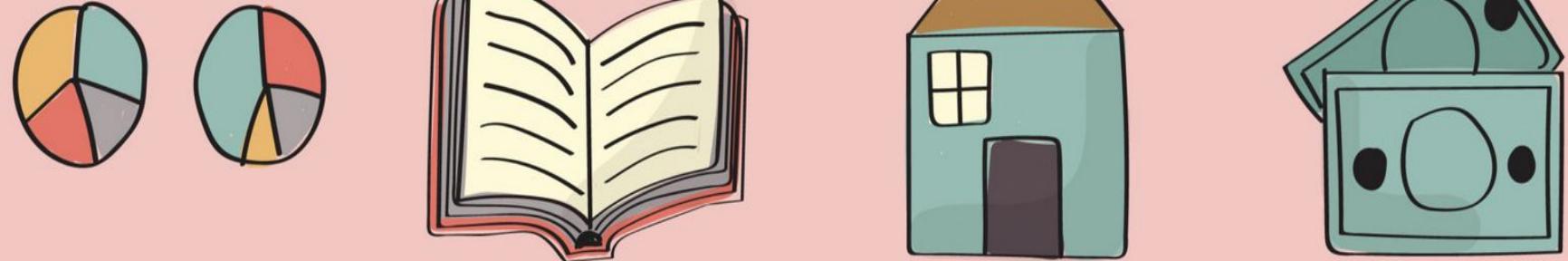


PERCEPTIONS OF POVERTY

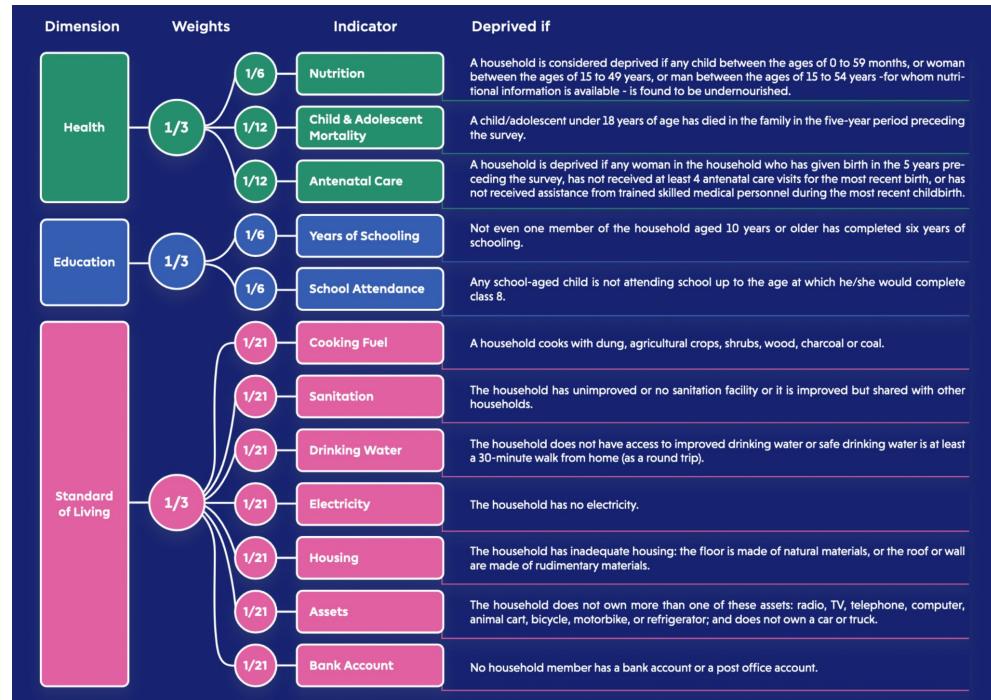
Rishi Dey Chowdhury, Anushka De, Shibendra Kumar Singh, etc.



Multi-Dimensional Poverty Index

An weighted sum score calculated based on this chart is the Deprivation Score (DS) which translates to Poverty level of a person.

Here, we do not question the validity of MPI. But we want to improve on it to be apt for all class of people and across all regions across India.



The Problem

Regional Problems

Many of the indicators does not portray the true picture of poverty or deprivations faced by people living in a region.

Current weighting scheme doesn't take into account this factor.

Indian Context

The MPI Indicators are taken directly from global MPI model. This makes it less accurate in Indian context.

Need to revisit the indicators and improve their quality.

Problem statement

Design a weighting scheme which is more robust and flexible:

- Adaptable Weights
- Weights \propto Deprivation
- The Indicators truly capture what is intended

Challenges deep-dive

Challenge 1

Design Questionnaire

The questionnaire should ideally touch upon all the important aspects required to validate the weights and make them adjustable.

Also the validity of the indicators.

Challenge 2

Collect Data

We can help ease out this step of survey by following the sampling scheme of NSSO.
We must collect as much bg info about a place in advance as possible and frame the qsns accord.

Challenge 3

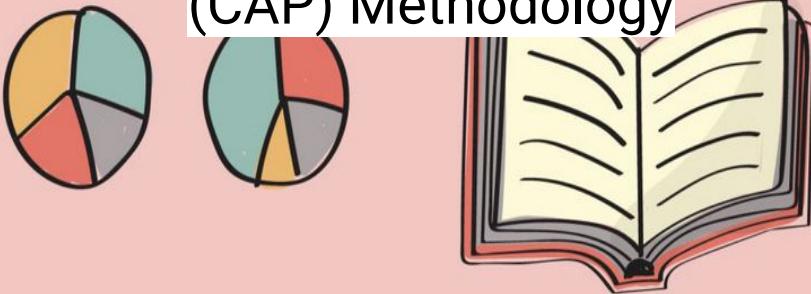
Inference and Benchmark

We will have to infer from whatever response we get from the survey. Translate it into meaningful decisions for policy makers and also validate our empirical results with past data.



CAP Framework

Contrastive Allocative Perturbative
(CAP) Methodology



An effective framework which can be leveraged to design questionnaire and estimate weights for MPI

Design

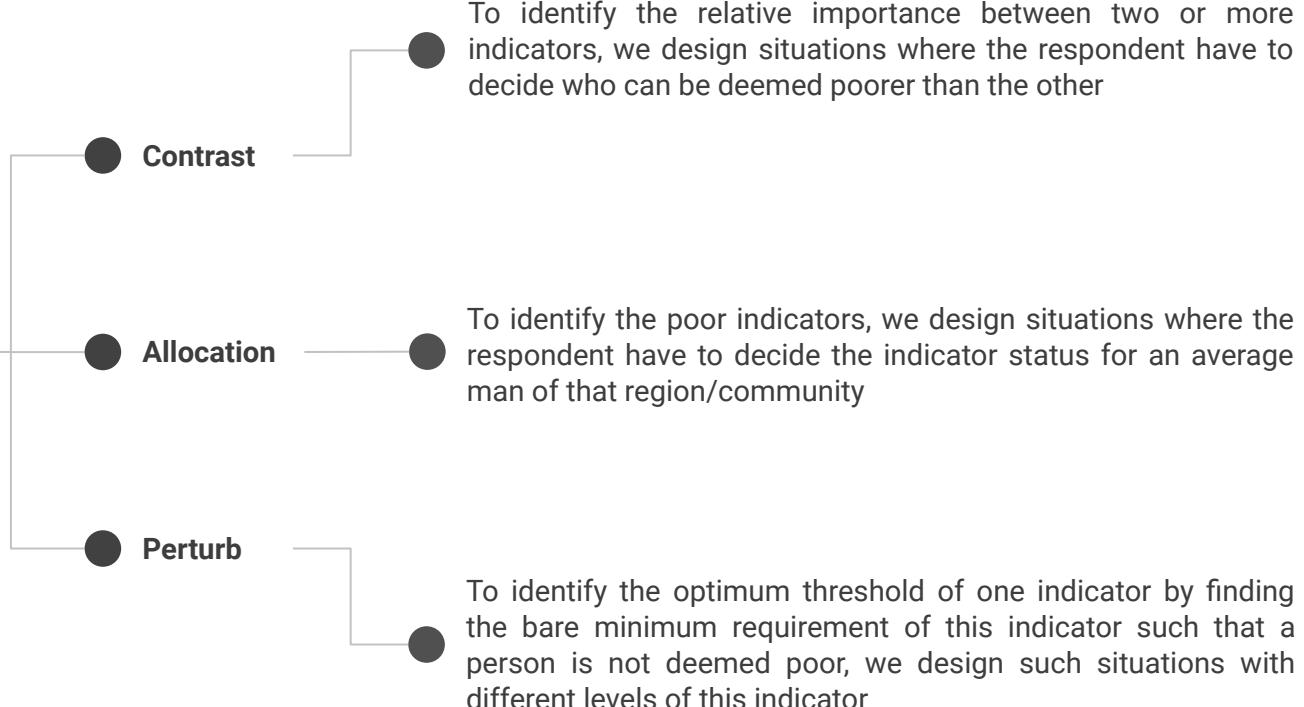
The Questionnaire Structure

Collect as much **background information about the place** from secondary data, if possible, where survey will be conducted to calibrate the two extremes of the poverty scale and available facilities to frame targeted questions and reduce redundancy.

Questionnaire

Collect information regarding **socio-economic background of the respondent**.

Past MPI Data collected can give us prior idea in selecting which questions to ask.



Emphasis should be put on the fact that the **respondents should be encouraged to answer this question keeping in mind their locality** and not the entirety of the city or India

Sample Questions

Contrastive Comparison

Rank the following according to their level of poorness. The other indicators not mentioned remain the same across each person.

A



B



C



Framing the Comparisons

- I: We should keep the number of **X** same in each person, o.w. one with more **X** will be selected as more poor.
- I: To reduce the no. of questions we can compare **good** indicators among themselves and same for **bad** ones.
- I: If some region is not having **good** medical facilities then at least one of our ranking question must have one **✓** and one **X** for one of the medical indicators.

Why? To understand if they really feel deprived of that

What is good? The indicators which received higher score

What is bad? The indicators which received lower score

Past MPI data can come into play.
More on it Later

Between the Broad indicators

Q:  Schooling,  Nutritious Daily Meal,  Electricity

Q:  Water,  Children Care,  Education

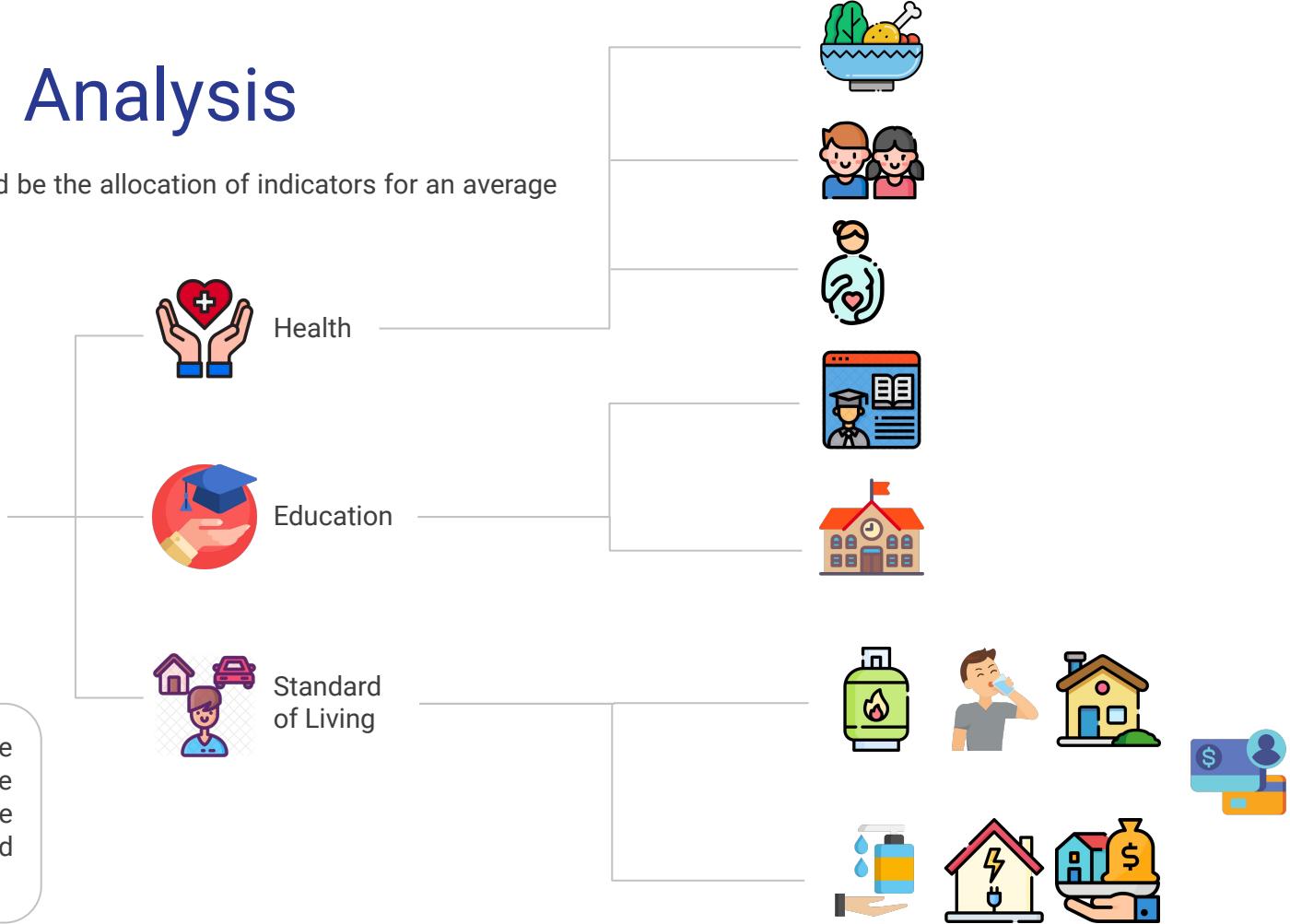
Q:  Bank Account,  Antenatal Care,  Education

Allocation Analysis

In your opinion what should be the allocation of indicators for an average man in this region?



We may provide the background of the average man depending on the average income, family size and education level of that region.



Between the Broad indicators

Q: Would you choose paying medical bills over your child's school fees?

Q: If you have money so that you can either spend over your child's school fees or eating a month's two times a day nutritious meal , what would you choose?

Q: Would you consider expenditure for antenatal care more important than paying for electricity?

Q: Which is more important for you: use of cooking fuel or payment of your child's school fees?

Within the Indicators

Q: What would you prioritize: payment for electricity or payment for clean drinking water?

Q: Is living in a *pucca* house more important for you or having access to electricity?

Q: Which is more important for you:living in a *pucca* house or having a bank account?

Q: Which is more important for you: owing a T.V. or having a bank account?

Perturbation Performance

Whom out of the following will you consider to be NOT poor? More than one person can be chosen.

A



B



C



D



Attended School Upto Class 8



Attended School Upto Class 10



Attended School Upto Class 12



Graduated

Benefits of CAP Framework

Better, Flexible and Accurate Methodology

How CAP Framework Outstands?

Mitigate Bias

- We never ask the respondent about his situation.
- We always present the respondent with schematics of a person which helps reduce false response or bias.



Measures Deprivation

- Help Figure out the threshold of deprivation for many indicators.
- People have to prioritize between the indicators which help identify the levels of deprivation.



Capture Regional View

- Helps bring out the implicit and explicit views on various indicators in that region.
- Allows us to inculcate regional aspects and poverty extremes in our questionnaire to make them more relatable



Past MPI Data

Adding Insights for framing regional questions

West Bengal

A snapshot of multidimensional poverty in West Bengal



Overview

West Bengal Headcount Ratio, Intensity and MPI

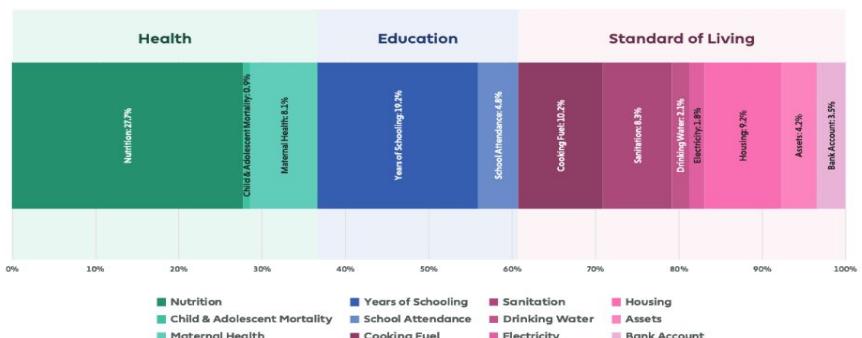
$$\text{Headcount Ratio (H)} \times \text{Intensity (A)} = \text{MPI (HxA)}$$

21.43% \times 45.49% = 0.097

Rural			Urban		
Headcount Ratio	Intensity	MPI	Headcount Ratio	Intensity	MPI
25.8%	45.39%	0.117	11.67%	46%	0.054

West Bengal: Indicator-wise Contribution to the MPI

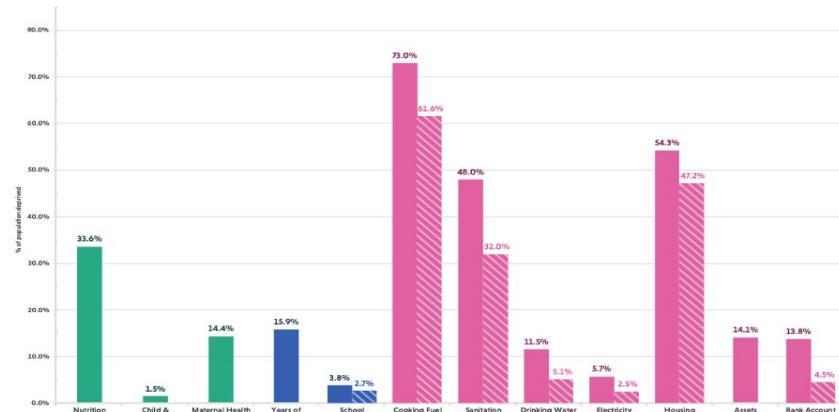
Percentage contribution of each indicator to the MPI score



Note on the data period: The NFHS 4 (2015-16) precedes the full roll out of flagship schemes of Pradhan Mantri Awas Yojana (PMAY), Jai Jeevan Mission (JJM), Swachh Bharat Mission (SBM), Pradhan Mantri Sahaj Bilgi Har Ghar Yojana (Saubhagya), Pradhan Mantri Ujjwala Yojana (PMUY), and the Pradhan Mantri Jan Dhan Yojana (PMJDY).

West Bengal: Uncensored Headcount Ratio

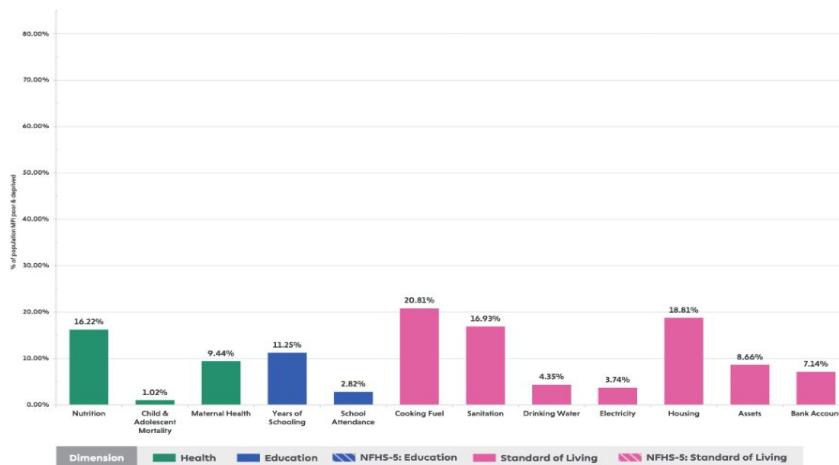
Percentage of total population who are deprived in each indicator



Note on comparison: The striped bars denote the provisional estimates of the uncensored headcount ratio based on the data available in the NFHS-5 West Bengal State Report (2019-20).

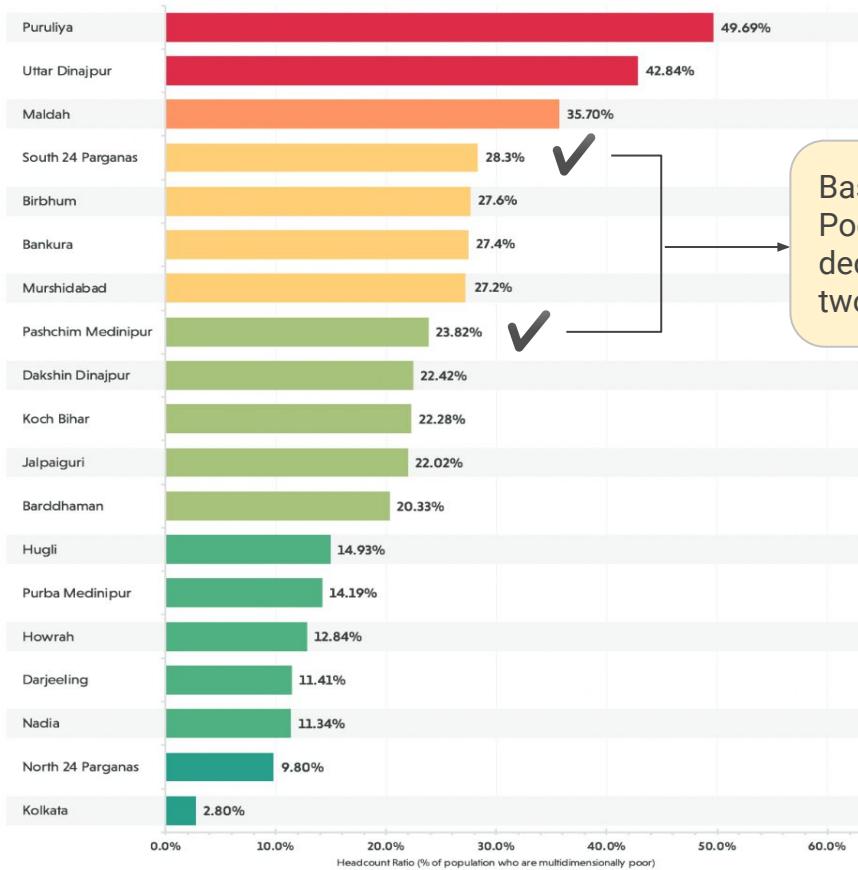
West Bengal: Censored Headcount Ratio

Percentage of total population who are multidimensionally poor and deprived in each indicator



West Bengal: Headcount Ratio

Percentage of population who are multidimensionally poor in each district



Multidimensional Poverty Index

0.013 to 0.044	0.045 to 0.075	0.076 to 0.107	0.108 to 0.139	0.140 to 0.171	0.172 to 0.203	0.204 to 0.236
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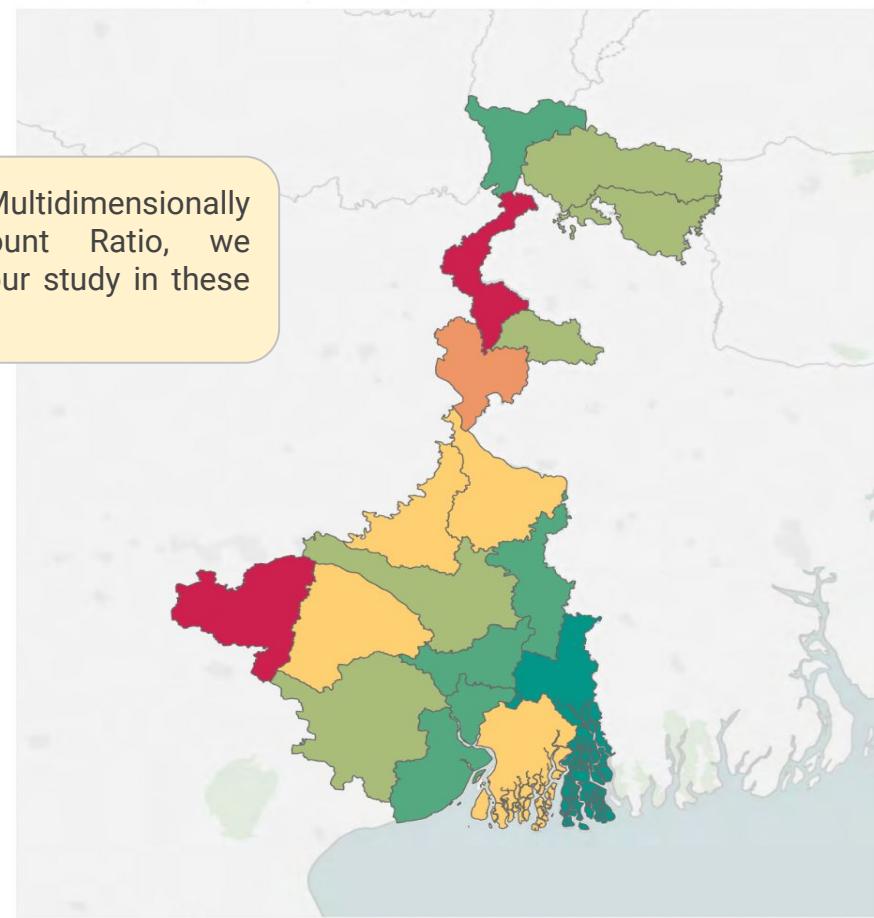
The size of the bar represents the percentage of population who are multidimensionally poor in each district of West Bengal.

The colour of the bar represents the MPI score of the district. The colour moves from green, through yellow, to red as the MPI score increases.

Green represents areas with the lowest MPI scores while red represents areas with the highest MPI scores. The legend provides the range of MPI scores represented by a colour.

West Bengal

Multidimensional Poverty Index Score (District-wise)



0.013 to 0.044	0.045 to 0.075	0.076 to 0.107	0.108 to 0.139	0.140 to 0.171	0.172 to 0.203	0.204 to 0.236
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Districts of West Bengal are as per the 2011 Census of India. The colour represents the MPI score of a district. The colour moves from green, through yellow, to red as the MPI score increases. Green represents areas with the lowest MPI scores while red represents areas with the highest MPI scores. The legend provides the range of MPI scores represented by a colour.

Multidimensional Poverty in West Bengal

District-wise Headcount Ratio, Intensity and MPI Score

Districts of West Bengal	Headcount Ratio	Intensity	MPI
Bankura	27.42%	44.58%	0.122
Bardhaman	20.33%	47.06%	0.096
Birbhum	27.61%	45.60%	0.126
Dakshin Dinajpur	22.42%	44.18%	0.099
Darjeeling	11.41%	44.97%	0.051
Howrah	12.84%	45.12%	0.058
Hugli	14.93%	44.23%	0.066
Jalpaiguri	22.02%	45.90%	0.101
Koch Bihar	22.28%	45.13%	0.101
Kolkata	2.80%	45.56%	0.013
Maldah	35.70%	45.66%	0.163
Murshidabad	27.23%	45.96%	0.125
Nadia	11.34%	42.60%	0.048
North 24 Parganas	9.80%	41.51%	0.041
Pashchim Medinipur	23.82%	43.50%	0.104
Purba Medinipur	14.19%	42.68%	0.061
Puruliya	49.69%	47.44%	0.236
South 24 Parganas	28.27%	45.67%	0.129
Uttar Dinajpur	42.84%	49.79%	0.213

Districts of West Bengal are as per the 2011 Census of India

Multidimensional Poverty in West Bengal

Urban and Rural Headcount Ratio, Intensity and MPI Score for each District

Districts of West Bengal	Headcount Ratio	Rural		Urban	
		Intensity	MPI	Headcount Ratio	Intensity
Bankura	29.38%	44.79%	0.132	7.34%	36.00%
Bardhaman	21.92%	48.56%	0.106	18.38%	44.86%
Birbhum	30.08%	45.76%	0.138	12.97%	43.41%
Dakshin Dinajpur	24.89%	44.45%	0.111	5.13%	35.03%
Darjeeling	15.24%	45.60%	0.069	4.93%	41.69%
Howrah	14.34%	45.55%	0.065	11.88%	44.79%
Hugli	17.23%	43.21%	0.074	10.92%	47.00%
Jalpaiguri	27.88%	46.12%	0.129	3.80%	40.68%
Koch Bihar	23.98%	45.36%	0.109	7.26%	38.51%
Kolkata	-	-	-	2.80%	45.56%
Maldah	37.53%	45.79%	0.172	24.36%	44.42%
Murshidabad	27.50%	45.03%	0.124	26.33%	49.19%
Nadia	14.08%	42.39%	0.060	3.92%	44.73%
North 24 Parganas	13.86%	40.24%	0.056	6.52%	43.70%
Pashchim Medinipur	24.91%	43.54%	0.108	14.85%	42.91%
Purba Medinipur	14.74%	43.06%	0.063	9.95%	38.36%
Puruliya	49.76%	46.04%	0.229	49.30%	55.58%
South 24 Parganas	31.75%	45.76%	0.145	16.70%	45.12%
Uttar Dinajpur	46.23%	49.72%	0.230	19.24%	50.92%

Districts of West Bengal are as per the 2011 Census of India

Questionnaire

Questionnaire

Designing the Survey Questions

Figuring Out Good and Bad Indicators

What is good? The indicators which have higher contrib.

As discussed earlier, We need the **good** and **bad** indicators to consider only important comparisons

What is bad? The indicators which have lower contrib.

Circled ones have higher contribution (>7%)

The contribution of an indicator provides an insight into the **relative deprivation** in a particular indicator based on the weight attached to that indicator – NITI AAYOG Report - Based on NHFS 2015-2016

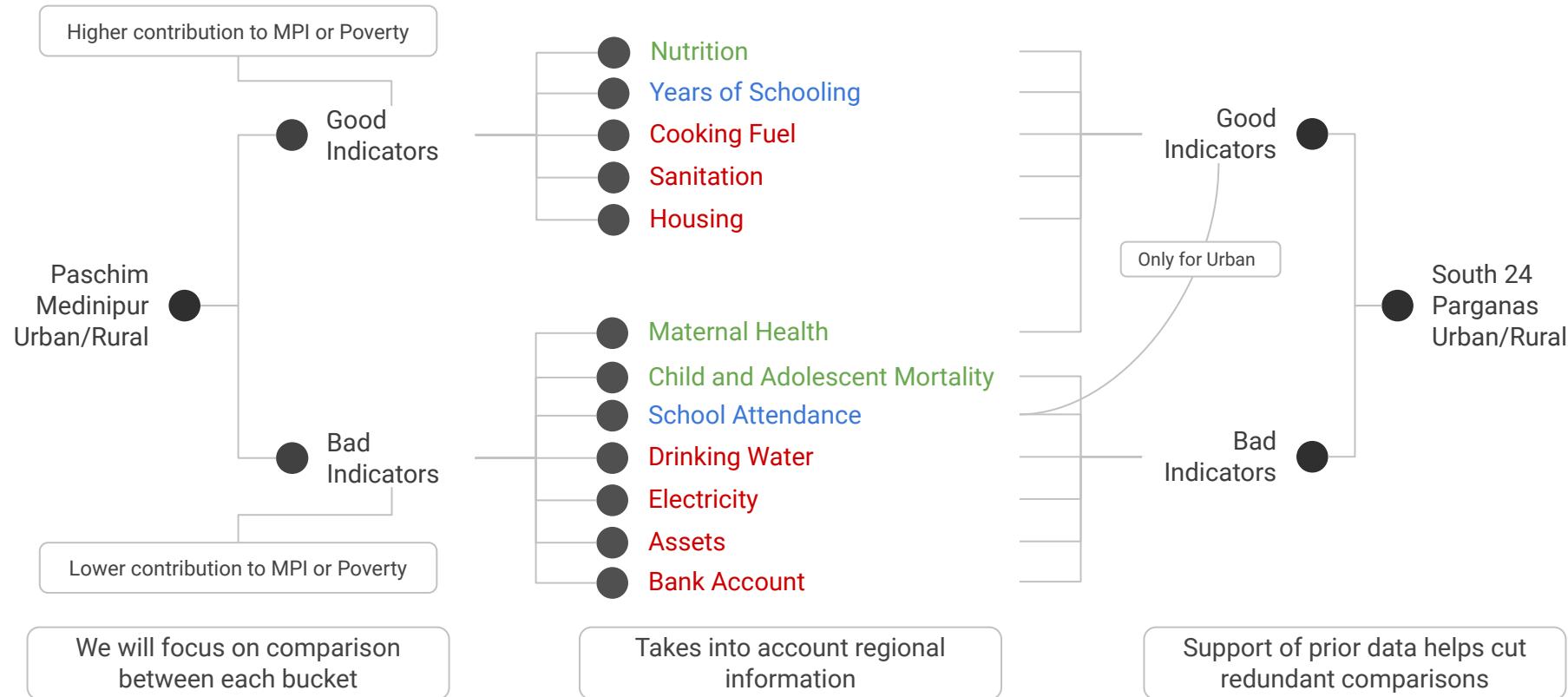
Indicator Contribution

Indicator Contribution: Urban		Urban										Rural																			
State / District	Indicator Contribution: Urban	Health					Education					Standard of Living					Health					Education					Standard of Living				
		Nutrition	Child & Adolescent Mortality	Maternal Health	Years of Schooling	School Attendance	Cooking Fuel	Sanitation	Drinking Water	Electricity	Housing	Assets	Bank Account	Nutrition	Child & Adolescent Mortality	Maternal Health	Years of Schooling	School Attendance	Cooking Fuel	Sanitation	Drinking Water	Electricity	Housing	Assets	Bank Account						
Uttar Pradesh	Shatrapur	26.57%	0.32%	11.92%	13.34%	13.00%	7.78%	6.07%	0.00%	5.73%	8.33%	4.52%	2.01%	26.28%	1.64%	10.37%	13.27%	9.42%	9.00%	0.21%	8.52%	9.21%	2.53%	0.48%							
	Sonbhadra	22.45%	1.57%	8.76%	18.40%	13.01%	7.57%	0.77%	6.42%	6.93%	5.00%	1.54%	-	25.93%	1.34%	10.17%	14.12%	8.07%	9.46%	0.09%	2.97%	6.53%	9.12%	2.49%	0.50%						
	Sultarnpur	37.47%	5.77%	18.74%	10.57%	0.00%	3.02%	7.14%	0.00%	4.12%	10.71%	2.47%	0.00%	-	28.78%	2.57%	12.06%	13.34%	7.10%	9.81%	0.45%	0.80%	4.45%	9.58%	1.40%	0.67%					
	Unnao	24.87%	0.64%	10.02%	19.27%	15.10%	7.09%	5.91%	0.46%	2.78%	6.72%	3.44%	3.50%	-	27.36%	1.58%	10.97%	8.70%	6.24%	9.84%	0.28%	7.66%	9.59%	2.23%	0.82%						
	Varanasi	31.04%	1.46%	11.90%	16.30%	15.27%	4.88%	6.91%	0.47%	0.65%	8.16%	1.62%	1.40%	-	34.11%	2.08%	15.14%	10.16%	5.92%	8.42%	0.97%	2.70%	10.02%	1.13%	0.65%						
	Almora	45.78%	0.00%	22.89%	0.00%	0.00%	7.91%	8.34%	0.00%	0.00%	10.11%	0.00%	5.17%	-	37.05%	1.25%	14.90%	6.20%	0.31%	10.03%	5.99%	4.50%	0.92%	11.46%	5.66%	0.86%					
	Bageshwari	0.00%	0.00%	18.92%	0.00%	37.84%	10.81%	10.81%	0.00%	0.00%	10.81%	0.00%	-	-	33.82%	1.00%	15.15%	9.65%	0.79%	11.36%	6.52%	4.25%	0.85%	9.30%	6.71%	0.43%					
	Chamoli	-	-	-	-	-	-	-	-	-	-	-	-	34.80%	1.53%	14.88%	7.59%	0.33%	10.06%	7.48%	2.59%	1.20%	10.83%	6.85%	0.95%						
	Champawat	29.02%	2.95%	15.03%	12.72%	8.42%	8.52%	8.93%	1.99%	0.37%	8.16%	1.77%	2.12%	-	30.65%	1.83%	14.24%	11.26%	1.48%	10.32%	3.01%	2.21%	9.86%	6.71%	0.79%						
	Dehradun	33.89%	2.94%	14.26%	22.40%	10.74%	3.06%	7.95%	0.00%	0.00%	12.08%	2.99%	0.70%	-	32.80%	2.10%	13.91%	16.49%	6.51%	9.27%	6.43%	0.41%	0.77%	7.06%	3.51%	0.72%					
Uttarakhand	Girwal	34.72%	0.00%	17.36%	34.72%	0.00%	6.65%	3.27%	0.00%	0.00%	0.00%	3.27%	0.00%	-	34.61%	0.50%	12.48%	7.89%	0.80%	11.39%	8.54%	4.80%	1.42%	9.89%	5.57%	2.12%					
	Hardwar	25.39%	2.73%	12.78%	23.57%	11.90%	8.09%	5.51%	0.23%	0.51%	9.39%	2.40%	2.97%	-	28.55%	2.03%	14.19%	7.41%	9.99%	9.60%	0.07%	0.65%	6.74%	2.26%	2.99%						
	Nainital	31.64%	3.06%	10.36%	19.16%	13.97%	5.63%	5.40%	0.95%	0.45%	2.49%	2.73%	3.53%	-	33.31%	1.90%	15.03%	7.96%	6.68%	10.54%	6.48%	1.75%	0.74%	8.23%	4.76%	2.40%					
	Pithoragarh	-	-	-	-	-	-	-	-	-	-	-	-	33.02%	1.46%	13.25%	9.48%	0.59%	10.79%	8.16%	4.67%	1.11%	9.93%	6.47%	0.87%						
	Rudraprayag	-	-	-	-	-	-	-	-	-	-	-	-	34.10%	1.46%	12.94%	8.51%	1.14%	11.45%	8.21%	4.24%	0.55%	10.04%	6.87%	1.15%						
	Tehri Garhwal	-	-	-	-	-	-	-	-	-	-	-	-	35.27%	1.28%	13.72%	8.48%	0.00%	11.04%	6.29%	6.29%	0.79%	7.34%	5.28%	0.33%						
	Udham Singh Nagar	28.70%	2.35%	21.99%	22.22%	10.38%	6.44%	5.64%	1.20%	0.43%	3.78%	3.88%	3.38%	-	29.44%	1.09%	12.88%	9.48%	0.00%	12.09%	5.59%	2.11%	2.09%	9.87%	5.87%	2.09%					
	Uttrakhand	32.54%	0.00%	16.28%	32.56%	0.00%	0.00%	0.00%	0.00%	0.00%	9.30%	9.30%	-	-	30.99%	1.09%	13.99%	3.79%	2.20%	10.57%	0.16%	5.92%	1.87%	8.46%	7.40%	0.53%					
	Berhampur	44.29%	15.08%	0.00%	16.12%	0.00%	11.25%	2.63%	8.62%	0.00%	0.00%	0.00%	0.00%	-	38.39%	1.09%	4.45%	19.00%	3.54%	10.57%	3.15%	8.89%	9.81%	4.59%	2.35%						
West Bengal	Bandhavgarh	30.39%	0.36%	4.40%	19.08%	3.99%	10.18%	9.14%	5.21%	2.41%	6.60%	3.93%	4.37%	-	26.50%	0.50%	5.63%	14.57%	3.89%	9.27%	9.00%	1.24%	8.86%	4.72%	3.59%						
	Birbhum	30.05%	0.00%	0.00%	19.41%	2.77%	9.81%	10.97%	4.24%	2.32%	10.34%	6.08%	4.01%	-	25.49%	0.43%	4.36%	23.99%	3.62%	10.38%	9.95%	1.90%	1.02%	9.82%	5.53%	3.33%					
	Dakshin Dinajpur	45.58%	0.00%	17.78%	2.00%	0.00%	10.31%	6.72%	0.00%	0.00%	13.60%	3.44%	0.57%	-	26.06%	0.94%	6.55%	22.01%	5.51%	10.66%	8.63%	0.27%	1.71%	10.55%	4.62%	2.47%					
	Debrejeling	21.57%	0.00%	9.75%	22.40%	9.61%	7.59%	7.93%	3.14%	2.68%	7.38%	6.91%	1.01%	-	29.72%	0.72%	8.09%	16.28%	4.39%	9.99%	7.65%	6.70%	2.03%	7.88%	3.18%	2.03%					
	Howrah	25.44%	1.03%	4.76%	17.92%	10.89%	9.77%	7.73%	2.91%	1.17%	7.00%	5.05%	6.34%	-	27.98%	2.13%	7.79%	21.94%	6.86%	10.10%	7.83%	0.00%	1.04%	8.15%	2.34%	3.81%					
	Hugli	25.74%	0.32%	9.58%	21.41%	3.99%	9.19%	7.23%	1.33%	2.82%	7.45%	3.65%	5.24%	-	28.75%	1.11%	6.15%	20.6%	9.04%	11.02%	0.26%	1.95%	9.15%	3.80%	3.66%						
	Jalpaiguri	33.62%	0.00%	6.22%	18.76%	0.00%	8.51%	7.70%	3.90%	1.30%	10.10%	4.94%	4.94%	-	30.99%	1.09%	13.99%	3.79%	2.20%	10.57%	0.16%	5.92%	1.87%	8.46%	7.40%	0.53%					
	Koch Bihar	30.11%	5.63%	0.00%	16.94%	7.51%	9.14%	9.14%	0.00%	0.00%	10.22%	7.53%	3.76%	-	38.39%	1.09%	4.45%	19.00%	3.54%	10.57%	3.15%	8.89%	9.81%	4.59%	2.35%						
	Kolkata	26.60%	0.00%	1.07%	34.44%	11.94%	5.03%	8.96%	1.34%	0.24%	2.04%	2.81%	5.31%	-	26.50%	0.50%	5.63%	14.57%	3.89%	9.27%	9.00%	1.24%	8.86%	4.72%	3.59%						
South 24 Parganas	Maldah	31.15%	2.72%	11.75%	19.52%	5.77%	8.33%	4.48%	0.39%	0.18%	10.16%	2.54%	2.76%	-	25.83%	0.81%	10.44%	21.15%	4.44%	10.25%	7.77%	0.99%	9.37%	3.38%	2.32%						
	Murshidabad	28.33%	0.99%	12.27%	20.27%	10.38%	8.80%	6.95%	0.50%	0.53%	7.46%	3.24%	0.88%	-	27.12%	0.91%	10.33%	19.54%	3.57%	10.22%	7.85%	1.20%	2.43%	9.35%	4.47%	3.00%					
	Nadia	25.05%	0.00%	7.07%	23.26%	4.02%	10.65%	6.08%	1.24%	9.38%	5.25%	4.92%	-	25.36%	0.76%	6.26%	28.18%	1.73%	7.71%	1.87%	1.33%	10.27%	3.21%	2.07%							
	North 24 Parganas	32.47%	0.91%	11.78%	21.40%	1.94%	8.89%	1.21%	6.01%	2.60%	5.44%	-	31.14%	1.30%	11.49%	14.05%	6.66%	11.81%	10.04%	0.35%	1.54%	11.84%	2.91%	2.31%							
	Padmam Madipur	31.70%	0.00%	5.55%	18.02%	0.00%	11.01%	10.33%	0.00%	3.78%	9.79%	4.59%	4.96%	-	31.36%	0.52%	6.28%	12.74%	2.97%	10.86%	9.49%	2.95%	1.11%	9.93%	4.75%	2.48%					
	Purbia Madipur	31.03%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	-	31.93%	1.29%	11.01%	15.75%	5.09%	11.06%	5.80%	1.88%	0.84%	10.43%	3.57%	2.76%					
	Surulia	31.85%	0.00%	1.05%	18.43%	8.55%	8.47%	7.44%	2.04%	2.31%	7.23%	5.24%	3.87%	-	32.05%	1.05%	7.23%	22.95%	1.11%	11.06%	1.11%	1.22%	1.48%	-	-						
	South 24 Parganas	19.85%	0.00%	0.55%	18.43%	8.55%	8.39%	3.32%	2.34%	8.48%	6.26%	4.93%	-	26.29%	1.10%	10.23%	15.77%	6.10%	10.23%	7.41%	1.77%	2.07%	9.29%	4.70%	4.53%						
	Uttar Dinajpur	22.94%	0.00%	7.22%	24.41%	6.81%	9.25%	7.03%	1.80%	8.22%	2.75%	5.12%	-	24.06%	0.91%	10.61%	19.21%	8.76%	9.55%	8.35%	0.28%	1.85%	8.59%	3.85%	4.16%						

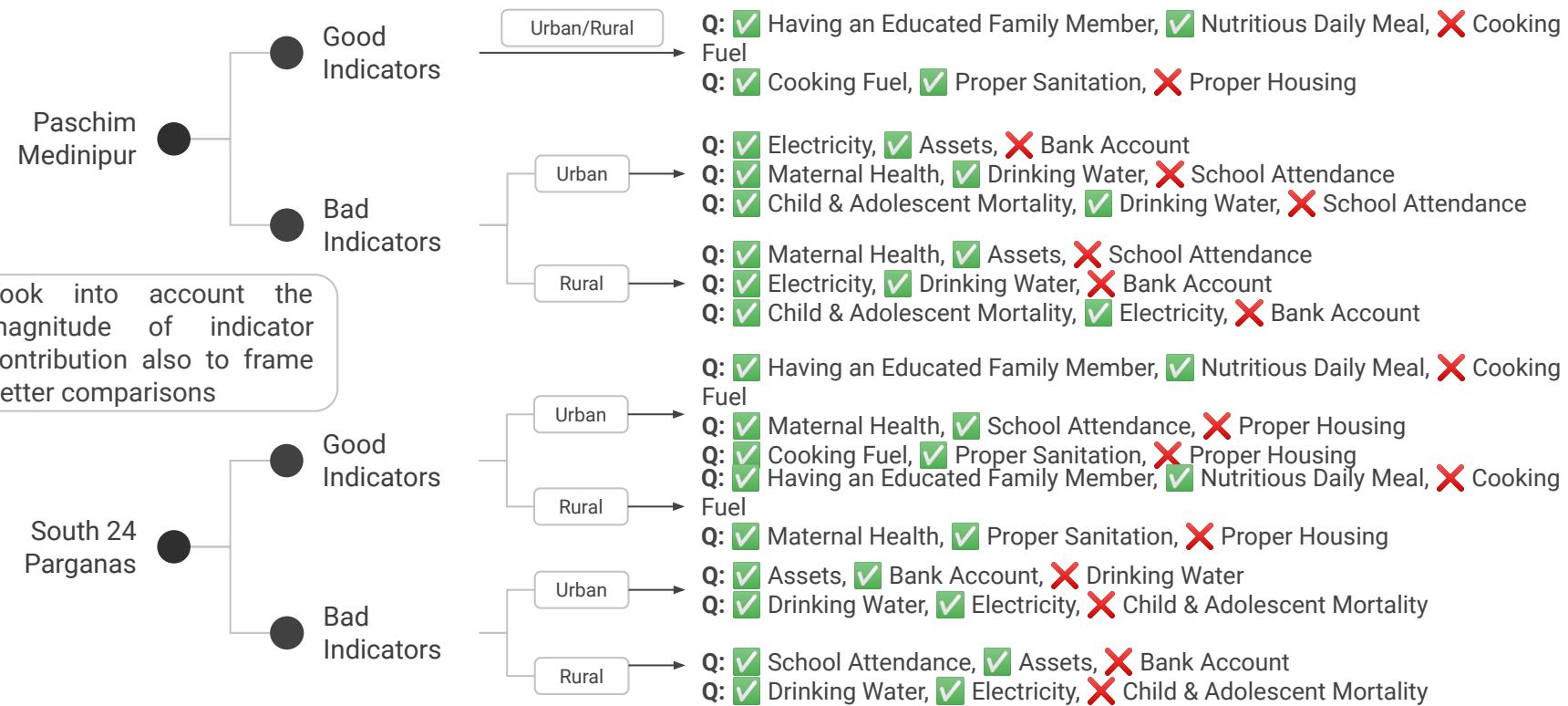
AAYUG Report - Based on NHFS 2015-2016

Censored																															
Censored Headcount Ratio: Urban				Urban								Rural				Overall															
State	District	Health		Education				Standard of Living				Censored Headcount Ratio: Rural				Health		Education				Censored Headcount Ratio									
		Nutrition	Child & Adolescent Mortality	Maternal Health	Years of Schooling	School Attended	Cooking Fuel	Sanitation	Drinking Water	Electricity	Housing	Assets	Bank Account	State	District	Nutrition	Child & Adolescent Mortality	Maternal Health	Years of Schooling	School Attended	Cooking Fuel	Sanitation	Drinking Water	Electricity	Housing	Assets	Bank Account				
Uttar Pradesh	Saharanpur	22.4%	1.0%	22.5%	11.7%	21.4%	24.8%	14.0%	1.0%	14.0%	23.8%	13.4%	1.0%	Uttar Pradesh	Saharanpur	43.4%	4.6%	42.6%	12.1%	21.0%	14.8%	14.0%	8.6%	14.0%	31.6%	14.0%	1.0%	21.0%	14.0%		
Uttar Pradesh	Sonbhadra	17.3%	1.0%	15.5%	8.4%	4.3%	4.2%	8.0%	0.8%	7.1%	7.6%	5.5%	3.7%	0.8%	Uttar Pradesh	Sonbhadra	41.9%	4.6%	41.1%	12.1%	21.0%	14.8%	14.0%	8.6%	14.0%	31.6%	14.0%	1.0%	21.0%	14.0%	
Uttar Pradesh	Sultanpur	9.4%	1.0%	9.4%	2.7%	2.0%	2.0%	8.0%	0.8%	3.0%	9.4%	2.2%	0.8%	0.8%	Uttar Pradesh	Sultanpur	31.1%	5.5%	26.2%	14.4%	24.8%	17.6%	14.0%	12.5%	14.0%	32.6%	14.0%	2.0%	22.0%	14.0%	
Uttar Pradesh	Vardan	13.6%	1.0%	10.6%	7.0%	4.7%	4.7%	10.4%	0.7%	8.9%	12.2%	3.4%	2.3%	1.0%	Uttar Pradesh	Vardan	31.3%	5.5%	27.8%	15.0%	21.0%	17.6%	14.0%	12.5%	14.0%	32.6%	14.0%	2.0%	22.0%	14.0%	
Uttar Pradesh	Agra	24.9%	0.8%	24.9%	2.0%	2.0%	2.0%	1.0%	0.8%	1.6%	1.6%	1.0%	0.8%	0.8%	Uttar Pradesh	Agra	24.8%	1.6%	20.7%	1.5%	2.5%	2.5%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	1.0%	24.8%	14.0%
Uttar Pradesh	Bijnor	18.4%	0.8%	18.4%	2.0%	2.0%	2.0%	1.0%	0.8%	1.6%	1.6%	1.0%	0.8%	0.8%	Uttar Pradesh	Bijnor	24.8%	1.6%	20.7%	1.5%	2.5%	2.5%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	1.0%	24.8%	14.0%
Uttar Pradesh	Chandauli	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	Uttar Pradesh	Chandauli	13.3%	1.5%	14.8%	1.0%	1.0%	1.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	1.0%	13.3%	14.0%
Uttar Pradesh	Champawat	31.7%	5.5%	16.1%	5.8%	5.8%	5.8%	2.8%	4.2%	0.8%	0.8%	17.2%	3.4%	4.4%	Uttar Pradesh	Champawat	18.4%	2.5%	12.1%	1.0%	1.0%	1.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	1.0%	18.4%	14.0%
Uttar Pradesh	Gorakhpur	1.8%	0.8%	1.8%	1.6%	1.6%	1.6%	1.2%	1.2%	1.2%	1.2%	0.8%	0.8%	0.8%	Uttar Pradesh	Gorakhpur	11.2%	0.3%	8.7%	0.7%	1.0%	1.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	1.0%	11.2%	14.0%
Uttar Pradesh	Hanumangarh	18.8%	0.8%	18.8%	1.6%	1.6%	1.6%	1.2%	1.2%	1.2%	1.2%	0.8%	0.8%	0.8%	Uttar Pradesh	Hanumangarh	19.8%	0.8%	18.8%	1.6%	1.6%	1.6%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	1.0%	19.8%	14.0%
Uttar Pradesh	Hendur	18.0%	0.8%	18.0%	1.6%	1.6%	1.6%	1.2%	1.2%	1.2%	1.2%	0.8%	0.8%	0.8%	Uttar Pradesh	Hendur	19.8%	0.8%	18.8%	1.6%	1.6%	1.6%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	1.0%	19.8%	14.0%
Uttar Pradesh	Kanpur Dehat	1.3%	0.8%	1.3%	1.6%	1.6%	1.6%	1.2%	1.2%	1.2%	1.2%	0.8%	0.8%	0.8%	Uttar Pradesh	Kanpur Dehat	13.2%	1.2%	11.0%	1.0%	1.0%	1.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	1.0%	13.2%	14.0%
Uttar Pradesh	Kanpur Nagar	14.0%	2.9%	13.8%	1.6%	1.6%	1.6%	1.2%	1.2%	1.2%	1.2%	0.8%	0.8%	0.8%	Uttar Pradesh	Kanpur Nagar	10.0%	1.0%	8.4%	1.0%	1.0%	1.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	1.0%	10.0%	14.0%
Uttar Pradesh	Lakhimpur Kheri	20.2%	1.0%	19.8%	1.6%	1.6%	1.6%	1.2%	1.2%	1.2%	1.2%	0.8%	0.8%	0.8%	Uttar Pradesh	Lakhimpur Kheri	21.2%	1.0%	19.8%	1.6%	1.6%	1.6%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	1.0%	21.2%	14.0%
Uttar Pradesh	Lakhimpur Kheri	20.0%	1.0%	20.0%	1.6%	1.6%	1.6%	1.2%	1.2%	1.2%	1.2%	0.8%	0.8%	0.8%	Uttar Pradesh	Lakhimpur Kheri	21.2%	1.0%	19.8%	1.6%	1.6%	1.6%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	1.0%	21.2%	14.0%
Uttar Pradesh	Lalitpur	20.0%	1.0%	20.0%	1.6%	1.6%	1.6%	1.2%	1.2%	1.2%	1.2%	0.8%	0.8%	0.8%	Uttar Pradesh	Lalitpur	21.2%	1.0%	19.8%	1.6%	1.6%	1.6%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	1.0%	21.2%	14.0%
Uttar Pradesh	Mau	2.4%	0.8%	2.4%	1.6%	1.6%	1.6%	1.2%	1.2%	1.2%	1.2%	0.8%	0.8%	0.8%	Uttar Pradesh	Mau	8.0%	0.5%	6.0%	1.0%	1.0%	1.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	1.0%	8.0%	14.0%
Uttar Pradesh	Muzaffarnagar	2.4%	0.8%	2.4%	1.6%	1.6%	1.6%	1.2%	1.2%	1.2%	1.2%	0.8%	0.8%	0.8%	Uttar Pradesh	Muzaffarnagar	8.0%	0.5%	6.0%	1.0%	1.0%	1.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	1.0%	8.0%	14.0%
Uttar Pradesh	Pilibhit	2.4%	0.8%	2.4%	1.6%	1.6%	1.6%	1.2%	1.2%	1.2%	1.2%	0.8%	0.8%	0.8%	Uttar Pradesh	Pilibhit	8.0%	0.5%	6.0%	1.0%	1.0%	1.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	1.0%	8.0%	14.0%
Uttar Pradesh	Pilibhit	2.4%	0.8%	2.4%	1.6%	1.6%	1.6%	1.2%	1.2%	1.2%	1.2%	0.8%	0.8%	0.8%	Uttar Pradesh	Pilibhit	8.0%	0.5%	6.0%	1.0%	1.0%	1.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	1.0%	8.0%	14.0%
Uttar Pradesh	Rae Bareli	2.4%	0.8%	2.4%	1.6%	1.6%	1.6%	1.2%	1.2%	1.2%	1.2%	0.8%	0.8%	0.8%	Uttar Pradesh	Rae Bareli	8.0%	0.5%	6.0%	1.0%	1.0%	1.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	1.0%	8.0%	14.0%
Uttar Pradesh	Rampur	2.4%	0.8%	2.4%	1.6%	1.6%	1.6%	1.2%	1.2%	1.2%	1.2%	0.8%	0.8%	0.8%	Uttar Pradesh	Rampur	8.0%	0.5%	6.0%	1.0%	1.0%	1.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	1.0%	8.0%	14.0%
Uttar Pradesh	Rathnashali	2.4%	0.8%	2.4%	1.6%	1.6%	1.6%	1.2%	1.2%	1.2%	1.2%	0.8%	0.8%	0.8%	Uttar Pradesh	Rathnashali	8.0%	0.5%	6.0%	1.0%	1.0%	1.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	1.0%	8.0%	14.0%
Uttar Pradesh	Roorkee	2.4%	0.8%	2.4%	1.6%	1.6%	1.6%	1.2%	1.2%	1.2%	1.2%	0.8%	0.8%	0.8%	Uttar Pradesh	Roorkee	8.0%	0.5%	6.0%	1.0%	1.0%	1.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	1.0%	8.0%	14.0%
Uttar Pradesh	Saharanpur	2.4%	0.8%	2.4%	1.6%	1.6%	1.6%	1.2%	1.2%	1.2%	1.2%	0.8%	0.8%	0.8%	Uttar Pradesh	Saharanpur	8.0%	0.5%	6.0%	1.0%	1.0%	1.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	1.0%	8.0%	14.0%
Uttar Pradesh	Sant Kabir Nagar	2.4%	0.8%	2.4%	1.6%	1.6%	1.6%	1.2%	1.2%	1.2%	1.2%	0.8%	0.8%	0.8%	Uttar Pradesh	Sant Kabir Nagar	8.0%	0.5%	6.0%	1.0%	1.0%	1.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	1.0%	8.0%	14.0%
Uttar Pradesh	Sant Kabir Nagar	2.4%	0.8%	2.4%	1.6%	1.6%	1.6%	1.2%	1.2%	1.2%	1.2%	0.8%	0.8%	0.8%	Uttar Pradesh	Sant Kabir Nagar	8.0%	0.5%	6.0%	1.0%	1.0%	1.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	1.0%	8.0%	14.0%
Uttar Pradesh	Sant Kabir Nagar	2.4%	0.8%	2.4%	1.6%	1.6%	1.6%	1.2%	1.2%	1.2%	1.2%	0.8%	0.8%	0.8%	Uttar Pradesh	Sant Kabir Nagar	8.0%	0.5%	6.0%	1.0%	1.0%	1.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	1.0%	8.0%	14.0%
Uttar Pradesh	Sant Kabir Nagar	2.4%	0.8%	2.4%	1.6%	1.6%	1.6%	1.2%	1.2%	1.2%	1.2%	0.8%	0.8%	0.8%	Uttar Pradesh	Sant Kabir Nagar	8.0%	0.5%	6.0%	1.0%	1.0%	1.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	1.0%	8.0%	14.0%
Uttar Pradesh	Sant Kabir Nagar	2.4%	0.8%	2.4%	1.6%	1.6%	1.6%	1.2%	1.2%	1.2%	1.2%	0.8%	0.8%	0.8%	Uttar Pradesh	Sant Kabir Nagar	8.0%	0.5%	6.0%	1.0%	1.0%	1.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	1.0%	8.0%	14.0%
Uttar Pradesh	Sant Kabir Nagar	2.4%	0.8%	2.4%	1.6%	1.6%	1.6%	1.2%	1.2%	1.2%	1.2%	0.8%	0.8%	0.8%	Uttar Pradesh	Sant Kabir Nagar	8.0%	0.5%	6.0%	1.0%	1.0%	1.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	1.0%	8.0%	14.0%
Uttar Pradesh	Sant Kabir Nagar	2.4%	0.8%	2.4%	1.6%	1.6%	1.6%	1.2%	1.2%	1.2%	1.2%	0.8%	0.8%	0.8%	Uttar Pradesh	Sant Kabir Nagar	8.0%	0.5%	6.0%	1.0%	1.0%	1.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	1.0%	8.0%	14.0%
Uttar Pradesh	Sant Kabir Nagar	2.4%	0.8%	2.4%	1.6%	1.6%	1.6%	1.2%	1.2%	1.2%	1.2%	0.8%	0.8%	0.8%	Uttar Pradesh	Sant Kabir Nagar	8.0%	0.5%	6.0%	1.0%	1.0%	1.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	1.0%	8.0%	14.0%
Uttar Pradesh	Sant Kabir Nagar	2.4%	0.8%	2.4%	1.6%	1.6%	1.6%	1.2%	1.2%	1.2%	1.2%	0.8%	0.8%	0.8%	Uttar Pradesh	Sant Kabir Nagar	8.0%	0.5%	6.0%	1.0%	1.0%	1.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	1.0%	8.0%	14.0%
Uttar Pradesh	Sant Kabir Nagar	2.4%	0.8%	2.4%	1.6%	1.6%	1.6%	1.2%	1.2%	1.2%	1.2%	0.8%	0.8%	0.8%	Uttar Pradesh	Sant Kabir Nagar	8.0%	0.5%	6.0%	1.0%	1.0%	1.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	1.0%	8.0%	14.0%
Uttar Pradesh	Sant Kabir Nagar	2.4%	0.8%	2.4%	1.6%	1.6%	1.6%	1.2%	1.2%	1.2%	1.2%	0.8%	0.8%	0.8%	Uttar Pradesh	Sant Kabir Nagar	8.0%	0.5%	6.0%	1.0%	1.0%	1.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	1.0%	8.0%	14.0%
Uttar Pradesh	Sant Kabir Nagar	2.4%	0.8%	2.4%	1.6%	1.6%	1.6%	1.2%	1.2%	1.2%	1.2%	0.8%	0.8%	0.8%	Uttar Pradesh	Sant Kabir Nagar	8.0%	0.5%	6.0%	1.0%	1.0%	1.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	1.0%	8.0%	14.0%
Uttar Pradesh	Sant Kabir Nagar	2.4%	0.8%	2.4%	1.6%	1.6%	1.6%	1.2%	1.2%	1.2%	1.2%	0.8%	0.8%	0.8%	Uttar Pradesh	Sant Kabir Nagar	8.0%	0.5%	6.0%	1.0%	1.0%	1.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	1.0%	8.0%	14.0%
Uttar Pradesh	Sant Kabir Nagar	2.4%	0.8%	2.4%	1.6%	1.6%	1.6%	1.2%	1.2%	1.2%	1.2%	0.8%	0.8%	0.8%	Uttar Pradesh	Sant Kabir Nagar	8.0%	0.5%	6.0%	1.0%	1.0%	1.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	1.0%	8.0%	14.0%
Uttar Pradesh	Sant Kabir Nagar	2.4%	0.8%	2.4%	1.6%	1.6%	1.6%	1.2%	1.2%	1.2%	1.2%	0.8%	0.8%	0.8%	Uttar Pradesh	Sant Kabir Nagar	8.0%	0.5%	6.0%	1.0%	1.0%	1.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	1.0%	8.0%	14.0%
Uttar Pradesh	Sant Kabir Nagar	2.4%	0.8%	2.4%	1.6%	1.6%	1.6%	1.2%	1.2%	1.2%	1.2%	0.8%	0.8%	0.8%	Uttar Pradesh	Sant Kabir Nagar	8.0%	0.5%	6.0%	1.0%	1.0%	1.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	1.0%	8.0%	14.0%
Uttar Pradesh	Sant Kabir Nagar	2.4%	0.8%																												

Buckets for Contrastive Comparison



Contrastive Comparison



Allocation Analysis

In your opinion what should be the allocation (0-1 status) of indicators for an average man in this region?

We may provide the background of the average man depending on the average income, family size and education level of that region.



Health



Education



Standard
of Living



Perturbation Performance

Whom out of the following will you consider to be NOT poor? More than one person can be chosen.



Data Collection

What to Collect?



Choose Households Based on help from Municipality or Panchayat

Establish Rapport
Ask About Socio-Economic Background
Observe Household Condition

Can we change the questions to be asked using some strategy? To probe more into the perspectives

Ask Questions



Statistical Inference

Carry out Inference

Each of the 3 people in the survey group should mark the household poor/not poor



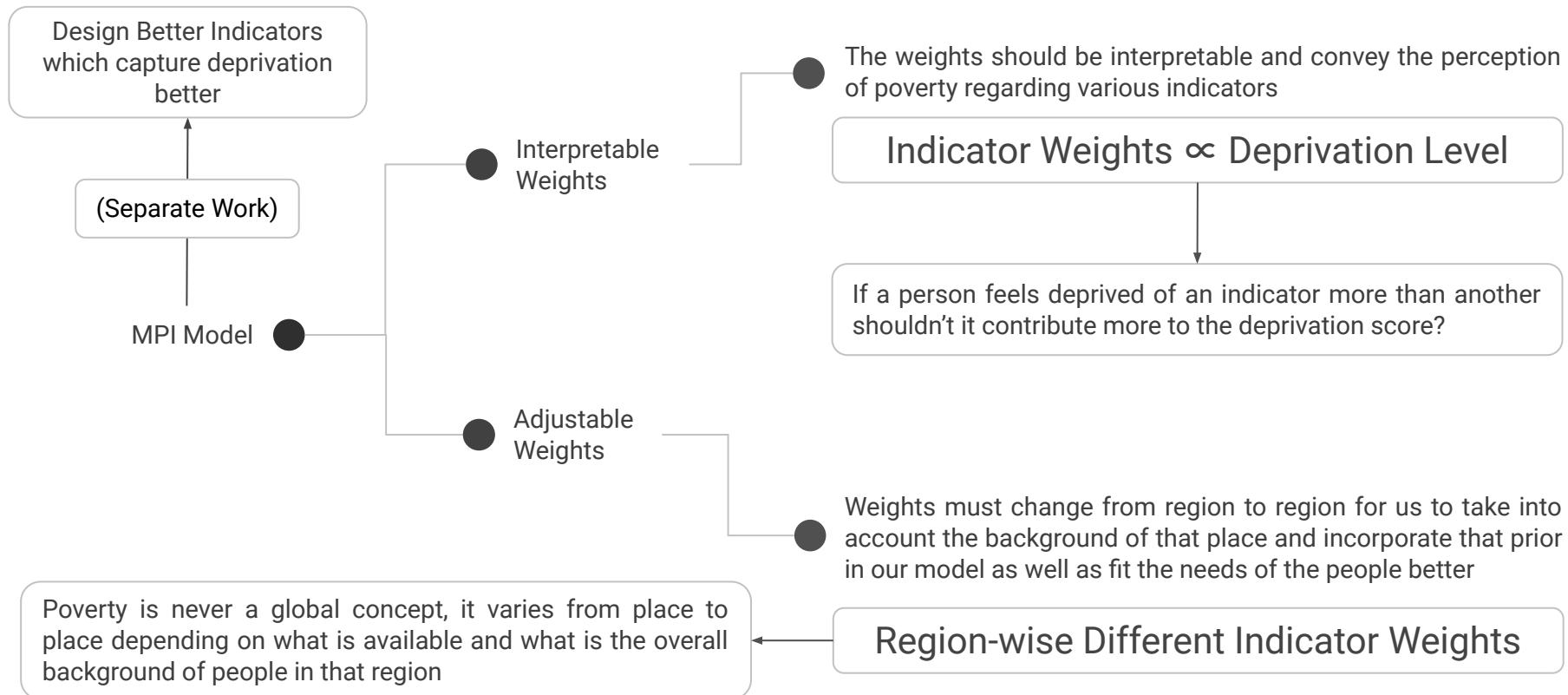
Estimation and Interpretation
of Weights



Aim of Our MPI Model

Motivation for the weight estimation scheme

What are we looking for in our MPI Model?



Weight Estimation

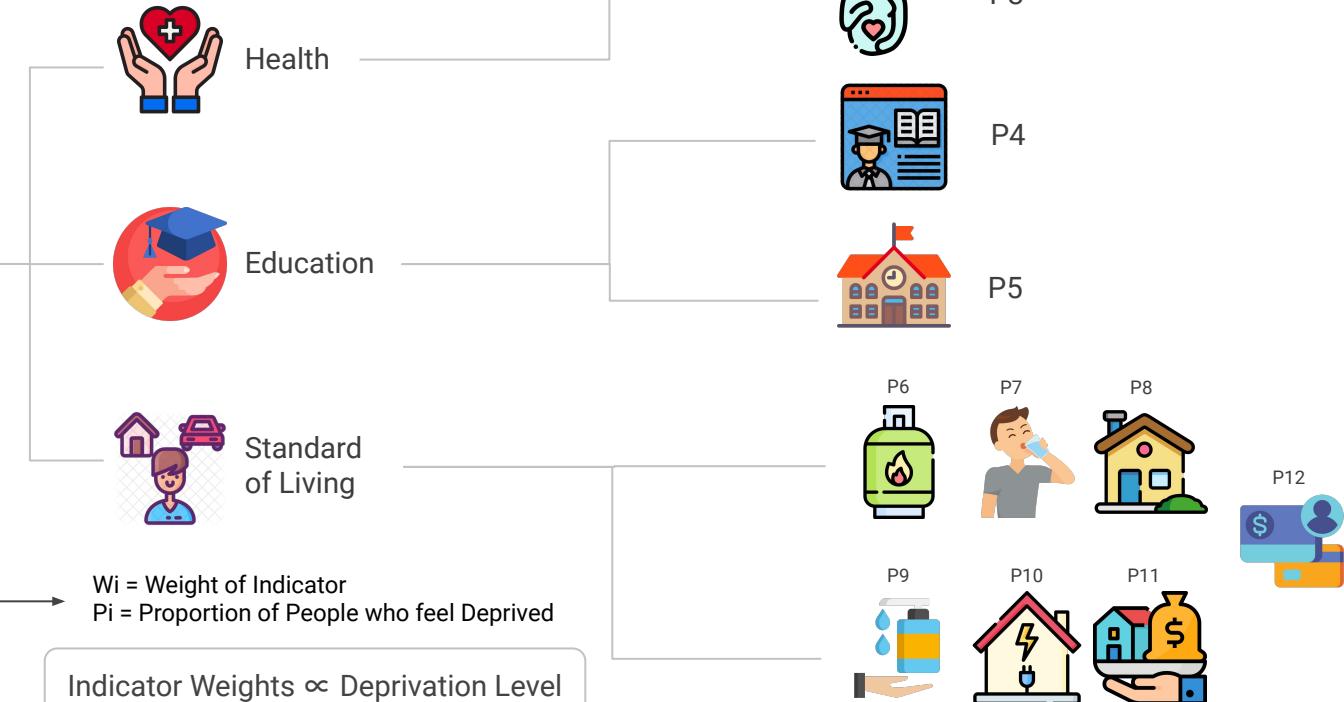
Use the **Normalized Proportion of People who feel Deprived of an Indicator** as the **Weight Estimate for that Indicator in that Region**.



$$W_i = \frac{P_i}{\sum_{j=1}^{12} P_j}$$

Wi = Weight of Indicator
Pi = Proportion of People who feel Deprived

Indicator Weights \propto Deprivation Level



What we need to estimate from our data is the proportion of people who feel deprived for each indicator.

Why not go for Regression-Based Estimate?



Logistic Regression kind of setup requires us to label the respondents as poor/not poor

Brings in personal perception of poverty



Our/Policy Maker's judgement should only creep in at the very last in deciding what should be the threshold above which an individual will be deemed Multidimensionally Poor

Model Estimated Weights are highly influenced by our perception



	Deprivation Score (c_i)	Higher than 0.33? ($c_i \geq k$)	Is MPI Poor?
Individual A	0.48	Yes	Yes
Individual B	0.20	No	No



Better to let the people's deprivation decide how much each indicator should contribute to their poverty