

Relative Income, Inequality and Subjective Wellbeing: Evidence for Brazil

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Abstract This paper analyzes the determinants of the self-reported income and food sufficiency in Brazil, highlighting how these subjective measures of wellbeing are affected by relative conditions. Analyses are based on pooled data from the 2002/2003 and 2008/2009 Brazilian Family Budget Survey and on estimates of the multinomial relation between income and food sufficiency with absolute and relative indicators. The paper highlights that living in a more affluent neighborhood does matter in self-reported perceptions of wellbeing. Stated income sufficiency depends positively on absolute family income and negatively on relative neighbor income. Moreover, neighborhood education and regional inequality affect both stated perceptions of income and food sufficiency. The paper concludes that improving personal income and education, as well as reducing inequality, is one of the most effective ways to improve both the quality of life and the general perceptions of wellbeing in society.

Keywords Stated wellbeing · Relative income perception · Inequality · Income sufficiency · Food sufficiency · Brazil

1 Introduction

Economic analyses of poverty, inequality or, in a broader sense, wellbeing, are usually based on objective concepts of living, such as absolute or relative levels of income and consumption (Gustafsson 1995). In addition, there is a growing interest in measures of subjective wellbeing (SWB), which provide effective information to understand how people feel about their material conditions or their social perceptions (Eckersley 2009; Garner and De Vos 1995). Although purchasing power is a fair proxy for people's welfare, there are concepts that go beyond the possession of income or goods. For instance, poor populations can present different levels of income sufficiency which, in addition to the

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family income, depend on the health status of their members and on the access to different kinds of social benefits, such as school meals or basic food basket (Hagenaars and De Vos 1988; Hoffmann 2008).

SWB can be accessed through diverse self-reported questions, for instance: asking family heads what they consider as minimal income level for their own family, or asking directly about the level of contentment with his/her life (Diener 1984; Goedhart et al. 1977; Veenhoven 1993). Since subjective evaluations depend largely on income and material living, there is a strict relation between subjective and objective indicators of wellbeing, such as health, comfort or wealth (Easterlin 2001). Moreover, SWB include a global assessment of other aspects of social life, such as feelings of joy, pleasure, contentment and life satisfaction (Diener and Suh 1997).

Since people are free to define wellbeing in their own terms, SWB can be strongly influenced by considerations of what each person believes to be a desirable standard of living. Since the prominent study of Easterlin (1974), researchers have been looking for evidence that reported wellbeing depends both on own and on relative income, this means, on income relative to others (see, for instance, D'Ambrosio and Frick 2007; Bechetti et al. 2011; Luttmer 2005). In general, evidence depends mainly on the period of analysis, on the groups of analysis—between or within nations—, as well as on strategies of analysis (Hagerty and Veenhoven 2003).

This paper provides new and important elements to understand how an individual's perception of wellbeing may be affected by relative factors. Specifically, three main contributions of these analyses may be emphasized. First, the study uses a more comprehensive measure of SWB, the self-reported perception of income sufficiency, and compares its results with a “less subjective” condition of wellbeing, the self-reported perception of food sufficiency. Second, the paper highlights that living in a more affluent neighborhood does matter in self-reported perceptions of wellbeing. Third, since differences between absolute and relative income are strictly related to inequality, the paper also highlights how SWB is negatively related to inequality.

2 The Relativity of Subjective Wellbeing

One of the main advantages of self-reported measures of wellbeing is that they incorporate both objective and subjective perceptions of wellbeing, without explicitly needing an objective diagnosis of the family standard of living (Veenhoven 1993). Moreover, SWB indicators may also be used as a proxy for quality of life, since they encompass not only objective domains of standard of living (such as health, comfort or wealth), but they are also related to how people feel about their own lives and, in a narrower sense, to subjective perception about their objective living conditions (Diener and Suh 1997).

Furthermore, some incongruity between objective and subjective wellbeing indicators may arise when people suffering substantial material deprivation do not necessarily report lower satisfaction with their lives. Differences due to the subjectivity of self-reported wellbeing can be grouped into *adaptive aspirations* and *relative income perceptions* (Diener 1984).

Adaptive aspirations arise when a subjective evaluation of wellbeing is influenced by the expectations, goals and aspirations that each person judges to be reasonable. Because the reported satisfaction with specific domain of life undoubtedly depends on the culture and the way one's life is structured, individuals tend to make comparisons based on their personal consumption experiences (Diener 1984). Thus, people with similar material

conditions may have different perceptions of wellbeing depending on their life cycle or aspirations when compared to the standards they deem as ideal.

In turn, relative income perception means that the subjective evaluation of people about their income also depends on their relative position within a social group of reference (Easterlin 2001). Usually people compare their income and consumption with other members of the same social group. The greater the extent and complexity of a social group's needs, the greater the income and consumption to ensure a living condition considered normal for its members.

For a long time, the relationship between relative income and SWB has attracted the attention. Easterlin (1974) provided evidence that within countries self-reported wellbeing and income are directly related, although this positive relation is uncertain in comparisons among countries at a given time or in a given country over time. According to Easterlin, when people are judging wellbeing they tend to compare their actual situation with a reference standard or norm, which vary among social groups and, especially, between countries. What is more, reported wellbeing advances over time with the individual's economic condition. Among other studies, Luttmer (2005) controlled individual characteristics and showed that high earnings of neighbors are associated with low levels of self-reported wellbeing. McBride (2001) also used micro data to find evidence that relative income does matter in individual assessments of SWB, although there is indication that these effects may be smaller at lower income levels.

Since the concept of inequality is related to differences between absolute and relative incomes, high levels of regional inequality would also reduce SWB. Alesina et al. (2004), for instance, found evidence that individuals, especially Europeans, have a lower tendency to report positive wellbeing when inequality within their countries is high. Glaeser et al. (2008) presented similar findings analyzing differences between countries and suggest that, among other hypotheses, the existence of high levels of envy in more unequal regions may reduce stated wellbeing. Moreover, inequality may also define different socioeconomic contexts, such as the level of social exclusion, economic deprivation, health diseases and crimes, variables that are directly related to SWB (Ehrlich 1973; Wilkinson and Pickett 2009).

3 Materials and Methods

3.1 Data Source

Results of this study are based on pooled data of the Brazilian Family Budget Survey (POF, an acronym for *Pesquisa de Orçamentos Familiares*) 2002/2003 and 2008/2009 (IBGE 2002, 2008). The survey samples households in all the 27 Brazilian Federal Units (FUs). The first stage of the POF sampling involves dividing the FUs into primary sample units (PSUs), a group of households with similar characteristics of income and education. PSUs are selected based on a systemic sampling, with probabilities proportional to the number of households. In the second stage, a sample of households within the sample PSUs is randomly selected. In 2002/2003, the sample contained 3,984 PSU and 48,470 households. In 2008/2009, there were 4,696 PSU and 55,970 households. Each household contains one or more families. There were 48,568 families sampled in 2002/2003 and 56,901 in 2008/2009. This paper uses both information of the families and the average values of income and education of their respective PSUs. The reference period of this information is January

2003 and January 2009 and monetary values are expressed in constant Reais (R\$) of January 2009.¹

One of the advantages of POF in comparison to other Brazilian household surveys is that it considers both monetary and non-monetary values of income, such as imputed rents, self-consumption production and employee benefits. Moreover, POF also provides valuable information to analyze self-perceived standards of living, such as the degree of income and food sufficiency. The questions used in this study are:

Income sufficiency: *in your opinion, your total family income allows you to sustain your life until the end of the month with: 1) great difficulty, 2) difficulty, 3) some difficulty, 4) some ease, 5) ease or 6) great ease;*

Food sufficiency: *from the following statements, which one best describes the quantity of food consumed by your family: 1) usually not enough, 2) sometimes enough, 3) always enough;*

3.2 Empirical Strategy

The response variable Y was measured on a scale of six categories for income sufficiency, ranging from great difficulty (1) to great ease (6), and of three categories for food sufficiency, ranging from usually not enough (1) to always enough (3). The relation between response variables and their socioeconomic determinants were analyzed using ordered logistic models (OLM). The model for the cumulative probability function (*logit*) in the OLM is (SAS 2011):

$$\text{logit}(\Pr(Y \leq j)) = \log\left(\frac{\Pr(Y \leq j)}{1 - \Pr(Y \leq j)}\right) = \alpha_j + \beta' \mathbf{x} + \varepsilon, \quad j = 2, \dots, k \quad (1)$$

where k is the number of ordinal categories, \mathbf{x} is the vector of explanatory variables and ε is the idiosyncratic error. This model assumes that the odds of the event j are independent of the category j , this means, the odds are assumed to be constant for all categories. Therefore, the slopes in β' will be the same for all categories. In turn, the intercepts α_j will be different for each *logit*, since predicted cumulative probabilities are different for each set of values \mathbf{x} .

To determine whether income or food sufficiency (Y) depend both on absolute and relative concerns, the *logit* was adjusted as a function of families' socioeconomic characteristics (hereby represented by vector \mathbf{x}) and three regional characteristics: (i) the natural logarithmic of the monthly per capita income in the PSU where the family lives ($R1$); (ii) the share of family heads with secondary education diploma in the respective PSU ($R2$); and (iii) the Gini coefficient of inequality in the FU where the family lives ($R3$). Moreover, fixed effects δ controlled temporal heterogeneities. The model can be represented by:

$$\text{logit}(\Pr(Y_{isft} \leq j)) = \alpha_j + \beta' \mathbf{x}_{isft} + \phi R1_{sft} + \phi R2_{sft} + \gamma R3_{ft} + \delta_t + \varepsilon_{ifst} \quad (2)$$

where i indexes families, f indexes FUs, s indexes PSUs and t indexes the period. Table 1 presents the whole set of families' explanatory factors \mathbf{x} and their respective average values. Similar description is presented for regional variables ($R1$, $R2$ e $R3$) in Table 2.

¹ Monetary values were deflated using the National Consumer Price Index (INPC). From January 2003 to 2009, the cumulative inflation measured by INPC was 39.1 % (values obtained from IPEADATA website. Available at: <<http://www.ipeadata.com.br>>. Access in: November 2010).

Table 1 Average values are in monthly R\$ for Income and in proportion for the further variables

Variable	Description	2002/ 2003	2008/ 2009
Income	Natural logarithmic of the monthly per capita family income	697	841
Main source of income			
Employer	1 when the higher income in the family comes from an employer; 0 otherwise	0.04	0.03
Non agricultural	<i>Reference of analysis</i> —when it comes from a non-agricultural worker (employee)	0.39	0.39
Domestic worker	1 when it comes from a person hired as paid domestic worker; 0 otherwise	0.03	0.03
Agricultural	1 when it comes from an agricultural worker (employee); 0 otherwise	0.03	0.02
Self-employment	1 when it comes from a self-employed; 0 otherwise	0.23	0.20
Retirement	1 when it comes from a retired person; 0 otherwise	0.18	0.20
Cash transfer	1 when it comes from a beneficiary of cash transfer programs; 0 otherwise	0.01	0.03
Other sources	1 when it comes from other sources; 0 otherwise	0.11	0.10
Woman	1 when the family head is a woman; 0 for man	0.23	0.28
Education	1 when family head has secondary education diploma; 0 otherwise	0.17	0.33
Age	Decades of age of the family head	4.5	4.7
Color or race			
White	<i>Reference of analysis</i> —when family head is white	0.50	0.46
Asian	1 when family head is Asian; 0 otherwise	0.01	0.01
Black	1 when family head is black; 0 otherwise	0.09	0.09
Brown	1 when family head is brown; 0 otherwise	0.41	0.44
Indian	1 when family head is Indian; 0 otherwise	0.004	0.01
Family status			
Single	1 when family has only one member; 0 otherwise	0.03	0.04
Couple—children	<i>Reference of analysis</i> —when it is a couple with children	0.54	0.56
Couple—no children	1 when it is a couple with no children; 0 otherwise	0.06	0.09
Mother—children	1 when it is a mother with children; 0 otherwise	0.07	0.10
Others	1 when it is another type of family; 0 otherwise	0.30	0.21
Piped water	1 when household has piped water; 0 otherwise	0.86	0.92
Sewage	1 when household has piped sewage; 0 otherwise	0.63	0.67
Pavement	1 when street is paved; 0 otherwise	0.60	0.67
Rural	1 when family lives in a rural area; 0 otherwise	0.17	0.17

Source microdata from POF/IBGE

The hypothesis under analysis is that SWB depend positively on absolute income (*Income*) and negatively on relative income (*PSU Income*). Since differences between absolute and relative incomes are directly related to regional inequality, the level of inequality in the FU (*FU Gini*) may also be negatively related to SWB. Moreover, the share of family heads with secondary education diploma in the PSU (*PSU Education*) would be a fair proxy for the social conditions in the neighborhood and, thus, would be positively related to SWB.

Table 2 Description and average values for regional variables

Variable	Description	2002/2003	2008/2009
PSU income	Natural logarithmic of the monthly per capita income in the PSU where the family lives	697	841
PSU education	The share of family heads with secondary education diploma in the PSU where the family lives	0.17	0.33
FU Gini	Gini coefficient of inequality in the FU where the family lives	0.59	0.55

Source microdata from POF/IBGE

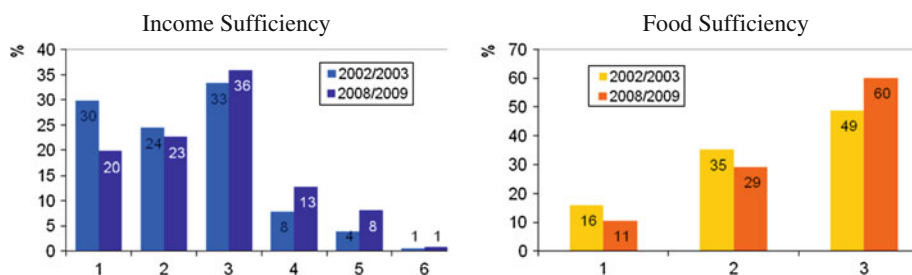


Fig. 1 Percentage of persons (%) according to levels of income and food sufficiency—Brazil 2002/2003 and 2008/2009. Source: microdata from POF/IBGE

4 Results

4.1 Descriptive Analyses

The levels of income insufficiency in Brazil are extreme, even considering the substantial reduction in the 2000s. In 2009, about 147 million people (78 %) had at least some income difficulty (levels 1, 2 or 3) and 37 million (20 %) reported extreme difficulty (level 1) to live with their family income (Fig. 1). As might be expected, food insufficiency rates are less severe than the income insufficiency, which indicates that people prioritize the consumption of food in comparison to other items of consumption. In 2009, 20 million people (11 %) reported that the quantity of food consumed was usually not enough.

The reduction of the reported perceptions of income and food insufficiency was more intense among the most severe levels of insufficiency, which would reflect a faster income growth of the poorest families due to the expansion of the cash transfer programs in Brazil (Medeiros et al. 2007). For instance, the number of people with extreme difficulty to live on their family incomes reduced by 40 % between 2003 and 2009. Moreover, the number of people whose quantity of food is usually not enough reduced by 38 %.

The income insufficiency is expressive even for people with relatively high incomes (Fig. 2). For instance, 37 % of those with monthly per capita income between 2,750 and 3,000 Reais reported some income difficulty in 2009.² Besides family socioeconomic constraints, relative income perception may also influence this result: the greater the extent and complexity of a group's needs, the higher the amount of income and expenditures

² These incomes are relatively high in Brazil. In 2009, <5 % of the Brazilian population had a monthly per capita income higher than 2,750 Reais.

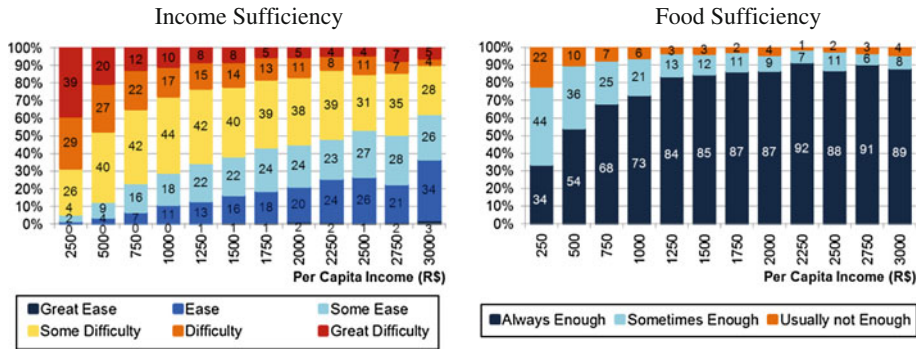


Fig. 2 Percentage of persons (%) according to groups of monthly per capita income and income and food sufficiency (*Horizontal axis* represents upper bound of groups of monthly per capita income)—Brazil 2008/2009. *Source:* microdata from POF/IBGE

required to ensure a regular perception of wellbeing. Thus, there would be a limit for an objective evaluation of wellbeing, beyond which people would be more guided by relative perceptions.

Almost 100 % of those with a monthly per capita income lower than 250 Reais reported income insufficiency, which reflects the hardships imposed by the extreme budget constraints of these families. Moreover, the income sufficiency increases sharply for the initial variation in the per capita income. As suggested in other studies, increasing income confers considerable benefits at low income levels, but little benefits at high income levels (Diener and Diener 1995).

Self-perceptions of food sufficiency seem to be less sensitive to the subjectivity: the rates of food insufficiency for high earners are substantially lower than the income insufficiency. Nevertheless, food insufficiency is not insignificant for relatively high earners, since high earnings do not necessarily assure the sufficiency of food. For instance, close to 10 % of those with monthly per capita income higher than 2,000 Reais reported at least some food difficulty. Health and socioeconomic conditions, for example, may impose additional hardships to the budgets of these families.

4.2 The Determinants of Income and Food Sufficiency

Table 3 presents maximum likelihood estimates for the ordered logistic models (Eq. 2). Overall, goodness of fit measures suggest reasonable adjustments, with likelihood ratios significant at 0.01 % and adjusted R^2 higher than 0.24 for both response variables (income and food sufficiency). Since the ordered logistic model assumes that the relationship between each pair of outcome groups is the same (for instance, the highest versus all lower categories of the response variable), there is only one set of estimates of regression slopes. The exceptions are the intercepts, which represent different values of each logit after holding constant independent variables. Since the highest level of insufficiency is used as reference (“great difficulty” for income and “usually not enough” for food sufficiency), positive coefficients mean that an increase in the predictor tends to increase the odds of not having difficulty versus having difficulty, i.e., tend to increase the *propensity to sufficiency*.

First of all, results highlight that absolute income plays an important role in increasing SWB, since variable *Income* is positively related to income and food sufficiency. For

Table 3 Maximum likelihood estimates of the ordered logistic regression for income and food sufficiency—Brazil 2002/2003 and 2008/2009

Variable	Income sufficiency			Food sufficiency		
	Estimate	CI (95 %)		Estimate	CI (95 %)	
Intercept—6	−7.474	−7.786	−7.163	—	—	—
Intercept—5	−5.020	−5.323	−4.716	—	—	—
Intercept—4	−3.819	−4.122	−3.517	—	—	—
Intercept—3	−1.808	−2.110	−1.506	−2.747	−3.095	−2.400
Intercept—2	−0.528	−0.830	−0.227	−0.723	−1.070	−0.376
<i>Family characteristics</i>						
Income	0.942	0.924	0.960	0.787	0.767	0.807
Main source of income						
Employer	0.324	0.259	0.390	0.600	0.504	0.697
Domestic worker	−0.167	−0.237	−0.097	−0.044	−0.117	0.030
Agricultural	−0.126	−0.212	−0.041	−0.237	−0.322	−0.152
Self-employment	0.023	−0.009	0.054	0.171	0.136	0.206
Retirement	0.032	−0.010	0.074	0.034	−0.013	0.082
Cash transfer	−0.288	−0.386	−0.189	−0.149	−0.246	−0.052
Other sources	−0.068	−0.109	−0.028	0.105	0.059	0.151
Woman	−0.152	−0.187	−0.118	−0.114	−0.153	−0.075
Education	0.165	0.133	0.198	0.233	0.194	0.272
Age	−0.603	−0.648	−0.558	−0.296	−0.347	−0.245
Age ²	0.049	0.044	0.053	0.025	0.019	0.030
Color or race						
Asian	−0.013	−0.166	0.141	−0.245	−0.437	−0.053
Black	−0.361	−0.403	−0.318	−0.450	−0.495	−0.404
Brown	−0.138	−0.164	−0.112	−0.269	−0.298	−0.240
Indian	−0.179	−0.350	−0.008	−0.787	−0.966	−0.608
Family status						
Single	−0.325	−0.393	−0.258	−0.140	−0.223	−0.058
Couple—no children	−0.062	−0.107	−0.017	0.045	−0.011	0.101
Mother—children	−0.275	−0.326	−0.224	−0.201	−0.256	−0.146
Others	−0.040	−0.070	−0.010	−0.132	−0.164	−0.099
Piped water	0.332	0.287	0.376	0.317	0.272	0.363
Sewage	0.088	0.058	0.117	0.020	−0.012	0.051
Pavement	0.027	−0.002	0.057	0.020	−0.012	0.052
Rural	0.375	0.337	0.414	0.361	0.319	0.402
<i>Regional characteristics</i>						
PSU income	−0.158	−0.184	−0.132	0.043	0.013	0.073
PSU education	0.149	0.073	0.224	0.222	0.132	0.312
FU Gini	−2.394	−2.823	−1.964	−2.673	−3.158	−2.188
Fixed effect—2002	−0.336	−0.366	−0.306	−0.160	−0.193	−0.127

Source microdata from POF/IBGE

instance, for a 1 % increase in the monthly per capita family income, the propensity to income sufficiency is expected to increase 0.94 % and the propensity to food sufficiency is expected to increase 0.79 %.

Moreover, binary variables associated with the sources of income also determine significant differences in the levels of SWB. These variables can reflect different patterns of life and social conditions that families are submitted to. First of all, results suggest that families headed by employers present a higher propensity to income sufficiency, holding constant other explanatory factors. On the other hand, families related to vulnerable sources of income, such as paid domestic workers and beneficiaries of cash transfers are less likely to declare income sufficiency.

Other social characteristics are also important to determine the propensity to income and food sufficiency. For example, families headed by women, black, brown and Indian people tend to be more affected by income and food insufficiency. On the other hand, the secondary education diploma of the family head increases significantly the propensity to income and food sufficiency. Moreover, couples with children are also more likely to declare income and food sufficiency.

The effect of age on income and food sufficiency was measured using two variables: *Age* and *Age*² (Age-squared). The assumption under analysis is that there is a quadratic relation between age and sufficiency, in other words, opposite trends of variation of income and food sufficiency for different stages of aging. In fact, the negative estimates of *Age* and positive estimates of *Age*² suggest a U-shaped relationship between age and propensity to sufficiency. A comprehensive figure of this relationship is given in “Appendix”. Results suggest that propensity to income and food sufficiency tends to reduce as family heads move through adulthood, holding constant other socioeconomic characteristics. On the other hand, old-age heads tend to be more satisfied with their income and food than adult heads. According to Diener and Suh (1998), older persons may present higher levels of life satisfaction even when their objective circumstances are equivalent to those of younger counterparts, since they may lower their level of aspirations and standards as they age.

Household characteristics, such as access to basic items of infrastructure, also contribute significantly to increase income and food sufficiency, especially access to piped water. Moreover, rural residents are more likely to declare income sufficiency than urban residents, independent of other socioeconomic characteristics. In other words, people with similar socioeconomic characteristics are more likely to be satisfied with their income or food in the rural than in the urban areas. Different standards of living may contribute to explain this result, for example, due to the greater needs of a family in the urban areas.

Moreover, the fixed effects controlling temporal heterogeneities show that there was a substantial increase in the stated income and food sufficiency between 2003 and 2009, holding constant explanatory factors. These reductions would be related both to changes in unobserved socioeconomic characteristics, such as access to credit or economic stability, or changes in the general perception of wellbeing.

But the most important results refer to the coefficients of regional characteristics, which estimate the effect of relative income (*PSU Income*), education (*PSU Education*) and regional inequality (*FU Gini*) on income and food sufficiency. First, results highlight the negative relation between *PSU Income* and propensity to income sufficiency. In other words, the richer the neighborhood, the lower the propensity to report income sufficiency. People living in richer areas tend to be less satisfied with their absolute per capita income, since they tend to compare their income with richer counterparts of the same neighborhood. In turn, the positive relation between *PSU Income* and food sufficiency suggests that the concept of relative income perception does not apply to this specific measure of wellbeing.

Families with similar socioeconomic characteristics are also less likely to declare income sufficiency in more unequal localities. Inequality is directly related to differences between absolute and relative income, as well as other kinds of socioeconomic deprivation that reduce the feeling of wellbeing and, thus, propensity to income sufficiency. Inequality is also negatively related to food sufficiency, which may reflect the fact that basic needs are higher in more unequal areas, reducing income available for food consumption and, consequently, propensity to food sufficiency.

Finally, *PSU Education* is positively related to the propensity to income and food sufficiency. This result suggests that people living in areas with higher levels of educational attainment are more likely to declare income or food sufficiency. Educational attainment affects both socioeconomic development and socio-cultural habits, impacting on material needs, aspirations and, probably, on different expectations of the life that people deem as ideal.

5 Discussion

One of the main advantages of the subjective indicators is that they allow us to assess both objective and subjective concepts of how people feel about their living conditions. The income sufficiency, for example, depends not only on objective concepts of current income, but also on the access to a range of social benefits, such as basic food basket, or even differences in lifestyles, such as production for own consumption. Similarly, concepts of wellbeing become more complex as essential needs are fulfilled, when factors such as violence, transportation and social inequality begin to weigh.

Self-reported sufficiency showed strong relations to the main family socioeconomic characteristics. Some relations reveal objective perceptions of wellbeing, such as current income or household infrastructure. Other relations may be more associated with subjective perceptions, such as different standards of rural or urban living. Differences between urban and rural populations may provide relevant information to analyze the effects of adaptive aspirations and expectations on reported SWB. Although the percentage of people with insufficiency is substantially higher in the rural areas, people with similar socioeconomic characteristics are more likely to be satisfied with their life in rural areas. Among the poorest people, for example, the needs of urban residents go beyond food consumption, involving concerns such as transportation, violence and drug traffic. Moreover, adaptive aspirations, rooted in the different standards of living that these groups are submitted to, also play important roles in determining a higher level of insufficiency in the urban areas.

Holding constant family socioeconomic characteristics, neighborhood income negatively affects self-reported perceptions of income sufficiency. In other words, family members with equivalent incomes are less likely to report income sufficiency in high income neighborhoods. First, income sufficiency depends on both absolute and on relative income. Thus, if absolute income does not change, either low income or high income groups tend to be in a worse relative position in richer areas and, consequently, they will report higher dissatisfaction with the income they have. Second, income and aspirations tend to go together in the space. Concepts of wellbeing are more complex in more developed regions, considering both higher levels of living, which imply higher personal consumption expenditures, as well as additional social problems that may arise in more developed regions, such as violence, traffic jams, drug traffic and residence in slums.

Similarly, inequality is negatively related to income sufficiency, as well as to food sufficiency. Inequality reflects differences between absolute and relative income and is

directly related to socioeconomic deprivation. As inequality grows and the high earning population consume more with non-essential items, the desire for such things increases in the rest of the population and they tend to be less satisfied with what they have. Moreover, since inequality also reveals a positive relation with a series of social problems, such as bad health care and violence, it tends also to increase social needs and to reduce the feeling of joy.

In turn, the positive relation between the stated perception of sufficiency and educational attainment in the PSU suggest that the social benefits of education spread throughout the neighborhood. Education improves socioeconomic conditions, modifies cultural behavior and may affect the individual's material aspirations, since it changes the person's social group of reference. The positive effects in the neighborhood may go beyond better life conditions, also improving feelings of joy, pleasure and contentment in the community.

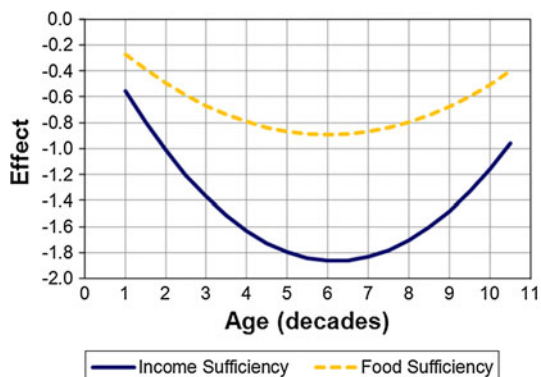
6 Conclusions

Subjective indicators of wellbeing provide additional and important elements to improve socioeconomic analyses and to orientate policies to reduce poverty and inequality. Undoubtedly, public policies must prioritize the provision of basic needs for the population, especially those related to social infrastructure and public goods that determine the quality of life in contemporary societies. Once basic deficiencies are fulfilled, government policies would be more concerned with the factors that most effectively affect SWB, such as equality and education.

In Brazil, for instance, the distribution of self-reported measures of income and food sufficiency highlights huge levels of exclusion and inequality of its population. There is still a long way to go in order to overcome the critical scenario of insufficiency in Brazil. Nevertheless, socioeconomic dynamics in the first decade of the twenty-first century showed that it is possible to harmonize economic growth, reduction of inequality and improvement of education, essential factors to improve the quality of life and the general perceptions of wellbeing in society.

Appendix

Fig. 3 Relation between age (decades) and the total estimated effect on propensity to income and food sufficiency. The regression lines are based on the following equation: *effect (income sufficiency)* = *Age* (−0.603) + *Age*² (0.049); *effect (food sufficiency)* = *Age* (−0.296) + *Age*² (0.025)



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