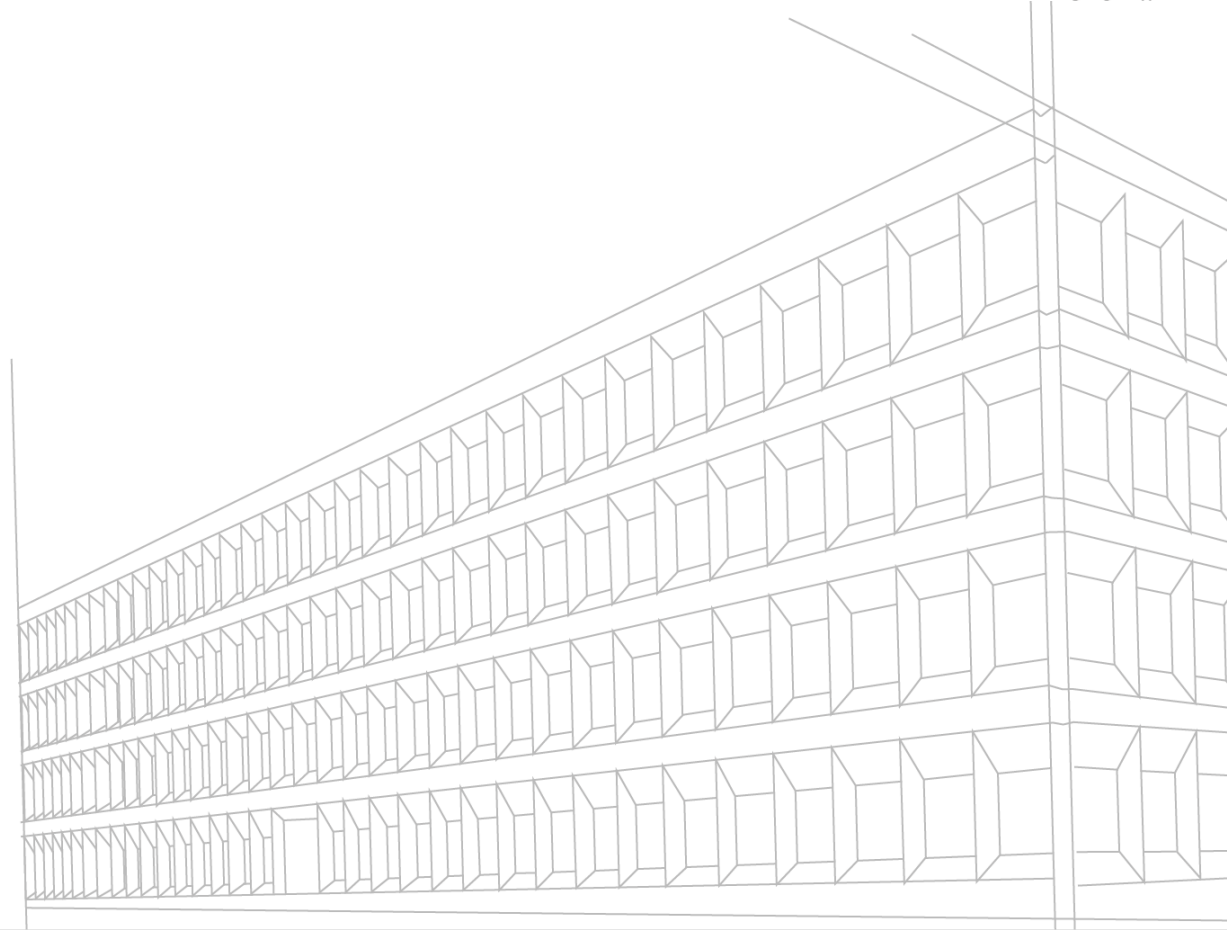


Public Spending on the Reduction of Multidimensional Poverty



Federal Court of Accounts (SAI Brazil)

The objective



The project aims to develop a methodology for assessing the **cost-effectiveness of public policies** that can alleviate poverty in its several dimensions.

The initiative will be implemented in four stages:

1. Develop a **preliminary Multidimensional Poverty Index (MPI)** for Brazil, based on available data and the Alkire-Foster method (adopted by OPHI – Oxford Poverty and Human Development Initiative).
2. Establish a methodology to link **government spending** to each dimension/indicator of the MPI.
3. Analyzing the **cost-effectiveness** of public expenditures in poverty reduction in each dimension/indicator of the MPI.
4. Share the **methodology** with other SAI that might be interested in applying it with the assistance of OPHI/SAI Brazil.

Multidimensional poverty



The Brazilian Federal Court of Accounts (TCU) is developing a **Multidimensional Poverty Index** (MPI) for Brasil, based on the methodology designed by the Oxford Poverty and Human Development Initiative (OPHI). The MPI measures poverty beyond monetary assessments, capturing deprivations in areas such as:

- **Health**
- **Education**
- **Housing**

The project has been developed in partnership with **OPHI**, considering their expertise in measuring multidimensional poverty worldwide.

Why the use of MPI is relevant



International experience shows that adopting an MPI:

- improves **sectoral coordination** within governments
- strengthens the **targeting** of **poverty-reduction** policies
- enables policymakers to identify which **deprivations simultaneously** affect **poor families** in the country by regions, states, municipalities
- complements **monetary measures** of poverty which are not perfectly correlated with multidimensional measures.

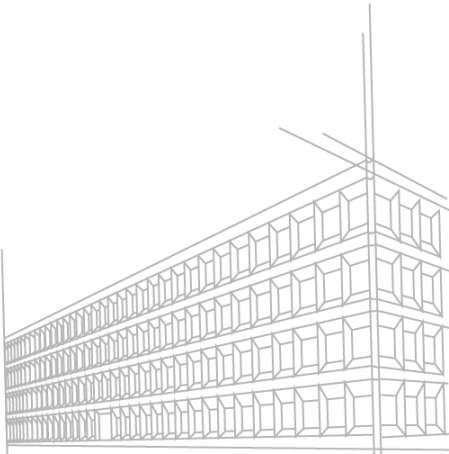
Preliminary Proposal for a Multidimensional Poverty Index (MPI) pilot - Brazil



- It used administrative data from (**CadÚnico**), a national database which contains socioeconomic information for **more than 90 million people** from low-income families.
- **Premise:** all, or almost all, people in poverty should be in the registry.
- **Advantages:** The data offer detailed information on households, and it can be cross-referenced with other administrative databases since it include personal records, addresses, and living conditions, among other details.
- **Disadvantages:** The index is considered "pilot" because **the data do not represent the country's total population** like other demographic surveys (such as the PNAD from IBGE). Additionally, the registry's updates can be less systematic, occurring every 2 years for each household.

Preliminary Proposal for a Multidimensional Poverty Index (MPI)

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
	Teacher qualifications	1/30
Health (1/5)	Access to services	1/15
	Access to water	1/15
	Sanitation	1/15
Living Standards (1/5)	Excessive overcrowding	1/20
	Wall and floor material	1/20
	Waste disposal	1/20
	Electricity	1/20
Vulnerability (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



Preliminary Proposal for a Multidimensional Poverty Index (MPI) pilot - Brazil



- The preliminary MPI includes 5 dimensions: Education, Health, Living Conditions, Vulnerabilities, and Labor.
- All dimensions have the same weight (1/5), each contributing equally to the overall index.
- These 5 dimensions are organized into 19 indicators, with each one recording a type of household deprivation:
- Examples:
 - there is at least one school-aged child who does not attend school.
 - the school they attend has poor infrastructure or unqualified teachers.
 - they do not have access to water, or the water is of poor quality.
 - the home's walls and floors are inadequate.
 - there is a child up to 3 years old who does not attend daycare.

Preliminary Proposal for a Multidimensional Poverty Index (MPI) pilot - Brazil



Dimension	Indicators	Description
Education (1/5)	Illiteracy	At least one adult (>18) is illiterate
	Years of schooling	No adult (>19) has completed high school
	School attendance	At least one school-aged child does not attend school
	School lag	At least one school-aged person is two or more years behind in school
	School infrastructure	Someone attends a school with 10 or fewer of the 20 required infrastructure items
	Teacher qualifications	Someone attends a school where 50% or more of the teachers do not have adequate training
Health (1/5)	Access to services	The household did not report a healthcare facility where they receive care
	Access to water	They have no access to water or access to low-quality water (e.g., cisterns)
	Sanitation	There is no bathroom in the home or on the property, or it is not connected to a collective network or septic tank
Living standards (1/5)	Excessive overcrowding	There are more than three residents per bedroom in the household
	Wall and floor material	The household has floors (e.g., dirt) or walls (e.g., unplastered, wattle and daub) made of inadequate materials
	Waste disposal	The household has no garbage collection
	Electricity	The household has no electric lighting

Preliminary Proposal for a Multidimensional Poverty Index (MPI) pilot - Brazil



Dimension	Indicators	Description
Vulnerabilities (1/5)	Lack of support in early childhood	At least one child up to 3 years old does not attend daycare
	Lack of income in old age	At least one elderly person (>65) has no income (e.g., benefits, pension)
	Child labor	At least one person up to 14 years old works or is under 16 and is not an apprentice or intern
	Young people who neither work nor study	There is a young person between 15 and 29 years old who neither works nor studies
Work (1/5)	Long-term unemployment	At least one person worked for less than 6 months in the last 12 months
	Informality	At least one person has informal occupation

Examples of Preliminary Results

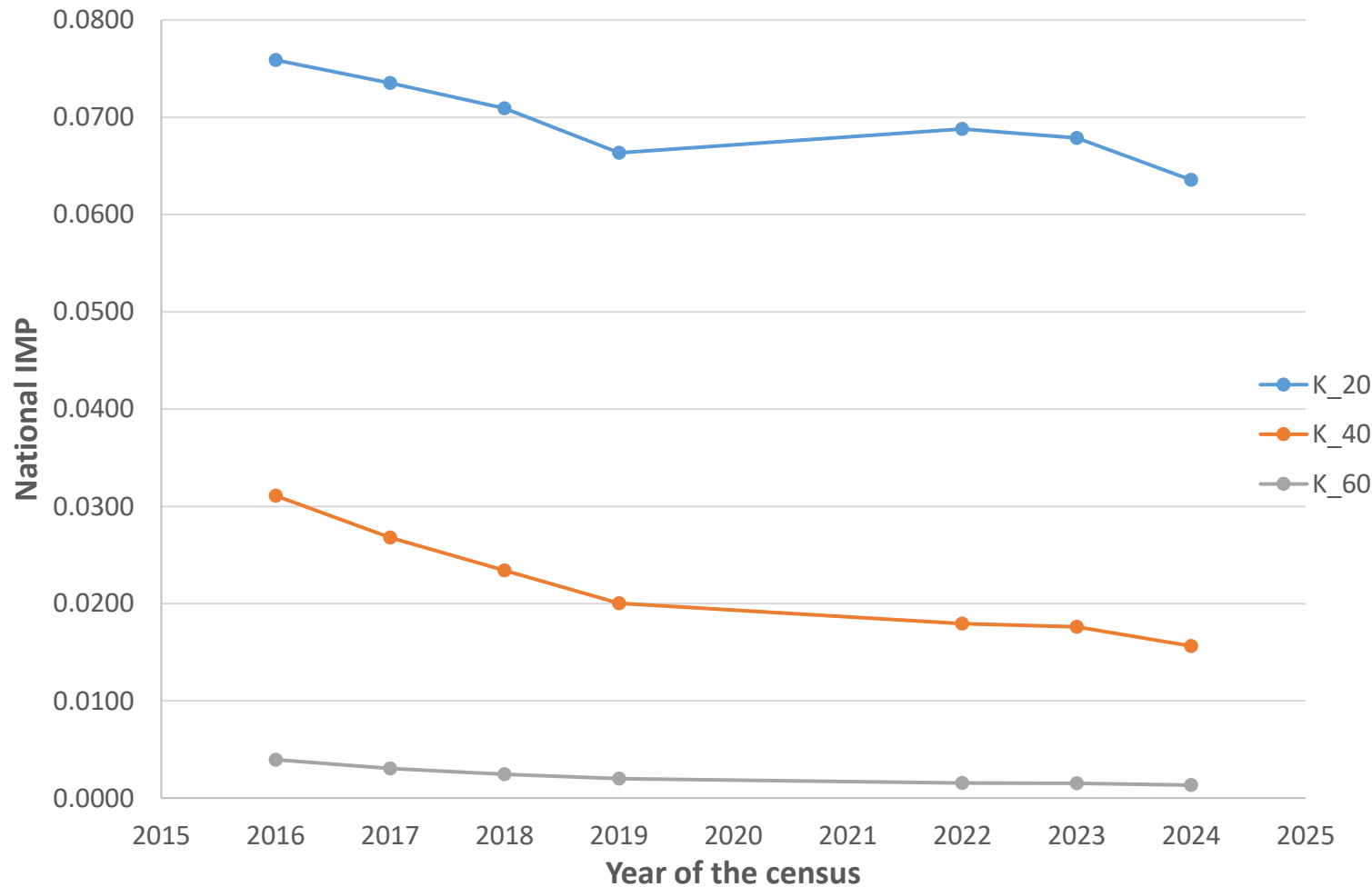


- The following are some **preliminary results** intended to **illustrate the possible uses** of the index developed based on the Alkire-Foster methodology, which is used by OPHI researchers.
- **The results are not considered final**, as the analyses are still undergoing review and refinement.

Examples of Preliminary Results



Pilot MPI values for Brazil



The 3 lines on the chart show the **MPI values** for each year relative to poor families (deprived in 20% of indicators), very poor families (deprived in 40%), and extremely poor families (deprived in 60%). You can observe that the MPI value shows a **decreasing trend** over the years, which indicates a gradual reduction in multidimensional poverty.

Examples of Preliminary Results



- 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).

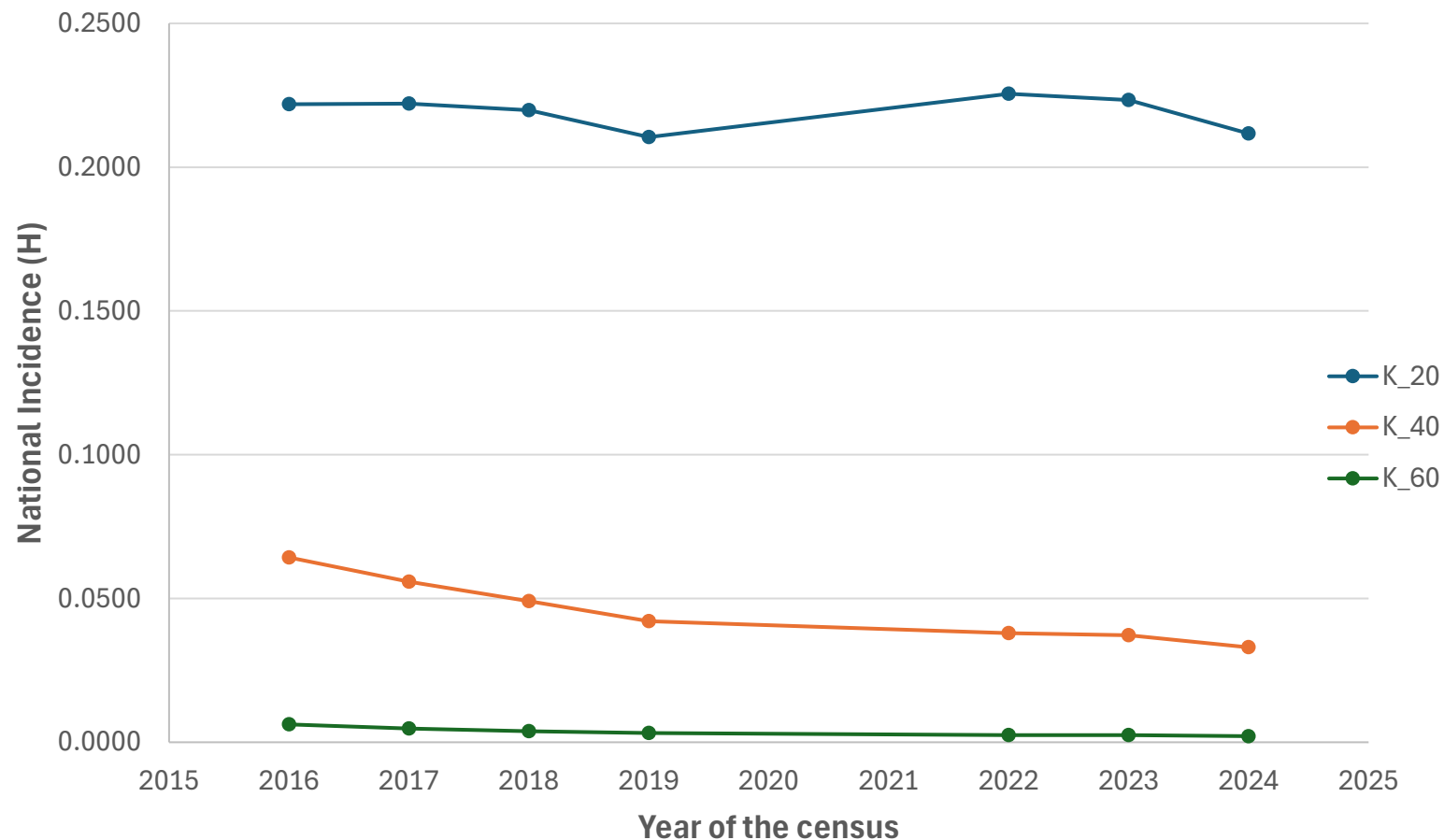
$$\text{MPI} = \text{Poverty Incidence} \times \text{Poverty Intensity}$$

- The two graphs that follow illustrate the changes in **Incidence** and **Intensity** over the years, respectively

Examples of Preliminary Results



National Incidence (H) Values

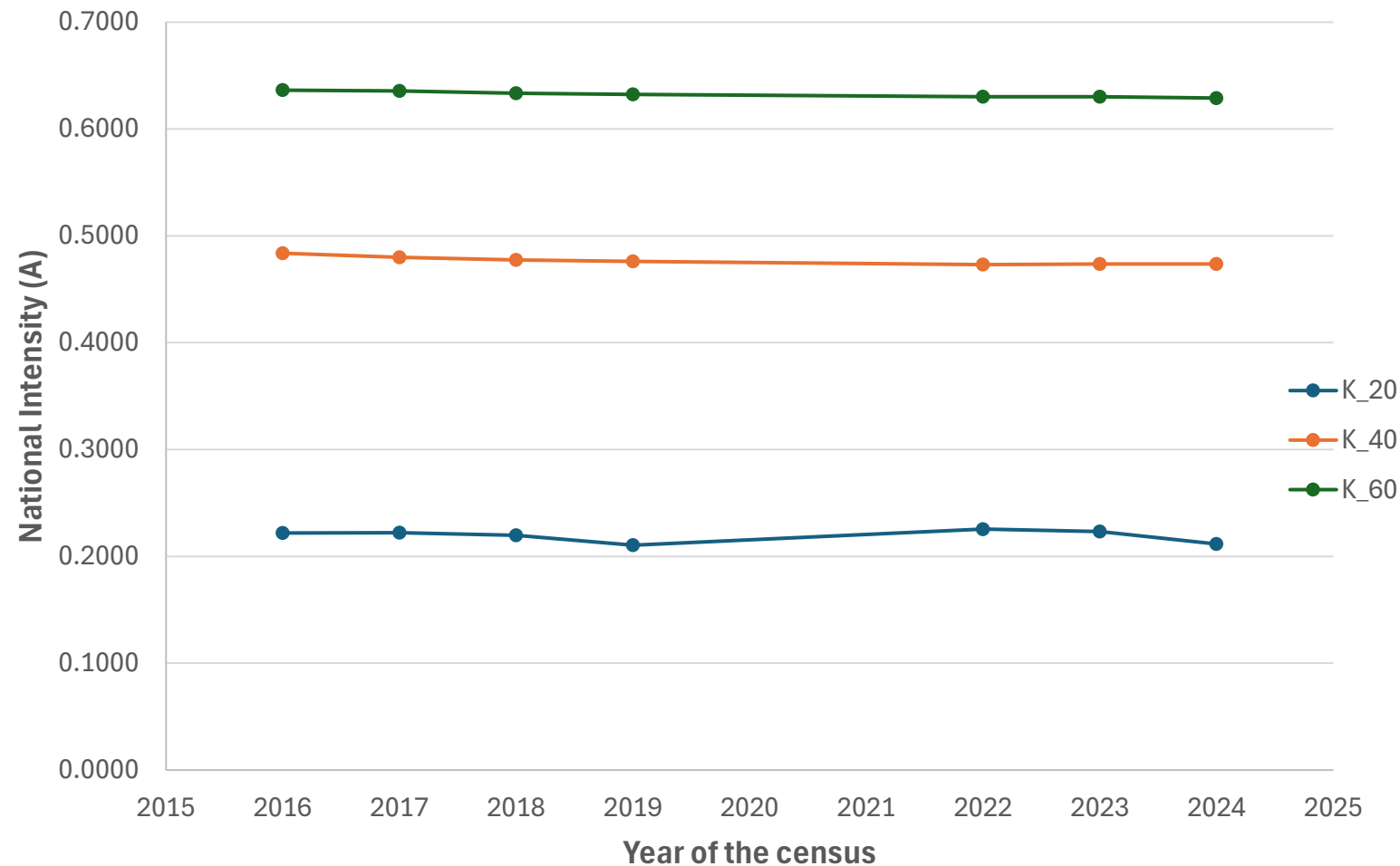


Observe that the **Incidence** of poverty tended to **decrease** throughout the period, especially among the groups of **very poor families** (40% deprivations) and **extremely poor families** (60% deprivations).

Examples of Preliminary Results



National Intensity (A) Values



You can observe that the **Intensity of poverty** (the average percentage of deprivations among the poor) has not shown significant changes over the period, remaining more stable.

Examples of Preliminary Results

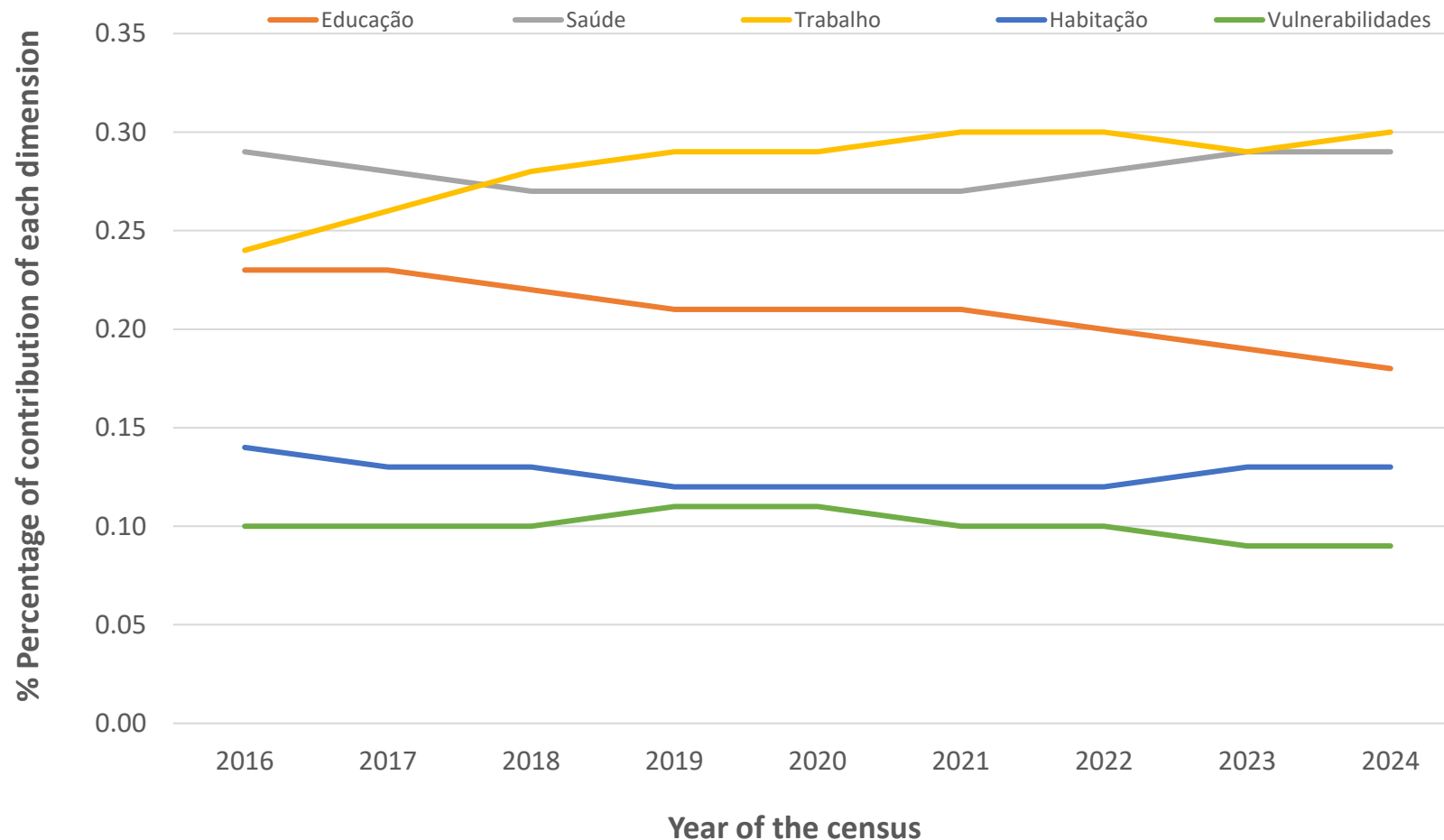


- Another advantage of the methodology adopted to calculate the MPI (the Alkire-Foster method, used by OPHI researchers) is the possibility of measuring the **relative contribution of each dimension** to a family's poverty status.
- The two charts below present examples of this type of analysis and include the **contribution of deprivations in each dimension** to the situation of **poor families** (20% deprivations) and **very poor families** (40% deprivations), respectively.
- Taken together, the charts suggest that the **weights of the deprivations** affecting poor families **differ** from those that affect very poor families.

Examples of Preliminary Results

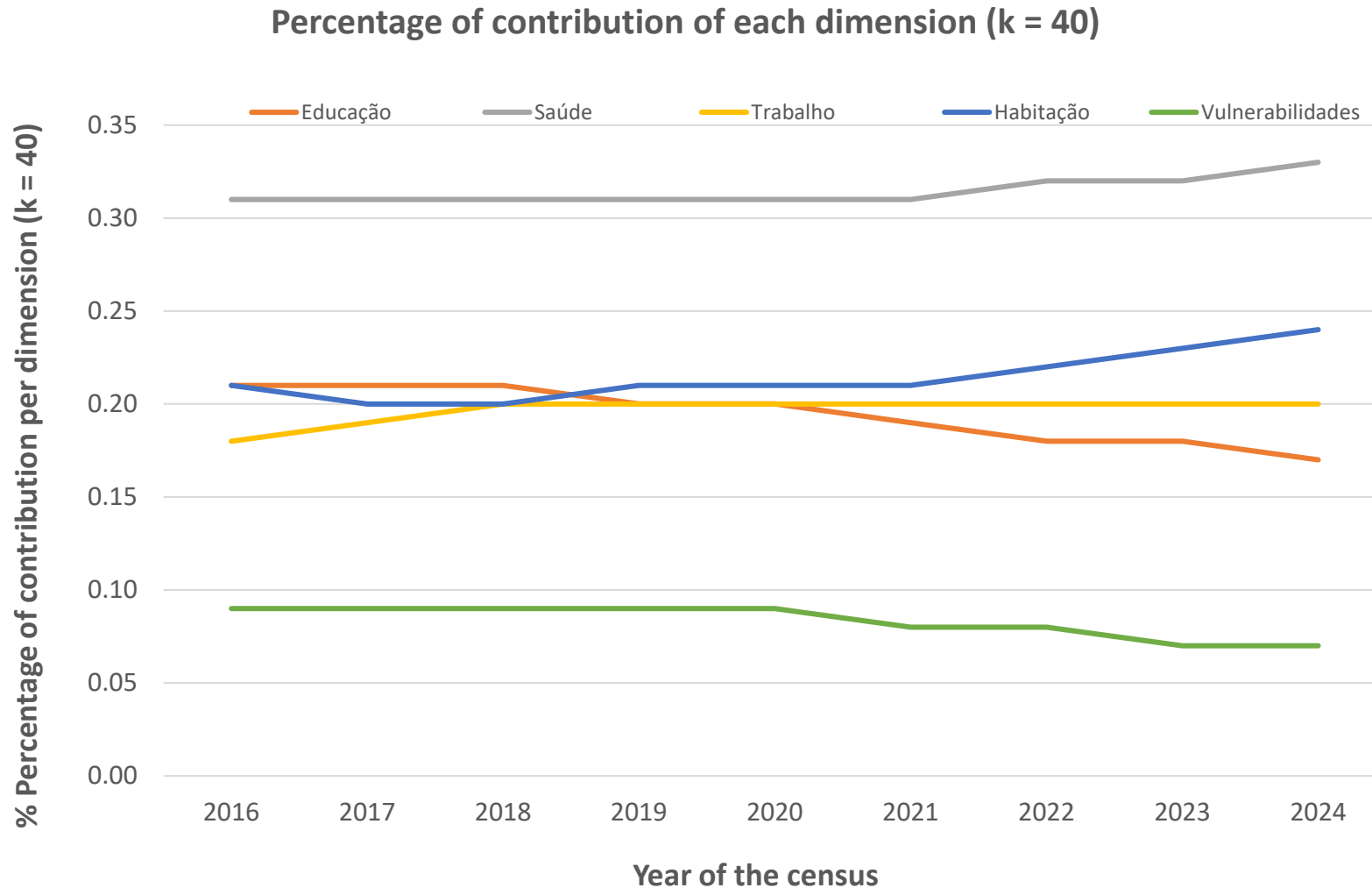


Percentage of contribution of each dimension (k = 20)



The relative contribution of each dimension to the MPI for the poor population (20% deprivations) shows that **labor and health** contributed most to poverty. These were followed by **education**, which had a decreasing trend (indicating improvements in education), **living conditions**, and **vulnerabilities**.

Examples of Preliminary Results



The relative contribution of each dimension to the MPI for the very poor population (more than 40% deprivations) shows that **health** contributed most to poverty. This was followed by **labor**, **living conditions** (with an increasing trend), and **education** (with a decreasing trend). **Vulnerabilities** had the smallest contribution (with a decreasing trend).

Examples of Preliminary Results



- The adopted methodology also allows for analyses of multidimensional poverty for the **different regions of the country**.
- The following chart illustrates the level of multidimensional poverty (MPI) for each state.
- The same type of analysis can also be performed for **each municipality** in the country, which would provide a portrait of multidimensional poverty throughout the territory.

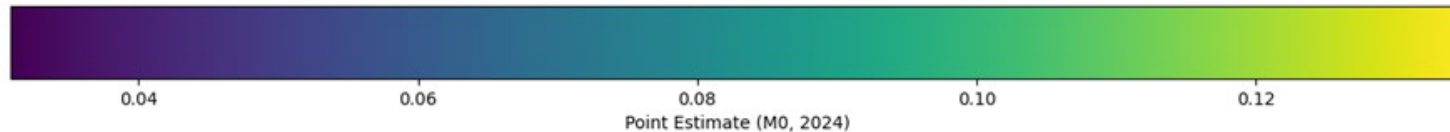
Examples of Preliminary Results



Point Estimate (M0) by Region in Brazil (2024)



The multidimensional poverty index (for poor families, with 20% deprivations) was calculated for each of the country's states in 2024. It can be observed that poor families are concentrated in the states of the **North Region, as well as in Maranhão and Piauí.**

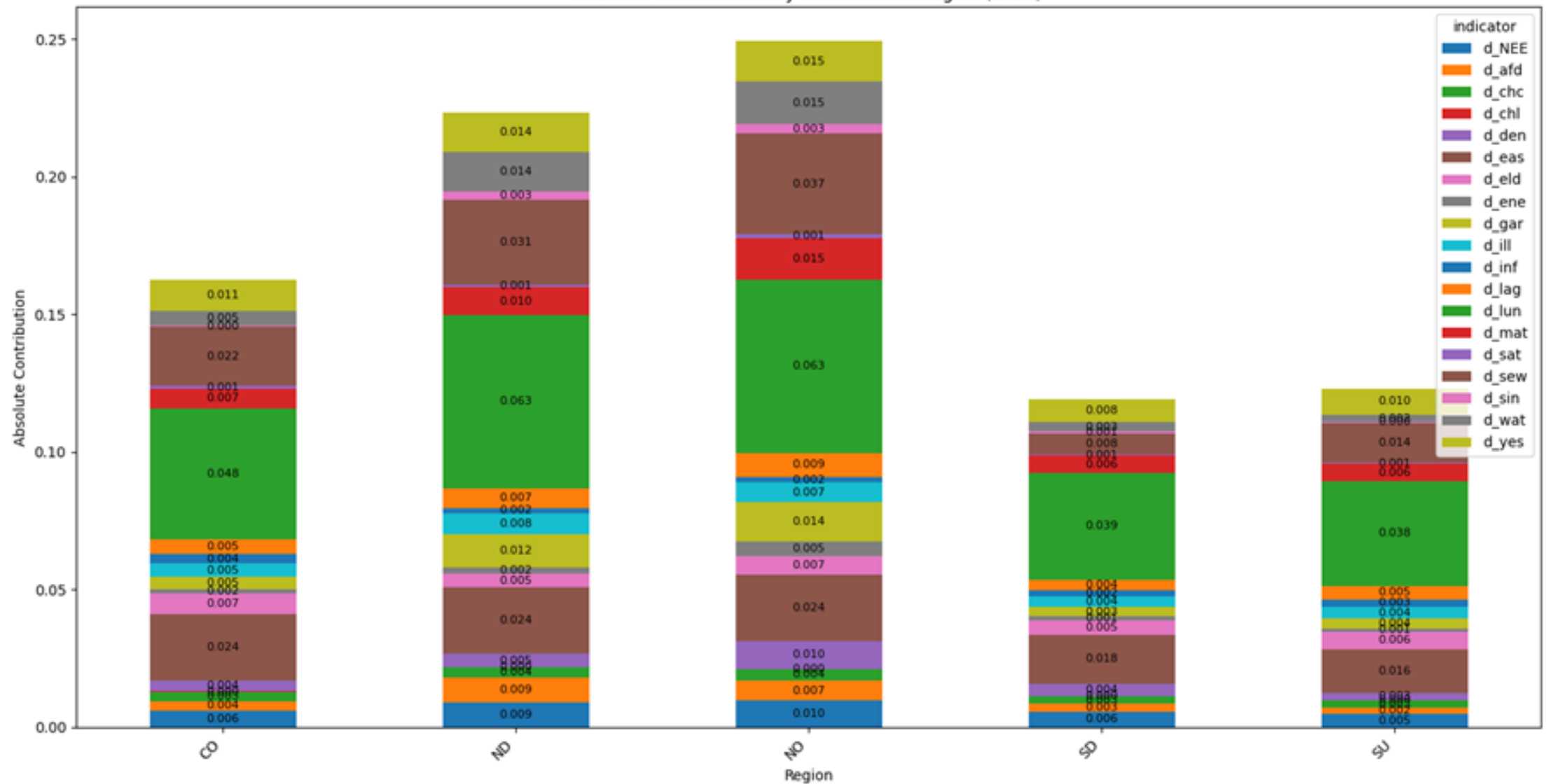


Examples of Preliminary Results

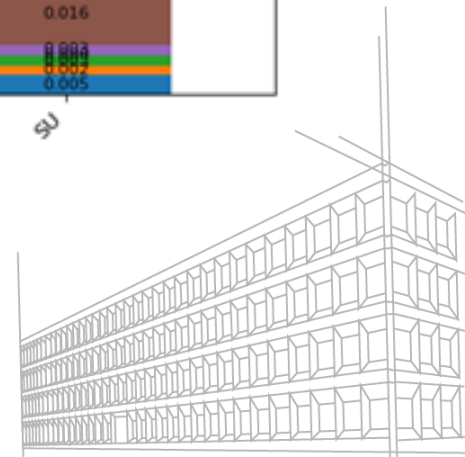


- The adopted methodology also makes it possible to analyze the **relative contribution of each of the 19 indicators** to the poverty situation for each region, state, or municipality.
- The following chart shows the relative contribution of each indicator to the poverty situation of families in **each region** of the country.
- This feature of the methodology allows for identifying which deprivations require more attention from public policies and in which parts of the country. **This enables governments to better focus their actions on the fight against poverty.**

Absolute contribution by Indicator and Region (2024)



For the year 2024, the indicator with the greatest absolute contribution to the MPI in all regions was **long-term unemployment**. In the North and Northeast regions, the **sanitation** indicator also had a significant impact.



Cost-effectiveness of expenditures



The identification of **public expenditures** in policies associated to poverty dimensions (e.g., health, education, housing) allows for:

- the evaluation of which **changes in spending** (e.g., health, education) are more strongly correlated to changes in poverty reduction
- assessment of the **temporal lag** between increases in spending and poverty reduction in each dimension
- the evaluation of spending in/by **different states/municipalities** on the reduction of poverty (differences in efficiency?)
- estimation of the **cost-effectiveness** of investing in different policies aimed at reducing poverty

Cost-effectiveness analyses



- Development of **econometric** model:
 - Measures of poverty **dependent** on levels of spending by dimensions, country regions (states/municipalities)
 - **Efficiency**: frontier analysis
 - Temporal effects: spending as **lag variables**
 - Explanatory variables: state/municipality **financial governance**, for example
- Present the methodology and some results: side event at **Incosai**

Thank you!

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