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# Child Mortality Inequalities in Madhya Pradesh

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## Abstract

The present paper analyses levels and trends in the inquality in child mortality in Madhya Pradesh on the basis of the data available through 2001 and 2011 population census in Madhya Pradesh which has the highest child mortality a cross the major states of India. The paper estimates infant mortality rate and under-five mortality rate for 540 mutually exclusive population sub-groups as they existed in 2001 and 600 mutually exclusive population sub-groups as they existed in 2011. The analysis reveals that the inequality in child mortality across mutually exclusive population sub-groups in the state remains quite pervasive and it appears to have increased between 2001 and 2011. Moreover, there are some population sub-groups where the child mortality has increased instead decreased. The analysis reflects within state variation in the administrative capacity and organisational efficiency of child survival efforts in the state. The paper calls for formulating a state specific child survival policy to address the issue of inequality in child mortality that remains quite pervasive in the state.

# Introduction

Child mortality continues to be a major development challenge in Madhya Pradesh. Although, the available evidence indicates that child mortality is decreasing in the state since the last 40 years, yet the risk of death during childhood in Madhya Pradesh remains the highest amongst the major states of the country according to the sample registration system (Government of India, 2015). These estimates also suggest that the decrease in child mortality in the state has not been fast enough to achieve the Millennium Development Goal 4 - reducing the under-five mortality rate by two-third by 2015 from the level that prevailed in 1990 (Chaurasia, 2017). There is also little possibility that, with the current pace of the decrease, Madhya Pradesh will be able to achieve the goals set in the National Health Policy 2017 (Government of India, 2017) and the targets set under the 2030 Sustainable Development Agenda of the United Nations (United Nations, 2015). If the available evidence is any indication, then it is obvious that Madhya Pradesh has fallen short of expectations as far as securing the life of the children of the state is concerned.

Very little is currently known about residence, social and gender inequalities in child mortality how these inequalities varies across the constituent districts of the state. Estimates of child mortality prepared on the basis of the data available through 1981, 1991 and 2001 population censuses indicate that within state inequalities in child mortality have been quite pervasive in the state (Government of India, 198 , 199 , 200 ). However, estimates of child mortality have not been prepared on the basis of the data available through the 2011 population census. It can, however, be argued that a reduction in inter-district inequalities in child mortality in the state can go a long way in hastening the pace of reduction in child mortality. It can also be argued that reducing residence, social class and gender inequalities in child mortality in the constituent districts of the state can contribute substantially towards reducing the inter-district inequality in child mortality. However, the current understanding about inequalities in child mortality in Madhya Pradesh is at best very limited (Chaurasia, 2011).

This paper has two objectives. The first objective of the paper is to estimate child mortality in 12 mutually exclusive population sub-groups for the districts of the state as they existed at the time of 2001 and 2011 on the basis of the data available through 2001 and 2011 population census. We have estimated the probability of death during childhood for 45 districts in 2001 and 50 districts in 2011. In each district, child mortality has been estimated for 12 mutually exclusive population sub-groups separately to highlight within district inequality in child mortality.

The second objective of the paper is to use the estimates of child mortality to analyse the inequality in child mortality in the state by constructing appropriate measures of inequality in child mortality and the change in this inequality over time. We also decompose the child mortality inequality in the state into within-district and between districts components using the sub-group decomposition technique. The analysis reflects the effectiveness and efficiency of child survival efforts in the state, especially in terms of reducing inequalities in the survival chances of the children of the state.

# Measuring Child Mortality Inequality

The main challenge towards analysing regional, residence, social class and gender inequalities in child mortality in the state is to estimate child mortality for mutually exclusive population sub-groups within the state which then constitute the basis for measuring and analysing child mortality inequality. We use two, most commonly used indicators of child mortality - infant mortality rate (IMR) and under-five mortality rate (U5MR), although there are other indicators of child mortality such as neonatal mortality rate and mortality rate in the age group 1-4 years. Estimates of IMR and U5MR for India and states are available through the sample registration system (Government of India, 2015) and the National Family Health Survey (International Institute for Population Sciences and IFC, 2017). However, neither the sample registration system nor the National Family Health Survey provides estimates of IMR and U5MR for the districts of the state and for different mutually exclusive population sub-groups within the district.

We have estimated IMR and U5MR for different population sub-groups in each district of the state on the basis of children ever born and children surviving data available through 2001 and 2011 population census using the indirect method of child mortality estimation (Moultrie, 2013; United Nations, 1983). Data on children ever born and children surviving are available by the current age of women for the state and for each of its constituent district by residence, social class and gender from 2001 and 2011 population census so that the population of the state or the district can be divided into the following 12 mutually exclusive population sub-groups:

1.    Rural Scheduled Castes female
2.    Rural Scheduled Castes male
3.    Rural Scheduled Tribes female
4.    Rural Scheduled Tribes male
5.    Rural Other Castes female
6.    Rural Other Castes male
7.    Urban Scheduled Castes female
8.    Urban Scheduled Castes male
9.    Urban Scheduled Tribes female
10.   Urban Scheduled Tribes male
11.   Urban Other Castes female
12.   Urban Other Castes male

The availability of the data related to children ever born and children surviving for the 12 mutually exclusive population sub-groups in each district from the 2011 population census suggests that child mortality can be estimated for 540 mutually exclusive population sub-groups (45x12) as they existed in 2001 and for 600 mutually exclusive population sub-groups (50x12) as they existed in 2011. For each mutually exclusive population sub-group, two indicators of child mortality - infant mortality rate (IMR) and under-five mortality rate (U5MR) - have been calculated for the year 2001 and 2011 respectively. Variation in the two indicators across the 540 mutually exclusive population sub-groups in 2001 and 600 mutually population sub-groups in 2011 constituted the basis for measuring and analysing inequalities in child mortality in the state.

There are a number of measures that can be used to analyse inequality. The first and the most basic is the differential or the ratio of the highest to the lowest child mortality. Differential is easy to calculate and straightforward to interpret but has many limitations, the most important of which is that it depends upon only the maximum and the minimum values in the dataset. Other inequality measures that are commonly used are the entropy class measures popularised by Theil (1967, 1972) and explored in more detail by Bourguignon (1979), Shorrocks (1980, 1984, 1988), Cowell and Jenkins (1995) and Foster and Shneyerov (2000). These include coefficient of variation (*CV*) and mean logarithmic deviation (*MLD*). The coefficient of variation (CV) is defined as (Firebough, 1999)

$$CV = \sqrt{\frac{1}{k}\sum_{i=1}^{k}(1-r_i)^2} \tag{1}$$

where *i* indexes the *k* population sub-groups and $r_i$ is the ratio of child mortality in population sub-group *i* to the child mortality in the population of all sub-groups combined. On the other hand, the mean logarithmic deviation (*MLD*) is defined as

$$MLD = \frac{1}{k}\sum_{i=1}^{k}\ln\left(\frac{\mu}{y_i}\right) \tag{2}$$

where μ is the child mortality for all population sub-groups combined and $y_i$ is the child mortality in population sub-group *i*.

Both *CV* and *MLD* have the important property that they are additively decomposable. In the present context, this means that the inequality in child mortality measured in terms of *CV* or in terms of *MLD* in the state can be decomposed into two additive components. One component reflects the inter-district inequality or disparity in child mortality and is commonly known as between-districts component while the second component reflects the within-district inequality or variation in child mortality. The second component is measured in terms of variation in child mortality across different population sub-groups within the same district. This decomposition is important from the policy and programme perspective as factors that are responsible for between-districts variation ot inequality in child mortality are essentially different from factors that are responsible for within-district, population sub-group, inequality in child mortality. Moreover, the change in the between-districts inequality in child mortality over time may be different from the change in the within-district inequality in child mortality which also has policy and programme implications.

In the present paper, we use all the three measures of inequality - differential (*D*), coefficient of variation (*CV*) and mean logarithmic deviation (*MLD*) to analyse the inequality in child mortality in the state. The change in *D*, *CV* and *MLD* over time indicates whether inequality in child mortality in the state has increased or decreased. On the other hand, decomposition of *MLD* into between-districts and within-district components reflects the relative importance of the two components.

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# Child Mortality in Madhya Pradesh

Estimates of IMR and U5MR for 540 mutually exclusive population sub-groups in 2001 and 600 mutually exclusive population sub-groups in 2011 are presented in appendix tables 1 and 2 respectively. These tables reveal that child mortality varies widely across the mutually exclusive population sub-groups reflecting the persistence of substantial inequalities in child mortality in the state. In 2001, both IMR and U5MR were the highest in male Scheduled Tribes children in rural areas of district Datia (0.162 and 0.270) but the lowest in female Scheduled Tribes children in urban areas of district Morena (0.032 and 0.040) across the 540 mutually exclusive population sub-groups. In 2011, on the other hand, both IMR and U5MR were the highest in female Scheduled Tribes children in rural areas of district Shivpuri (0.136 and 0.201 respectively) but the lowest in male other castes children living in urban areas of district Alirajpur (0.023 and 0.034) across the 600 mutually exclusive population sub-groups. The weighted average of the child mortality in the mutually exclusive population sub-groups suggests that IMR and U5MR in Madhya Pradesh was respectively 0.094 and 0.141 in 2001 which decreased to 0.067 and 0.101 respectively in 2011 (Table 1). An idea about the residence, social class and gender inequality in child mortality in the state can be made from the fact that both IMR and U5MR in 2001 in the state were the highest in female Scheduled Tribes children in the rural areas (0.116 and 0.181) but the lowest in male other castes children in the urban areas (0.067 and 0.095). On the other hand IMR and U5MR in 2011 in the state were the highest in male Scheduled Tribes children in the rural areas (0.091 and 0.133) but was the lowest in female other castes children in the urban areas (0.045 and 0.070).

Child mortality also varies widely across the districts of the state as may be seen from table 2. In 2001, child mortality is estimated to be the highest in district Katni with an IMR of 0.123 and an U5MR of 0.194 but the lowest in district Indore with an IMR of 0.056 and an U5MR of 0.076. In 2011, on the other hand, child mortality estimated to be the highest in district Singrauli with an IMR of 0.097 and an U5MR of 0.144 but the lowest in district Indore with an IMR of 0.044 and an U5MR of 0.067.

The decrease in child mortality between 2001 and 2011 has been different in different mutually exclusive population sub-groups at the state level as well as atthe district level. For the purpose of comparison, we have calculated IMR and U5MR for those 45 districts which existed at the time of 2001 population census. Interestingly, both IMR and U5MR did not decrease in all the 540 mutually exclusive population sub-groups. There are at least 34 population sub-groups where the IMR increased instead decreased during the period 2001-2011. Similarly, there are at least 53 population sub-groups where the U5MR increased instead decreased between 2001 and 2011. The increase in both IMR and CMR has been found to be the highest in male Scheduled Castes children living in the urban areas of district Dindori. However, both IMR and U5MR decreased during 2001-2011 in all the 45 districts of the state as they existed at the time of the 2001 population census. Similarly, at the state level, both IMR and U5MR decreased in all the 12 mutually exclusive population sub-groups during 2001-2011 according to the data available through 2001 and 2011 population censuses.

# Child Mortality Inequality in Madhya Pradesh

Table 3 presents estimates of three inequality measures - differential (*D*), coefficient of variation (*CV*) and mean logarithmic deviation (*MLD*) - for IMR and U5MR in Madhya Pradesh in 2001 and in 2011. In 2001, the highest IMR and U5MR across the 540 mutually exclusive population sub-groups was more than 5 time the lowest IMR and U5MR. In 2011, on the other hand, the highest IMR across the 600 mutually exclusive population sub-groups was also almost 5 times the lowest IMR whereas the highest U5MR was around 4.8 times the lowest U5MR in the state (Table 4). The coefficient of variation (*CV*) in IMR, however, increased from 0.263 in 2001 to 0.319 in 2011 indicating that the inequality in IMR across the 540 mutually exclusive population sub-groups of the state has increased over time. Similarly, the mean logarithmic deviation (*MLD*) in IMR also increased from 0.036 in 2001 to 0.051 in 2011 which again confirms the increase in inequality in IMR within the state, even though, IMR has decreased in the state and in all the constituent districts of the state.

The inequality in U5MR within the state, however, appears to have decreased between 2001 and 2011. The coefficient of variation (*CV*) decreased marginally from 0.313 in 2001 to 0.306 in 2011 where as the mean logarithmic deviation (*MLD*) decreased from 0.051 in 2011 to 0.467 in 2011. Since U5MR is determined by the mortality in the first year of life and the mortality during 1-4 years of life, an increase in inequality in IMR and a decrease in U5MR indicates that the within state inequality in mortality in children aged 1-4 years appears to have decreased in the state between 2001 and 2011.

The observed inequality in child mortality as measured by IMR and U5MR within the state is the result of the within district inequality in child mortality across the 12 mutually exclusive population sub-groups and the the inequality in child mortality across the districts of the state. In 2001, inter-district inequality in both IMR and U5MR was the highest in urban male Scheduled Tribes children but in 2011, this inequality was the highest in urban female Scheduled Tribes children. By contrast, the inter-district inequality in both IMR and U5MR was the lowest in the Other Castes female children living in the urban areas in both 2001 and in 2011. On the other hand, the inter-district inequality in IMR increased in all the 12 mutually exclusive population sub-groups whereas the inter-district inequality in U5MR decreased in 5 of the 12 mutually exclusive population sub-groups but increased in the remaining population sub-groups.

The within-district inequality in both IMR and U5MR across the 12 mutually exclusive population sub-groups, on the other hand, has been estimated to be the highest in district Datia but the lowest in district Dewas in the year 2001. In the year 2011, however, this inequality has been estimated to be the highest in district Alirajpur but the lowest in district Indore. Moreover, among the 45 districts that existed at the time of the 2001 population census, the inequality in IMR across the 12 mutually exclusive population sub-groups appears to have increased in 29 districts but decreased in 16 districts whereas the inequality in U5MR across the 12 mutually exclusive population sub-groups appears to have increased in 13 districts but decreased in 32 districts of the state.

## Decomposition of Child Inequality

The application of the technique of sub-group decomposition permits decomposing the observed inequality in child mortality in the state into two components - the within-district component and the between-districts component. The between-district component captures the inequality due to variation in the average values of child mortality across the districts while the within-district component captures the variation in child mortality across different population sub-groups within the same district. This decomposition can be done in two ways. One is the old age analysis of variance. The other is to use *MLD* which has the property that the overall child mortality can be decomposed into within-group and between-group components. It can be shown that the *MLD* of child mortality in the state can be decomposed as (Shorrocks and Wan, 2005)

$$MLD = \sum_{k=1}^{m} w_k \, MLD_k + \sum_{k=1}^{m} w_k \ln(c / c_k) = W + B$$

where $w_k$ denotes the proportion of life births in district $k$, $MLD_k$, denotes the mean logarithmic deviation in district $k$, $c$ denotes the child mortality in the state and $c_k$ denotes the child mortality in district $k$ measured in terms of either IMR or U5MR. Here $W$ is the weighted average of *MLD* across the 12 mutually exclusive population sub-groups in each district and is referred to as the within-district component of inequality. On the other hand $B$ is the between-districts component.

Results of the decomposition exercise are presented in table 5. In 2001,around 28 per cent of the inequality in IMR in the state is accounted by between-districts inequality in IMR whereas within-district inequality accounted for more than 72 per cent of the inequality in IMR in the state. When the number of districts are kept the same as in 2001, the between-districts inequality accounted for more than 37 per cent of the inequality in IMR in the state whereas the within-district inequality accounted for around 63 per cent of the inequality in IMR. It is also apparent from the table that the increase in inequality in IMR between 2001 and 2011 has been the result of the increase in both the between-districts and the within-district component of inequality, although the increase in the between-districts component has been faster. On the other hand, the between-districts component accounted for almost 28 per cent of the inequality in U5MR in 2001 but almost 38 per cent in 2011. Moreover, although the inequality in U5MR decreased in the state between 2001 and 2011, yet the between-districts component of inequality in U5MR increased whereas the within-district component decreased. Table 5 suggests that the inequality in IMR appears to have increased in the state between 2001 and 2011 because of the increase in both between-districts and within-district components where as the decrease in the inequality in U5MR has primarily been due to the decrease in the within-district component of the inequality in U5MR as the between-districts component of the inequality in U5MR has increased in the state between 2001 and 2011. In other words, the inter-district variation or inter-district inequality in child mortality appears to have become increasingly prominent in deciding the level of child inequality in the state whereas the importance of the within-district inequality in U5MR appears to have decreased over time.

## Discussions and Conclusions

In this paper, we have presented estimates of IMR and U5MR for 540 mutually exclusive population sub-groups on the basis of the data available through the 2001 population census and 600 mutually exclusive population sub-groups on the basis of the 2011 population census. The estimates of IMR and U5MR so obtained have been used to analyse inter-district, regional, social class and gender inequality in child mortality in the state as measured in terms of IMR and U5MR. The analysis suggests that inter-district, residence, social class and gender inequalities in child mortality in the state remain quite pervasive and there is evidence to suggest that the inequality in IMR in the state has increased over time whereas the inequality in U5MR has decreased. The analysis also suggests that there has definitely been an increase in both between districts and within-district inequality in IMR whereas between-districts inequality increased in U5MR but within-district inequality in U5MR has decreased. At the same time, the analysis reveals that there are a number of mutually exclusive population sub-groups in the state where child mortality either measured in terms of IMR or in terms of U5MR has increased instead decreased over time despite all efforts to secure the life of children, especially, of infants. It may be emphasised here that reducing the inequalities in child mortality may go a long way in hastening the pace of reduction in both IMR and U5MR in the state. The evidence available from the present analysis, however, indicates that the state experience towards reducing regional, residence, social class and gender inequalities in child mortality has not been according to expectations. There is a need of reinvigorating child survival efforts following a decentralised district-based approach of preventing deaths of infants and young children.

Reasons for the regional, residence, social class and gender inequalities in child mortality in the state which appear to have persisted over time are not known at present. This is an area of further research, especially in the context of the targets set under the 2030 Sustainable Development Agenda of the United Nations which emphasises reducing U5MR to at least 0.025 by the year 2030 and reduction of inequalities of all forms within and among countries (United Nations Sustainable Development Solutions Network, 2015) and the National Health Policy 2017 which aims at reducing the U5MR to 0.023 by the year 2025 and the IMR to 0.028 by the year 2019 (Government of India, 2017). Reduction in regional, residence, social class and gender inequalities in child mortality are essential to achieve these targets and goals. It appears that the state requires a child survival policy of its own. Such a policy is currently missing in the state.

The observed inequalities in child mortality in the state also reflect the varation in the administrative capacity and organisational efficiency of child survival efforts across the districts of the state. Very little is however known at present about the efficiency and effectiveness of child survival interventions and programmes directed towards preventing pre-mature child deaths. If the present analysis is any evidence then it obvious that there is substantial scope of improving the administrative capacity and organisation efficiency of child survival efforts in the state. A beginning to this direction can be made by formulating and adopting a child survival policy specific to the state.

References

Bourguignon F (1979) Decomposable income inequality measures. *Econometrica* 47(4):901-920.

Chaurasia AR (2011) Social class and residential disparities in human development in Madhya Pradesh. *Indian Journal of Human Development* 7(2):275-299.

Chaurasia AR (2017) Progress towards child survival in India, 1971-2015. Bhopal, MLC Foundation and 'Shyam' Institute.

Cowell FA, Jenkins SP (1995) How much inequality can we explain? A methodology and an application to the United States. *Economic Journal* 105(429):421-430.

Daly T, Regan C, Regan C (2016) *80-20 Development in an Unequal World*. 7th Edition. Oxford, New Internationalist.

Firebough G (1999) Empirics of world income inequality. *American Journal of Sociology* 104(6):1597-1631.

Foster JE, Shneyerov AA (2000) Path independent inequality measures. *Journal of Economic Theory* 91(2):199-222.

Government of India (2015) *Sample Registration System Statistical Report 2015*. New Delhi, Ministry of Home Affairs, Office of the Registrar General and Census Commissioner.

Government of India (2017) *National Health Policy 2017*. New Delhi, Ministry of Health and Family Welfare.

International Institute for Population Sciences, ICF (2017) *National Family Health Survey (NFHS-4), India, 2015-16: Madhya Pradesh*. Mumbai, International Institute for Population Sciences.

Moultrie T, Dorrington R, Hill R, Hill K, Timæmus, Zaba B (2013) *Tools for Demographic Estimation*. Paris, International Institute for Population Sciences.

Rey SJ, Montouri BD (1999) US regional income convergence: a spatial econometric perspective. *Regional Studies,* 33, 143-156.

Shorrocks AF (1980) The class of additively decomposable inequality measures. *Econometrica* 48(3):613-625.

Shorrocks AF (1984) Inequality decomposition by population sub-groups. *Econometrica* 52(6):1369-85.

Shorrocks AF (1988) Aggregation issues in inequality measurement. In W Eichhorn (Ed) *Measurement in Economics*:429-451. New York, Physica-Verlag.

Shorrocks AF, Wan G (2005) Spatial decomposition of inequality. *Journal of Economic Geography* 5(1):59-81.

Theil TH (1967) *Economics and Information Theory*. Amsterdam, North Holland Publishing Company.

Theil TH (1972) *Statistical Decomposition Analysis*. Amsterdam, North Holland Publishing Company.

United Nations (1983) *Manual X. Indirect Techniques of Demographic Estimation.* New York, United Nations. Department of International Economic and Social Affairs.

United Nations (2015) *Transforming Our World. The 2030 Sustainable Development Agenda*. New York, United Nations.

United Nations Sustainable Development Solutions Network (2015) *Indicators and Monitoring Framework for Sustainable Development Goals. Launching the Data Revolution for SDGs.* New York, United Nations Sustainable Development Solutions Network.

Table 1
Estimates of IMR and U5MR in Madhya Pradesh and in 12 mutually exclusive
population sub-groups, 2001 and 2011

| Population sub-group | | | IMR | | U5MR | | Decrease in | |
|---|---|---|---|---|---|---|---|---|
| | | | 2001 | 2011 | 2001 | 2011 | IMR | U5MR |
| Madhya Pradesh | | | 0.094 | 0.068 | 0.141 | 0.101 | 0.026 | 0.040 |
| Rural | SC | Female | 0.112 | 0.074 | 0.175 | 0.113 | 0.038 | 0.062 |
| | | Male | 0.106 | 0.075 | 0.162 | 0.110 | 0.031 | 0.052 |
| | ST | Female | 0.116 | 0.087 | 0.181 | 0.132 | 0.029 | 0.049 |
| | | Male | 0.115 | 0.091 | 0.180 | 0.133 | 0.024 | 0.047 |
| | OT | Female | 0.093 | 0.059 | 0.139 | 0.092 | 0.034 | 0.047 |
| | | Male | 0.087 | 0.062 | 0.129 | 0.092 | 0.025 | 0.037 |
| Urban | SC | Female | 0.079 | 0.057 | 0.115 | 0.088 | 0.022 | 0.027 |
| | | Male | 0.079 | 0.062 | 0.115 | 0.092 | 0.017 | 0.023 |
| | ST | Female | 0.091 | 0.067 | 0.136 | 0.102 | 0.024 | 0.034 |
| | | Male | 0.090 | 0.069 | 0.136 | 0.101 | 0.021 | 0.035 |
| | OT | Female | 0.069 | 0.045 | 0.098 | 0.070 | 0.024 | 0.028 |
| | | Male | 0.067 | 0.050 | 0.095 | 0.074 | 0.017 | 0.021 |

Source: Author's calculations based on 2001 and 2011 population census data.

Table 2
IMR and U5MR in districts of Madhya Pradesh, 2001 and 2011

| District | IMR | | U5MR | | Decrease in | |
|---|---|---|---|---|---|---|
| | 2001 | 2011 | 2001 | 2011 | IMR | U5MR |
| Balaghat | 0.092 | 0.067 | 0.138 | 0.101 | 0.026 | 0.039 |
| Barwani | 0.099 | 0.069 | 0.150 | 0.104 | 0.032 | 0.048 |
| Betul | 0.091 | 0.077 | 0.137 | 0.115 | 0.015 | 0.022 |
| Bhind | 0.075 | 0.052 | 0.108 | 0.080 | 0.024 | 0.030 |
| Bhopal | 0.071 | 0.049 | 0.101 | 0.074 | 0.023 | 0.027 |
| Chhatarpur | 0.100 | 0.076 | 0.153 | 0.114 | 0.025 | 0.039 |
| Chhindwara | 0.088 | 0.067 | 0.131 | 0.101 | 0.023 | 0.031 |
| Damoh | 0.105 | 0.071 | 0.162 | 0.107 | 0.035 | 0.055 |
| Datia | 0.102 | 0.073 | 0.156 | 0.110 | 0.029 | 0.046 |
| Dewas | 0.096 | 0.051 | 0.145 | 0.078 | 0.045 | 0.067 |
| Dhar | 0.082 | 0.050 | 0.120 | 0.075 | 0.032 | 0.043 |
| Dindori | 0.104 | 0.077 | 0.159 | 0.116 | 0.027 | 0.043 |
| East Nimar | 0.094 | 0.090 | 0.141 | 0.134 | 0.004 | 0.007 |
| Guna | 0.110 | 0.069 | 0.170 | 0.104 | 0.042 | 0.068 |
| Gwalior | 0.071 | 0.061 | 0.101 | 0.093 | 0.010 | 0.009 |
| Harda | 0.107 | 0.076 | 0.166 | 0.113 | 0.034 | 0.055 |
| Hoshangabad | 0.107 | 0.064 | 0.165 | 0.097 | 0.044 | 0.070 |
| Indore | 0.056 | 0.044 | 0.076 | 0.067 | 0.012 | 0.009 |
| Jabalpur | 0.085 | 0.069 | 0.126 | 0.103 | 0.018 | 0.024 |
| Jhabua | 0.101 | 0.099 | 0.154 | 0.147 | 0.018 | 0.028 |
| Katni | 0.123 | 0.092 | 0.194 | 0.137 | 0.033 | 0.061 |
| Mandla | 0.107 | 0.068 | 0.165 | 0.102 | 0.040 | 0.063 |
| Mandsaur | 0.083 | 0.054 | 0.121 | 0.082 | 0.030 | 0.040 |
| Morena | 0.092 | 0.057 | 0.138 | 0.086 | 0.037 | 0.052 |
| Narsimhapur | 0.086 | 0.067 | 0.128 | 0.101 | 0.019 | 0.026 |
| Neemuch | 0.080 | 0.056 | 0.116 | 0.085 | 0.024 | 0.032 |
| Panna | 0.118 | 0.091 | 0.186 | 0.135 | 0.029 | 0.052 |
| Raisen | 0.087 | 0.066 | 0.130 | 0.100 | 0.021 | 0.029 |
| Rajgarh | 0.095 | 0.065 | 0.144 | 0.098 | 0.032 | 0.046 |
| Ratlam | 0.101 | 0.062 | 0.153 | 0.094 | 0.040 | 0.060 |
| Rewa | 0.097 | 0.066 | 0.146 | 0.100 | 0.033 | 0.049 |
| Sagar | 0.098 | 0.071 | 0.149 | 0.107 | 0.028 | 0.042 |
| Satna | 0.111 | 0.083 | 0.173 | 0.124 | 0.030 | 0.050 |
| Sehore | 0.092 | 0.067 | 0.139 | 0.101 | 0.026 | 0.037 |
| Seoni | 0.083 | 0.058 | 0.122 | 0.088 | 0.026 | 0.034 |
| Shahdol | 0.101 | 0.088 | 0.154 | 0.130 | 0.021 | 0.033 |
| Shajapur | 0.082 | 0.056 | 0.119 | 0.084 | 0.026 | 0.034 |
| Sheopur | 0.101 | 0.089 | 0.153 | 0.133 | 0.014 | 0.025 |
| Shivpuri | 0.105 | 0.081 | 0.163 | 0.121 | 0.027 | 0.043 |
| Sidhi | 0.109 | 0.086 | 0.169 | 0.129 | 0.024 | 0.041 |
| Tikamgarh | 0.099 | 0.069 | 0.149 | 0.104 | 0.030 | 0.045 |
| Ujjain | 0.086 | 0.050 | 0.126 | 0.077 | 0.035 | 0.049 |

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| District | IMR | | U5MR | | Decrease in | |
|---|---|---|---|---|---|---|
| | 2001 | 2011 | 2001 | 2011 | IMR | U5MR |
| Umaria | 0.109 | 0.091 | 0.168 | 0.135 | 0.019 | 0.034 |
| Vidisha | 0.112 | 0.072 | 0.174 | 0.108 | 0.041 | 0.067 |
| West Nimar | 0.082 | 0.053 | 0.121 | 0.081 | 0.030 | 0.040 |
| Alirajpur | na | 0.082 | na | 0.122 | na | na |
| Anuppur | na | 0.082 | na | 0.122 | na | na |
| Ashoknagar | na | 0.075 | na | 0.113 | na | na |
| Burhanpur | na | 0.049 | na | 0.074 | na | na |
| Guna | na | 0.064 | na | 0.097 | na | na |
| Jhabua | na | 0.076 | na | 0.113 | na | na |
| Khandwa | na | 0.062 | na | 0.094 | na | na |
| Shahdol | na | 0.090 | na | 0.133 | na | na |
| Sidhi | na | 0.086 | na | 0.129 | na | na |
| Singrauli | na | 0.097 | na | 0.144 | na | na |

Source:     Author's calculations

Remarks:   East Nimar includes district Khandwa and district Burhanpur of the 2011 population census

Guna (old) includes district Guna and district Ashoknagar of the 2011 population census

Jhabua (old) includes district Jhabua and district Alirajpur of the 2011 population census

Shahdol (old) includes district Shahdol and district Anuppur of the 2011 population census

Sidhi (old) includes district Sidhi and district Singrauli of the 2011 population census

Table 3
Inter-district inequality (*CV*) in child mortality in Madhya Pradesh and in 12
mutually exclusive population sub-groups, 2001 and 2011

| Population sub-group | | | IMR | | U5MR | |
|---|---|---|---|---|---|---|
| | | | 2001 | 2011 | 2001 | 2011 |
| All | | | 0.182 | 0.190 | 0.219 | 0.182 |
| Rural | Scheduled Castes | Male | 0.145 | 0.201 | 0.174 | 0.193 |
| | | Female | 0.151 | 0.202 | 0.179 | 0.194 |
| | Scheduled Tribes | Male | 0.180 | 0.216 | 0.213 | 0.206 |
| | | Female | 0.170 | 0.245 | 0.203 | 0.232 |
| | Other Castes | Male | 0.145 | 0.194 | 0.172 | 0.188 |
| | | Female | 0.148 | 0.176 | 0.176 | 0.170 |
| Urban | Scheduled Castes | Male | 0.190 | 0.258 | 0.226 | 0.248 |
| | | Female | 0.219 | 0.281 | 0.257 | 0.272 |
| | Scheduled Tribes | Male | 0.290 | 0.298 | 0.350 | 0.287 |
| | | Female | 0.268 | 0.382 | 0.317 | 0.367 |
| | Other Castes | Male | 0.163 | 0.186 | 0.192 | 0.181 |
| | | Female | 0.161 | 0.172 | 0.190 | 0.167 |
| N | | | 45 | 50 | 45 | 50 |

Source:        Author's calculations

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Table 4
Child mortality inequality (*CV*) across 12 mutually exclusive population sub-groups
in districts of Madhya Pradesh

| District | IMR | | U5MR | |
|---|---|---|---|---|
| | 2001 | 2011 | 2001 | 2011 |
| Balaghat | 0.285 | 0.227 | 0.337 | 0.211 |
| Barwani | 0.231 | 0.225 | 0.272 | 0.214 |
| Betul | 0.179 | 0.210 | 0.217 | 0.197 |
| Bhind | 0.278 | 0.265 | 0.326 | 0.265 |
| Bhopal | 0.210 | 0.266 | 0.251 | 0.257 |
| Chhatarpur | 0.240 | 0.218 | 0.286 | 0.211 |
| Chhindwara | 0.216 | 0.245 | 0.254 | 0.231 |
| Damoh | 0.203 | 0.200 | 0.244 | 0.197 |
| Datia | 0.321 | 0.192 | 0.386 | 0.183 |
| Dewas | 0.135 | 0.210 | 0.163 | 0.206 |
| Dhar | 0.190 | 0.154 | 0.226 | 0.149 |
| Dindori | 0.227 | 0.312 | 0.266 | 0.291 |
| East Nimar | 0.199 | 0.214 | 0.235 | 0.202 |
| Guna | 0.184 | 0.238 | 0.221 | 0.232 |
| Gwalior | 0.249 | 0.271 | 0.300 | 0.261 |
| Harda | 0.271 | 0.289 | 0.326 | 0.277 |
| Hoshangabad | 0.175 | 0.270 | 0.211 | 0.260 |
| Indore | 0.148 | 0.110 | 0.175 | 0.099 |
| Jabalpur | 0.210 | 0.187 | 0.249 | 0.174 |
| Jhabua | 0.261 | 0.198 | 0.309 | 0.186 |
| Katni | 0.235 | 0.228 | 0.278 | 0.212 |
| Mandla | 0.229 | 0.278 | 0.267 | 0.263 |
| Mandsaur | 0.216 | 0.281 | 0.260 | 0.269 |
| Morena | 0.293 | 0.293 | 0.339 | 0.291 |
| Narsimhapur | 0.191 | 0.213 | 0.230 | 0.199 |
| Neemuch | 0.242 | 0.284 | 0.284 | 0.270 |
| Panna | 0.247 | 0.272 | 0.294 | 0.264 |
| Raisen | 0.166 | 0.202 | 0.200 | 0.193 |
| Rajgarh | 0.217 | 0.167 | 0.257 | 0.158 |
| Ratlam | 0.153 | 0.223 | 0.182 | 0.217 |
| Rewa | 0.256 | 0.260 | 0.305 | 0.251 |
| Sagar | 0.221 | 0.239 | 0.263 | 0.231 |
| Satna | 0.177 | 0.278 | 0.212 | 0.264 |
| Sehore | 0.234 | 0.206 | 0.274 | 0.195 |
| Seoni | 0.257 | 0.183 | 0.302 | 0.167 |
| Shahdol | 0.227 | 0.248 | 0.268 | 0.236 |
| Shajapur | 0.179 | 0.202 | 0.214 | 0.196 |
| Sheopur | 0.216 | 0.285 | 0.256 | 0.274 |
| Shivpuri | 0.249 | 0.335 | 0.298 | 0.322 |
| Sidhi | 0.142 | 0.215 | 0.168 | 0.202 |
| Tikamgarh | 0.219 | 0.258 | 0.265 | 0.251 |

| District | IMR | | U5MR | |
|---|---|---|---|---|
| | 2001 | 2011 | 2001 | 2011 |
| Ujjain | 0.152 | 0.210 | 0.181 | 0.200 |
| Umaria | 0.220 | 0.202 | 0.262 | 0.193 |
| Vidisha | 0.202 | 0.296 | 0.241 | 0.285 |
| West Nimar | 0.252 | 0.200 | 0.298 | 0.190 |
| Alirajpur | na | 0.404 | na | 0.390 |
| Anuppur | na | 0.163 | na | 0.148 |
| Ashoknagar | na | 0.273 | na | 0.261 |
| Burhanpur | na | 0.236 | na | 0.226 |
| Guna | na | 0.234 | na | 0.230 |
| Jhabua | na | 0.285 | na | 0.270 |
| Khandwa | na | 0.240 | na | 0.232 |
| Shahdol | na | 0.275 | na | 0.262 |
| Sidhi | na | 0.247 | na | 0.236 |
| Singrauli | na | 0.200 | na | 0.188 |

Source: Author's calculations

Remarks: East Nimar includes district Khandwa and district Burhanpur of the 2011 population census

Guna (old) includes district Guna and district Ashoknagar of the 2011 population census

Jhabua (old) includes district Jhabua and district Alirajpur of the 2011 population census

Shahdol (old) includes district Shahdol and district Anuppur of the 2011 population census

Sidhi (old) includes district Sidhi and district Singrauli of the 2011 population census

Table 5
Inequality in child mortality in Madhya Pradesh

| Inequality measure | IMR | | U5MR | |
|---|---|---|---|---|
| | 2001 | 2011 | 2001 | 2011 |
| Differential (*D*) | 5.06 | 4.95 | 6.75 | 4.84 |
| Coefficient of variation (*CV*) | 0.263 | 0.308 | 0.315 | 0.295 |
| Mean logarithmic deviation (*MLD*) | 0.036 | 0.047 | 0.051 | 0.043 |
| Between district component of *MLD* | 0.010 | 0.018 | 0.014 | 0.016 |
| Within-district component of *MLD* | 0.026 | 0.030 | 0.037 | 0.027 |
| Number of districts | 540 | 540 | 540 | 540 |
| Differential (*D*) | | 0.319 | | 0.306 |
| Coefficient of variation (*CV*) | | 4.95 | | 4.84 |
| Mean logarithmic deviation (*MLD*) | | 0.051 | | 0.467 |
| Between district component of *MLD* | | 0.020 | | 0.018 |
| Within-district component of *MLD* | | 0.031 | | 0.028 |
| Number of districts | | 600 | | 600 |

Source:     Author's calculations
Remarks:    Estimates of inequalities indexes for 2011 have been prepared in two ways. In the first case, total number of districts have been kept the same as they existed in 2001 whereas in the second case, the number of districts are as they existed in 2011.

Appendix Table 1
Estimates of IMR and U5MR for 540 mutually exclusive population sub-groups in Madhya Pradesh as they existed in 2001

| District | Population sub-group | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Rural | | | | | | Urban | | | | | |
| | Scheduled Castes | | Scheduled Tribes | | Other Castes | | Scheduled Castes | | Scheduled Tribes | | Other Castes | |
| | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female |
| | IMR | | | | | | | | | | | |
| Balaghat | 0.108 | 0.091 | 0.111 | 0.110 | 0.093 | 0.091 | 0.062 | 0.049 | 0.067 | 0.063 | 0.056 | 0.052 |
| Barwani | 0.093 | 0.097 | 0.107 | 0.105 | 0.088 | 0.094 | 0.064 | 0.049 | 0.056 | 0.080 | 0.064 | 0.072 |
| Betul | 0.090 | 0.093 | 0.110 | 0.110 | 0.072 | 0.075 | 0.097 | 0.095 | 0.124 | 0.097 | 0.069 | 0.074 |
| Bhind | 0.080 | 0.104 | 0.046 | 0.099 | 0.065 | 0.086 | 0.075 | 0.087 | 0.043 | 0.109 | 0.051 | 0.071 |
| Bhopal | 0.105 | 0.115 | 0.094 | 0.094 | 0.082 | 0.088 | 0.071 | 0.067 | 0.064 | 0.066 | 0.066 | 0.063 |
| Chhatarpur | 0.118 | 0.128 | 0.124 | 0.128 | 0.099 | 0.104 | 0.076 | 0.092 | 0.070 | 0.102 | 0.062 | 0.066 |
| Chhindwara | 0.085 | 0.097 | 0.107 | 0.105 | 0.083 | 0.088 | 0.068 | 0.057 | 0.086 | 0.065 | 0.057 | 0.061 |
| Damoh | 0.128 | 0.129 | 0.129 | 0.123 | 0.097 | 0.103 | 0.097 | 0.093 | 0.071 | 0.102 | 0.075 | 0.075 |
| Datia | 0.116 | 0.131 | 0.162 | 0.155 | 0.093 | 0.110 | 0.068 | 0.090 | 0.067 | 0.080 | 0.074 | 0.067 |
| Dewas | 0.101 | 0.114 | 0.118 | 0.115 | 0.088 | 0.092 | 0.078 | 0.106 | 0.091 | 0.104 | 0.082 | 0.084 |
| Dhar | 0.092 | 0.095 | 0.090 | 0.092 | 0.071 | 0.069 | 0.055 | 0.065 | 0.063 | 0.068 | 0.064 | 0.058 |
| Dindori | 0.111 | 0.113 | 0.110 | 0.104 | 0.099 | 0.095 | 0.052 | 0.057 | 0.093 | 0.131 | 0.089 | 0.087 |
| East Nimar | 0.099 | 0.103 | 0.114 | 0.113 | 0.086 | 0.089 | 0.083 | 0.055 | 0.090 | 0.080 | 0.066 | 0.070 |
| Guna | 0.123 | 0.135 | 0.132 | 0.137 | 0.102 | 0.111 | 0.099 | 0.100 | 0.082 | 0.118 | 0.077 | 0.086 |
| Gwalior | 0.083 | 0.103 | 0.123 | 0.120 | 0.066 | 0.085 | 0.067 | 0.077 | 0.075 | 0.086 | 0.055 | 0.063 |
| Harda | 0.099 | 0.124 | 0.143 | 0.129 | 0.094 | 0.107 | 0.063 | 0.070 | 0.082 | 0.085 | 0.067 | 0.069 |
| Hoshangabad | 0.124 | 0.138 | 0.124 | 0.119 | 0.099 | 0.111 | 0.094 | 0.097 | 0.134 | 0.076 | 0.088 | 0.092 |
| Indore | 0.068 | 0.064 | 0.078 | 0.072 | 0.053 | 0.056 | 0.056 | 0.055 | 0.073 | 0.071 | 0.052 | 0.051 |
| Jabalpur | 0.113 | 0.115 | 0.115 | 0.118 | 0.096 | 0.095 | 0.077 | 0.080 | 0.094 | 0.091 | 0.059 | 0.062 |

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| District | Population sub-group | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Rural | | | | | | Urban | | | | | |
| | Scheduled Castes | | Scheduled Tribes | | Other Castes | | Scheduled Castes | | Scheduled Tribes | | Other Castes | |
| | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female |
| Jhabua | 0.102 | 0.094 | 0.107 | 0.105 | 0.065 | 0.065 | 0.060 | 0.068 | 0.075 | 0.079 | 0.044 | 0.056 |
| Katni | 0.138 | 0.136 | 0.147 | 0.136 | 0.121 | 0.128 | 0.079 | 0.080 | 0.108 | 0.110 | 0.075 | 0.076 |
| Mandla | 0.092 | 0.108 | 0.115 | 0.115 | 0.100 | 0.100 | 0.064 | 0.044 | 0.111 | 0.098 | 0.081 | 0.075 |
| Mandsaur | 0.099 | 0.095 | 0.095 | 0.101 | 0.081 | 0.081 | 0.082 | 0.070 | 0.120 | 0.134 | 0.067 | 0.069 |
| Morena | 0.091 | 0.125 | 0.121 | 0.133 | 0.080 | 0.105 | 0.083 | 0.097 | 0.069 | 0.032 | 0.076 | 0.081 |
| Narsimhapur | 0.098 | 0.100 | 0.102 | 0.109 | 0.081 | 0.084 | 0.066 | 0.072 | 0.075 | 0.059 | 0.070 | 0.069 |
| Neemuch | 0.092 | 0.102 | 0.111 | 0.105 | 0.081 | 0.083 | 0.072 | 0.053 | 0.100 | 0.077 | 0.054 | 0.054 |
| Panna | 0.131 | 0.139 | 0.151 | 0.148 | 0.109 | 0.113 | 0.098 | 0.097 | 0.081 | 0.102 | 0.069 | 0.072 |
| Raisen | 0.107 | 0.115 | 0.108 | 0.100 | 0.081 | 0.080 | 0.085 | 0.098 | 0.095 | 0.084 | 0.068 | 0.066 |
| Rajgarh | 0.114 | 0.124 | 0.113 | 0.107 | 0.094 | 0.097 | 0.087 | 0.097 | 0.073 | 0.067 | 0.068 | 0.061 |
| Ratlam | 0.122 | 0.113 | 0.111 | 0.113 | 0.100 | 0.099 | 0.085 | 0.084 | 0.078 | 0.105 | 0.081 | 0.079 |
| Rewa | 0.106 | 0.121 | 0.133 | 0.138 | 0.085 | 0.090 | 0.084 | 0.093 | 0.136 | 0.146 | 0.066 | 0.069 |
| Sagar | 0.124 | 0.131 | 0.123 | 0.127 | 0.092 | 0.096 | 0.106 | 0.087 | 0.114 | 0.077 | 0.064 | 0.070 |
| Satna | 0.125 | 0.136 | 0.146 | 0.145 | 0.099 | 0.105 | 0.101 | 0.102 | 0.111 | 0.116 | 0.083 | 0.089 |
| Sehore | 0.112 | 0.117 | 0.111 | 0.112 | 0.085 | 0.093 | 0.077 | 0.087 | 0.068 | 0.112 | 0.058 | 0.057 |
| Seoni | 0.083 | 0.074 | 0.092 | 0.090 | 0.084 | 0.083 | 0.046 | 0.055 | 0.068 | 0.046 | 0.052 | 0.046 |
| Shahdol | 0.100 | 0.118 | 0.117 | 0.114 | 0.101 | 0.104 | 0.072 | 0.065 | 0.077 | 0.089 | 0.064 | 0.063 |
| Shajapur | 0.101 | 0.108 | 0.093 | 0.083 | 0.077 | 0.080 | 0.076 | 0.081 | 0.066 | 0.072 | 0.059 | 0.062 |
| Sheopur | 0.100 | 0.120 | 0.130 | 0.132 | 0.087 | 0.096 | 0.098 | 0.085 | 0.120 | 0.104 | 0.058 | 0.073 |
| Shivpuri | 0.110 | 0.126 | 0.148 | 0.153 | 0.090 | 0.105 | 0.088 | 0.078 | 0.146 | 0.121 | 0.075 | 0.080 |
| Sidhi | 0.121 | 0.114 | 0.130 | 0.130 | 0.098 | 0.101 | 0.094 | 0.100 | 0.116 | 0.112 | 0.086 | 0.083 |
| Tikamgarh | 0.103 | 0.117 | 0.125 | 0.145 | 0.091 | 0.105 | 0.074 | 0.088 | 0.128 | 0.126 | 0.075 | 0.076 |

| District | Population sub-group | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Rural | | | | | | Urban | | | | | |
| | Scheduled Castes | | Scheduled Tribes | | Other Castes | | Scheduled Castes | | Scheduled Tribes | | Other Castes | |
| | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female |
| Ujjain | 0.105 | 0.105 | 0.101 | 0.082 | 0.086 | 0.085 | 0.082 | 0.083 | 0.064 | 0.074 | 0.073 | 0.071 |
| Umaria | 0.106 | 0.116 | 0.125 | 0.123 | 0.103 | 0.104 | 0.073 | 0.076 | 0.085 | 0.090 | 0.067 | 0.063 |
| Vidisha | 0.138 | 0.143 | 0.139 | 0.147 | 0.103 | 0.112 | 0.110 | 0.096 | 0.161 | 0.131 | 0.087 | 0.084 |
| West Nimar | 0.111 | 0.092 | 0.091 | 0.089 | 0.080 | 0.076 | 0.067 | 0.054 | 0.076 | 0.063 | 0.050 | 0.045 |
| U5MR | | | | | | | | | | | | |
| Balaghat | 0.167 | 0.136 | 0.171 | 0.170 | 0.139 | 0.136 | 0.085 | 0.065 | 0.094 | 0.087 | 0.076 | 0.070 |
| Barwani | 0.139 | 0.146 | 0.164 | 0.160 | 0.130 | 0.143 | 0.089 | 0.065 | 0.076 | 0.116 | 0.089 | 0.102 |
| Betul | 0.134 | 0.138 | 0.171 | 0.171 | 0.103 | 0.107 | 0.147 | 0.142 | 0.197 | 0.146 | 0.097 | 0.105 |
| Bhind | 0.116 | 0.159 | 0.060 | 0.150 | 0.090 | 0.126 | 0.107 | 0.129 | 0.056 | 0.168 | 0.068 | 0.101 |
| Bhopal | 0.160 | 0.179 | 0.140 | 0.141 | 0.120 | 0.130 | 0.101 | 0.094 | 0.089 | 0.092 | 0.092 | 0.087 |
| Chhatarpur | 0.185 | 0.204 | 0.197 | 0.205 | 0.149 | 0.159 | 0.109 | 0.137 | 0.099 | 0.155 | 0.085 | 0.092 |
| Chhindwara | 0.124 | 0.146 | 0.164 | 0.160 | 0.121 | 0.130 | 0.095 | 0.078 | 0.126 | 0.091 | 0.078 | 0.084 |
| Damoh | 0.205 | 0.207 | 0.207 | 0.195 | 0.146 | 0.157 | 0.147 | 0.139 | 0.101 | 0.155 | 0.107 | 0.107 |
| Datia | 0.181 | 0.210 | 0.270 | 0.257 | 0.139 | 0.171 | 0.095 | 0.134 | 0.094 | 0.116 | 0.105 | 0.094 |
| Dewas | 0.154 | 0.178 | 0.185 | 0.180 | 0.130 | 0.137 | 0.113 | 0.163 | 0.136 | 0.159 | 0.120 | 0.122 |
| Dhar | 0.136 | 0.143 | 0.134 | 0.137 | 0.101 | 0.097 | 0.075 | 0.090 | 0.087 | 0.096 | 0.089 | 0.079 |
| Dindori | 0.171 | 0.175 | 0.170 | 0.159 | 0.149 | 0.142 | 0.070 | 0.076 | 0.139 | 0.210 | 0.132 | 0.128 |
| East Nimar | 0.149 | 0.157 | 0.177 | 0.175 | 0.126 | 0.132 | 0.121 | 0.075 | 0.134 | 0.116 | 0.092 | 0.099 |
| Guna | 0.195 | 0.217 | 0.212 | 0.222 | 0.156 | 0.172 | 0.149 | 0.152 | 0.120 | 0.185 | 0.110 | 0.126 |
| Gwalior | 0.122 | 0.157 | 0.194 | 0.189 | 0.092 | 0.125 | 0.094 | 0.110 | 0.107 | 0.126 | 0.075 | 0.087 |
| Harda | 0.149 | 0.197 | 0.233 | 0.206 | 0.141 | 0.164 | 0.087 | 0.099 | 0.120 | 0.125 | 0.094 | 0.097 |
| Hoshangabad | 0.197 | 0.223 | 0.197 | 0.187 | 0.149 | 0.171 | 0.141 | 0.146 | 0.216 | 0.109 | 0.130 | 0.137 |

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| District | Population sub-group | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Rural | | | | | | Urban | | | | | |
| | Scheduled Castes | | Scheduled Tribes | | Other Castes | | Scheduled Castes | | Scheduled Tribes | | Other Castes | |
| | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female |
| Indore | 0.095 | 0.089 | 0.112 | 0.103 | 0.071 | 0.076 | 0.076 | 0.075 | 0.105 | 0.101 | 0.070 | 0.068 |
| Jabalpur | 0.176 | 0.180 | 0.180 | 0.185 | 0.144 | 0.142 | 0.110 | 0.116 | 0.141 | 0.136 | 0.081 | 0.085 |
| Jhabua | 0.155 | 0.141 | 0.164 | 0.161 | 0.090 | 0.091 | 0.083 | 0.096 | 0.107 | 0.114 | 0.057 | 0.076 |
| Katni | 0.223 | 0.220 | 0.241 | 0.219 | 0.190 | 0.205 | 0.115 | 0.116 | 0.167 | 0.170 | 0.107 | 0.109 |
| Mandla | 0.136 | 0.167 | 0.179 | 0.180 | 0.151 | 0.151 | 0.088 | 0.057 | 0.172 | 0.148 | 0.118 | 0.107 |
| Mandsaur | 0.149 | 0.143 | 0.143 | 0.153 | 0.118 | 0.118 | 0.120 | 0.099 | 0.189 | 0.215 | 0.094 | 0.097 |
| Morena | 0.135 | 0.198 | 0.190 | 0.214 | 0.116 | 0.160 | 0.122 | 0.146 | 0.097 | 0.040 | 0.109 | 0.118 |
| Narsimhapur | 0.148 | 0.152 | 0.155 | 0.169 | 0.118 | 0.123 | 0.092 | 0.102 | 0.107 | 0.081 | 0.099 | 0.097 |
| Neemuch | 0.137 | 0.155 | 0.172 | 0.161 | 0.118 | 0.122 | 0.103 | 0.071 | 0.152 | 0.111 | 0.073 | 0.073 |
| Panna | 0.209 | 0.226 | 0.249 | 0.243 | 0.169 | 0.175 | 0.149 | 0.147 | 0.118 | 0.155 | 0.097 | 0.103 |
| Raisen | 0.164 | 0.180 | 0.167 | 0.151 | 0.118 | 0.116 | 0.124 | 0.148 | 0.142 | 0.122 | 0.095 | 0.092 |
| Rajgarh | 0.178 | 0.196 | 0.175 | 0.164 | 0.141 | 0.146 | 0.128 | 0.146 | 0.104 | 0.094 | 0.096 | 0.084 |
| Ratlam | 0.192 | 0.176 | 0.172 | 0.175 | 0.152 | 0.149 | 0.125 | 0.122 | 0.112 | 0.160 | 0.118 | 0.115 |
| Rewa | 0.163 | 0.190 | 0.214 | 0.223 | 0.124 | 0.134 | 0.123 | 0.139 | 0.220 | 0.238 | 0.092 | 0.097 |
| Sagar | 0.197 | 0.209 | 0.195 | 0.202 | 0.137 | 0.144 | 0.162 | 0.128 | 0.178 | 0.111 | 0.088 | 0.099 |
| Satna | 0.199 | 0.220 | 0.239 | 0.237 | 0.150 | 0.161 | 0.153 | 0.155 | 0.172 | 0.181 | 0.122 | 0.132 |
| Sehore | 0.173 | 0.183 | 0.172 | 0.173 | 0.125 | 0.139 | 0.111 | 0.128 | 0.096 | 0.173 | 0.079 | 0.078 |
| Seoni | 0.121 | 0.106 | 0.137 | 0.134 | 0.122 | 0.122 | 0.060 | 0.074 | 0.095 | 0.060 | 0.070 | 0.060 |
| Shahdol | 0.152 | 0.185 | 0.183 | 0.177 | 0.154 | 0.159 | 0.103 | 0.091 | 0.111 | 0.132 | 0.089 | 0.087 |
| Shajapur | 0.154 | 0.166 | 0.138 | 0.122 | 0.110 | 0.116 | 0.109 | 0.118 | 0.092 | 0.103 | 0.082 | 0.085 |
| Sheopur | 0.151 | 0.189 | 0.208 | 0.212 | 0.128 | 0.144 | 0.148 | 0.124 | 0.189 | 0.159 | 0.080 | 0.104 |
| Shivpuri | 0.171 | 0.200 | 0.243 | 0.252 | 0.134 | 0.161 | 0.130 | 0.112 | 0.238 | 0.190 | 0.107 | 0.116 |

| District | Population sub-group | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Rural | | | | | | Urban | | | | | |
| | Scheduled Castes | | Scheduled Tribes | | Other Castes | | Scheduled Castes | | Scheduled Tribes | | Other Castes | |
| | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female |
| Sidhi | 0.190 | 0.178 | 0.208 | 0.207 | 0.148 | 0.154 | 0.141 | 0.152 | 0.181 | 0.173 | 0.126 | 0.122 |
| Tikamgarh | 0.157 | 0.183 | 0.199 | 0.237 | 0.132 | 0.160 | 0.105 | 0.130 | 0.204 | 0.200 | 0.107 | 0.109 |
| Ujjain | 0.160 | 0.160 | 0.153 | 0.120 | 0.126 | 0.124 | 0.120 | 0.121 | 0.089 | 0.105 | 0.104 | 0.101 |
| Umaria | 0.162 | 0.181 | 0.198 | 0.195 | 0.157 | 0.159 | 0.104 | 0.109 | 0.124 | 0.134 | 0.094 | 0.087 |
| Vidisha | 0.223 | 0.233 | 0.225 | 0.242 | 0.157 | 0.174 | 0.170 | 0.145 | 0.269 | 0.210 | 0.128 | 0.123 |
| West Nimar | 0.172 | 0.137 | 0.136 | 0.132 | 0.116 | 0.109 | 0.094 | 0.073 | 0.109 | 0.087 | 0.067 | 0.059 |

Source:     Author's calculations

Appendix Table 2

Estimates of IMR and U5MR for 600 mutually exclusive population sub-groups in Madhya Pradesh as they existed in 2011

| District | Population sub-group | | | | | | | | | | | |
|----------|---------------------|---|---|---|---|---|---|---|---|---|---|---|
| | Rural | | | | | | Urban | | | | | |
| | Scheduled Castes | | Scheduled Tribes | | Other Castes | | Scheduled Castes | | Scheduled Tribes | | Other Castes | |
| | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female |
| | IMR | | | | | | | | | | | |
| Alirajpur | 0.077 | 0.070 | 0.092 | 0.080 | 0.054 | 0.056 | 0.031 | 0.034 | 0.050 | 0.037 | 0.023 | 0.035 |
| Anuppur | 0.093 | 0.088 | 0.095 | 0.082 | 0.087 | 0.069 | 0.079 | 0.072 | 0.090 | 0.068 | 0.063 | 0.053 |
| Ashoknagar | 0.090 | 0.088 | 0.117 | 0.122 | 0.064 | 0.067 | 0.074 | 0.063 | 0.070 | 0.087 | 0.053 | 0.054 |
| Balaghat | 0.081 | 0.066 | 0.087 | 0.073 | 0.072 | 0.058 | 0.058 | 0.050 | 0.058 | 0.039 | 0.058 | 0.042 |
| Barwani | 0.067 | 0.065 | 0.081 | 0.068 | 0.062 | 0.053 | 0.047 | 0.049 | 0.056 | 0.046 | 0.043 | 0.033 |
| Betul | 0.079 | 0.068 | 0.099 | 0.088 | 0.069 | 0.057 | 0.061 | 0.050 | 0.074 | 0.075 | 0.058 | 0.048 |
| Bhind | 0.053 | 0.064 | 0.078 | 0.092 | 0.045 | 0.056 | 0.053 | 0.066 | 0.029 | 0.059 | 0.046 | 0.056 |
| Bhopal | 0.074 | 0.083 | 0.081 | 0.076 | 0.062 | 0.055 | 0.050 | 0.042 | 0.044 | 0.045 | 0.044 | 0.043 |
| Burhanpur | 0.043 | 0.035 | 0.067 | 0.062 | 0.040 | 0.048 | 0.041 | 0.035 | 0.053 | 0.035 | 0.036 | 0.038 |
| Chhatarpur | 0.090 | 0.092 | 0.109 | 0.120 | 0.070 | 0.074 | 0.072 | 0.071 | 0.082 | 0.088 | 0.060 | 0.058 |
| Chhindwara | 0.069 | 0.063 | 0.091 | 0.078 | 0.065 | 0.055 | 0.054 | 0.042 | 0.057 | 0.054 | 0.043 | 0.040 |
| Damoh | 0.082 | 0.088 | 0.089 | 0.084 | 0.065 | 0.070 | 0.060 | 0.063 | 0.062 | 0.086 | 0.052 | 0.046 |
| Datia | 0.083 | 0.084 | 0.099 | 0.115 | 0.069 | 0.068 | 0.083 | 0.085 | 0.090 | 0.057 | 0.073 | 0.063 |
| Dewas | 0.062 | 0.062 | 0.067 | 0.072 | 0.045 | 0.045 | 0.045 | 0.046 | 0.051 | 0.052 | 0.039 | 0.036 |
| Dhar | 0.052 | 0.047 | 0.057 | 0.055 | 0.040 | 0.039 | 0.043 | 0.038 | 0.041 | 0.043 | 0.037 | 0.038 |
| Dindori | 0.108 | 0.095 | 0.084 | 0.073 | 0.074 | 0.069 | 0.119 | 0.031 | 0.104 | 0.067 | 0.062 | 0.049 |
| Guna | 0.066 | 0.077 | 0.088 | 0.092 | 0.057 | 0.061 | 0.048 | 0.061 | 0.075 | 0.086 | 0.049 | 0.045 |
| Gwalior | 0.069 | 0.073 | 0.109 | 0.112 | 0.052 | 0.063 | 0.067 | 0.058 | 0.073 | 0.097 | 0.062 | 0.052 |
| Harda | 0.071 | 0.080 | 0.097 | 0.103 | 0.065 | 0.064 | 0.046 | 0.045 | 0.083 | 0.055 | 0.053 | 0.042 |

| District | Population sub-group | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Rural | | | | | | Urban | | | | | |
| | Scheduled Castes | | Scheduled Tribes | | Other Castes | | Scheduled Castes | | Scheduled Tribes | | Other Castes | |
| | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female |
| Hoshangabad | 0.081 | 0.084 | 0.098 | 0.082 | 0.058 | 0.056 | 0.060 | 0.074 | 0.050 | 0.046 | 0.050 | 0.040 |
| Indore | 0.049 | 0.043 | 0.054 | 0.050 | 0.040 | 0.037 | 0.049 | 0.042 | 0.052 | 0.047 | 0.048 | 0.040 |
| Jabalpur | 0.089 | 0.078 | 0.101 | 0.088 | 0.072 | 0.060 | 0.075 | 0.064 | 0.088 | 0.086 | 0.064 | 0.050 |
| Jhabua | 0.043 | 0.046 | 0.083 | 0.076 | 0.053 | 0.049 | 0.063 | 0.032 | 0.048 | 0.041 | 0.051 | 0.035 |
| Katni | 0.096 | 0.088 | 0.124 | 0.114 | 0.089 | 0.079 | 0.079 | 0.079 | 0.114 | 0.085 | 0.068 | 0.049 |
| Khandwa | 0.059 | 0.062 | 0.079 | 0.079 | 0.054 | 0.053 | 0.048 | 0.044 | 0.056 | 0.044 | 0.042 | 0.034 |
| Mandla | 0.064 | 0.058 | 0.077 | 0.065 | 0.078 | 0.062 | 0.053 | 0.029 | 0.068 | 0.035 | 0.047 | 0.036 |
| Mandsaur | 0.072 | 0.066 | 0.080 | 0.066 | 0.057 | 0.049 | 0.046 | 0.048 | 0.052 | 0.029 | 0.037 | 0.035 |
| Morena | 0.055 | 0.078 | 0.090 | 0.094 | 0.048 | 0.063 | 0.056 | 0.066 | 0.027 | 0.065 | 0.044 | 0.052 |
| Narsimhapur | 0.077 | 0.071 | 0.091 | 0.081 | 0.071 | 0.059 | 0.060 | 0.055 | 0.075 | 0.048 | 0.050 | 0.044 |
| Neemuch | 0.071 | 0.061 | 0.101 | 0.084 | 0.055 | 0.051 | 0.054 | 0.045 | 0.068 | 0.073 | 0.046 | 0.036 |
| Panna | 0.101 | 0.108 | 0.123 | 0.116 | 0.081 | 0.077 | 0.080 | 0.087 | 0.085 | 0.113 | 0.051 | 0.041 |
| Raisen | 0.082 | 0.078 | 0.093 | 0.086 | 0.060 | 0.059 | 0.067 | 0.061 | 0.069 | 0.076 | 0.052 | 0.045 |
| Rajgarh | 0.078 | 0.079 | 0.081 | 0.067 | 0.064 | 0.063 | 0.061 | 0.058 | 0.057 | 0.050 | 0.053 | 0.050 |
| Ratlam | 0.077 | 0.071 | 0.080 | 0.077 | 0.060 | 0.052 | 0.047 | 0.053 | 0.057 | 0.067 | 0.045 | 0.037 |
| Rewa | 0.076 | 0.081 | 0.099 | 0.100 | 0.056 | 0.053 | 0.074 | 0.066 | 0.095 | 0.100 | 0.048 | 0.050 |
| Sagar | 0.089 | 0.091 | 0.102 | 0.092 | 0.064 | 0.062 | 0.071 | 0.070 | 0.093 | 0.123 | 0.061 | 0.057 |
| Satna | 0.093 | 0.094 | 0.124 | 0.121 | 0.074 | 0.075 | 0.085 | 0.069 | 0.116 | 0.099 | 0.050 | 0.049 |
| Sehore | 0.086 | 0.079 | 0.089 | 0.085 | 0.062 | 0.055 | 0.075 | 0.066 | 0.063 | 0.048 | 0.054 | 0.052 |
| Seoni | 0.064 | 0.060 | 0.065 | 0.057 | 0.061 | 0.054 | 0.062 | 0.038 | 0.066 | 0.040 | 0.051 | 0.038 |
| Shahdol | 0.094 | 0.089 | 0.113 | 0.096 | 0.088 | 0.080 | 0.066 | 0.049 | 0.074 | 0.076 | 0.046 | 0.043 |
| Shajapur | 0.067 | 0.071 | 0.063 | 0.064 | 0.055 | 0.052 | 0.063 | 0.055 | 0.043 | 0.036 | 0.041 | 0.042 |

| District | Population sub-group | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Rural | | | | | | Urban | | | | | |
| | Scheduled Castes | | Scheduled Tribes | | Other Castes | | Scheduled Castes | | Scheduled Tribes | | Other Castes | |
| | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female |
| Sheopur | 0.075 | 0.096 | 0.134 | 0.131 | 0.071 | 0.070 | 0.079 | 0.077 | 0.089 | 0.110 | 0.052 | 0.063 |
| Shivpuri | 0.082 | 0.086 | 0.132 | 0.136 | 0.069 | 0.073 | 0.060 | 0.073 | 0.093 | 0.110 | 0.045 | 0.050 |
| Sidhi | 0.093 | 0.089 | 0.116 | 0.114 | 0.071 | 0.071 | 0.086 | 0.091 | 0.096 | 0.072 | 0.050 | 0.049 |
| Singrauli | 0.107 | 0.093 | 0.118 | 0.112 | 0.089 | 0.085 | 0.097 | 0.086 | 0.111 | 0.093 | 0.067 | 0.051 |
| Tikamgarh | 0.069 | 0.080 | 0.095 | 0.107 | 0.066 | 0.070 | 0.048 | 0.067 | 0.070 | 0.042 | 0.058 | 0.052 |
| Ujjain | 0.064 | 0.066 | 0.061 | 0.056 | 0.052 | 0.049 | 0.049 | 0.043 | 0.063 | 0.032 | 0.039 | 0.039 |
| Umaria | 0.087 | 0.085 | 0.113 | 0.102 | 0.078 | 0.075 | 0.083 | 0.066 | 0.083 | 0.094 | 0.054 | 0.057 |
| Vidisha | 0.090 | 0.091 | 0.127 | 0.118 | 0.066 | 0.068 | 0.067 | 0.070 | 0.081 | 0.107 | 0.051 | 0.047 |
| West Nimar | 0.059 | 0.055 | 0.063 | 0.057 | 0.050 | 0.046 | 0.051 | 0.031 | 0.051 | 0.045 | 0.038 | 0.033 |
| U5MR | | | | | | | | | | | | |
| Alirajpur | 0.114 | 0.108 | 0.135 | 0.122 | 0.081 | 0.086 | 0.046 | 0.053 | 0.075 | 0.058 | 0.034 | 0.055 |
| Anuppur | 0.136 | 0.133 | 0.139 | 0.125 | 0.128 | 0.107 | 0.116 | 0.110 | 0.132 | 0.104 | 0.093 | 0.082 |
| Ashoknagar | 0.131 | 0.133 | 0.168 | 0.182 | 0.095 | 0.104 | 0.109 | 0.097 | 0.103 | 0.132 | 0.079 | 0.083 |
| Balaghat | 0.119 | 0.101 | 0.127 | 0.112 | 0.107 | 0.089 | 0.086 | 0.078 | 0.086 | 0.061 | 0.086 | 0.066 |
| Barwani | 0.099 | 0.099 | 0.118 | 0.105 | 0.092 | 0.083 | 0.070 | 0.076 | 0.083 | 0.072 | 0.064 | 0.053 |
| Betul | 0.117 | 0.105 | 0.144 | 0.133 | 0.101 | 0.088 | 0.091 | 0.077 | 0.109 | 0.114 | 0.087 | 0.075 |
| Bhind | 0.080 | 0.098 | 0.115 | 0.139 | 0.068 | 0.087 | 0.079 | 0.101 | 0.043 | 0.092 | 0.069 | 0.086 |
| Bhopal | 0.109 | 0.126 | 0.119 | 0.117 | 0.092 | 0.085 | 0.075 | 0.066 | 0.066 | 0.070 | 0.066 | 0.067 |
| Burhanpur | 0.065 | 0.054 | 0.099 | 0.096 | 0.059 | 0.074 | 0.062 | 0.055 | 0.079 | 0.055 | 0.054 | 0.059 |
| Chhatarpur | 0.132 | 0.140 | 0.158 | 0.179 | 0.104 | 0.113 | 0.107 | 0.108 | 0.120 | 0.134 | 0.089 | 0.090 |
| Chhindwara | 0.103 | 0.097 | 0.133 | 0.119 | 0.097 | 0.085 | 0.080 | 0.065 | 0.085 | 0.083 | 0.065 | 0.062 |
| Damoh | 0.120 | 0.134 | 0.130 | 0.128 | 0.096 | 0.108 | 0.090 | 0.097 | 0.092 | 0.131 | 0.077 | 0.072 |

| District | Population sub-group | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Rural | | | | | | Urban | | | | | |
| | Scheduled Castes | | Scheduled Tribes | | Other Castes | | Scheduled Castes | | Scheduled Tribes | | Other Castes | |
| | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female |
| Datia | 0.121 | 0.128 | 0.145 | 0.172 | 0.101 | 0.105 | 0.122 | 0.129 | 0.131 | 0.088 | 0.108 | 0.097 |
| Dewas | 0.091 | 0.096 | 0.099 | 0.110 | 0.067 | 0.070 | 0.067 | 0.071 | 0.077 | 0.080 | 0.059 | 0.056 |
| Dhar | 0.078 | 0.073 | 0.085 | 0.086 | 0.060 | 0.061 | 0.064 | 0.059 | 0.062 | 0.066 | 0.055 | 0.059 |
| Dindori | 0.157 | 0.144 | 0.123 | 0.112 | 0.109 | 0.106 | 0.171 | 0.049 | 0.151 | 0.103 | 0.092 | 0.077 |
| Guna | 0.098 | 0.118 | 0.129 | 0.140 | 0.084 | 0.095 | 0.071 | 0.094 | 0.110 | 0.131 | 0.074 | 0.070 |
| Gwalior | 0.102 | 0.112 | 0.158 | 0.168 | 0.077 | 0.097 | 0.099 | 0.090 | 0.108 | 0.146 | 0.091 | 0.080 |
| Harda | 0.104 | 0.122 | 0.142 | 0.155 | 0.096 | 0.099 | 0.069 | 0.071 | 0.122 | 0.086 | 0.079 | 0.065 |
| Hoshangabad | 0.119 | 0.128 | 0.143 | 0.126 | 0.086 | 0.086 | 0.090 | 0.114 | 0.075 | 0.072 | 0.074 | 0.063 |
| Indore | 0.073 | 0.067 | 0.080 | 0.078 | 0.060 | 0.058 | 0.073 | 0.066 | 0.078 | 0.073 | 0.072 | 0.063 |
| Jabalpur | 0.130 | 0.120 | 0.147 | 0.133 | 0.107 | 0.093 | 0.110 | 0.099 | 0.129 | 0.131 | 0.094 | 0.077 |
| Jhabua | 0.064 | 0.072 | 0.121 | 0.117 | 0.079 | 0.076 | 0.094 | 0.050 | 0.071 | 0.065 | 0.077 | 0.055 |
| Katni | 0.141 | 0.133 | 0.178 | 0.170 | 0.130 | 0.120 | 0.116 | 0.120 | 0.165 | 0.129 | 0.100 | 0.077 |
| Khandwa | 0.088 | 0.096 | 0.116 | 0.120 | 0.081 | 0.082 | 0.072 | 0.069 | 0.083 | 0.069 | 0.063 | 0.054 |
| Mandla | 0.094 | 0.090 | 0.114 | 0.100 | 0.114 | 0.096 | 0.079 | 0.046 | 0.101 | 0.055 | 0.071 | 0.056 |
| Mandsaur | 0.106 | 0.102 | 0.118 | 0.102 | 0.084 | 0.077 | 0.068 | 0.075 | 0.078 | 0.046 | 0.056 | 0.055 |
| Morena | 0.082 | 0.119 | 0.131 | 0.142 | 0.072 | 0.097 | 0.084 | 0.101 | 0.042 | 0.099 | 0.067 | 0.081 |
| Narsimhapur | 0.113 | 0.110 | 0.133 | 0.123 | 0.105 | 0.091 | 0.089 | 0.085 | 0.110 | 0.075 | 0.075 | 0.069 |
| Neemuch | 0.105 | 0.094 | 0.148 | 0.128 | 0.082 | 0.079 | 0.080 | 0.071 | 0.100 | 0.111 | 0.068 | 0.057 |
| Panna | 0.147 | 0.162 | 0.178 | 0.174 | 0.120 | 0.118 | 0.118 | 0.132 | 0.125 | 0.169 | 0.077 | 0.064 |
| Raisen | 0.121 | 0.119 | 0.136 | 0.132 | 0.090 | 0.091 | 0.100 | 0.093 | 0.102 | 0.116 | 0.077 | 0.070 |
| Rajgarh | 0.115 | 0.121 | 0.119 | 0.103 | 0.095 | 0.097 | 0.090 | 0.090 | 0.084 | 0.077 | 0.079 | 0.077 |
| Ratlam | 0.114 | 0.109 | 0.117 | 0.117 | 0.088 | 0.080 | 0.071 | 0.083 | 0.085 | 0.103 | 0.068 | 0.057 |

| District | Population sub-group | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Rural | | | | | | Urban | | | | | |
| | Scheduled Castes | | Scheduled Tribes | | Other Castes | | Scheduled Castes | | Scheduled Tribes | | Other Castes | |
| | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female |
| Rewa | 0.112 | 0.124 | 0.144 | 0.150 | 0.084 | 0.082 | 0.110 | 0.101 | 0.139 | 0.151 | 0.072 | 0.078 |
| Sagar | 0.130 | 0.137 | 0.149 | 0.140 | 0.095 | 0.096 | 0.105 | 0.107 | 0.136 | 0.184 | 0.091 | 0.088 |
| Satna | 0.135 | 0.142 | 0.178 | 0.180 | 0.109 | 0.115 | 0.125 | 0.106 | 0.168 | 0.150 | 0.074 | 0.076 |
| Sehore | 0.127 | 0.121 | 0.131 | 0.129 | 0.092 | 0.086 | 0.111 | 0.101 | 0.093 | 0.075 | 0.081 | 0.080 |
| Seoni | 0.095 | 0.093 | 0.096 | 0.088 | 0.090 | 0.084 | 0.092 | 0.060 | 0.097 | 0.063 | 0.076 | 0.060 |
| Shahdol | 0.137 | 0.135 | 0.163 | 0.146 | 0.129 | 0.122 | 0.097 | 0.076 | 0.109 | 0.116 | 0.069 | 0.067 |
| Shajapur | 0.099 | 0.108 | 0.093 | 0.098 | 0.081 | 0.081 | 0.093 | 0.086 | 0.065 | 0.056 | 0.062 | 0.066 |
| Sheopur | 0.111 | 0.145 | 0.192 | 0.194 | 0.104 | 0.107 | 0.117 | 0.118 | 0.131 | 0.165 | 0.077 | 0.096 |
| Shivpuri | 0.120 | 0.131 | 0.189 | 0.201 | 0.101 | 0.111 | 0.089 | 0.113 | 0.136 | 0.165 | 0.067 | 0.078 |
| Sidhi | 0.136 | 0.136 | 0.168 | 0.171 | 0.105 | 0.109 | 0.125 | 0.138 | 0.139 | 0.111 | 0.075 | 0.076 |
| Singrauli | 0.155 | 0.142 | 0.170 | 0.168 | 0.130 | 0.130 | 0.141 | 0.131 | 0.161 | 0.141 | 0.099 | 0.080 |
| Tikamgarh | 0.102 | 0.122 | 0.138 | 0.160 | 0.098 | 0.107 | 0.072 | 0.103 | 0.104 | 0.065 | 0.087 | 0.081 |
| Ujjain | 0.095 | 0.102 | 0.091 | 0.087 | 0.077 | 0.076 | 0.073 | 0.067 | 0.093 | 0.050 | 0.058 | 0.062 |
| Umaria | 0.128 | 0.130 | 0.163 | 0.154 | 0.115 | 0.116 | 0.122 | 0.101 | 0.122 | 0.142 | 0.081 | 0.088 |
| Vidisha | 0.131 | 0.138 | 0.183 | 0.176 | 0.098 | 0.104 | 0.099 | 0.108 | 0.119 | 0.161 | 0.076 | 0.074 |
| West Nimar | 0.088 | 0.085 | 0.094 | 0.088 | 0.075 | 0.072 | 0.076 | 0.049 | 0.076 | 0.071 | 0.057 | 0.052 |

Source:     Author's calculations