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Regional Estimates of Multidimensional Poverty in India

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Abstract
Using unit data from the Indian Human Development Survey (IHDS), 2004-05, this paper estimates and decompose the multidimensional poverty dynamics in 84 natural regions of India. Multidimensional poverty is measured in the dimensions of health, knowledge, income, employment and household environment using ten indicators and Alkire-Foster methodology. The unique contributions of the paper are inclusion of a direct economic variable (consumption expenditure) to quantify the living standard dimension, decomposition of MPI across the dimensions and the indicators and provide estimates at sub-national level.

Results indicate that about half of India's population are multidimensional poor with large regional variations. More than 70% of the population are multidimensional poor in the Mahanadi Basin, the southern region of Chhattisgarh and the Vindhya region of Madhya Pradesh, while it is less than 10% in the coastal regions of Maharashtra, Delhi, Goa, the mountainous region of Jammu and Kashmir, the Hills region and Plains region of Manipur, Puducherry and Sikkim. The decomposition of MPI indicates that economic dimension alone accounts for about one-third of multidimensional poverty in most of the regions of India. Based on these analyses, the authors suggest target based interventions in the poor regions to reduce poverty and inequality, and achieve the Millennium Development Goals in India.

JEL I J Z
Keywords Multidimensional poverty index; decomposition; regions; India

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1.1 Introduction

During the first four decades of development studies (1950-90), poverty was primarily measured in money metric form, either from household income or consumption expenditure. The limitation of money-metric poverty to capture the multiple deprivations of human life and the development of the capability approach (Sen, 1985) led to growing interest to measure poverty in a multidimensional space. The evolution of the human development paradigm in 1990 led to a strong theoretical foundation to measure multidimensional poverty. The United Nations Development Programme (UNDP) in its annual publications devised a set of composite indices, the Capability Poverty Measure (CPM), the Human Poverty Index 1 (HPI 1) and the Human Poverty Index 2 (HPI 2) to measure multidimensional poverty (UNDP 1996, 1997) using aggregate data. The Millennium Declaration has outlined eradication of poverty in its all forms - hunger, ill health, illiteracy. The goals, targets and indicators of the Millennium Development Goals (MDGs) are included in national and local planning (United Nations, 2000). In recent years, the UNDP has disseminated the multidimensional poverty index (MPI) for 104 countries (UNDP, 2010). While the HPI measures poverty at the macro level, the MPI is unique as it identifies individuals (at the micro level) deprived in overlapping multiple dimensions and captures both the extent and intensity of poverty (Alkire and Santos, 2010).

Following the UNDP's work, several researchers have contributed towards measurement of multidimensional poverty (Anand and Sen, 1997; Chiappero-Martinetti, 2000; Bourguignon and Chakravarty, 2003; Gordon et al., 2003; Qizilbash, 2004; Alkire and Foster, 2007; Antony and Rao, 2007; Calvo, 2008; Wagle, 2008; Alkire and Santos, 2010; Alkire and Foster, 2011; Mohanty, 2011). Most of these studies used the dimensions of education, health and standard of living and a few studies included subjective well-being such as fear of facing hardship (Calvo, 2008) in defining multidimensional poverty. However, these studies differed in measuring multidimensional poverty, for instance in fixing the poverty cut-off point of each dimension, weighting the dimensions, deprivation cut-off point in separating the poor from the non-poor and so on. With respect to measurement, some researchers considered the union (poor in any dimension) approach (Bourguignon and Chakravarty, 2003) while others have used the intersection approach (poor in two or more dimension) (Gordon et al., 2003) or relative approach (Wagle, 2008) in defining the poverty line.

While earlier studies used aggregate data, recent studies estimated multidimensional poverty using micro level data. Based on the counting approach, Alkire and Foster (2007; 2011) developed a new methodology in estimating multidimensional poverty. Following the Alkire-Foster method, some studies estimated multidimensional poverty (Alkire and Santos, 2010; Coromaldi and Zoli, 2012; Alkire et al., 2013; Batana, 2013; Battiston et al., 2013; Santos, 2013; Yu, 2013). Alkire and Santos (2010) provided estimates of multidimensional poverty for many developing countries using Demographic and Health Survey (DHS) and other large scale survey data. However, their analysis was restricted to three dimensions and had data constraints. Santos (2013) measured multidimensional poverty reduction in Bhutan from 2003 to 2007 using the Bhutan Living Standard Survey.

Consumption expenditure with other indicators was used in measuring multidimensional poverty. The reduction in multidimensional poverty was observed irrespective of indicators weights, deprivation cut-off and identification criterion of the poor. A significant poverty reduction was found due to reduction in the proportion of poor accompanied by the intensity of poverty among those who were less intense poor.

Batana (2013) measured multidimensional poverty among the women in Sub-Saharan countries using four dimensions - assets, health, schooling and empowerment. Multidimensional poverty estimates when compared with Human Development Index (HDI), Income poverty, Asset poverty and Gender Development Index (GDI) show a different picture in country rankings. This suggests that inclusion of additional dimensions in multidimensional measure changes the rankings of countries. The decomposition analysis reveals that deprivations in schooling and lack of empowerment among women contribute to poverty. Battiston et al (2013) measured multidimensional poverty in six Latin American countries by combining indicators from two traditional measures of poverty: income based and unsatisfied basic needs (UBN) approach and used Alkire-Foster and Bourguignon-Chakravarty (BC) measures of poverty. While measuring poverty, both income based and UBN indicators are relevant and useful in targeting the poor. Mohanty (2011; 2012), using the unit data from NFHS 3, linked multidimensional poverty with health and health care utilisation. Children belonging to multidimensional poor households are more likely to be deprived of health care and lower survaival. Alkire and Seth (2013b) suggested a new method using binary scoring method, which can be updated periodically, to target BPL households in India.

1.2 Aim and Rationale

Though eradication of multidimensional poverty has been at the centre stage of development agenda, there are only a few studies that estimated multidimensional poverty in India. This paper aims at providing estimates of multidimensional poverty at disaggregated level; in the regions of India, and decomposing multidimensional poverty dynamics across dimensions and regions. This is an improvement on existing literature as we have measured multidimensional poverty by including direct economic variables rather than economic proxies, incorporated the missing dimensions of work/employment and household environment, provided estimates for 84 regions of India, and disaggregated across dimensions, indicators and regions.

We put forward the following rationale in support of the study. First, the regions of India are classified baed on agro-climatic conditions and homogenous with respect to economic, social, cultural and demographic variabls. On the otherhand variation in the socio-economic development among regions of India are large. Regional estimates of multidimensional poverty will be helpful in identifying the backward areas for policy intervention. Second, earlier studies in India (Alkire and Seth, 2013a; Mohanty 2011) used economic proxies rather than direct economic variables in measuring living standard and were restricted to three dimensions - health, knowledge and living standard. We have included some of the key missiing dimension such as consumption expenditure, work/employment and household environmental dimensions in estimating multidimensional poverty. Third, for the first time, we provide the estimates of multidimensional poverty fat disaggregated level (for 84 regions of India) and decomposed the MPI by indicators, rural and urban, regions and states to understand the relative contribution of factors in explaining multidimensional poverty.

1.3 Data

The Indian Human Development Survey (IHDS), 2004-05, conducted by the University of Maryland and the National Council of Applied Economic Research (NCAER), New Delhi is used for the analyses. The IHDS survey interviewed 41554 households and covered 215754 individuals from 1503 villages and 971 urban blocks of India. The advantage of using the IHDS survey in estimating multidimensional poverty is that it provides comprehensive information on key dimensions of income, consumption expenditure, health, wealth and

work/employment. It provides comprehensive information on income, consumption expenditure, employment, education, fertility, reproductive health, child health, morbidities, gender relations, social capital and cognitive development of children. The details of the survey design, sampling instrument, variables and constructed variables, and various codes used are available in the national report (Desai et al., 2008). Households with missing information were small and we have excluded missing values from analyses.

1.4 Methods

1.4.1 Dimensions and Indicators

In measuring multidimensional poverty, five dimensions have been selected, namely health, education, economic, work/employment and household environment. These five dimensions comprise a total of ten indicators. The description of dimensions, indicators and the weight to each indicator is shown in Table 1. Two indicators included in the health dimension are household experience of any child or adult (<60 years) death in the year preceding the survey, and if any ever married woman (15-49 years) in the household was undernourished (BMI less than 18.5). The two indicators considered in the education dimension are school enrolment and years of schooling. The household is considered deprived in the school enrolment indicator if at least one school going child aged 6-14 years in the household currently are not enrolled in the school. Similarly, a household is deprived in years of schooling indicator if no adult member aged 15 years and more in the household has completed five years of schooling. In the economic dimension, the monthly per capita consumption expenditure and the revised official state level poverty line cut-off for 2004-05 is used to define consumption poverty (GOI, 2011). With respect to work/employment two indicators, occupation and employment are used. A household is said to be deprived in occupation if the household's annual per capita income is less than 5000 rupees and, either the household belongs to labour class households or low paid non-farm business or has low land holdings with less than 2.5 acres. The three indicators used in the household environment dimension are access to clean drinking water, adequate sanitation and clean cooking fuel.

Table 1: Dimensions, indicators and weights used in computation of multidimensional poverty index (MPI) in India

Sn	Dimensions	Description of Indicators	Weights
1	**Health**	**Mortality (V1**): Any child or adult (<60years) death occurred in the household in the year preceding the survey date	1/10=0.1
		Nutrition (V2): If the household has any undernourished (BMI <18.5) ever married women (15-49 years)	1/10=0.1
2	**Education**	**School Enrolment (V3):** At least one child in the school going age (6-14 years) in the household currently not enrolled in school	1/10=0.1
		Years of Schooling (V4): No adult member (15 years and above) in the household has completed five years of schooling	1/10=0.1
3	**Economic**	**Consumption Expenditure (V5):** If the household falls below the consumption expenditure threshold limit (official poverty line)	2/10=0.2
4	**Work and Employment**	**Occupation (V6):** If the per capita annual income is less than 5000 rupees and the household belongs to either low paid non-farm business, or labour class household, or low land holding (<2.5 acre)	1/10=0.1
		Employment (V7): No one in the household (15-59 years) has worked for more than 240 hours in one activity in the year preceding the survey date	1/10=0.1
5	**Household environment**	**Water (V8):** No access to clean drinking water	1/15=0.67
		Sanitation (V9): No access to adequate sanitation	1/15=0.67
		Cooking fuel (V10): No access to clean cooking fuel	1/15=0.67

1.4.2 Measurement of Multidimensional Poverty

We measured the multidimensional poverty index (MPI) using the dual cut-off method based on the counting approach developed by Alkire and Foster (2007; 2011). This method is gaing popular and disseminated by UNDP in the Human Development Report (HDR) 2010 (UNDP, 2010). The Alkire and Foster assigns equal weight to each dimension and equal weight to each indicator within each dimension. An individual gets a weighted deprivation score according to his/her number of weighted deprivations. The total weighted deprivation score ranges 0-1 and a household is identified as multidimensional poor if the weighted deprivation score is greater than 0.33, which is one-third of the total weighted deprivation

score. To derive multidimensional poverty, the Head count ratio (H) and intensity of poverty (A) are computed.

The headcount ratio is the proportion of the population who are multidimensional poor. The headcount ratio is computed as:

$$H=\frac{q}{n}$$

Where, q is number of multidimensional poor, n is total population.

The intensity of poverty (A) or the breadth of deprivation captures the average weighted count of deprivations experienced by the multidimensional poor. The intensity of poverty (A) is computed as

$$A=\frac{\sum_1^q c}{q}$$

Where, c is the total weighted deprivations experiences by the poor.

The multidimensional poverty index (MPI) is the product of headcount ratio (H) and the intensity of poverty (A). It is also referred as adjusted headcount ratio. The MPI is computed as:

$$MPI= H * A$$

1.4.3 Decomposition of MPI

We have further decomposed the MPI by its component indicators. The censored headcount ratio is first identified to decompose MPI into each indicator. The censored headcount ratio is defined as the proportion of multidimensional poor deprived in the given indicator to the total population. The contribution of deprivation of a particular indicator is computed as:

$$\textit{Contribution of Indicator i to MPI} = \frac{w_i CH_i}{MPI_{country}} * 100$$

Where w_i is the weight of i^{th} indicator and CH_i is the censored headcount ratio of i^{th} indicator.

The contribution of each region to overall poverty is computed by using the following formula:

$$\textit{Contribution of region i to MPI} = \frac{\frac{n_i}{n} MPI_i}{MPI_{country}} * 100$$

Where n_i is the population of i^{th} region and n is the total population. MPI_i is the MPI of i^{th} region.

We prepared state and region maps of multidimensional poverty index using ArcGIS software package (ArcMap 10) to show the spatial variation of multidimensional poverty .

1.5 Results

1.5.1 Multidimensional Poverty in the States of India

Multidimensional poverty at the national level was estimated at 45% and it is close to the estimates of Alkire and Seth (49%) (Alkire and Seth, 2013a). The correlation coefficient of our estimates with Alkire-Foster estimates is 0.77. Among the bigger states of India (states with population of more than 10 million), our estimate of multidimensional poverty is maximum in Chhattisgarh (71.3%) followed by Odisha, Bihar, Jharkhand and Uttar Pradesh. All these states are also marked red in Map 1. It is minimum in the state of Jammu and Kashmir followed by Himachal Pradesh and Punjab. Among smaller states, the variation in multidimensional poverty estimates is large, from 52% in Dadra & Nagar Haveli to less than 5% in Goa.

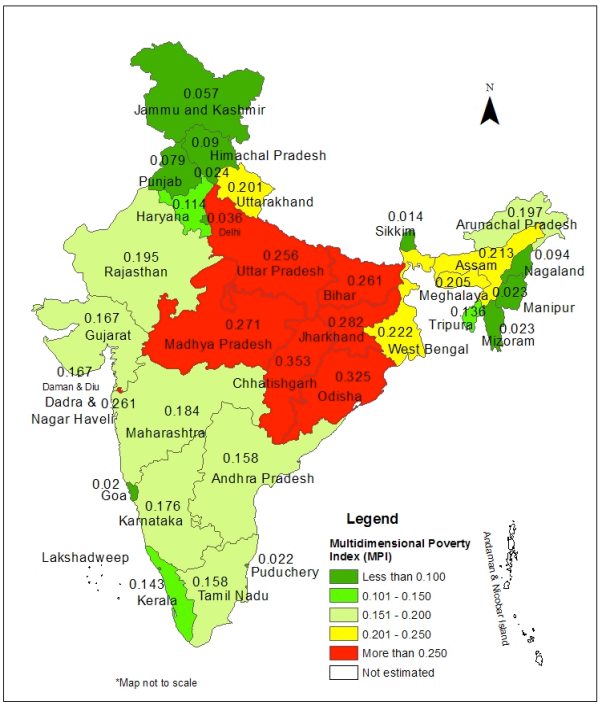
1.5.2 Poverty Estimates at the Regional Level

The multidimensional poverty index (MPI) is the product of two measures, headcount ratio (H) and intensity of poverty (A). The headcount ratio is the proportion of multidimensional poor to the total population. The intensity of poverty is the average weight of deprivations experienced by the multidimensional poor at a time. Table A.1 provides eight columns, starting with the serial number of the regions, name of the state and region, the estimated headcount ratio, intensity of poverty, MPI, rank of regions by MPI, share of MPI in the region and the percentage of population in the region. The estimates for a total of 29 states and 84 regions are presented in the Table A.1. The estimated headcount ratio varies largely among the regions, from as high as 93% in the southern regions of Chhattisgarh and 72% in

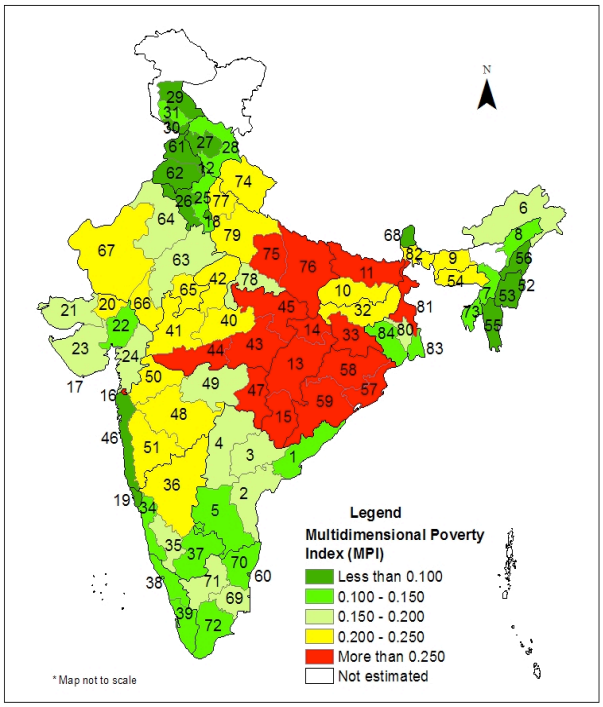
the Mahanadi basin of Chhattisgarh, followed by 65% in Southern Odisha. It was minimum in the regions of Sikkim (3.7%). The headcount ratio varies largely among the regions within the states. For example, the headcount ratio in the state of Maharashtra ranges from 10.5% in the coastal region to 53.8% in the eastern region. The intensity of poverty is high in the region of Hazaribag Plateau in the state of Jharkhand (51%). On the other hand, the intensity of poverty was low in the plains of Manipur where the multidimensional poor were deprived in less than one-third of the MPIs total weighted deprivation score.

Regional variation of MPI is shown in Map 2. The regions are grouped into five categories according to the MPI values: less than 0.100 (lowest), 0.100-0.150, 0.150-0.200, 0.200-0.250 and more than 0.250 (highest). Two regions each from Jammu and Kashmir, Punjab and Manipur, one region each from Haryana, Himachal Pradesh, Maharashtra (coastal region), Goa, Delhi, Chandigarh, Puducherry, Sikkim, Mizoram and Nagaland fall under the first category. The second category comprises 17 regions, the third category comprises 15 regions and the fourth category comprises 20 regions. The regions under the fifth category are all regions of Chhattisgarh and Odisha, three regions from Madhya Pradesh, two regions from Uttar Pradesh, one region each from Maharashtra, Bihar, Jharkhand, West Bengal and Dadra and Nagar Haveli.In Table 2, column 5 provides the MPI values and column 6 provides the rank in MPI value among the regions of India. The MPI values vary from a low of 0.014 in Sikkim to a high of 0.451 in the southern region of Chhattisgarh. The variability in MPI values is also large in regions within the state. For example in the case of Uttar Pradesh, the MPI values vary from 0.244 (ranked 66) to 0.178 in Southern Uttar Pradesh (ranked 40). The coefficient of variation in MPI in the regions of India was 51 indicating a large variation across regions. On ranking all the regions in ascending order, we found that the regions in the state of Chhattisgarh have higher value of MPI and lower rank compared to the other regions. However, the coefficient of variation in intensity of poverty was 7.4% indicating the low variability in intensity of poverty across the regions of India.

Map 1: Multidimensional Poverty Index (MPI) in States and Union Territories of India, 2004- 05



Map 2: Multidimensional Poverty Index (MPI) in Regions of India, 2004-05

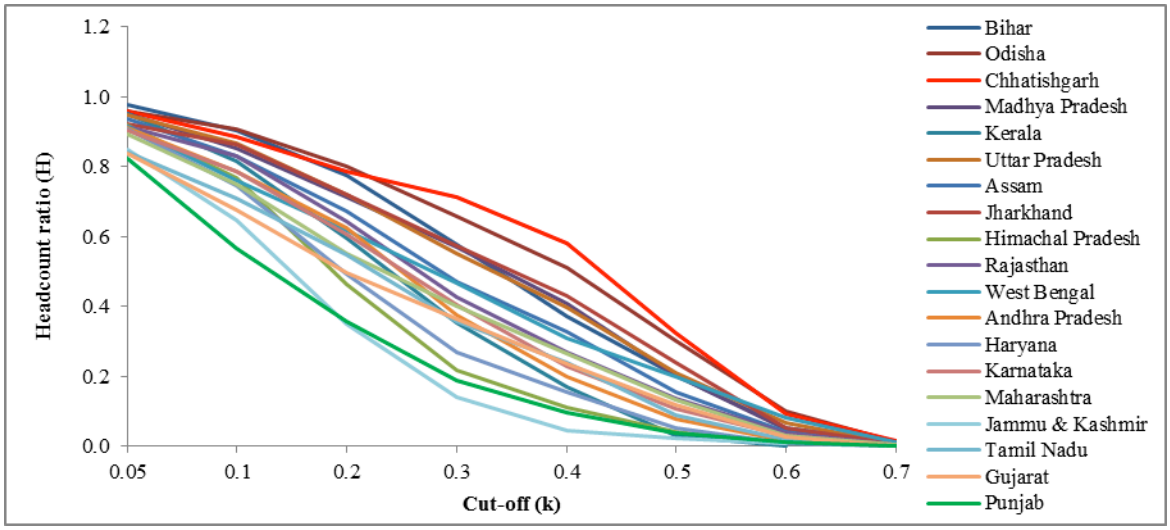


1. Coastal Northern (Andhra Pradesh)
2. Coastal southern (Andhra Pradesh)
3. Inland North Eastern (Andhra Pradesh)
4. Inland North Western (Andhra Pradesh)
5. Inland Southern (Andhra Pradesh)
6. Arunachal Pradesh
7. Cachar Plain (Assam)
8. Plains Eastern (Assam)
9. Plains Western (Assam)
10. Central (Bihar)
11. Northern (Bihar)
12. Chandigarh
13. Mahanadi Basin (Chhattisgarh)
14. Northern (Chhattisgarh)
15. Southern (Chhattisgarh)
16. Dadra & Nagar Haveli
17. Daman & DIU
18. Delhi
19. Goa
20. Dry areas (Gujarat)
21. Kachchh (Gujarat)
22. Plains Northern (Gujarat)
23. Saurashtra (Gujarat)
24. South Eastern (Gujarat)
25. Eastern (Haryana)
26. Western (Haryana)
27. Central (Himachal Pradesh)
28. Trans Himalayan & Southern (Himachal Pradesh)
29. Jhelum Valley(Jammu & Kashmiri)
30. Mountainous (Jammu & Kashmiri)
31. Outer Hills(Jammu & Kashmiri)
32. Hazaribag Plateau (Jharkhand)
33. Ranchi Plateau (Jharkhand)
34. Coastal and Ghats (Karnataka)
35. Inland Eastern (Karnataka)
36. Inland Northern (Karnataka)
37. Inland Southern (Karnataka)
38. Northern (Kerala)
39. Southern (Kerala)
40. Central (Madhya Pradesh)
41. Malwa (Madhya Pradesh)
42. Northern (Madhya Pradesh)
43. South (Madhya Pradesh)
44. South Western (Madhya Pradesh)
45. Vindhya (Madhya Pradesh)
46. Coastal (Maharashtra)
47. Eastern (Maharashtra)
48. Inland Central (Maharashtra)
49. Inland Eastern (Maharashtra)
50. Inland Northern (Maharashtra)
51. Inland Western (Maharashtra)
52. Hills (Manipur)
53. Plains (Manipur)
54. Meghalaya
55. Mizoram
56. Nagaland
57. Coastal (Odisha)
58. Northern (Odisha)
59. Southern (Odisha)
60. Puducherry
61. Northern (Punjab)
62. Southern (Punjab)
63. North-Eastern (Rajasthan)
64. Northern (Rajasthan)
65. South-Eastern (Rajasthan)
66. Southern (Rajasthan)
67. Western (Rajasthan)
68. Sikkim
69. Coastal (Tamil Nadu)
70. Coastal Northern (Tamil Nadu)
71. Inland (Tamil Nadu)
72. Southern (Tamil Nadu)
73. Tripura
74. Uttarakhand
75. Central (Uttar Pradesh)
76. Eastern (Uttar Pradesh)
77. Northern upper Ganga Plain (Uttar Pradesh)
78. Southern (Uttar Pradesh)
79. Southern Upper Ganga Plains (Uttar Pradesh)
80. Central Plains (West Bengal)
81. Eastern Plains (West Bengal)
82. Himalayan (West Bengal)
83. Southern Plains (West Bengal)
84. Western Plains (West Bengal)

1.5.3 Robustness of the Estimation

Dominance analysis is performed to check the robustness of the estimation of multidimensional poverty across deprivation cut-off (*k*). The headcount ratio and multidimensional poverty index are estimated using different deprivation cut-off (*k*) among the bigger states of India. The dominance relations among the states are shown in Figure 1. Each curve in the figure indicates the poverty level in the states when *k* is varied. If a curve lies below or above another curve, we can say a dominance relation exists between two states. On the other hand, when two curves cross each other, there is no possibility of dominance. There are many dominance relations between the states as is evident from this Figure. For example, the curve of Chhattisgarh state lies above the curve of Jharkhand state showing a dominance relationship between these two states.

Figure 1: Poverty comparisons as poverty cut-off *k* varies among the bigger states of India, 2004-05.



1.5.4 Decomposition of MPI by Dimensions and Component Indicators

Decomposition is an important and useful tool to understand the contribution of each dimension and indicator to multidimensional poverty. At the state and regional level, the decompositions are presented across dimensions and indicators (Table A.2). Among the ten indicators, the deprivation of consumption expenditure contributes the most (32%) to overall poverty. The other indicators in order of their deprivation are occupation, cooking fuel, sanitation, underweight and years of schooling. The indicators of mortality, school enrolment,

employment and drinking water are the least contributors to overall poverty. Among the five dimensions, it is clear that deprivation in economic dimension contributes more to overall poverty followed by household environment dimension, and work/employment dimension.

State level variations among the deprivation indicators are robust. In most of the states, deprivation in consumption expenditure contributes the most compared to the other deprivation indicators except in Andhra Pradesh. In the case of Andhra Pradesh, the deprivation in occupation contributes more to poverty. Interestingly, it is found that the composition of poverty influenced by the deprivation indicators is very different among the states. For example, if we look at the contribution of deprivation indicators to poverty in the state of Kerala (MPI=0.143), it is completely different from others where the contribution by deprivation in education and health dimensions are negligible and the deprivation in consumption expenditure, drinking water is very high. The contribution of sanitation is low in this state compared to other states. Among the bigger states, in the states of Andhra Pradesh, Bihar, Himachal Pradesh and Jammu and Kashmir, the contribution is high in deprivation of household environment dimension, while in all other states, consumption expenditure contributes more to overall poverty. Hence, it is worth noting that in all the states, economic and household environment are two leading contributors to multidimensional poverty.

The contribution of dimensions and indicators to the overall poverty is simillar across regions ; the consumption expenditure contributed most to the poverty. However, there are few regions from Andhra Pradesh, Jammu and Kashmir and Manipur where occupation contributed most. Moreover, in some of the regions other indicators such as sanitation, cooking fuel, years of schooling, underweight, and school enrolment were also contributed significantly to poverty. The contributions of each indicator to poverty were not even among the regions within the states. For example, in the state of Andhra Pradesh, the contribution of consumption expenditure was low in coastal northern and inland north eastern region compared to the contribution of underweight, years of schooling, occupation, sanitation and cooking facility.

1.5.5 Decomposition of MPI by Regions

Columns 7 and 8 in Table A.1 present the percentage of contribution to MPI and percentage of population among regions respectively. We found that Uttar Pradesh is home to the largest number of multidimensional poor, where 14.7% of the population account for more than 18% of multidimensional poor. This is also true for the states of Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh, Odisha and West Bengal, where the share of poverty is higher than the share of population. These seven Indian states are home to 58% of the multidimensional poor and they account for 45% of the total population. Among the regions, Eastern Uttar Pradesh has the largest share of multidimensional poverty. It is home to more than 9% of the total multidimensional poor, though it has only 7% of the total population. It is also found that the contribution of regions to multidimensional poverty varies within the states. In Maharashtra, the coastal region contributes only 0.5% while it shares 2.2% of the total population. On the other hand, the inland central region contributes 2% while it shares only 1.7% of the total population. This shows how poverty inequality prevails within the states.

1.6 Discussion and Conclusion

Multidimensional poverty is a priority research agenda, both nationally and globally. Globally, the UNDP initiative to measure poverty in multidimensional space and the UN Millennium Declaration 2000 put forward eight MDG goals, eighteen targets and a set of indicators to eradicate poverty in all forms - hunger, illiteracy and disease. At the national level, the Planning Commission, Government of India has acknowledged the multidimensional nature of poverty, though it continued to provide the estimates based on money-metric poverty. Thus, the need and utility of multidimensional poverty has been established in national and international development agenda.

In India, there are a limited number of studies that estimated multidimensional poverty using unit data from NFHs (Alkire and Seth, 2013a; Mohanty, 2011). These studies use economic proxies and are confined to three dimensions. Earlier studies in India were based on National Family and Health Surveys (NFHSs) were limited to state level analyses and did not incorporate any direct economic variable.This paper is an improvement on earlier studies with respect to dimension, variable and coverage. First, it has included a direct economic variable like monthly per capita expenditure in the economic domain to estimate

multidimensional poverty. Second, it covered five dimensions including the dimension of work/employment and household living condition. Third, it has provided the estimates for 84 natural regions that vary largely in the level of development.

The followings are our salient findings. First, the extent of multidimensional poverty varies largely among the regions of India. While the multidimensional poor comprise more than 70% of the population in the regions of the Mahanadi basin and southern regions of Chhattisgarh and Vindhya region of Madhya Pradesh, it is less than 10% in the coastal region of Maharashtra, Delhi, Goa, mountainous region of Jammu and Kashmir, hills and plains of Manipur, Puducherry and Sikkim. Second, the differentials in multidimensional povrty are also large among the regions within the states of India. For example, in the state of Maharashtra, the regional estimates in MPI vary from 53.8% in the eastern region to 10.5% in the coastal region. Third, the decompositions of MPI by dimensions show that the deprivation in economic dimension contributes largely to the MPI in most of the states followed by deprivation in household environment, work/employment, health and education. Sanitation and cooking fuel contribute more to overall poverty in the household environment dimension. Fourth, decompositions by regions have shown higher concentration of poverty in some parts of the country. We also found that the states of Bihar, Jharkhand, Chhattisgarh, Odisha, Madhya Pradesh, Uttar Pradesh and West Bengal that account for about 45% of India's population have a concentration of more than 58% of multidimensional poor.

Based on these findings, we suggest that attempts be made to provide estimates at the district level, as the district is the centre of planning and programme implementation in India. We also suggest targeted intervention in backward regions to reduce poverty and inequality, and achieve the Millennium Development Goals in India.

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1.7 Appendix

Table A.1: Head count ratio (H), intensity of poverty (A), multidimensional poverty index (MPI) and decomposition of MPI value at state and regional level in India, 2004-05.

Sl no (col 1)	Regions (col. 2)	Headcount Ratio (H) (col. 3)	Intensity of Poverty (A) (col. 4)	MPI (col. 5)	Rank of regions by MPI (col. 6)	Contribution to MPI (%) (col. 7)	% of population (col. 8)
	INDIA	**45.1**	**46.0**	**0.207**		**100**	**100**
	Andhra Pradesh	**37.5**	**42.3**	**0.158**		**5.7**	**7.5**
1	Coastal Northern	36.1	39.1	0.141	29	0.8	1.2
2	Coastal Southern	41.7	44.4	0.185	43	1.1	1.2
3	Inland North Eastern	43.5	41.2	0.179	41	1.3	1.5
4	Inland North Western	36.7	43.3	0.159	37	1.6	2.1
5	Inland Southern	30.4	42.8	0.130	23	0.9	1.5
6	**Arunachal Pradesh**	**44.5**	**44.3**	**0.197**	**47**	**0.1**	**0.1**
	Assam	**47.0**	**45.3**	**0.213**		**2.4**	**2.4**
7	Cachar Plain	29.3	46.6	0.137	25	0.1	0.1
8	Plains Eastern	25.0	41.6	0.104	17	0.1	0.3
9	Plains Western	51.0	45.5	0.232	58	2.2	2.0
	Bihar	**57.8**	**45.2**	**0.261**		**8.5**	**6.8**
10	Central	52.9	46.0	0.243	65	3.7	3.1
11	Northern	62.0	44.6	0.277	73	4.9	3.7
12	**Chandigarh**	**5.9**	**40.2**	**0.024**	6	**0.0**	**0.1**
	Chhattisgarh	**71.3**	**49.4**	**0.353**		**4.8**	**2.8**
13	Mahanadi Basin	72.0	49.5	0.356	83	3.7	2.2
14	Northern	54.3	50.2	0.273	72	0.5	0.4
15	Southern	93.1	48.4	0.451	84	0.5	0.2
16	**Dadra & Nagar Haveli**	**52.3**	**49.9**	**0.261**	71	**0.0**	**0.0**
17	**Daman & DIU**	**38.0**	**44.1**	**0.167**	39	**0.0**	**0.0**
18	**Delhi**	**8.5**	**42.1**	**0.036**	8	**0.2**	**1.3**
19	**Goa**	**4.6**	**42.5**	**0.020**	3	**0.0**	**0.2**
	Gujarat	**36.5**	**45.7**	**0.167**		**4.1**	**5.1**
20	Dry areas	53.0	44.9	0.238	62	0.2	0.1
21	Kachchh	41.4	44.7	0.185	44	0.2	0.2
22	Plains Northern	31.8	44.9	0.143	30	1.3	1.9
23	Saurashtra	33.2	46.7	0.155	35	0.8	1.1
24	South Eastern	42.3	46.0	0.195	46	1.6	1.7
	Haryana	**26.8**	**42.5**	**0.114**		**1.0**	**1.9**
25	Eastern	30.8	42.2	0.130	22	0.7	1.2
26	Western	20.4	43.1	0.088	14	0.3	0.7

	Himachal Pradesh	**21.6**	**41.9**	**0.090**		**0.3**	**0.6**
27	Central	17.5	40.8	0.071	13	0.1	0.4
28	Trans Himalayan & Southern	27.4	42.9	0.118	21	0.2	0.3
	Jammu & Kashmir	**14.0**	**40.8**	**0.057**		**0.3**	**1.1**
29	Jhelum Valley	13.3	39.8	0.053	11	0.2	0.8
30	Mountainous	9.3	41.5	0.039	9	0.0	0.2
31	Outer Hills	24.6	43.7	0.108	18	0.1	0.1
	Jharkhand	**57.4**	**49.1**	**0.282**		**5.1**	**3.8**
32	Hazaribag Plateau	46.7	50.7	0.237	61	1.7	1.5
33	Ranchi Plateau	64.3	48.4	0.311	78	3.4	2.3
	Karnataka	**40.4**	**43.6**	**0.176**		**3.9**	**4.6**
34	Coastal and Ghats	25.9	45.0	0.117	20	0.2	0.4
35	Inland Eastern	35.6	43.8	0.156	36	0.3	0.4
36	Inland Northern	49.3	44.4	0.219	54	2.1	2.0
37	Inland Southern	34.5	41.9	0.145	33	1.2	1.8
	Kerala	**35.2**	**40.6**	**0.143**		**2.2**	**3.1**
38	Northern	35.7	39.1	0.140	26	0.5	0.8
39	Southern	35.0	41.2	0.144	31	1.6	2.3
	Madhya Pradesh	**57.1**	**47.4**	**0.271**		**6.9**	**5.2**
40	Central	47.6	47.1	0.224	57	0.5	0.4
41	Malwa	47.8	46.2	0.221	56	1.7	1.6
42	Northern	54.3	44.1	0.239	63	0.8	0.7
43	South	58.2	48.0	0.280	75	0.6	0.4
44	South Western	58.1	48.5	0.282	76	1.1	0.8
45	Vindhya	71.1	49.0	0.348	82	2.3	1.4
	Maharashtra	**40.0**	**46.1**	**0.184**		**9.3**	**10.4**
46	Coastal	10.5	41.9	0.044	10	0.5	2.2
47	Eastern	53.8	47.6	0.256	70	0.8	0.7
48	Inland Central	50.1	48.8	0.245	67	2.0	1.7
49	Inland Eastern	42.1	47.3	0.199	48	1.7	1.8
50	Inland Northern	50.4	46.5	0.235	60	1.4	1.3
51	Inland Western	47.8	43.9	0.210	53	2.9	2.9
	Manipur	**6.6**	**34.2**	**0.023**		**0.0**	**0.3**
52	Hills	3.8	40.0	0.015	2	0.0	0.1
53	Plains	7.5	33.3	0.025	7	0.0	0.2
54	**Meghalaya**	**43.4**	**47.1**	**0.205**	51	**0.2**	**0.2**
55	**Mizoram**	**5.5**	**41.9**	**0.023**	5	**0.0**	**0.1**
56	**Nagaland**	**23.8**	**39.3**	**0.094**	16	**0.1**	**0.2**
	Odisha	**65.9**	**49.3**	**0.325**		**6.3**	**4.0**
57	Coastal	67.5	49.5	0.335	81	2.7	1.7
58	Northern	64.7	48.5	0.314	79	1.6	1.1
59	Southern	64.7	49.6	0.321	80	2.0	1.3
60	**Puducherry**	**5.6**	**39.2**	**0.022**	4	**0.0**	**0.1**

	Punjab	**18.9**	**42.0**	**0.079**		**0.9**	**2.4**
61	Northern	16.4	42.5	0.070	12	0.4	1.2
62	Southern	21.3	41.6	0.089	15	0.5	1.2
	Rajasthan	**42.7**	**45.7**	**0.195**		**4.8**	**5.1**
63	North-Eastern	36.6	45.0	0.165	38	1.5	1.9
64	Northern	41.2	44.7	0.184	42	1.0	1.2
65	South-Eastern	50.1	48.1	0.241	64	0.7	0.6
66	Southern	53.0	46.8	0.248	68	0.5	0.4
67	Western	47.8	45.8	0.219	55	1.0	1.0
68	**Sikkim**	**3.7**	**38.2**	**0.014**	1	**0.0**	**0.1**
	Tamil Nadu	**35.7**	**44.1**	**0.158**		**4.7**	**6.2**
69	Coastal	42.6	44.8	0.191	45	1.6	1.8
70	Coastal Northern	33.5	43.0	0.144	32	1.2	1.7
71	Inland	33.2	45.4	0.151	34	0.8	1.1
72	Southern	32.3	43.3	0.140	28	1.1	1.6
73	**Tripura**	**28.4**	**48.0**	**0.136**	24	**0.2**	**0.3**
74	**Uttarakhand**	**43.2**	**46.4**	**0.201**	50	**1.7**	**1.8**
	Uttar Pradesh	**55.3**	**46.4**	**0.256**		**18.2**	**14.7**
75	Central	53.8	46.7	0.251	69	3.2	2.6
76	Eastern	61.2	46.9	0.287	77	9.8	7.1
77	Northern Upper Ganga Plain	46.2	45.0	0.208	52	2.5	2.5
78	Southern	40.3	44.3	0.178	40	0.7	0.8
79	Southern Upper Ganga Plains	52.9	46.0	0.244	66	2.1	1.8
	West Bengal	**46.6**	**47.5**	**0.222**		**8**	**7.4**
80	Central Plains	42.4	47.0	0.200	49	1.7	1.8
81	Eastern Plains	57.7	48.1	0.278	74	3.9	2.9
82	Himalayan	45.8	51.0	0.234	59	1.3	1.1
83	Southern Plains	32.6	42.9	0.140	27	1.1	1.6
84	Western Plains	24.7	45.6	0.113	19	0.0	0.1

Table A.2: Decomposition of multidimensional poverty index by dimensions and indicators in states and regions of India, 2004-05

State/ Region	Health		Education		Income	Work		Household environment			MPI
	Any death	Underweight	School enrolment	Years of schooling	Consumption poor	Work and employment	Occupation	Source of drinking water	Sanitation facility	Cooking facility	
Andhra Pradesh	**1.7**	**10.0**	**2.4**	**13.1**	**18.8**	**0.6**	**21.6**	**2.2**	**14.5**	**15.0**	**0.158**
Coastal Northern	2.5	11.6	2.5	14.7	10.5	0.9	23.1	2.9	15.0	16.3	**0.141**
Coastal southern	0.6	6.3	3.0	9.8	27.0	0.7	21.2	3.7	13.1	14.6	**0.185**
Inland North Eastern	3.7	15.6	1.3	14.3	7.4	0.4	22.5	3.2	15.5	16.1	**0.179**
Inland North Western	1.3	8.1	2.6	16.0	21.1	0.4	20.8	0.9	14.2	14.6	**0.159**
Inland Southern	0.6	8.9	2.6	8.5	28.1	0.5	21.1	0.8	15.1	13.8	**0.130**
Arunachal Pradesh	**0.9**	**0.0**	**1.1**	**5.4**	**39.2**	**2.0**	**19.6**	**3.5**	**15.1**	**13.3**	**0.197**
Assam	**1.4**	**1.8**	**5.0**	**7.2**	**36.1**	**1.9**	**18.4**	**0.8**	**13.9**	**13.4**	**0.213**
Cachar Plain	2.0	7.2	2.0	3.8	35.7	4.6	18.0	2.4	11.8	12.4	**0.137**
Plains Eastern	0.3	0.6	2.0	4.7	38.8	11.0	17.3	0.5	14.1	10.6	**0.104**
Plains Western	1.4	1.8	5.3	7.4	36.0	1.3	18.5	0.7	14.0	13.6	**0.232**
Bihar	**2.3**	**8.0**	**3.2**	**11.4**	**24.8**	**1.2**	**19.8**	**1.3**	**14.3**	**13.7**	**0.261**
Central	2.2	6.2	4.1	9.0	27.5	1.2	19.5	2.6	13.9	13.9	**0.243**
Northern	2.5	9.4	2.5	13.2	22.8	1.2	20.1	0.2	14.6	13.5	**0.277**
Chandigarh	**0.0**	**0.0**	**0.0**	**6.2**	**49.8**	**0.0**	**19.9**	**0.0**	**16.6**	**7.5**	**0.024**
Chhattisgarh	**0.9**	**7.4**	**1.7**	**6.6**	**38.3**	**0.2**	**14.6**	**3.8**	**13.3**	**13.3**	**0.353**
Mahanadi Basin	1.0	7.4	1.9	6.5	37.8	0.1	15.0	3.8	13.3	13.3	**0.356**
Northern	0.6	6.4	0.9	7.3	38.7	0.5	14.3	5.3	13.0	13.3	**0.273**
Southern	0.0	8.6	1.4	6.8	41.3	0.0	12.2	2.5	13.8	13.5	**0.451**
Dadra & Nagar Haveli	**1.4**	**7.6**	**3.4**	**7.6**	**38.8**	**0.2**	**16.4**	**0.0**	**13.2**	**11.3**	**0.261**
Daman & DIU	**1.3**	**10.4**	**0.0**	**2.9**	**40.1**	**0.0**	**16.7**	**0.9**	**12.6**	**15.1**	**0.167**
Delhi	**0.0**	**4.2**	**4.1**	**7.3**	**42.3**	**4.2**	**16.4**	**2.3**	**10.8**	**8.5**	**0.036**
Goa	**2.1**	**7.4**	**1.4**	**0.8**	**42.4**	**3.2**	**14.3**	**2.3**	**14.1**	**12.0**	**0.020**
Gujarat	**0.5**	**10.3**	**3.2**	**7.7**	**31.2**	**0.5**	**17.4**	**3.9**	**12.3**	**13.0**	**0.167**
Dry areas	0.0	1.7	9.4	15.7	30.3	0.0	9.4	4.7	13.9	14.9	**0.238**
Kachchh	0.0	4.3	3.4	12.9	27.3	0.0	18.3	6.4	12.7	14.9	**0.185**
Plains Northern	0.5	13.1	2.6	5.7	27.5	0.6	20.4	5.2	11.3	13.1	**0.143**
Saurashtra	0.4	7.1	3.8	9.2	33.7	0.7	16.4	4.6	13.1	11.1	**0.155**
South Eastern	0.6	11.2	2.7	7.3	33.5	0.4	16.2	2.0	12.6	13.6	**0.195**
Haryana	**1.4**	**7.2**	**2.5**	**7.2**	**30.9**	**1.0**	**19.6**	**1.2**	**14.9**	**14.1**	**0.114**
Eastern	1.7	7.1	2.6	7.7	29.8	1.1	19.3	1.2	15.0	14.5	**0.130**
Western	0.8	7.3	2.1	6.1	33.6	0.9	20.1	1.3	14.7	13.2	**0.088**
Himachal Pradesh	**2.5**	**11.0**	**1.2**	**4.2**	**26.7**	**0.2**	**20.9**	**2.7**	**15.3**	**15.3**	**0.090**
Central	2.6	11.9	1.1	3.4	25.7	0.1	21.3	2.2	16.2	15.5	**0.071**
Trans Himalayan & Southern	2.5	10.3	1.3	4.9	27.6	0.2	20.5	3.1	14.5	15.1	**0.118**
Jammu & Kashmir	**3.4**	**9.2**	**4.6**	**10.6**	**15.4**	**1.7**	**21.3**	**5.8**	**15.4**	**12.6**	**0.057**
Jhelam Valley	4.9	7.0	5.2	11.8	17.4	1.4	21.2	4.4	15.4	11.3	**0.053**
Mountainous	1.4	7.3	1.7	7.7	22.4	4.1	22.4	2.9	15.4	14.7	**0.039**

Outer Hills	0.0	16.8	4.3	8.7	5.8	1.1	21.4	11.4	15.3	15.3	**0.108**
Jharkhand	**0.4**	**7.0**	**2.4**	**5.3**	**36.8**	**0.7**	**15.0**	**6.2**	**12.7**	**13.4**	**0.282**
Hazaribag Plateau	0.6	9.9	2.4	6.0	32.9	0.1	16.8	5.4	12.8	13.1	**0.237**
Ranchi Plateau	0.2	5.6	2.5	5.0	38.7	1.0	14.1	6.6	12.7	13.6	**0.311**
Karnataka	**1.5**	**10.2**	**2.5**	**8.2**	**27.4**	**0.7**	**18.9**	**1.7**	**14.6**	**14.3**	**0.176**
Coastal and Ghats	0.4	12.3	0.5	3.7	27.8	2.8	20.4	7.4	11.6	13.3	**0.117**
Inland Eastern	1.7	10.6	1.6	7.7	28.4	1.0	19.9	2.8	13.7	12.6	**0.156**
Inland Northern	1.4	8.9	3.3	9.2	28.3	0.6	17.3	1.8	14.5	14.8	**0.219**
Inland Southern	1.7	11.9	1.8	7.4	25.4	0.4	21.2	0.3	15.7	14.0	**0.145**
Kerala	**1.3**	**3.8**	**0.0**	**0.7**	**42.8**	**2.1**	**19.9**	**10.0**	**5.1**	**14.4**	**0.143**
Northern	0.5	1.9	0.0	0.2	48.2	2.2	21.4	13.3	2.3	10.0	**0.140**
Southern	1.5	4.4	0.0	0.8	40.9	2.1	19.4	8.9	6.1	15.9	**0.144**
Madhya Pradesh	**0.6**	**7.2**	**2.0**	**6.9**	**35.7**	**0.2**	**15.8**	**4.7**	**13.1**	**13.8**	**0.271**
Central	0.6	8.2	3.1	10.1	27.5	0.2	17.7	5.7	12.9	14.1	**0.224**
Malwa	0.8	7.4	2.1	8.2	34.4	0.4	16.4	3.5	13.3	13.6	**0.221**
Northern	0.6	6.1	2.3	5.5	38.3	0.0	18.0	1.3	12.9	15.0	**0.239**
South	0.5	6.5	1.7	5.9	41.3	0.4	12.3	4.3	13.7	13.4	**0.280**
South Western	0.3	7.6	1.9	7.5	38.0	0.3	16.0	2.6	12.2	13.7	**0.282**
Vindhya	0.7	7.1	1.7	5.8	34.9	0.1	15.1	7.7	13.4	13.5	**0.348**
Maharashtra	**0.8**	**9.6**	**1.9**	**4.5**	**38.3**	**0.3**	**14.1**	**3.5**	**14.1**	**12.8**	**0.184**
Coastal	0.1	10.6	1.7	2.2	43.3	0.9	15.6	2.4	15.3	7.9	**0.044**
Eastern	1.6	10.7	0.9	4.4	33.0	0.1	16.8	4.8	14.0	13.5	**0.256**
Inland Central	0.9	8.6	3.5	7.0	36.5	0.4	13.3	3.7	13.4	12.8	**0.245**
Inland Eastern	0.6	9.0	2.8	5.7	35.0	0.1	15.0	4.1	14.1	13.6	**0.199**
Inland Northern	0.7	9.2	1.1	5.1	39.0	0.5	14.1	3.9	13.7	12.7	**0.235**
Inland Western	0.6	10.4	1.0	2.2	41.8	0.2	13.2	2.7	14.7	13.1	**0.210**
Manipur	**14.6**	**4.2**	**5.5**	**6.6**	**0.0**	**2.6**	**25.0**	**5.4**	**16.7**	**19.5**	**0.023**
Hills	25.0	0.0	0.0	0.0	0.0	0.0	25.0	16.7	16.7	16.7	**0.015**
Plains	12.7	5.0	7.7	6.5	0.0	3.1	25.0	3.3	16.7	20.0	**0.025**
Meghalaya	**0.8**	**3.8**	**4.1**	**9.3**	**32.4**	**3.3**	**18.5**	**5.8**	**13.5**	**8.6**	**0.205**
Mizoram	**0.0**	**0.0**	**6.1**	**4.1**	**47.7**	**3.9**	**8.0**	**6.5**	**15.9**	**7.9**	**0.023**
Nagaland	**0.0**	**0.0**	**0.0**	**0.6**	**49.6**	**6.1**	**5.3**	**7.6**	**13.8**	**17.0**	**0.094**
Odisha	**1.3**	**8.1**	**2.7**	**6.4**	**33.7**	**0.5**	**17.1**	**3.7**	**13.4**	**13.0**	**0.325**
Coastal	1.4	9.0	2.9	5.3	33.2	0.5	17.0	4.2	13.4	13.1	**0.335**
Northern	0.7	6.0	1.7	5.1	37.6	0.3	17.1	4.2	13.7	13.5	**0.314**
Southern	1.5	8.7	3.4	9.0	31.1	0.7	17.3	2.5	13.3	12.6	**0.321**
Pondicherry	**1.6**	**7.9**	**3.7**	**10.5**	**21.9**	**0.0**	**21.8**	**0.0**	**15.6**	**17.0**	**0.022**
Punjab	**2.2**	**5.9**	**2.8**	**9.0**	**30.1**	**1.3**	**20.7**	**0.2**	**12.5**	**15.3**	**0.079**
Northern	3.3	5.9	2.4	9.8	26.1	1.6	22.2	0.3	13.7	14.7	**0.070**
Southern	1.3	6.0	3.0	8.4	33.0	1.1	19.7	0.2	11.6	15.7	**0.089**
Rajasthan	**0.8**	**7.3**	**3.2**	**7.6**	**33.9**	**0.4**	**16.5**	**3.1**	**13.3**	**14.0**	**0.195**
North-Eastern	0.5	4.0	3.1	6.7	36.4	0.2	16.9	4.1	14.1	13.9	**0.165**
Northern	1.9	11.5	2.6	6.8	33.2	0.6	14.7	2.0	12.1	14.5	**0.184**
South-Eastern	0.6	6.2	3.0	10.3	33.0	0.2	17.9	2.4	12.9	13.3	**0.241**
Southern	0.2	11.0	2.7	9.5	26.7	0.4	18.7	3.2	13.8	13.8	**0.248**
Western	0.6	6.7	4.1	7.0	34.6	0.4	15.9	3.2	13.4	14.1	**0.219**
Sikkim	**6.6**	**0.0**	**0.0**	**0.0**	**52.4**	**0.0**	**23.5**	**0.0**	**0.0**	**17.5**	**0.014**
Tamil Nadu	**4.1**	**8.2**	**1.6**	**6.7**	**29.2**	**1.4**	**20.9**	**1.6**	**13.4**	**13.0**	**0.158**
Coastal	**3.9**	**8.3**	**1.4**	**7.4**	**26.8**	**1.6**	**20.5**	**1.4**	**14.6**	**13.9**	**0.191**

Coastal Northern	9.0	12.5	2.0	4.5	21.6	1.1	21.5	0.4	13.5	13.8	**0.144**
Inland	1.9	7.0	1.2	11.4	30.8	0.8	20.4	0.9	14.1	11.5	**0.151**
Southern	0.6	4.0	1.7	4.4	39.8	1.8	21.0	3.6	11.0	11.9	**0.140**
Tripura	**1.3**	**3.5**	**2.5**	**13.0**	**32.8**	**1.6**	**14.6**	**5.6**	**12.6**	**12.6**	**0.136**
Uttar Pradesh	**1.9**	**8.1**	**2.8**	**6.9**	**32.0**	**0.7**	**18.5**	**1.1**	**13.8**	**14.1**	**0.256**
Central	2.5	8.6	1.8	4.7	34.7	1.0	17.9	1.2	13.8	13.9	**0.251**
Eastern	2.0	8.7	2.4	6.7	31.7	0.8	18.5	1.3	13.9	14.1	**0.287**
Northern upper Ganga Plain	1.0	5.6	5.0	10.3	30.9	0.6	19.2	0.0	13.2	14.2	**0.208**
Southern	1.5	8.5	5.0	7.9	24.1	0.7	19.9	3.1	14.6	14.7	**0.178**
Southern Upper Ganga Plains	1.8	7.5	3.2	7.2	32.9	0.3	18.1	1.1	13.8	13.9	**0.244**
Uttarakhand	**0.3**	**12.6**	**1.3**	**3.8**	**35.1**	**0.0**	**18.7**	**3.1**	**10.9**	**14.0**	**0.201**
West Bengal	**0.9**	**8.8**	**3.1**	**12.1**	**28.4**	**0.6**	**18.5**	**1.8**	**12.7**	**13.2**	**0.222**
Central Plains	1.2	10.1	3.4	12.7	26.9	0.5	18.0	0.5	13.2	13.5	**0.200**
Eastern Plains	1.1	9.5	3.0	13.0	27.0	0.3	18.7	0.6	13.2	13.5	**0.278**
Himalayan	0.3	7.4	2.1	13.2	26.8	0.2	16.7	8.4	12.0	12.9	**0.234**
Southern Plains	0.1	5.6	4.0	6.8	38.0	2.3	20.4	0.0	11.2	11.5	**0.140**
Western Plains	2.3	16.3	2.3	4.7	32.7	0.0	18.7	0.0	9.6	13.4	**0.113**
India	**1.4**	**8.2**	**2.6**	**7.7**	**31.9**	**0.7**	**17.8**	**2.8**	**13.4**	**13.6**	**0.207**

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The Editor

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