

Multidimensional Poverty Index: A Comparative Analysis of the Indian states

Dr. Dipak C. Chaudhari

Head, Dept. of Economics,

Abhinav College of Arts, Commerce and Science, Bhayander

Email: drdcchaudhari@gmail.com

Abstract:

This research paper is an attempt to understand and analysed the different facet of poverty. The present paper delves into the multidimensional poverty index (MPI) published by NITI Aayog in its report for the years 2015-2016 and 2019-2021, The NITI Aayog has used the data of NFHS 4 and NFHS 5 for calculating MPI. The paper highlights the disparities in MPI across Indian states over the two periods. It indicates that the general decline in MPI at national level, with the reduction in Headcount Ratio from 24.85% to 14.96% and the MPI almost reduced half from 0.117 to 0.066. Despite this national progress, considerable interregional disparities persist. Bihar has consistently recorded the highest MPI, whereas Kerala maintained the lowest level of MPI across the India. At another side Bihar showed significant improvement in MPI during the period, contrasting with states like Kerala, Lakshadweep, Punjab, and Puducherry which lagged in MPI reduction. The paper underscores the need for targeted policies addressing the diverse nature of poverty across Indian states.

Keywords: MPI, Headcount ratio, Intensity ratio

Introduction:

Poverty has been conventionally measured through income but this approach failed to capture the multidimensional nature of poverty. The term Multidimensional poverty is more than mere measurement of income, it includes other factors such as health, education, and standard of living. This approach of poverty provides a more holistic understanding of poverty. Through understanding multiple facets of poverty, policymakers could develop more specific policies to target the root causes of poverty and improved the well-being of affected one. Multidimensional poverty (MPI) is more specific way to understand the deprivation of an individuals and

communities. Multidimensional approach of poverty acknowledges that poverty cannot be homogeneous it is diverse concept. Different individuals may have different nature of deprivations, and it is necessary to measure the combinations of diversity. Multidimensional approach of poverty, capture the complexities of deprivation. This helps to understand the problem of poverty in true sense and enable to develop more comprehensive and inclusive policies to alleviate poverty. Additionally, the multidimensional approach of poverty identifies the different capabilities and functioning an individuals and communities has, even at similar levels of resources. This highlights more specific

challenges an individual face to achieve decent standard of living.

This paper study the Multidimensional poverty index published by NITI Aayog and comparatively analysed the data of two different periods 2015–2016 and 2019-2021 based on NFHS 4 and NFHS 5. The objective of the paper is to identify the disparities in the Multidimensional poverty across states of India during two different periods, i.e. 2015–16 and 2019-2021. In addition, this paper attempted to inquired the change in MPI's in absolute terms. The headcount ratio (H), and poverty intensity (A) in to the same periods across the states of India. The final section explains absolute change in MPI indicators across the states.

Data and Method:

This study uses the secondary data. The data of India’s MPI for the year 2015–2016 and 2019-21 is obtained from the report named India’s National Multidimensional Poverty Index: A progress review 2023 published by NITI Aayog in 2023. The NITI Aayog uses Alkire–Foster (A–F) Method developed by UNDP and OPHI (Oxford Poverty & Human Development Initiatives). A-F Method has many technical and practical advantages which made it suitable for the measurement of non-monetary poverty estimation. MPI of the year 2015-16 is based on NFHS-4 dataset collected in the year 2015– 16, MPI of 2019–21 uses the NFHS-5 collected during 2019-21.

As per the UNDP HDR 2015 and 2019 MPI for the year 20015–2016 and 2019-2021 are calculated MPI using three dimensions i.e. health, education, and standard of living. MPI indicators reflects Sustainable Development Goals (SDGs).

The Headcount Ratio (H) is determined the multidimensionally poor population in proportion with the total population. Headcount Ratio (H) is one indicator use to determine the MPI. H denotes the Percentage of multidimensionally poor population.

$$H = \frac{q}{n} * 100$$

Where, q implies number of multidimensional poor and n implies total population.

To calculate MPI the second index used along with the Headcount Ratio is Intensity of poverty (A) The intensity of poverty shows the percentage of deprived population suffered from multidimensionally poverty. It is expressed in percentage.

$$A = \frac{1}{q} \sum_{i=1}^q ci(k)$$

The Multidimensional Poverty Index (MPI) is calculated by multiplying both indices, the Headcount Ration (H) and Intensity of poverty (A). Hence, the MPI is calculated as.

$$MPI = H * A$$

Multidimensional Poverty in India:

Table:1 Multidimensional Poverty Index in India

Year	Headcount Ratio (H)	Intensity (A)	MPI (H x A)
2015-16	24.85%	47.14%	0.117
2019-21	14.96%	44.39%	0.066

Source: India’s National Multidimensional Poverty Index A progress review 2023, NITI Aayog

The table 1 states that the MPI during NFHS-4 and NFHS-5 have been falling in almost all the states in India,

Headcount and Intensity index of poverty in the year 20015- 20016 and 2019- 2021 has maintained good progress. Headcount ratio has dropped down from 24.85 percent in 2015-2016 to 24.85 percent in 2019-2021. The MPI score has dropped more than halved during this period from 0.117 to 0.066. There is no significance changed in intensity of poverty. It reduced from 47.14 percent to 44.39 percent. This is a serious concern for policy makers. Though there is significant reduction in to MPI at national level, Large interregional disparities have been observed across the sates in India.

State wise pattern of poverty in 20015-2016 and 2019-21

Table 2 reveals that among all the states in India Bihar has highest MPI 0.265 during 2015-16 followed by Jharkhand, Uttar Pradesh, Madhya Pradesh, Aasam and Meghalaya due to Lack of educational facilities, scarcity of physical infrastructure for industrial sector, high unemployment, burden of population on the resources are the main reasons behind the of the high incidence of MPI in these states. The Kerala has lowest MPI with value 0.003 in 2015-16. Kerala was the lowest in MPI across all the states in India. After Kerala Puduchchery, Lakshadweep, Goa were having lowest MPI.

Table 2- State wise MPI, Headcount Ratio (H) and Intensity (A) in 20015-2016 and 2019- 2021

State	NFHS-4 (2015-16)			NFHS-5 (2019-21)			Absolute Change		
	Headcount Ratio	Intensity	MPI	Headcount Ratio	Intensity	MPI	Headcount Ratio	Intensity	MPI
Andhra Pradesh	11.77%	43.28%	0.051	6.06%	41.12%	0.025	-5.71%	-2.16%	-0.026
Arunachal Pradesh	24.23%	47.25%	0.115	13.76%	43.04%	0.059	-10.47%	-4.21%	-0.056
Assam	32.65%	47.88%	0.156	19.35%	44.41%	0.086	-13.30%	-3.47%	-0.07
Bihar	51.89%	51.01%	0.265	33.76%	47.40%	0.16	-18.13%	-3.61%	-0.105
Chhattisgarh	29.90%	44.64%	0.133	16.37%	42.61%	0.07	-13.53%	-2.03%	-0.063
Goa	3.76%	40.13%	0.015	0.84%	38.69%	0.003	-2.92%	-1.44%	-0.012
Gujarat	18.47%	44.97%	0.083	11.66%	43.25%	0.05	-6.81%	-1.72%	-0.033
Haryana	11.88%	44.40%	0.053	7.07%	43.34%	0.031	-4.81%	-1.06%	-0.022
Himachal Pradesh	7.59%	39.44%	0.03	4.93%	40.22%	0.02	-2.66%	0.78%	-0.01
Jharkhand	42.10%	47.92%	0.202	28.81%	45.59%	0.131	-13.29%	-2.33%	-0.071
Karnataka	12.77%	42.76%	0.055	7.58%	41.21%	0.031	-5.19%	-1.55%	-0.024
Kerala	0.70%	38.99%	0.003	0.55%	36.92%	0.002	-0.15%	-2.07%	-0.001
Madhya Pradesh	36.57%	47.25%	0.173	20.63%	43.70%	0.09	-15.94%	-3.55%	-0.083
Maharashtra	14.80%	43.76%	0.065	7.81%	41.77%	0.033	-6.99%	-1.99%	-0.032

Manipur	16.96%	44.61%	0.076	8.10%	41.91%	0.034	-8.86%	-2.70%	-0.042
Meghalaya	32.54%	48.08%	0.156	27.79%	48.01%	0.133	-4.75%	-0.07%	-0.023
Mizoram	9.78%	47.42%	0.046	5.30%	45.62%	0.024	-4.48%	-1.80%	-0.022
Nagaland	25.16%	46.29%	0.116	15.43%	42.61%	0.066	-9.73%	-3.68%	-0.05
Odisha	29.34%	46.42%	0.136	15.68%	44.50%	0.07	-13.66%	-1.92%	-0.066
Punjab	5.57%	43.74%	0.024	4.75%	41.22%	0.02	-0.82%	-2.52%	-0.004
Rajasthan	28.86%	47.34%	0.137	15.31%	42.70%	0.065	-13.55%	-4.64%	-0.072
Sikkim	3.82%	41.20%	0.016	2.60%	41.02%	0.011	-1.22%	-0.18%	-0.005
Tamil Nadu	4.76%	39.97%	0.019	2.20%	38.70%	0.009	-2.56%	-1.27%	-0.01
Telangana	13.18%	43.29%	0.057	5.88%	40.85%	0.024	-7.30%	-2.44%	-0.033
Tripura	16.62%	45.03%	0.075	13.11%	42.68%	0.056	-3.51%	-2.35%	-0.019
Uttar Pradesh	37.68%	47.60%	0.179	22.93%	44.83%	0.103	-14.75%	-2.77%	-0.076
Uttarakhand	17.67%	44.35%	0.078	9.67%	41.99%	0.041	-8.00%	-2.36%	-0.037
West Bengal	21.29%	45.50%	0.097	11.89%	42.35%	0.05	-9.40%	-3.15%	-0.047
Andaman & Nicobar Islands	4.29%	40.50%	0.017	2.30%	40.62%	0.009	-1.99%	0.12%	-0.008
Chandigarh	5.97%	43.39%	0.026	3.52%	47.41%	0.017	-2.45%	4.02%	-0.009
Dadra & Nagar Haveli & Daman & Diu	19.58%	44.23%	0.087	9.21%	42.15%	0.039	-10.37%	-2.08%	-0.048
Delhi	4.44%	43.92%	0.02	3.43%	41.99%	0.014	-1.01%	-1.93%	-0.006
Jammu & Kashmir	12.56%	44.17%	0.055	4.80%	42.11%	0.02	-7.76%	-2.06%	-0.035
Ladakh	12.70%	40.37%	0.051	3.53%	41.20%	0.015	-9.17%	0.83%	-0.036
Lakshadweep	1.82%	35.80%	0.007	1.11%	36.47%	0.004	-0.71%	0.67%	-0.003
Puducherry	1.71%	38.55%	0.007	0.85%	38.03%	0.003	-0.86%	-0.52%	-0.004

Source: India's National Multidimensional Poverty Index A progress review 2023, NITI Aayog

Table 2 shows that during the years 2015–2016, 9 out of the 36 states and UTs has highest level of MPI exceeded the national value of 0.117 and during 2019-21 8 out of 36 states and UTs has highest MPI compare to the national level 0.066 of the same period. States like Aasam, Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh, Meghalaya, Odisha, Uttar Pradesh having lowest level of MPI compare to national level during both NFHS-4 and NFHS-5 except Rajasthan. Rajasthan MPI got improved NFHS-5 and not fall below national level. All these states having

lowest MPI are primarily located in India's central and eastern regions. Table 2 further reveals that the Bihar is the only states having highest MPI which is greater than the high MPI category (0.212 and above) during 2015-16. Seven states Arunachal Pradesh, Aasam, Chhattisgarh, Meghalaya, Nagaland, Odisha and Rajasthan fall within the MPI's moderate category (considering range between 0.108 to 0.159). While fifteen states fall under lowest MPI category (less than 0.054). Kerala having the lowest MPI value of 0.003 recognised as the states having lowest MPI in India.

While studying the pattern of the Headcount ratio during the 2015-16. Bihar (51.89 %) has the highest headcount ratio. The states like Bihar, Aasam, Chhattisgarh, Jharkhand, Madhya Pradesh, Meghalaya, Nagaland, Odisha, Rajasthan, Uttar Pradesh surpassed the national headcount ratio 24.85 percent. In contrary Kerala (0.70 %) has lowest headcount ration during the period. In contrary Kerala (0.70%) had lowest headcount ratio among all the states during 2015-16.

According to intensity data given in to table 2. Bihar (51.01 %) shows the highest intensity during the 2015-16. Nine states had high intensity than the National average intensity 47.14 percent. The states like Arunachal Pradesh. Bihar, Aasam, Jharkhand, Madhya Pradesh, Meghalaya, Mizoram, Rajasthan and Uttar Pradesh surpassed the national intensity index. These states are almost similar to the states having highest headcount ration. In contrary the states and UTs like Lakshdweep (35.85%), Puducherry (38.55%) Himachal Pradesh (38.49%), Kerala (38.99 %) has lowest intensity during 2015-16.

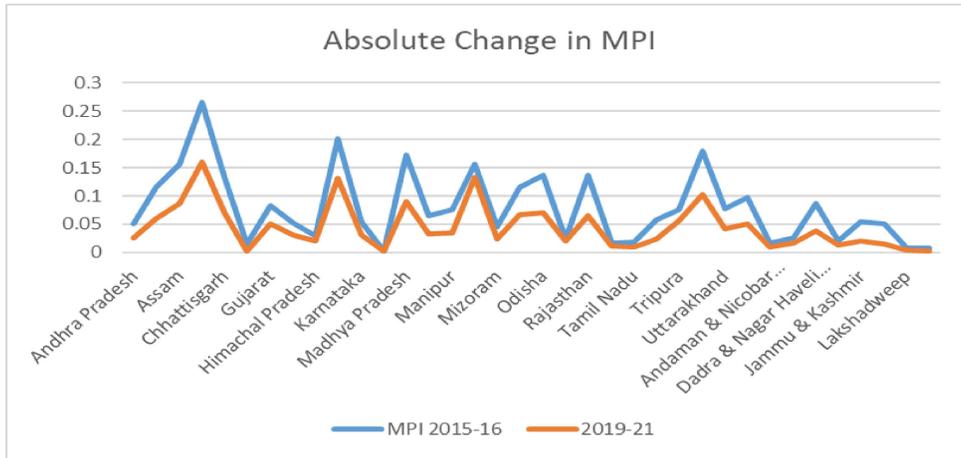
While analysing the state wise pattern of Multidimensional poverty during 2019-21 it is observed the regional disparities in the MPI, headcount ratio and intensity across the states. According to the data in table 2, Bihar had highest MPI (0.16) and Kerala had the lowest MPI (0.002) in India. After the Bihar states like Meghalaya (0.133) and Jharkhand (0.131) had faced high level of multidimensional

poverty these states fall under the moderate level poverty (considering range between 0.108 to 0.159 MPI). During 2019-21 total 24 states fall under the lowest MPI category (below 0.054) whereas during 2015-16 only 15 states fall under the lowest MPI category (below 0.054). This shows a commendable improvement by the states in terms of Multidimensional poverty. Comparing with the national level score during the same period it is observed that 9 states had greater MPI than the national MPI (0.066). The states have crossed the national MPI threshold were Bihar, Meghalaya, Jharkhand, Uttar Pradesh, Madhya Pradesh, Aasam, Chhattisgarh, Odisha, and Nagaland. It should be noted that the Kerala remain as the lowest MPI states in India during both 2015–16 and 2019-21.

Absolute change in MPI across the Indian states between 2015-16 to 2019-21

Several states like Arunachal Pradesh, Aasam, Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh, Nagaland, Odisha, Rajasthan, Uttar Pradesh have made significant advancement in MPI on the other side the states and UTs like Kerala, Lakshadweep, Punjab, Puducherry, Sikkim has the lowest reduction in MPI as a result we can conclude that the countries with the higher poverty incidence could achieved substantial reduction in MPI compare to the countries with the lowest MPI.

Graph-1



After calculating the absolute change in MPI of the 2015-16 and 2019-21 it is observed that Bihar (0.105) could achieved significant improvement in MPI. Followed by Madhya Pradesh (0.83), Uttar Pradesh (0.76) and Rajasthan (0.72). While states like Kerala, Lakshadweep, Punjab and Puducherry could not gain much in terms of MPI reduction during the NFHS-4 and NFHS-5.

Conclusion:

The paper underscores the importance of multidimensional poverty approach to understanding poverty, It is beyond mere income parameter to it includes health, education, and living standards. The analyses based on the MPI data from NITI Aayog for 2015-2016 and 2019-2021 highlight an overall reduction in multidimensional poverty across India. Despite the positive trend in MPI, there exist disparities among the states, with Bihar registered the highest MPI value in NFHS-4 (2015-16) and NFHS-5 (2019-21) saw the fastest reduction in MPI value in absolute terms at the same time Kerala the lowest in MPI saw slowest reduction in MPI. States like Bihar, Madhya Pradesh,

and Uttar Pradesh have shown notable progress in reducing MPI, while others like Kerala, Lakshadweep, Punjab, and Puducherry have made comparatively slower advancements. These findings emphasize the importance of targeted and region-specific policy interventions to address the multifaceted nature of poverty. It is imperative for policymakers to recognize and act upon these disparities to ensure inclusive development and improve the overall well-being of the population across all states in India.

Reference:

- Alkire, S. & Foster, J. (2011). Counting and multidimensional poverty measurement. *Journal of Public Economics*, 95(7-8), 476-487.
- Alkire, S. & Santos, M. E. (2014). Measuring acute poverty in the developing World: robustness and scope of the multidimensional poverty index. *World Development*, 59, 251-274.
- Maiti, K. D. & Mehrotra, S. (2022). A Curious Case of the Millions of “Disappeared” Poor in India.

- Mishra, A. & Ray, R. (2013). Multi-dimensional deprivation in India during and after the reforms: Do the household expenditure and the family health surveys present consistent evidence? *Social Indicators Research*, 110(2), 791–818
- Ohlan, R. (2013). Pattern of regional disparities in socioeconomic development in India: District level analysis. *Social Indicators Research*, 114(3), 841–873
- Sarkar, S. (2012). Multi-dimensional Poverty in India: Insights from NSSO data. OPHI Working Paper
- Tripathi, S. & Yenneti, K. (2020). Measurement of multidimensional poverty in India: A State-level analysis. *Indian Journal of Human Development*, 14(2), 257–274
- UNDP (2015). Human development report 2015: Work for human development. United Nations Development Programme
- Multidimensional Poverty Index, A Progress review 2023. NITI Aayog.
