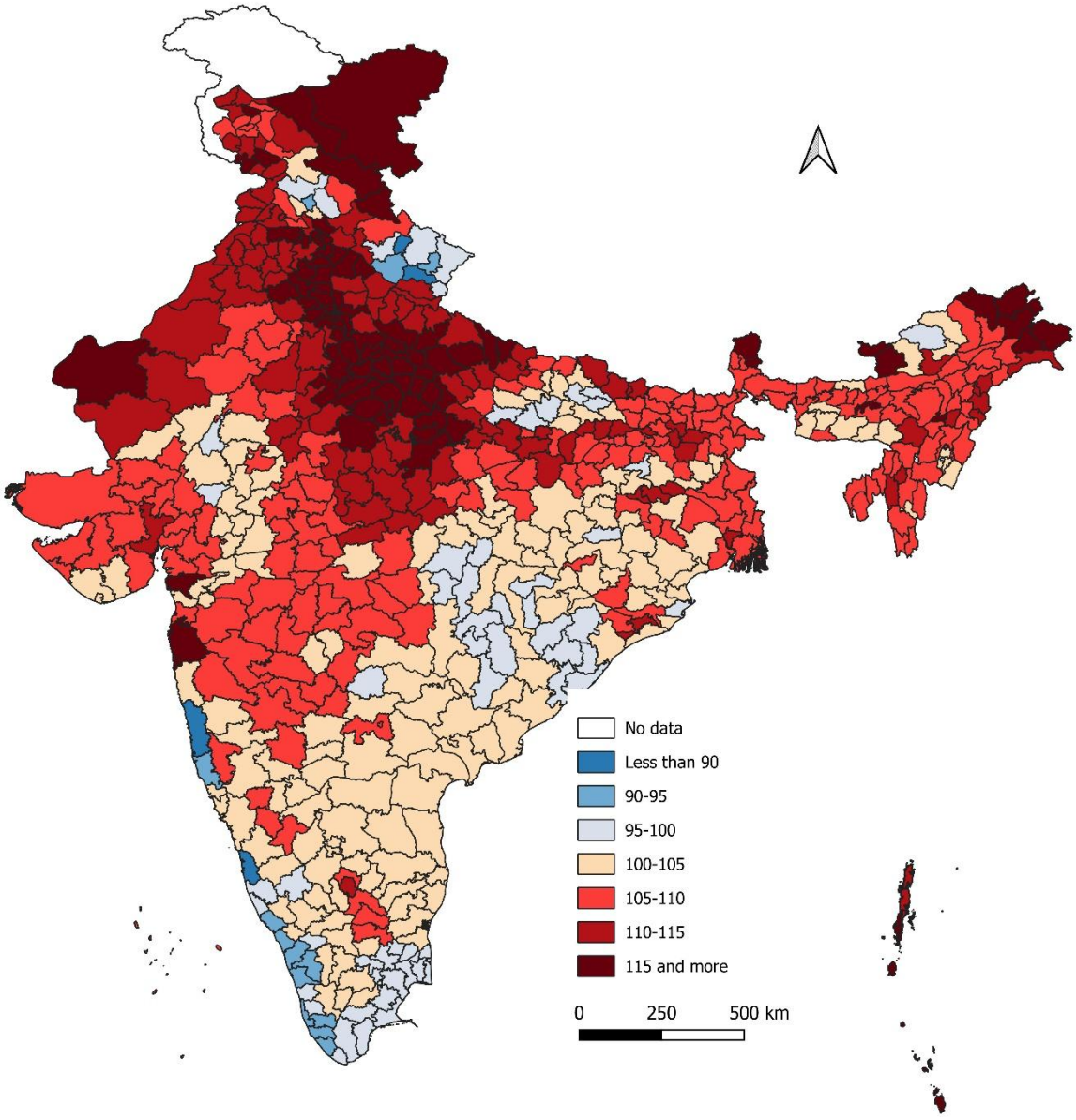

Figure 11: Population sex ratio (males for every 100 females) in districts of India, 2001.
Remarks: The number of districts is 640 as they existed at the time of the 2011 population census.
Source: Prepared by the author based on the data made available by the Registrar General and Census Commissioner of India.

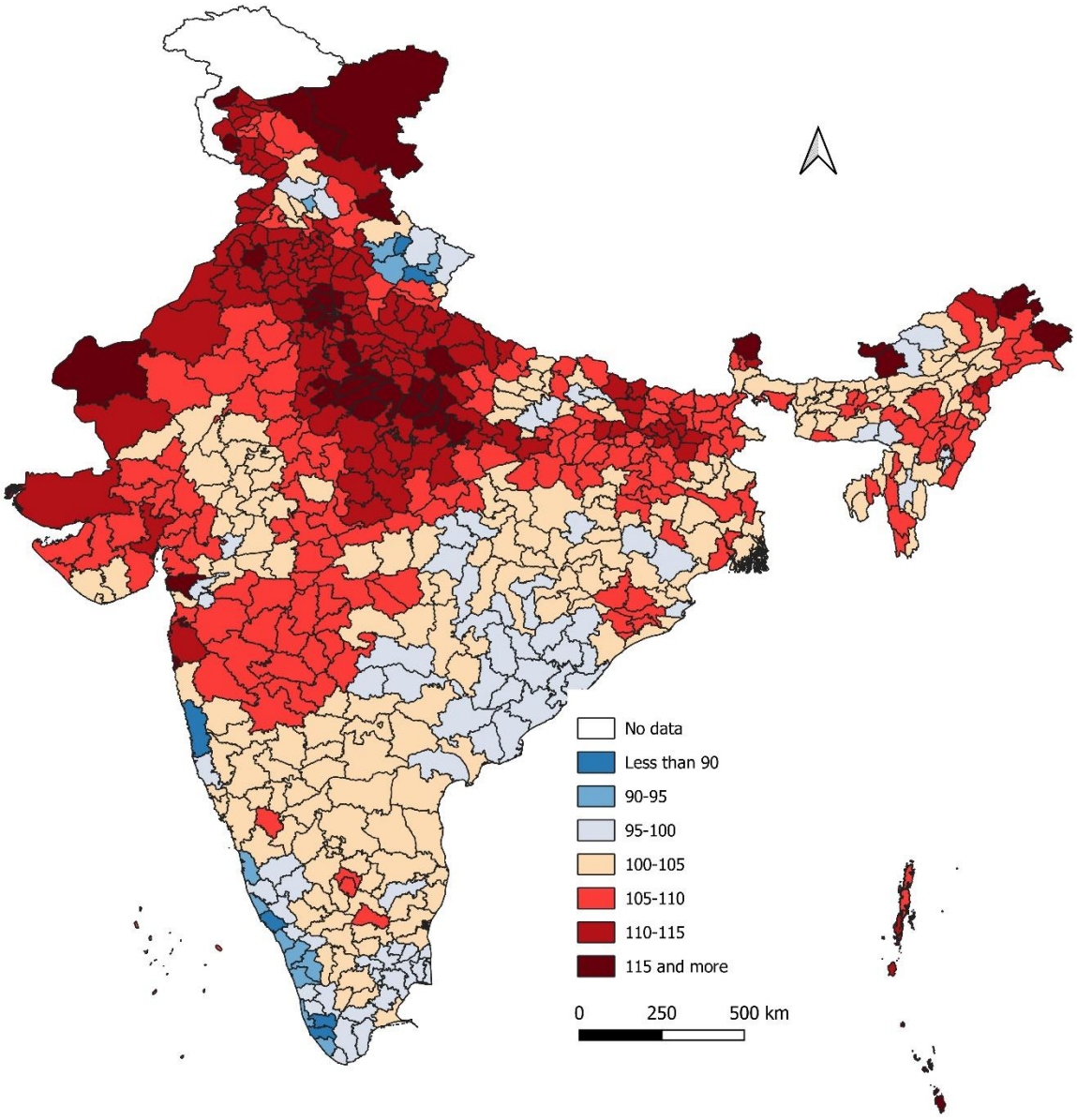

Figure 12: Population sex ratio (males for every 100 females) in districts of India, 2011.
Remarks: The number of districts is 640 as they existed at the time of the 2011 population census.
Source: Prepared by the author based on the data made available by the Registrar General and Census Commissioner of India.

Trend in Population Sex Ratio, 1950-2021

District level analysis of the trend in the population sex ratio based on estimates of population sex ratio at 10 years apart is inappropriate because the trend may not be linear during the 10 years interval. An alternative approach is to analyse the change in the sex ratio in different 10 years intervals. The direction of the change in population sex ratio in different 10 years intervals may be different and the algebraic sum of the change in different 10 years intervals gives the change in population sex ratio during the period 1901-2011. The change in population sex ratio in a 10-year interval may be classified into 6 categories depending upon the direction and the magnitude of the change. The change may be termed as extreme if population sex ratio either decreases or increases by at least 10 males for every 100 females; moderate if population sex ratio either decreases or increases in the range of 5-10 males for every 100 females; and marginal if population sex ratio either decreases or increases in the range of 0-5 males for every 100 females.

Table 3 presents the distribution of districts by the level of change in population sex ratio between successive population censuses. During 2001-2011, the change in population sex ratio was marginal in 596 (93 per cent) of the 640 districts. The decrease in population sex ratio was either moderate or extreme in only 32 districts whereas there were only 12 districts where increase in population sex ratio was either moderate or extreme. The situation has been similar throughout the last century. An understanding of the moderate to extreme change in population sex ratio in select few districts is possible only through district-specific analysis. One possible reason may be heavy out migration of the male population from or heavy in migration of the male population in these districts. Lack of data on the number of male and female out migrants and in migrants during different 10 years intervals, however, inhibit any such analysis.

Table 3: Distribution of districts by the change in the population sex ratio in different 10 years interval during the period 1901-2011.

Period	Number of districts							
	Decrease in the sex ratio			Increase in the sex ratio			No data	Total
	Extreme	Moderate	Marginal	Marginal	Moderate	Extreme		
1901-1911	3	3	196	298	37	4	99	640
1911-1921	1	7	169	372	19	3	69	640
1921-1931	4	5	210	331	16	1	73	640
1931-1941	2	12	262	281	10	0	73	640
1941-1951	10	21	271	247	14	5	72	640
1951-1961	8	13	202	351	18	8	40	640
1961-1971	8	13	167	376	56	10	10	640
1971-1981	7	15	333	237	14	7	27	640
1981-1991	6	9	201	370	24	3	27	640
1991-2001	1	19	476	136	3	5	0	640
2001-2011	5	27	473	123	8	4	0	640
1901-2011	39	58	109	153	111	71	99	640

Source: Author's calculations based on data given in the appendix table.

An examination of the population sex ratio in each district over a period of 110 years reveals that there are only 23 (3.6 per cent) districts in the country where the male-female imbalance in population has always been favourable to females. In these districts, females outnumbered males at every decennial population census since 1901. By contrast, in 352 (55 per cent) districts, male-female imbalance has always been in favour of males as males outnumbered females at every decennial population census. In the remaining 265 (41.4 per cent) districts, the change in male-female imbalance has been inconsistent.

At the national level, the trend in population sex ratio during 1950-2021 can be analysed using the annual estimates of population by sex provided by the United Nations (2022). It may, however, be emphasised that the national level trend does not necessarily reflect the trend in the constituent states/Union Territories and districts of the country.

Figure 13 depicts the evolution of population sex ratio in India since 1901. The change in population sex ratio in India has two distinct phases. During 1901-1951, population sex ratio in the country increased almost linearly, but during 1951-2021, the change has been volatile. The differing trend in the population sex ratio before and after 1950 reflects the demographic discontinuity and shows that male and female population growth has not been smooth during the 1940s, but there has been a sudden change (Keyfitz, 1987). Unlike the period 1901-1951, the change in population sex ratio has not been linear during 1950-2021.

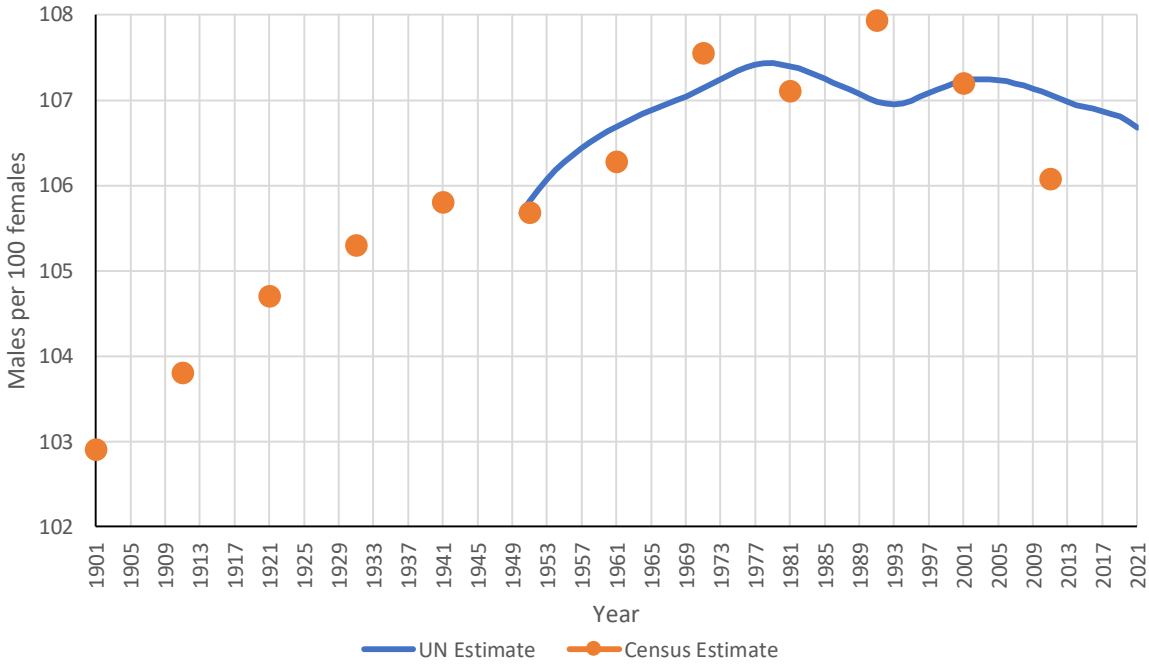

Figure 13: Trend in the population sex ratio (number of males for every 100 females) in India, 1901-2021.
Source: Author

Results of the trend analysis, using joinpoint regression, are presented in table 4. The data driven Bayesian Information Criterion (BIC) method with data dependent selection (DDS) was used to identify the joinpoint(s). Table 4 confirms that the trend in population sex ratio in the country has not been consistent 1950-2021. The period 1950-2022 can be divided into eight time-segments of unequal length and the annual per cent change (APC) in population sex ratio has been different in different time-segments. The increase in population sex ratio was the most rapid during 1950-1954 when it increased at a rate of more than 12 per cent per year whereas the decrease was the most rapid during 1981-1993 when it decreased at a rate of around 3 per cent per year. Table 4 also shows that there was virtually little change in population sex ratio during 1977-1981, and again during 2001-2006 as the APC has not been found to be statistically significantly different from zero in these time-segments.

Combining the annual per cent change (APC) in different time-segments, the average annual per cent change (AAPC) in the population sex ratio during 1950-2021 is estimated to be almost 1.4 per cent per year, which confirms that male-female imbalance in India has turned increasingly favourable to males over the last century. The AAPC, however, does not reflect the volatility in the population sex ratio as reflected in figure 13 and as revealed through APC in different time-segments of the period 1950-2021. Broadly speaking, the change in population sex ratio in India during 1950-2021 can be divided into two time-segments. During 1950-1977, population sex ratio in the country increased quite rapidly at an average annual rate of around 6 per cent per year and the increase has been quite consistent but, after 1977, it decreased at an average annual rate of around 1.5 per cent per year, although the decrease has not been consistent.

Table 4: Results of the joinpoint regression analysis of the trend in the population sex ratio in India, 1950-2021.

Period		Annual per cent change (APC)/Average annual per cent change (AAPC)			Test Statistic (t)	Prob > |t|
		APC/AAPC	Lower CI	Upper CI		
From	To					
1950	1954	0.1217	0.1124	0.1311	26.241	< 0.001
1954	1960	0.0698	0.0632	0.0764	21.270	< 0.001
1960	1977	0.0428	0.0417	0.0439	76.129	< 0.001
1977	1981	-0.0034	-0.0182	0.0113	-0.469	0.641
1981	1993	-0.0382	-0.0402	-0.0362	-38.616	< 0.001
1993	2001	0.0374	0.0335	0.0414	19.103	< 0.001
2001	2006	-0.0014	-0.0107	0.0080	-0.292	0.772
2006	2021	-0.0322	-0.0334	-0.0310	-51.967	< 0.001
1950	2021	0.0137	0.0122	0.0151	18.706	< 0.001
1950	*1977*	*0.0605*	*0.0584*	*0.0626*	*56.939*	*<0.001*
1977	*2021*	*-0.0150*	*-0.0170*	*-0.0131*	*-15.311*	*<0.001*

Source: Author

Population sex ratio is the weighted sum of age-specific sex ratios with weights equal to the proportion of the population in the age group. Since the population distribution across ages is not uniform, contribution of the sex ratio in an age group to the sex ratio of the population is contingent upon the proportion of the population in the age group. Figure 14 presents the trend in sex ratio in age groups 0-6 years, 7-14 years, 15-49 years, 50-59 years, and 60 years and above based on United Nations estimates of male and female population by age for different years of the period 1950-2021. The figure shows that the sex ratio in population younger than 50 years increased marginally in population below 15 years of age, remained largely unchanged in population 15-19 years of age, but the trend has been quite volatile in population aged 50 years and above. The sex ratio in the age group 0-6 years increased from 104 to 109 males for every 100 females; from 103 to 110 males for every 100 females in the age group 7-14 years; and from 108 to 109 males for every 100 females in the age group 15-49 years during 1950-2021. However, the sex ratio decreased from 108 to 103 in the age group 50-59 years and from 98 to 94 males for every 100 females in the age group 60 years and above during this period.

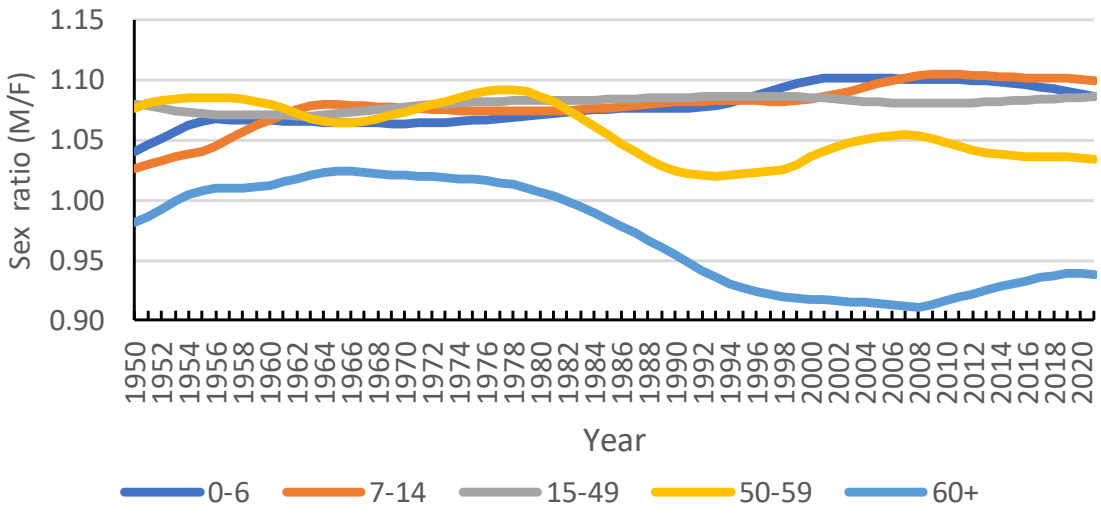

Figure 14: Trend in age-specific sex ratios in India, 1950-2021.
Source: Author

Decomposition of the Change in Sex Ratio

The change in the population sex ratio is the result of the difference between the male population growth and the female population growth. There are the following six possibilities depending upon the direction and magnitude of male and female population growth:

1.	Male population decreases	Female population decreases	Decrease in male population is faster than the decrease in female population	Population sex ratio decreases
2.	Male population decreases	Female population decreases	Decrease in female population is faster than the decrease in male population	Population sex ratio increases
3.	Male population increases	Female population decreases		Population sex ratio increases
4.	Male population decreases	Female population increases		Population sex ratio decreases
5.	Male population increases	Female population increases	Increase in male population is slower than the increase in female population	Population sex ratio increases
6.	Male population increases	Female population increases	Increase in female population is slower than the increase in male population	Population sex ratio increases

Results of the district level decomposition analysis are presented in table. During 2001-2011, there were 16 districts in which both male and female population decreased but population sex ratio decreased in 11 and increased in 5 districts because of the difference in the magnitude of male and female population growth. There was no district where male population increased but female population decreased during this period but, in 7 districts, male population decreased but female population increased so that population sex ratio decreased. Finally, there were 617 districts where both male and female population increased but population sex ratio decreased in 487 districts and increased in only 130 districts. A similar situation prevailed during 1991-2001, but prior to 1991, the scenario was different. During 1911-1921, both male and female population decreased in 255 districts, but sex ratio increased in 182 districts because the decrease in female population was more rapid than that in male population. In 261 districts, both male and female population increased but population sex ratio increased in only 180 districts.

Table 5: Male and female population growth and change in population sex ratio in districts of India, 1901-2011.

Period	Number of districts							
	$r_M<0; r_F<0$		$r_M>0; r_F<0$	$r_M<0; r_F>0$	$r_{M>}0; r_F>0$		No data	Total
	Sex ratio		Sex ratio	Sex ratio	Sex ratio			
	Decreased	Increased	Increased	Decreased	Decreased	Increased		
1901-1911	23	77	17	10	169	245	99	640
1911-1921	73	182	32	23	81	180	69	640
1921-1931	4	1	6	6	208	341	74	640
1931-1941	1	0	0	6	269	291	73	640
1941-1951	8	4	7	7	287	255	62	640
1951-1961	1	2	1	0	222	374	40	640
1961-1971	0	0	1	0	188	442	9	640
1971-1981	1	0	0	3	351	258	27	640
1981-1991	1	0	0	2	213	397	27	640
1991-2001	1	2	1	0	495	141	0	640
2001-2011	11	5	0	7	487	130	0	640

Source: Author

Table 6 presents decomposition results for India. During 1901-1911, male population growth was more rapid than female population growth so that population sex ratio increased. During 1911-1921, population sex ratio increased mainly because of the decrease in female population. During 1921-1941; 1951-1971; and 1981-1991 male population grew more rapidly than female population leading to increase in population sex ratio growth. During 1941-1951; 1971-1981; and 1911-2011, however, female population grew more rapidly than male population, so population sex ratio decreased. During 1971-1981, male population growth slowed down, but female population growth accelerated so that both contributed to decrease population sex ratio. After 1991, decrease in population sex ratio has primarily been due to faster decrease in male population growth relative to males.

Table 6: Contribution of male and female population growth to the change in population sex ratio in India, 1901-2011.

Year	Population		Sex ratio	Change in sex ratio	Population growth		Contribution of population growth to the change in sex ratio	
	Male	Female			Male	Female	Male	Female
	M	F	$S=M/F$	s_2-s_1	r_M	r_F	Δs_M	Δs_F
1901	120,791,301	117,358,672	1.0292					
1911	128,385,368	123,708,022	1.0378	0.0086	0.061	0.053	0.0630	-0.0545
1921	128,546,225	122,774,988	1.0470	0.0092	0.001	-0.008	0.0013	0.0079
1931	142,929,689	135,788,921	1.0526	0.0056	0.106	0.101	0.1113	-0.1058
1941	163,685,302	154,690,267	1.0581	0.0056	0.136	0.130	0.1431	-0.1375
1951	185,528,462	175,559,628	1.0568	-0.0014	0.125	0.127	0.1325	-0.1338
1961	226,293,201	212,941,570	1.0627	0.0059	0.199	0.193	0.2105	-0.2046
1971	284,049,276	264,110,376	1.0755	0.0128	0.227	0.215	0.2430	-0.2302
1981	353,374,460	329,954,637	1.0710	-0.0045	0.218	0.223	0.2344	-0.2389
1991	439,358,440	407,062,599	1.0793	0.0084	0.218	0.210	0.2342	-0.2258
2001	532,223,090	496,514,346	1.0719	-0.0074	0.192	0.199	0.2062	-0.2137
2011	623,270,258	587,584,719	1.0607	-0.0112	0.158	0.168	0.1684	-0.1796

Source: Decennial population censuses and author's calculations.

Equation (13) makes it possible to explore how the difference in male and female population growth in different age groups has contributed to the decrease in the population sex ratio in the country after 1991. Table 7 presents results of this decomposition analysis for the period 1991-2011. During 1991-2001, male population growth was more rapid than female population growth in ages below 30 years, but female population growth was more rapid than male population growth in ages 30 years and above. The age group 0-29 years, therefore, accounted for an increase of around 1.1 males for every 100 females whereas the age group 30 years and above accounted for a decrease of around 1.7 males for every 100 females so that the population sex ratio decreased by around 0.7 males for every 100 females during this period.

During 2001-2011, male population growth was slower than female population growth in the age group 10-14 years and in population aged 30 years which accounted for a decrease of around 1.5 males for every 100 females in the population sex ratio. However, male population growth was more rapid than the female population growth in age groups 5-9 and 15-29 years which accounted for an increase of around 0.2 males for every 100 females in the population sex ratio. In the age group 0-4 years, both male and female population decreased but the decrease was more rapid in the female population compared to the decrease in the male population so that population sex ratio increased during this period and the increase in the sex ratio in this age group accounted for an increase of 0.2 males for every 100 females in the population sex ratio. The net result was that the population sex ratio decreased by around 1.1 males for every 100 females during this period. Combining the contribution of the difference in male and female population growth in different age groups during 1991-2001 and 2001-2011, the population sex ratio decreased by 1.8 males for every 100 females during 1991-2011.

Table 7: Contribution of the change in age-specific sex ratios to the change in sex ratio in India during 1991-2011.

Age	Population sex ratio			Change in population sex ratio		Contribution of the change in			
	1991	2001	2011	1991-2001	2001-2011	Male population growth		Female population growth	
						1991-2001	2001-2011	1991-2001	2001-2011
All ages	1.079	1.072	1.061	-0.007	-0.011				
0-4	1.042	1.071	1.082	0.003	0.002	0.016	-0.007	-0.014	0.009
5-9	1.072	1.084	1.094	0.002	0.001	0.014	0.004	-0.012	-0.003
10-14	1.123	1.108	1.097	0.000	-0.001	0.024	0.012	-0.024	-0.013
15-19	1.124	1.166	1.132	0.001	0.001	0.026	0.017	-0.024	-0.015
20-24	1.033	1.066	1.070	0.003	0.000	0.021	0.020	-0.018	-0.020
25-29	0.995	0.993	1.025	0.001	0.000	0.017	0.018	-0.016	-0.018
30-34	1.043	1.012	1.017	-0.003	0.000	0.017	0.012	-0.020	-0.013
35-39	1.111	1.044	1.017	-0.003	-0.003	0.017	0.015	-0.020	-0.018
40-44	1.140	1.155	1.076	-0.001	-0.002	0.016	0.014	-0.017	-0.015
45-49	1.141	1.103	1.065	0.000	-0.003	0.012	0.014	-0.012	-0.016
50-54	1.145	1.186	1.113	-0.001	0.000	0.008	0.012	-0.009	-0.011
55-59	1.100	0.965	0.988	-0.002	-0.002	0.006	0.008	-0.008	-0.010
60-64	1.068	0.975	0.986	-0.003	0.000	0.005	0.011	-0.008	-0.012
65-69	1.070	0.917	0.958	-0.003	-0.001	0.005	0.005	-0.008	-0.006
70-74	1.112	1.048	1.010	-0.002	0.000	0.005	0.003	-0.007	-0.003
75-79	1.036	0.992	0.947	0.001	-0.001	0.002	0.007	-0.001	-0.008
80+	1.097	0.951	0.880	-0.001	-0.002	-0.004	0.004	0.003	-0.005

Source: Author

Table 8: Decomposition of the change in population sex ratio (males per 100 females) in different time segments in India, 1950-2021.

Period	Change in population sex ratio	Change attributed to the change in sex ratio in the age group					Change attributed to population composition
		0-6	7-14	15-49	50-59	60+	
1950-1954	0.48	0.45	0.20	-0.34	0.05	0.12	0.00
1954-1960	0.44	0.09	0.51	-0.12	0.04	0.04	-0.05
1960-1977	0.79	0.03	0.14	0.55	0.08	0.01	-0.03
1977-1981	-0.02	0.09	0.07	0.02	-0.06	-0.07	0.00
1981-1993	-0.39	0.13	0.16	0.16	-0.39	-0.43	-0.01
1993-2001	0.30	0.39	0.06	-0.07	0.13	-0.13	-0.10
2001-2006	0.01	0.00	0.24	-0.19	0.09	0.13	-0.11
2006-2021	-0.55	-0.21	0.00	0.25	-0.16	0.22	-0.65
1950-2021	1.07	0.71	1.17	0.30	-0.33	-0.33	-0.45

Source: Author

Table 8 shows how the change in sex ratio in different age groups has contributed to the change in the population sex ratio. During 1950-2021, the population sex ratio in India increased by around 1.07 males for every 100 females. The increase in the sex ratio in population younger than 50 years accounted for an increase of around 2.18 males for every 100 females in the population sex ratio but the decrease in sex ratio in population aged 50 years and above accounted for a decrease of 0.66 males for every 100 females in the population sex ratio. At the same time, the change in the age composition of the population accounted for a decrease of 0.45 males for every 100 females in the population sex ratio. It is also clear from the table that the relative contribution of the change in sex ratio in different age group to the change in the population sex ratio has been different in different time segments. For example, the increase in population sex ratio during 1950-1954 was mainly

because of the increase in the sex ratio in 0-6 years of age whereas the sex ratio in the age group 15-49 years decreased during this period. By contrast the decrease in population sex ratio during 2005-2021 was primarily due to the change in the age composition of the population. The change in the sex ratio in the age group 15-49 years and in the age group 60 years and above contributed to increase, not decrease, the population sex ratio during this time segment. There has also been minor change in the sex ratio in the age group 7-14 years during this time segment.

The change in population sex ratio can also be decomposed in terms of the difference between the number of male and female births; male and female deaths; and male and female net migrants in conjunction with equation (21). Results of this decomposition analysis, based on United Nations estimates, are presented in figure 15. United Nations estimates that male population in India increased by around 543 million while female population increased by around 507 million during the 70 years between 1950 and 2021. There were almost 887 million male births and around 826 million female births during this period so that the sex ratio at birth increased from 105 male births for every 100 female births in 1950 to more than 107 male births for every 100 female births in 2021. At the same time, there were almost 339 million male deaths and around 314 female deaths during this period so that the sex ratio of deaths also increased from around 98 male deaths for every 100 female deaths in 1950 to more than 118 male deaths for every 100 female deaths in 2021. The application of equation (21) suggests that the birth component of the change in population sex ratio accounted for an increase of around 2 males for every 100 females in the population sex ratio between 1950 and 2021 while the death component accounted for a decrease of around 1 male for every 100 females during this period. The net migration component also contributed to the decrease in the population sex ratio, but its contribution has been marginal except in selected years, especially in the year 2020. Figure 15 also shows that the birth component of the change in population sex ratio contributed to slow down the increase in the population sex ratio during the period 1950-1991 but contributed to the increase in population sex ratio during the period 1992-2021. The death component, on the other hand, contributed to accelerate the increase in population sex ratio during the period 1950-1981 but contributed to accelerate the decrease in population sex ratio during the period 1982-2021. It was only during the period 1982-1991, when both birth and death components of the change contributed to accelerate the decrease in the population sex ratio.

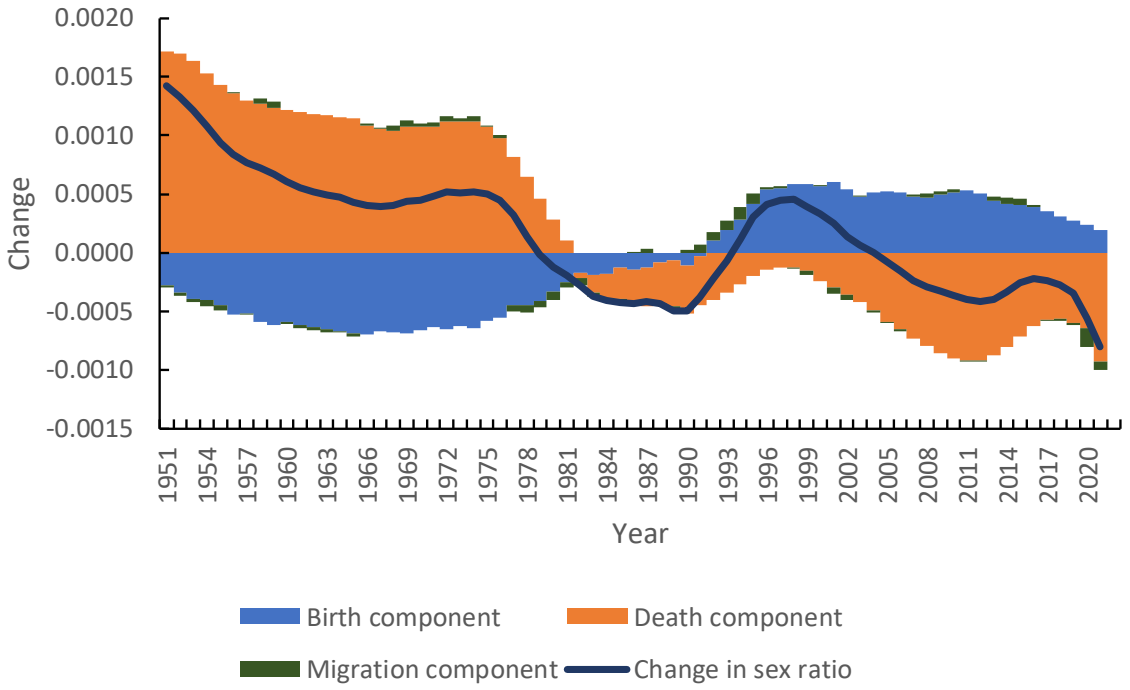

Figure 15: Decomposition of the change in the population sex ratio in India, 1950-2021.
Source: Author

Table 9 decomposes the change in population sex ratio in different time-segments of the period 1950-2021 as revealed through the joinpoint regression analysis. During 1950-1954, population sex ratio in the country increased by around 0.5 males for every 100 females due to higher number of female than male deaths. The sex ratio of births was favourable to females, but sex ratio of deaths was unfavourable to females in this period. During 1954-1977, population sex ratio increased because sex ratio of births was favourable to females, but sex ratio of deaths and net migrants was unfavourable to females. During 1977-1981, there were more female births than male births and more male deaths than female deaths which resulted in a decrease in population sex ratio. Since 1981, there are more male deaths than female deaths which contributed to the decrease in population sex ratio. The male-female difference in the number of births, on the other hand, was favourable to females during 1981-1993 but, after 1993, it has turned favourable to males and contributed to the increase in population sex ratio. The excess of male births to female births during 2001-2006 was nearly the same as the excess of male deaths to female deaths so that there was virtually little change in the population sex ratio. After 2006, excess of male births over female births and excess of male deaths over female deaths increased substantially. The decrease in population sex ratio, after 2006, has primarily been due to the increase in the excess of male deaths over female deaths. The contribution of the difference between male and female net migrants has also been different in different time-segments, although the magnitude of this contribution has always been marginal.

Table 9: Decomposition of the change in population sex ratio in different time-segments of the period 1950-2021.

Year	Population sex ratio (Number of males for every 100 females)	Change in population sex ratio	Change in population sex ratio attributed to the difference between male and female		
			Births	Deaths	Net migrants
1950	105.68				
1954	106.18	0.503	-0.141	0.656	-0.012
1960	106.63	0.454	-0.328	0.777	0.005
1977	107.42	0.785	-1.078	1.842	0.020
1981	107.40	-0.020	-0.142	0.146	-0.023
1993	106.95	-0.446	-0.089	-0.373	0.015
2001	107.22	0.271	0.415	-0.157	0.013
2006	107.22	-0.003	0.259	-0.254	-0.008
2021	106.67	-0.548	0.612	-1.154	-0.005

Source: Author

Figure 16 presents results of the decomposition of the difference between the number of male and female deaths. The mortality component was negative during 1950-1980 but turned positive after 1980. A negative mortality component implies higher female death rate compared to male death rate whereas a positive mortality component implies that higher male death rate compared to female death rate. Before 1980, female death rate was higher than male death rate but, after 1980, male death rate became higher than female death rate. On the other hand, the population size component has always been positive which means that males always outnumbered females. Figure 15 suggests that more female than male deaths in India during 1950-1954 was because the mortality component was negative and larger than the size component. The mortality component remained negative till 1980 but its magnitude became less than the population size component so that there were more male than female deaths during 1955-1980 and the magnitude of the difference has increased over time. After 1980, male mortality became higher than female mortality so that mortality component also turned positive and contributed to increase the difference between the number of male deaths and the number of female deaths. In 2021, the difference between the number of male deaths and the number of female deaths was around 1.125 million. The difference between male and female death rate accounted for almost 0.7 million or 62 per cent of the excess male deaths. The increase in the male death rate relative to the female death rate has been responsible for first the slowdown in the increase, and then the decrease in population sex ratio.

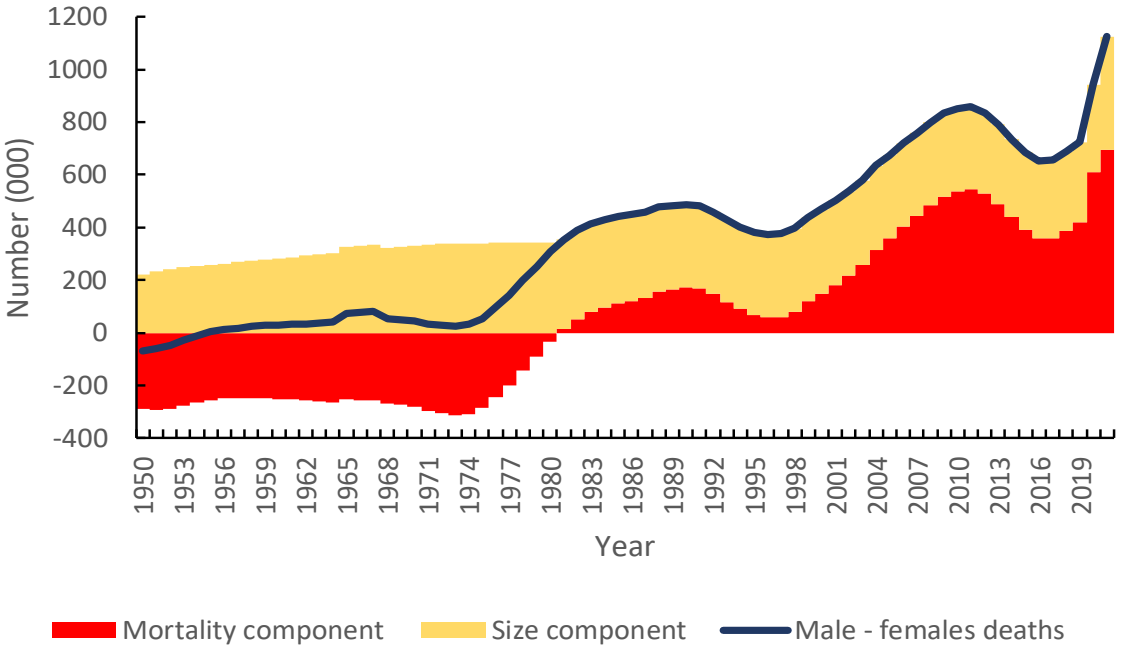

Figure 16: Decomposition of the difference in the number of male deaths and the number of female deaths in India, 1950-2021.
Source: Author

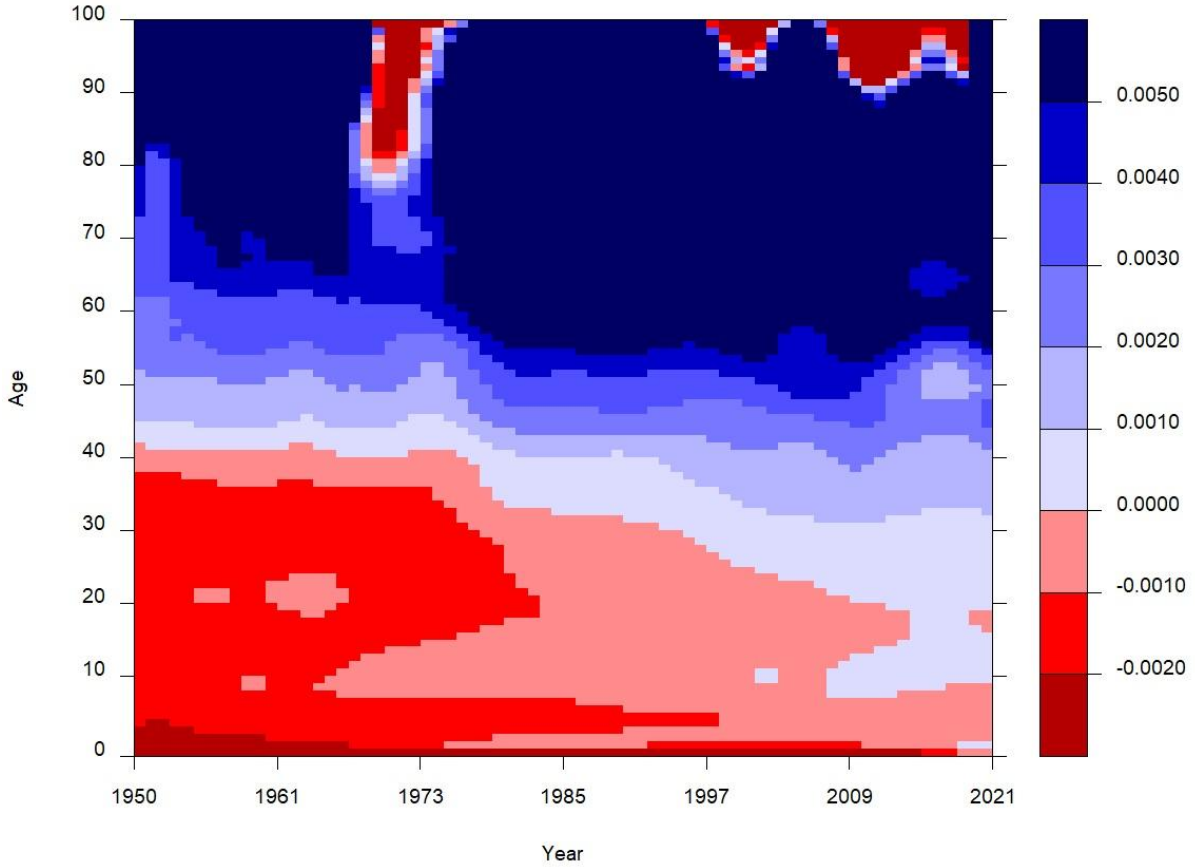

Figure 17: Male-female difference in age-specific death rate in India, 1950-2021.
Source: Author

The death rate is determined by age-specific death rates and the age distribution of the population. The difference between male and female age-specific death rates, therefore, shape the difference between male and female death rates. Figure 17 depicts the male-female difference in the age-specific death rate in India during 1950-2021 based on the estimates prepared by the United Nations. The female death rate was higher than the male death rate in population younger than 40 years in the past. Now, the female death rate is higher than the male death rate in population younger than 10 years only and the gap between female and male death rate has decreased. In other ages, male death rate is higher than the female death rate and, in ages 70 years and above, the male death rate is now substantially higher than the female death rate.

Conclusions

This paper presents 120 years perspective of the male-female imbalance in 640 districts of India as they existed at the 2011 population census based on the population enumerated at different decennial population censuses since 1901. The paper reveals that in more than half of the districts, males have outnumbered females throughout the 110 years period between 1901 and 2011 but, at the same time, there is a small proportion of districts in which females have always outnumbered males. On the other hand, there are at least 40 per cent districts where male-female imbalance was favourable to females in the past but has turned favourable to males in recent years. If we exclude districts where male-female imbalance varied within the normal range to 95-105 males for every 100 females, the number of districts where male-female imbalance was favourable to females decreased but the number of districts where male-female imbalance was favourable to males increased up to 1991 but the trend reversed thereafter. At the same time, the number of districts where male-female imbalance was exceptionally favourable to males (at least 115 males for every 100 females) increased up to 1971 but decreased drastically thereafter. There were only 45 districts where male-female imbalance was exceptionally favourable to males at the 2011 population census.

Districts where male-female imbalance is favourable to males have been clustered in the north-west corner of the country throughout the 110 years under reference. The north-south divide in the male-female imbalance was quite marked in the past, but in recent years, male-female imbalance has turned favourable to males in many districts of the south whereas in many districts of the north, male-female imbalance has turned favourable to females. The 19 districts where male-female imbalance was exceptionally favourable to females in 2011 are not confined to south India only. The geographical contiguity of districts where male-female imbalance has remained favourable to males during the last century is, however, very clear and has persisted over time.

The male-female imbalance in the population is contingent upon four factors: 1) sex ratio at birth; 2) sex ratio of deaths, determined primarily by male-female difference in age-specific death rates; 3) sex ratio of net migrants, determined by male-female difference in age-specific net migrations rates; and 4) sex bias in population enumeration. The relative contribution of these four factors to male-female imbalance in the districts of the country has never been carried out because of the lack of necessary data. Inter-district variation in sex ratio of deaths, sex ratio of net migrants and sex bias in population enumeration in India is not known but sex ratio at birth varies widely across districts. The data collected on the live births during the year prior to the 2011 population census suggest that the sex ratio at birth varies from just 32 male births for every 100 female births in district Chamba in Himachal Pradesh to 153 male births for every 100 female births in district Shupiyan of Jammu and Kashmir. It has been shown that small differences in mortality, especially at young ages, persisting over a long period, coupled with a sex ratio at birth of 106 males per 100 females, results in male-female imbalance in population that is highly favourable-to-males (Griffiths et al, 2000).

The present analysis also reveals that there are districts in the country where male-female imbalance has always been favourable to females throughout the 110 years under reference. However, to the best of our knowledge, we have not found any analysis that has attempted to identify the reasons why male-female imbalance has always been favourable to females in these districts. It may be argued

that the male-female imbalance in the net migration is a more dominant factor in deciding the male-female imbalance in population at the district level as compared to male-female imbalance in births and deaths or the sex bias in enumeration. It is possible to estimate the impact of migratory flows on male-female imbalance through a summary index that quantifies the impact of migration on population composition (Rodríguez-Vignoli and Rowe, 2018). However, such an exercise, to the best of our knowledge, has never been carried out in India.

In the absence of district level time series data on sex ratio of births, sex ratio of deaths and sex ratio of net migrants, the change in the male-female imbalance in population of a district may be explained in terms of the difference between the growth of male and female population. During 2001-2011, both male and female population increased in 617 of the 640 districts but male population growth was slower than female population growth in 487 districts so that male-female imbalance became more favourable to females in these districts. There were also districts where male population decreased, possibly because of outmigration, but female population increased so that both male and female population growth contributed to making the male-female imbalance more favourable to females. In other districts, male population growth was more rapid than female population growth so that the male-female balance turned more favourable to males. There was, however, no district where male population increased but female population decreased during this period.

The male-female imbalance in population at the national level and at state/Union Territory level is an aggregation of the male-female imbalance in the population of districts. Since districts are of uneven population size and population growth in districts are different. The contribution of the male-female imbalance in the population of a district to the male-female imbalance in the population of the country or in the population of the state/Union Territory also depends upon the proportionate distribution of population across districts. The spatial decomposition of the change in male-female imbalance in population of the country may help in identifying the districts which have been primarily responsible for frequent changes in male-female imbalance at the national level during 1950-2021 as revealed through United Nations estimates.

The decrease in the male dominance in the Indian population after 1991 has been due to more rapid growth of female compared to male population aged 30 years and above. In ages younger than 30 years, growth of female population was slower than that of male population. This means that the decrease in male dominance in the Indian population after 1991 has primarily been due to the increase in the number of male deaths as compared to the number of females deaths in ages 30 years and above as there is evidence of the increase in the sex ratio at birth. In the past, female death rate was higher than the male death rate in population younger than 40 years of age. Now, the female death rate is higher than the male death rate in population younger than 10 years only but the gap in female-male death rate has narrowed down. It appears that there has been a slowdown in the decrease in male death rate in the country in the recent past. Chaurasia (2023) has observed that male mortality transition in India has always been slower than female mortality transition so that female life expectancy at birth became higher than the male life expectancy around 1980s and the gap in female-male life expectancy at birth has widened since then leading to an increase in the number of male deaths relative to female deaths and decrease in population sex ratio.

To conclude, the present analysis highlights the need of analysing the trend, variation, and determinants of male-female imbalance in population at district (local) level to understand the trend, patterns, and determinants of male-female imbalance at the national and state/Union Territory levels. Studies on male-female imbalance in the Indian population have largely been carried out at the national level only. However, national level analyses mask the within country, local level diversity in the trend, patterns, and determinants of male-female balance in population as revealed through the present analysis. The analysis of the male-female imbalance in population at the local level is important because male-female imbalance at the local level adds to the male-female imbalance at the national level and efforts to address the male-female imbalance are to be taken at the local (district) level only. Understanding the factors responsible of the prevailing male-female imbalance in the districts of the country is, therefore, important.

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Appendix Table: Estimates of population sex ratio in 640 districts of India as they existed at the 2011 population census, 1901-2011.

State/UT	District	Year												CV
		1901	1911	1921	1931	1941	1951	1961	1971	1981	1991	2001	2011	
Jammu and Kashmir	Kupwara	114	113	116	116	116	114	113	119	117	113	110	120	0.021
	Badgam	114	116	117	120	119	119	119	119	114	110	107	112	0.034
	Leh (Ladakh)	101	100	97	98	99	99	99	100	113	117	122	145	0.128
	Kargil	101	100	97	98	99	103	107	105	117	118	120	123	0.085
	Punch	112	108	112	111	110	110	111	111	112	111	109	112	0.011
	Rajouri	112	111	110	111	109	110	111	111	110	112	114	116	0.017
	Kathua	115	116	115	114	113	112	111	109	109	110	111	112	0.019
	Baramula	114	113	116	116	116	117	116	117	114	112	111	113	0.017
	Bandipore	114	113	116	116	116	117	120	119	117	114	112	113	0.022
	Srinagar	114	115	117	120	119	118	117	117	114	117	119	111	0.021
	Ganderbal	114	115	117	120	119	118	120	119	114	112	109	114	0.028
	Pulwama	114	115	118	118	119	119	119	116	110	109	106	110	0.039
	Shupiyan	114	115	118	118	119	119	116	120	114	110	105	105	0.044
	Anantnag	114	115	118	118	119	117	118	118	113	111	110	108	0.033
	Kulgam	114	115	118	118	119	117	109	118	113	109	106	105	0.042
	Doda	110	109	110	111	110	111	111	111	108	110	109	109	0.009
	Ramban	110	110	111	111	110	111	112	116	115	114	112	111	0.017
	Kishtwar	110	109	110	111	110	111	110	113	112	111	111	109	0.010
	Udhampur	112	112	112	111	111	110	110	109	107	114	118	115	0.025
	Reasi	112	112	112	111	111	110	110	112	116	115	114	112	0.015
	Jammu	117	123	119	121	118	115	114	109	110	112	116	114	0.035
	Samba	117	121	118	119	117	114	108	106	105	111	111	113	0.045
Himachal Pradesh	Chamba	111	111	112	110	114	112	114	106	107	105	104	101	0.037
	Kangra	nd	111	108	109	109	107	104	99	98	98	98	99	0.049
	Lahul & Spiti	101	101	101	101	109	107	127	122	130	122	125	111	0.098
	Kullu	nd	99	99	99	108	106	106	109	109	109	108	106	0.037
	Mandi	110	108	107	109	110	103	101	104	100	99	99	99	0.043
	Hamirpur	nd	111	108	109	109	107	92	89	87	90	91	91	0.095
	Una	nd	111	108	109	109	107	102	100	97	98	100	102	0.045
	Bilaspur	119	116	114	111	107	106	105	101	100	100	101	102	0.061
	Solan	138	138	155	138	136	125	114	108	108	110	117	114	0.119

State/UT	District	Year												CV
		1901	1911	1921	1931	1941	1951	1961	1971	1981	1991	2001	2011	
	Sirmaur	125	122	121	124	122	125	121	120	114	112	111	109	0.047
	Shimla	117	114	119	113	115	114	117	115	114	112	112	109	0.023
	Kinnaur	110	107	108	106	110	93	103	113	113	117	117	122	0.064
Punjab	Gurdaspur	117	129	126	124	119	118	115	112	110	111	112	112	0.052
	Kapurthala	nd	nd	nd	nd	nd	114	113	112	111	112	113	110	0.011
	Jalandhar	118	128	124	119	116	117	115	113	112	111	113	109	0.044
	Hoshiarpur	114	121	117	115	114	114	111	111	109	108	107	104	0.040
	Shahid	117	126	122	118	116	114	111	113	111	111	109	105	0.047
	Fatehgarh Sahib	nd	nd	nd	nd	nd	129	123	120	119	115	117	115	0.039
	Ludhiana	121	131	127	126	120	117	117	118	116	118	121	115	0.040
	Moga	nd	nd	nd	nd	nd	115	116	116	113	113	113	112	0.013
	Firozpur	121	129	125	123	123	120	119	114	113	112	113	112	0.046
	Muktsar	nd	nd	nd	nd	nd	116	118	116	113	114	112	112	0.019
	Faridkot	nd	nd	nd	nd	nd	117	118	115	114	113	113	112	0.016
	Bathinda	nd	nd	nd	nd	nd	119	120	118	116	113	115	115	0.019
	Mansa	nd	nd	nd	nd	nd	121	120	117	115	115	114	113	0.026
	Patiala	nd	nd	nd	nd	nd	125	121	118	115	113	114	112	0.036
	Amritsar	121	128	126	125	119	121	119	117	115	114	115	112	0.040
	Tarn Taran	121	128	126	125	119	115	114	116	115	116	113	111	0.044
	Rupnagar	124	132	128	127	125	123	123	115	113	113	113	109	0.059
	Sahibzada Ajit Singh Nagar	124	132	128	127	125	120	122	120	119	117	119	114	0.040
	Sangrur	nd	nd	nd	nd	nd	122	120	119	117	115	115	113	0.026
	Barnala	nd	nd	nd	nd	nd	122	120	119	115	115	115	114	0.024
Chandigarh	Chandigarh	130	139	135	133	131	128	153	134	130	127	129	122	0.057
Uttarakhand	Uttarkashi	98	97	97	98	102	101	104	111	114	109	106	104	0.052
	Chamoli	97	97	92	94	93	92	92	97	98	102	98	98	0.032
	Rudraprayag	97	97	93	95	95	87	85	85	90	91	90	90	0.045
	Tehri Garhwal	99	97	97	98	102	89	83	85	93	96	95	93	0.059
	Dehradun	136	144	153	148	155	140	131	130	123	119	113	111	0.108
	Garhwal	97	97	92	94	93	88	86	89	92	95	90	91	0.034
	Pithoragarh	102	103	100	100	99	98	95	97	97	101	97	98	0.023
	Bageshwar	102	103	100	100	99	99	98	95	96	95	90	92	0.039

State/UT	District	Year												CV
		1901	1911	1921	1931	1941	1951	1961	1971	1981	1991	2001	2011	
	Almora	102	103	100	100	99	94	90	91	91	91	87	88	0.059
	Champawat	106	107	104	104	103	105	107	105	106	106	98	102	0.022
	Nainital	126	130	138	141	142	138	130	119	118	113	110	107	0.093
	Udham Singh Nagar	126	130	139	141	142	142	146	129	119	116	111	109	0.098
	Hardwar	116	121	122	122	125	124	126	125	122	118	116	114	0.032
Haryana	Panchkula	124	133	129	127	125	125	124	122	120	119	122	115	0.037
	Ambala	124	133	129	127	125	124	121	113	111	111	115	113	0.061
	Yamunanagar	123	131	128	127	125	119	120	118	117	113	116	114	0.046
	Kurukshetra	118	121	121	123	120	116	117	116	115	114	115	113	0.026
	Kaithal	nd	nd	nd	nd	nd	118	119	119	118	117	117	113	0.015
	Karnal	118	121	121	123	120	116	117	117	117	116	116	113	0.023
	Panipat	nd	nd	nd	nd	nd	115	117	117	118	117	121	116	0.013
	Sonipat	113	117	117	116	109	113	113	115	116	119	119	117	0.024
	Jind	nd	nd	nd	nd	nd	118	117	116	117	119	117	115	0.011
	Fatehabad	nd	nd	nd	nd	nd	117	117	115	113	114	113	111	0.019
	Sirsa	115	119	114	117	114	119	118	116	114	113	113	111	0.021
	Hisar	nd	nd	nd	nd	nd	115	115	116	116	117	118	115	0.009
	Bhiwani	nd	nd	nd	nd	nd	114	114	114	111	114	114	113	0.007
	Rohtak	113	117	117	116	109	113	113	114	115	118	118	115	0.021
	Jhajjar	113	117	117	116	109	110	111	111	112	116	118	116	0.027
	Mahendragarh	nd	nd	nd	nd	nd	103	104	110	107	110	109	112	0.028
	Rewari	nd	nd	nd	nd	nd	107	108	108	108	108	111	111	0.014
	Gurgaon	111	114	117	116	114	111	114	113	114	115	118	117	0.019
	Mewat	111	114	117	116	114	112	111	113	113	115	111	110	0.018
	Faridabad	111	114	117	116	114	117	120	130	128	123	121	115	0.048
	Palwal	111	114	117	116	114	117	117	118	118	118	116	114	0.019
National Capital	North West	nd	nd	nd	nd	nd	nd	119	124	125	122	122	116	0.025
Territory of	North	nd	nd	nd	nd	nd	nd	132	128	125	122	121	115	0.044
Delhi	North East	nd	nd	nd	nd	nd	nd	132	130	124	120	118	113	0.055
	East	nd	nd	nd	nd	nd	nd	119	121	120	118	119	113	0.021
	New Delhi	nd	nd	nd	nd	nd	nd	149	142	139	126	126	122	0.074
	Central	nd	nd	nd	nd	nd	nd	125	122	118	115	119	112	0.037

State/UT	District	Year												CV
		1901	1911	1921	1931	1941	1951	1961	1971	1981	1991	2001	2011	
	West	nd	nd	nd	nd	nd	nd	124	120	121	118	120	114	0.024
	South West	nd	nd	nd	nd	nd	nd	126	126	128	126	128	119	0.023
	South	nd	nd	nd	nd	nd	nd	128	126	126	124	125	116	0.031
Rajasthan	Ganganagar	117	122	117	125	123	121	119	116	116	116	115	113	0.031
	Hanumangarh	117	122	117	125	123	118	119	113	112	112	112	110	0.041
	Bikaner	109	110	112	112	115	109	109	110	111	112	112	110	0.015
	Churu	107	108	108	108	110	106	107	106	105	107	106	106	0.013
	Jhunjhunun	113	110	114	114	113	105	106	108	105	107	106	105	0.034
	Alwar	108	109	113	112	112	112	112	113	112	114	113	112	0.013
	Bharatpur	116	119	122	119	119	118	116	117	118	120	117	114	0.017
	Dhaulpur	116	119	122	119	119	123	124	124	126	126	121	118	0.024
	Karauli	115	115	116	114	113	116	117	118	117	119	117	116	0.013
	Sawai Madhopur	115	115	116	114	113	112	113	114	114	115	112	111	0.012
	Dausa	111	110	114	112	110	111	113	113	112	113	111	110	0.010
	Jaipur	111	110	113	112	109	108	112	112	112	112	111	110	0.013
	Sikar	114	111	113	110	109	103	104	104	104	106	105	106	0.034
	Nagaur	109	108	111	109	110	107	106	106	104	106	106	105	0.018
	Jodhpur	113	112	115	113	113	111	113	111	110	112	110	109	0.014
	Jaisalmer	115	119	124	118	121	122	125	123	123	124	122	117	0.025
	Barmer	114	114	116	112	115	115	115	113	111	112	112	111	0.015
	Jalor	111	109	110	110	109	109	109	107	106	106	104	105	0.020
	Sirohi	109	107	107	106	106	104	105	104	104	105	106	106	0.013
	Pali	106	107	107	105	106	106	106	105	106	105	102	101	0.016
	Ajmer	111	113	120	111	111	108	110	110	108	109	107	105	0.031
	Tonk	109	111	110	109	111	108	110	110	108	108	107	105	0.014
	Bundi	108	107	109	109	109	110	112	113	113	113	110	108	0.018
	Bhilwara	109	107	106	106	106	107	110	110	106	106	104	103	0.020
	Rajsamand	109	107	106	106	106	105	107	103	100	101	100	101	0.028
	Dungarpur	100	99	101	101	103	100	101	98	96	100	98	101	0.018
	Banswara	98	98	99	99	100	102	103	102	102	103	103	102	0.019
	Chittaurgarh	110	108	107	106	106	105	108	108	105	106	103	103	0.018
	Kota	106	107	108	107	109	108	113	115	114	114	112	110	0.026

State/UT	District	Year												CV
		1901	1911	1921	1931	1941	1951	1961	1971	1981	1991	2001	2011	
	Baran	106	107	108	107	109	107	110	111	111	112	110	108	0.016
	Jhalawar	107	108	109	109	108	105	108	109	108	109	108	106	0.011
	Udaipur	109	107	106	106	106	103	106	105	103	105	103	104	0.016
	Pratapgarh	109	107	106	106	106	103	105	106	105	105	103	102	0.017
Uttar Pradesh	Saharanpur	116	122	122	122	125	121	119	121	119	117	116	112	0.028
	Muzaffarnagar	115	122	121	121	121	121	119	120	119	116	115	112	0.025
	Bijnor	109	113	111	113	112	113	114	117	116	115	112	109	0.021
	Moradabad	113	115	114	115	115	116	116	120	119	118	114	110	0.022
	Rampur	112	114	116	117	118	116	115	120	119	117	114	110	0.023
	Jyotiba Phule Nagar	113	115	114	115	115	114	114	118	118	116	113	110	0.019
	Meerut	114	118	118	119	118	121	119	121	119	117	115	113	0.021
	Baghpat	114	118	118	119	118	120	118	120	120	119	118	116	0.014
	Ghaziabad	113	117	117	118	117	117	118	121	121	119	116	113	0.019
	Gautam Buddha Nagar	112	114	114	115	113	114	115	119	118	123	119	117	0.026
	Bulandshahr	111	111	112	113	110	113	113	117	116	117	114	112	0.019
	Aligarh	112	117	118	119	119	116	116	119	118	118	116	113	0.019
	Mahamaya Nagar	113	119	119	119	119	117	117	121	121	121	117	115	0.020
	Mathura	116	123	123	120	120	118	120	122	123	122	119	116	0.021
	Agra	116	120	122	121	118	118	119	121	121	120	118	115	0.017
	Firozabad	118	121	122	122	119	118	118	120	121	120	117	114	0.019
	Mainpuri	119	122	123	122	119	116	116	120	120	120	117	114	0.023
	Budaun	117	121	118	118	117	119	120	123	124	123	119	115	0.023
	Bareilly	116	119	116	118	118	119	120	122	120	119	115	113	0.021
	Pilibhit	113	116	113	116	116	117	117	121	118	117	114	112	0.021
	Shahjahanpur	116	119	117	120	122	121	122	125	123	123	119	115	0.025
	Kheri	112	114	113	115	115	118	117	121	118	119	115	112	0.024
	Sitapur	112	114	115	114	114	116	116	121	118	120	116	113	0.023
	Hardoi	114	119	118	117	116	116	117	121	121	122	118	115	0.021
	Unnao	104	111	112	112	112	111	112	112	112	115	111	110	0.021
	Lucknow	110	117	118	122	122	119	119	119	118	116	113	109	0.035
	Rae Bareli	97	101	103	103	103	105	104	106	106	107	105	106	0.025
	Farrukhabad	118	122	121	121	115	119	120	123	122	120	118	114	0.022

State/UT	District	Year												CV
		1901	1911	1921	1931	1941	1951	1961	1971	1981	1991	2001	2011	
	Kannauj	118	122	121	121	115	120	119	121	120	119	115	114	0.021
	Etawah	119	121	123	124	120	118	119	121	120	120	117	115	0.020
	Auraiya	119	121	123	124	120	120	117	121	121	121	117	116	0.020
	Kanpur Dehat	115	120	125	123	129	117	116	118	118	120	117	116	0.033
	Kanpur Nagar	115	120	125	123	129	130	127	125	121	120	117	116	0.038
	Jalaun	107	107	111	110	111	110	113	117	120	121	118	116	0.040
	Jhansi	105	106	108	107	107	109	112	114	115	116	115	112	0.034
	Lalitpur	105	106	108	107	107	107	110	117	117	116	113	110	0.038
	Hamirpur	101	102	104	105	104	107	109	114	117	119	117	116	0.059
	Mahoba	101	102	104	105	104	104	108	114	116	118	116	114	0.056
	Banda	102	102	105	107	107	107	110	115	116	120	116	116	0.054
	Chitrakoot	102	102	105	107	107	110	112	115	114	116	115	114	0.044
	Fatehpur	104	107	110	110	106	109	109	111	112	113	112	111	0.024
	Pratapgarh	96	95	95	95	104	96	94	98	99	101	100	100	0.030
	Kaushambi	100	103	106	106	105	104	106	108	110	113	112	110	0.035
	Allahabad	100	103	106	106	105	106	108	112	113	115	114	111	0.041
	Bara Banki	105	109	109	109	110	113	113	118	117	117	113	110	0.035
	Faizabad	103	101	102	104	102	104	102	109	110	111	107	104	0.031
	Ambedkar Nagar	102	100	101	103	101	103	102	107	105	106	102	102	0.021
	Sultanpur	97	97	97	98	96	100	98	103	103	107	102	102	0.033
	Bahraich	107	108	109	109	110	111	112	118	114	118	115	112	0.032
	Shrawasti	107	108	109	109	110	109	111	121	127	121	117	113	0.054
	Balrampur	104	104	105	105	106	107	109	115	114	115	112	108	0.040
	Gonda	104	104	105	105	106	107	106	114	111	114	110	109	0.033
	Siddharthnagar	103	102	105	106	106	104	105	110	108	110	105	102	0.024
	Basti	103	102	105	106	106	106	107	112	109	110	107	104	0.027
	Sant Kabir Nagar	103	102	105	106	106	104	103	109	105	108	103	103	0.019
	Mahrajganj	99	101	103	105	102	104	104	109	109	110	107	106	0.032
	Gorakhpur	99	101	103	105	102	100	101	108	105	108	104	105	0.027
	Kushinagar	99	101	104	106	103	103	103	107	105	106	104	104	0.022
	Deoria	99	101	104	106	103	97	97	101	98	100	100	98	0.027
	Azamgarh	98	101	103	103	101	98	96	99	97	99	98	98	0.022

State/UT	District	Year												CV
		1901	1911	1921	1931	1941	1951	1961	1971	1981	1991	2001	2011	
	Mau	97	101	103	103	101	100	99	102	100	103	101	102	0.017
	Ballia	92	100	105	106	101	96	96	103	102	106	105	107	0.043
	Jaunpur	96	99	99	98	97	98	94	99	99	101	99	98	0.016
	Ghazipur	95	100	104	105	103	100	98	102	101	104	102	105	0.029
	Chandauli	100	101	104	104	105	103	105	109	109	110	109	109	0.032
	Varanasi	100	101	104	104	105	108	109	113	112	112	111	110	0.041
	Sant Ravidas Nagar (Bhadohi)	100	101	104	104	105	98	96	104	109	112	109	105	0.043
	Mirzapur	96	98	100	100	100	101	104	110	111	113	112	111	0.058
	Sonbhadra	96	98	100	100	100	104	111	113	114	116	111	109	0.064
	Etah	118	119	118	118	118	115	115	119	120	121	118	115	0.017
	Kanshiram Nagar	118	119	118	118	118	115	116	121	121	122	118	114	0.020
Bihar	Pashchim Champaran	98	97	100	102	102	104	106	109	110	114	111	110	0.050
	Purba Champaran	98	97	100	102	102	99	99	106	108	113	112	111	0.053
	Sheohar	92	92	93	96	95	99	98	103	108	114	113	112	0.081
	Sitamarhi	92	92	93	96	95	97	97	104	107	113	112	111	0.079
	Madhubani	95	93	95	98	97	94	95	101	102	107	106	108	0.053
	Supaul	99	99	102	104	104	104	105	108	107	111	109	108	0.033
	Araria	104	104	106	107	105	109	107	109	108	110	109	109	0.018
	Kishanganj	104	104	106	107	105	116	115	110	108	107	107	105	0.034
	Purnia	104	104	106	107	105	108	108	109	108	111	109	109	0.019
	Katihar	104	104	106	107	105	108	107	108	108	110	109	109	0.017
	Madhepura	99	99	102	104	104	109	108	111	109	113	109	110	0.042
	Saharsa	99	99	102	104	104	103	104	108	107	113	110	110	0.041
	Darbhanga	95	93	95	98	97	94	92	101	102	110	109	110	0.064
	Muzaffarpur	92	92	93	96	95	98	95	101	104	111	109	111	0.070
	Gopalganj	83	87	94	96	92	96	91	98	99	103	100	98	0.058
	Siwan	83	87	94	96	92	89	87	93	93	98	97	101	0.054
	Saran	83	87	94	96	92	88	87	95	98	104	104	105	0.073
	Vaishali	92	92	93	96	95	94	94	98	101	109	109	112	0.070
	Samastipur	95	93	95	98	97	99	96	103	103	108	108	110	0.055
	Begusarai	96	96	98	100	100	98	98	106	106	111	110	112	0.057
	Khagaria	96	96	98	100	100	106	106	112	111	115	113	113	0.066

State/UT	District	Year												CV
		1901	1911	1921	1931	1941	1951	1961	1971	1981	1991	2001	2011	
	Bhagalpur	95	96	97	101	103	106	108	112	111	116	114	114	0.068
	Banka	95	96	97	101	103	101	101	106	107	112	110	110	0.054
	Munger	96	96	98	100	100	106	106	111	112	117	115	114	0.071
	Lakhisarai	96	96	98	100	100	101	101	106	108	114	109	111	0.056
	Sheikhpura	96	96	98	100	100	99	99	105	106	112	109	108	0.050
	Nalanda	98	101	105	107	107	103	103	107	108	111	109	108	0.034
	Patna	98	101	105	107	107	107	109	112	112	115	115	112	0.046
	Bhojpur	91	94	97	100	102	99	97	102	105	111	111	110	0.061
	Buxar	91	94	97	100	102	102	101	105	108	113	111	109	0.062
	Kaimur (Bhabua)	91	94	97	100	102	104	102	107	110	113	111	109	0.064
	Rohtas	91	94	97	100	102	105	104	108	110	112	110	109	0.062
	Aurangabad	96	97	100	100	100	101	100	104	105	109	107	108	0.040
	Gaya	96	97	100	100	100	101	100	104	104	108	107	107	0.037
	Nawada	96	97	100	100	100	96	95	98	100	107	106	107	0.040
	Jamui	96	96	98	100	100	99	98	102	103	111	109	108	0.049
	Jehanabad	96	97	100	100	100	102	100	105	105	109	108	108	0.042
	Arwal	96	97	100	100	100	102	99	104	104	108	107	108	0.038
Sikkim	North District	nd	nd	nd	nd	nd	nd	113	117	127	121	133	130	0.058
	West District	nd	nd	nd	nd	nd	nd	nd	107	110	109	108	106	0.014
	South District	nd	nd	nd	nd	nd	nd	nd	110	117	112	108	109	0.029
	East District	nd	nd	nd	nd	nd	nd	113	126	126	116	119	115	0.043
Arunachal Pradesh	Tawang	nd	nd	nd	nd	nd	nd	113	117	110	118	128	140	0.083
	West Kameng	nd	nd	nd	nd	nd	nd	171	151	120	122	133	122	0.137
	East Kameng	nd	nd	nd	nd	nd	nd	98	108	106	104	101	97	0.037
	Papum Pare	nd	nd	nd	nd	nd	nd	143	110	133	120	111	102	0.117
	Upper Subansiri	nd	nd	nd	nd	nd	nd	102	105	103	115	104	100	0.047
	West Siang	nd	nd	nd	nd	nd	nd	115	118	110	115	110	108	0.032
	East Siang	nd	nd	nd	nd	nd	nd	104	116	120	114	107	102	0.059
	Upper Siang	nd	nd	nd	nd	nd	nd	114	115	110	122	118	113	0.032
	Changlang	nd	nd	nd	nd	nd	nd	109	117	120	116	110	108	0.040
	Tirap	nd	nd	nd	nd	nd	nd	104	111	111	116	110	106	0.035
	Lower Subansiri	nd	nd	nd	nd	nd	nd	105	108	105	108	104	102	0.021

State/UT	District	Year												CV
		1901	1911	1921	1931	1941	1951	1961	1971	1981	1991	2001	2011	
	Kurung Kumey	nd	nd	nd	nd	nd	nd	102	103	102	101	99	97	0.021
	Dibang Valley	nd	nd	nd	nd	nd	nd	93	135	143	140	144	123	0.137
	Lower Dibang Valley	nd	nd	nd	nd	nd	nd	103	119	154	124	117	108	0.134
	Lohit	nd	nd	nd	nd	nd	nd	135	131	129	125	116	110	0.072
	Anjaw	nd	nd	nd	nd	nd	nd	96	132	123	130	123	119	0.097
Nagaland	Mon	nd	nd	nd	nd	nd	nd	107	111	114	115	114	111	0.025
	Mokokchung	103	92	94	96	95	96	103	120	110	110	109	108	0.080
	Zunheboto	103	95	96	97	96	98	101	102	104	104	106	102	0.036
	Wokha	103	92	94	96	95	96	111	102	109	109	108	103	0.064
	Dimapur	103	108	107	104	101	105	135	155	141	121	117	109	0.144
	Phek	103	108	107	104	101	105	109	110	115	114	109	105	0.037
	Tuensang	nd	nd	nd	nd	nd	96	106	114	113	112	111	108	0.051
	Longleng	nd	nd	nd	nd	nd	nd	104	110	113	115	113	111	0.031
	Kiphire	nd	nd	nd	nd	nd	nd	102	98	110	109	111	105	0.045
	Kohima	103	108	107	104	101	105	116	127	119	115	111	108	0.066
	Peren	103	108	107	104	101	105	98	102	109	111	106	109	0.034
	Senapati	nd	nd	nd	nd	nd	97	100	105	108	106	107	107	0.036
Manipur	Tamenglong	nd	nd	nd	nd	nd	91	95	99	103	107	108	106	0.061
	Churachandpur	nd	nd	nd	nd	nd	95	100	102	108	107	106	103	0.040
	Bishnupur	nd	nd	nd	nd	nd	98	99	102	101	102	101	100	0.013
	Thoubal	nd	nd	nd	nd	nd	98	99	101	101	102	100	100	0.014
	Imphal West	nd	nd	nd	nd	nd	98	99	102	100	102	100	97	0.019
	Imphal East	nd	nd	nd	nd	nd	97	98	101	102	104	101	98	0.022
	Ukhrul	nd	nd	nd	nd	nd	94	97	103	109	113	109	106	0.061
	Chandel	nd	nd	nd	nd	nd	93	99	103	107	110	102	107	0.052
Mizoram	Mamit	nd	nd	nd	nd	nd	nd	nd	114	115	112	112	108	0.022
	Kolasib	nd	nd	nd	nd	nd	nd	nd	102	111	109	110	105	0.033
	Aizawl	nd	nd	nd	nd	nd	nd	nd	105	109	109	105	99	0.033
	Champhai	nd	nd	nd	nd	nd	nd	nd	95	100	103	106	102	0.036
	Serchhip	nd	nd	nd	nd	nd	nd	nd	104	100	105	103	102	0.019
	Lunglei	nd	nd	nd	nd	nd	nd	nd	119	114	110	108	106	0.043
	Lawngtlai	nd	nd	nd	nd	nd	nd	nd	103	114	111	110	106	0.035

State/UT	District	Year												CV
		1901	1911	1921	1931	1941	1951	1961	1971	1981	1991	2001	2011	
	Saiha	nd	nd	nd	nd	nd	nd	nd	97	107	108	105	102	0.038
Tripura	West Tripura	114	112	112	112	113	110	107	106	105	106	105	104	0.034
	South Tripura	115	113	114	115	114	110	107	106	106	105	106	104	0.037
	Dhalai	115	114	114	114	112	111	109	109	107	107	107	106	0.029
	North Tripura	116	115	114	113	111	112	109	107	107	106	105	103	0.036
	West Garo Hills	104	105	105	105	103	106	105	103	104	104	103	102	0.011
Meghalaya	East Garo Hills	101	104	104	103	102	104	103	107	106	104	104	103	0.016
	South Garo Hills	101	103	103	103	101	103	103	109	104	104	106	106	0.020
	West Khasi Hills	93	95	97	102	104	105	108	105	105	105	103	102	0.044
	Ribhoi	93	95	97	102	104	106	115	112	109	106	106	105	0.060
	East Khasi Hills	93	95	97	102	104	106	111	109	105	105	102	99	0.052
	Jaintia Hills	92	94	96	101	103	105	98	100	102	103	100	99	0.038
Assam	Kokrajhar	111	113	114	114	114	114	112	109	nd	106	106	104	0.032
	Dhubri	111	113	114	114	114	114	112	108	nd	105	106	105	0.033
	Goalpara	111	113	114	114	114	110	109	107	nd	106	105	104	0.034
	Barpeta	99	108	114	115	116	114	112	110	nd	107	107	105	0.045
	Morigaon	104	104	110	113	116	113	112	109	nd	106	106	103	0.039
	Nagaon	104	104	110	113	116	117	115	112	nd	108	106	104	0.043
	Sonitpur	109	116	116	121	117	117	119	115	nd	110	108	105	0.043
	Lakhimpur	116	113	115	122	118	115	119	112	nd	107	105	103	0.050
	Dhemaji	116	113	115	122	118	113	113	114	nd	108	106	105	0.043
	Tinsukia	116	113	115	122	118	123	124	117	nd	112	109	105	0.048
	Dibrugarh	116	113	115	122	118	121	120	116	nd	111	107	104	0.047
	Sivasagar	113	112	111	112	112	114	115	113	nd	110	108	105	0.025
	Jorhat	113	112	112	114	114	115	116	113	nd	110	107	104	0.031
	Golaghat	113	112	111	115	114	116	115	113	nd	109	108	104	0.031
	Karbi Anglong	nd	nd	nd	nd	107	110	116	114	nd	110	108	105	0.033
	Dima Hasao	203	109	113	111	107	108	115	119	nd	117	113	107	0.220
	Cachar	110	110	110	112	112	112	110	109	nd	107	106	104	0.022
	Karimganj	104	106	108	108	111	111	110	108	nd	106	106	104	0.023
	Hailakandi	110	109	108	111	112	112	111	108	nd	108	107	105	0.019
	Bongaigaon	111	113	114	114	114	115	111	108	nd	107	106	104	0.033

State/UT	District	Year												CV
		1901	1911	1921	1931	1941	1951	1961	1971	1981	1991	2001	2011	
	Chirang	111	113	114	114	114	115	111	108	nd	105	106	103	0.036
	Kamrup	99	102	106	108	113	115	114	111	nd	108	107	105	0.044
	Kamrup Metropolitan	99	102	106	108	113	142	158	137	nd	124	117	107	0.152
	Nalbari	99	103	109	111	114	110	110	108	nd	108	107	105	0.036
	Baksa	99	104	109	111	114	116	113	109	nd	105	104	103	0.047
	Darrang	109	106	109	116	114	114	113	109	nd	107	107	105	0.033
	Udalguri	109	106	109	116	114	120	116	111	nd	106	105	103	0.046
West Bengal	Darjiling	114	115	111	114	113	116	116	113	113	109	107	103	0.033
	Jalpaiguri	119	121	117	120	120	121	117	113	110	108	106	105	0.050
	Koch Bihar	113	115	114	113	114	117	112	109	107	107	105	106	0.034
	Uttar Dinajpur	109	109	108	108	110	116	113	110	107	109	107	107	0.024
	Dakshin Dinajpur	109	109	108	108	110	109	107	106	106	106	105	105	0.016
	Maldah	99	100	101	101	102	103	104	105	105	107	106	106	0.024
	Murshidabad	96	98	99	99	101	103	103	105	104	106	105	104	0.030
	Birbhum	97	98	100	100	100	103	103	103	104	106	105	105	0.027
	Barddhaman	100	100	104	107	112	113	117	113	111	111	109	106	0.047
	Nadia	99	100	105	105	106	107	105	105	106	107	106	106	0.023
	North Twenty	109	114	117	118	121	118	120	116	112	110	108	105	0.044
	Hugli	102	104	109	114	116	113	112	112	110	109	106	104	0.039
	Bankura	97	98	100	100	102	102	102	104	104	105	105	105	0.026
	Puruliya	99	100	100	101	102	102	103	104	104	106	105	104	0.020
	Haora	107	112	116	120	127	123	124	120	115	113	110	106	0.055
	Kolkata	187	196	199	206	213	169	159	151	135	125	121	110	0.210
	South Twenty-Four Parganas	108	112	115	115	118	116	109	109	108	108	107	105	0.038
	Paschim Medinipur	99	100	101	103	105	104	105	106	105	105	104	104	0.020
	Purba Medinipur	99	100	101	103	105	105	105	106	106	106	106	107	0.024
Jharkhand	Garhwa	98	99	100	100	100	102	101	104	105	108	107	107	0.032
	Chatra	94	95	96	98	101	97	99	99	101	105	105	105	0.038
	Kodarma	94	95	96	98	101	95	98	97	96	101	99	105	0.031
	Giridih	94	95	96	98	101	106	96	98	98	103	102	106	0.040
	Deoghar	98	98	99	100	101	107	104	107	107	110	109	108	0.041
	Godda	98	98	99	100	101	100	101	104	104	108	108	107	0.035

State/UT	District	Year												CV
		1901	1911	1921	1931	1941	1951	1961	1971	1981	1991	2001	2011	
	Sahibganj	98	98	99	100	101	101	102	104	105	108	106	105	0.031
	Pakur	98	98	99	100	101	101	101	103	103	105	104	101	0.021
	Dhanbad	105	112	118	120	121	127	131	128	124	122	114	110	0.063
	Bokaro	97	101	103	106	108	106	108	115	115	116	112	108	0.052
	Lohardaga	94	95	97	98	100	101	97	97	99	103	102	102	0.026
	Purbi Singhbhum	98	97	100	101	102	110	111	112	110	110	108	105	0.052
	Palamu	98	99	100	100	100	102	102	104	105	108	108	108	0.034
	Latehar	98	99	100	100	100	104	101	102	102	105	105	103	0.021
	Hazaribagh	94	95	96	98	101	97	98	100	101	105	101	106	0.035
	Ramgarh	94	95	96	98	101	110	115	115	118	117	112	109	0.083
	Dumka	98	98	99	100	101	102	101	103	103	104	104	102	0.020
	Jamtara	98	98	99	100	101	101	102	104	103	105	104	105	0.024
	Ranchi	95	95	97	98	100	104	106	108	110	110	108	105	0.053
	Khunti	95	95	97	98	100	100	98	99	98	101	101	100	0.020
	Gumla	95	95	97	98	100	100	98	99	98	102	101	101	0.022
	Simdega	95	95	97	98	100	100	99	100	98	100	100	100	0.019
	Pashchimi Singhbhum	98	97	100	101	102	98	98	100	101	102	101	100	0.016
	Saraikela-Kharsawan	98	97	100	101	102	100	101	104	105	106	105	105	0.030
Odisha	Bargarh	98	97	97	96	97	98	99	101	101	102	103	102	0.024
	Jharsuguda	98	97	97	96	97	98	102	104	105	107	106	105	0.039
	Sambalpur	98	97	97	96	97	102	102	104	104	105	103	102	0.033
	Debagarh	98	97	97	96	97	98	100	102	103	102	102	103	0.026
	Sundargarh	104	101	100	99	98	99	109	106	107	107	105	103	0.035
	Kendujhar	102	100	97	97	99	100	102	102	102	103	102	101	0.019
	Mayurbhanj	99	99	99	99	99	100	101	101	101	102	102	99	0.013
	Baleshwar	94	92	91	95	98	105	105	104	104	105	105	104	0.055
	Bhadrak	94	92	91	95	98	96	100	102	100	101	103	102	0.041
	Kendrapara	94	91	86	90	92	96	98	99	100	99	99	99	0.046
	Jagatsinghapur	94	91	86	90	92	95	95	98	101	102	104	103	0.058
	Cuttack	94	91	86	90	92	101	106	106	107	109	107	106	0.079
	Jajapur	94	91	86	90	92	95	97	99	101	102	103	103	0.056
	Dhenkanal	98	97	93	95	97	97	100	102	103	105	104	106	0.040

State/UT	District	Year												CV
		1901	1911	1921	1931	1941	1951	1961	1971	1981	1991	2001	2011	
	Anugul	98	97	93	95	97	99	102	103	105	106	106	106	0.045
	Nayagarh	99	98	91	93	92	95	98	101	103	104	107	109	0.056
	Khordha	99	98	91	93	92	96	99	104	106	111	111	108	0.068
	Puri	99	98	91	93	92	100	102	102	103	103	103	104	0.045
	Ganjam	89	86	82	84	86	89	92	96	97	99	100	102	0.071
	Gajapati	89	86	82	84	86	96	97	98	98	97	97	96	0.065
	Kandhamal	99	99	98	98	98	98	98	99	99	100	99	96	0.010
	Baudh	99	99	98	98	98	100	101	101	101	101	102	101	0.014
	Subarnapur	96	97	97	98	98	99	99	101	102	102	104	104	0.026
	Balangir	96	97	97	98	98	99	100	101	101	102	102	101	0.020
	Nuapada	100	98	97	97	97	99	98	99	99	100	99	98	0.011
	Kalahandi	100	98	97	97	97	98	98	99	99	100	100	100	0.013
	Rayagada	103	100	100	100	100	99	99	100	98	99	97	95	0.019
	Nabarangapur	103	100	100	100	100	102	102	102	101	101	101	98	0.013
	Koraput	103	100	100	100	100	102	102	102	101	101	100	97	0.016
	Malkangiri	103	100	100	100	100	99	100	107	104	102	100	98	0.024
Chhattisgarh	Koriya	103	104	104	104	105	105	114	108	108	108	106	103	0.027
	Surguja	103	104	104	104	105	105	102	102	103	104	103	102	0.009
	Jashpur	99	99	98	98	99	103	100	100	100	100	100	99	0.014
	Raigarh	99	99	98	98	99	96	98	99	99	100	101	101	0.013
	Korba	95	95	96	96	97	98	100	102	105	105	104	103	0.039
	Janjgir-Champa	95	95	96	96	97	97	96	97	97	99	100	101	0.021
	Bilaspur	95	95	96	96	97	96	98	101	101	103	103	103	0.032
	Kabeerdham	89	92	90	91	94	96	97	99	99	100	100	100	0.043
	Rajnandgaon	88	91	88	89	93	95	97	98	98	98	98	99	0.044
	Durg	94	94	94	94	94	94	104	102	102	103	102	101	0.043
	Raipur	94	95	95	94	95	96	97	100	100	102	102	102	0.032
	Mahasamund	94	95	95	94	95	96	96	97	98	99	98	98	0.018
	Dhamtari	94	95	95	94	95	95	95	98	98	99	100	99	0.022
	Uttar Bastar Kanker	102	101	101	100	99	98	99	100	99	100	99	99	0.010
	Bastar	102	101	101	100	99	104	100	100	100	100	99	98	0.014
	Narayanpur	102	101	101	100	99	99	102	102	102	101	99	101	0.011

State/UT	District	Year												CV
		1901	1911	1921	1931	1941	1951	1961	1971	1981	1991	2001	2011	
	Dakshin Bastar Dantewada	102	101	101	100	99	92	98	101	98	98	97	98	0.025
	Bijapur	102	101	101	100	99	112	99	100	100	101	100	102	0.032
Madhya Pradesh	Sheopur	nd	118	122	121	120	110	116	113	113	114	112	111	0.035
	Morena	nd	118	122	121	120	120	120	122	122	124	122	119	0.012
	Bhind	nd	118	120	120	119	119	118	120	121	123	121	119	0.011
	Gwalior	nd	114	120	118	116	113	117	120	119	120	118	116	0.020
	Datia	nd	109	110	112	111	110	111	114	117	118	117	115	0.027
	Shivpuri	nd	110	112	111	111	110	113	116	117	118	116	114	0.025
	Tikamgarh	106	104	107	108	109	110	110	114	113	115	113	111	0.028
	Chhatarpur	106	106	108	109	110	112	112	116	116	117	115	113	0.033
	Panna	101	103	104	103	104	106	107	108	110	112	111	110	0.033
	Sagar	103	104	106	106	102	107	109	112	112	114	113	112	0.037
	Damoh	101	102	105	103	102	102	104	106	108	110	111	110	0.033
	Satna	96	97	98	99	101	102	104	105	107	109	108	108	0.043
	Rewa	99	99	99	101	100	102	101	103	103	107	106	107	0.030
	Umaria	100	98	100	101	101	103	107	104	104	106	106	105	0.026
	Neemuch	107	106	105	106	106	103	108	109	106	106	105	105	0.013
	Mandsaur	107	106	105	106	106	106	108	108	106	106	105	104	0.011
	Ratlam	nd	104	106	106	104	104	106	106	106	105	104	103	0.010
	Ujjain	nd	109	109	110	107	105	109	109	108	108	107	105	0.014
	Shajapur	nd	106	107	108	106	103	106	107	108	109	108	107	0.013
	Dewas	nd	101	106	106	106	104	107	108	108	108	108	106	0.017
	Dhar	nd	100	101	102	103	104	104	104	103	105	105	104	0.015
	Indore	nd	112	118	119	116	111	113	114	111	110	110	108	0.030
	Khargone (West Nimar)	nd	104	104	105	103	103	105	107	106	106	105	104	0.011
	Barwani	nd	104	104	105	103	103	103	103	103	104	103	102	0.007
	Rajgarh	nd	108	110	110	110	108	109	110	107	108	107	105	0.015
	Vidisha	106	106	110	109	110	109	112	113	114	114	114	112	0.024
	Bhopal	nd	107	111	111	113	112	123	119	114	112	112	109	0.038
	Sehore	nd	104	108	108	109	108	109	110	110	111	110	109	0.017
	Raisen	nd	101	105	105	107	109	110	111	110	114	114	111	0.035
	Betul	96	99	98	98	100	100	101	102	103	104	104	103	0.024

State/UT	District	Year												CV
		1901	1911	1921	1931	1941	1951	1961	1971	1981	1991	2001	2011	
	Harda	100	102	103	104	103	105	105	107	108	109	109	107	0.027
	Hoshangabad	100	102	103	104	103	105	108	111	111	112	112	109	0.039
	Katni	97	100	102	102	106	101	103	104	105	106	106	105	0.026
	Jabalpur	97	100	102	102	106	109	111	113	112	111	110	108	0.046
	Narsimhapur	96	99	101	101	103	103	105	108	108	110	110	109	0.042
	Dindori	97	98	99	99	99	98	99	100	100	102	101	100	0.012
	Mandla	97	98	99	99	99	96	100	101	99	101	100	99	0.014
	Chhindwara	96	98	97	99	100	100	102	103	104	105	105	104	0.030
	Seoni	94	95	96	96	97	99	99	101	102	103	102	102	0.031
	Balaghat	94	96	97	97	98	101	99	100	99	100	98	98	0.019
	Guna	nd	109	110	111	111	110	113	113	113	114	112	110	0.015
	Ashoknagar	nd	109	110	111	111	108	110	113	113	114	114	111	0.018
	Shahdol	100	98	100	101	101	104	105	106	107	107	105	103	0.027
	Anuppur	100	98	100	101	101	102	103	103	105	106	104	102	0.021
	Sidhi	100	99	100	101	101	102	101	103	103	107	106	104	0.023
	Singrauli	100	99	100	101	101	104	104	105	108	110	108	109	0.035
	Jhabua	nd	100	103	104	105	104	104	103	101	103	102	101	0.014
	Alirajpur	nd	100	103	104	105	106	105	103	102	102	101	99	0.022
	Khandwa (East Nimar)	105	106	108	108	106	106	107	108	107	107	107	106	0.008
	Burhanpur	105	106	108	108	106	104	106	106	106	105	106	105	0.009
Gujarat	Kachchh	101	97	94	94	91	93	96	99	100	104	106	110	0.056
	Banas Kantha	108	109	109	107	105	105	106	106	106	107	108	107	0.011
	Patan	105	106	105	103	103	103	105	105	104	106	107	107	0.013
	Mahesana	105	105	105	103	103	100	103	104	103	105	108	108	0.021
	Sabar Kantha	100	102	101	104	103	103	105	104	102	104	106	105	0.015
	Gandhinagar	105	107	108	106	110	101	104	107	106	107	109	108	0.022
	Ahmadabad	106	110	116	112	121	120	117	116	113	111	112	111	0.037
	Surendranagar	103	107	104	104	105	104	106	106	107	109	108	108	0.016
	Rajkot	103	102	102	103	102	101	104	106	106	106	107	108	0.021
	Jamnagar	103	102	102	101	101	101	105	106	105	105	106	107	0.020
	Porbandar	105	104	104	104	104	100	104	105	103	104	106	105	0.013
	Junagadh	105	104	104	104	104	102	105	107	105	104	105	105	0.010

State/UT	District	Year												CV
		1901	1911	1921	1931	1941	1951	1961	1971	1981	1991	2001	2011	
	Amreli	105	105	105	105	105	103	104	105	102	102	101	104	0.013
	Bhavnagar	106	106	106	105	106	105	107	106	105	106	107	107	0.007
	Anand	112	116	115	114	112	110	112	114	110	110	110	108	0.020
	Kheda	111	116	115	114	112	109	109	110	108	108	108	106	0.025
	Panch Mahals	103	104	105	107	107	108	108	108	106	107	107	105	0.015
	Dohad	103	104	105	107	107	105	105	104	102	102	101	101	0.019
	Vadodara	109	110	111	111	111	109	110	111	109	110	109	107	0.010
	Narmada	105	107	107	109	108	107	105	104	105	106	105	104	0.014
	Bharuch	104	106	106	109	107	106	106	106	107	108	109	108	0.012
	The Dangs	107	113	113	118	118	114	110	106	103	102	101	99	0.057
	Navsari	101	101	101	102	102	96	97	100	103	104	105	104	0.026
	Valsad	101	101	101	102	102	100	99	101	101	105	109	108	0.029
	Surat	101	101	101	102	102	103	103	106	110	113	123	127	0.080
	Tapi	101	101	101	102	102	104	103	105	101	101	100	99	0.014
Daman and Diu	Diu	107	99	81	80	88	87	74	82	88	94	89	97	0.101
Dadra and Nagar	Daman	95	94	93	104	97	90	94	97	98	110	169	187	0.279
Haveli	Dadra & Nagar Haveli	104	103	106	110	108	106	104	99	103	105	123	129	0.078
Maharashtra	Nandurbar	102	102	102	103	103	103	103	103	102	103	102	102	0.004
	Dhule	102	102	102	103	103	103	104	105	105	106	106	106	0.013
	Jalgaon	103	102	103	103	103	103	105	105	105	106	107	108	0.019
	Buldana	101	102	102	103	103	102	104	105	104	105	106	107	0.017
	Akola	103	103	104	105	105	105	108	107	107	107	107	106	0.014
	Washim	103	103	104	105	105	103	105	105	104	106	106	108	0.012
	Amravati	104	104	105	106	106	104	107	107	107	107	107	105	0.011
	Wardha	101	102	103	103	102	102	104	105	105	106	107	106	0.019
	Nagpur	101	102	103	105	105	105	108	108	108	108	107	105	0.023
	Bhandara	93	96	98	98	99	100	101	102	101	102	102	102	0.026
	Gondiya	93	96	98	98	99	100	100	101	100	101	99	100	0.021
	Gadchiroli	98	100	100	101	101	100	100	101	102	103	102	102	0.013
	Chandrapur	98	100	100	101	101	101	102	104	104	106	105	104	0.024
	Yavatmal	101	102	103	104	102	101	103	104	104	105	106	105	0.015
	Nanded	100	101	102	104	104	102	103	105	104	106	106	106	0.020

State/UT	District	Year												CV
		1901	1911	1921	1931	1941	1951	1961	1971	1981	1991	2001	2011	
	Hingoli	100	101	102	104	104	101	103	103	103	105	105	106	0.017
	Parbhani	100	101	102	104	104	103	103	105	103	105	104	106	0.015
	Jalna	100	101	101	103	104	102	103	104	103	104	105	107	0.017
	Aurangabad	100	101	101	103	105	103	105	107	107	108	108	108	0.028
	Nashik	103	102	104	104	105	105	106	106	107	106	108	107	0.017
	Thane	107	106	107	107	106	109	109	112	113	114	117	113	0.032
	Mumbai Suburban	153	175	178	169	162	141	134	130	125	120	122	116	0.152
	Mumbai	153	175	178	169	162	174	160	149	137	126	129	120	0.128
	Raigarh	100	98	97	99	96	96	95	95	96	99	103	104	0.029
	Pune	102	102	105	105	105	107	106	107	107	107	109	109	0.020
	Ahmadnagar	99	102	102	103	103	103	104	105	104	105	106	106	0.019
	Bid	102	102	104	105	106	104	103	105	104	106	107	109	0.019
	Latur	102	104	106	106	106	106	105	106	104	106	107	108	0.014
	Osmanabad	102	104	107	106	106	106	106	106	104	107	107	108	0.015
	Solapur	102	103	106	107	106	106	107	107	106	107	107	107	0.015
	Satara	97	98	97	99	97	95	95	96	94	97	101	101	0.021
	Ratnagiri	89	86	84	89	86	81	79	79	79	83	88	89	0.046
	Sindhudurg	90	87	85	89	87	83	84	82	83	88	93	97	0.047
	Kolhapur	103	103	106	105	103	104	104	105	104	104	105	105	0.009
	Sangli	102	105	106	105	105	103	104	105	103	104	104	104	0.011
Andhra Pradesh	Adilabad	101	102	105	105	103	99	102	102	102	102	101	100	0.015
	Nizamabad	99	99	98	101	101	98	99	100	99	98	98	96	0.013
	Karimnagar	109	107	105	104	103	102	100	102	101	101	100	99	0.028
	Medak	102	102	102	102	103	101	100	101	102	103	103	101	0.009
	Hyderabad	106	105	105	108	106	101	108	109	109	107	107	105	0.019
	Rangareddy	106	105	105	108	106	101	101	104	105	106	106	104	0.018
	Mahbubnagar	102	103	102	103	103	100	100	101	102	103	103	102	0.011
	Nalgonda	112	106	105	105	106	106	105	104	103	104	104	102	0.023
	Warangal	110	107	106	106	106	105	105	105	104	104	103	100	0.022
	Khammam	109	106	105	105	106	105	104	105	104	104	103	99	0.021
	Srikakulam	93	91	91	93	94	94	96	97	98	99	99	99	0.029
	Vizianagaram	94	92	92	94	95	97	98	99	99	100	99	98	0.029

State/UT	District	Year												CV
		1901	1911	1921	1931	1941	1951	1961	1971	1981	1991	2001	2011	
	Visakhapatnam	96	94	93	95	96	98	100	101	102	103	101	99	0.033
	East Godavari	96	96	96	97	99	100	100	100	101	100	101	99	0.018
	West Godavari	97	97	97	97	99	100	101	101	101	101	101	100	0.017
	Krishna	103	102	102	103	104	103	104	104	103	103	102	101	0.008
	Guntur	102	102	102	102	103	103	102	103	103	103	102	100	0.009
	Prakasam	100	100	101	101	102	102	101	101	102	103	103	102	0.009
	Sri Potti Sriramulu Nellore	102	101	102	101	101	101	101	101	102	102	102	102	0.005
	Y. S. R.	102	103	104	104	105	105	104	104	104	105	103	101	0.010
	Kurnool	103	102	104	103	103	102	102	103	104	105	104	101	0.009
	Anantapur	105	105	106	106	106	106	106	106	106	106	104	102	0.009
	Chittoor	103	103	104	104	105	105	105	104	104	103	102	100	0.013
Karnataka	Belgaum	102	103	105	105	106	105	105	106	105	105	104	103	0.010
	Bagalkot	100	100	103	102	102	100	101	101	100	102	102	101	0.008
	Bijapur	100	101	104	104	105	104	103	104	103	106	105	104	0.014
	Bidar	101	102	103	104	105	102	103	104	103	105	105	105	0.013
	Raichur	101	102	103	102	103	100	101	102	101	102	102	100	0.010
	Koppal	101	102	103	102	103	103	103	102	101	102	102	101	0.007
	Gadag	100	102	101	102	103	101	102	102	102	103	103	102	0.008
	Dharwad	102	103	105	106	107	104	106	108	107	107	105	103	0.017
	Uttara Kannada	108	105	103	105	104	103	106	105	104	104	103	102	0.014
	Haveri	103	103	106	106	106	107	106	107	107	107	106	105	0.013
	Bellary	103	103	103	103	103	105	104	103	103	104	103	102	0.007
	Chitradurga	103	103	106	105	107	106	106	106	105	105	105	103	0.011
	Davanagere	103	102	104	105	105	105	105	106	106	106	105	103	0.012
	Shimoga	112	111	112	116	115	114	114	109	106	104	102	100	0.047
	Udupi	89	90	91	89	89	87	86	88	89	88	89	91	0.017
	Chikmagalur	110	110	110	113	112	112	111	107	105	102	102	99	0.041
	Tumkur	101	102	104	104	105	104	105	105	104	104	103	102	0.011
	Bangalore	102	104	107	108	108	112	112	113	111	111	110	109	0.029
	Mandya	97	97	100	101	102	101	103	104	104	104	101	100	0.023
	Hassan	99	98	100	102	102	103	103	103	101	100	100	99	0.017
	Dakshina Kannada	97	96	97	96	95	95	97	99	99	98	98	98	0.013

State/UT	District	Year												CV
		1901	1911	1921	1931	1941	1951	1961	1971	1981	1991	2001	2011	
	Kodagu	125	125	120	124	121	120	116	110	107	102	100	98	0.085
	Mysore	99	99	101	102	104	104	106	107	105	105	104	101	0.023
	Chamarajanagar	98	99	99	100	103	102	103	105	105	105	103	101	0.024
	Gulbarga	103	103	103	103	104	102	102	103	103	105	104	103	0.008
	Yadgir	103	103	103	103	104	98	99	100	100	102	102	101	0.018
	Kolar	105	105	105	105	105	101	102	103	102	103	102	102	0.012
	Chikkaballapura	102	102	104	105	105	105	105	105	104	105	104	103	0.011
	Bangalore Rural	101	102	104	104	104	102	103	104	103	105	106	106	0.014
	Ramanagara	100	100	102	103	104	104	105	105	106	106	104	103	0.018
Goa	North Goa	91	89	87	90	91	88	92	100	102	104	105	104	0.072
	South Goa	93	92	94	95	95	90	96	104	103	103	103	101	0.050
Lakshadweep	Lakshadweep	94	101	97	101	98	96	98	102	103	106	105	106	0.038
Kerala	Kasaragod	94	95	95	96	96	96	97	100	98	97	95	93	0.019
	Kannur	94	93	89	90	90	93	95	97	96	95	92	88	0.030
	Wayanad	124	123	127	124	120	119	111	108	105	104	100	97	0.089
	Kozhikode	99	98	96	97	96	98	99	100	98	97	95	91	0.024
	Malappuram	98	98	96	94	94	95	95	96	95	95	94	91	0.020
	Palakkad	96	95	94	93	93	92	93	95	95	94	94	94	0.011
	Thrissur	100	99	95	93	92	90	91	92	91	92	92	90	0.032
	Ernakulam	102	101	103	101	101	99	100	101	100	100	98	97	0.015
	Idukki	119	119	118	120	114	110	109	107	104	103	101	99	0.066
	Kottayam	104	103	106	104	103	101	101	101	100	100	98	96	0.026
	Alappuzha	101	101	101	100	100	98	97	98	96	95	93	91	0.034
	Pathanamthitta	101	101	105	103	101	100	99	98	95	94	91	88	0.049
	Kollam	101	101	101	99	99	100	100	100	98	97	94	90	0.034
	Thiruvananthapuram	100	101	102	100	98	99	99	99	97	97	94	92	0.028
Tamil Nadu	Thiruvallur	101	101	101	102	103	103	104	106	105	105	103	101	0.016
	Chennai	102	105	109	111	110	108	111	111	107	107	104	101	0.031
	Kancheepuram	101	101	101	102	103	103	104	105	104	104	103	101	0.012
	Vellore	97	97	98	99	101	100	101	103	102	102	100	99	0.019
	Tiruvannamalai	99	99	99	100	101	99	101	103	102	102	101	101	0.013
	Viluppuram	99	99	99	100	101	101	101	103	103	103	102	101	0.017

State/UT	District	Year												CV
		1901	1911	1921	1931	1941	1951	1961	1971	1981	1991	2001	2011	
	Salem	96	98	99	98	100	101	103	105	107	108	108	105	0.038
	Namakkal	96	98	99	98	100	98	99	102	103	104	103	101	0.024
	Erode	98	98	99	99	100	101	103	104	105	105	103	101	0.025
	The Nilgiris	119	115	113	119	117	111	109	106	104	102	99	96	0.068
	Dindigul	95	95	96	96	98	99	100	101	102	102	101	100	0.025
	Karur	95	94	96	96	98	98	99	100	100	100	99	98	0.020
	Tiruchirappalli	95	94	96	96	98	99	100	102	102	102	100	99	0.027
	Perambalur	95	94	96	96	98	98	99	101	100	103	99	100	0.025
	Ariyalur	95	94	96	96	98	100	101	102	103	103	99	99	0.029
	Cuddalore	99	99	99	100	101	100	102	103	103	103	101	101	0.017
	Nagapattinam	90	91	92	92	95	95	98	100	101	101	99	98	0.039
	Thiruvarur	90	91	92	92	95	97	98	100	102	101	99	98	0.041
	Thanjavur	90	91	92	92	95	98	99	101	101	100	98	97	0.041
	Pudukkottai	92	91	92	91	94	95	97	99	99	99	99	99	0.034
	Sivaganga	85	86	87	87	89	90	93	95	96	97	96	100	0.051
	Madurai	96	96	97	97	99	99	100	102	103	104	102	101	0.026
	Theni	96	96	97	97	99	100	101	101	103	104	102	101	0.025
	Virudhunagar	97	97	98	96	96	97	98	99	100	101	99	99	0.015
	Ramanathapuram	86	87	86	85	89	87	92	94	97	99	97	102	0.061
	Thoothukkudi	95	94	94	93	94	93	94	95	95	95	95	98	0.012
	Tirunelveli	94	94	96	93	95	96	96	97	96	97	96	98	0.013
	Kanniyakumari	100	101	102	101	101	102	102	103	101	101	99	98	0.013
	Dharmapuri	98	99	100	101	102	101	102	103	104	107	107	106	0.029
	Krishnagiri	98	99	100	101	102	103	104	103	104	105	106	104	0.024
	Coimbatore	96	96	99	100	101	102	106	106	106	105	103	100	0.033
	Tiruppur	97	97	99	99	101	99	101	102	104	104	104	101	0.023
Puducherry	Yanam	nd	83	84	nd	nd	94	98	98	103	103	103	96	0.073
	Puducherry	nd	99	99	nd	nd	99	101	103	104	104	101	97	0.022
	Mahe	nd	89	83	nd	nd	87	85	86	88	87	87	84	0.020
	Karaikal	nd	83	87	nd	nd	93	95	98	98	99	98	96	0.055
Andaman and	Nicobars	119	121	130	114	112	111	115	128	123	119	117	129	0.052
Nicobar Islands	North & Middle Andaman	509	507	687	287	231	204	189	146	127	118	113	108	0.687

State/UT	District	Year												CV
		1901	1911	1921	1931	1941	1951	1961	1971	1981	1991	2001	2011	
	South Andaman	509	508	687	287	231	204	176	174	137	125	121	115	0.666

Source: Author based on data from different decennial population censuses.

Remarks: nd – no data.

CV – coefficient of variation.