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**SURVEY RESEARCH TO ASSESS CHANGES IN THE
MULTIDIMENSIONAL POVERTY DIAGNOSTIC (DOOR TO DOOR
PROJECT) IN 44 MUNICIPALITIES OF MINAS GERAIS STATE**

**PRODUCT 07:
English summary of the Final Survey Report:
applied methodology, statistical data
analysis and main results**

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INTRODUCTION

Product 7 aims to present an English summary, and final stage, of the applied methodology, statistical data analysis and main results, of the **Survey Research to Assess Changes in the Multidimensional Poverty Diagnostic Survey (Door to Door Project) in 44 municipalities in the state of Minas Gerais**. The Service Agreement for Professional Consulting Nº30256/2014 was signed between the United Nations Program for Development - UNDP and Polis Pesquisa Ltda.

This paper is organized in three sections as follows: **SECTION I** describes the methodological aspects of the Multidimensional Poverty Index (MPI) including the indicators used to construct the measure, sampling, data collection procedures, and data records. **SECTION II** analyzes the Multidimensional Poverty Index (MPI) results and its time series 2011-2014 datasets, such as the proportions of deprivation and households classified as "poor" by indicators and dimensions. **SECTION III** presents considerations and key findings about the poverty multidimensional study.



SECTION I - METHODOLOGY

1. The Multidimensional Poverty Index (MPI)

The **Multidimensional Poverty Index (MPI)** was developed by the Oxford Poverty and Human Development Initiative (OPHI) and presented in the Human Development Report 2010 (HDR, 2010) with the United Nations Development Programme (UNDP). The MPI was proposed to produce a global extreme poverty measure, and allow for comparisons across countries and regions in the world as well as within countries, states and municipalities.

The MPI aims to measure poverty considering multiple related dimensions, moving beyond the income-based poverty measures which were dominant in social studies for poverty diagnosis in recent decades. This new proposal seeks to identify overlapping deprivations at the household level across three dimensions: health, education and living standards. Ten indicators in these three dimensions are considered for the index measure:

- ✓ **Education**
 1. Years of schooling
 2. Child School Attendance

- ✓ **Health**
 3. Nutrition
 4. Child Mortality

- ✓ **Living Standards**
 5. Cooking fuel
 6. Access to sanitation facility
 7. Access to drinking water
 8. Electricity
 9. Flooring
 10. Household goods



The **Door to Door Project** was implemented in the state of Minas Gerais in 2011 affirming the Multidimensional Poverty Index (IPM) measure's importance for a diagnosis that could identify vulnerable households. The **Door to Door Project** selected municipalities taking into account the municipal Human Development Index, the Social Responsibility Index for Minas Gerais State, the municipalities' population, besides the criteria related to public policies implementing, and compliance by city administrations.

The **Door to Door Project** collected data in face-to-face households interviews, using a structured questionnaire based on the MPI measure indicators. The 2014 survey results highlight a picture of multidimensional deprivation prevalence and its intensity in Minas Gerais State first consolidated in a 2011 census in these 44 municipalities. Time series MPI data comparisons broken down by indicators mapped out people living in poverty and changes over time, allowing the state government to identify where and how many deprivations people experience at the same time.

The data collected by the **Door to Door Project** is one of the most important tools used by the Minas Gerais' government to define social public investment in the state municipalities. These informations are central to identify cities that will be part of the so called **Programa Travessia** (CADERNOS TRAVESSIAS, 2011; 2012). This is an inter-sectorial actions social program that aims to promote human and social local development through initiatives to fight poverty, to create employment and income and through investment in education and health care, and improvements in infrastructure, sanitation, electricity and transportation.

MPI indicators composition

The **Multidimensional Poverty Index (MPI)** uses parameters (dimensions, indicators, cutoffs and weights) and functional form presented by Alkire and Foster (2009; 2010) and in the Human Development Report 2010 (HDR, 2010).

The MPI explicitly weights each dimension equally and each indicator within the dimension equally. Each of the three dimensions has a 1/3 weight. Within each dimension the corresponding 1/3 weight is divided between its indicators. The education and health dimensions have two indicators each



weighting 16.667%. There are six indicators making up the living standard dimension; each of them weighting 5.556 %.

To assess deprivation in the education dimension the Minas Gerais government has made an adjustment in the years of schooling indicator. According to UNDP, educational deprivation exists when "all 15 years or older members of the household have not completed at least five years of education". According to the Minas Gerais state government educational deprivation exists when "at least one 15 years or older member of the household has not completed five years study". **Table 1** shows weights distribution and deprivation definition for each indicator.

Table 1. Dimensions, indicators, weights and deprivation definition for each indicator.

DIMENSION		INDICATOR		DEPRIVED IF...
Dimension	Relative Weight	Indicator	Relative Weight	
Education	33%	Years of schooling	16.667%	<p>Minas Gerais State: At least one member of the household 15 years or older has not completed five years study.</p> <p>UNDP: All members of the household 15 years or older have not completed at least five years study.</p>
		Child School Attendance	16.667%	Any school-aged child is not attending school.
		Child Mortality	16.667%	Any child has died in the family household.
Health	33%	Nutrition	16.667%	Any adult or child is malnourished.
		Access to sanitation facility	5.556%	The household's sanitation facility is not improved or it is improved but shared with other household
Living Standard	33%	Access to drinking water	5.556%	The household does not have access to clean drinking water or clean water is more than 30 minutes walking from home.
		Cooking fuel	5.556%	The household does not have a gas stove and cooks with kerosene, wood or charcoal.
		Electricity	5.556%	The household has no electricity served by the power company.
		Flooring	5.556%	The household has dirt, sand or dung floor.
		Household goods	5.556%	The household does not own more than one of: radio, TV, telephone, bike, motorbike or refrigerator, and does not own a car or truck.

Project BRA/12/015: "Applied methodology to assess changes in Minas Gerais State Multidimensional Poverty Diagnostic", 2013.



MPI calculation description

The **Multidimensional Poverty Index (MPI)** identifies multiple deprivations at the household level through ten indicators in health, education and standard of living dimensions. To calculate MPI we begin by classifying “poor” and “non-poor” households depending on the number of deprivations in those ten indicators in selected household experience. For each household the sum of the weighted ten indicators lies between 0.00% deprivation and 100% household deprivations. Households that are deprived in at least 30% of the percentage deprivation scale are classified as “poor”. Dummies variables compute “poor” (1) and “non-poor” (0) households.

The calculation to obtain the **proportion of “poor”** on the study population (**H**) is as follows: the sum of “poor” households multiplied by sample weight and divided by the sample size. The **intensity of poverty** among multidimensionally “poor” (**A**) is obtained as follows: the sum of each “poor” household deprivation percentage within all classified “poor” households multiplied by sample weight and divided by the number of multidimensionally “poor” households. The MPI value summarizes information on multiple deprivations into a single number. It is calculated by multiplying the proportion of “poor” (H) by Intensity of poverty among the multidimensionally “poor” (A). In sum, the calculation of the MPI was performed following the steps outlined in **Table 2** below.

Table 2. Computing the Multidimensional Poverty Index (MPI)

<p>1. Categories “Poor” vs “non-poor”:</p> <p>i. Obtaining the percentage of deprivation among the ten indicators that make up the index, considering the relative weighting of 1/3 for each dimension and within each dimension equal indicators weight;</p> <p>ii. “Poor” vs “non-poor”: Households that are deprived in at least 30% in the deprivation 0,00% to 100% scale are classified as “poor”.</p>
<p>2. Proportion of “poor” in the sample (H):</p> $H = \frac{\sum (\text{“Poor” “Non- Poor”} \times \text{sample weight})}{n \text{ (sample size)}}$
<p>3. Intensity of poverty (A) among the multidimensionally “poor” households:</p> $A = \frac{\sum (\% \text{ deprivations for “poor” (1)} \times \text{sample weight})}{n_{\text{“poor”}} \text{ (number of multidimensionally “poor”)}}$
<p>4. The MPI:</p> $\text{MPI} = H \times A$

2014 Survey Research to Assess Changes in the Multidimensional Poverty Diagnostic (Door to Door Project) in 44 municipalities of Minas Gerais State.



2. Sample and data collection in 2014

Sample design

- ✓ **Universe:** Set of all 44 municipalities households included in 2011 **Door to Door Project** as follows: Alvorada de Minas, Arinos, Cachoeira Dourada, Campanário, Campo Azul, Capim Branco, Carvalhos, Confins, Consolação, Diogo de Vasconcelos, Dom Joaquim, Fernandes Tourinho, Frei Lagonegro, Ibituruna, Itinga, Joaquim Felício, Josenópolis, Juramento, Lagoa dos Patos, Marilac, Mateus Leme, Matutina, Miravânia, Nacip Raydan, Natalândia, Ninheira, Oratórios, Passabém, Pescador, Ponto Chique, Presidente Juscelino, Presidente Kubitschek, Quartel Geral, Santa Fé de Minas, Santo Antônio do Itambé, Santo Antônio do Jacinto, Santo Hipólito, São Félix de Minas, São Geraldo da Piedade, São João do Pacuí, São José da Safira, São José do Divino, Serra Azul de Minas e Serranópolis de Minas.
- ✓ **Sample size:** 2,300 households
- ✓ **Sampling selection:** The selection was done using a probability sampling method. It was a stratified random sampling proportional to the size of the municipalities.
- ✓ **Confidence Level:** 95%.
- ✓ **Margin of error:** 2 pp
- ✓ **Unit of analysis:** Household
- ✓ **Specific aspects:** Longitudinal 2011-2014 study. In 2011 the **Door to Door Project** conducted a census in the 44 project selected municipalities identifying in 54,666 households overlapping deprivations and collecting necessary data to construct the Multidimensional Poverty Index. The 2014 sampling was designed to assess changes in multidimensional deprivations prevalence and its intensity in these **Door to Door Project** 44 municipalities in the state of Minas Gerais.
- ✓ **Sampling weight:** Sample was weighted to maintain the same parameters proportion for municipalities' number of households and "poor" and "non-poor" households as in the universe in 2011.



Data collection

- ✓ **Respondent:** Household residente, who is at least 18 years old.
- ✓ **Data collection instrument:** Data was collected at the selected households by trained interviewers using computer-assisted *face-to-face* Interviews and a structured questionnaire. The software developed for the tablet computers managed the flow of questions and survey response consistency. At the end of the the interview the answers to the survey questionnaires were sent directly to a server that stored data.
- ✓ **Questionnaire pretest:** For the 2014 questionnaire pretest a team of trained interviewers observed and recorded problems with understanding and interpretation of the questions in about 70 interviews in households of the target population. The 2014 pretest led to questionnaire improvements in order to standardize understanding according to the Door to Door Project research questions' objectives. The Door to Door Project questionnaire had been modified even before 2014 pretest. Adjustments were done in the original 2011 Door to Door Project survey questionnaire drawing on experience gained in other surveys conducted in the context of this projetc.
- ✓ **Data collection period:** The interviews were carried out from June 25 to September 5, 2014.

Data base

- ✓ **Database:** The questionnaire variables were organized into two databases by unit of analysis: households and individuals. Data were processed and analyzed in Excel 2007 and statistical software - SPSS 20.0 (Statistical Package for the Social Sciences)
- ✓ **Coding:** In order to calculate The Multidimensional Poverty Index (MPI) dummy variables were created to categorize “deprived” (1) and “non-deprived” (0) household to each of the ten indicators.



SECTION II – DATA ANALYSIS

1. MPI result for 2014 Door to Door Project

The two key pieces of the Multidimensional Poverty Index (MPI) are the **proportion of “poor”** households in relation to the study population (**H**), and the **intensity of deprivations (A)** among the multidimensionally “poor” households. These statistics were calculated for the 44 municipalities included in the 2014 **Door to Door Project** survey. As described above, the **Door to Door Project** criterion for deprived household in the years of schooling indicator is *“having at least one member of the household 15 years or older not completed five years of education”*. The calculation of MPI was carried out following the steps in **Table 3** below.

Table 3. Door to Door Project Multidimensional Poverty Index (MPI) Calculation

<p>1. Categories “poor” vs “non-poor” (Door to Door Project):</p> <p>i. Obtaining the percentage of deprivation among the ten indicators that make up the index, considering the relative weighting of 1/3 for each dimension and equal indicators weight within dimensions;</p> <p>ii. “Poor” vs “non-poor”: Households that are deprived in at least 30% of the weighted indicators are “poor”.</p>
<p>2. Proportion of “poor” in the sample (H):</p> <p>$H = \sum (\text{“Poor” “Non-poor”} \times \text{sample weight}) / n \text{ (sample size)}$</p> <p>$H_{pp} = 213.1151 / 2,181 = 0.0977$</p>
<p>3. Intensity of poverty (A) among the multidimensionally “poor” households:</p> <p>$A = \sum (\% \text{ deprivations for poor } (1) \times \text{sample weight}) / n_{\text{poor}}$ (number of multidimensionally “poor”)</p> <p>$A_{pp} = 0.3716$</p>
<p>4. MIP according to the Door to Door Project criteria:</p> <p>$MPI_{pp} = H_{pp} \times A_{pp}$</p> <p>$IPM_{pp} = H_{pp} \times A_{pp} = 0.0977 \times 0.3716 = 0.036$</p>

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The data analysis and survey main results presented in this report summary use households as the unit of analysis¹. The objective is to compare the 2014 MPI results and its key pieces information with those obtained in 2011. MPI and its components for 2011 and 2014 are shown in **Table 4**.

¹Except for analysis presented in “Relationship between ‘poor’ and ‘non-poor’ individuals and demographic subgroups”, page 28.



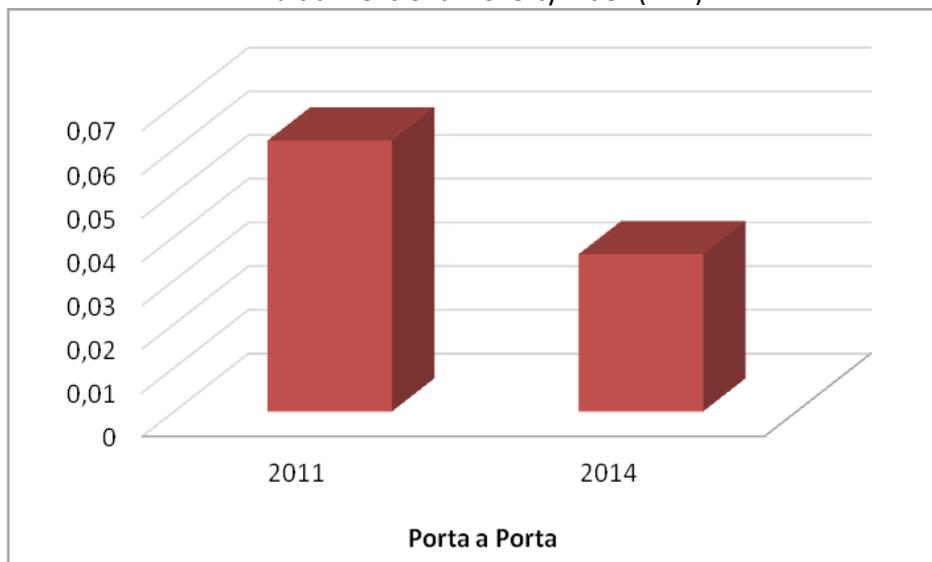
In **2011** Door to Door Project MPI was **0.062**. In **2014** the poverty index registered **0.036** which means a **42% reduction** in comparison to 2011. While the poverty index summarizes information on multiple deprivations, identifying overlapping deprivations at the household level across education, health and living standards dimensions. The survey results indicate **reduction in deprivations experienced by “poor” households** and, consequently, a **reduction in the proportion of “poor” households between 2011 and 2014**.

Table 4. The 2011 and 2014 Door to Door Project Multidimensional Poverty Index (MPI) and its components: proportion of households that experience overlapping deprivations (H) and intensity of deprivations (A).

Components / Year	H		A		IPM	
	2011	2014	2011	2014	2011	2014
Results	0.159	0.098	0.391	0.372	0.062	0.036

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Figure 1. The 2011 and 2014 Door to Door Project results for the Multidimensional Poverty Index (MPI)



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As a composite measure that summarizes information on multiple deprivations, three categories of households were created from the Multidimensional Poverty Index (MPI) distribution: “poor”, “vulnerable” and “non-poor”. Each category aggregates households that experience different levels of deprivations. Households that are deprived **in at least 30%** of the index weighted indicators are categorized as “poor”. Households classified as “vulnerable” experience **between 20% and 30%** of the index deprivations. “Non-poor” households compute **less than 20%** of the index deprivations.

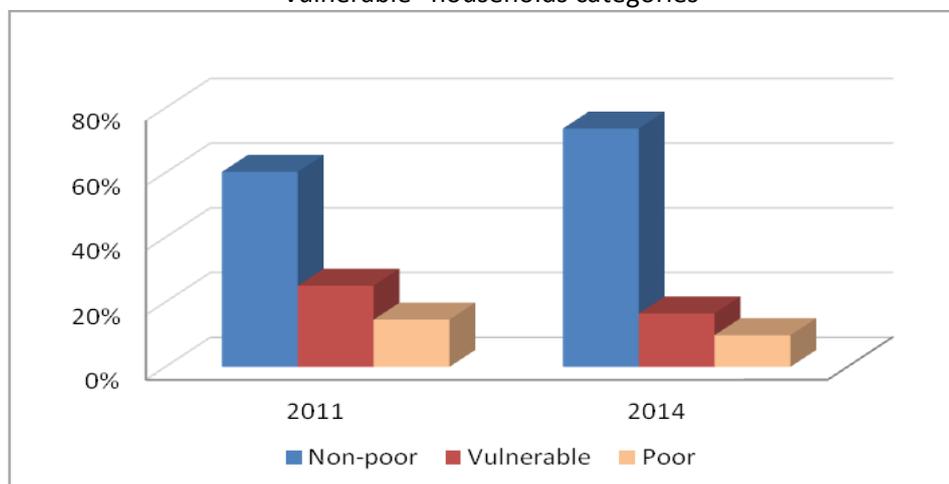
The “vulnerable” category households is a very important one to be followed up because its members are at risk of joining the category of multidimensionally poor by experiencing between 20% and 30% of deprivation. **Table 5** shows the proportions of households in the “poor” and “vulnerable” categories for 2011 and 2014 **Door to Door Project** data sets. **The “poor” and “vulnerable” households proportions are lower in 2014.** The proportion of “poor” households **decreased** from **14.6% to 9.8%** and the “vulnerable” households went down from **25.1% to 16.5%**.

Table 5. “Poor” and “vulnerable” households categories in 44 Door to Door Project municipalities.

Year	Number of households N= Population n= sample	“Poor” (>30% deprivations)	“Vulnerable” (Between 20%- 30% deprivations)
2011	N= 54,666 n= 54,666	N= 7,993 (14.6%)	N= 13,698 (25,1%)
2014	n= 2,181	n= 213 (9.8%)	n= 361 (16.5%)

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Figure 2. The 2011 and 2014 Door to Door Project households distribution for the “poor” and “vulnerable” households categories



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2. Distribution of “poor”, “vulnerable” and “non-poor” households in deprivations intervals

Analysis of 2011 and 2014 Door to Door Project datasets for “poor”, “vulnerable” and “non-poor” households categories are presented in **Table 6**. The two datasets households **deprivation intervals distributions** are alike: both have the **largest proportion of households classified as “non-poor” (73.7% in 2014 and 60.3% in 2011)** experiencing **less than 20%** of deprivations. In the 2014 dataset 22.9% of households have no deprivations (0.00% percentage). In 2011 there were 21.7% households in the no-deprivations group. For the 2014 survey there are 4.1% households lying in the deprivation interval between 5.56% to 11.11%, and 46.7% in the interval 16.67%. In 2011 there were 5.9% households and 31.7% in these respective ranges.

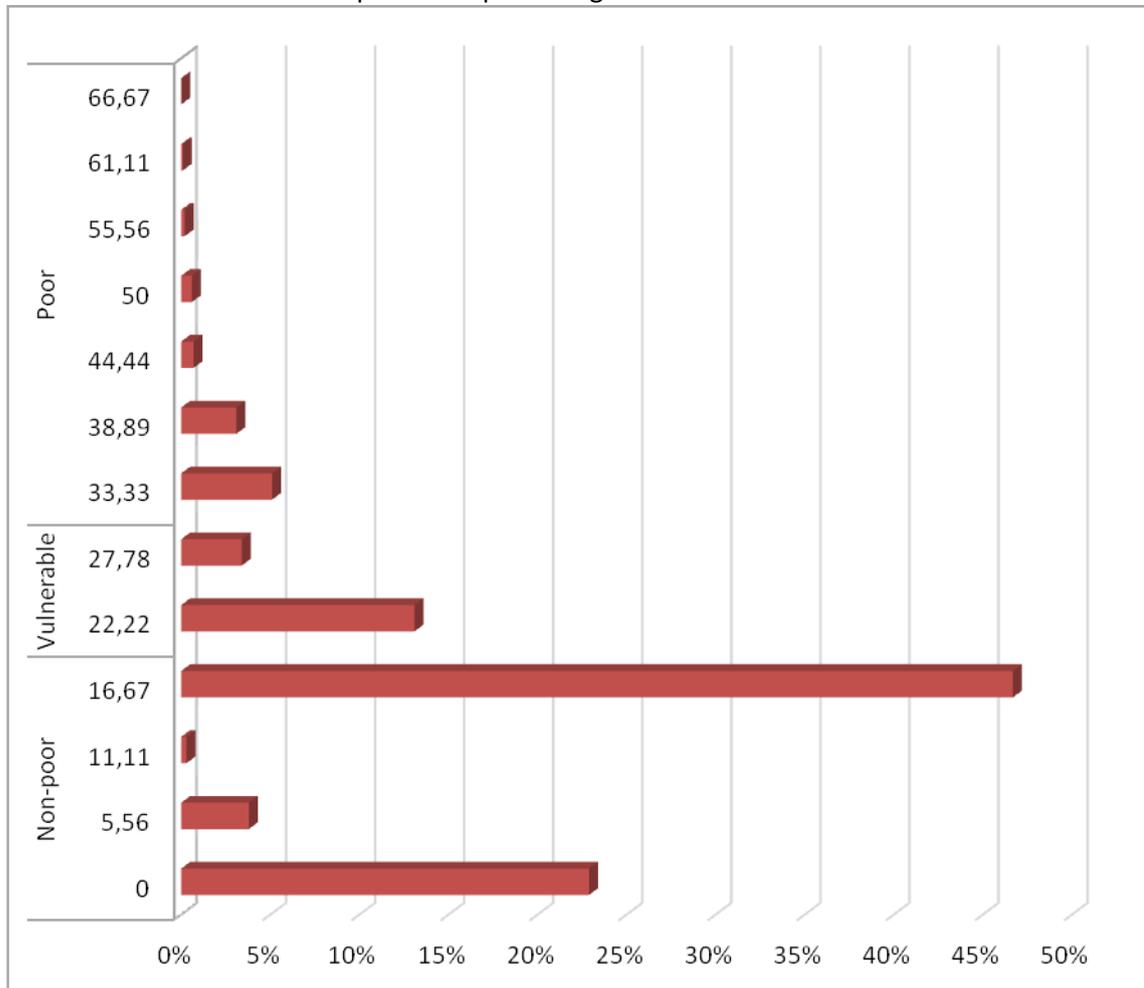
The proportions of “poor” households and “vulnerable” households categories have **decreased in all deprivation intervals between 2011 and 2014**.

Table 6. Incidence of “poor”, “vulnerable” and “non-poor” households in deprivations percentage intervals.

Categories	Deprivation intervals	Households proportions in deprivation intervals 2011	Households proportions in deprivation intervals 2014
Non-poor	0.00%	21.7%	22.9%
	5.56%	5.4%	3.8%
	11.11%	1.5%	0.3%
	16.67%	31.7%	46.7%
Vulnerable	22.22%	17.0%	13.1%
	27.78%	8.0%	3.4%
Poor	33.33%	6.8%	5.1%
	38.89%	4.0%	3.1%
	44.44%	1.0%	0.7%
	50.00%	0.9%	0.6%
	55.56%	0.5%	0.2%
	61.11%	0.8%	0.1%
	66.67% or more	0.7%	0.0%
Total	100%	(N=54,666) 100%	(n=2,181) 100%

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Figure 3. Distribution of “poor”, “vulnerable” and “non-poor” households in deprivations percentage intervals.



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Within the “poor” households category 52.1% are in the 33.33% deprivation interval which is the deprivation cutoff bound to classify a household as “poor”. The “poor” households deprivation intervals distribution is presented in **Table 7** as follows: 52.1% of households are in the 33.33% deprivation interval, 31.4% of “poor” households experience 38.89% of deprivations, 7.5% of households face 44.44% of deprivations, and 9% of households experience more than 50% of deprivations in all dimensions and indicators that compose the multidimensional poverty index.

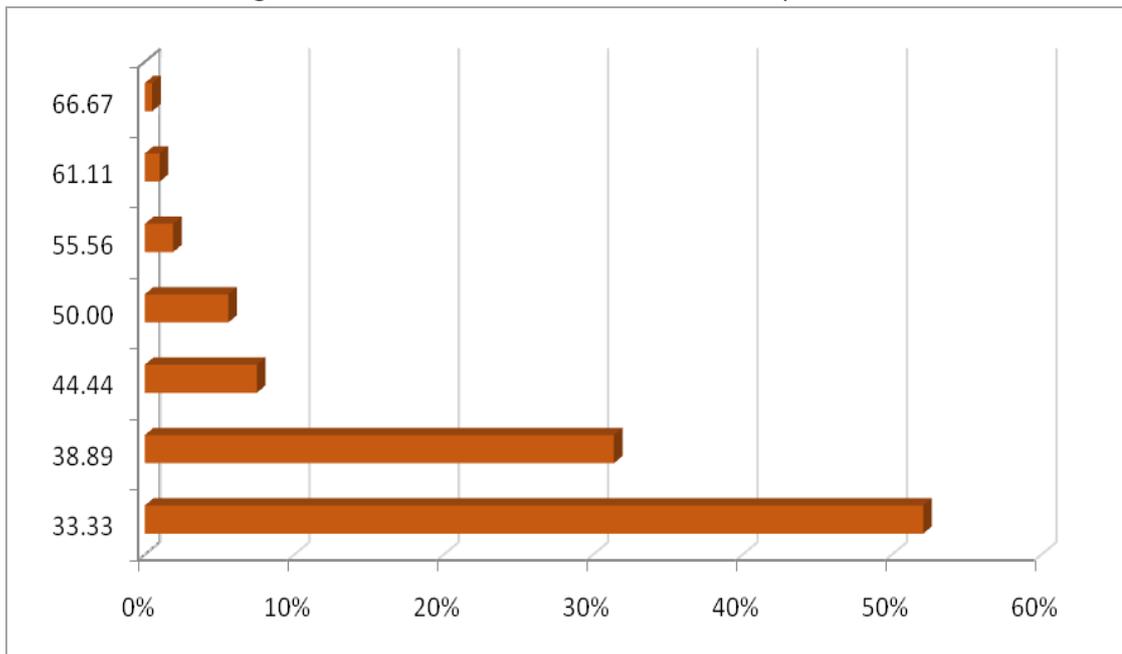


Table 7. Proportion of “poor” households distribution in deprivations intervals.

Category	Deprivation intervals	Proportion of households
Poor	33.33%	52.1%
	38.89%	31.4%
	44.44%	7.5%
	50.00%	5.6%
	55.56%	1.9%
	61.11%	1.0%
	66.67 % or more	0.5%
Total	100%	213 (100%)

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Figure 4. “Poor” households distribution in deprivations intervals.



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3. Households deprivations proportions in each Multidimensional Poverty Index (MPI) dimension and indicator

The frequency of households deprivations and its proportion mean in each dimension and weighted indicator that make up the MPI are presented in **Table 8**. Between 2011 and 2014 there was a **reduction** in the proportion of households experiencing deprivations in **all living standard** dimension indicators. At the same time, there was an **increase** in households proportion experiencing deprivation in the **years of schooling** education dimension indicator and in the **nutrition** health dimension indicator.

The deprivation indicators for **years of schooling** (education dimension) and **access to sanitation facility** (living standard dimension) have the highest households incidence in the set of the 10 index indicators of 2014 **Door to Door Project** survey. In the other hand, the indicators that present the **lowest** proportion of deprived households are **child school attendance** (education dimension), **access to drinking water** (living standard dimension) and **electricity** (living standard dimension).

Databases analysis across 2011-2014 show incidence of **reduction** of households deprivation in the indicators as follows:

- ✓ Child School Attendance (from 2.1% to 0.5%);
- ✓ Child Mortality (from 4.7% to 2.9%);
- ✓ Electricity (from 3.2% to 1.2%);
- ✓ Access to Sanitation Facility (from 22,1% to 20,4%);
- ✓ Access to Drinking Water (from 28.6% to 1.0%);
- ✓ Flooring (from 10.4% to 6.2%);
- ✓ Cooking Fuel (from 9.5% to 5.1%);
- ✓ Household goods (from 7.0% to 2.0%).

There are proportion means **increase** in households deprivation in the indicators as follows:

- ✓ Years of Schooling (from 68.8% to 72.2%);
- ✓ Nutrition (from 2.2% to 5.9%).



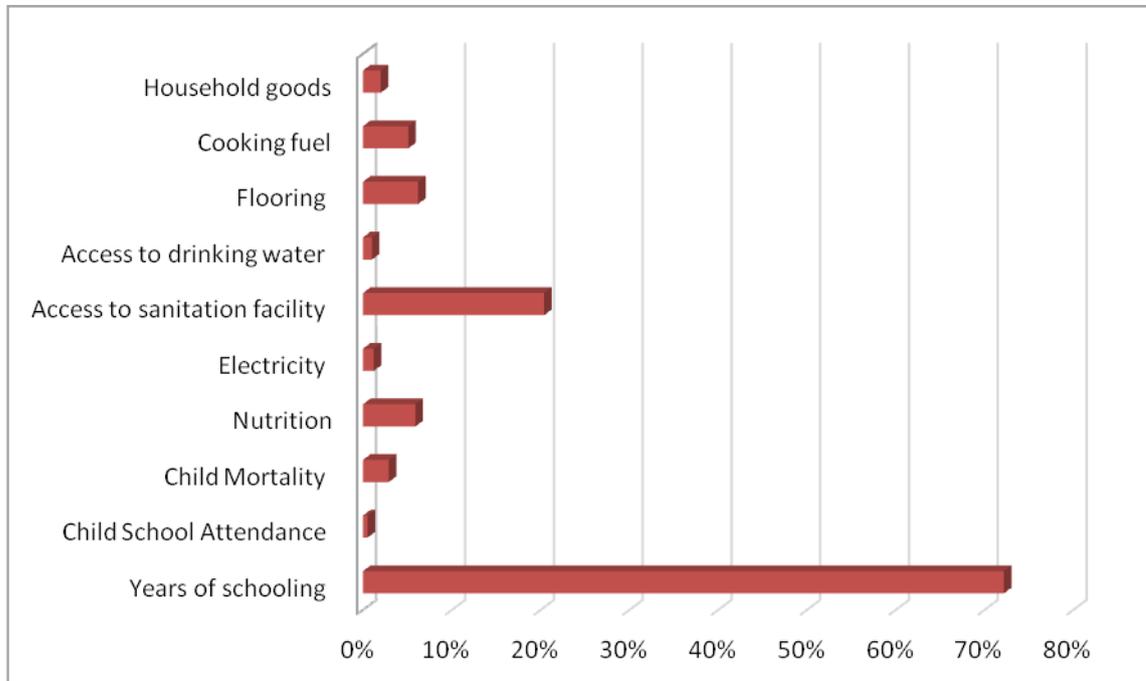
Table 8. Frequencies and proportions means of households deprivations in each dimension and indicator that make up the MPI in 44 Door to Door Project municipalities.

Dimensions	Indicators	2011		2014	
		% Indicator	% Dimension	% Indicator	% Dimension
Education	Years of schooling	37,592 (68.8%)	37,912 (69.4%)	1,575 (72.2%)	
	Child School Attendance	1,175 (2.1%)		12 (0.5%)	
Health	Child Mortality	2,588 (4.7%)	3,558 (6.5%)	63 (2.9%)	
	Nutrition	1,117 (2.2%)		128 (5.9%)	
Living Standard	Electricity	1,746 (3.2%)	24,198 (44.3%)	26 (1.2%)	
	Access to sanitation facility	12,073 (22.1%)		446 (20.4%)	
	Access to drinking water	15,655 (28.6%)		21 (1.0%)	
	Flooring	5,691 (10.4%)		572 (26.2%)	
	Cooking fuel	5,209 (9.5%)		136 (6.2%)	
	Household goods	3,851 (7.0%)		111 (5.1%)	
				43 (2.0%)	
Households		54.666 (N)		2.181 (n)	

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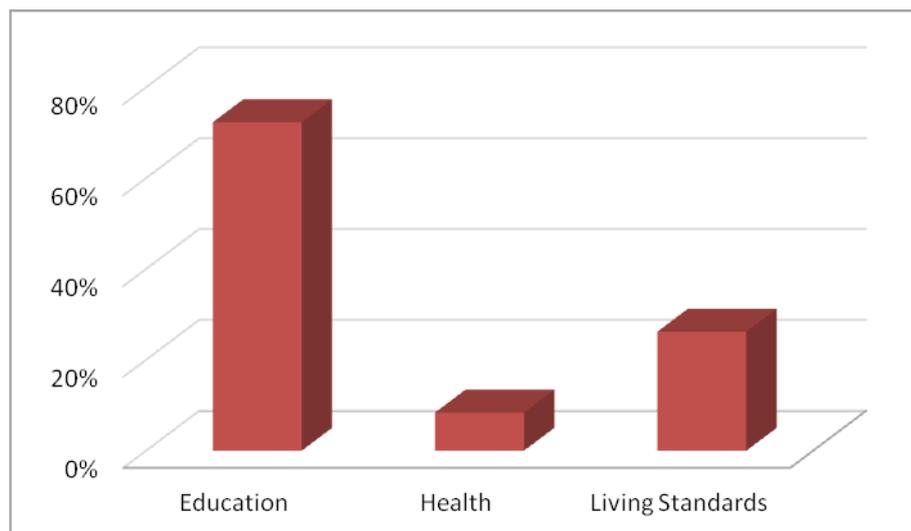


Figure 5. Households deprivations proportion means of MPI indicators in 44 municipalities of 2014 Door to Door Project.



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Figure 6. Households deprivations proportion means in Education, Health and Living Standard dimensions in 44 municipalities of Door to Door Project 2014.



2014 Survey Research to Assess Changes in the Multidimensional Poverty Diagnostic (Door to Door Project) in 44 municipalities of Minas Gerais State.



4. MPI dimensions and indicators distribution within “poor” and “vulnerable” households

Table 9 describes frequencies and proportion means of households experiencing deprivations in education, health and living standard dimensions and the 10 related indicators within the “poor” and the “vulnerable” MPI categories. **Years of Schooling** deprivation is **highly frequent** in households classified as “poor” and as “vulnerable” over time. In 2011, 98.7% of “poor” households were deprived in years of schooling. In 2014 there are 99.5% of deprived households in this education dimension indicator. This is also true for households classified as “vulnerable”: in 2011, 96.7% of households were deprived in years of schooling. In 2014 there are 98.6 deprived households according to the same indicator.

Databases analysis across 2011-2014 shows deprivation indicators incidence **reduction** within “poor” households category as follows:

- ✓ Child School Attendance (from 11% to 4.2%)
- ✓ Electricity (from 13.9% to 6.6%)
- ✓ Access to Sanitation Facility (from 63.6% to 46.9%)
- ✓ Access to Drinking Water (from 58.2% to 7.5%)
- ✓ Cooking Fuel (from 42% to 19.7%)
- ✓ Flooring (from 41.6% to 20.2%)
- ✓ Household goods (from 29.9% to 12.2%)
- ✓ Child Mortality (from 28.3% to 27.7%)

There are deprivation indicators incidence **increases** in “poor” households as follows:

- ✓ Years of Schooling (from 98.7% to 99.5%)
- ✓ Nutrition (from 12.3% to 56.3%)

Within the “vulnerable” household category there are incidence **reductions** across time of the following indicators:

- ✓ Child School Attendance (from 0.5% to 0.0%)
- ✓ Child Mortality (from 0.7% to 0.3%)
- ✓ Electricity (from 3.2% to 2.8%)
- ✓ Access to Drinking Water (from 62.3% to 1.1%)
- ✓ Household goods (from 8.2% to 4.4%)



There are **increases** in deprivations indicators proportion means within the “vulnerable” households category as follows:

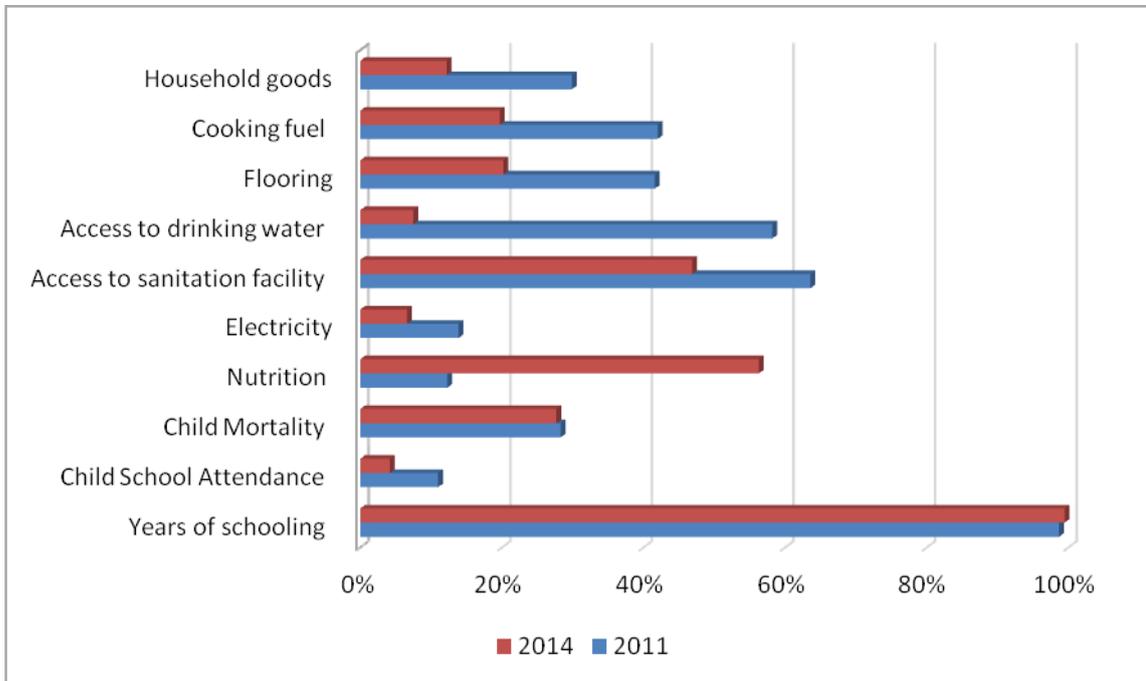
- ✓ Years of Schooling (from 96.7 to 98.6%)
- ✓ Nutrition (from 0.5% to 0.8%)
- ✓ Access to Sanitation Facility (from 39.4% to 76.4%)
- ✓ Flooring (from 12.7% to 19.7%)
- ✓ Cooking fuel (from 10.8% to 16.9%)

Table 9. Frequencies and proportions of deprivation indicators within poor and vulnerable MPI households in 44 Door to Door Project municipalities (2011, 2014).

Indicators	Poor		Vulnerable	
	2011	2014	2011	2014
Years of schooling	7,889 (98.7%)	212 (99.5%)	13,242 (96.7%)	356 (98.6%)
Child School Attend	880 (11.0%)	9 (4.2%)	75 (0.5%)	0 (0.0%)
Child Mortality	2,262 (28.3%)	59 (27.7%)	99 (0.7%)	1 (0.3%)
Nutrition	982 (12.3%)	120 (56.3%)	71 (0.5%)	3 (0.8%)
Electricity	1,110 (13.9%)	14 (6.6%)	440 (3.2%)	10 (2.8%)
Access to Sanitation Facility	5,080 (63.6%)	100 (46.9%)	5,392 (39.4%)	275 (76.4%)
Access to drinking water	4,655 (58.2%)	16 (7.5%)	8,540 (62.3%)	4 (1.1%)
Flooring	3,322 (41.6%)	43 (20.2%)	1,738 (12.7%)	71 (19.7%)
Cooking fuel	3,360 (42.0%)	42 (19.7%)	1,475 (10.8%)	61 (16.9%)
Household goods	2,387 (29.9%)	26 (12.2%)	1,129 (8.2%)	16 (4.4%)
Total	7,993 (100%)	213 (100%)	13,698 (100%)	361 (100%)

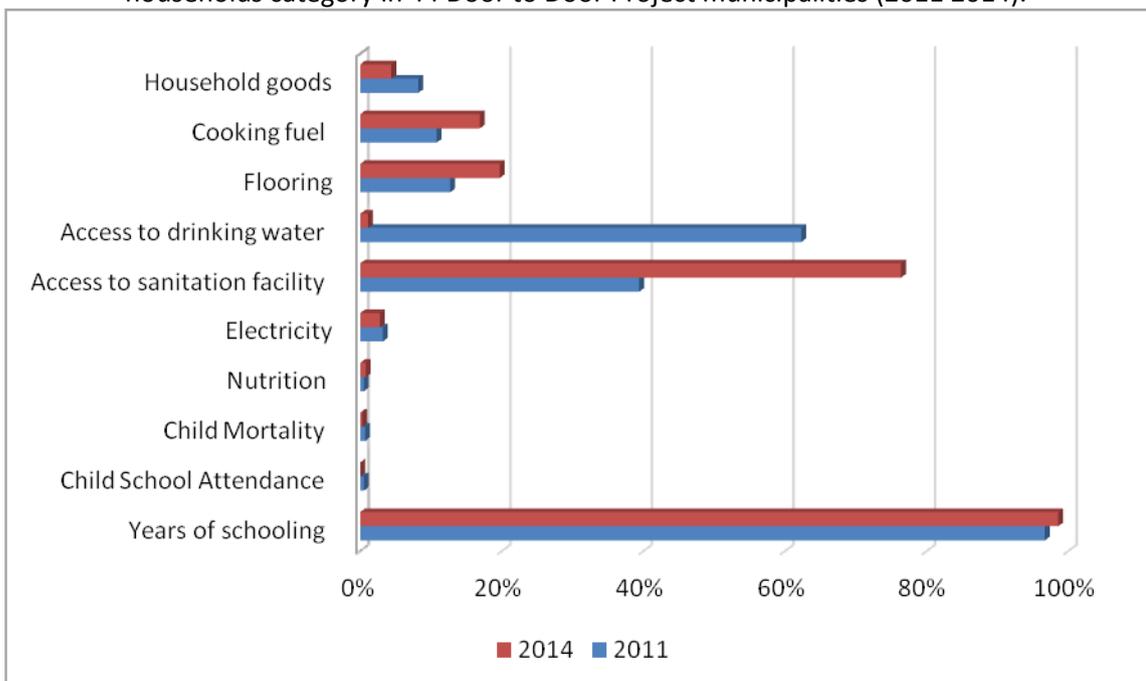
2014 Survey Research to Assess Changes in the Multidimensional Poverty Diagnostic (Door to Door Project) in 44 municipalities of Minas Gerais State.

Figure 7. Frequency and proportion mean of deprivation indicators within poor MPI households category in 44 Door to Door Project municipalities (2011-2014).



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Figure 8. Frequency and proportion mean of deprivation indicators within vulnerable MPI households category in 44 Door to Door Project municipalities (2011-2014).



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The frequency and proportion means over time (2011-2014) of “poor” and “vulnerable” households that experience deprivations in the education, health and living standard dimensions are shown in **Table 10**. Within the “**vulnerable**” households category the deprivation households proportions distributions **are stable over time for all three dimensions**. In education, health and living standard dimensions 97%, 1% and 100% of households respectively, experienced deprivations in 2011. In 2014 survey, 98.6%, 1.1% and 100% of “vulnerable” households are deprived in education, health and living standard dimensions, respectively.

Within the “**poor**” households category incidence of deprivations in the **education dimension** is about the same across 2011 and 2014 datasets: 99% and 99.5% of “poor” households, respectively, are deprived. But there are **changes** in households incidence in **health** and **standard living** deprivations dimensions over time within this category. In health dimension, deprived households increased from 39% in 2011 to 80.3% in 2014. On the contrary, deprived “poor” households in the standard of living dimension were reduced from 80% in 2011 to 56.3% in 2014.

Thus, what mostly explains the **decreasing** means proportions of “poor” households **over 2011 to 2014** is the **reduction** of households deprived in the **standard of living dimension**.

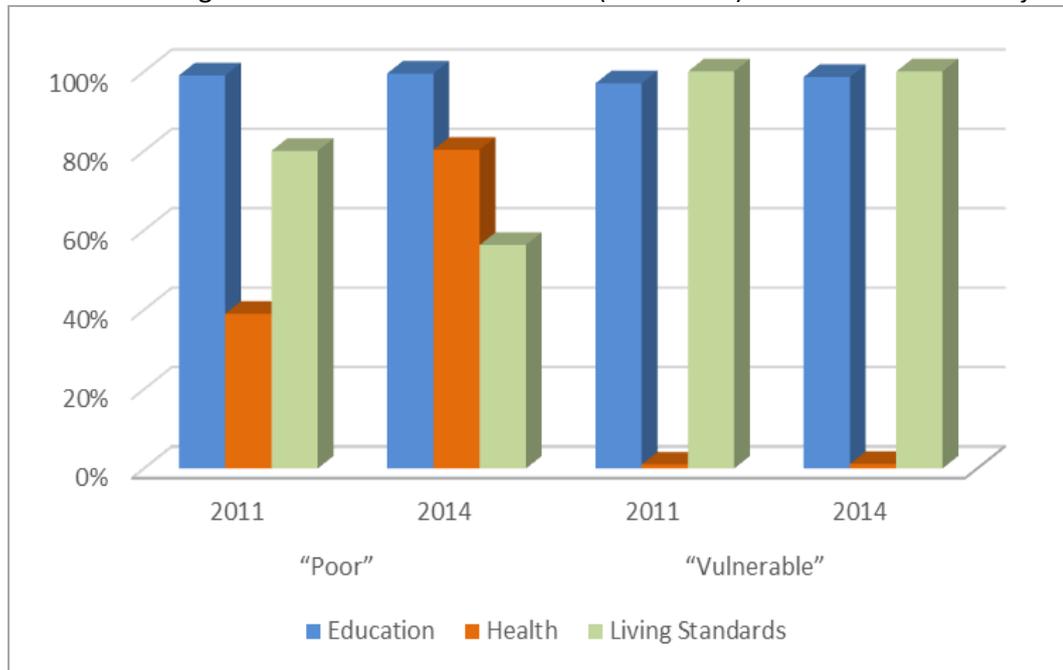
Table 10. “Poor” and “vulnerable” households categories frequencies and proportions in education, health and living standard dimensions over time (2011-2014) in 44 Door to Door Project municipalities.

Dimension	“Poor”		“Vulnerables”	
	2011 (N=7.993)	2014 (n=213)	2011 (N=13.698)	2014 (n=361)
Education	7,914 (99%)	212 (99.5%)	13,317 (97%)	356 (98.6%)
Health	3,097 (39%)	171 (80.3%)	170 (1%)	4 (1.1%)
Living Standards	6,395 (80%)	120 (56.3%)	13,698 (100%)	361 (100%)

2014 Survey Research to Assess Changes in the Multidimensional Poverty Diagnostic (Door to Door Project) in 44 municipalities of Minas Gerais State.



Figure 9. “Poor” and “vulnerable” households categories frequencies and proportions in education, health and living standard dimensions over time (2011-2014) in 44 Door to Door Project



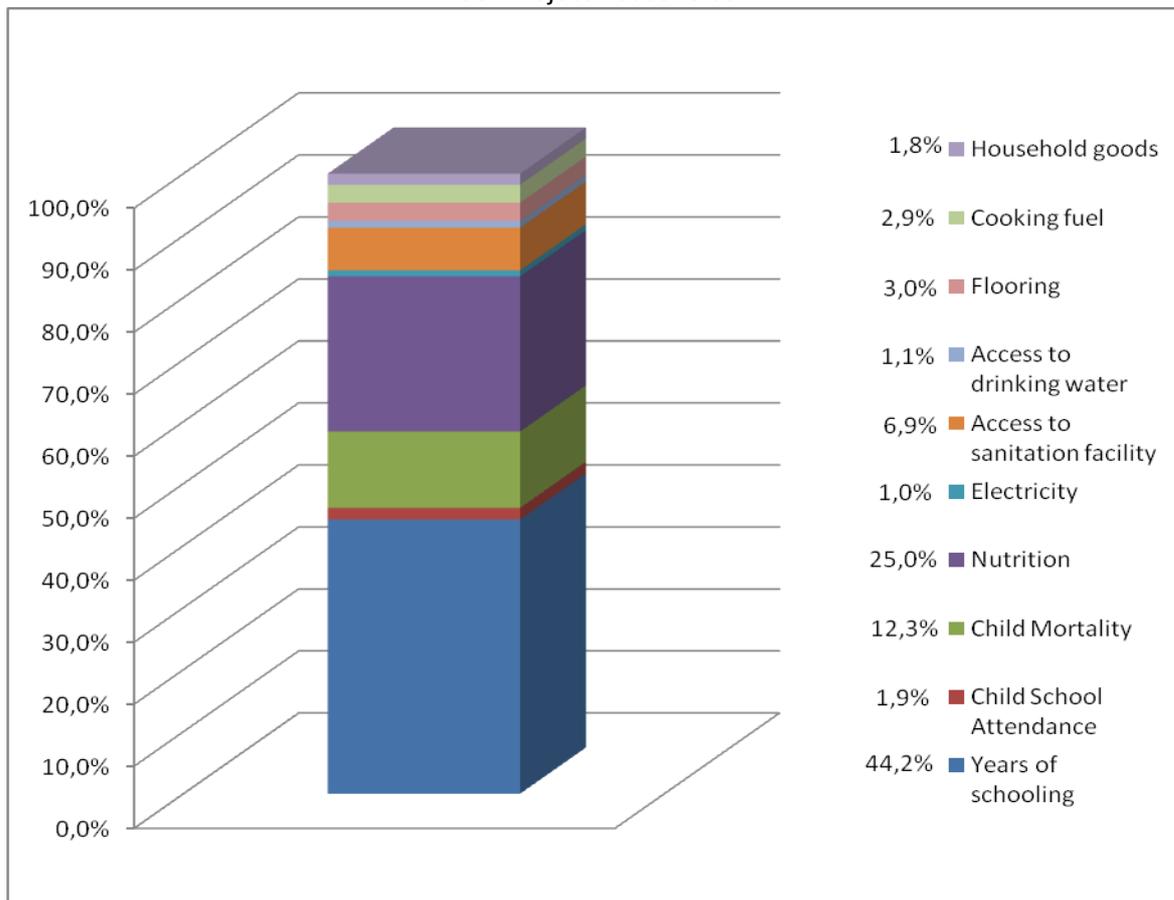
2014 Survey Research to Assess Changes in the Multidimensional Poverty Diagnostic (Door to Door Project) in 44 municipalities of Minas Gerais State.

5. Decomposition of deprivation intensity by indicators and dimensions

Another form to calculate intensity, which considers only the multidimensionally poor households, was proposed in order to analyze how indicators and dimensions contribute to the deprivation intensity measure. The calculation is as follows: the sum of deprived households for each indicator multiplied by the weight indicator (**Table 3**). The intensity of deprivation consists, then, in the sum of weighted deprivation for each indicator. This is a way to have each weighted indicator **contribution in deprivation intensity** and also for each dimension.

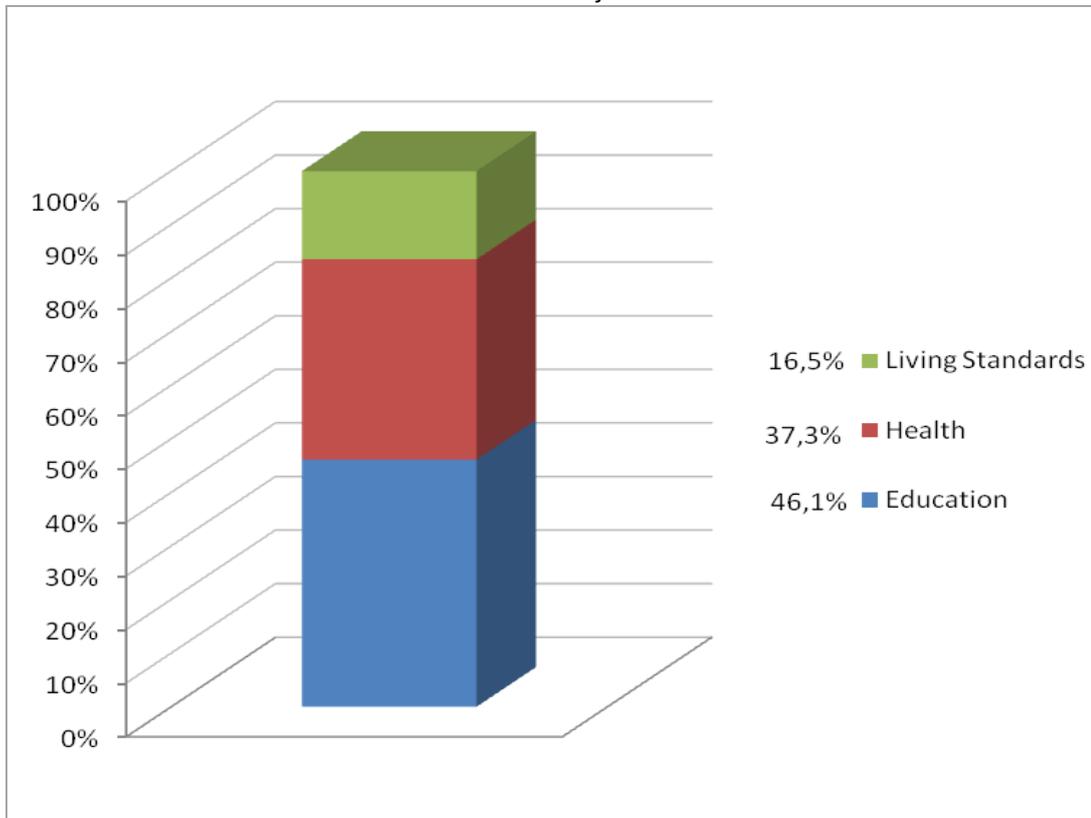
Among dimensions, greatest contribution to deprivation intensity is given by education (46.1%), followed by health (37.3%). Among the indicators, the highest contribution is given by "years of schooling" (42%), followed by "nutrition" (25%). The results are shown in **Figures 10** and **11**.

Figure 10. Indicator contribution to obtain the deprivation intensity measure for the 2014 Door to Door Project households.



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Figure 11. Dimension contribution to obtain intensity of deprivation in households for the 2014 Door to Door Project.



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6. Relationship between “poor” and “non-poor” individuals and demografic subgroups

All statistical analysis in this section use data in the individual level (all living people in the selected households). Statistical hypotheses tests will be performed to determine whether there is a significant association between “poor”/“non-poor” individuals and demografic subgroups such as gender, age and Minas Gerais state’ regions.

The cross-tabulation table below shows that there is a significant association between gender and the categorical binomial variable “poor”/ “non-poor”: there is a **predominance of men (53.3%) over women (46.7%)** among the multidimensionally "poor" category.

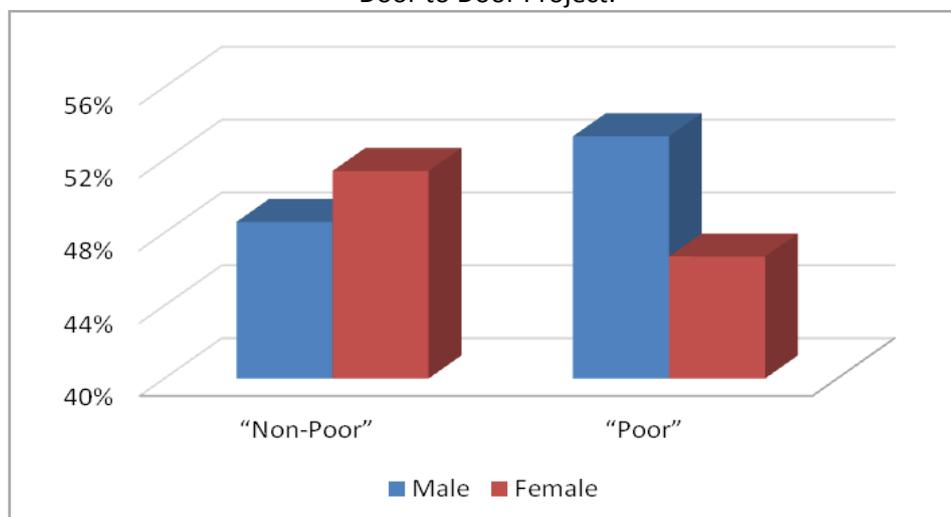
Table 11. “Poor” and “non-poor” individuals distribution and gender in 44 municipalities of 2004 Door to Door Project.

Sexo	Door to Door Projetc Criteria		Total
	“Non-poor”	“Poor”	
	P-value ⁽¹⁾ = 0,014*		
Male	3,135 (48.6%)	407 (53.3%)	3,542 (49.1%)
Female	3,312 (51.4%)	356 (46.7%)	3,668 (50.9%)
Total	6,447 (100%)	763 (100%)	7,210 (100%)

2014 Survey Research to Assess Changes in the Multidimensional Poverty Diagnostic (Door to Door Project) in 44 municipalities of Minas Gerais State.

⁽¹⁾ P-value refers to Pearson chi-square test, which compares "poor" and "non-poor" distribution in gender male/female categories. The symbol * indicates that the distribution column is significantly different for the groups of "poor" and "non-poor".

Figure 12. “Poor” and “Non-poor” individuals distribution and gender in 44 municipalities of 2014 Door to Door Project.



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In cross table bellow we observe a **higher concentration of "poor" individuals frequency in 10-19 years of age category (21.8%)** than the average frequency (11%) in the others "poor" individuals age categories.

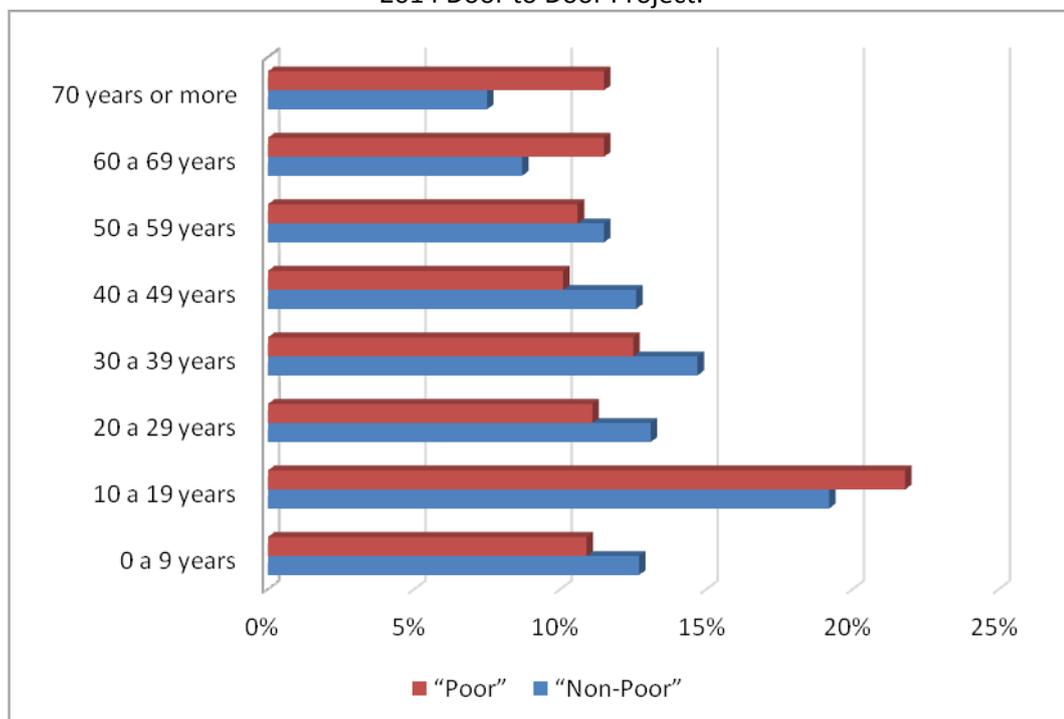
Table 12. "Poor" and "non-poor" individuals distribution and age categories in 44 municipalities of 2014 Door to Door Project.

Variable	Door to Door Projetc Criteria		Total
	"Non-poor"	"Poor"	
Age categories	P-value ⁽¹⁾ = 0,003*		
0 - 9 years	821 (12.7%)	83 (10.9%)	904 (12.5%)
10 -19 years	1.240 (19.2%)	166 (21.8%)	1.406 (19.5%)
20 - 29 years	842 (13.1%)	85 (11.1%)	927 (12.9%)
30 - 39 years	947 (14.7%)	95 (12.5%)	1.042 (14.5%)
40 - 49 years	810 (12.6%)	77 (10.1%)	887 (12.3%)
50 - 59 years	739 (11.5%)	81 (10.6%)	820 (11.4%)
60 - 69 years	562 (8.7%)	88 (11.5%)	650 (9.0%)
70 years or more	486 (7.5%)	88 (11.5%)	574 (8.0%)
Total	6,447 (100%)	763 (100%)	7.210 (100%)

2014 Survey Research to Assess Changes in the Multidimensional Poverty Diagnostic (Door to Door Project) in 44 municipalities of Minas Gerais State.

⁽¹⁾ P-value refers to chi-square test, which compares "poor" and "non-poor" distribution in age categories. The symbol * indicates that the distribution column is significantly different for the groups of "poor" and "non-poor".

Figure 13. "Poor" and "non-poor" individuals distribution and age categories in 44 municipalities of 2014 Door to Door Project.



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There is a **higher incidence of multidimensionally “poor” people in the Norte Region** (North of the state region) than in other state regions. There are not people classified as “poor” in Triângulo Mineiro/Alto Paranaíba region and Oeste region (West of the State).

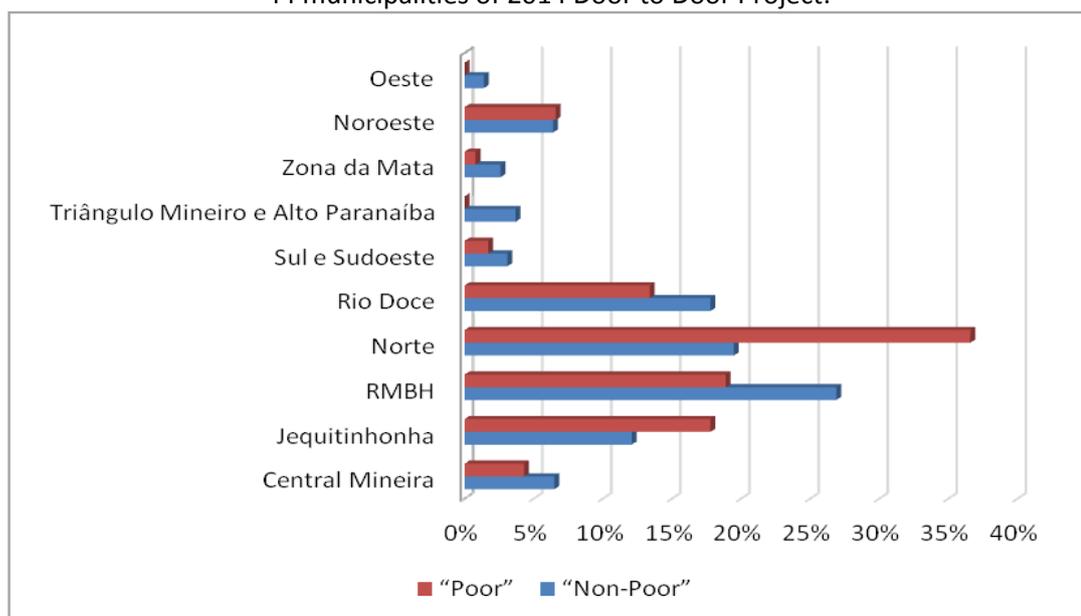
Table 13. “Poor” and “non-poor” individuals distribution in Minas Gerais State Regions. Data is from 44 municipalities of 2014 Door to Door Project.

Minas Gerais State Regions	Critério Porta a Porta		Total
	“Non-poor” (n=6.447)	“Poor” (n=763)	
	P-value ⁽¹⁾ = 0,000*		
Central Mineira	422 (6.5%)	33 (4.3%)	455 (6.3%)
Jequitinhonha	778 (12.1%)	136 (17.8%)	914 (12.7%)
RMBH	1.737 (26.9%)	144 (18.9%)	1,881 (26.1%)
Norte	1.257 (19.5%)	279 (36.6%)	1,536 (21.3%)
Rio Doce	1.146 (17.8%)	102 (13.4%)	1,248 (17.3%)
Sul e Sudoeste	199 (3.1%)	13 (1.7%)	212 (2.9%)
Triângulo Mineiro e Alto Paranaíba	237 (3.7%)	0 (0.0%)	237 (3.3%)
Zona da Mata	169 (2.6%)	6 (0.8%)	175 (2.7%)
Noroeste	409 (6.4%)	50 (6.6%)	459 (6.4%)
Oeste	93 (1.4%)	0 (0%)	93 (1.3%)

2014 Survey Research to Assess Changes in the Multidimensional Poverty Diagnostic (Door to Door Project) in 44 municipalities of Minas Gerais State.

⁽¹⁾P-value refers to chi-square test, which compares “poor” and “non-poor” distribution in Minas Gerais State regions. The symbol * indicates that the distribution column is significantly different for the groups of “poor” and “non-poor”.

Figure 14. “Poor” and “non-poor” individuals distribution in Minas Gerais State Regions. Data is from 44 municipalities of 2014 Door to Door Project.



2014 Survey Research to Assess Changes in the Multidimensional Poverty Diagnostic (Door to Door Project) in 44 municipalities of Minas Gerais State.



SECTION III – KEY FINDINGS

One of the first highlighted results is the significant **42% reduction** in the overall **Multidimensional Poverty Index (MPI) from 2011 to 2014** (Table 4) in the 44 Door to Door Project municipalities. This MPI overall reduction is explained by the **decrease from 14.6% to 9.8% of households classified as “poor”** according to the **MPI** procedures for measuring households suffering deprivations in ten weighted indicators. There is also a **decrease from 25.1% to 16.5% in the households classified as “vulnerable”** which is an evidence of a possible improvement in living standards, health and education dimensions of the study population (Table 5).

The **education** dimension remains the most important in determining multidimensional poverty: according do the **Door to Door Project** criteria, in 2014, **72.3%** of households are deprived in this dimension (Table 8). Within the education dimension it is remarkable that almost all “poor” households are deprived in the **years of schooling** indicator (99.5%). Thus, this indicator (Table 9) has directly influenced the MPI, since there was a decrease from 11% to 4.2% in the deprivation indicator of child school attendance.

In the **health** dimension a **reversal** in its indicators proportions was observed (Table 9). In 2011 the **highest incidence was child mortality**: 28.3% of poor households were deprived in this indicator. At the same time, 12.3% of “poor” households were deprived in the nutrition indicator. However, in 2014, deprivation in the **nutrition** indicator **has the highest incidence** (56.3%) among “poor” households, followed by child mortality² present in 27.7 of “poor” households category.

Finally, **in the period 2011-2014** there was a **decrease from 80% to 56.3%** of “poor” households deprived in the **living standard dimension**. Similarly to 2011 (Table 9), most of the “poor” households deprived in the living standard dimension are deprived on the **access to sanitation facility** indicator. In 2014 the indicators **flooring** and **cooking fuel also contributed** for deprivation in the living standard dimension. The number of “poor” households deprived in the living standard dimension and also deprived in the **water access facility** indicator **decreased considerably** from 58.2% in 2011 to 7.5% in 2014 (Table 9).

² Questionnaire wording explaining to respondents nutrition deprivation concept was adjusted in between data collection 2011 and 2014 and should be considered to explain variation in results.



In what concerns the **sociodemographic subgroups**, data at the individual level show a greater incidence of “poor” people among **men in the 10-19 years group** and **living in the North region** of the Minas Gerais state (Tables 11, 12 and 13).

In sum, these are some of the key findings on the MPI measure in the state of Minas Gerais. Other analyzes and conclusions can be developed from data interpretation considering public policies such as Programa Travessia, and through assessing changing conditions by dimensions, by each deprivation indicator, and finally, by poverty multidimensionality as measured by the index.

Data collection in 2014 also brought important methodological contributions to the **Door to Door Project**. We emphasized work for the **improvement of the instrument of data collection (the survey questionnaire), through the use of the state of the art in questionnaire pretest methodology, and broader training of the research team**. This experience indicates the continuing need for improvements, not only of the data collection instrument but also of all other stages in data construction playing relevant roles in overall data quality.



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