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Gender and Multidimensional Poverty in Nicaragua, An Individual-based Approach*

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Abstract

Most existing empirical papers concerned about multidimensional poverty use the household as the unit of analysis, meaning that multidimensional poverty status of the household is equated with the multidimensional poverty status of all individuals in the household. This assumption, nonetheless, overlooks important within-household features and ignores the intra-household inequalities. Besides, by definition, households containing both a female and a male cannot contribute to a gender gap, so gender differentials cannot be estimated. But, the Sustainable Development Goals have put special emphasis on gender equality along their targets; therefore, new measures able to capture the gender differences are needed. Consequently, in this paper, we propose an individual-based multidimensional poverty measure in order to estimate the three Is of multidimensional poverty (incidence, intensity, and inequality) in Nicaragua as well as the gender differentials. We also estimate logit regressions to better understanding the determinants of multidimensional poverty in this country. Overall, we find that there are statistically significant gender differences in multidimensional poverty in Nicaragua; but, they are estimated to be small and lower than 5%. However, the gender differential in inequality is larger than 10%, and it suggests that multidimensional poor women are living in very intense poverty when compared with multidimensional poor men. We also find that the elderly and children are the most vulnerable people in terms of multidimensional poverty in this country; furthermore, when information on employment, domestic work, and social protection is considered in the analysis, the gender gaps become more substantial, and women are more likely to be poor than men.

Keywords: multidimensional poverty, poverty measurement, intra-household inequality, gender differences in poverty, Nicaragua, Latin America

JEL Codes: I3, I32, D1, D13, D6, D63, O5, O54

1 Introduction

In many ways, poverty is one of the major sources of unfreedom (Sen, 2000a, p. 3). It can involve not only the absence of necessities of material well-being but also the negation of possibilities of living a decent life (Anand and Sen, 1997, p. 4). Consequently, the removal of poverty is a central goal of development and remains at the top of the world's development agenda as it is reflected in the 2030 Agenda for Sustainable Development that was adopted by the United

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Nation General Assembly on September 25th, 2015: “End poverty in all its forms everywhere” [Goal 1 of the Sustainable Development Goals (SDGs)] (UN, 2015, p. 15).

The conceptual understanding of poverty has been enhanced and deepened considerably in the past decades, as it is reflected by the Goal 1 of the SDGs and its targets, following Amartya Sen's influential work and his capability approach (Thorbecke, 2008, p. 3)[1]. There is currently a widespread consensus that poverty is a multidimensional phenomenon (Atkinson, 2003, p. 51; Ferreira and Lugo, 2013, p. 232; Silber and Yalonetzky, 2014, p. 9; Whelan et al., 2014, p. 183)[2] and its analysis and measurement should not be based solely on income as it is unable to capture key poverty dimensions such as housing, life expectancy, the provision of public goods, literacy, security, freedom and so on (Bourguignon and Chakravarty, 2003, p. 26; Thorbecke, 2008, p. 17; Chakravarty and Lugo, 2016, p. 245); in short, “human lives are battered and diminished in all kinds of different ways”, as Sen has emphasized (Sen, 2000b, p. 18). As a result, poverty research has shifted the emphasis from a unidimensional to a multidimensional approach (Chakravarty and Lugo, 2016, p. 247), which has been considered as “the most important development of poverty research in recent years” (Kakwani and Silber, 2008a, p. xv), and various approaches have been put forward in the literature to measure poverty in a multidimensional setting (see, for instance, Klasen, 2000; Tsui, 2002; Atkinson, 2003; Bourguignon and Chakravarty, 2003; Deutsche and Silber, 2005; Lemmi and Betti, 2006, 2013; Alkire and Foster, 2007, 2011a; Kakwani and Silber, 2008b; Chakravarty et al., 2008; Duclos et al., 2008; Rippin, 2010, 2016; Alkire et al, 2015).

Yet, it is fair to say that there does not seem to be a universal agreement on whether the multiple dimensions of poverty should be brought together into a single measure (Lustig, 2011, p. 227)[3]; Martin Ravallion, for instance, advocates a dashboard approach, although he also recognizes that poverty is multidimensional (Ravallion, 2011, p. 236). Particularly, in this paper, we start from the premise that a composite index and a dashboard approach can be complementary; there is no reason to choose between them, that is a “false dichotomy” (Ferreira and Lugo, 2013, p. 223). The latter might be particularly useful for policy purposes while the former is helpful to take advantage of the information from the “joint distribution of deprivations” (Alkire and Foster, 2011a, p. 301) when the target is “to quantify the incidence of multiple deprivations within the same individuals” (Yalonetzky, 2014, p. 773).

On the other hand, most empirical investigations of multidimensional poverty have used the household as the unit of identification (Rogan, 2016a, p. 990; Klasen and Lahoti, 2016, p. 2; Franco, 2017, p. 65), meaning that this entity has been utilized to identify who is multi-dimensionally poor or non-poor. The general assumption adopted is that all persons in the household are considered to be multi-dimensionally poor if the household is identified as such, which means that the multidimensional poverty status of the household is equated with the multidimensional poverty status of all individuals in the household (Klasen and Lahoti, 2016, p. 2). Yet, poverty is a characteristic of individuals, not households (Deaton, 1997, p. 223), and, furthermore, perhaps the most important thing, that assumption overlooks important within-household features (Jenkins, 1991, p. 17) and ignores the intra-household inequalities (is assumed to be zero) that have been suggested to exist (see, for instance, Klasen and Wink, 2002; 2003; Asfaw, Klasen and Lamanna, 2010; Rodríguez, 2016): “much of inequality is generated within households” (Klasen, 2004, p. 11). Besides, inequalities between adolescents and adults or between different generations might be hidden when the household is the unit of analysis (Atkinson, et al., 2002, p. 98), leading to an underestimation of the extent of overall poverty

[1]See, for instance, Sen, 1984; 1985; 1992; 1993; 2000a; 2008.

[2]See, for instance, Kakwani and Silber, 2008a; Stiglitz et al., 2009a, 2009b; Whelan et al., 2014; Alkire et al., 2015.

[3]On this debate, see Alkire and Foster, 2011a; Lustig, 2011; Ravallion, 2011.

and inequality in the society (Rodríguez, 2016, p. 111), which in turn can lead to a biased assessment of social policies and targeting.

In addition, within-household inequality is an important problem, which deserves fuller research, in special because of its significance to measuring poverty among females (Atkinson, 2002, p. 98), further, "inequality between women and men afflicts and sometime prematurely ends the lives of millions of women, and, in different ways, severely restricts the substantive freedoms that women enjoy" (Sen, 2000, p. 15). But, multidimensional poverty measures that take the household as the unit of identification of the poor are not sensitive to gender (Pogge and Wisor, 2016, p. 652); they are gender-blind (Bessell, 2015, p. 224) and consequently incapable of revealing gender differentials within the households (Pogge and Wisor, 2016, p. 652). By definition, households containing both a female and a male cannot contribute to a gender gap in poverty (Wiepking and Maas, 2005, p. 187), that is, a gender difference cannot be estimated and a gender analysis of poverty cannot be carried out using this kind of measures. However, gender equality is also at the center of sustainable development (ECLAC, 2016); the SDGs have put special emphasis on this matter along their targets and have also incorporated a particular goal on that: "Achieve gender equality and empower all women and girls" (Goal 5 of the SDGs) (UN, 2015, p. 14). Therefore, new measures able to capture the gender differences are needed in order to track, in a proper way, the progress in achieving this goal and targets.

Although, in principle, assessing individual poverty seems to be more feasible in a multidimensional framework than in a monetary one (Klasen, 2007, p. 178-181), since attainments in many non-monetary dimensions such as education and health can be ascribed to individuals, and the information on those attainments are often available in the household surveys, most popular multidimensional poverty measures such as the Multidimensional Poverty Index (MPI) (Duclos and Tiberti, 2016, p. 676), which has been developed by the Oxford Poverty and Human Development Initiative (OPHI) in collaboration with the Human Development Report Office of the United Nation Development Program (UNDP) (Alkire and Santos, 2014, p. 252), are estimated at the household level and are not therefore sensitive to the deprivation intra-household distribution and thus unable of displaying substantial and often gender differentials in deprivation and multidimensional poverty (Pogge and Wisor, 2016, p. 651).

In the literature on multidimensional poverty analysis, there can be found only but a few papers concerned about assessing individual multidimensional poverty as well as gender differences, but the vast majority of them have focused on a specific population subgroup such as children (Roelen, et al., 2010, 2011; Roche, 2013; Rodríguez, 2016), women (Bastos et al., 2009; Alkire et al., 2013; Batana, 2013), and adults (Mitra et al., 2013; Alkire et al., 2014; Vijaya et al., 2014; Agbodji et al., 2015; Bessell, 2015; Rogan, 2016a, Pogge and Wisor, 2016); that is, they have not assessed multidimensional poverty at the individual level for the whole population. In fact, as far as we know, there are only two papers that have evaluated individual-based multidimensional poverty across the entire population. The first one is the work by Klasen and Lahoti (2016), where they proposed a framework to measure multidimensional poverty and inequality at the individual level and applied it for the case of India. They found that poverty among females is 14 percentages point larger than among males in their individual MPI measure but only 2 percentage points higher when using a household-based measure. They also suggested that in India, the neglect of intra-household inequality underestimates poverty and inequality in deprivation by some 30%. The second one is the work by Franco (2017), who constructed an individual-centered multidimensional poverty index using three age groupings, children (less than 18 years old), adults (between 18 and 59 years), and elderly (60 years or older), and used it to estimate multidimensional poverty in Chile, Colombia, Ecuador, and Peru. She found that Chile is the country with the best performance in poverty and, overall, the elderly, as opposed to the children, is the worst off age group. She also found that in Chile, Colombia, Ecuador, and Peru, a household-based multidimensional poverty is consistently larger than an individual-based one. But, unlike the previous paper, the gender analysis is missing in Franco's (2017) paper as well as the inequality analysis.

It is also worth mentioning that given the lack of individual based poverty analysis, gender inequality has been assessed by comparing the poverty status of female-headed households against that of male-headed households (see, for instance, Buvinić and Grupta, 1997; Drèze and Srinivasan, 1997; Chant, 1999, 2004; Rogan, 2013, 2016a, 2016b; Klasen et al., 2015; Altamirano and Damiano, 2016), and the proportion of poor households headed by females has been broadly adopted as a measure of women's poverty (Fukuda-Parr, 1999, p. 99). However, despite the abundance of reasons why households led by a female may suffer more from deprivation and poverty, empirical evidence on the correlation between poverty and headship is ambiguous (Klasen, et al. 2015, p. 37), and women's multidimensional poverty seems to have nothing to do with household headship (Klasen and Lahoti, 2016, p. 20).

In this paper, we open the "black box" that is the household (Jenkins, 1991, p. 457) and propose an individual-based multidimensional poverty measure in order to overcome some of the shortcomings of the existing household-based measures as well as to estimate the gender differences in the three Is of poverty (incidence, intensity, and inequality) (Jenkins and Lambert, 1997, p. 317). Using the most recent household data from Nicaragua, "National Households Survey on Measurement of Level of Life" (2014-EMNV) (INIDE, 2015, p. 1), we apply the methodology proposed by Alkire and Foster (2007, 2011a) and the Correlation-Sensitive Poverty Index ($CSPI$) proposed by Nicole Rippin (Rippin, 2010; 2012; 2013; 2016), which is an inequality-sensitive multidimensional poverty index, as well as the absolute inequality measure proposed by Alkire and Seth (2014a). We also investigate on the determinants of multidimensional poverty in this country by estimating logit regressions.

To our best knowledge, in Latin America and the Caribbean region, this paper represents the first effort to estimate multidimensional poverty and inequality at the individual level across the entire population as well as gender differences in multidimensional poverty and inequality, the first one that applies the $CSPI$ in that region, and one of the first attempts in the literature. The paper is organized as follows. In the next section, we discuss data and methodological strategy, section three discusses results and section four presents concluding remarks.

2 Data and Methodology

2.1 Data

The dataset analyzed in this paper are drawn from the most recent household data from Nicaragua: "National Households Survey on Measurement of Level of Life" (henceforth 2014-EMNV) (INIDE, 2015, p. 1), which was conducted by the National Institute of Development Information with support from the World Bank in late 2014. The survey contains information on 6,851 households and 29,443 people and is nationally representative, as well as representative at rural and urban areas (INIDE, 2015, p. 4). In our analysis, we include the household members who completed a full interview (29,381 people).

The unit of identification of the multidimensional poor is the individual. As methodological strategy to derive the multidimensional poverty measures based on the individual, the population is divided into four age groupings: children (less than 6 years old), adolescents (between 6 and 17 years), adults (between 18 and 59 years), and elderly (60 years or older). Three criteria have been taken into account to mark the boundaries of the groups: the definition of early childhood (individuals under 6 years old) by the National Early Childhood Policy of the National Reconciliation and Unity Government of Nicaragua (GRUN, 2011, p. 3), the definition of children ("every human being below the age of eighteen years") by the Convention on the Rights of the Child (UN, 1989, p. 2), and the legal age of retirement in Nicaragua (60 years old, except for formal education teachers, which is 55 years)[4]. Table 1 shows the sample size by group and gender, its representation at national level, and the population share. It is worth noting that adolescents and adults represent roughly 80% of the whole population in Nicaragua, which means that national achievements are highly influenced by the performance of these groups. We use the population share of each of the age groupings to obtain the estimates for the whole population.

2.2 Multidimensional Poverty Measures

As Amartya Sen noted in his influential article from 1976 "Poverty: An Ordinal Approach to Measurement", the measurement of poverty entails solving two distinct problems: (i) the identification of the poor among the reference population, and (ii) the aggregation of the available information on the poor into an overall index of poverty (Sen, 1976, p. 219). This two-step method of Sen (identification and aggregation) "has become the standard conceptual framework for poverty measurement" (Alkire and Foster, 2011b, p. 291), so that deriving a poverty measure in a multidimensional measurement environment also demands addressing both issues (Espinoza-Delgado, 2014, p. 243). In this regard, an approach that fulfills this requirement is the counting methodology proposed by Alkire and Foster (2007, 2011a) (henceforth "AF"), an axiomatic family of multidimensional poverty measures (Alkire et al., 2015, p. 144)[5]. In this paper, this methodology is mainly adopted to estimate multidimensional poverty in Nicaragua.

Why the AF methodology? The AF approach certainly offers the advantage of being very simple, clear, and extremely appealing, when compared to other methodologies (Silber, 2011, p. 479; Thorbecke, 2011, p. 486)[6]. In addition to this, its measures also satisfy a number of desirable properties, use the easy to understand counting approach to identify the multidimensionally poor, and explicitly take the joint distribution of deprivations into account (Alkire et al., 2015, p. 144). However, it is fair to say, despite its widespread acceptance, the AF methodology has some serious flaws (Rippin, 2010, p. 4; Silber, 2011, p. 479; Duclos and Tiberti, 2016, p. 682; Pogge and Wisor, 2016, p. 651). For instance, this methodology assumes indirectly that up to the multidimensional poverty line (k) the poverty dimensions are perfectly substitutes while they are perfect complements from k onwards (Rippin, 2012, p. 6; Silber and Yalonetzky, 2014, p. 13), which is hard to justify. Also, perhaps the most important thing, any AF measure is insensitive to inequality among the poor (Rippin, 2012, p. 3). Therefore, to address this, we also estimate the Correlation Sensitive Poverty Index (CSPI) proposed by Nicole Rippin (Rippin, 2012; 2013) that is sensitive to inequality among the poor and uses the union approach to identify them.

2.2.1 The AF Methodology

The AF methodology solves the identification and aggregation problems by using a method of identification ρ_k (or "dual cutoff approach") (Alkire, et al., 2015, p. 148) that extends the union and intersection approaches (see Atkinson, 2003) and employing a family of multidimensional poverty measures Mα that uses the Foster-Greer-Thorbecke (FGT) poverty measures (Foster,

[4]Article 55, General Regulations of the Social Security Law of Nicaragua (Decree No. 975, 1982); we also follow the general tradition in Latin America and the Caribbean to define older people as those individuals aged 60 or more (Gasparini et al., 2010, p. 177).

[5]A systematic overview of this methodology can be found in Alkire, et al., 2015, pgs. 144-185.

[6]For other methodologies, see, for instance, Lemmi and Betti, 2006, 2013; Kakwani and Silber, 2008.

et al., 1984) "properly adjusted to account for multidimensionality" (Alkire and Foster, 2011a, p. 476)[7].

Identifying the Multidimensional Poor

Let n represent the number of individuals and let $d \geq 2$ be the number of indicators under analysis. Let X=$[X_{ij}]$ denote the $n\ x\ d$ achievement matrix, where $x_{ij} \geq 0$ ($x_{ij} \in R_+$) is the achievement of i in indicator j. Each row vector $x_i = (x_{1i}, \ldots, x_{id})$ gives individual $i's$ achievements, while each column vector $x_j = (x_{1j}, \ldots, x_{nj})$ provides the distribution of achievements in indicator j across the set of individuals. How does ρ_k work?

First cutoff

For each indicator j, a deprivation cutoff z_j is set. Let $z = (z_1, \ldots, z_d)$ be the row vector that collects the deprivation cutoffs. Given x_{ij}, if $x_{ij} < z_j$, meaning that the achievement level of the i^{th} individual in a given indicator j falls below the specific deprivation cutoff z_j, the i^{th} individual is identified as deprived in j. From the X matrix and the z vector, a matrix of deprivation $g^0[g_i j^0]$ is obtained such that $g^0_{ij} = 1$ if $x_{ij} < z_j$, and $g^0_{ij} = 0$ when $x_{ij} \geq z_j$, for all $j = 1, \ldots, d$ and for $i = 1, \ldots, n$. That is, if individual i is deprived in indicator j, then they are given a "deprivation status" of 1, and 0 if not (Alkire et al., 2015, p. 150). Let $w = (w_1, \ldots, w_d)$ be the vector of weights that reveals the relative importance of each indicator ($w_j > 0$ and $\sum_1^d w_j$ $= 1$). A deprivation score of individual $i(c_i)$ is gotten by adding their weighted deprivations up: $c_i = \sum_{j=1}^d w_j g^0_{ij} = \sum_{j=1}^d \bar{g}^0_{ij}$. If individual i is not deprived in any indicator $c_i = 0$; conversely, $c_i = 1$ when the individual is deprived in all indicators. The vector of deprivation scores for all individuals is $c = (c_1, \ldots, c_n)$, and it is the output of the first cutoff. Before moving on to the second cutoff, it is worth mentioning that the procedure followed to construct g^0 represents one of two kinds of censoring that the identification involves, since any achievement level beyond its deprivation cutoff is completely being ignored (Alkire et al., p. 154).

Second cutoff

To identify the poor, a cutoff level for c_i is used. Let k denote "the poverty cutoff" (Alkire and Foster, 2011a, p. 478) that represents the least deprivation score an individual needs to show in order to be deemed as multi-dimensionally poor. The poverty cutoff is implemented by using the method of identification ρ_k, which identifies individual i as poor when their deprivation score is at least k. Formally, $\rho_k(x_{i\cdot}; z) = 1$ if $c_i \geq k$, and $\rho_k(x_{i\cdot}; z) = 0$, otherwise. Since ρ_k is dependent on both z vector and k, it is called as "dual-cutoff method of identification" (Alkire, et al., 2015, p. 152). It is worth noting that ρ_k includes the union and intersection approaches as particular cases where $k \leq min(w_1, \ldots, w_d)$ and $k = 1$, respectively. The AF methodology suggests to set k somewhere between these two extremes (Alkire and Foster, 2011a, p. 478). After identifying the multi-dimensionally poor by using k, the second censoring takes place. From the deprivation matrix $g^0[g^0_{ij}]$, a censored deprivation matrix $g^0(k)$ is constructed by multiplying each element in g^0 by the identification function $\rho_k(x_{i\cdot}; z)$: $g^0_{ij}(k) = g^0_{ij} \times \rho_k(x_{i\cdot}; z)$ for all i and for all j. In the censored deprivation matrix, if $\rho_k(x_{i\cdot}; z) = 1$, which means that individual i is multi-dimensionally poor, the deprivation status of i in every indicator does not change, and the row with their deprivation information remains the same as in g^0. But, if i is not poor, meaning that $\rho_k(x_{i\cdot}; z) = 0$, their deprivation information is censored, and a vector of zeros is assigned. Similarly, a censored deprivation score vector for all individuals is obtained from the original

[7]This section is based on the chapter 5 of the book Multidimensional Poverty Measurement and Analysis (Alkire et al., 2015, pgs. 144-185).

deprivation score vector: $c(k) = c \times \rho_k(x_{i\cdot}; z)$; it is also possible to derive it from $g_{ij}^0(k)$. Let $c_i(k) = \sum_{j=1}^{d} w_j g_{ij}^0(k)$ be the censored deprivation score of individual i; by definition, $c_i(k) = c_i$ when $c_i \geq k$, and $c_i(k) = 0$, otherwise. Finally, $c(k) = [c_1(k), \ldots, c_n(k)]$. This second censoring is an essential input for the AF methodology to address the aggregation issue (Alkire et al., 2015, p. 155).

The aggregation step

To solve the aggregation problem, the AF methodology proposes a family of multidimensional poverty measures M_α which is based on the FGT class of poverty measures. The first measure of this family is the adjusted headcount ratio $[M_0(X; z)]$ that is the mean of $c(k)$ and is given by (Alkire et al., 2015, p. 156)[8]:

$$M_0 = \mu(c(k)) = \frac{1}{n} \times \sum_{i=1}^{n} c_i(k)$$

The adjusted headcount ratio can also be calculated as the product of two partial indices: H, the multidimensional headcount ratio or the incidence of multidimensional poverty, and A, "the average deprivation score across the poor" or the intensity of poverty (Alkire et al., 2015, p. 157). Then:

$$M_0 = \mu(c(k)) = H \times A = \frac{q}{n} \times \frac{1}{q} \sum_{i=1}^{q} c_i(k) = \sum_{i=1}^{n} c_i(k) = \sum_{i=1}^{n} \sum_{j=1}^{d} w_j g_{ij}^0(k)$$

We use M_0 to estimate multidimensional poverty in Nicaragua and also take advantage of two key properties of this measure: the "population subgroups decomposability" (Alkire, et al., 2015, p. 163), which allows assessing the subgroup contributions (male and female) to overall poverty, and the breakdown property by indicator (Alkire and Santos, 2014, p. 253), which makes possible to find out the contribution of each indicator to overall poverty.

2.3 Inequality among the Multi-dimensionally Poor

Inequality was labeled as the third dimension of poverty by Stephan Jenkins and Peter Lambert in their paper from 1997 "Three 'I's of Poverty Curves, with An Analysis of UK Poverty Trends". Yet it has been neglected by almost all of the literature on multidimensional poverty measurement. Consequently, in addition to H, A, and M_0, we employ the "separate inequality measure" (Iq) proposed by Sabina Alkire and Suman Seth (Alkire and Seth, 2014a, p. 3) in order to evaluate inequality among the multi-dimensionally poor. Let q denote the number of multi-dimensionally poor. Inequality can be computed as:

$$Iq = \frac{4}{q} \sum_{i=1}^{q} [c_i(k) - A]^2$$

2.4 Correlation Sensitive Poverty Index ($CSPI$)

For the reasons stated previously, we also estimate the $CSPI$ that takes into account the inequality among the multidimensional poor and uses the union approach to identify the multidimensionally poor individuals (Rippin, 2010, 2012, 2013, 2016). It is computed as follow:

[8] M_0 can be understood as the proportion of deprivations that the multi-dimensionally poor experience, as a share of the deprivations that would be experienced if all individuals were multi-dimensionally poor and deprived in all the indicators considered (Alkire et al., 2015, p. 184).

$$CSPI = \frac{1}{n}\sum_{i=1}^{n}\sum_{j=1}^{d}(w_j g_{ij}^0)^2$$

The $CSPI$ can be decomposed into all three Is of poverty (incidence, intensity, and inequality); in fact, it is the only one multidimensional poverty index that can do it (Rippin, 2012, p. 11). The decomposition of the $CSPI$ is as follow:

$$CSPI = \frac{q}{n}(\frac{\sum_{i=1}^{n} c_i}{q})^2 + 2(\frac{\frac{1}{2q}\sum_{i=1}^{n} c_i}{\frac{1}{q}\sum_{i=1}^{n} c_i}) = HA^2(1+2GE)$$

2.5 Measures to Evaluate Gender Difference in Multidimensional Poverty

To assess gender differences in multidimensional poverty, we use "the sex-poverty ratio" presented by Mc Lanahan et al., (1989, p. 105). This is simply the ratio of women's multidimensional poverty rate ($H, A, M_0, Iq, CSPI$) to men's multidimensional poverty rate; therefore, it is a relative measure of the status of women and men. A sex poverty ratio of 1.10 means, for instance, that women's poverty rate (incidence, intensity or inequality) is 10 percent higher than men's.

2.6 Dimensions, Indicators and Deprivation Cutoffs

The choice of dimensions and indicators reflects a normative decision in measurement design (Alkire et al., 2015, p. 197); it is "a value judgment" rather than an empirical exercise (Alkire and Santos, 2010, p. 11). Our multidimensional poverty measure uses the same three dimensions as the Multidimensional Poverty Index (Global-MPI) (Alkire and Santos, 2014, p. 252), but different indicators to measure each of them, as we will see below. The dimensions, indicators and deprivation cutoffs used are presented in Table 2.

Education

Not being effectively able to achieve alternative educational levels certainly constitutes a "capability deprivation" (Sen, 2000, p. 87) that should be taken into account to diagnose and measure poverty[9]. Education has intrinsic value, being educated is a valuable achievement in itself, and the real opportunity to have it "can be of direct importance to a person's effective freedom" (Drèze and Sen, 2002, p. 39). It can also play a number of different instrumental roles (personal and collective) (Robeyns, 2006, pgs. 70-71). For instance, education can be crucial for finding and getting a decent job ("personal" role), for practicing of democracy ("social" role), for bringing people in touch with others ("process" role), for enhancing disadvantaged people ability ("empowerment" role), and for decreasing of gender inequalities ("distributive" role) (Drèze and Sen, 2002, p. 39). The widespread consensus is that individual and the society in which they live can benefit from education (Stiglitz et al., 2009b, p. 44); therefore, its inclusion is widely justified[10].

The Global-MPI uses two indicators to measure this dimension: years of schooling (all household members are considered deprived if nobody in the household has at least five years of

[9] "..., identifying a minimal combination of basic capabilities can be a good way of setting up the problem of diagnosing and measuring poverty" (Sen, 1993, p. 41).

[10] Education has also been highlighted in the capability number four ("Senses, Imagination, and Thought") of "The Central Human Capabilities" proposed by Martha Nussbaum (Nussbaum, 2003, p. 41), and it has also been identified as one of the "key" dimensions of well-being by the Commission on the Measurement of Economic Performance and Social Progress (Stiglitz et al., 2009a, p. 14).

schooling) and school attendance (all household members are considered non-deprived if all of their school-age children are attending grades 1 to 8 of school) (Alkire and Santos, 2010, p. 14). We use one indicator to measure this dimension (schooling achievement), but the information used by the Global-MPI is also taken into account.

For children, we assess whether they are currently attending nursery school or preschool or primary school, and the years of schooling of the head of the household where they live as proxy for the potential status (Klasen and Lahoti, 2016, p. 11). If children are not attending one of these options and the headship has not completed lower secondary school (9 years of schooling), they are then considered to be deprived[11]. Besides the fact that the Government of Nicaragua has a specific national policy addressed to early childhood[12], the use of this information is supported by the rich and well-established literature that has pointed out the benefits of early childhood education[13]. For instance, early childhood education can enormously increase the children's "cognitive abilities", especially for disadvantaged children (Barnett, 2002, p. 1); it can shape the children's "attitudes", "habits', and "identity throughout life" (Pramling Samuelsson and Kaga, 2010, p. 57), and can even prevent some diseases such as "cardiovascular and metabolic diseases" (Campbell et al., 2014, p. 1478)[14]. Of course, the chosen indicator does not capture the quality of early childhood education in Nicaragua, nor does it catch the level of knowledge achieved, nor skills, but it is the best option available to evaluate whether or not children "are being exposed to a learning environment" (Alkire and Santos, 2010, p. 14). Notice that the Global-MPI does not include this information[15]; it only evaluates if all children 8 years old or older are attending school (Alkire and Santos, 2014, p. 267) and considers children younger than that age as non-deprived, which could lead to underestimate the dimensional deprivation.

For adolescents, we evaluate if they are on track to achieve, at least, lower secondary school by 17 years old. In Nicaragua, adolescents are expected to complete 9 years of schooling by 15 years old, so we provide a buffer of two years to account for delayed, mainly in the rural areas. It is worth mentioning that only primary school (6 years of education) is mandatory in this country, but our deprivation level is in line with the target 4.1 of the SDGs, which demands, by 2030, to ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes. Naturally, again, this indicator is not able to catch the quality of formal education in Nicaragua, nor is it able to capture the learning achievements; however, it is the best information available to assess if adolescents are effectively involved in a learning process[16].

Finally, we consider that adults and elderly are education deprived if they have not finished at least lower secondary school (9 years of schooling) in order to be consistent in our analysis. It is worth mentioning that the multidimensional poverty index proposed recently for Latin America (MPI-LA) uses the same deprivation line only for adults as it demands primary school completion for the elderly (Santos and Villatoro, 2016, p. 8); the Global-MPI, for its part, requires 5 years of education for years of schooling, "all household members are considered non-

[11]Children one year old or less (33% of the group) are also considered to be deprived if the household head has not achieved 9 years of schooling, which should be understood as a normative decision

[12]"Poltica Nacional de Primera Infancia. Amor para los ms Chiquitos y Chiquitas" (GRUN, 2011).

[13]See, for instance, Barnett, 1995, 2002; Barnett and Ackerman, 2006; Hayes, 2008; Hägglund and Pramling Sammuelson, 2008; Pramling Samuelsson and Kaga, 2008, 2010; Heckman, 2008, 2011; Doyle et al., 2009; Cunha et al., 2010; Nores and Barnett, 2010; Pramling Samuelsson 2011; Gertler et al., 2013; Bartik, 2014; Campbell, et al., 2014; Gamboa and Krger, 2016.

[14]Further, "adolescents who have a good start in life are less likely to be poor as adults" (Hayes, 2008, p. 8).

[15]In fact, there are very few papers in the field of multidimensional poverty measurement that incorporate information on early childhood education. Some exceptions are: UNICEF-CONEVAL, 2012; Franco, 2017.

[16]"A child who is denied the opportunity of elementary schooling is not only deprived as a youngster, but also handicapped all through life (as a person unable to do certain basic things that rely on reading, writing and arithmetic)" (Sen, 2000, p. 284).

deprived if at least one person has five years schooling" (Alkire and Santos, 2014, p. 254), hence we apply a more demanding cutoff.

Health

Health has also been identified as one of the "key" dimensions of well-being (Stiglitz, et al., 2009a, p. 14), and it is also included in the Nussbaum's capabilities list: "2. Body Health. Being able to have good health, including reproductive health; to be adequately nourished; to have adequate shelter" (Nussbaum, 2003, p. 41). Health has intrinsic and instrumental value as well (Alkire and Santos, 2014, p. 253). Being healthy is not only valuable achievement in itself, but also can help individuals to do many valuable things such as playing baseball or rugby, swimming and so on (Drèze and Sen, 2002, p. 39). Health can also affect several others capabilities; for instance, being not healthy can limit an individual's capability to take part in social activities and prevent them to practice their profession (Rippin, 2016, p. 235).

Nutrition and child mortality are the indicators used by the Global-MPI to measure health[17]; but, they cannot be incorporated in our analysis due to the fact that the necessary information to construct them is not available in the 2014-EMNV. The survey supplies information on whether individuals have suffered from a disease (s) in the last month. Therefore, we take advantage of that information to construct our indicator: health functioning. Children and adolescents are considered to be deprived if they have suffered from a chronic disease or eruptive disease (such as rubella, measles, chickenpox, and so on) or diarrhea or several diseases in the past month. Meanwhile, adults and elderly are identified as deprived in health if they have suffered from a chronic disease or several diseases in the past month[18].

Standard of Living

Perhaps the inclusion of living standard dimension could be questionable under the capability approach framework; however, as Sen (1984, p. 86) emphasized, standard of living can be seen "as freedom (positive freedom) of particular types, related to material capabilities. It reflects a variety of freedoms of material kind". In addition, there is empirical evidence that suggests that the living standard indicators contribute the most to multidimensional poverty, especially in poorer countries and in rural areas (Dotter and Klasen, 2014, p. 17). We use eight indicators to measure this dimension, the six ones of the Global-MPI plus two indicators used by the MPI-LA; these indicators are closely linked with the functionings they facilitate (Alkire and Santos, 2014, p. 254). Since we use the individual as the unit of identification of the poor, we suppose that each of the indicators is a public good accessible by everyone within the household (Vijaya, et al., 2014, p. 74; Klasen and Lahoti, 2016, p. 13). Therefore, we do not capture inequalities within the household in this dimension, only horizontal inequalities (Stewart, 2005, 2010); unfortunately, it is not possible to determine with any certainty how much these public goods are used by one individual versus another (Klasen, 2004, p. 12). This issue is in fact an open research question, and more and better individual data are required; but, to the extent they are true public goods (non-rival and non-excludable), it is fine to treat them as household-level indicators.

[17] "The first identifies a person as deprived in nutrition if anyone in their household is undernourished using the weight-for-age indicator for adolescents and the Body Mass Index (BMI) for adults". "The second indicator is whether a child in the household has died" (Alkire and Santos, 2014, p. 254).

[18] Since our health indicator is based on a self-report assessment of having been sick, there may be reporting bias in disease (s) prevalence. To address this, we have related health deprived rate to an assets index and to income quintiles. The results suggest that there is no an obvious reporting bias in health (see Tables 15 and 16 in the Appendix).

The first three indicators are housing, people per bedroom, and housing tenure, which are similar to the ones used by the MPI-LA to measure the “housing dimension” (Santos and Villatoro, 2016, p. 8). Housing assesses whether the individual is living in a dwelling with dirt floor or precarious roof or wall materials. If so, they are considered to be deprived. The quality of housing has instrumental and intrinsic value. It can affect directly or indirectly the health of individuals and can provide important safety elements (Shaw, 2004, p. 398). It should also affect the well-being of people directly (Klasen, 2000, p. 41). The second indicator (people per bedroom) is concerned about overcrowding, which is quite related to the quality of housing and can affect individuals' well-being. Overcrowding can be an important factor in transmission of diseases such as tuberculosis (Elender et al., 1998, p. 677), it can be a cause of infant mortality (Cage and Foster, 2002, 129) and does not certainly contribute to a healthy environment. As deprivation cutoff, we use the same as the MPI-LA: an individual is identified as deprived if they have to share bedroom with two or more people (Santos and Villatoro, 2016, p. 8). Housing tenure security is considered a component of the right to adequate housing: housing is adequate if its occupants have a degree of tenure security which guarantees legal protection against forced evictions, harassment and other threats (OHCHR, 2009, p. 4). Consequently, an individual is considered to be deprived if he or she is living in an illegally occupied house or in a ceded or borrowed house, the same deprivation line as the MPI-LA (Santos and Villatoro, 2016, p. 8).

The following two indicators are water and sanitation. Both are included in the goal 6 of the SDGs, which is to “ensure availability and sustainable management of water and sanitation for all” (UN, 2015, p. 18), and are of considerable instrumental and intrinsic significance (Klasen, 2000, p. 41). They are also included by the Global-MPI in the living standard dimension (Alkire and Santos, 2014, p. 252). Safe drinking water is necessary for life, health and well-being (Alkire and Santos, 2010, p. 16; Jain, 2012, p. 1), and it is also considered as a human right (Noga and Wolbring, 2013, p. 1878). In addition, access to drinking water brings associated time savings, which can be used in other activities (Boone et al., 2011, p. 1826). On the other hand, sanitation is also a fundamental component of well-being, it is essential for a good health and prevents various diseases (Mara et al., 2010: 1)[19].

The sixth indicator is electricity. This indicator is related to the seventh SDG, which is to “ensure access to affordable, reliable, sustainable, and modern energy for all” (UN, 2015, p. 19), and it is also included in the Global-MPI living standard dimension (Alkire and Santos, 2014, p. 252). Having access to electricity can help improving living conditions of individuals by allowing them to be independent from sunlight as well as by contributing to a clean environment (Santos, 2013, p. 267). If an individual does not have access to electricity, she/he is consequently considered to be electricity deprived.

The seventh indicator is energy, which accounts for the main source of energy for cooking used by household members, and it is called by the Global-MPI as cooking fuel (Alkire and Santos, 2014, p. 252). This indicator is also included for intrinsic and instrumental significance (Klasen, 2000, p. 41), and it can be framed into the goal number 7 of the SDGs (UN, 2015, p. 18). Indoor air pollution has adverse effects for health and can increase the risk of many diseases and death (Kaplan, 2010, p. 221); it has also been considered as “a global health threat” (Duflo et al., 2008, p. 7). An individual is identified as energy deprived, if they are living in a household which uses wood or coal or dung as main cooking fuel; this deprivation cutoff is similar to the one used by the MPI-LA (Santos and Villatoro, 2016, p. 8).

Finally, the assets indicator used by the Global-MPI is also included. An individual is deprived if does not access to one of the following assets: radio, TV, telephone, bicycle, motorbike, refrigerator, and does not own a car or truck (Alkire and Santos, 2014, p. 254). This indicator

[19] “Adequate sanitation, together with good hygiene and safe water, are fundamental to good health and to social and economic development” (Mara et al., 2010, p. 1).

has instrumental significance since the goods considered can help the individual in maintaining contact with the surrounding world, ease the work burden in and around the household and contribute to the improve of health (Klasen, 2000: 41-42).

In addition to the three-dimensional index, we also estimate a four-dimensional measure for adults, where gender tensions might be highest (ECLAC, 2016, p. 127), and elderly, who might be the most vulnerable group (Gasparini et al., 2010, p. 205), in order to shed some lights on the role the institutions play in driving gender gap in poverty among these age groupings. We add a fourth dimension that incorporates information on employment (for adults) and social protection (for elderly), which captures important aspects of well-being that are relevant for Nicaragua, but also for Latin America and the Caribbean (Gasparini et al., 2010, p. 176), and where there might be substantial gender gaps. Additionally, this dimension can be framed both in the Goal 8, and its targets, of the SDGs: "Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all" (UN, 2015, p. 14), and in the target 5.4 of these Goals: "Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate" (UN, 2015, p. 18).

2.7 Association between Indicators

Table 3 displays the Spearman's rank correlation coefficients between the indicators of deprivation (0-1) that have been constructed using the indicator deprivation cut-offs of Table 2. Income deprivation indicator (0-1) is also included in the table; it has been obtained by using the official "Overall Poverty Line (OPL)" (INIDE, 2015, p. 8)[20].

It can be seen, firstly, that education has no correlation coefficients higher than 0.37 with all the other indicators, excepting energy for adults (0.438), what suggests that there is a low correlation between deprivation in education and deprivation in the other indicators. This can be justified due to the fact that other factors pointed out by the literature on education, such as self-motivation, individual abilities, expectations about the rewards from education (Eckstein and Wolpin, 1999, p. 1335), parent's education level (Belzil and Hansen, 2003, p. 694), "family background" (Cameron and Heckman, 2001, p. 492), could have more impact on schooling achievement. Secondly, health functioning turns out to be very weakly related to the other indicators; deprivation in this indicator has correlations below 0.12 with all of them, which makes sense since chronic disease prevalence is strongly related to behavioral factors (Fine, et al., 2004, p. 18). Thirdly, it can also be noted that no correlation coefficient of living standard indicators surpasses 0.50, excepting housing and energy, and assets and energy for adults, elderly, and when the whole population is considered, suggesting, overall, a moderate correlation. Finally, it is worth noting that income is moderately correlated with all the other indicators; excluding energy and assets, it exhibits correlations below 0.40. Consequently, a multidimensional approach to poverty measurement is really justified.

2.8 Weighting and Poverty Cutoff (k)

The choice of a weighting structure certainly entails, explicitly or implicitly, "a value judgment" on the trade-offs between the selected indicators (Decancq and Lugo, 2013, p. 9); and the weights represent another normative decision in constructing any multidimensional poverty measure

[20]The value of 2014 OPL is estimated at a consumption level of C$ 17,011.47 annual per capita (INIDE, 2015, p. 8). Assuming a year of 365 days and using the 2014 average exchange rate (C$ 25.96 per American dollar, US $) published on the World Bank's website (http://data.worldbank.org/indicator/PA.NUS.FCRF?locations=NI), the 2014 OPL is equivalent to 1.80 dollars a day.

(Alkire, et al., 2015, p. 197). Taking this into account, we use, as baseline, the Global-MPI weighting scheme (an equal-nested weights scheme) that assigns one third to each of the three dimensions (Alkire and Santos, 2014, p. 256), and within the standard of living dimension the weight is equally distributed across the indicators.

It is worth mentioning that equal weights are in line with the principle that the weights of the single indicators "should be proportionate" (Atkinson, 2003, p. 58), which means that "the interpretation of the set of indicators is greatly eased where the individual components have degrees of importance that, while not necessarily exactly equal, are not grossly different" (Atkinson, et al., p. 25)[21]. Regarding the selection of k, which is also a normative decision (Alkire et al., 197), we set a k of 33.33%, the same as the Global-MPI (Alkire and Santos, 2014, p. 257), according to which an individual needs to be deprived in at least 33.33% of the weighted indicators in order to be identified as multi-dimensionally poor.

3 Results

3.1 Aggregate Deprivation by Indicator

We first evaluate the aggregate deprivation levels in each indicator before computing the poverty and inequality measures. Figure 1 depicts the estimated proportion of people deprived in each of the ten indicators[22]. The proportion of the monetary poor (dash line) is also displayed as a reference, which has been estimated by using the official "overall poverty line" (C$ 17,011.47 Nicaraguan Córdobas, approximately equivalent to 1.80 dollars a day) (INIDE, 2016, p. 27). On the whole, it can be observed that, although the deprivation levels are different among the groups, the deprivation profiles are quite similar, mainly those of children and adolescents, except for the case of elderly. The results also show that there are several indicators in which deprivation is larger than that of the income, confirming the necessity of shifting from the monetary approach to a broader poverty analysis, which has also been suggested by Espinoza-Delgado and López-Laborda (2017, p. 50).

In general, figure 1 reveals a panorama of the education in Nicaragua not very encouraging. The elderly is the most deprived group in education, as could be expected given the deprivation threshold used, but children and adults also exhibit quite high deprivation rates when compared, for instance, with income deprivation. According to our results, more than eight out of ten elderly have not completed the lower secondary school in this country, but also seven out of the eight have not even finished primary school, which evidences the failure of the education policy to achieve this goal over decades, considering that primary school has been universal in Nicaragua since 1893 (CIASES, 2016, p. 6). Almost six out of ten adults have not attained the lower secondary school, greatly lessening their probability of accessing a decent job (Santos and Villatoro, 2016, p. 9). Children also suffer the same deprivation in education as adults. Despite the existence of a national policy of early childhood education and care in Nicaragua, roughly six out of ten children are not still being exposed to a learning environment and the head of the household where they live has not at least achieved the lower secondary school, which means that they also run the risk of not completing this education level[23]. Perhaps the good news on education is the fact that adolescents have a relatively low deprivation rate (28.5%), which

[21]Alternative weighting schemes can be found in Decancq and Lugo, 2013; Pasha, 2017.

[22]The point estimates as well as its confidence intervals at 95 percent can be found in Tables 17 and 18 in the Appendix.

[23]For instance, the empirical evidence in Latin America has found that there is a positive correlation between the young person's educational attainments and their parents' years of schooling: the proportion of young persons that finishes secondary school is over 60% when their parents have completed 10 or more years of schooling (Villatoro, 2007, p. 16).

suggests that seven out of ten adolescents are on track to achieve, at least, the lower secondary school level by 17 years of age. Considering the whole population, the result indicates that roughly one out of two Nicaraguan is education deprived, evidencing the necessity of a deep reform of the education policy in Nicaragua.

Figure 1 also shows that among children, adolescents, and adults, health functioning obtains the lowest deprivation rate (below 16%); but, among elderly, this indicator displays the second highest rates, five out of ten elderly people claimed to suffer from a chronic disease or several diseases. This finding is consistent with what the empirical evidence on Latin America and the Caribbean has found; in this region, the probability of being diseased, as self-reported in the surveys, is substantially larger for elderly people than other age groupings, and the differences are especially big in Bolivia and Nicaragua (Gasparini et al., 2010, p. 192). However, it is worth mentioning that in Nicaragua, considering ours estimate and the one provided by Gasparini et al. (2010, p. 194), which is based on data from 2001-EMNV, the prevalence of diseases among people aged 60 or more seems to have decreased over the first fifteen years of the XXI century. The deprivation rate for the whole population is estimated to be about 15%.

The results also evidence that all age groupings suffer a substantial deprivation in housing, people per bedroom, sanitation, energy, and assets when compared to the income deprivation. In these living standard indicators, the deprivation rates are estimated to be over 33%. In contrast, the groups are relatively better-off in housing tenure, water, and electricity in which the deprivation rates are below 23%. Overall, the elderly seem to be the best-off group in the living standard dimension while the reverse seems to be the case for children. Since elderly is the worse-off group in education and health, one can expect that multidimensional poverty level among this group is to be higher than that of the other ones, given the equal-nested weights scheme to be used.

Tables 4 and 5 provide the estimates of the proportion of males and females deprived in each indicator, as well as the differences between females and males' estimates, in absolute and relative terms. It can be seen that there is no substantial gender gap in education among children and elderly, males and females in these groups are almost equally likely to be deprived in education[24]. The opposite is noted for adolescents, who show the highest gender gap in education (20%), and adults (11%), but, interestingly, women seem to be better-off than men.

The estimates also suggest that there are, in relative terms, sizable gender differences in health, mainly among adolescents (39%), adults (65%), who exhibit the largest gap, and elderly (28%); here, unlike what occurs with education, women are much worse-off than men, except for the case of children. This is a very common finding that is often considered as a paradox (Arber and Cooper, 1999, p. 61; Case and Paxson, 2005, p. 189), women report to suffer more from illnesses although they live longer (see, for instance, Nathanson, 1975; Case and Deaton, 2003, 2005a, 2005b), and it is "close to universal around the world" (Case and Deaton, 2005a, p. 186). Notwithstanding this paradox, the observed gender differences "are picking up a real differential in perceived health", as Case and Deaton (2003, p. 39) pointed out.

The results show overall that women are likely to be better-off in living standard indicators than men (some exceptions are female children in people per bedroom, water, sanitation, electricity, and assets, and female adolescents in assets); although, in most cases, the gender differences are smaller than 10%, in relative terms, excepting in housing tenure, for children, water, for adolescents, and in the elderly's indicators, in which cases the gaps are over 12%. Regarding the gender gaps observed in living standard indicators, it might be argued that the sizes could be understated since we have not been able to discriminate deprivation between males and females within the households. However, to the extent they are true public goods (non-rival and non-excludable), they benefit everyone and it makes no sense to further investigate who benefits

[24] This suggests that our indicator for children does not impute a gender differential into the data.

more, and we are fully taking into account the individual horizontal inequalities.

Considering the whole population, the size of the gender gap is estimated to be 8% in education, 38% in health (the largest one), and lower than 10% in living standard indicators. In Nicaragua, according to our estimates, women are better-off in education and living standard than men, but the reverse is the case in health.

3.2 The Incidence and Intensity of Multidimensional Poverty

Table 6 displays the estimates of the multidimensional headcount ratio (H) and the average deprivation share across the multi-dimensionally poor (A), as well as the estimates of the adjusted headcount ratio (M_0). We also provide the confidence intervals at 95% and standard errors for each of the point estimates, which have been obtained using the bootstrap technique and following the Bradley Efron's work on nonparametric standard errors and confidence intervals (Efron, 1981). The two first measures account for the incidence and intensity of multidimensional poverty, respectively, and the latter one is the measure used to compute the Multidimensional Poverty Index (MPI index) (Alkire and Santos, 2014).

As it can be noted from Table 6, the results offer evidence in support of a more disaggregated poverty analysis, since the incidence of multidimensional poverty can be very different for different age groupings, which should be taken into account for a better social policy design. It should be noted that the estimates seem to describe a U-shaped relationship between the poverty incidence and the age of the individual. The highest poverty incidence is found among the elderly (92.9%), as opposed to adolescents (36.6%), which is mostly related to the relatively quite larger deprivation in education and health that exhibit the people aged 60 years or more, as was intimated previously [25]. Children (63.3%) and adults (60.5%) also exhibit strikingly large multidimensional poverty incidence rates compared to the adolescents' one; however, in these cases, the incidence is chiefly driven by deprivation in education and living standard as health deprivation is relatively quite low.

The estimated overall multidimensional poverty incidence rate (57.6%) suggests that in Nicaragua roughly six out of ten individuals (or 3.6 million people) are multidimensional poor; that incidence is, approximately, 28 percentage points higher than the monetary poverty one (see Table 19 in the Appendix). As a reference, the MPI-LA, based on 2009-EMNV survey, but using the household as the unit of identification, shows that the multidimensional poverty incidence in Nicaragua exceeds 70% and is the highest in Latin America (Santos and Villatoro, 2016, p. 24); also, it indicates that the incidence in this country is more than 15 percentage points above the monetary one (Santos and Villatoro, 2016, p. 26). Therefore, the incidence of multidimensional poverty in Nicaragua still remains a huge problem, and the monetary approach seems to be unable to reflect the extent of it.

It can be also noted from Table 6 that, unlike what occurs with the poverty incidence, there is not great variability in the multidimensional poverty intensity across the groups, a finding that has been already pointed out in the literature (see, for instance, Dotter and Klasen, 2014; Lahoti and Klasen, 2016). Additionally, it should be observed that the intensity among adults is slightly lower than that of adolescents, so the former now displace the latter in the ranking, and the U-shaped relationship is disappeared. The poverty intensity ranges from 51.3% (for adults) to 59.2% (for elderly), and the overall intensity is estimated to be 52.9%. That is, on average, the multidimensionally poor are simultaneously deprived in more than five out of the ten indicators considered, which means that the intensity in Nicaragua is also large[26]. This finding

[25] In Latin American context, a similar qualitative finding is also found by Franco (2017) for the case of Chile, Colombia, Ecuador, and Peru.

[26] Note that, by definition, the minimum intensity value is the poverty cut-off (k = 33.33%).

is in line with the regional and national evidence as well. For instance, Santos and Villatoro (2016, p. 25) found that the multidimensional poverty intensity in Latin America surpasses 45% in countries with the largest poverty incidence rates such as Nicaragua; Espinoza-Delgado and López-Laborda (2017, p. 44) also found that multidimensional poverty intensity in Nicaragua is larger than 40%.

Since the MPI index (M_0) is obtained as the product of the incidence (H) and the intensity (A) of poverty, as a consequence, the large variability observed in the individual-based MPI index across the groups is driven by the great variability in the poverty incidence, the ranking of groups is the same as with the latter, and the U-shaped relationship between the MPI index and the age of the individual is also observed. Therefore, we find that the most vulnerable people in terms of multidimensional poverty in Nicaragua are the elderly and children. The overall multidimensional poverty in Nicaragua is estimated to be 0.3046; as a reference, although they are not strictly comparable, this figure is more than four times higher than the OPHI's most recent estimate (0.072) based on 2011-12 DHS (OPHI, 2017, p. 1), and it is about 0.10 points lower than the estimated MPI-LA based on 2009-EMNV (Santos and Villatoro, 2016, p. 24).

Concerning the gender differentials in multidimensional poverty, Table 7 provides the calculation of the difference between females and males' estimated poverty measures, in absolute and relative terms. We find that in Nicaragua there are statistically significant gender gaps in poverty (incidence, intensity, and MPI index), but they are estimated to be lower than 10%, in relative terms, across the age groupings. That is, the estimated gaps are not substantial in size when compared to other works and realities. For instance, Rogan (2016a, p. 994) found that in South Africa, the size of the gender differentials is 29% (excluding the gap in poverty intensity); Klasen and Lahoti (2016, p. 41) found that in India, the size is higher than 30% (except for intensity).

The highest gender gap in poverty incidence and MPI index is found among adolescents (9%) and the lowest one among children (2%). The gender gaps observed among children, adolescents and adults are in favor of females, but the reverse is the case among elderly, elderly women seem to be slightly worse-off (5%) than men. Table 7 indicates that there is almost parity in poverty intensity, males and females are likely to suffer from the same poverty intensity, except for adults, who show a small difference (3%) that is in favor of males. Consequently, the size and the direction of the estimated gender gaps in MPI index are mostly driven by the difference observed in poverty incidence. The overall estimates suggest that in Nicaragua, the gender gaps in multidimensional poverty are lower than 5%. Nicaraguan women seem to be slightly better off in poverty incidence (4%) and MPI index (2%) than men, but the reverse is the case for poverty intensity (2%).

In order to discover what is exactly driving the observed gender gap in poverty incidence in each group, we estimate the absolute contribution of the gender difference in each of the ten indicators to the overall gender gap. To do this, we first compute a “weighted” censored headcount ratio of each indicator by gender, which in each case is calculated by dividing the contribution of each indicator to the estimated MPI index by the corresponding poverty intensity. Then, we estimate the rate differences, which are the absolute contributions to the overall gender gap. Figure 2 shows such contributions in the form of a bar graph for each indicator and for each group and the whole population. In this figure, a positive bar in any indicator means that females are worse-off than males in that indicator, and vice versa. The last bar in the figure represents the size of the overall gap, which is computed adding up all the indicator gaps, and it is the one that appears in the second-to-last column of Table 7.

Figure 2 makes clear that among children, the gender gap in multidimensional poverty incidence that favors females is mostly driven by the difference in health, followed by the one in education. For its part, among adolescents and adults, the overall gender gap that also favors females is mainly explained by the gap in education, which is in turn reinforced by the differentials in living standards indicators. Among the elderly, the estimated gap that is in favor of men is clearly driven by the differential in health. It should be noted that in this case, unlike what occurs with the other groups, the gap in each of the living standard indicators is larger than the gap in education. Finally, the overall gender gap is explained by the gap in education and the cumulative gaps in the living standard dimension. It is worth mentioning that similar patterns would be found if we estimated the absolute contributions to the overall gender gap discovered in MPI index as this measure only differs from H (the incidence) in that it takes A (the intensity) into account.

As it was discussed earlier in this paper, the MPI index (M_0 measure) is not sensitive to inequality among the multidimensional poor. Therefore, we also estimate the Correlation Sensitive Poverty Index ($CSPI$) proposed by Rippin (2012), which takes inequality into account and adopts the union approach to solve the problem of identification of the poor. The estimates are shown in Tables 8 and 9.

From those tables, it can be seen that the multidimensional poverty incidence under the union approach is in all cases very large and above 85%, which is so because any individual deprived in at least one indicator is considered to be multidimensional poor. Now, a little variability in poverty incidence across the groups is observed, but the reverse is the case for the intensity. Interestingly, the variability noted in the $CSPI$ index is quite similar to the one in MPI index. The elderly turn out to be the most vulnerable group in terms of multidimensional poverty (incidence, intensity, and $CSPI$ index). The gender gaps are not substantial, although statistically significant, and females seem to be a little bit better-off than males, except for the elderly women, who are slightly worse-off than their counterpart, and adult women in the $CSPI$ index. The overall results suggest that in Nicaragua, the gender gaps are lower than 2%; that is, women and men are almost likely to be poor. Therefore, with very few exceptions, the same conclusions that were drawn from the MPI analysis can be drawn from Tables 8 and 9.

3.3 Inequality among the Multi-dimensionally Poor

We also estimate absolute inequality in deprivation scores among the multi-dimensionally poor, as well as gender differentials in inequality, using the measure proposed by Alkire and Seth (2014a), which is described in section 2 of this paper. Tables 10 and 11 provide the results. Overall, the estimates suggest that in Nicaragua, there is also a U-shaped relationship between the inequality level and the age of the individual, which is in line with the international evidence that has shown that there is a positive relationship between the Global MPI value and the inequality among the poor (see Alkire and Seth, 2014b, p. 3).

From Table 10, it can be seen that the largest inequality in deprivation scores is found among the elderly poor (0.1431) and the smallest one among the adolescents (0.0691); that is, inequality reflects a similar pattern and variability as those of MPI index. The figures, therefore, evidence that the elderly in Nicaragua not only present a huge level of multidimensional poverty but also are living in very acute poverty, which is hidden when the household is used to identify the multidimensional poor. Another interesting finding is that even though the adolescents and adults' MPI indices are starkly different (see Table 6), both population groups exhibit very similar inequality measures, which reveals that the deprivation score distributions of the poor are rather alike, as we will see later on.

Table 11 presents the estimated inequality by gender, as well as the difference between females and males' measure in absolute and relative terms. As it can be seen from this table, the results also reveal very interesting findings. Firstly, it can be noted that for children and adults, the gender differentials are much larger in relative terms than the ones in multidimensional poverty

(16% vs 2%, and 30% vs 4%, respectively). Secondly, the inequality among the female poor seems to be higher than among the male poor, excluding the case of children; that is, the direction of the gender gap changes and benefits males. Finally, considering the whole population, Table 11 reveals that the size of the gender gap in inequality that favors males is, in relative terms, 13%, and it is mostly driven by the gap estimated for adults. Consequently, in Nicaragua, the multidimensional poor women are living in very intense poverty when compared with the multidimensional poor men.

In order to better understanding the source of the estimated inequality levels and the gender gaps, Figure 3 depicts the distribution of intensities in poor males and females. Since the used absolute inequality measure is sensitive to pockets of individuals who have large deprivation scores (Alkire and Seth, 2014b, p. 1), the inequality is greater among the poor group that exhibits a larger share of people with this feature in their distribution.

From Figure 3, it can be seen that the elderly exhibit a remarkably different intensity distribution; more than 30% of their multidimensional poor are deprived in 70% or more of the weighted indicators. Conversely, only fewer than 15.5% of the poor among the other groups are. This is the main reason why the largest inequality level is found among the elderly (elderly women). The observed gender gap among children that favors females is due to the fact that a larger share of poor male children is deprived in 70% or more of the weighted indicators than their counterpart (15.3% vs 13.1%). The reverse is the case for adults (7.2% vs 12.3%), which show the greatest gender gap in inequality, as it was seen.

The overall estimated gender gap that favors men is explained by the fact that there is comparatively a larger poor women proportion facing deprivation in 70% or more of the weighted indicators (15.2% vs 11.6%). From these findings, we can conclude that even though the gender differential in multidimensional poverty is relatively small, the gender gap in inequality can be substantially greater whether females (or males) have a pocket of poor people that are suffering from very intense poverty, and males (or females) do not; the bigger the size of the pocket, the larger the gender gap.

3.4 Gender Gap in enhanced Multidimensional Poverty among Adults and Elderly

We also estimate an enhanced multidimensional poverty indicator that considers employment (for adults) and social protection (for elderly) as a fourth dimension. In this context, an adult is deemed to be deprived in the employment dimension whether they are unemployed (open unemployment definition) or employed without a pay or a hidden unemployed or a domestic worker (who are willing to work but are not seeking for a job because must care their children and/or a relative and/or do housework). In turn, an elderly is identified as deprived in the social protection dimension if they do not have access to any form of income (no job income, no pension, no retirement income, no remittance income and so on). We attach equal weight to each dimension (25%) and set the second cut-off at 25%, which is qualitatively the same as the previous one (33.3%): an individual is considered to be multidimensional poor if they are deprived in at least one full dimension, so that the new findings are comparable with the previous ones. The estimated multidimensional poverty measures (incidence, intensity, MPI index, and inequality) are displayed in Tables 12 and 13 respectively. Overall, these tables make clear that when information on employment, domestic work, and social protection is incorporated to the analysis, the gender gaps in Nicaragua are sizable and women are more likely to be poor than men. Furthermore, the inequality among the poor women goes up substantially in comparison to that of men.

3.5 Determinants of the Monetary and Multidimensional Poverty

As a complement to the previous analysis, logit regression models are estimated in order to investigate the determinants of the monetary and multidimensional poverty in Nicaragua. The following exogenous variables have been taken into account in the regressions: the gender, the age of the individual and its square, the area of residence, the region of residence (three dummy variables: Pacific, Central, and Atlantic), the size of the household and its square, the gender of the household head and their marital status (four dummy variables: Married, Unmarried, Divorced, and Widower), and some interaction variables between gender and the marital status of the household head, as well as between the area of residence and the region of residence. The dependent variable (poverty) is dichotomous and represents the probability that an individual is considered as monetary or multidimensional poor, respectively; this variable is equal to 1 if they are poor, to 0 otherwise. The official definition of poverty is used to identify the monetary poor, and both the three-dimensional measure (for the whole population) and the four-dimensional one (for adults and elderly) are employed to determine the multidimensional poor. The results of these logit regressions are given in Table 14.

The results suggest that the gender variable is statistically non-significant when the monetary approach is adopted to define poverty, which means that overall the individual's gender as such has nothing to do with their probability of being monetary poor. However, gender does matter when a multidimensional definition of poverty is followed, although the conclusion on the direction of the bias can change, depending on the information considered in the analysis. The difference in the statistical significance of the gender variable observed between both ways of defining poverty (monetary and multidimensional) can be explained by the fact that the multidimensional approach followed in this paper can capture intra-household inequalities that the monetary approach cannot do it; that is, we can suppose that this difference is an intra-household inequality issue. Using the three-dimensional measure (health, education, and living standard), the estimates show that in Nicaragua, males have more probability of being multidimensional poor than females, but the opposite is the case when the measure is enhanced with information on employment and social security. In this second case, gender has a much stronger effect on the probability of being multidimensional poor than that of the three-dimensional case, which comes to confirm our descriptive findings.

Table 14 also indicates that no matter the poverty definition used to identify the poor, there is, *ceteris paribus*, a U-shaped relationship between the age of the individual and the probability that they will be considered as poor. This finding is consistent with our conclusions, but it is inconsistent with the conclusions that can be drawn from the monetary poverty estimates as they suggest that the lowest poverty rates are found among adults and elderly (see Table 19 in the Appendix). There seems also to be a U-shaped relationship between the household size to which the individual belongs and the probability that they will be deemed poor.

The estimates also make clear that, *ceteris paribus*, the individuals from rural areas really have a higher probability of being poor, mainly monetary poor, than those from urban areas, a finding that has been highlighted by the regional and global empirical evidence as well (see, for instance, Battiston et al., 2013; ECLAC, 2013; Alkire and Santos, 2014; Santos and Villatoro, 2016), and that warrants special attention. The probability of being considered as poor seems also to be much larger among individuals living outside the capital, Managua, and it is the highest for individuals living in the Central and Atlantic rural areas, which has also been suggested by Altamirano and Damiano (2016, p. 15).

As far as the gender of the household head and their marital status are concerned, as well as the corresponding interaction terms that capture the joint impact of these variables on the probability that the individual is considered to be poor, the results suggest that those have a strong impact on the probability of being poor. This impact varies between the approaches analyzed, and it is much more substantial when the monetary approach is adopted. Although, in general, there is the belief that female-headed households are more likely to be poor than male-headed households (Chant 1999, p. 26; Chant, 2004, p. 19; Klasen et al., 2015, p. 37) and, as a result, females are likely to be poorer than males (Lahoti and Klasen, 2016, p. 20), Table 14 indicates that in most cases that does not seem to occur in Nicaragua, particularly when a multidimensional approach is followed.

According to our estimates, regardless of the approach used, the individuals living in households headed by a single female or a widow seem to have, *ceteris paribus*, a lower probability of being considered as poor than those living in households headed by a single male or a widower. The probability of being multidimensional poor is also lower in the households led by divorced women as well as in those headed by unmarried women; but, the reverse occurs with the probability of being monetary poor. It should also be noted that individuals living in married women-headed households have a larger probability of being monetary poor than those living in married men-headed households. But, this finding does not hold true with the three-dimensional measure. Focusing on multidimensional poverty, we can conclude that in Nicaragua, overall, the households headed by women are on average better off than those headed by men, which is in line with the empirical evidence in this country, although grounded on household-based measures, that has found poverty dominance of male-headed households over single mothers (Altamirano and Damiano, 2016, p. 18); that is, it can be considered to be a robust finding.

3.6 Robustness Analysis

The design of a multidimensional poverty measure entails the choice of diverse parameters (Alkire et al., 2015, p. 233), and thus we are interested in assessing how sensitive our estimates are to this selection of parameters: Are the main conclusions robust to these choices? Consequently, we examine extensively the robustness of our conclusions to i) changes in multidimensional poverty line (k) and ii) weighting structure (w).

To investigate whether our results are robust to the choice of a multidimensional poverty line, we employ the complementary cumulative distribution function ($CCDF$) –the complement of a cumulative distribution function (CDF)– put forward by Alkire et al., (2015, p. 236). Given any value a, the $CCDF$ provides the proportion of the individuals that has scores larger than or equal to a; in our context, it will show the proportion of the multidimensional poor individuals (the multidimensional headcount ratio, H) if the second cut-off is set to a. Given two deprivation score distributions, c and c', with $CCDFs$ $\bar{F}_c$ and $\bar{F}_{c'}$, the distribution c first-order stochastically dominates distribution c' if and only if $\bar{F}_c(a) \geq \bar{F}_{c'}(a)$ for all a and if $\bar{F}_c(a) > \bar{F}_{c'}(a)$ for some a. For strict first-order stochastic dominance condition, the second inequality must hold for all a. Therefore, if c first-order stochastically dominates c', then it has no lower H than distribution c' for all multidimensional poverty lines (k).

Figure 4 depicts the $CCDFs$ for children, adolescents, adults, and elderly for various values of k. The figure makes clear that no matter which k one chooses, the proportion of multidimensional poor individuals (H) will always be larger for elderly than for children, adolescents, and adults. That is, the elderly's deprivation score distribution first-order stochastically dominates the other ones. Note also that the distribution for children dominates that of adolescents and adults; therefore, we can conclude that in Nicaragua, children and elderly are the most vulnerable people in terms of multidimensional poverty incidence, which is robust to the choice of a multidimensional poverty line (Duclos et al., 2008, p. 246). It is worth mentioning that for the case of MPI index (M_0), the conclusion also holds since H dominance implies M_0 dominance as well (second-order dominance) (Alkire et al., 2015, p. 237).

Figure 5 and 6 plot the $CCDFs$ for men and women for different k values, considering both the whole population and the four groups. Overall, we do not find first-order stochastic dominance between the *CCDFs* since the distributions cross each other at least once. But limiting the values of k to a more plausible (or pertinent) range of 20% to 40%, that is, conducting a restricted test of dominance (Alkire and Santos, 2014, p. 265), robust conclusions can be drawn. We find that the men's distributions dominate those of women, men's headcount ratios do not seem to be lower than women's for the restricted range of k values. It is also worth mentioning that the smallest sizes of the gender gap are found among children, as was suggested in our analysis. Considering the whole population, we can suggest with some robustness that in Nicaragua, men are slightly more likely to be multidimensional poor than women.

To test whether our findings are robust to a range of weights, we estimated H, A, M_0, and Iq by group and gender, as well as for the whole population, with five alternative weighting structures: i) giving 50% to living standard and 25% each to education and health, ii) giving 50% to education and 25% each to health and living standard, iii) giving 50% to health and 25% each to education and living standard, iv) giving 20% to living standard and 40% each to education and health to attach more weight to those dimensions that capture fully inequality within the household, and v) giving 0% to living standard and 50% each to education and health to estimate the size of the gender gap using the 100 percent individualized dimensions. The results of the robustness analysis are shown in Tables 21, 22, 23, and 24 in the Appendix; the gender differences in absolute and relative terms are also presented in these Tables as well as the corresponding confidence intervals at 95%. Additionally, the Tables show the estimates when equal-nested weights are used in order to ease the comparison of the results; these estimates are considered as the baseline.

We find that the levels of the different measures are sensitive to changes in the weighting structures, but the ranking of the groups in terms of the poverty incidence and MPI index is fully preserved; in the other cases (intensity and inequality), the ranking is partially held since, in some cases, children, adolescents and adults switch places. The analysis agrees again with the fact that elderly is the most vulnerable age groupings in terms of poverty and inequality. The size of the gender gaps in poverty and inequality is also quite sensitive to modifications in the weighting schemes, and, in some cases, the direction of the gaps changes when is compared to the baseline. However, some robust conclusions can be drawn as well: 1) the adolescent and adult males' poverty incidence is larger than females'; 2) the poverty intensity is not greater among adult and elderly men than among women, but the reverse is the case for children; 3) considering the whole population, the multidimensional poverty incidence is not higher among women, but the opposite is the case for the intensity; 4) the inequality among adolescent and adult females is not lower than among males, whereas the reverse occurs among children; finally, 5) the inequality among Nicaraguan females is not really lower than among males. In the remaining cases, the gap direction is ambiguous, but overall the size of the differential is quite similar to that of the baseline, respectively.

4 Concluding Remarks

In this paper, we have proposed an individual-based multidimensional poverty measure for Nicaragua and estimated the incidence, the intensity, and the inequality of multidimensional poverty in this country, as well as the gender differentials in poverty and inequality. We found that in Nicaragua, the incidence of multidimensional poverty still remains a huge problem and the monetary approach is incapable of revealing the extent of it. However, considering the estimates for the whole population, the encouraging result is that poverty does not seem to have a clear gender bias when education, health, and living standard dimensions are considered. The gender gaps in poverty are lower than 5%, and women seem to be slightly better-off in poverty incidence (4%) and MPI index (2%) than men; that is, males and females are almost equally likely to be multidimensional poor. But, the reverse seems to be the case for inequality (12%); we found that multidimensional poor women are living in very intense poverty when compared with the multidimensional poor men.

Overall, the results offer evidence in support of a more disaggregated poverty analysis, since the incidence of multidimensional poverty can be very different for different age groupings. We found that the elderly and children are the most vulnerable people in terms of multidimensional poverty in Nicaragua. In addition, when information on employment, domestic work, and social protection is incorporated to the analysis, the gender gaps in Nicaragua become more substantial, and women are more likely to be poor than men. Furthermore, the inequality among the poor women goes up substantially in comparison with that of men.

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Tables

Table 1: Sample size by Group and Gender, Population, and Population Share. *Source*: Authors' estimates based on 2014-EMNV

Group	Gender	Sample	Population	Pop. Share (%)
Children	Male	1,832	396,932	6.4
	Female	1,775	397,681	6.4
	Sub-total	*3,607*	*794,613*	*12.7*
Adolescents	Male	3,592	784,898	12.6
	Female	3,459	746,148	12.0
	Sub-total	*7,051*	*1,531,046*	*24.5*
Adults	Male	7,586	1,615,795	25.9
	Female	8,688	1,793,015	28.7
	Sub-total	*16,274*	*3,408,810*	*54.6*
Elderly	Male	1,093	243,033	3.9
	Female	1,356	263,405	4.2
	Sub-total	*2,449*	*506,438*	*8.1*
The Whole Population	Male	14,103	3.040.658	48.7
	Female	15,278	3.200.249	51.3
	Total	*29,381*	*6,240,907*	*100.0*

Table 2: Dimensions, Indicators and Deprivation Cut-offs

Dimension	Indicator	Deprivation Indicators He / She is deprived if He / She...
Education	**Schooling Achievement**	(Children) is not attending nursery school or pre-school or primary school and the head of the household have not completed lower secondary school (Adolescents) is not on track to complete lower secondary school by 17 years old (Adults) has not completed lower secondary school (Elderly) has not completed lower secondary school
Health	**Health Functioning**	(Children and Adolescents) has suffered from a chronic disease or eruptive disease or diarrhea or several diseases in the past four weeks (Adults and Elderly) has suffered from a chronic disease or several diseases in the past four weeks
Standard of Living	**Housing**	is living in a house with dirt floor or precarious roof or wall materials (waste, cardboard, tin, cane, palm, straw, other materials)
	People per Bedroom	has to share bedroom with two or more people
	Housing Tenure	is living in an illegally occupied house or in a ceded or borrowed house
	Water	does not have access to an improved drinking water source
	Sanitation	does not have access to improved sanitation facilities
	Electricity	does not have access to electricity
	Energy	is living in a household which uses wood or coal or dung as main cooking fuel
	Assets	does not access one of the following assets: radio, TV, telephone, bicycle, motorbike, refrigerator, and does not access a car or truck

Table 3: Spearman Correlation Coefficients between Deprivations, by Group. *Source*: Authors' estimates based on 2014-EMNV

Indicator	**Group**	**Education**	**Health**	**Housing**	**P. Bedroom**	**H. Tenure**	**Water**	**Sanitation**	**Electricity**	**Energy**	**Assets**
Income	Children	.264**	-.049**	.345**	.295**	-.009**	.283**	.292**	.314**	.432**	.397**
	Adolescents	.230**	.012**	.382**	.352**	.015**	.228**	.298**	.342**	.470**	.398**
	Adults	.290**	-.059**	.379**	.335**	.029**	.235**	.275**	.299**	.468**	.410**
	Elderly	.214**	-.025**	.423**	.397**	.040**	.137**	.275**	.394**	.450**	.450**
	The Whole Population	.233**	-.045**	.382**	.345**	.025**	.238**	.287**	.322**	.465**	.410**
Education	Children		.024**	.237**	.132**	-.041**	.213**	.197**	.213**	.352**	.264**
	Adolescents		-.003**	.190**	.151**	.062**	.191**	.176**	.275**	.261**	.240**
	Adults		.040**	.339**	.235**	.056**	.211**	.281**	.247**	.438**	.341**
	Elderly		-.020**	.261**	.184**	.044**	.134**	.232**	.158**	.367**	.286**
	The Whole Population		.084**	.255**	.159**	.028**	.178**	.217**	.222**	.347**	.281**
Health	Children			.049**	-.019**	.008**	.005**	.022**	.014**	.041**	.026**
	Adolescents			.004**	.035**	-.006**	-.017**	.012**	.010**	.029**	.030**
	Adults			-.072**	-.055**	-.041**	-.040**	-.051**	-.053**	-.060**	-.044**
	Elderly			-.092**	-.013**	-.007**	-.031**	-.045**	-.079**	-.107**	-.018**
	The Whole Population			-.050**	-.052**	-.042**	-.035**	-.032**	-.033**	-.035**	-.012**
Housing	Children				.354**	.054**	.277**	.325**	.318**	.486**	.409**
	Adolescents				.356**	.075**	.244**	.326**	.300**	.486**	.405**
	Adults				.384**	.106**	.278**	.366**	.334**	.511**	.431**
	Elderly				.383**	.088**	.293**	.406**	.386**	.512**	.498**
	The Whole Population				.378**	.094**	.273**	.356**	.329**	.504**	.428**
P. Bedroom	Children					.131**	.178**	.250**	.234**	.265**	.289**
	Adolescents					.113**	.127**	.246**	.237**	.277**	.293**
	Adults					.153**	.158**	.264**	.234**	.312**	.304**
	Elderly					.069**	.152**	.249**	.222**	.318**	.310**
	The Whole Population					.144**	.159**	.261**	.238**	.303**	.302**

** Correlation is significant at the 0.01 level (2-tailed).

Table 3 *Continued from previous page*

Indicator	Group	Education	Health	Housing	P. Bedroom	H. Tenure	Water	Sanitation	Electricity	Energy	Assets
H. Tenure	Children						.011**	.086**	.048**	.021**	.095**
	Adolescents						.072**	.125**	.068**	.075**	.089**
	Adults						.080**	.140**	.082**	.077**	.115**
	Elderly						.056**	.130**	.040**	.076**	.112**
	The Whole Population						.070**	.131**	.073**	.071**	.106**
Water	Children							.293**	.478**	.323**	.327**
	Adolescents							.284**	.415**	.304**	.333**
	Adults							.287**	.417**	.307**	.335**
	Elderly							.261**	.381**	.293**	.291**
	The Whole Population							.288**	.425**	.310**	.332**
Sanitation	Children								.263**	.368**	.300**
	Adolescents								.243**	.377**	.313**
	Adults								.235**	.416**	.316**
	Elderly								.183**	.490**	.356**
	The Whole Population								.240**	.408**	.318**
Electricity	Children									.373**	.468**
	Adolescents									.354**	.461**
	Adults									.355**	.464**
	Elderly									.355**	.404**
	The Whole Population									.359**	.460**
Energy	Children										.483**
	Adolescents										.496**
	Adults										.512**
	Elderly										.539**
	The Whole Population										.508**

** Correlation is significant at the 0.01 level (2-tailed).

Table 4: Proportion of Males and Females Deprived in Various Indicators (h%) and Gender Differential. *Source*: Authors' estimates based on 2014-EMNV

Children								
	Male			Female			Gender difference between Females and Males' Estimate	
Indicator	h	Confidence Interval at 95%* Lower bound	Upper bound	h	Confidence Interval at 95%* Lower bound	Upper bound	Absolute	Relative
Education	56.8	54.6	59.0	56.0	53.6	58.4	-0.84**	0.99
Health	16.7	15.1	18.7	15.1	13.3	16.8	-1.64**	0.90
Housing	47.0	45.1	48.7	46.1	43.7	48.3	-0.93**	0.98
P. Bedroom	69.6	67.5	71.6	71.4	69.6	73.0	1.79**	1.03
H. Tenure	24.4	22.2	26.8	20.0	18.1	22.0	-4.40**	0.82
Water	20.0	18.0	22.1	20.7	19.1	22.3	0.73**	1.04
Sanitation	46.5	44.5	48.6	48.5	46.4	50.5	1.98**	1.04
Electricity	17.3	15.2	19.1	19.0	17.5	20.6	1.72**	1.10
Energy	60.3	59.3	61.3	58.8	57.4	60.1	-1.50**	0.98
Assets	45.4	43.5	47.3	45.9	43.9	47.8	0.48**	1.01
Adolescents								
	Male			Female			Difference between Females and Males' Proportion	
Indicator	h	Confidence Interval at 95%* Lower bound	Upper bound	h	Confidence Interval at 95%* Lower bound	Upper bound	Absolute	Relative
Education	31.6	29.8	33.4	25.2	23.5	26.9	-6.42**	0.80
Health	9.1	8.1	10.3	12.6	11.2	14.1	3.55**	1.39
Housing	45.4	43.8	46.9	42.1	40.4	43.7	-3.29**	0.93
P. Bedroom	62.5	60.8	64.2	60.4	58.6	62.0	-2.12**	0.97
H. Tenure	18.5	16.9	20.0	17.7	16.3	19.1	-0.77**	0.96
Water	19.9	18.4	21.4	17.0	15.6	18.5	-2.86**	0.86
Sanitation	46.6	45.0	48.3	44.2	42.5	46.0	-2.37**	0.95
Electricity	15.9	14.6	17.1	15.9	14.6	17.2	0.01***	1.00
Energy	59.1	58.2	59.9	58.0	57.0	58.9	-1.09**	0.98
Assets	41.9	40.2	43.4	42.5	41.1	43.9	0.63**	1.02

*Confidence intervals were computed using the bootstrap percentile method with 1,000 stratified bootstrap replications (Efron, 1981, p. 145). **The difference is statistically significant at 1%. ***The difference is not statistically significant at 5%.

Table 4 *Continued from previous page*

Adults

Indicator	Male h	Male Confidence Interval at 95%* Lower bound	Male Confidence Interval at 95%* Upper bound	Female h	Female Confidence Interval at 95%* Lower bound	Female Confidence Interval at 95%* Upper bound	Difference between Females and Males' Estimate Absolute	Difference between Females and Males' Estimate Relative
Education	59.4	58.2	60.6	53.1	51.9	54.3	-6.28**	0.89
Health	8.4	7.7	9.1	13.8	12.9	14.7	5.43**	1.65
Housing	40.0	39.0	41.2	38.2	37.0	39.3	-1.82**	0.95
P. Bedroom	55.5	54.1	56.8	54.1	52.9	55.3	-1.38**	0.98
H. Tenure	18.7	17.5	19.8	17.5	16.4	18.7	-1.14**	0.94
Water	16.0	14.9	17.0	14.7	13.7	15.6	-1.29**	0.92
Sanitation	43.0	41.9	44.3	39.3	38.1	40.4	-3.78**	0.91
Electricity	13.5	12.6	14.5	12.6	11.7	13.4	-0.91**	0.93
Energy	53.7	53.0	54.5	50.5	49.8	51.2	-3.20**	0.94
Assets	38.8	37.7	39.9	36.5	35.4	37.5	-2.29**	0.94

Elderly

Indicator	Male h	Male Confidence Interval at 95%* Lower bound	Male Confidence Interval at 95%* Upper bound	Female h	Female Confidence Interval at 95%* Lower bound	Female Confidence Interval at 95%* Upper bound	Difference between Females and Males' Estimate Absolute	Difference between Females and Males' Estimate Relative
Education	83.7	82.4	84.9	85.2	83.8	86.7	1.55**	1.02
Health	45.4	42.4	48.8	58.2	55.7	60.7	12.75**	1.28
Housing	37.4	34.8	40.1	29.1	27.2	31.0	-8.27**	0.78
P. Bedroom	42.5	39.3	45.5	36.9	34.9	38.9	-5.55**	0.87
H. Tenure	9.4	7.4	11.3	7.1	5.9	8.3	-2.33**	0.75
Water	14.0	11.8	16.3	9.4	8.0	10.9	-4.56**	0.67
Sanitation	41.1	37.8	44.4	34.5	32.6	36.3	-6.63**	0.84
Electricity	15.7	13.1	18.3	9.0	7.3	10.6	-6.73**	0.57
Energy	57.9	56.8	58.9	44.4	43.2	45.7	-13.41**	0.77
Assets	44.2	41.7	46.6	36.0	34.2	37.8	-8.25**	0.81

*Confidence intervals were computed using the bootstrap percentile method with 1,000 stratified bootstrap replications (Efron, 1981, p. 145). **The difference is statistically significant at 1%.

Table 5: Proportion of Males and Females Deprived in Various Indicators ($h\%$) and Gender Differential. *Source*: Authors' estimates based on 2014-EMNV

The Whole Population								
	Male			Female			Difference between Females and Males' Estimate	
Indicator	h	Confidence Interval at 95%* Lower bound	Upper bound	h	Confidence Interval at 95%* Lower bound	Upper bound	Absolute	Relative
Education	53.8	52.8	54.9	49.6	48.6	50.7	-4.23**	0.92
Health	12.6	11.9	13.4	17.3	16.6	18.1	4.73**	1.38
Housing	42.1	41.2	42.9	39.4	38.5	40.2	-3.63**	0.93
P. Bedroom	58.1	57.1	59.1	56.3	55.4	57.3	-2.74**	0.97
H. Tenure	18.6	17.8	19.5	17.0	16.2	17.8	-2.44**	0.91
Water	17.3	16.5	18.2	15.5	14.8	16.2	-2.55**	0.90
Sanitation	44.3	43.3	45.3	41.2	40.3	42.1	-3.96**	0.93
Electricity	14.7	14.0	15.5	13.8	13.1	14.5	-1.62**	0.94
Energy	56.3	55.7	56.8	52.8	52.3	53.3	-3.96**	0.94
Assets	40.9	40.1	41.8	39.0	38.2	39.8	-1.88**	0.95

*Confidence intervals were computed using the bootstrap percentile method with 1,000 stratified bootstrap replications (Efron, 1981, p. 145). **The difference is statistically significant at 1%.

Table 6: Multidimensional Poverty Measures, by Group. *Source*: Authors' estimates based on 2014-EMNV

The Multidimensional Headcount Ratio (H%): The Incidence of Multidimensional Poverty				
			Confidence Interval at 95%*	
Subgroup	H	Bootstrap SE*	Lower bound	Upper bound
Children	63.3	0.82	61.7	64.9
Adolescents	36.6	0.68	35.2	37.9
Adults	60.5	0.44	59.7	61.4
Elderly	92.9	0.38	92.2	93.7
The Whole Population	57.6	0.37	57.0	58.3
The Average Deprivation Share among the Multidimensionally Poor (A): The Intensity of Multidimensional Poverty				
			Confidence Interval at 95%*	
Subgroup	A	Bootstrap SE*	Lower bound	Upper bound
Children	0.5406	0.0031	0.5343	0.5470
Adolescents	0.5208	0.0024	0.5163	0.5256
Adults	0.5128	0.0016	0.5098	0.5158
Elderly	0.5924	0.0038	0.5849	0.5997
The Whole Population	0.5285	0.0014	0.5258	0.5312
The Adjusted Multidimensional Headcount Ratio (M_0): MPI Index (H x A)				
			Confidence Interval at 95%*	
Subgroup	M_0	Bootstrap SE*	Lower bound	Upper bound
Children	0.3419	0.0049	0.3318	0.3512
Adolescents	0.1907	0.0038	0.1832	0.1984
Adults	0.3105	0.0024	0.3060	0.3153
Elderly	0.5510	0.0044	0.5422	0.5596
The Whole Population	0.3046	0.0018	0.3013	0.3084

*Standard errors (SE) were estimated following the bootstrap estimate of the standard error proposed by Bradley Efron with 1,000 stratified bootstrap replications (Efron, 1981, pgs. 139-143). Confidence intervals were computed using the bootstrap percentile method with 1,000 stratified bootstrap replications (Efron, 1981, p. 145).

Table 7: Multidimensional Poverty Measures, by Group and Gender, and Gender Differentials. *Source*: Authors' estimates based on 2014-EMNV

The Multidimensional Headcount Ratio (H%): The Incidence of Multidimensional Poverty										
	Male				Female				Gender Difference	
Subgroup	H	Bootstrap SE*	Confidence Interval at 95%* Lower bound	Upper bound	H	Bootstrap SE*	Confidence Interval at 95%* Lower bound	Upper bound	Absolute	Relative
Children	63.9	1.09	61.8	66.1	62.7	1.16	60.4	64.9	-1.27**	0.98
Adolescents	38.2	0.94	36.4	40.0	34.9	0.98	33.0	36.8	-3.30**	0.91
Adults	62.7	0.63	61.5	63.9	58.5	0.64	57.3	59.7	-4.21**	0.93
Elderly	91.6	0.52	90.6	92.6	94.1	0.58	93.0	95.3	2.47**	1.03
The Whole Population	58.9	0.55	57.8	60.0	56.5	0.51	55.5	57.5	-2.41**	0.96

The Average Deprivation Share among the Poor (A): The Intensity of Multidimensional Poverty										
	Male				Female				Gender Difference	
Subgroup	A	Bootstrap SE*	Confidence Interval at 95%* Lower bound	Upper bound	A	Bootstrap SE*	Confidence Interval at 95%* Lower bound	Upper bound	Absolute	Relative
Children	0.5415	0.0043	0.5327	0.5497	0.5394	0.0045	0.5312	0.5487	-0.0020**	1.00
Adolescents	0.5218	0.0029	0.5159	0.5274	0.5200	0.0037	0.5128	0.5278	-0.0018**	1.00
Adults	0.5044	0.0020	0.5005	0.5082	0.5211	0.0025	0.5163	0.5258	0.0167**	1.03
Elderly	0.5862	0.0065	0.5734	0.5984	0.5983	0.0044	0.5896	0.6069	0.0121**	1.02
The Whole Population	0.5227	0.0020	0.5190	0.5266	0.5339	0.0020	0.5301	0.5380	0.0113**	1.02

The Adjusted Multidimensional Headcount Ratio (M_0): MPI Index (H x A)										
	Male				Female				Gender Difference	
Subgroup	M_0	Bootstrap SE*	Confidence Interval at 95%* Lower bound	Upper bound	M_0	Bootstrap SE*	Confidence Interval at 95%* Lower bound	Upper bound	Absolute	Relative
Children	0.3463	0.0069	0.3324	0.3599	0.3378	0.0069	0.3241	0.3514	-0.0085**	0.98
Adolescents	0.1995	0.0054	0.1888	0.2101	0.1817	0.0054	0.1708	0.1921	-0.0179**	0.91
Adults	0.3167	0.0034	0.3100	0.3231	0.3051	0.0036	0.2985	0.3123	-0.0116**	0.96
Elderly	0.5370	0.0062	0.5246	0.5492	0.5631	0.0055	0.5522	0.5744	0.0261**	1.05
The Whole Population	0.3079	0.0025	0.3031	0.3127	0.3015	0.0025	0.2965	0.3066	-0.0064**	0.98

*Standard errors (SE) were estimated following the bootstrap estimate of the standard error proposed by Bradley Efron with 1,000 stratified bootstrap replications (Efron, 1981, pgs. 139-143). Confidence intervals were computed using the bootstrap percentile method with 1,000 stratified bootstrap replications (Efron, 1981, p. 145). **The difference is statistically significant at 1%.

Table 8: Multidimensional Poverty Measures using the Union Approach, by Group. *Source* Authors' estimates based on data from EMNV-2014

The Multidimensional Headcount Ratio ($H\%$): The Incidence of Multidimensional Poverty				
Subgroup	H	Bootstrap SE*	Confidence Interval at 95%* Lower bound	Upper bound
Children	92.6	0.29	92.0	93.1
Adolescents	87.3	0.27	86.8	87.8
Adults	85.9	0.22	85.5	86.4
Elderly	95.3	0.36	94.6	96.0
The Whole Population	87.9	0.18	87.5	88.2
The Aggregate Deprivation Count Ratio: The Intensity of Multidimensional Poverty				
Subgroup	*Intensity*	Bootstrap SE*	Confidence Interval at 95%* Lower bound	Upper bound
Children	0.4090	0.0039	0.4010	0.4164
Adolescents	0.2951	0.0031	0.2886	0.3015
Adults	0.3928	0.0022	0.3885	0.3969
Elderly	0.5801	0.0038	0.5728	0.5872
The Whole Population	0.3875	0.0019	0.3840	0.3913
The Correlation Sensitive Poverty Index ($CSPI$)				
Subgroup	$CSPI$	Bootstrap SE*	Confidence Interval at 95%* Lower bound	Upper bound
Children	0.2056	0.0037	0.1983	0.2125
Adolescents	0.1173	0.0023	0.1129	0.1218
Adults	0.1740	0.0017	0.1709	0.1775
Elderly	0.3598	0.0046	0.3507	0.3687
The Whole Population	0.1792	0.0012	0.1769	0.1815

*Standard errors (SE) were estimated following the bootstrap estimate of the standard error proposed by Bradley Efron with 1,000 stratified bootstrap replications (Efron, 1981, pgs. 139-143). Confidence intervals were computed using the bootstrap percentile method with 1,000 stratified bootstrap replications (Efron, 1981, p. 145).

Table 9: Multidimensional Poverty Measures using the Union Approach by Group and Gender, and Gender Differentials. *Source*: Authors' estimates based on data from EMNV-2014

The Multidimensional Headcount Ratio (H%): The Incidence of Multidimensional Poverty										
	Male				Female				Gender Difference	
Subgroup	H	Bootstrap SE*	Confidence Interval at 95%* Lower bound	Upper bound	H	Bootstrap SE*	Confidence Interval at 95%* Lower bound	Upper bound	Absolute	Relative
Children	93.4	0.36	92.6	94.1	90.9	0.45	90.9	92.6	-2.47**	0.97
Adolescents	88.2	0.38	87.5	89.0	86.4	0.40	85.6	87.1	-1.88**	0.98
Adults	86.6	0.33	85.9	87.3	85.3	0.32	84.7	85.9	-1.31**	0.98
Elderly	94.6	0.43	93.8	95.5	95.9	0.54	94.8	97.0	1.24**	1.01
The Whole Population	88.6	0.24	88.1	89.0	87.2	0.24	86.8	87.7	-1.33**	0.99
The Aggregate Deprivation Count Ratio: The Intensity of Multidimensional Poverty										
	Male				Female				Gender Difference	
Subgroup	*Intensity*	Bootstrap SE*	Confidence Interval at 95%* Lower bound	Upper bound	*Intensity*	Bootstrap SE*	Confidence Interval at 95%* Lower bound	Upper bound	Absolute	Relative
Children	0.4100	0.0058	0.3987	0.4217	0.4081	0.0055	0.3974	0.4193	-0.0018**	1.00
Adolescents	0.3001	0.0044	0.2915	0.3088	0.2899	0.0045	0.2809	0.2987	-0.0102**	0.97
Adults	0.3955	0.0028	0.3900	0.4009	0.3902	0.0031	0.3836	0.3961	-0.0053**	0.99
Elderly	0.5706	0.0063	0.5582	0.5824	0.5884	0.0048	0.5791	0.5980	0.0178**	1.03
The Whole Population	0.3878	0.0026	0.3829	0.3930	0.3874	0.0027	0.3820	0.3928	-0.0004**	1.00
The Correlation Sensitive Poverty Index ($CSPI$)										
	Male				Female				Gender Difference	
Subgroup	$CSPI$	Bootstrap SE*	Confidence Interval at 95%* Lower bound	Upper bound	$CSPI$	Bootstrap SE*	Confidence Interval at 95%* Lower bound	Upper bound	Absolute	Relative
Children	0.2099	0.0053	0.1997	0.2206	0.2019	0.0026	0.1921	0.2123	-0.0081**	0.96
Adolescents	0.1218	0.0051	0.1158	0.1285	0.1126	0.0080	0.1061	0.1190	-0.0092**	0.92
Adults	0.1732	0.0032	0.1691	0.1775	0.1748	0.0062	0.1699	0.1799	0.0016**	1.01
Elderly	0.3482	0.0079	0.3328	0.3644	0.3706	0.0060	0.3592	0.3823	0.0225**	1.06
The Whole Population	0.1786	0.0016	0.1755	0.1817	0.1798	0.0018	0.1764	0.1833	0.0012**	1.01

*Standard errors (SE) were estimated following the bootstrap estimate of the standard error proposed by Bradley Efron with 1,000 stratified bootstrap replications (Efron, 1981, pgs. 139-143). Confidence intervals were computed using the bootstrap percentile method with 1,000 stratified bootstrap replications (Efron, 1981, p. 145). **The difference is statistically significant at 1%.

Table 10: Inequality Among the Multidimensionally Poor (Iq) by Group. *Source*: Authors' estimates based on data from EMNV-2014

Subgroup	Iq	Bootstrap SE*	Confidence Interval at 95%*	
			Lower bound	Upper bound
Children	0.0934	0.0039	0.0860	0.1014
Adolescents	0.0691	0.0031	0.0633	0.0753
Adults	0.0714	0.0019	0.0676	0.0754
Elderly	0.1431	0.0030	0.1372	0.1490
The Whole Population	0.0864	0.0017	0.0832	0.0897

*Standard errors (SE) were estimated following the bootstrap estimate of the standard error proposed by Bradley Efron with 1,000 stratified bootstrap replications (Efron, 1981, pgs. 139-143). Confidence intervals were computed using the bootstrap percentile method with 1,000 stratified bootstrap replications (Efron, 1981, p. 145).

Table 11: Inequality Among the Multidimensionally Poor (Iq) by Group and Gender, and Gender Differentials. *Source*: Authors' estimates based on data from EMNV-2014

	Male				Female				Difference between Females and Males' Estimate	
Subgroup	Iq	Bootstrap SE*	Confidence Interval at 95%* Lower bound	Upper bound	Iq	Bootstrap SE*	Confidence Interval at 95%* Lower bound	Upper bound	Absolute	Relative
Children	0.1015	0.0051	0.0914	0.1109	0.0854	0.0056	0.0744	0.0970	-0.0162**	0.84
Adolescents	0.0671	0.0037	0.0598	0.0748	0.0714	0.0052	0.0613	0.0815	0.0043**	1.06
Adults	0.0615	0.0024	0.0569	0.0664	0.0802	0.0030	0.0746	0.0863	0.0187**	1.30
Elderly	0.1416	0.0053	0.1318	0.1521	0.1443	0.0038	0.1369	0.1519	0.0027**	1.02
The Whole Population	0.0811	0.0025	0.0761	0.0859	0.0911	0.0023	0.0868	0.0958	0.0100**	1.12

*Standard errors (SE) were estimated following the bootstrap estimate of the standard error proposed by Bradley Efron with 1,000 stratified bootstrap replications (Efron, 1981, pgs. 139-143). Confidence intervals were computed using the bootstrap percentile method with 1,000 stratified bootstrap replications (Efron, 1981, p. 145). **The difference is statistically significant at 1%.

Table 12: Multidimensional Poverty Measures among Adults, considering Employment as fourth dimension, and Gender Differences. *Source*: Authors' estimates based on data from EMNV-2014

Measure	Male	Bootstrap SE*	Confidence Interval at 95%*		Female	Bootstrap SE*	Confidence Interval at 95%*		Gender Difference	
			Lower bound	Upper bound			Lower bound	Upper bound	Absolute	Relative
Incidence (H)	69.7	0.57	68.5	70.8	74.4	0.5	73.4	75.3	4.74**	1.07
Intensity (A)	0.4031	0.0021	0.3991	0.4073	0.4787	0.0026	0.4737	0.4840	0.0756**	1.19
MPI index (M_0)	0.2810	0.0026	0.2759	0.2863	0.3561	0.0031	0.3500	0.3621	0.0751**	1.27
Inequality (Iq)	0.0617	0.0019	0.0582	0.0653	0.1262	0.0024	0.1218	0.1308	0.0644**	2.04

*Standard errors (SE) were estimated following the bootstrap estimate of the standard error proposed by Bradley Efron with 1,000 stratified bootstrap replications (Efron, 1981, pgs. 139-143). Confidence intervals were computed using the bootstrap percentile method with 1,000 stratified bootstrap replications (Efron, 1981, p. 145). **The difference is statistically significant at 1%.

Table 13: Multidimensional Poverty Measures among Elderly, considering Social Protection as fourth dimension, and Gender Differences. *Source*: Authors' estimates based on data from EMNV-2014

Measure	Male	Bootstrap SE*	Confidence Interval at 95%*		Female	Bootstrap SE*	Confidence Interval at 95%*		Gender Difference	
			Lower bound	Upper bound			Lower bound	Upper bound	Absolute	Relative
Incidence (H)	92.1	0.49	91.2	93.1	95.3	0.55	94.2	96.4	3.15**	1.03
Intensity (A)	0.4894	0.0061	0.4782	0.5013	0.5435	0.0047	0.5348	0.5531	0.0540**	1.11
MPI index (M_0)	0.4508	0.0061	0.4387	0.4629	0.5181	0.0053	0.5081	0.5288	0.0672**	1.15
Inequality (Iq)	0.1426	0.0082	0.1273	0.1589	0.1685	0.0052	0.1579	0.1783	0.0259**	1.18

*Standard errors (SE) were estimated following the bootstrap estimate of the standard error proposed by Bradley Efron with 1,000 stratified bootstrap replications (Efron, 1981, pgs. 139-143). Confidence intervals were computed using the bootstrap percentile method with 1,000 stratified bootstrap replications (Efron, 1981, p. 145). **The difference is statistically significant at 1%.

Table 14: Results of the Logit Regressions: The Determinants of the Monetary and Multidimensional Poverty in Nicaragua. *Source*: Authors' estimates based on 2014-EMNV

Poverty	Monetary Poverty among the Whole Population		Multidimensional Poverty among the Whole Population (with three dimensions)		Multidimensional Poverty among Adults and Elderly (with four dimensions)	
Explanatory variables	Coef.	Robust Std. Err.	Coef.	Robust Std. Err.	Coef.	Robust Std. Err.
Gender (base: Male)						
Female	-0.02104***	0.04589	-0.13646*	0.03741	0.34895*	0.04741
Age	-0.01260*	0.00364	-0.02121*	0.00415	-0.02925**	0.01206
Square of Age	0.00013**	0.00005	0.00106*	0.00007	0.00087*	0.00015
Area of Resident (base: Urban)						
Rural	0.79613*	0.10677	0.61329*	0.09229	0.49699*	0.12350
Region of Resident (base: the capital, Managua)						
Pacific	0.14247**	0.06686	0.18705*	0.04722	0.16375*	0.05779
Central	0.84686*	0.06469	0.29782*	0.04688	0.24381*	0.05735
Atlantic	0.60742*	0.06968	0.31779*	0.05355	0.24393*	0.06920
Household size	0.75938*	0.03061	0.12975*	0.02215	0.13132*	0.02851
Square of the household size	-0.03180*	0.00182	-0.00498*	0.00143	-0.00557*	0.00199
Gender of the Household Head (base: Female)						
Male	3.17592*	0.50734	1.28017*	0.32907	0.99026**	0.40683
Marital Status of the Household Head (base: Single)						
Married	2.75174*	0.39117	0.77535*	0.25085	0.94917*	0.30152
Unmarried	3.04974*	0.37789	1.29285*	0.24339	1.23299*	0.29455
Divorced	2.84163*	0.37203	1.15441*	0.23811	0.94956*	0.28720
Widower	2.57362*	0.37695	1.10266*	0.24215	0.93514*	0.29126
Interaction: Married (Male-Headed Household)	-3.31831*	0.52624	-1.13640*	0.34276	-1.01594**	0.42226
Interaction: Unmarried (Male-Headed Household)	-3.18562*	0.51686	-1.25835*	0.33779	-0.88602**	0.41930
Interaction: Divorced (Male-Headed Household)	-3.59774*	0.53874	-1.04854*	0.35585	-0.69611***	0.43188
Interaction: Widower (Male-Headed Household)	-2.85718*	0.55390	-1.11215*	0.37675	-0.49076***	0.44835
Interaction Rural (Pacific)	0.50926*	0.13344	0.17892***	0.11456	0.60512*	0.16725
Interaction: Rural (Central)	0.61077*	0.13303	0.97421*	0.12148	1.57465*	0.19950
Interaction: Rural (Atlantic)	1.06708*	0.12874	0.52699*	0.11689	1.20103*	0.17684
Constant	-7.86459*	0.39287	-2.38305*	0.25135	-1.52136*	0.36540
Number of obs.	29381		29381		18723	
Wald chi2(21)	2818.06		2263.49		1226.38	
Prob. > chi2	0.0000		0.0000		0.0000	
Pseudo R2	0.2396		0.1584		0.1519	
Log pseudolikelihood	-2881854.40		-3579153.90		-1869089.80	

*The coefficient is statistically significant at 1%. **The coefficient is statistically significant at 10%.
***The coefficient is not statistically significant at 10%.

Figures

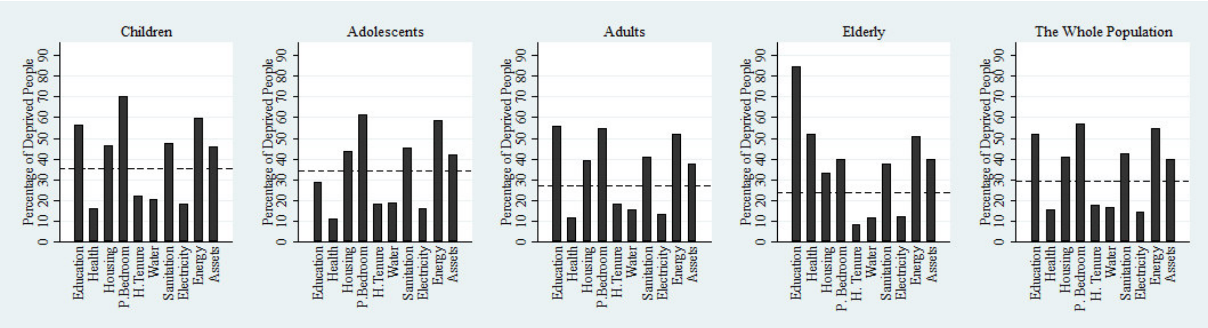

Figure 1: Percentage of People Deprived in each Indicator. *Source*: Authors' estimates based on data from 2014-EMNV. *The dash line represents the proportion of the monetary poor estimated by using the official “Overall Poverty Line (OPL)” (INIDE, 2015, p. 8), which is equivalent to 1.80 dollars a day.

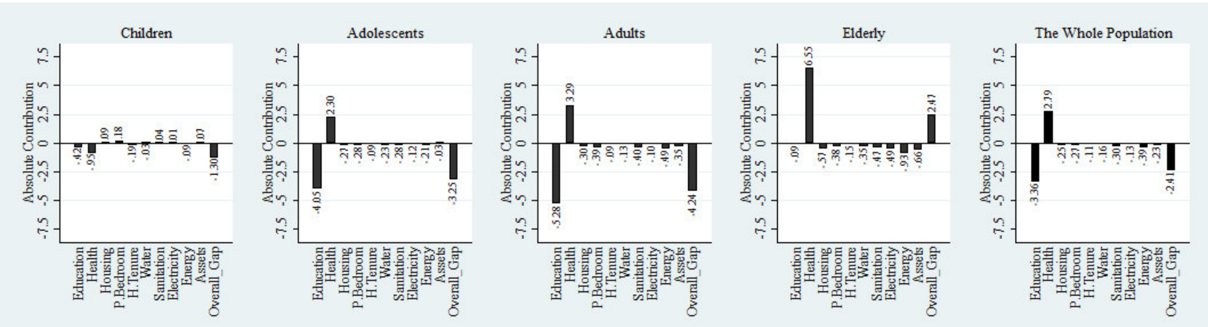

Figure 2: Absolute Contribution of the Gender Gap in each Indicator to the Overall Gap. *Source*: Authors' estimates based on 2014-EMNV. Note: A positive bar in any indicator means that females are worse off than males in that indicator, and vice versa. The Overall_Gap is obtained adding up all indicator gaps.

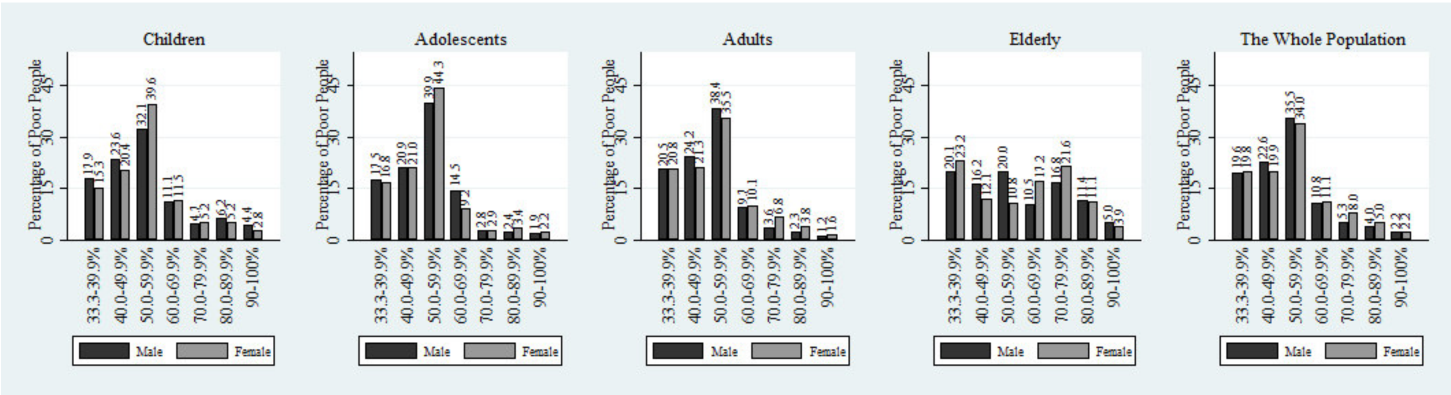

Figure 3: Distributions of Intensities in Poor Males and Females, by Group. *Source*: Authors' estimates based on 2014-EMNV.

Appendix

Table 15: Relation between Health Deprived Rate (%) and Assets Index, by group. *Source*: Authors' estimates based on 2014-EMNV

		Scores of Assets Index						
	Group	**0**	**1**	**2**	**3**	**4**	**5**	**6**
Health Deprived Rate	**Children**	63.87	20.33	8.55	4.70	2.35	0.19	0.00
	Adolescents	61.02	22.94	9.49	4.26	1.75	0.54	0.00
	Adults	44.75	28.22	15.05	7.05	4.17	0.69	0.06
	Elderly	48.57	26.92	12.53	6.99	4.60	0.32	0.07

A score of 0 signifies that individual does not have access to any of the following six items: microwave, motorcycle, car, refrigerator, freezer or washing machine; a score of 1 means that the individual has access to one of the six items; and so on.

Table 16: Relation between Health Deprived Rate (%) and Income Quintile (Q), by Group. *Source*: Authors' estimates based on 2014-EMNV

Group	**Poorest Q**	**Q 2**	**Q 3**	**Q 4**	**Richest Q**
Children	13.43	13.79	17.44	19.32	16.84
Adolescents	10.72	10.89	9.65	11.64	11.51
Adults	7.79	9.31	10.37	14.03	13.79
Elderly	51.17	52.11	50.30	50.02	55.31
Correlation Coefficients of Spearman					
		Children	**Adolescents**	**Adults**	**Elderly**
Health Functioning - Income Quintile		-.140**	-.139**	.100**	.276**

** Correlation is significant at the 0.01 level (2-tailed).

Table 17: Proportion of Individuals Deprived in Various Indicators ($h\%$), by Group. *Source*: Authors' estimates based on 2014-EMNV

	Children			Adolescents		
Indicator	h	Confidence Interval at 95%* Lower bound	Upper bound	h	Confidence Interval at 95%* Lower bound	Upper bound
Education	56.4	54.7	58.0	28.5	27.2	29.8
Health	15.9	14.6	17.2	10.8	10.0	11.7
Housing	46.5	45.2	48.0	43.8	42.6	45.0
P. Bedroom	70.5	69.1	71.8	61.5	60.2	62.7
H. Tenure	22.2	20.8	23.6	18.1	17.0	19.2
Water	20.3	19.1	21.6	18.5	17.5	19.6
Sanitation	47.5	46.0	49.0	45.4	44.2	46.5
Electricity	18.2	17.0	19.4	15.8	15.0	16.7
Energy	59.5	58.6	60.3	58.5	57.9	59.2
Assets	45.7	44.3	47.0	42.2	41.1	43.2
	Adults			Elderly		
Indicator	h	Confidence Interval at 95%* Lower bound	Upper bound	h	Confidence Interval at 95%* Lower bound	Upper bound
Education	56.1	55.2	57.0	84.5	83.5	85.4
Health	11.3	10.7	11.8	52.1	50.2	53.9
Housing	39.1	38.3	39.9	33.1	31.5	34.7
P. Bedroom	54.8	53.8	55.6	39.5	37.7	41.3
H. Tenure	18.0	17.2	18.7	8.2	7.1	9.3
Water	15.3	14.5	16.0	11.6	10.3	12.9
Sanitation	41.0	40.2	41.9	37.6	35.9	39.3
Electricity	13.0	12.4	13.7	12.2	10.7	13.7
Energy	52.0	51.5	52.6	50.9	50.0	51.7
Assets	37.6	36.8	38.4	40.0	38.4	41.5

*Confidence intervals were computed using the bootstrap percentile method with 1,000 stratified bootstrap replications (Efron, 1981, p. 145).

Table 18: Proportion of Individuals Deprived in Various Indicators (h%). *Source*: Authors' estimates based on EMNV-2014

The Whole Population			
Indicator	h	Confidence Interval at 95 percent Lower bound	 Upper bound
Education	51.7	50.9	52.4
Health	15.1	14.5	15.6
Housing	40.7	40.1	41.3
P. Bedroom	57.2	56.5	57.8
H. Tenure	17.8	17.2	18.4
Water	16.4	15.9	16.9
Sanitation	42.7	42.0	43.3
Electricity	14.3	13.8	14.8
Energy	54.5	54.1	54.9
Assets	39.9	39.4	40.5

*Confidence intervals were computed using the bootstrap percentile method with 1,000 stratified bootstrap replications (Efron, 1981, p. 145).

Table 19: The Incidence of Monetary Poverty (H%). *Source*: Authors' estimates based on data from 2014-EMNV

Group	H	Confidence Interval at 95%* Lower bound	 Upper bound
Children	35.3	33.7	37.0
Adolescents	34.4	33.1	35.6
Adults	27.0	26.1	27.8
Elderly	23.5	21.9	25.1
The Whole Population	29.6	28.9	30.2

*Confidence intervals were computed using the bootstrap percentile method with 1,000 stratified bootstrap replications (Efron, 1981, p. 145).

Table 20: The Incidence of Monetary Poverty (H%) by Gender. *Source*: Authors' estimates based on data from 2014-EMNV

Group	Male			Female			Difference between Females and Males' estimates	
	H	Confidence Interval at 95%*		H	Confidence Interval at 95%*			
		Lower bound	Upper bound		Lower bound	Upper bound	Absolute	Relative
Children	35.3	33.0	37.6	35.4	33.2	37.5	0.09***	1.00
Adolescents	35.0	33.2	36.7	33.7	31.9	35.4	-1.30**	0.96
Adults	27.6	26.3	28.8	26.4	25.1	27.5	-1.27**	0.95
Elderly	27.0	24.0	29.6	20.3	18.7	21.9	-6.61**	0.75
The Whole Population	30.5	29.5	31.4	28.7	27.8	29.6	-1.75**	0.94

*Confidence intervals were computed using the bootstrap percentile method with 1,000 stratified bootstrap replications (Efron, 1981, p. 145). **The difference is statistically significant at 1%. ***The difference is statistically significant at 10 percent.

Table 21: The Multidimensional Poverty Incidence ($H\%$), using six alternate Weighting Structures. *Source*: Authors' estimates based on 2014-EMNV

Weighting Structure	Children			Male Children			Female Children			Gender Differences	
	Lb	***H***	Ub	Lb	***H***	Ub	Lb	***H***	Ub	Absolute	Relative
Education (33.3%) Health (33.3%) Living Standard (33.3%)	61.7	**63.3**	64.9	61.8	**63.9**	66.1	60.4	**62.7**	64.9	-1.27*	0.98
Education (25%) Health (25%) Living Standard (50%)	55.4	**56.8**	58.1	54.2	**56.2**	58.1	55.4	**57.4**	59.4	1.21*	1.02
Education (50%) Health (25%) Living Standard (25%)	58.2	**59.7**	61.2	57.8	**60.0**	62.1	57.2	**59.4**	61.5	-0.60*	0.99
Education (25%) Health (50%) Living Standard (25%)	47.7	**49.4**	50.9	46.7	**48.8**	50.8	47.5	**49.9**	52.3	1.03*	1.02
Education (40%) Health (40%) Living Standard (20%)	61.3	**62.9**	64.5	61.5	**63.5**	65.6	60.1	**62.4**	64.6	-1.15*	0.98
Education (50%) Health (50%) Living Standard (0%)	61.4	**62.9**	64.5	61.3	**63.5**	65.8	60.1	**62.4**	64.7	-1.18*	0.98
Weighting Structure	Adolescents			Male Adolescents			Female Adolescents			Gender Differences	
	Lb	***H***	Ub	Lb	***H***	Ub	Lb	***H***	Ub	Absolute	Relative
Education (33.3%) Health (33.3%) Living Standard (33.3%)	35.2	**36.6**	37.9	36.4	**38.2**	40.0	33.0	**34.9**	36.8	-3.30*	0.91
Education (25%) Health (25%) Living Standard (50%)	35.7	**37.0**	38.3	36.4	**38.2**	39.9	33.8	**35.6**	37.4	-2.68*	0.93
Education (50%) Health (25%) Living Standard (25%)	31.6	**32.8**	34.2	33.3	**35.0**	36.9	28.7	**30.6**	32.5	-4.39*	0.87
Education (25%) Health (50%) Living Standard (25%)	29.1	**30.3**	31.6	28.9	**30.7**	32.6	28.0	**30.0**	31.9	-0.71*	0.98
Education (40%) Health (40%) Living Standard (20%)	35.0	**36.3**	37.6	35.9	**37.8**	39.7	32.7	**34.7**	36.7	-3.06*	0.92
Education (50%) Health (50%) Living Standard (0%)	34.9	**36.3**	37.6	36.0	**37.8**	39.7	32.6	**34.7**	36.7	-3.12*	0.92
Weighting Structure	Adults			Male Adults			Female Adults			Gender Differences	
	Lb	***H***	Ub	Lb	***H***	Ub	Lb	***H***	Ub	Absolute	Relative
Education (33.3%) Health (33.3%) Living Standard (33.3%)	59.7	**60.5**	61.4	61.5	**62.7**	63.9	57.3	**58.5**	59.7	-4.21*	0.93
Education (25%) Health (25%) Living Standard (50%)	48.8	**49.7**	50.4	50.8	**51.8**	52.8	46.6	**47.7**	48.8	-4.02*	0.92
Education (50%) Health (25%) Living Standard (25%)	55.9	**56.8**	57.6	58.6	**59.9**	61.0	52.9	**54.1**	55.2	-5.79*	0.90
Education (25%) Health (50%) Living Standard (25%)	44.5	**45.4**	46.2	44.6	**45.8**	47.0	43.8	**45.0**	46.1	-0.87*	0.98
Education (40%) Health (40%) Living Standard (20%)	59.5	**60.4**	61.3	61.3	**62.7**	63.8	57.1	**58.4**	59.6	-4.26*	0.93
Education (50%) Health (50%) Living Standard (0%)	59.6	**60.5**	61.3	61.4	**62.7**	63.9	57.2	**58.5**	59.7	-4.19*	0.93
Weighting Structure	Elderly			Male Elderly			Female Elderly			Gender Differences	
	Lb	***H***	Ub	Lb	***H***	Ub	Lb	***H***	Ub	Absolute	Relative
Education (33.3%) Health (33.3%) Living Standard (33.3%)	92.2	**92.9**	93.7	90.6	**91.6**	92.6	93.0	**94.1**	95.3	2.52*	1.03
Education (25%) Health (25%) Living Standard (50%)	71.6	**72.7**	73.9	71.8	**73.2**	74.6	70.6	**72.3**	74.2	-0.86*	0.99
Education (50%) Health (25%) Living Standard (25%)	84.0	**84.9**	85.9	83.0	**84.3**	85.5	83.8	**85.4**	86.7	1.12*	1.01
Education (25%) Health (50%) Living Standard (25%)	72.5	**73.8**	75.1	70.7	**72.7**	74.4	72.8	**74.7**	76.6	2.07*	1.03
Education (40%) Health (40%) Living Standard (20%)	92.2	**92.9**	93.7	90.7	**91.6**	92.5	93.0	**94.2**	95.4	2.55*	1.03
Education (50%) Health (50%) Living Standard (0%)	92.1	**92.9**	93.7	90.7	**91.6**	92.5	93.1	**94.2**	95.4	2.57*	1.03
Weighting Structure	The Whole Population			Male			Female			Gender Differences	
	Lb	***H***	Ub	Lb	***H***	Ub	Lb	***H***	Ub	Absolute	Relative
Education (33.3%) Health (33.3%) Living Standard (33.3%)	57.0	**57.6**	58.3	57.8	**58.9**	60.0	55.5	**56.5**	57.5	-2.41*	0.96
Education (25%) Health (25%) Living Standard (50%)	48.7	**49.3**	50.0	49.8	**50.6**	51.5	47.2	**48.1**	49.1	-2.47*	0.95
Education (50%) Health (25%) Living Standard (25%)	52.8	**53.6**	54.2	54.5	**55.5**	56.5	51.0	**51.8**	52.8	-3.63*	0.93
Education (25%) Health (50%) Living Standard (25%)	43.8	**44.5**	45.2	43.5	**44.5**	45.5	43.6	**44.5**	45.7	0.07*	1.00
Education (40%) Health (40%) Living Standard (20%)	56.7	**57.5**	58.2	57.7	**58.7**	59.7	55.2	**56.3**	57.4	-2.36*	0.96
Education (50%) Health (50%) Living Standard (0%)	56.7	**57.5**	58.2	57.5	**58.6**	59.7	55.2	**56.3**	57.3	-2.32*	0.96

Lb: Lower bound; Ub: Upper bound. Confidence intervals at 95% were computed using the bootstrap percentile method with 1,000 stratified bootstrap replications (Efron, 1981, p. 145). *The difference is statistically significant at 1%.

Table 22: The Multidimensional Poverty Intensity (A), using six alternate Weighting Structures. *Source*: Authors' estimates based on 2014-EMNV

Weighting Structure	Children			Male Children			Female Children			Gender Differences	
	Lb	***A***	Ub	Lb	***A***	Ub	Lb	***A***	Ub	Absolute	Relative
Education (33.3%) Health (33.3%) Living Standard (33.3%)	0.5343	**0.5406**	0.5470	0.5327	**0.5415**	0.5497	0.5312	**0.5394**	0.5487	-0.0020*	1.00
Education (25%) Health (25%) Living Standard (50%)	0.5525	**0.5589**	0.5659	0.5531	**0.5632**	0.5719	0.5452	**0.5548**	0.5638	-0.0084*	0.99
Education (50%) Health (25%) Living Standard (25%)	0.6440	**0.6494**	0.6554	0.6440	**0.6522**	0.6605	0.6386	**0.6467**	0.6549	-0.0055*	0.99
Education (25%) Health (50%) Living Standard (25%)	0.5097	**0.5194**	0.5294	0.5165	**0.5285**	0.5404	0.4975	**0.5104**	0.5236	-0.0181*	0.97
Education (40%) Health (40%) Living Standard (20%)	0.5483	**0.5549**	0.5617	0.5488	**0.5579**	0.5671	0.5437	**0.5522**	0.5612	-0.0057*	0.99
Education (50%) Health (50%) Living Standard (0%)	0.5673	**0.5748**	0.5828	0.5695	**0.5799**	0.5904	0.5590	**0.5697**	0.5817	-0.0102*	0.98
Weighting Structure	Adolescents			Male Adolescents			Female Adolescents			Gender Differences	
	Lb	***A***	Ub	Lb	***A***	Ub	Lb	***A***	Ub	Absolute	Relative
Education (33.3%) Health (33.3%) Living Standard (33.3%)	0.5163	**0.5208**	0.5256	0.5159	**0.5218**	0.5274	0.5128	**0.5200**	0.5278	-0.0018*	1.00
Education (25%) Health (25%) Living Standard (50%)	0.5236	**0.5294**	0.5351	0.5265	**0.5340**	0.5421	0.5160	**0.5241**	0.5329	-0.0099*	0.98
Education (50%) Health (25%) Living Standard (25%)	0.6146	**0.6205**	0.6264	0.6203	**0.6279**	0.6351	0.6021	**0.6120**	0.6221	-0.0158*	0.97
Education (25%) Health (50%) Living Standard (25%)	0.4941	**0.5016**	0.5098	0.4828	**0.4915**	0.5013	0.5008	**0.5127**	0.5245	0.0212*	1.04
Education (40%) Health (40%) Living Standard (20%)	0.5257	**0.5304**	0.5354	0.5240	**0.5298**	0.5358	0.5231	**0.5310**	0.5396	0.0012*	1.00
Education (50%) Health (50%) Living Standard (0%)	0.5364	**0.5421**	0.5478	0.5327	**0.5391**	0.5459	0.5361	**0.5455**	0.5562	0.0064*	1.01
Weighting Structure	Adults			Male Adults			Female Adults			Gender Differences	
	Lb	***A***	Ub	Lb	***A***	Ub	Lb	***A***	Ub	Absolute	Relative
Education (33.3%) Health (33.3%) Living Standard (33.3%)	0.5098	**0.5128**	0.5158	0.5005	**0.5044**	0.5082	0.5163	**0.5211**	0.5258	0.0167*	1.03
Education (25%) Health (25%) Living Standard (50%)	0.5373	**0.5407**	0.5440	0.5290	**0.5337**	0.5386	0.5420	**0.5473**	0.5523	0.0137*	1.03
Education (50%) Health (25%) Living Standard (25%)	0.6370	**0.6395**	0.6420	0.6291	**0.6321**	0.6352	0.6431	**0.6470**	0.6510	0.0149*	1.02
Education (25%) Health (50%) Living Standard (25%)	0.4749	**0.4799**	0.4850	0.4522	**0.4584**	0.4648	0.4919	**0.4998**	0.5074	0.0414*	1.09
Education (40%) Health (40%) Living Standard (20%)	0.5275	**0.5309**	0.5342	0.5153	**0.5193**	0.5236	0.5368	**0.5421**	0.5474	0.0228*	1.04
Education (50%) Health (50%) Living Standard (0%)	0.5531	**0.5574**	0.5615	0.5364	**0.5411**	0.5460	0.5669	**0.5732**	0.5795	0.0321*	1.06
Weighting Structure	Elderly			Male Elderly			Female Elderly			Gender Differences	
	Lb	***A***	Ub	Lb	***A***	Ub	Lb	***A***	Ub	Absolute	Relative
Education (33.3%) Health (33.3%) Living Standard (33.3%)	0.5849	**0.5924**	0.5997	0.5734	**0.5862**	0.5984	0.5896	**0.5983**	0.6069	0.0121	1.02
Education (25%) Health (25%) Living Standard (50%)	0.5837	**0.5909**	0.5983	0.5784	**0.5909**	0.6037	0.5834	**0.5907**	0.5985	-0.0001	1.00
Education (50%) Health (25%) Living Standard (25%)	0.7041	**0.7105**	0.7165	0.6937	**0.7034**	0.7128	0.7106	**0.7172**	0.7241	0.0139	1.02
Education (25%) Health (50%) Living Standard (25%)	0.6527	**0.6642**	0.6748	0.6167	**0.6374**	0.6555	0.6759	**0.6877**	0.7001	0.0502	1.08
Education (40%) Health (40%) Living Standard (20%)	0.6407	**0.6495**	0.6575	0.6206	**0.6340**	0.6479	0.6529	**0.6633**	0.6727	0.0293	1.05
Education (50%) Health (50%) Living Standard (0%)	0.7244	**0.7347**	0.7444	0.6884	**0.7052**	0.7220	0.7494	**0.7616**	0.7744	0.0565	1.08
Weighting Structure	The Whole Population			Male			Female			Gender Differences	
	Lb	***A***	Ub	Lb	***A***	Ub	Lb	***A***	Ub	Absolute	Relative
Education (33.3%) Health (33.3%) Living Standard (33.3%)	0.5258	**0.5285**	0.5312	0.5190	**0.5227**	0.5266	0.5301	**0.5339**	0.5380	0.0113	1.02
Education (25%) Health (25%) Living Standard (50%)	0.5443	**0.5473**	0.5506	0.5405	**0.5448**	0.5494	0.5453	**0.5498**	0.5544	0.0050	1.01
Education (50%) Health (25%) Living Standard (25%)	0.6447	**0.6472**	0.6498	0.6395	**0.6429**	0.6463	0.6478	**0.6518**	0.6556	0.0089	1.01
Education (25%) Health (50%) Living Standard (25%)	0.5097	**0.5141**	0.5186	0.4914	**0.4978**	0.5049	0.5232	**0.5295**	0.5359	0.0318	1.06
Education (40%) Health (40%) Living Standard (20%)	0.5466	**0.5497**	0.5529	0.5365	**0.5406**	0.5452	0.5545	**0.5587**	0.5633	0.0181	1.03
Education (50%) Health (50%) Living Standard (0%)	0.5768	**0.5807**	0.5843	0.5615	**0.5666**	0.5716	0.5893	**0.5947**	0.6003	0.0280	1.05

Lb: Lower bound; Ub: Upper bound. Confidence intervals at 95% were computed using the bootstrap percentile method with 1,000 stratified bootstrap replications (Efron, 1981, p. 145). *The difference is statistically significant at 1%.

Table 23: The Adjusted Headcount Ratio (M_0), the MPI index, using six alternate Weighting Structures. *Source*: Authors' estimates based on 2014-EMNV

Weighting Structure	Children			Male Children			Female Children			Gender Differences	
	Lb	M_0	Ub	Lb	M_0	Ub	Lb	M_0	Ub	Absolute	Relative
Education (33.3%) Health (33.3%) Living Standard (33.3%)	0.3318	**0.3419**	0.3512	0.3324	**0.3463**	0.3599	0.3241	**0.3378**	0.3514	-0.0085*	0.98
Education (25%) Health (25%) Living Standard (50%)	0.3091	**0.3175**	0.3259	0.3043	**0.3166**	0.3291	0.3065	**0.3184**	0.3297	0.0018*	1.01
Education (50%) Health (25%) Living Standard (25%)	0.3755	**0.3877**	0.3996	0.3749	**0.3907**	0.4066	0.3683	**0.3843**	0.3995	-0.0064*	0.98
Education (25%) Health (50%) Living Standard (25%)	0.2469	**0.2566**	0.2663	0.2448	**0.2583**	0.2714	0.2403	**0.2549**	0.2687	-0.0034*	0.99
Education (40%) Health (40%) Living Standard (20%)	0.3394	**0.3493**	0.3594	0.3402	**0.3538**	0.3679	0.3303	**0.3445**	0.3585	-0.0094*	0.97
Education (50%) Health (50%) Living Standard (0%)	0.3509	**0.3614**	0.3722	0.3519	**0.3673**	0.3822	0.3404	**0.3556**	0.3700	-0.0117*	0.97
Weighting Structure	Adolescents			Male Adolescents			Female Adolescents			Gender Differences	
	Lb	M_0	Ub	Lb	M_0	Ub	Lb	M_0	Ub	Absolute	Relative
Education (33.3%) Health (33.3%) Living Standard (33.3%)	0.1832	**0.1907**	0.1984	0.1888	**0.1995**	0.2109	0.1708	**0.1817**	0.1921	-0.0179*	0.91
Education (25%) Health (25%) Living Standard (50%)	0.1890	**0.1958**	0.2022	0.1947	**0.2044**	0.2141	0.1762	**0.1867**	0.1962	-0.0177*	0.91
Education (50%) Health (25%) Living Standard (25%)	0.1957	**0.2042**	0.2125	0.2083	**0.2198**	0.2315	0.1749	**0.1874**	0.2000	-0.0324*	0.85
Education (25%) Health (50%) Living Standard (25%)	0.1448	**0.1521**	0.1592	0.1411	**0.1506**	0.1598	0.1429	**0.1537**	0.1650	0.0031*	1.02
Education (40%) Health (40%) Living Standard (20%)	0.1846	**0.1925**	0.1996	0.1889	**0.2002**	0.2103	0.1734	**0.1841**	0.1947	-0.0160*	0.92
Education (50%) Health (50%) Living Standard (0%)	0.1886	**0.1964**	0.2042	0.1933	**0.2040**	0.2153	0.1786	**0.1894**	0.2008	-0.0146*	0.93
Weighting Structure	Adults			Male Adults			Female Adults			Gender Differences	
	Lb	M_0	Ub	Lb	M_0	Ub	Lb	M_0	Ub	Absolute	Relative
Education (33.3%) Health (33.3%) Living Standard (33.3%)	0.3060	**0.3105**	0.3153	0.3100	**0.3167**	0.3231	0.2985	**0.3051**	0.3123	-0.0116*	0.96
Education (25%) Health (25%) Living Standard (50%)	0.2640	**0.2683**	0.2725	0.2708	**0.2764**	0.2824	0.2549	**0.2613**	0.2678	-0.0151*	0.95
Education (50%) Health (25%) Living Standard (25%)	0.3571	**0.3630**	0.3689	0.3702	**0.3783**	0.3861	0.3418	**0.3498**	0.3583	-0.0285*	0.92
Education (25%) Health (50%) Living Standard (25%)	0.2129	**0.2177**	0.2223	0.2039	**0.2102**	0.2164	0.2171	**0.2245**	0.2316	0.0144*	1.07
Education (40%) Health (40%) Living Standard (20%)	0.3159	**0.3206**	0.3258	0.3187	**0.3254**	0.3322	0.3095	**0.3168**	0.3247	-0.0087*	0.97
Education (50%) Health (50%) Living Standard (0%)	0.3312	**0.3369**	0.3423	0.3320	**0.3391**	0.3465	0.3260	**0.3347**	0.3428	-0.0044*	0.99
Weighting Structure	Elderly			Male Elderly			Female Elderly			Gender Differences	
	Lb	M_0	Ub	Lb	M_0	Ub	Lb	M_0	Ub	Absolute	Relative
Education (33.3%) Health (33.3%) Living Standard (33.3%)	0.5422	**0.5510**	0.5596	0.5246	**0.5370**	0.5492	0.5522	**0.5631**	0.5744	0.0261	1.05
Education (25%) Health (25%) Living Standard (50%)	0.4802	**0.4872**	0.4945	0.4757	**0.4865**	0.4971	0.4779	**0.4875**	0.4963	0.0009	1.00
Education (50%) Health (25%) Living Standard (25%)	0.6178	**0.6256**	0.6335	0.6035	**0.6140**	0.6247	0.6260	**0.6361**	0.6464	0.0221	1.04
Education (25%) Health (50%) Living Standard (25%)	0.5336	**0.5446**	0.5550	0.5017	**0.5188**	0.5356	0.5556	**0.5686**	0.5829	0.0498	1.10
Education (40%) Health (40%) Living Standard (20%)	0.5952	**0.6044**	0.6140	0.5685	**0.5823**	0.5953	0.6128	**0.6254**	0.6382	0.0431	1.07
Education (50%) Health (50%) Living Standard (0%)	0.6718	**0.6829**	0.6947	0.6287	**0.6457**	0.6637	0.7011	**0.7167**	0.7331	0.0710	1.11
Weighting Structure	The Whole Population			Male			Female			Gender Differences	
	Lb	M_0	Ub	Lb	M_0	Ub	Lb	M_0	Ub	Absolute	Relative
Education (33.3%) Health (33.3%) Living Standard (33.3%)	0.3013	**0.3046**	0.3084	0.3031	**0.3079**	0.3127	0.2965	**0.3015**	0.3066	-0.0064	0.98
Education (25%) Health (25%) Living Standard (50%)	0.3414	**0.3440**	0.3464	0.3455	**0.3489**	0.3522	0.3359	**0.3393**	0.3427	-0.0096	0.97
Education (50%) Health (25%) Living Standard (25%)	0.3813	**0.3846**	0.3880	0.3872	**0.3921**	0.3970	0.3727	**0.3775**	0.3820	-0.0147	0.96
Education (25%) Health (50%) Living Standard (25%)	0.2902	**0.2930**	0.2961	0.2851	**0.2892**	0.2932	0.2931	**0.2969**	0.3007	0.0077	1.03
Education (40%) Health (40%) Living Standard (20%)	0.3344	**0.3378**	0.3411	0.3346	**0.3390**	0.3432	0.3320	**0.3365**	0.3414	-0.0024	0.99
Education (50%) Health (50%) Living Standard (0%)	0.3298	**0.3337**	0.3379	0.3275	**0.3325**	0.3378	0.3295	**0.3348**	0.3408	0.0023	1.01

Lb: Lower bound; Ub: Upper bound. Confidence intervals at 95% were computed using the bootstrap percentile method with 1,000 stratified bootstrap replications (Efron, 1981, p. 145). *The difference is statistically significant at 1%.

Table 24: The Inequality among the Multidimensional Poor (Iq), using six alternate Weighting Structures. *Source*: Authors' estimates based on 2014-EMNV

Weighting Structure	Children			Male Children			Female Children			Gender Differences	
	Lb	***Iq***	Ub	Lb	***Iq***	Ub	Lb	***Iq***	Ub	Absolute	Relative
Education (33.3%) Health (33.3%) Living Standard (33.3%)	0.0860	**0.0934**	0.1014	0.0914	**0.1015**	0.1109	0.0744	**0.0854**	0.0970	-0.0162*	0.84
Education (25%) Health (25%) Living Standard (50%)	0.0741	**0.0801**	0.0861	0.0786	**0.0867**	0.0950	0.0654	**0.0733**	0.0813	-0.0134*	0.85
Education (50%) Health (25%) Living Standard (25%)	0.0629	**0.0680**	0.0731	0.0654	**0.0720**	0.0789	0.0568	**0.0639**	0.0713	-0.0081*	0.89
Education (25%) Health (50%) Living Standard (25%)	0.1327	**0.1439**	0.1543	0.1377	**0.1535**	0.1680	0.1170	**0.1334**	0.1506	-0.0201*	0.87
Education (40%) Health (40%) Living Standard (20%)	0.0877	**0.0962**	0.1046	0.0916	**0.1037**	0.1146	0.0763	**0.0878**	0.0997	-0.0159*	0.85
Education (50%) Health (50%) Living Standard (0%)	0.1163	**0.1270**	0.1371	0.1190	**0.1333**	0.1479	0.1042	**0.1205**	0.1370	-0.0129*	0.90
Weighting Structure	Adolescents			Male Adolescents			Female Adolescents			Gender Differences	
	Lb	***Iq***	Ub	Lb	***Iq***	Ub	Lb	***Iq***	Ub	Absolute	Relative
Education (33.3%) Health (33.3%) Living Standard (33.3%)	0.0633	**0.0691**	0.0753	0.0598	**0.0671**	0.0748	0.0613	**0.0714**	0.0815	0.0043*	1.06
Education (25%) Health (25%) Living Standard (50%)	0.0631	**0.0680**	0.0731	0.0619	**0.0682**	0.0752	0.0594	**0.0672**	0.0758	-0.0010*	0.99
Education (50%) Health (25%) Living Standard (25%)	0.0645	**0.0695**	0.0744	0.0539	**0.0600**	0.0657	0.0722	**0.0805**	0.0894	0.0205*	1.34
Education (25%) Health (50%) Living Standard (25%)	0.0889	**0.0977**	0.1072	0.0817	**0.0923**	0.1038	0.0896	**0.1024**	0.1161	0.0101*	1.11
Education (40%) Health (40%) Living Standard (20%)	0.0552	**0.0622**	0.0695	0.0505	**0.0584**	0.0664	0.0551	**0.0668**	0.0787	0.0084*	1.14
Education (50%) Health (50%) Living Standard (0%)	0.0673	**0.0772**	0.0878	0.0605	**0.0719**	0.0840	0.0673	**0.0830**	0.1004	0.0111*	1.16
Weighting Structure	Adults			Male Adults			Female Adults			Gender Differences	
	Lb	***Iq***	Ub	Lb	***Iq***	Ub	Lb	***Iq***	Ub	Absolute	Relative
Education (33.3%) Health (33.3%) Living Standard (33.3%)	0.0676	**0.0714**	0.0754	0.0569	**0.0615**	0.0664	0.0746	**0.0802**	0.0863	0.0187*	1.30
Education (25%) Health (25%) Living Standard (50%)	0.0551	**0.0579**	0.0611	0.0510	**0.0546**	0.0582	0.0563	**0.0608**	0.0655	0.0062*	1.11
Education (50%) Health (25%) Living Standard (25%)	0.0399	**0.0420**	0.0441	0.0330	**0.0355**	0.0384	0.0447	**0.0482**	0.0517	0.0127*	1.36
Education (25%) Health (50%) Living Standard (25%)	0.1022	**0.1087**	0.1155	0.0793	**0.0881**	0.0968	0.1147	**0.1237**	0.1324	0.0356*	1.40
Education (40%) Health (40%) Living Standard (20%)	0.0677	**0.0721**	0.0768	0.0513	**0.0568**	0.0621	0.0793	**0.0857**	0.0923	0.0289*	1.51
Education (50%) Health (50%) Living Standard (0%)	0.0957	**0.1017**	0.1078	0.0679	**0.0753**	0.0828	0.1161	**0.1249**	0.1351	0.0497*	1.66
Weighting Structure	Elderly			Male Elderly			Female Elderly			Gender Differences	
	Lb	***Iq***	Ub	Lb	***Iq***	Ub	Lb	***Iq***	Ub	Absolute	Relative
Education (33.3%) Health (33.3%) Living Standard (33.3%)	0.1372	**0.1431**	0.1490	0.1318	**0.1416**	0.1521	0.1369	**0.1443**	0.1519	0.0027	1.02
Education (25%) Health (25%) Living Standard (50%)	0.0751	**0.0810**	0.0866	0.0774	**0.0860**	0.0949	0.0691	**0.0766**	0.0838	-0.0094	0.89
Education (50%) Health (25%) Living Standard (25%)	0.0731	**0.0763**	0.0795	0.0733	**0.0784**	0.0836	0.0696	**0.0741**	0.0779	-0.0043	0.95
Education (25%) Health (50%) Living Standard (25%)	0.1681	**0.1725**	0.1766	0.1845	**0.1905**	0.1970	0.1461	**0.1514**	0.1567	-0.0391	0.79
Education (40%) Health (40%) Living Standard (20%)	0.1670	**0.1714**	0.1756	0.1595	**0.1680**	0.1760	0.1680	**0.1729**	0.1780	0.0048	1.03
Education (50%) Health (50%) Living Standard (0%)	0.2475	**0.2490**	0.2499	0.2345	**0.2416**	0.2471	0.2476	**0.2493**	0.2500	0.0077	1.03
Weighting Structure	The Whole Population			Male			Female			Gender Differences	
	Lb	***Iq***	Ub	Lb	***Iq***	Ub	Lb	***Iq***	Ub	Absolute	Relative
Education (33.3%) Health (33.3%) Living Standard (33.3%)	0.0832	**0.0864**	0.0897	0.0761	**0.0811**	0.0859	0.0868	**0.0911**	0.0958	0.0100	1.12
Education (25%) Health (25%) Living Standard (50%)	0.0646	**0.0671**	0.0699	0.0636	**0.0672**	0.0709	0.0635	**0.0670**	0.0705	-0.0002	1.00
Education (50%) Health (25%) Living Standard (25%)	0.0546	**0.0569**	0.0591	0.0493	**0.0521**	0.0552	0.0583	**0.0617**	0.0649	0.0096	1.18
Education (25%) Health (50%) Living Standard (25%)	0.1305	**0.1353**	0.1403	0.1175	**0.1257**	0.1336	0.1358	**0.1419**	0.1482	0.0162	1.13
Education (40%) Health (40%) Living Standard (20%)	0.0891	**0.0932**	0.0972	0.0777	**0.0832**	0.0890	0.0970	**0.1024**	0.1075	0.0192	1.23
Education (50%) Health (50%) Living Standard (0%)	0.1300	**0.1353**	0.1406	0.1081	**0.1154**	0.1232	0.1462	**0.1533**	0.1609	0.0379	1.33

Lb: Lower bound; Ub: Upper bound. Confidence intervals at 95% were computed using the bootstrap percentile method with 1,000 stratified bootstrap replications (Efron, 1981, p. 145). *The difference is statistically significant at 1%. **The difference is statistically significant at 10%.

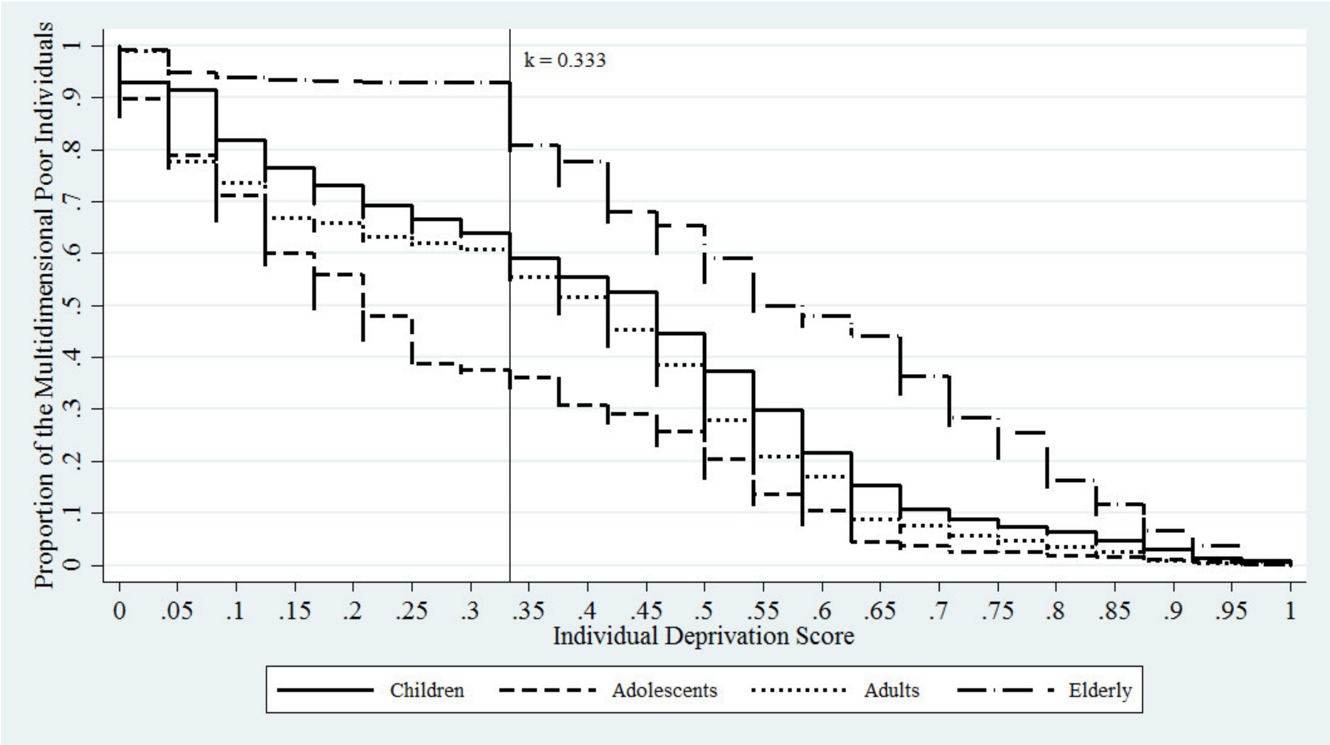

Figure 4: Complementary Cumulative Distribution Function ($CCDF$) by Group. *Source*: Authors' estimates based on 2014-EMNV

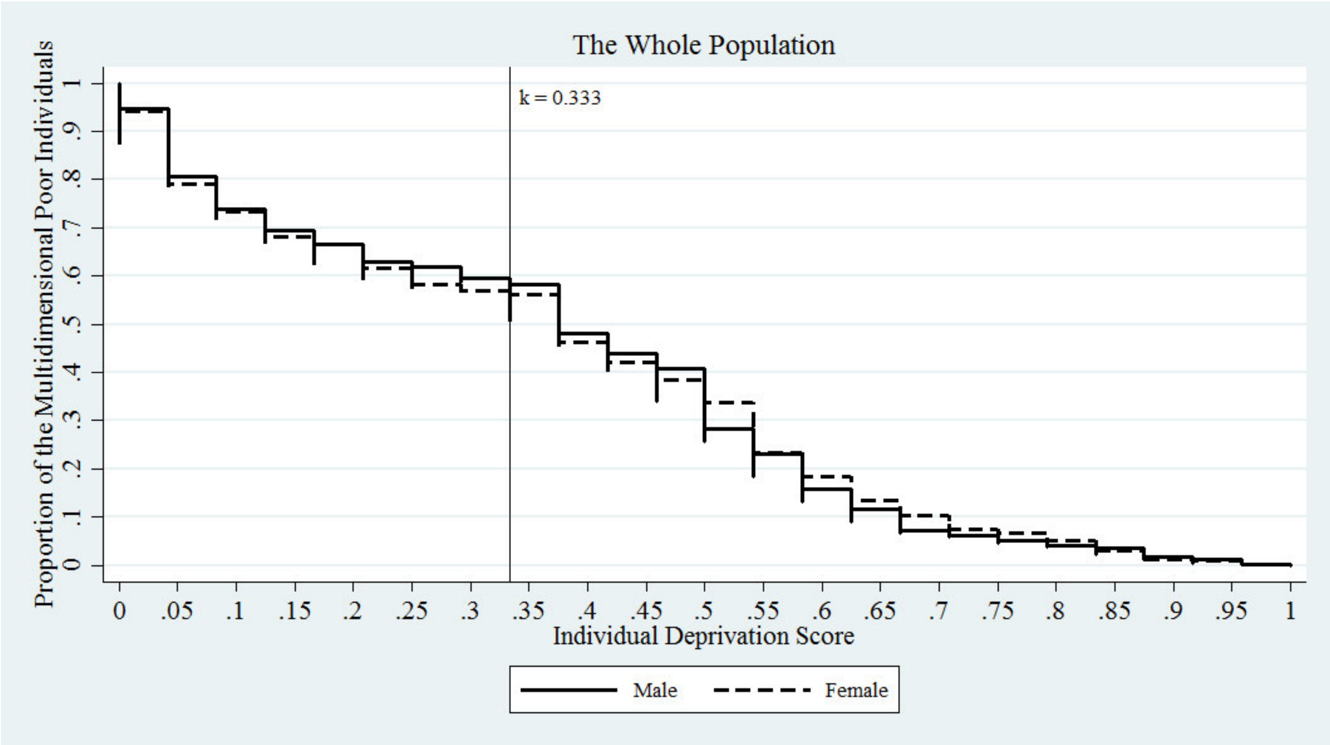

Figure 5: Complementary Cumulative Distribution Function ($CCDF$) by Gender. *Source*: Authors' estimates based on 2014-EMNV

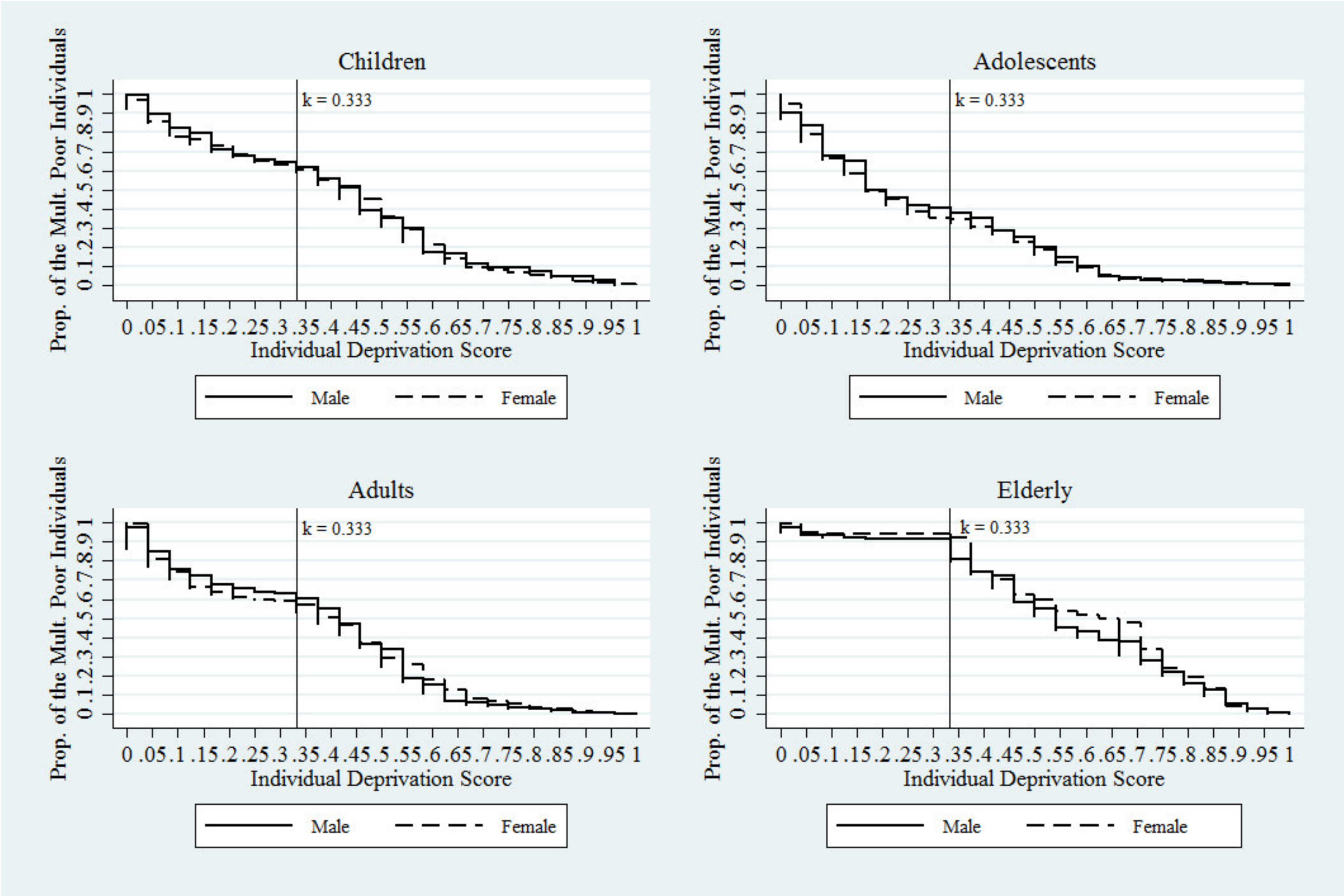

Figure 6: Complementary Cumulative Distribution Function ($CCDF$) by Group and Gender. *Source*: Authors' estimates based on 2014-EMNV