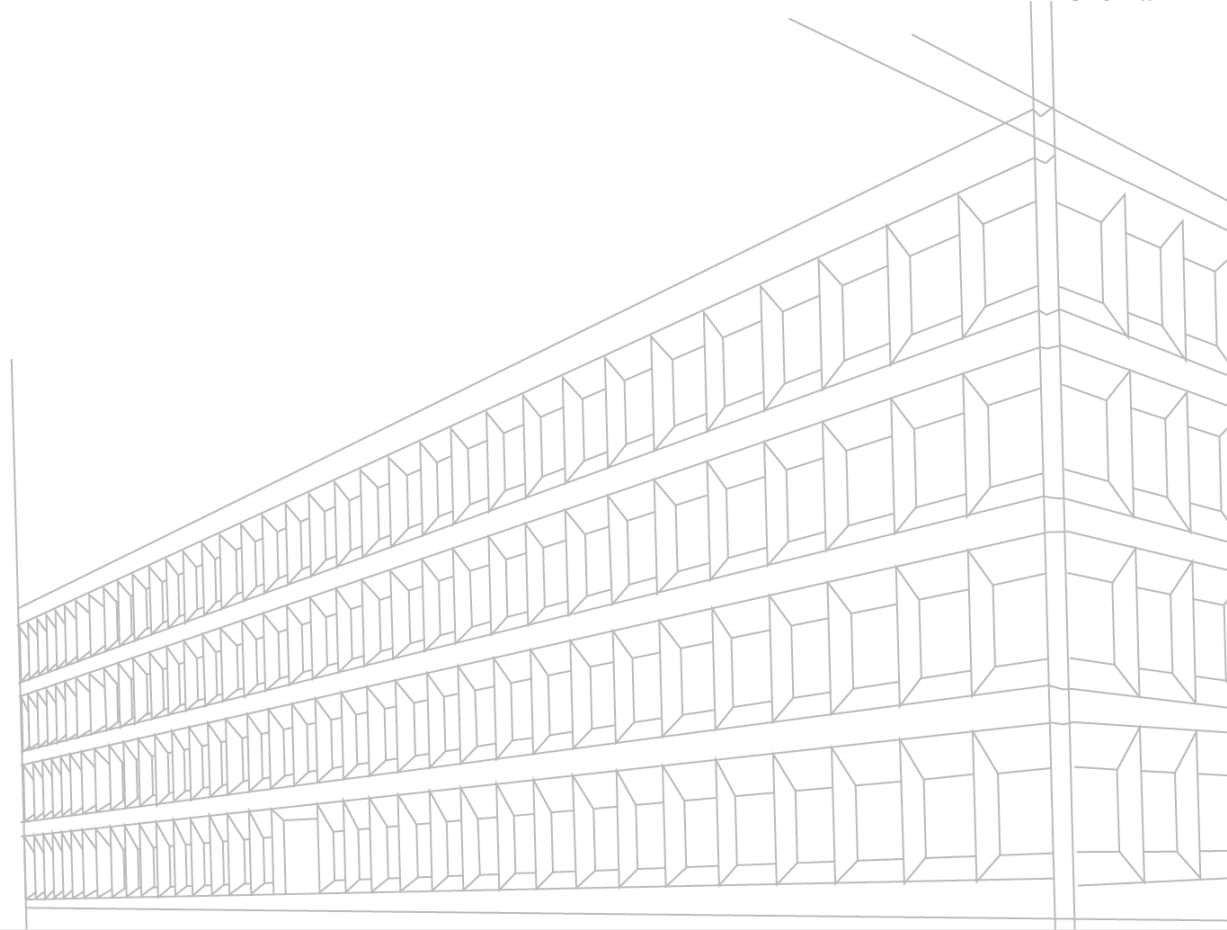


Use of multidimensional poverty measures in auditing



Federal Court of Accounts (SAI Brazil)

in collaboration with

Oxford Poverty & Human Development Initiative - OPHI (University of Oxford)

Presentation format



- Part 1 - Multidimensional measures of poverty
 - conceptual basis and how they are constructed
 - types and uses of MPI
- Part 2 - Uses of National MPI in audit
 - Alternatives if the country does not adopt an MPI
 - Evaluation of effectiveness and efficiency of public policies
 - Examples of uses
- Part 3 - SAI Brazil: Efficiency of expenditures in reducing MPI
 - Developing an MPI for auditing: sources of data
 - Dimensions and indicators of MPI for auditing
 - Some results on efficiency of public expenditures

Poverty as a Multidimensional Phenomenon



- “Human lives are battered and diminished in all kinds of different ways”
- “The functionings on which human flourishing depends include such elementary things as being alive, being well-nourished and in good health, moving about freely, and so on.”
- - Nobel Laureate Amartya Sen



What is a Multidimensional Poverty Index (MPI)?



- **Counting-based** measure of multidimensional poverty
- Shows both the **incidence** (how many people are poor?) and **intensity** (how poor are they?) of poverty, as well as its **composition** (in what ways are they poor?)
- Gives a **headline measure index**, measured from 0 (good) to 1 (bad)
- Can be easily broken down by **dimension/indicator** to show which areas are driving poverty
- Can be easily disaggregated to show how poverty **varies by population group** (urban/rural, subnational region, age, ethnicity, etc.)

Illustration: Counting-Based Approach



Society 1

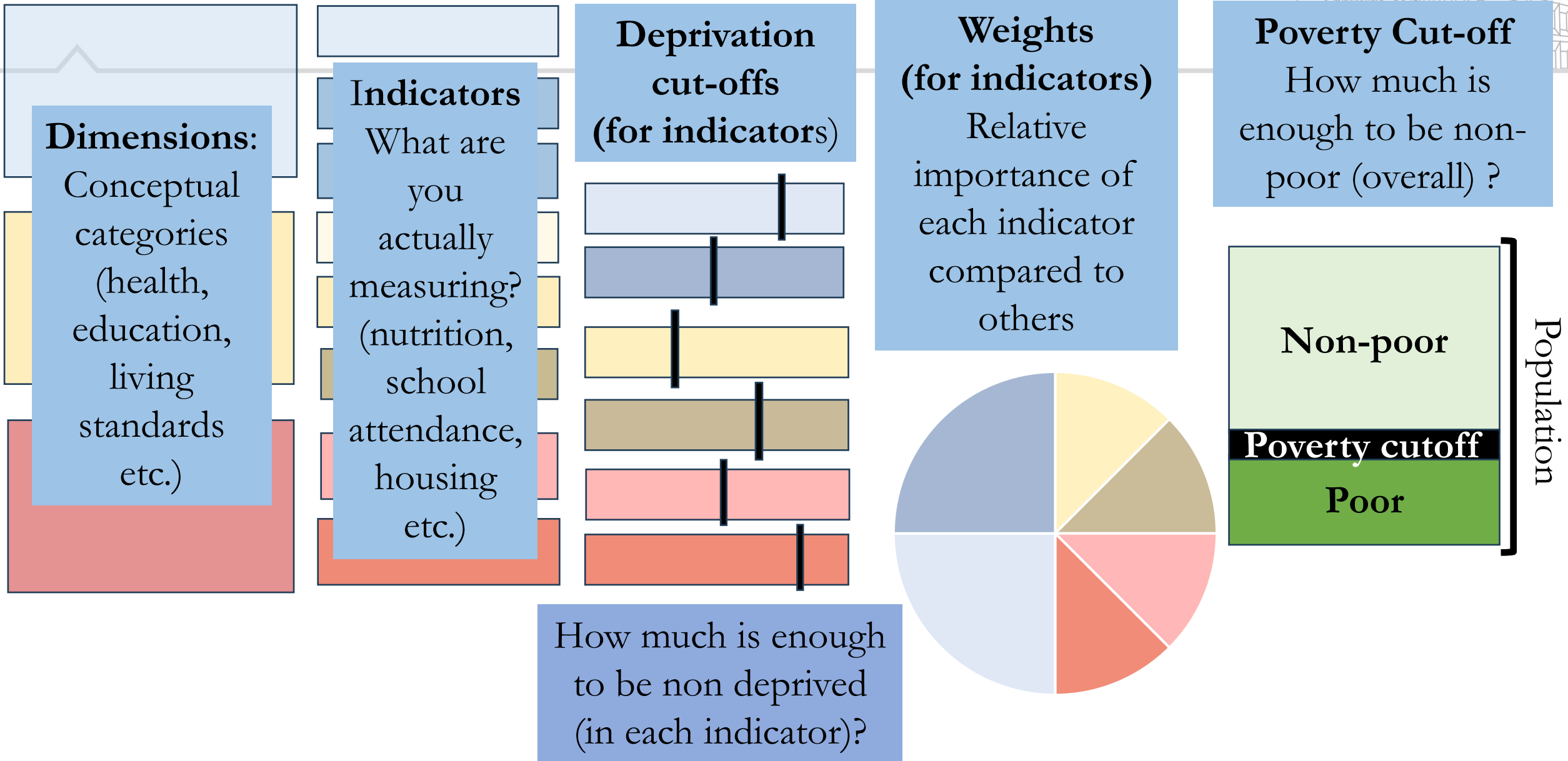
	Education	Assets	Shelter	Water	
1.	D	ND	ND	ND	1
2.	ND	D	ND	ND	1
3.	ND	ND	D	ND	1
4.	ND	ND	ND	D	1
	25%	25%	25%	25%	

Society 2

	Education	Assets	Shelter	Water	
1.	ND	ND	ND	ND	0
2.	ND	ND	ND	ND	0
3.	ND	ND	ND	ND	0
4.	D	D	D	D	4
	25%	25%	25%	25%	



First you need to make some decisions

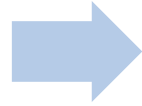


Steps for Calculating – Global MPI



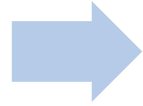
1. Choose measure structure

- Dimensions, Indicators, Weights, Cut-offs



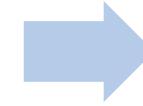
2. See who is poorest and how

- Create a deprivation profile for each person



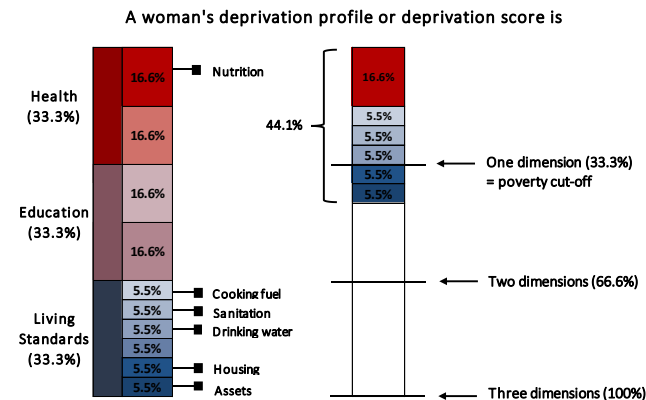
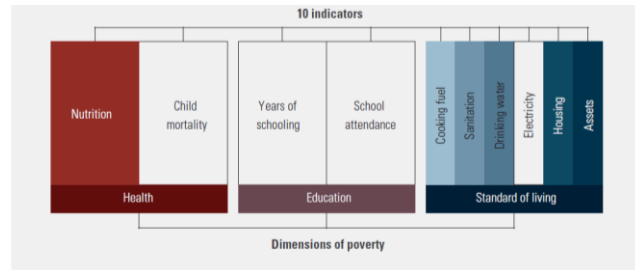
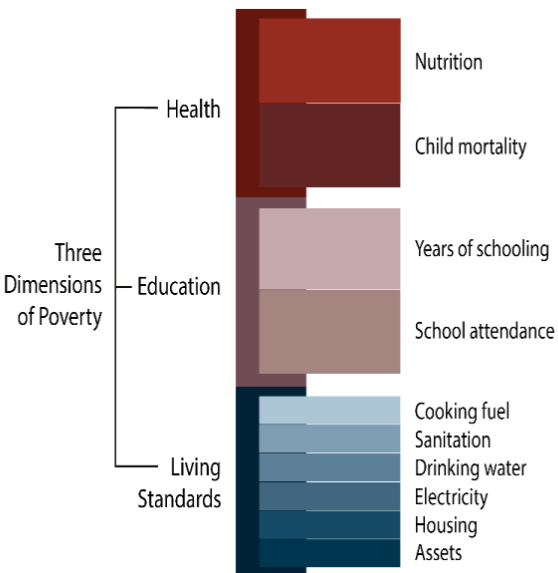
3. Identify who is poor

- If they are deprived in at least as many weighted indicators as the poverty cut-off

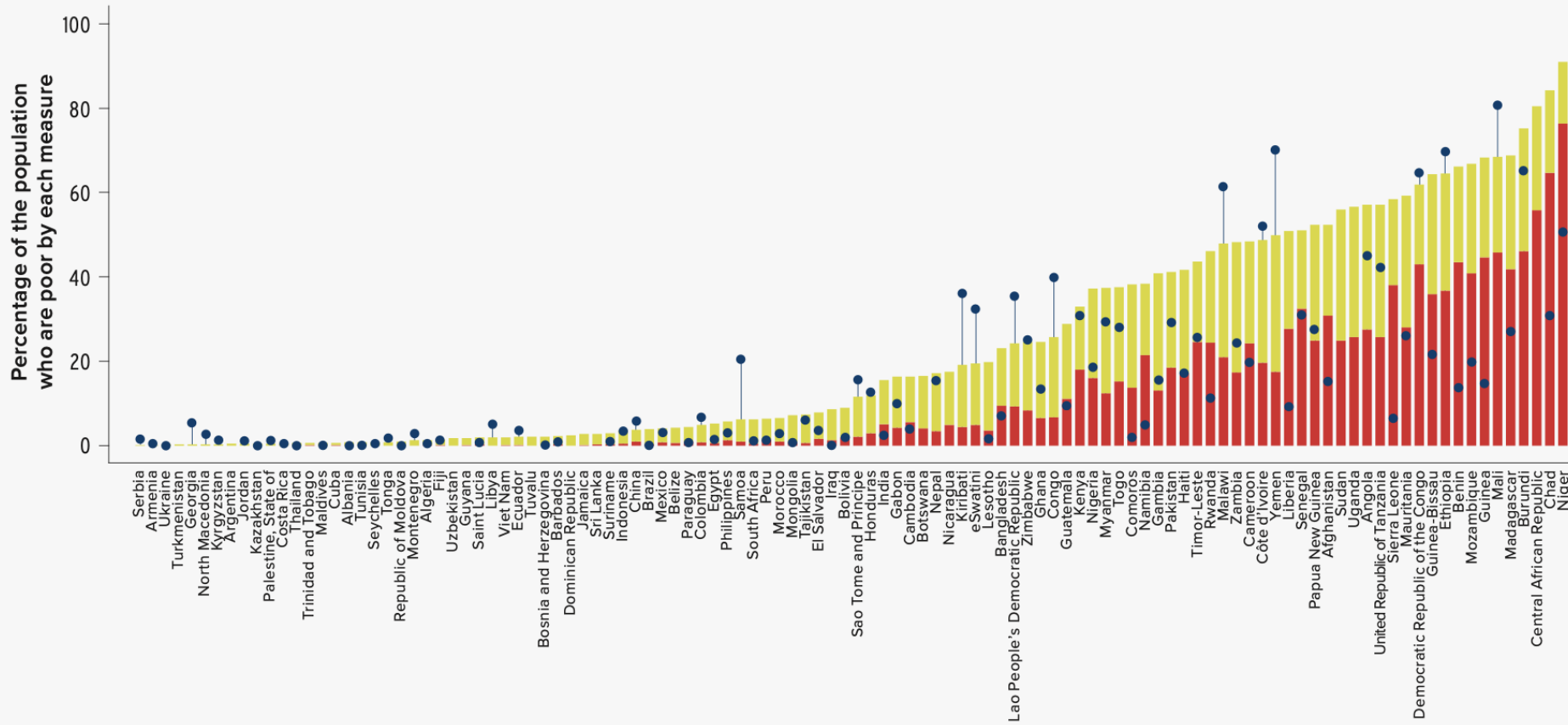


4. Compute and analyse the MPI

- Incidence: percentage of population who is poor
- Intensity: average deprivation score among the poor
- $MPI = \text{incidence} \times \text{intensity}$



Results Add Information



- The height of the bar represents the incidence of multidimensional poverty
- The height of the bar represents the incidence of severe multidimensional poverty
- The dot represents the incidence of monetary poverty (\$2.15 in purchasing power parity terms a day)

Global MPI
2023 Report

Different Types of MPIs: Global



- **Global MPI** is designed to be internationally comparable globally
- Same structure across all countries covered (more than 100)
- Launched in 2010 by **OPHI** and **UNDP** and updated annually
- Data sources: Demographic and Health Survey - DHS (USAID/Gates), Multiple Indicator Cluster Surveys - MICS (Unicef), national surveys

Different Types of MPIs: National



- **National MPIs** are designed to be tailored to national contexts and priorities
- Different structures to reflect different contexts – not comparable across countries
- Data sources: official national statistics, administrative data, specific surveys
- Used for national policymaking, including reporting for SDG1

National MPIs



- **More than 50 countries** now have National MPIs as official statistics
- They provide policy-relevant information to help stakeholders accelerate poverty reduction and develop evidence-informed solutions
- They use them to:
 - **Complement** monetary poverty statistics
 - **Track poverty** over time
 - **Allocate resources** by sector and by region
 - **Target** marginalized regions, groups, or households
 - **Coordinate** policy across sectors and subnational levels
 - **Monitor and evaluate** programmes
 - **Leave No One Behind** see the poorest & track trends
 - **Report on the SDGs** especially for indicator 1.2.2

Discussion of Part 1



- Does your country currently have a National Multidimensional Poverty Index (MPI)?
 - If yes, how is it used?
 - If not, do you think an MPI would make sense in your country's context?

Multidimensional Poverty Index (MPI)



A National Multidimensional Poverty Index (MPI) helps identify:

- who is poor
- where they live
- the specific deprivations they face



MPI and Supreme Audit Institutions



- Core principle of SAI: ultimate value and relevance is determined by the positive difference they make in the **lives of citizens** (Intosai-P 12).
- This requires SAIs to measure **audit outcomes**:
 - positive changes (e.g., policy improvements, financial savings, or governance enhancements) resulting from the **audit recommendations**
 - using **external outcome measures** of public policy as the benchmark against which government performance is evaluated.
- MPI can be viewed as **relevant external outcome** measures for public policies related to poverty

What measures can SAIs use?



- More than **50 countries** already adopt National MPI, which can be used
- Countries that do not calculate MPI:
 - Can use the **Global MPI** as an alternative – more useful for countries with Higher incidence of poverty
 - **Develop an MPI** for auditing purposes (SAI Brazil – will be described next)
 - Sources of data: national surveys, administrative data, specific surveys

How can MPI be useful for Supreme Audit Institutions?



Evaluate the **effectiveness** of public policies in reducing deprivations faced by the poor

Evaluate the **efficiency** of public policies in reducing deprivations faced by the poor

How can MPI be useful for Supreme Audit Institutions?



Audit objective	Audit approach	Examples
Evaluate the effectiveness of public policies in reducing the deprivations faced by the poor	Analyse the deficiencies in public policies related to deprivations (problem-oriented approach)	SAI Costa Rica 2021 SAI Colombia 2022 SAI Maldives 2025 SAI India 2022
	Evaluate the level of targeting of public policies (result-oriented approach)	SAI Costa Rica 2024 SAI Colombia 2022 SAI Indonesia 2022
	Evaluate progress towards SDG-1	SAI Costa Rica 2022 SAI Colombia 2020 SAI Maldives 2025 SAI Uganda 2024
Evaluate the efficiency of public policies in reducing deprivations faced by the poor	Evaluate the efficiency of specific policies or programmes (result-oriented approach)	SAI Costa Rica 2021 SAI Colombia 2022 SAI Uganda 2024
	Evaluate the efficiency of public expenditures (result-oriented approach)	SAI Brazil 2026

Effectiveness

Analyse the deficiencies in public policies



- Problem-oriented approach: why do such deprivations occur?
- Cause analyses for indicators of MPI:
 - why does this specific population in that region have no access to:
 - electricity? or health services? or school? or sewage?
- Examples:
 - SAI Costa Rica (2021): found that weak coordination and fragmented accountability limited program ability to reduce overlapping deprivations such as lack of skills, job access, and financial security;
 - SAI Colombia (2022): found an excessive emphasis in quantity, rather than quality, in the housing programme and failures in social transfers in reaching the most vulnerable

Effectiveness

Evaluate the level of targeting



- Public policies might improve the quality of life of general population (e.g., increased school quality) without improving the conditions faced by the poor population (MPI can show this)
- Are poor subnational regions and subgroups being attended?
- Examples:
 - SAI Colombia (2024) found that subsidies were concentrated in economically stronger regions, while regions with highest levels of multidimensional poverty received minimal support
 - SAI Indonesia (2022) revealed that governments used broad productivity indicators that often targeted middle- and upper-income producers, rather than those truly in poverty

Effectiveness

Evaluate progress towards SDG-1



- As the MPI is an outcome measure, it can and has been used to monitor progress towards SDG
- SDG-1, Target 1.2: By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions
- MPI is one of the measures recognised by the UN to report progress towards it
- Examples: SAI Costa Rica (2022), SAI Colombia (2020), SAI Maldives (2025) and SAI Uganda (2024)

Efficiency

Evaluate specific policies or programmes



- Evaluate if the inputs (e.g., spending) are maximized or satisfactory in relation to the outcomes, measured by an MPI and its dimensions or indicators
- Possible questions related to cash transfer:
 - Are increases in cash transfers systematically related to changes in the incidence and/or intensity of poverty?
 - Which deprivations are more efficiently reduced by increases in cash transfers?
- Example: SAI Colombia (2022) found that housing subsidies focused 96.7% on quantitative deficit (new housing) and only 3.3% on qualitative improvements, leaving structural housing issues unresolved

Efficiency

Evaluate the efficiency of public expenditures



- Analyse the relations between changes in expenditures and changes in MPI, what can be done in a variety of ways, not necessarily focusing on any specific programme or policy
- Some questions would be the following:
 - Does spending in different sectors of government (e.g., health, social protection, education) have significant effects on multidimensional poverty reduction?
 - Spending on which sectors shows larger effects in reducing multidimensional poverty? How long does it take for such effects?
 - Do local governments efficiency in public spending influence poverty reduction?
 - Example: SAI Brazil (2026) – next block

Discussion of Part 2



- Is your audit institution already involved in any work related to poverty, social programs, or multidimensional indicators?
 - If yes, what types of audits have been done?
- Thinking about your country's situation, do you see value in adopting an MPI-based approach to understand who is poor, where they live, and what deprivations they face?
- What challenges do you think your audit institution would face when trying to use MPI data in an audit?

MPI and Public Expenditures

An example from SAI Brazil



- Does spending in different sectors (e.g., health, education) influence MPI reduction?
- How long does it take for an increase in spending to influence MPI?
- Are there differences across sectors?
- Does the efficiency of spending by different states make significant difference?

The Project



1. The project aims to **develop a methodology** for assessing the **cost-effectiveness of public policies** that can alleviate poverty in its several dimensions.
2. How can it be done? **Integrating efforts** from SAI Brazil and OPHI
 - SAIs: **auditing public expenditures and evaluating public policies and programs**
 - OPHI: **measuring multidimensional poverty worldwide** (e.g., Global MPI), **assisting countries** to develop their own National MPI and **evaluating the factors that influence multidimensional poverty**

The steps for implementation



The initiative has been implemented in three stages:

1. Develop a **Multidimensional Poverty Index (MPI)** for auditing in Brazil, based on available data and the Alkire-Foster method. Necessary step because the country does not adopt an official MPI. It is an MPI for auditing purposes
2. Establish a methodology to link **government spending** to each dimension/indicator of the MPI
3. Evaluate the **cost-effectiveness** of public expenditures in poverty reduction in each dimension/indicator of the MPI

Development of an MPI for auditing in Brazil



MPI was based on **administrative data** from social welfare database (**CadÚnico**), information for **more than 90 million people** from low-income families

Assumption: all, or almost all, people in poverty should be in the registry.

Advantages:

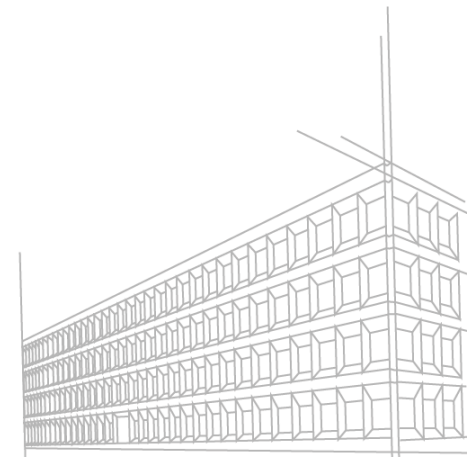
- The data offer detailed information on households
- Data **can be linked to other administrative** databases since it include personal records, addresses, and living conditions, among other details.

Disadvantages:

- The index is only for auditing purposes because **the data do not represent the country's total population** like other national demographic surveys
- Registry's **updates can be less systematic**, occurring every 2 years for each household.

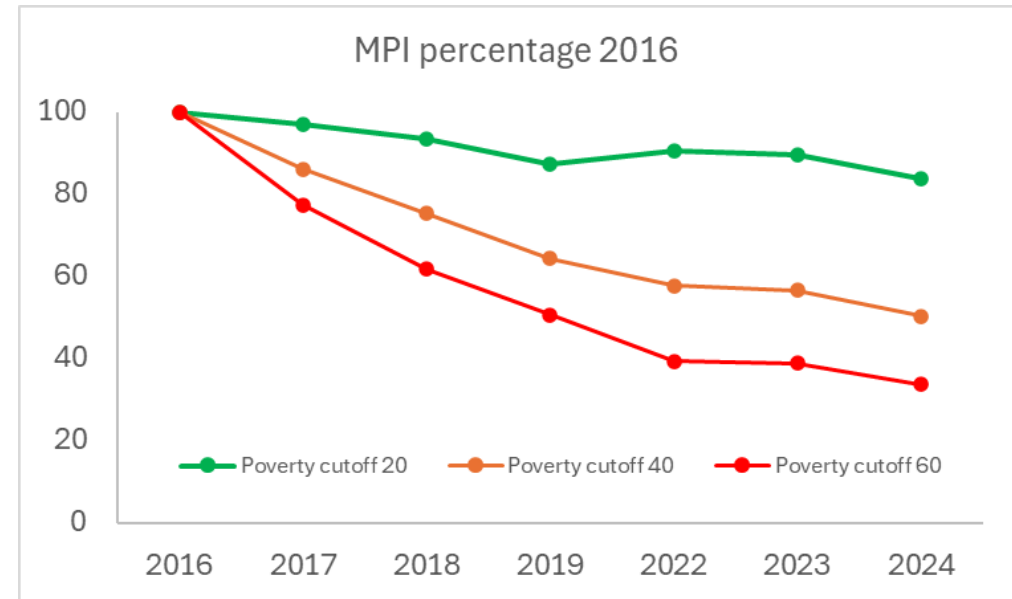
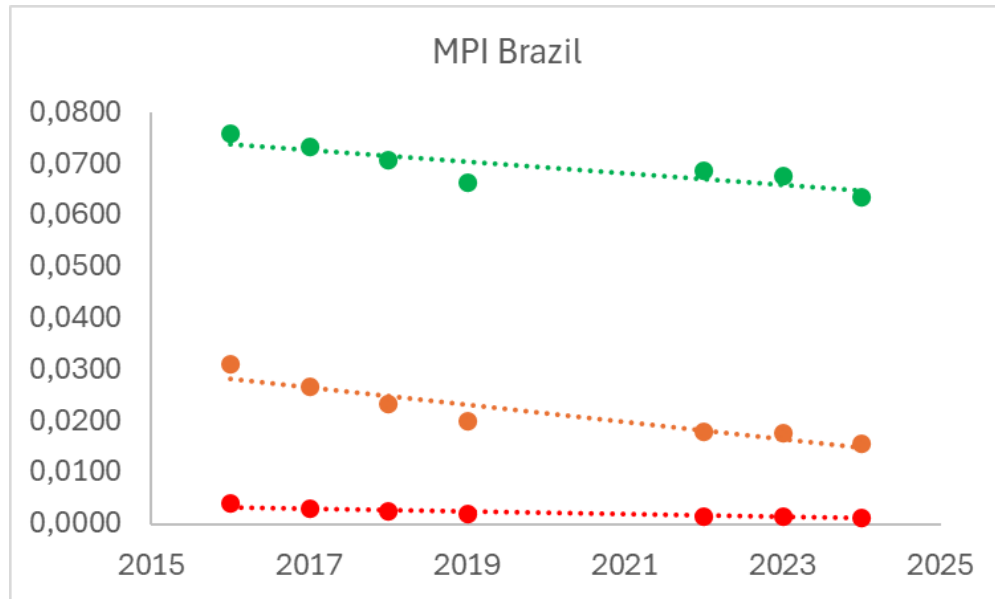
MPI for auditing in Brazil: 5 dimensions and 19 indicators

Dimensions	Indicators	Weight
Education (1/5)	Illiteracy	1/30
	Years of schooling	1/30
	School attendance	1/30
	School lag	1/30
	School infrastructure	1/30
	Teachers' qualifications	1/30
Health (1/5)	Access to health facilities	1/15
	Access to drinkable water	1/15
	Sanitation	1/15
Living Standards (1/5)	Overcrowding	1/20
	House material	1/20
	Waste disposal	1/20
	Electricity	1/20
Vulnerabilities (1/5)	Lack of support in early childhood	1/20
	Lack of income in old age	1/20
	Child labor	1/20
	Young people who neither work nor study	1/20
Work (1/5)	Long-term unemployment	1/10
	Informality	1/10



MPI and MPI reduction

Poverty cutoff 20%, 40%, 60%



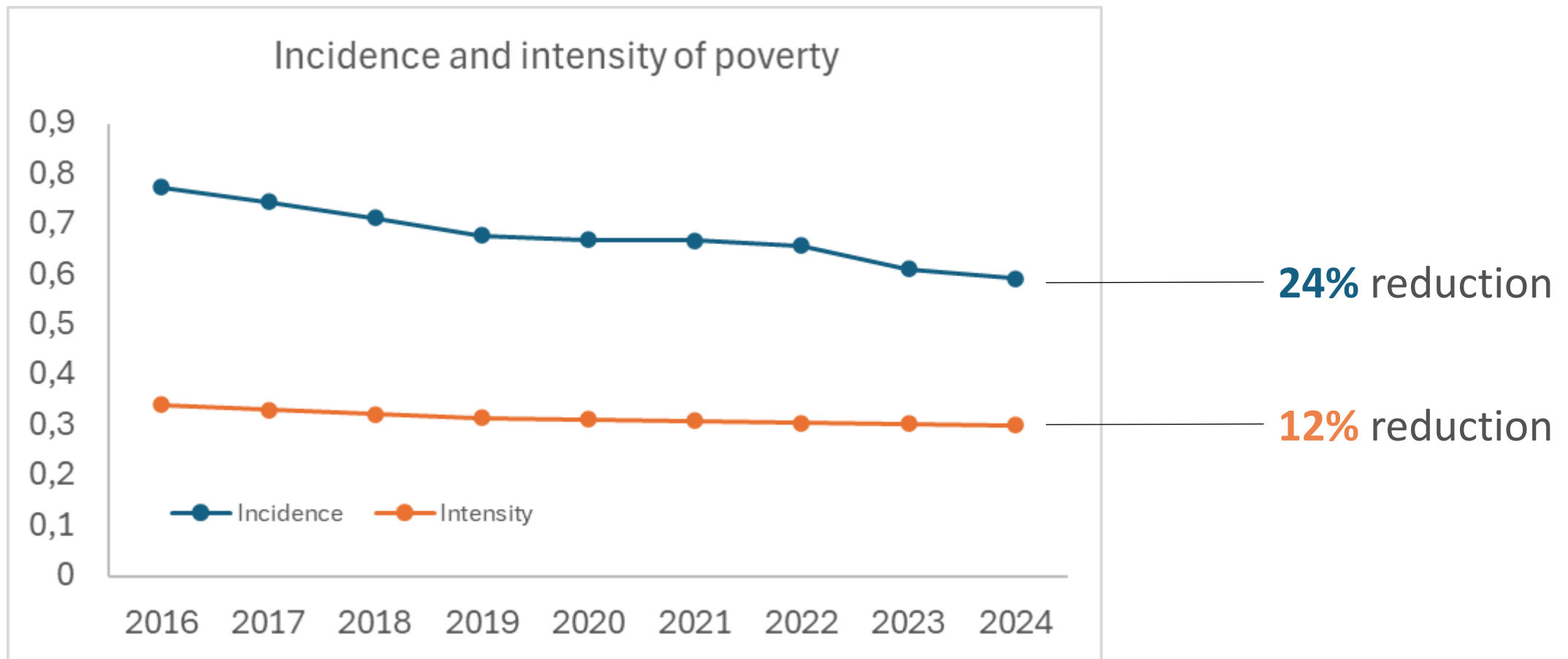
Poverty Incidence vs. Poverty Intensity



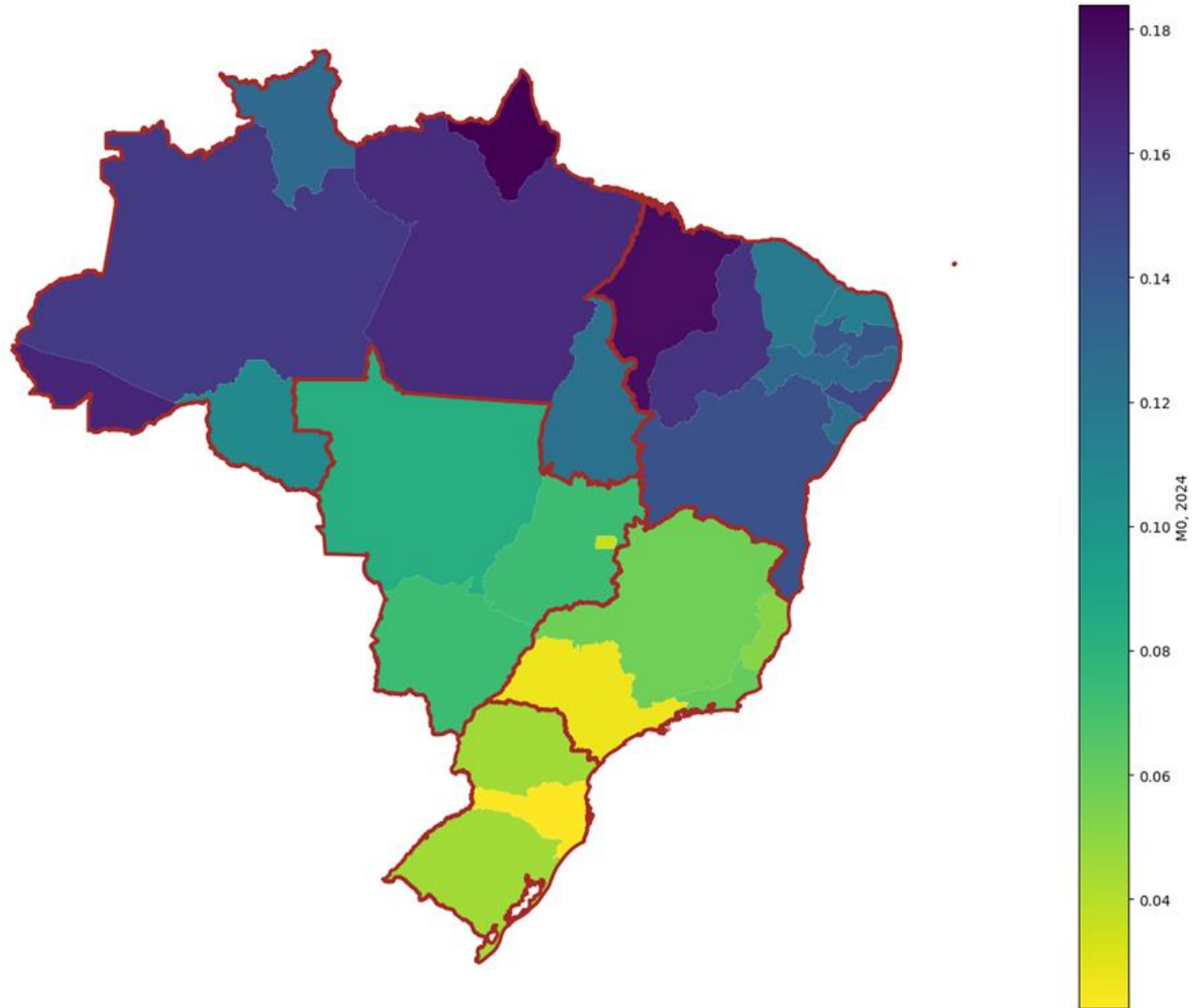
One of the advantages of the MPI, based on the adopted methodology, is that it allows for the separate analysis of **Poverty Incidence** (the percentage of multidimensionally poor people) and **Poverty Intensity** (the level of deprivation among poor families).

$$\text{MPI} = \text{Poverty Incidence} \times \text{Poverty Intensity}$$

How many are poor? How poor they are?

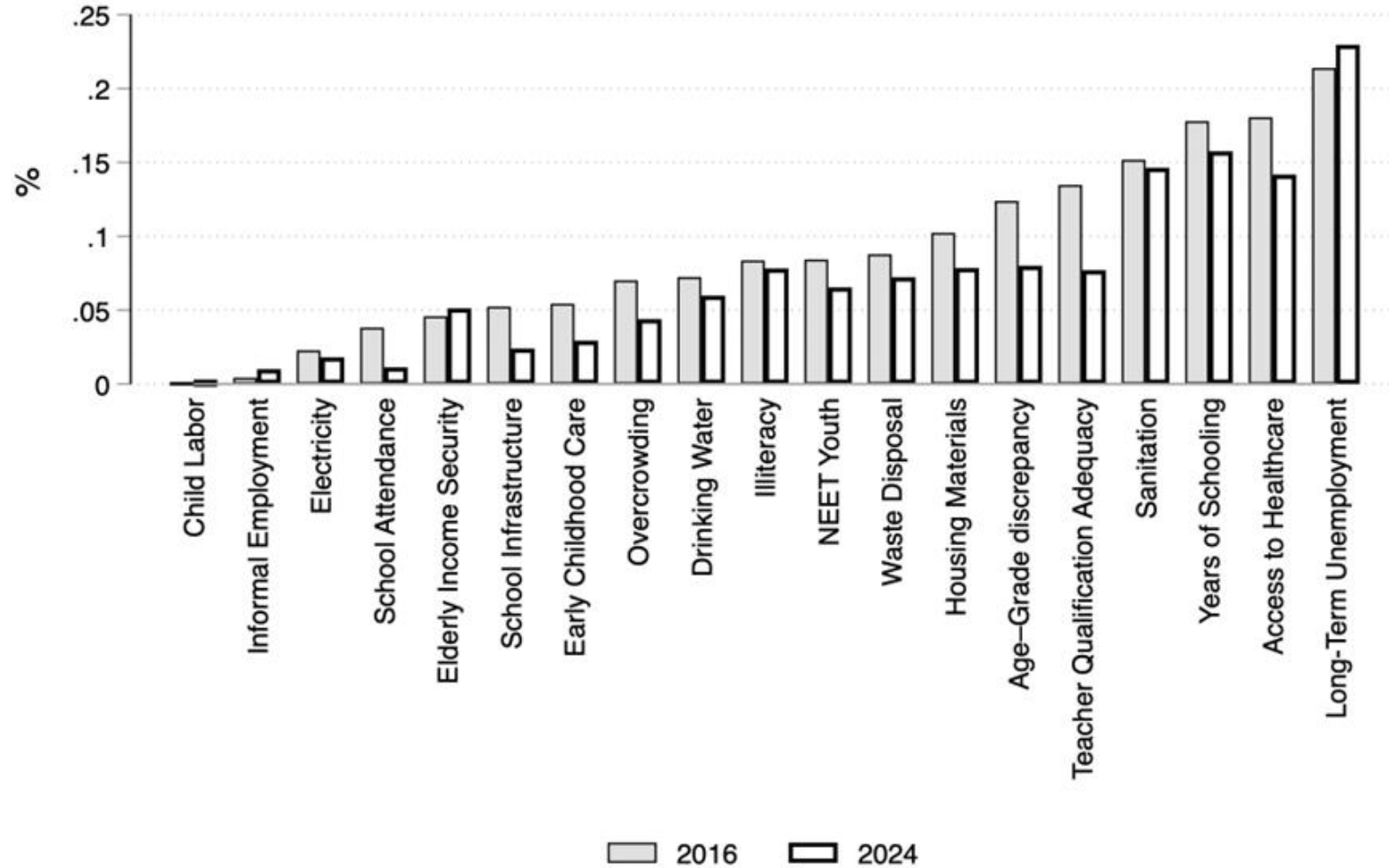


Where do they live? MPI for different states



Headcount by MPI indicator

Change from 2016 to 2024

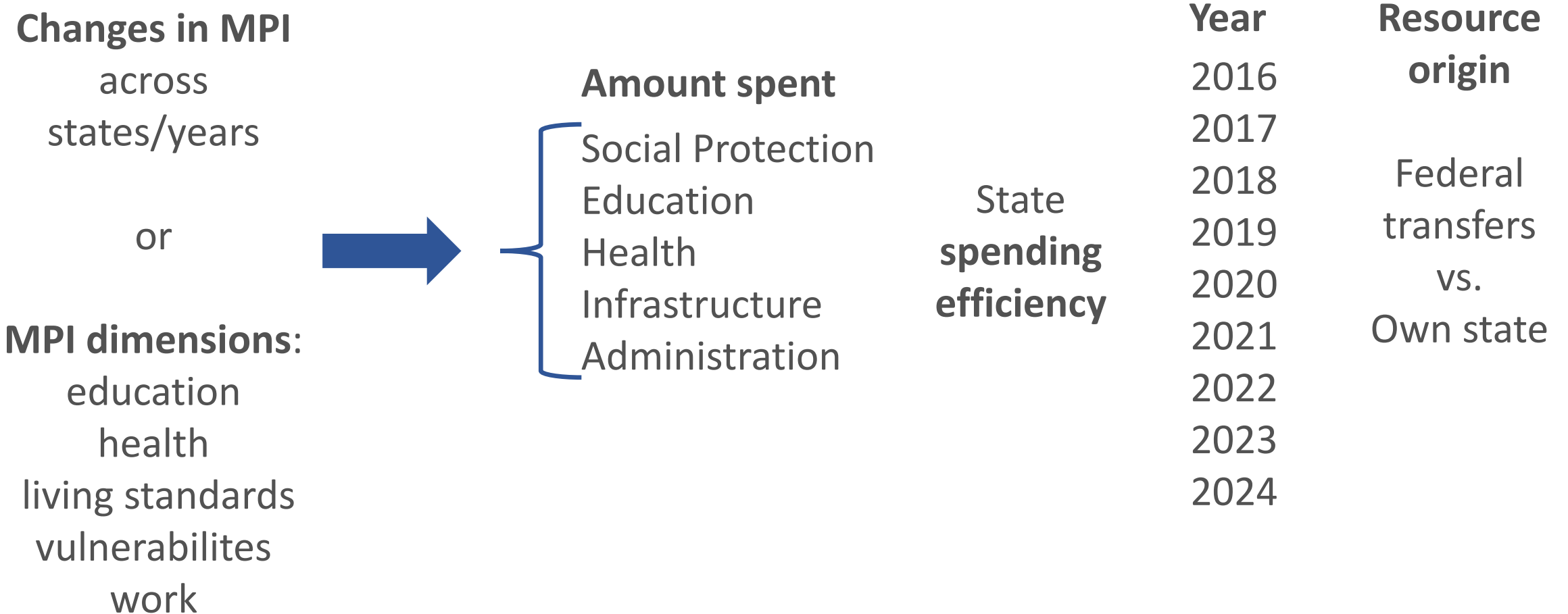


Public expenditure from 2016-2024



- Expenditure by government functions were grouped into six categories:
 - Social Protection
 - Education
 - Health
 - Infrastructure
 - Economy
 - Administration
- Expenditure was also classified in:
 - Federal transfers
 - Own spending by state

Relating MPI and Public Expenditures (econometric models and frontier analysis)



Some main results



- Spending **efficiency** differences across states explain substantial variation in poverty outcomes and are **strongly related** to both poverty **incidence** and **intensity**
- Expenditures on **social protection** emerges as the most robust correlate of **short-run** (up to 2 years) reductions in multidimensional poverty, particularly through intensity
- Expenditures on **education** effects appear more plausibly **delayed** (after 2 or more years) and domain-specific

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Discussion of Part 3



- When looking at the example of connecting public spending to changes in multidimensional poverty, what thoughts arise about how this type of analysis might resonate in different national contexts?
- Thinking more broadly, what role do you feel shared international learning could play in helping SAIs understand how public investments shape multidimensional poverty outcomes?
- What global benefits do you think could emerge if SAIs from different countries collaborated on MPI-based auditing approaches?

Thank you!

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