

Evolution of poverty analysis through census data in Brazil (1950-2010)

Pier Francesco De Maria

TITULAÇÃO: Bacharel em Ciências Econômicas, Mestre e Doutor em Demografia – UNICAMP

FILIAÇÃO: Escola Superior de Administração, Marketing e Comunicação – ESAMC/Campinas

OCUPAÇÃO: Professor de graduação nas disciplinas de Estatística e Economia

E-MAIL PARA CORRESPONDÊNCIA: dpierf@gmail.com

TELEFONE DE CONTATO: (19) 99120-0392

Evolution of poverty analysis through census data in Brazil (1950-2010)

ABSTRACT

There are no doubts concerning the evolution of counting and registering population in Brazil since the second half of the 20th century. Since 1940, decennially (with exception of 1991), a census that covers all the country is carried out, with the aim of updating data and knowing more about the population and its behavior. However, several problems arise when the interest is analyzing and discussing the characteristics and evolution of poverty, which are related to a trade-off between data availability and measure feasibility. The purpose of this paper is to understand, between 1950 and 2010, how much we have evolved, what and where we still must improve, and which are the current limitations of poverty analysis using census data. To perform this study, the census questionnaires since 1950 are deeply evaluated, combining its analysis with a brief discussion about feasible poverty techniques associated to a simple application example. The whole analysis is intended to show how census data collection have evolved and followed the evolution of poverty though and measurement. However, we conclude that we must improve a lot to have comprehensive data that allow us to measure poverty as a multidimensional not-only-objective phenomenon.

Keywords: Poverty analysis; Brazilian census data; Poverty and Demography

Evolución del análisis de pobreza con datos censales en Brasil (1950-2010)

RESUMEN

No hay dudas sobre la evolución del conteo y del registro de la población en Brasil desde la segunda mitad del siglo XX. Desde 1940, cada diez años (con excepción de 1991), se lleva a cabo un censo que abarca todo el país, con el objetivo de actualizar los datos y conocer más sobre la población y su comportamiento. Sin embargo, surgen varios problemas cuando el interés es analizar y discutir las características y la evolución de la pobreza, que están relacionadas con un *trade-off* entre la disponibilidad de los datos y la factibilidad de su mensuración. El propósito de este artículo es comprender, entre 1950 y 2010, cuánto hemos evolucionado, qué debemos mejorar y dónde debemos mejorar, y cuáles son las limitaciones actuales del análisis de la pobreza a partir de los datos censales.

Para realizar este estudio, se evalúan profundamente los cuestionarios del censo desde 1950, combinando su análisis con una breve discusión sobre las técnicas de pobreza factibles, bien como un simple ejemplo de aplicación. Todo el análisis pretende mostrar cómo la recopilación de datos del censo ha evolucionado y seguido la evolución de las formas de pensamiento y medición de la pobreza. Sin embargo, concluimos que debemos mejorar mucho para tener datos completos que nos permitan medir la pobreza como un fenómeno multidimensional, no solo objetivo.

Palabras-clave: Análisis de pobreza; Datos censales brasileños; Pobreza y Demografía

1. INTRODUCTION

There are no doubts concerning the evolution of counting and registering population in Brazil since the second quarter of the 20th century. Since 1940, decennially (with exception of 1991), a census that covers all the country is carried out, with the aim of updating information and knowing better the population and its behavior. Systematically, the census' questionnaire has been improved, investigating even more issues about who lives in Brazil. Data about sociodemographic, social and economic dimensions seem to give more and more information to demographers, economists and social scientists upon an increasingly complex society. This analysis appears to be clear when one studies household characteristics, demographics trends or issues about working conditions and labor market; data about those themes are clearly investigated when a census is carried out.

However, some kinds of problems arise when the interest is analyzing and discussing the characteristics and evolution of poverty. These problems are related to a counterfactual trade-off between data availability and measure feasibility. First, the concept of poverty is so wide and fuzzy that, making use of quantitative tools, only indirect estimates are available. Secondly, if we could clearly define poverty, maybe we would never have had data for measuring this phenomenon. Lastly, but not the least, the use of qualitative techniques could give us more precise clues about the issue, though increasing the degree of fuzziness around the concept of poverty.

In order to discuss and analyze issues about measuring and discussing poverty with census data, this paper aims to achieve three objectives. First, to evaluate the development of Brazilian census since 1950 and discuss the evolution of poverty thought and poverty analysis over the world, since the 1850s. Second, to describe, since 1950, which data could be used in order to quantify poverty and how the enhancement of census' questionnaires improved poverty analysis. Third and last, to analyze, considering the evolution of counting and registering population in Brazil, how demographic data can be used in order to optimize researches on poverty.

The main purpose of this paper is to understand, between 1950 and 2010, how much we have evolved, what and where we still have to improve, and which are the current and major limitations of poverty analysis using census data. In order to meet the goals of this research, we combine a technical study, concerning the development of census since 1950, with a theoretical discussion about the evolution of poverty. Moreover, an empirical sample analysis is carried out, using Brazilian censuses since 1970 to 2010, with the construction of an objective poverty index with available data.

This paper is divided into five sections, including this introduction. In Section 2, we discuss about the evolution of poverty thought and analysis in the last 160 years. Among Sections 3 and 4, we perform a widespread analysis about poverty measurement and possibilities of interaction with demographic data. Lastly, the combination of the theoretical and technical review (in Sections 2 and 3) with the empirical research (in Section 4) makes possible a critical analysis, in section 5, about the evolution and the new limits of poverty analysis with census data.

2. EVOLUTION OF POVERTY THOUGHT AND ANALYSIS

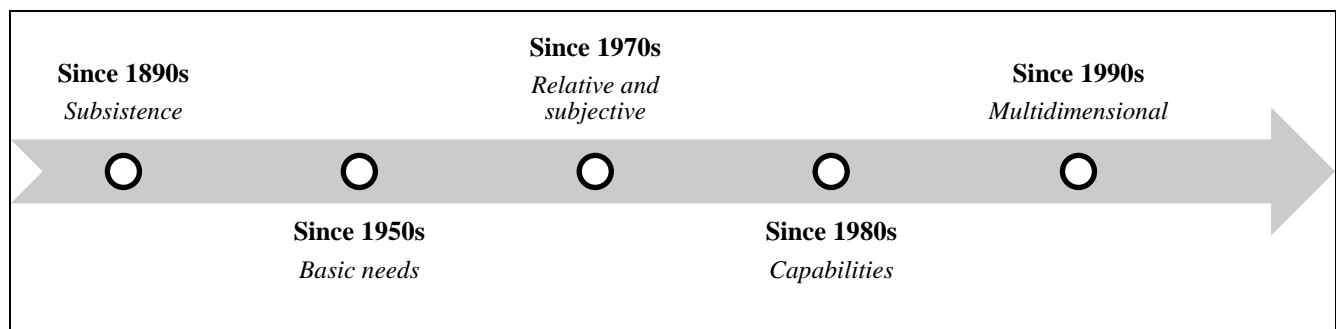
The discussion about the concepts and possible measurements of poverty is one of the main problems of the modern societies, at least since the advent of capitalism (CARNEY, 1992). Since the earlier development of the capitalist mode of production (17th century), local communities (specifically the parishes) had the responsibility of taking care of the poor and implement local policies in order to restrict and reduce poverty (CODES, 2005). Even though poverty has been a human phenomenon that always existed, capitalism made this fact a social problem; thus, local solutions became palliatives that could not be used nationwide. The evolution and development of capitalism amplified both poverty and the poverty problem (CASTEL, 1998).

The expansion of poverty is a result of the mass work allocation in each sphere of the production system. Therefore, the social division of labor transformed poverty into a systemic and definitive problem: on one hand, capitalism cannot survive without spreading poverty and inequality; on the other hand, poverty is an inherent force in order to expand the capitalist mode of production (CODES, 2005; MARIA, 2013). When capitalism took off, however, poverty could not be more a problem solved by local communities or with specific solutions, becoming a socialized problem (MESTRUM, 2002). The former discussion about the phenomenon, the first attempts to measure poverty and classify people as poor and non-poor and earlier studies and researches date back to this time (CODES, 2005).

As we can infer from Townsend (1993), the evolution of the scientific thought on poverty can be divided into five periods, each one with a specific approach to the problem. These eras are shown below (Figure 1), considering the period between the 19th and the 21st centuries (when substantial approaches were developed). An evident and vigorous process of theoretical and empirical maturation permeates the evolution of poverty analysis and thought, accompanying the numerous metamorphoses of capitalism and its mode of production (HARRIS-WHITE, 2006). Since the pre-Industrial era (when poverty was synonym of vagrancy) until today, when poverty is perceived as a complex system (WILBER, 1975), many approaches to the phenomenon were developed, discussed, improved and, somehow, discarded.

In order to construct a comprehensive analysis of poverty thought through the centuries, and also with the aim to understand how a more complex dynamic to the phenomenon can be deployed, the five approaches above will be developed in this section. As Figure 1 suggests, the degree of complexity in poverty analysis increases when one goes further than analyzing strictly income. This evolution is implicitly associated to the increasingly availability and complexity of data about people, household and families (McCAA; RUGGLES, 2002); these data are generally provided with the completion of a census or a survey.

FIGURE 1: The evolution of approaches on poverty thought and analysis



Source: Elaboration of the author using Townsend (1993) and Codes (2005).

Such sources of data became more popular since the 1950s (McCAA; RUGGLES, 2002; RUGGLES, 2014): in Brazil, the first official and nationwide census was carried out in 1872, near the end of monarchy (HAKKERT, 1996). Before that, information about births, deaths and marriages were available by Catholic Church, with the local registering made by the parishes and which data demographers analyze today (IBGE, 2003). The evolution of these approaches on poverty thought and

analysis has a common denominator, which is the main role of the State; it defines the strategies and public policies to fight against poverty and to give its population better life conditions (MARIA, 2013).

The first approach to be discussed is the “lack of subsistence”, which states that a family is poor if its survivorship cannot be granted with the total income earned by its members (TOWNSEND, 1993). This view is still strictly related a previous one – which defines poor as a tramp, because he did not want to work –, since if someone is poor, he does not work the minimum to earn a wage that can provide him a decent survival (MARIA, 2013). Moreover, this approach inherits from the Poor Laws the idea that a non-poor condition is related to some quantities of food (CODES, 2005)¹.

The subsistence approach, historically important and (even today) one of the main guidelines for public policies against poverty (ORSHANSKY *et al.*, 1978; ORSHANSKY, 1969), had two phases (CODES, 2005). The first one, between the end of the 19th century and the 1940s, involves strictly budget constraints that difficult the survival of the whole family, perceived as a “primary poverty” (ROWNTREE, 1901; GUSTAFSSON, 1995). The second one, since the end of WWII and developed in the United Kingdom (see BEVERIDGE, 1942), that covers a broader (even restricted) range of items – generically defined as “social cohesion” (CODES, 2005, p. 11) – in order to maintain the freedom by granting the full employment.

This approach became the basis for indices and strategies of poverty measurement (TOWNSEND, 1993). Methodologies developed over this outline are intended as the absolute (or, alternatively, objective) poverty approach (ROCHA, 2007; DREWNOWSKI, 1977), because involves “having less than an objectively defined, absolute minimum” (HAGENAARS; DE VOS, 1988, p. 212). However, as Townsend (1993) emphasized, this approach does not consider the availability of infrastructures and the social insertion of people. As an alternative, emerged the basic needs approach (STREETEN, 1984), developed between the 1950s and the 1960s (DREWNOSKI; SCOTT, 1966) and associated to the main idea of progress related to the satisfaction of these needs (CODES, 2005; BAGOLIN; ÁVILA, 2006).

Although it became more important in the 1970s, this stream advocates that there is a “principle of indivisibility” between poverty and life quality, being these two sides of the same coin (DREWNOWSKI; SCOTT, 1966). The basic needs approach is based on two groups of necessities: those

¹ From this idea, the Decree n. 399 defines, in Brazil, the minimum wage, its value and what it represents in terms of basic consumptions (BRASIL, 1938).

associated to personal consumption, like clothing, housing and food; and those related to public services, as education, health and transport (ILO, 1976). It is quite simple to verify that, in poverty analysis, this approach is still very close to the subsistence one (CODES, 2005), especially for the first group (personal consumption), because one must earn enough money to satisfy those needs.

However, this approach has several advantages compared to the subsistence one, because relates poverty with the issue of resources allocation (CODES, 2005) and the residual social lacks, both to be overcome with social security and an assistance network (SALAMA; DESTREMAU, 2001). Although the limitations of applying the basic needs approach as conceived at its origin, due to the high degree of arbitrariness concerning the choice of needs (TOWNSEND, 1993), adaptations have been made and applied, like the Unsatisfied Basic Needs approach (FERES; MANCERO, 2001; KAZTMAN, 1995)

This newer approach (still related to the subsistence idea) provides, intrinsically and with methodological limitations, the basis for further and more complex perspectives of subjectivity, relativity and multidimensionality of poverty. The basic needs approach shed light on the interdependence between poverty and the social and institutional structures (TOWNSEND, 1993). This is the first step to comprehend the complex network of relations involving the human being – at the micro level – and institutions – at the macro level (STREETEN *et al.*, 1981). However, basic needs approach faces three main issues: (1) the problems concerning the items selection criteria for analyses; (2) the impossibility of using an absolute specification for poverty measurement, considering the characteristics of each society; and (3) the false-idea of universal basic needs, that does not consider the idiosyncrasies of each country and its multiple cultures (CODES, 2005).

One of the main criticisms about the basic needs approach is related to its power of adequately describe and measure poverty in specific subgroups of a population (TOWNSEND, 1993), even this asymptomatic characteristic being associated to a social structure that allows and reproduces poverty (CODES, 2005). Acknowledging the existence of heterogeneity between and within each group allows poverty analysis to evolve into two concomitant approaches: the relative deprivation and the subjective perspective (TOWNSEND, 1993). Considering the relevance of the basic needs approach, since the multidimensional one was not already developed, the relative poverty stands for a situation where one is poor relatively to others in the same population – intended as a group that shares a set of characteristics, like geographical localization, costumes, and so on (DREWNOWSKI, 1977).

Using the relative approach, poverty stands for not having the minimum elements to maintain a dignified life pattern in the society (ROCHA, 1997). This approximation seems to be interesting and more complete, when compared to the previous ones, because considers local (space) and actual (time) characteristics of a society to delimit the poor and what is poverty (OSTER, 1978). However, some problems appear when one attempts to apply some techniques related to this approach. The most important is the availability of information and data that provide a profile about: family and region characteristics; inter and intraregional relations and interactions; and associations between national and regional development. The applicability of this approach depends on empirical evidences that help to define the regional poverty level (SAUNDERS; WHITEFORD, 1989). Moreover, data should be continuously updated to be reliable (MARIA, 2013), once the purpose of this approach is to capture the highly dynamic changes occurring in all modern societies (TOWNSEND, 1993).

The other alternative to the basic needs is the subjective approach. This kind of analysis considers that the opinions of people are relevant to define who is poor or not and how much one is (Ravallion, 1994). Poverty has an intrinsic heterogeneity component, related to different feelings between and within each group of a population, sometimes dissociated from the reality (CODES, 2005). Based on this, the subjective approach stresses that deprivation is an issue specially related to personal view about the phenomenon, being a relevant explanatory variable (SALAMA; DESTREMAU, 2001). Within this approach, people opinion is highly relevant to know which goods and services are important for a specific population (CODES, 2005)².

The notion of that being poor is related to the feeling of not being able to satisfy the commitments arose from the position assumed by a person towards the family and the society. Indeed, this subjectiveness is more related to Anthropology and Sociology than to Economics (SALAMA; DESTREMAU, 2001), due to the difficult of measure the poverty on a subjective basis. Other criticisms about this approach are: (1) poor people are not the best proxy to define themselves as poor (LOK-DESSALLIEN, 2001); (2) direct questions about being poor or not can be answered with false responses or misunderstood, due to offensiveness or humiliation (VAZ; SOARES, 2008). A possible solution is the use of a questionnaire with indirect questions about poverty to create a not-aggressive measure,

² As an example of the development of the subjective approach, see Narayan *et al.* (1999; 2000).

subjectively speaking, which can give us a more precisely definition of poverty by the poor itself (RAVALLION, 2012).

Even poor's opinion not being considered the best proxy, they know better than others about their situation and what defines poverty (MARKS, 2007; NARAYAN *et al.*, 2000). The growth of the poverty subjective approach is significant in the recent decades, related to the clear limitations of the absolute (either "basic needs" or "subsistence") and relative perspectives (TOWNSEND, 1993). However, this evolution should not ignore or omit the other approaches: they are complementary and, when both are well developed (in terms of questionnaires, surveys, measures, indices and so on), the poverty of a region can be better analyzed and discussed (TOWNSEND, 2004). As examples of this development, techniques for subjective poverty analysis were elaborated during the 1980s (DELEEK, 1985; KAPTEYN *et al.*, 1988) and the 1990s (FLIK; VAN PRAAG, 1991).

The last approach to be covered, before entering in the actual discussion of multidimensional poverty, is the capability one (SEN, 1985; 1999). Inheriting, indirectly, some issues from the subsistence, relative and subjective approaches (ALKIRE, 2005a; CLARK, 2005), the view of poverty as a lack of "basic capabilities" (SEN, 1999) is a breakthrough. As a starting point for constructing a broader conception of poverty, Sen (1983) shows that it is important to go beyond the relative view, since:

(...) the approach of relative deprivation – even including all its variants – cannot really be the only basis for the concept of poverty. (...) there is an irreducible core of absolute deprivation in our idea of poverty, which translates reports of starvation, malnutrition and visible hardship into a diagnosis of poverty without having to ascertain first the relative picture. Thus, the approach of relative deprivation supplements rather than supplants the analysis of poverty in terms of absolute dispossession. (SEN, 1983, p. 17)

It is not only to have or not that is relevant, but rather the fact that access to fundamental goods and services may be limited, restricted or even inexistent, depending on the analyzed locality and/or society (CLARK, 2005). Some relevant questions about what the approach to capabilities means are exposed by Amartya Sen:

(1) Poverty can be sensibly identified in terms of capability deprivation; the approach concentrates on deprivations that are intrinsically important (unlike low income, which is only instrumentally significant). (2) There are influences on capability deprivation – and thus on real poverty – other than lowness of income (income is not the only instrument in generating capabilities). (3) The instrumental relation between low income and low capability is variable between different families and different individuals (the impact of income on capabilities is contingent and conditional). (SEN, 1999, p. 87-88)

The conception of poverty from the perspective of capabilities takes into account a process for achieving development from freedom (SEN, 1999). This process, according to Alkire (2005b), consists of a chain of events that, at its end, provides more freedom and, consequently, fosters the resumption of a virtuous circle. The main question around this approach is which capabilities to measure (CLARK, 2005), since these vary according to country, locality, society and customs (Sen, 1999), related to “values of achievement and freedom” (SALAMA; DESTREMAU, 2001, p. 79). Although it includes relevant dimensions as politics and social justice (SEN, 1988), its applicability is quite limited, and the absence of proxy-data is the consequence of the great degree of difficulty in observing and measuring part of the reality (RAVALLION, 1994).

Approximating the concept of poverty by using this approach is a manner to make compatible the objective/absolute and relative dimensions (CODES, 2005), given that an income relative deprivation can provoke a lack of commodities and deny the access to a minimum range of capabilities (FUKUDA-PARR; KUMAR, 2003). However, the approximation to a complex system – starting with the capabilities approach and ending with the multidimensional one –, is not done without remember that the lack of income is one of the bases of this vicious cycle (SEN, 1999), given that the world works on a capitalism-based system. Complementarily, the association between low income and poverty is clearer in developing countries, where the social protection system is restricted, deficient or absent (SALAMA; DESTREMAU, 2001).

Even though developed by many researchers and scientists, the greatest heritage of the capability approach is the relevance of incorporating the largest number of dimensions as possible, also considering local characteristics as important factors to be included and fitted. Since the last quarter of the 20th century, the idea of a complex system and the connotation of poverty as an “immensurable abstraction” (WILBER, 1975) have been even more common, from which the use of income as a poverty synonym becomes highly partial (CODES, 2005). To cover the major part of this system, the multidimensional poverty approach is indispensable because allows the inclusion of an unlimited number of issues (MESTRUM, 2002) as factors and variables, like housing, income, work, health, goods and services, among others (ALTIMIR, 1979).

When we talk about a “poverty system”, we consider that poverty is a complex phenomenon that is constructed over several bases. Some of them are shared by most of the world (like income and some basic needs); others are commonly found depending on cultural and social constructs; lastly, a few of

them are widespread, but their importance differs locally. Thinking about this system, the approach of poverty as a multidimensional, multi-determined phenomenon is assembled on a huge number of possible deprivations, divisible between individual and local ones (WILBER, 1975). The interaction of these situations shows that the concept of poverty is based on a broad list of feedback-loops that create a “deprivation trap” (CODES, 2005).

However, if, on the one hand, poverty theory evolved into a more complex system of variables and explanations, on the other one, possibilities of comparatives and spatial-temporal analyses became more difficult and potentially restricted³. This problem appears because data collected by each country are somehow different – owing to divergences in census’ methodology, variables availability and categories used in each question –, which requires simpler multidimensional indices for international comparisons. Moreover, another important difficult of the multidimensional approach refers to how to aggregate the different variables and which weight should be given to each one (MESTRUM, 2002).

An attempt of constructing an MPI (Multidimensional Poverty Index) for Latin America, considering income, services, some capabilities and basic needs, was successfully performed by the *Oxford Poverty and Human Development Initiative* (SANTOS *et al.*, 2015; SANTOS; VILLATORO, 2016). This index uses data from 17 countries of Latin America and analyze, with some precision and specificity, poverty in the continent. Thus, despite the high complexity of analysis (CODES, 2005) and the limitations in terms of international and spatial-temporal comparisons, the multidimensional poverty approach is increasingly used and highly relevant. The main advantage is providing visibility to the fuzziness of poverty: in other words, two multidimensional poor families can stay in poverty for different reasons (MESTRUM, 2002). This advantage enlarges the horizons of analysis (SALAMA; DESTREMAU, 2001) and, therefore, creates new perspectives (MESTRUM, 2002) in terms of public policies and inclusion of demographic and social factors to compare population subgroups.

3. POVERTY MEASUREMENT IN BRAZIL (1950-2010)

After the discussion about the evolution of poverty thought and analysis since the 1850s presented in the previous topic, we can evaluate questionnaires and data of Brazilian censuses since the second half

³ Though these restrictions, poverty mapping (HENNINGER, 1998; HENNINGER; SNEL, 2002; DAVIS, 2003; BEDI *et al.*, 2007) and poverty profiles (ORSHANSKY, 1965; RAVALLION; BIDANI, 1994; FERREIRA *et al.*, 2003) are now more common in national and local analyses, with the aim of assisting and assessing public policies (KAKWANI; SON, 2005).

of the 20th century. First, census data and questionnaires are used with the aim of evaluate how questions were inquired over time (between 1950 and 2010) and how each of the approaches considered previously can be developed. In sequence, this analysis allows us to know which variables could be used to discuss and measure poverty, drawing a simple example of application.

3.1. *Liabile approaches using Brazilian censuses*

Data for people living in Brazil are available through national censuses carried out each 10 years since 1940 (with exception of 1991). As we said previously, the first Brazilian census was completed in 1872, when the country was yet a monarchy. However, microdata is only available since the 1960s census round – even with some degree of uncertainty about the obtainable results in this year (HAKKERT, 1996). Since the 1960’s census, a sample of the population answers a deeper questionnaire, whilst the rest of the population replies a simpler and smaller one with more general questions. Using the data collected from the census’ sample questionnaire, one can draw an uncountable set of analysis, including – but not limited to – demographic and economic issues.

From the data of the selected samples, a researcher interested in poverty analysis can perform several studies, increasing in complexity over time. In this subtopic, the aim is to introduce the possibilities of analysis since the census of 1950; in order to do this, the available questionnaires⁴ are deeply discussed below. Considering the complexity of the census and its evolution, in terms of depth of the issues addressed, it is intended that – at least from the viewpoint of poverty analysis – the possible approaches are different in each period (see Table 1).

TABLE 1: Evolution of census questionnaires and feasible poverty approaches in Brazil (1950-2010)

Year	Available questions		Feasible poverty approaches				
	Household	Personal	Subsistence	Basic needs	Relative	Multidim.	Capabilities
1950	0 ^(a)	25	✓ ^(c)				
1960	13	24	✓ ^(c)	✓ ^(c)			
1970	15	32	✓	✓	✓ ^(c)		
1980	21 ^(b)	57	✓	✓	✓	✓ ^(c)	
1991	27	61	✓	✓	✓	✓	✓ ^(c)

⁴ These questionnaires, all in Portuguese, are publicly provided and available at <http://biblioteca.ibge.gov.br/>. For 1950, there was no sample questionnaire.

2000	23	67	✓	✓	✓	✓	✓ ^(c)
2010	26 ^(b)	71	✓	✓	✓	✓	✓ ^(c)

Source: Elaboration of the author using the sample questionnaires of Brazilian census, 1950-2010.

Notes: ^(a) No household information available in this year.

^(b) International emigration (2010) and mortality (1980, 2010) modules not included.

^(c) Analyzed approaches could be imprecise, due to data limitation and availability.

In the 1950's census, two questionnaires were used, without a selected sample – in other words, all the population answered the same questions. The first one is about personal information, while the second one is related to family data. In this year, both data about the households and concerning personal and familiar incomes were not collected; the only feasible poverty approach is related to the use of the working status variables – making poverty analysis go back to a 19th century viewpoint. With these serious limitations, the 1950's census could only be used to generally describe who lives in Brazil, according to data like gender, color, age, religion, civil status and so on. Seemingly, this census is the last one in the country with an appearance of a population list, not being useful to perform even a rough analysis about the national poverty profile.

For the first time in the Brazilian census history, the 1960 edition includes data about household and income⁵. In the sample questionnaire, data about education were more detailed and a unique question about personal average income was added. With these elements, it was already possible to define poverty by the subsistence approach, although an objective, monetary poverty line was restricted to values classes, because the income question was of categorical type. Moreover, a pseudo basic needs approach could also be outlined, albeit it was limited to facilities and goods available inside the household and inquired in the census. The facilities inquired were three: water supply; sewage installation; and electricity availability. In turn, the presence of only four goods was investigated: cooking fuel; television; radio; and refrigerator. An additional question about the number of rooms and bedrooms could be used as a proxy of household density and a complementary dimension of the basic needs approach of poverty.

The changes between the 1960 and the 1970 editions of Brazilian census were not easily noticeable. The main one concerns the income question, which changed from a categorical type to a

⁵ When a researcher discusses income in Brazil, s/he should be careful about the variability of these data. Between 1942 and 1994, the national currency changed 8 times; additionally, the hyperinflation of the 1980s and 1990s substantially eroded the purchasing power of money. With these problems, a comparative analysis of income data among censuses should be made with caution, due to the necessity of both deflation and standardization of currencies.

continuous one; this modification permits the design of multiple monetary poverty lines, which allows the use of a relative approach, even being income-restricted. Furthermore, with the change in the income measurement, a more precise poverty profile could be outlined, crossing data about occupation, education, migration and so on. These intersections could also be made for an analysis related to basic needs, verifying for the existence of significant differences in poverty among sociodemographic characteristics (like religion, marital status, number of children ever born, etc.).

While the censuses until 1970 were very limited in terms of applicable poverty approaches and about the quantity of analyzable dimensions, the 1980's edition is a breaking point both in data collection and in national poverty researches. Very detailed data about the household and the residents had been obtained; more information about the house structure was added and the older, about facilities, were maintained or improved. For the first time, data collected about residents considered a broader range of income questions, including: gross mean wage in the main job; wage earned in secondary jobs; retirements and pensions; rents and donations. Although the applicable approaches in poverty analysis had not changed, but merely improved, the depth of the information collected in the 1980's census shows that – even knowing the limited range of basic needs, relative and subsistence approaches – the liable analyses can be carried out even deeper.

In 1991 – one year delayed in comparison with the expected census data –, more improvement about the household characteristics were added. A new set of questions about the existence of durable goods appeared for the first time, like washing machine, vacuum cleaner and water filter. With a wide range of questions related to the household composition, increases the liability of a multidimensional approach to poverty, although strictly limited to indices based on the same perspectives of past censuses. Questions related to the personal part of the sample questionnaire were maintained, with minor changes. The increasing availability of household data associated to the continuity of personal information about work, educational conditions and income, when one considers additional sociodemographic factors (like age, gender, race/color, family composition, etc.), makes feasible a multidimensional (clearly objective- and relative-based) approach.

In Brazil, since the end of the 20th century, two censuses have already been carried out (in 2000 and 2010). When both are compared with the 1991's edition, some questions about household characteristics and durable goods were not more asked, so that a few comparisons have not been possible. The 2010's edition included, for the first time, modern goods like cellphone and internet, which opens –

jointly with the availability of a car and other disposable facilities – to some (limited) approximation to the capabilities approach. The main household facilities present in 1991 were maintained: water supply; sewage installation; trash disposal; and electricity availability.

Modules about personal information were very similar in the last three censuses, except for four noticeable changes from 2000 to 2010: (1) the possibility of household shared responsibility; (2) a less degree of detail about incomes derived from non-work activities, as rents, savings and retirement⁶; (3) the inclusion of two modules, one about international emigration and other one related to mortality; and (4) the addition of a question that indicates if who answered the questionnaire about a person was itself, another resident (like the spouse or a son) or a non-resident. Though there were some considerable changes in the last three censuses, the data collected are so rich that permit researcher to go further in poverty analysis.

In the last two editions, information about household and income – accurately complemented by sociodemographic data – allowed the use of a deeper set of variables to describe the basic needs and multidimensional poverty approaches. Moreover, the richness of questions about personal characteristics grants the spread of the relative approach, which (if complemented with other techniques of poverty analysis) ensures greater accuracy to the obtained results. There are still two restrictions related to poverty approaches and their analysis with quantitative data: 1) the application of subjective measurement techniques; and 2) the definition of which are essentials capabilities (and which ones are peripherals) and how to inquire about them in a quantitative research like census.

However, analyzing the census questionnaires since 1950, some issues emerge. First, the possibilities of poverty analysis in Brazil accompanied the evolution of poverty thought worldwide. Second, the even greater geographical disaggregation of data collected (RUGGLES, 2014) allows intra-municipal poverty analysis combined with the elaboration of maps and the execution of spatial analysis, at least since the 2000's edition of census. Third, the increasing possibility of intersections between poverty and sciences like Demography and Economics, given by the high quantity (and precision and accuracy) of data, variables and responses that the most recent census gave us.

⁶ This could generate a problem in terms of inequality and poverty estimations, because it can cause a sub-estimation of the total income and a super-estimation of inequality (see Davern *et al.*, 2005). However, it seems to not be the case in the 2010 edition of Brazilian census (Souza, 2013).

3.2. *Measuring poverty with census data*

Considering the increase of information available from Brazilian censuses, a great number of indices and techniques for poverty analysis became available in the last decades. These are focused in four of the approaches presented before: subsistence; relativeness; basic needs; and multidimensionality. A considerable amount of these techniques is developed and implemented using data collected from either the Demographic Census or the National Survey Household Sample (PNAD), both carried out by the Brazilian Institute of Geography and Statistics (IBGE).

The main advantage of implementing a technique or index using PNAD is the data periodicity (IBGE, 2015). This survey is annually carried out with an average of 400 thousand people (representing about 100 thousand household and families), having representativeness for the whole country, the five macro-regions, the 27 federative states and the 9 metropolitan regions defined in the 1970s (*cf.* BRASIL, 1973). The main disadvantage of PNAD is the lack of extrapolation (and consequent inferentiality) for minor areas, like municipal and intra-municipal ones. Even so, the implementation and use of indices and techniques for poverty analysis using PNAD are very useful to evaluate their quality and the evolution of poverty in the intercensal period.

Some techniques for poverty measurement with survey data are shown below (Table 2). They are intended to be used with both census and PNAD, due to similarities between the questionnaires. Some techniques presented below use data from other surveys, like the Familiar Budget Survey (POF), not applicable to census or PNAD data, once that survey has information about consumption, which are not inquired in the formers.

The techniques and indices presented above are only some examples of possible approaches to poverty using Brazilian data like census and PNAD, since the range of available instruments for studying and measuring poverty is extremely broad and in constant evolution. Below, there is a sample of application, using two methods chosen from the presented above (from the subsistence and the multidimensional approaches). The aim is showing what one should consider when applies a poverty index or technique. As previously indicated (Table 1), the subsistence approach is feasible (even with some limitation) since 1950, while the multidimensional one is practicable since the 1980s and, with more precision, from the 2000's census on.

TABLE 2: Some applicable techniques for poverty analysis in Brazil, divided by approach and period

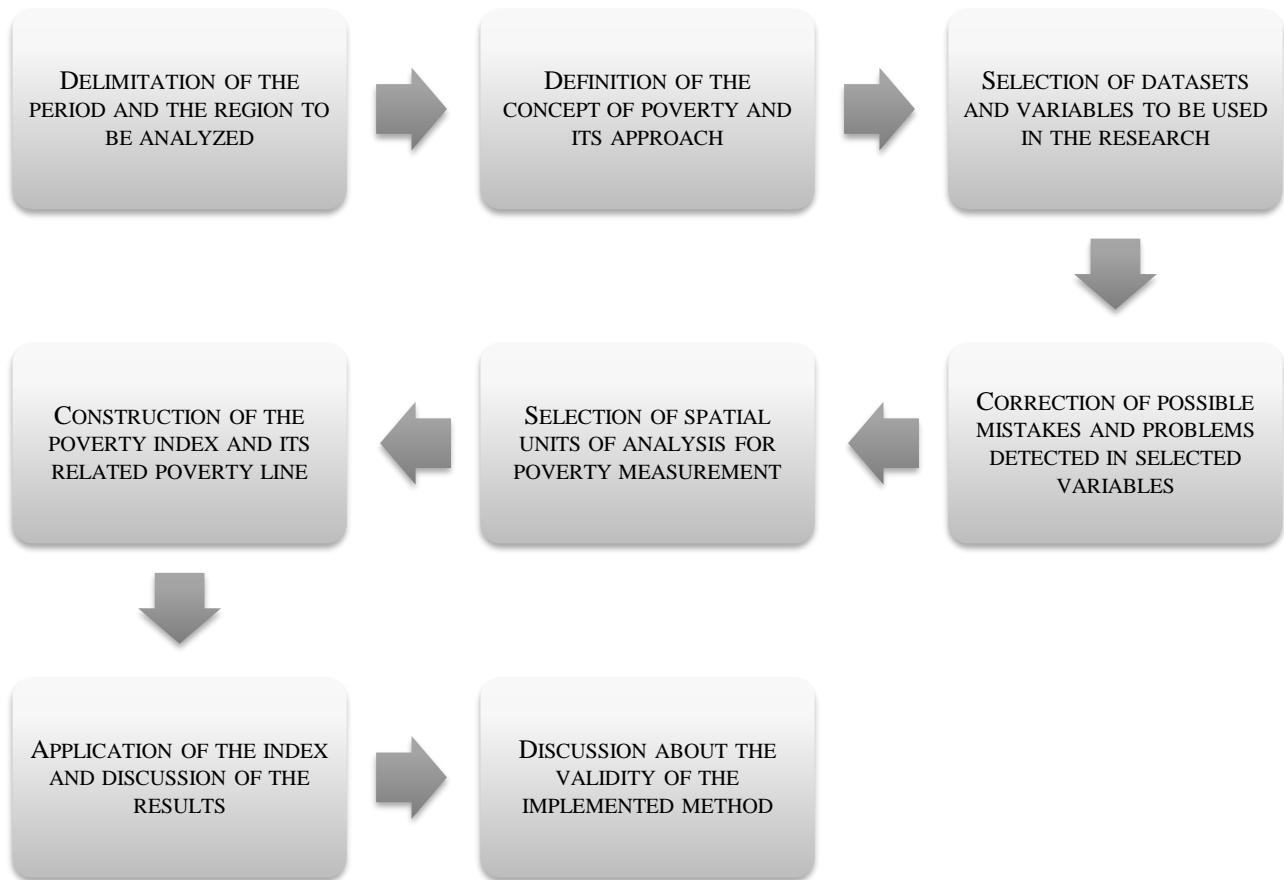
Poverty approach	Techniques and indices for poverty analysis	
Subsistence	Poverty line vs. familiar per capita income ^(S1) Multiple of minimum wage ^(S2)	
Basic needs	Poor types/categories ^(B1) Feeding and housing basic needs ^(B2)	
Relative	Long term analysis ^(R1) Poverty lines based on consumption ^(R2)	
Multidimensional	Millennium Development Goals ^(M1) Fuzzy sets approach ^(M2)	Family Vulnerability Index ^(M3) Multidimensional Poverty Index - MPI ^(M4)

Source: Elaboration of the author using references cited below.

- Notes:** (S1) - Barros *et al.* (2000) (S2) - Barros *et al.* (1999)
 (B1) - Kageyama and Hoffmann (2006) (B2) - Lustosa and Figueiredo (1990)
 (R1) - Rocha (2013) (R2) - Rocha (1988)
 (M1) - Diniz and Diniz (2009) (M2) - Carvalho *et al.* (2007)
 (M3) - Furtado (2012; 2013) (M4) - Santos *et al.* (2015)

The choice of the most adequate poverty approach for data analysis relies on some precepts and assumptions established before the application of a technique (Figure 2). Firstly, the researcher must define the concept of poverty to be adopted; after this, the next step includes the definition of which data and variables will be used. The next moment is the correction of possible problems detected in the responses of each factor, the selection of units for data analysis and the construction of the poverty index. Lastly, the application and the analyses of results, with corresponding discussion, close the cycle of the construction a rigorous poverty study.

FIGURE 2: The step-by-step process in poverty analysis



Source: Author's elaboration.

Considering that the availability and reliability of census microdata in Brazil date back to 1970 and the increasing number of information existing in our censuses, the example shown below use a measure of poverty as lack of income (corresponding to the subsistence approach, sometimes called unidimensional analysis. This choice is justifiable because, though poverty nowadays is recognized as a multidimensional phenomenon (BARROS *et al.*, 2006; SILVA; BARROS, 2006), the possibilities of long-term analyses are restricted to a little range of instruments⁷.

⁷ As a complement for the analysis, one can adopt the relative approach and design a set of poverty lines related to distinct regional scenarios. Additionally, a monetary basic needs perspective can be assumed if one defines the poverty line as a value that is strictly necessary in order to satisfy the minimum requirements for a decent life. Moreover, a manner of enriching poverty analysis through the subsistence approach is using a set of poverty lines, derived from more than one multiple of the minimum wage, like $\frac{1}{2}$, $\frac{1}{4}$ and $\frac{3}{4}$. Additionally, one can reduce the temporal span of analysis and deploy a combination of indices from more than one approach. See Maria (2018) for an example with unidimensional and multidimensional indices.

It is important to first define the poverty line as a multiple of the minimum wage (*cf.* BARROS *et al.*, 1999) to delimit who are the poor since 1980. To proceed with the results and analyses, the method used in this example is briefly presented hereafter. As seen in the previous section, the subsistence approach defines that a person, a household or a family is considered poor if the per capita income lies below the absolute poverty line. Considering this line as a multiple of the minimum wage, one can write:

$$P_i^t(k) = \begin{cases} 1, & \text{if } Y_i^t < k \times MW^t \\ 0, & \text{otherwise} \end{cases} \Rightarrow q_k^t = \frac{1}{n} \sum_{i=1}^n P_i^t(k), 0 \leq q_k^t \leq 1 \quad (1)$$

Where i represents the unit of analysis, t is the year analyzed, Y stands for the per capita income, k is a multiplier of the minimum wage (MW), q is the proportion of poor and n indicates the sum of units. For this example:

1. The per capita income is defined as the total income of the household divided by the number of resident people;
2. The multipliers of minimum wage will be: 0.25 (usually associated to extreme poverty) and 0.50 (used as a generally threshold for poverty)⁸;
3. Only people with 10 years or more and identified as head of the household are analyzed, so that the poverty index is intended as representing households.

To make a comparative time-series analysis, the per capita income of each year has to be deflated to a fixed year. Additionally, as Brazil changed several times its currency, it is mandatory to also convert the income values by a specific factor. It means that Y_i^t must consider the inflation of the period between t and the year chosen as basis (in this case, 2010) and the changes of currency (*cf.* CORSEUIL; FOGUEL, 2002). With the deflation and conversion processes, one has a common minimum wage poverty line, defined from the value observed in 2010, when the minimum wage was of R\$ 510.00. So, the per capita income can be compared with the minimum wage of 2010, as below:

$$Y_i^{t,2010} = \frac{Y_i^t}{f^t} \times \frac{1}{d^t} \Rightarrow P_i^{t,2010}(k) = \begin{cases} 1, & \text{if } Y_i^{t,2010} < k \times 510 \\ 0, & \text{otherwise} \end{cases} \quad (2)$$

⁸ These are common thresholds for poverty analysis in Brazil. Other common thresholds, these ones for international comparisons, are those adopted by the World Bank: US\$ 1.9/day for extreme poverty, and US\$ 5.5/day for poverty.

Where $Y_i^{t,2010}$ represents the per capita income in year t deflated to 2010, d is the deflation factor and f stands for the conversion index. The conversion and deflation factors to be used are shown below, complemented with the conversion of minimum wages (Table 3):

TABLE 3: Real minimum wages, deflation and conversion factors, Brazil (1960-2010)

Census date (month/year)	Deflation factor (d)	Conversion index (f)	Minimum Wage (MW)	
			Nominal (LCU)	Real (R\$ of 2010)
August/1960	$2.5079 \times E-15$	$2.7500 \times E+15$	5,900.00	855.47
August/1970	$8.8467 \times E-14$	$2.7500 \times E+12$	187.20	769.47
August/1980	$2.1334 \times E-12$	$2.7500 \times E+12$	4,149.60	707.30
August/1991	$2.6904 \times E-05$	$2.7500 \times E+06$	36,161.60	488.76
July/2000	$4.4248 \times E-01$	$1.0000 \times E+00$	151.00	341.26
July/2010	$1.0000 \times E+00$	$1.0000 \times E+00$	510.00	510.00

Source: Author's elaboration using references cited below.

Notes: Deflation factors calculated using as basis the General Prices Index – Internal Distribution (IGP-DI) for August/2010. The inflation index used for each census is the one for the month of reference indicated. See Courseil and Foguel (2002) for more methodological details.

After the adjustment implemented above, the results obtained for the poverty index are shown below. The data used for the analyses are provided by the International Public Use of Microdata Series – IPUMS (Minnesota Population Center, 2018), which has the purposes of collecting data from national statistical offices and harmonizing information to define standards of comparability among countries and periods. For each one of the four census years (1980, 1991, 2000 and 2010)⁹ was selected a sample size of 5%, with statistical representativeness for regions, states and cities¹⁰. Data were analyzed using the software SPSS® (Statistical Package for the Social Sciences), with a syntax developed for create comparable-income variables.

Using as k values 0.25 (for extreme poverty) and 0.50 (for poverty), the main results are shown below (Table 4). As a general conclusion, the proportion of poor and extremely poor household declines

⁹ Data for 1970 were discarded, due to inconsistencies in the income declaration – considering the criteria developed in this research, only household with zero-income were included into poverty and extreme poverty.

¹⁰ For 1991 and 2000 censuses, the sample sizes were bigger than 5%. To have the same sample-size for the four years, a resampling for 1991 and 2000 was required. The data extract used in this paper can be created at <https://international.ipums.org/>.

in the last 30 years, even with a slightly increment in the 1980s, due to the well-known problems of very high inflation, which has clear effects on poverty. This phenomenon is more evident, and the results are worse than the generally expected, because the cutoff is higher than the practiced, for example, by Rocha (2013). Moreover, a significant part of the population lives with a per capita income quite close to the set of poverty lines generally established. In other words, a large part of the population with low income can be considered as poor or not as the poverty line changes.

A central point in the discussion of the results exposed below is the possibility of imprecision related to factors like relativity. The relative approach gives more precise details to the national poverty profile, because considers the heterogeneity of a country like Brazil. For example, the 12.6% of extremely poor households in 2010 is a composition of geographically distinct realities; additionally, the poverty line in each region or state can (and will) diverge, due to the peculiarities of each locality. So, though the subsistence poverty approach gives a quicker and simpler result, the excess of generalization causes a lack of precision about the situation of poverty in Brazil and its states. This restriction, however, is not the same as being wrong: the results could be somewhat imprecise, but they do not represent a mistake, since income and poverty are strongly related.

TABLE 4: Proportion of poor and extremely poor households, Brazil (1980-2010)

Census year	Proportion of households		Total of households	
	Poor	Extremely poor	Poor	Extremely poor
1980	30.18%	12.81%	7,642,735	3,244,335
1991	39.93%	19.78%	13,773,391	6,822,529
2000	37.04%	18.69%	16,697,220	8,424,448
2010	26.11%	12.60%	14,999,610	7,234,831

Source: Integrated Public Use Microdata Series, International: Version 7.1 (2018).

Notes: Poverty line is half of 2010 MW (R\$ 510.00); extreme poverty line is half of poverty line.

4. POSSIBLE INTERACTIONS BETWEEN POVERTY AND DEMOGRAPHY

Considering the great evolution of the census data collection in Brazil (since 1950) and the increasing complexity of poverty thought and analysis, how can Demography and Poverty establish a more complex and deeper dialog? The demographic approach to data about poor people is very important, because this phenomenon can be discriminated by some characteristics like age, color, gender, marital

status, number of children even born, migration and so on. Any of the poverty approaches discussed previously in this paper can be replicated incorporating one or more demographic variables.

To show how important is to consider Demography into poverty analysis, results about the proportion of poor households by sex and marital status of the head are shown below (Table 5). As these data concern a national situation, some degree of heterogeneity is hidden in the results. However, it seems clear that the marital status is related to a different moment in the individual life cycle, while there are slighter differences between genders. Although poverty in Brazil is a decreasing phenomenon, the evolution of census data collection and the opening possibilities in terms of more complex approaches demand to consider, more than ever, the great variability of demographic variables (and their quality and accuracy degrees) available through census data.

TABLE 5: Proportion of poor households by gender and marital status, Brazil (1980-2010)

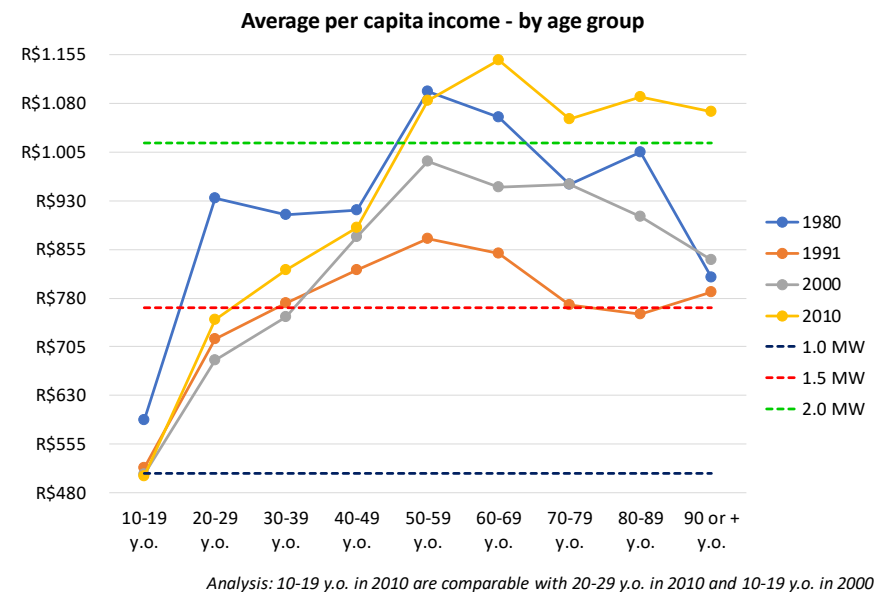
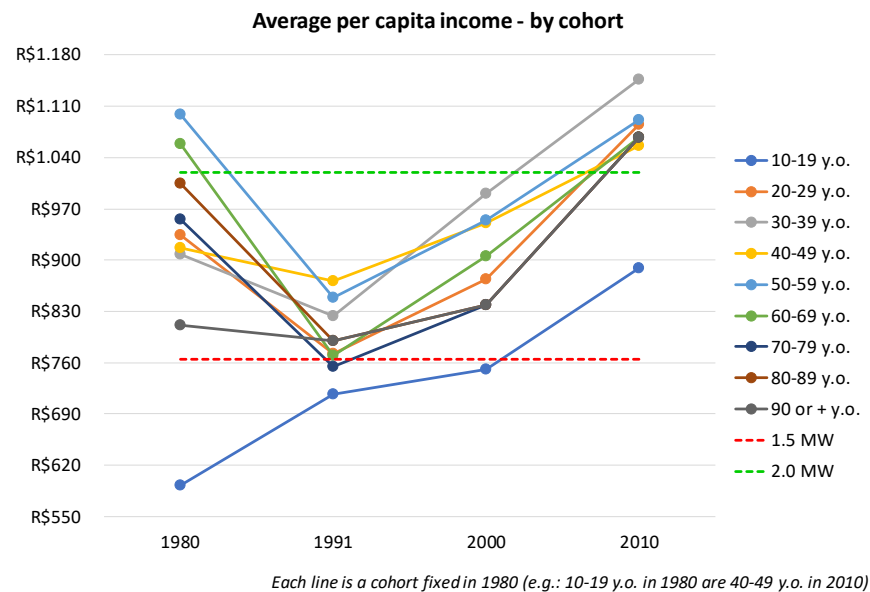
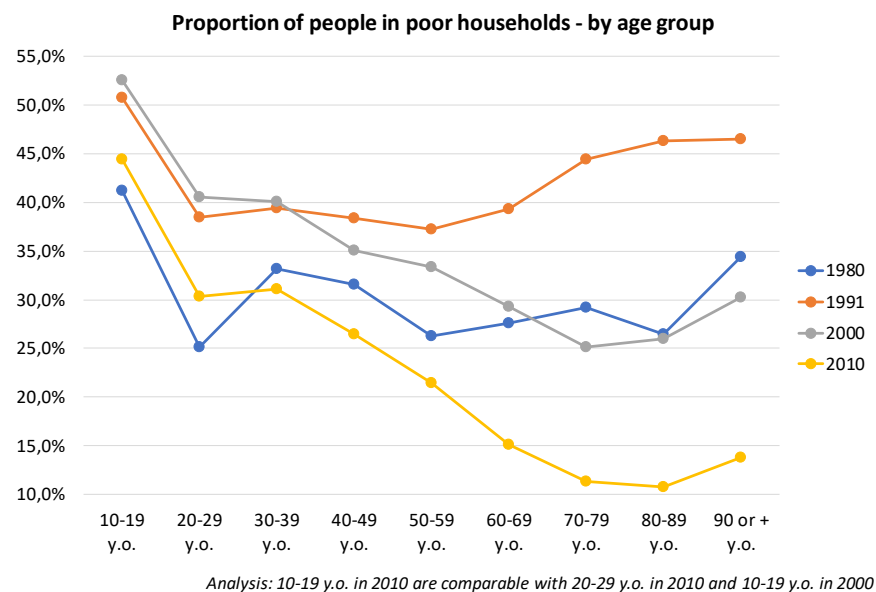
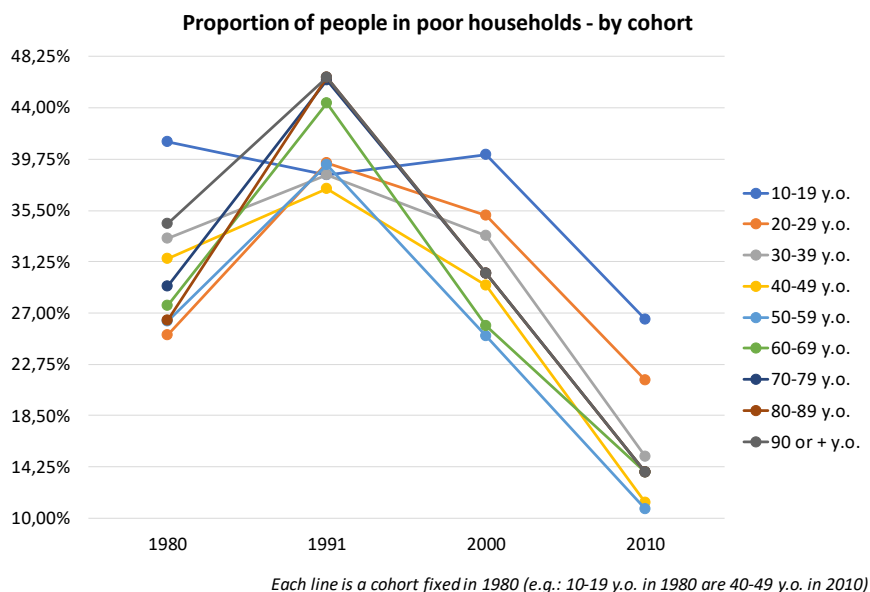
Census year	Proportion of households						
	Poor	Gender of the head		Marital status of the head			
		Man	Woman	Single	Married	Divorced	Widowed
1980	30.18%	30.38%	28.98%	15.26%	31.93%	27.48%	26.65%
1991	39.93%	39.61%	41.38%	27.13%	40.84%	38.79%	42.36%
2000	37.04%	37.70%	35.05%	22.55%	39.17%	39.02%	26.79%
2010	26.11%	25.50%	27.09%	20.64%	27.70%	28.60%	14.90%

Source: Integrated Public Use Microdata Series, International: Version 7.1 (2018).

Notes: Poverty line is half of 2010 MW (R\$ 510.00); extreme poverty line is half of poverty line.

The combination of age and poverty data allows us to perform a pseudo-cohort analysis. This kind of analysis is very useful to evaluate how specific age groups evolved in a selected variable through census' years (helping us to understand and somehow measure cohort, age and period effects). Using this approach, which results are shown in Figure 3, we can observe both the cohort and the age dynamics of poverty – here, there are data for proportion of people in poor households and for the average per capita income. Results include only people with 10 years old or older.

FIGURE 3: Proportion of people in poor households and average per capita income by cohorts and age groups, Brazil (1980-2010)



Source: Integrated Public Use Microdata Series, International: Version 7.1 (2018).

As shown by the pictures on the left, the proportion of poor people in each cohort decreases across the censuses, while the average *per capita* income augmented in real terms, reaching more than 2 minimum wages for all the cohorts that was 20-29 years old in 1980. From 1980 to 1991, there was an unprecedented increase in poverty due to hyperinflation and corrosion of wages; this phenomenon affected practically all the cohorts, except the one that was 10-19 years old in 1980. Using the pictures on the right, we observe that poverty affects more the youngest, while *per capita* income is higher for older people. These elements support hypothesis of differential in age composition of poverty: households with younger off-springs are more prone to be poor than those with elders. Another hypothesis that rises from the graphics is the cohort and period components of poverty: older cohorts were less exposed to poverty and low incomes in the 1980s and 1990s, compared to younger ones.

Another example of the relevance of demographic variables is given by race/color and nativity status variables, here considered as a proxy of migration (Table 6). As seen before, ignoring (in addition to geographical and cultural heterogeneities) the demographic composition of populations, which does not limit to age and gender, can lead to a misinterpretation of poverty in Brazil. If, in the previous case, the differences between genders were not too severe (also due to the use of household *per capita* income instead of labor earnings), in the actual one the discrepancies are more intense. Poverty affects in a significantly different way household by race/color; this fact shows us that there is a great inequality in terms of labor market access and career progression between white and non-white people. In turn, separating households with a foreign-born head from the others helps us to identify that international immigrants have, *coeteris paribus*, better life conditions.

TABLE 6: Proportion of poor households by race/color and nativity status, Brazil (1980-2010)

Census year	Proportion of households						
	Race/color of the head					Status of the head	
	White	Black	Brown	Asian	Indigenous	Native	Foreign
1980	19.96%	40.05%	44.67%	8.10%	-	30.76%	3.89%
1991	28.28%	53.02%	54.07%	10.50%	70.16%	40.30%	9.39%
2000	26.24%	49.69%	51.08%	13.68%	55.45%	37.28%	8.21%
2010	17.34%	32.87%	35.10%	24.06%	52.07%	26.19%	10.13%

Source: Integrated Public Use Microdata Series, International: Version 7.1 (2018).

Notes: Poverty line is half of 2010 MW (R\$ 510.00); extreme poverty line is half of poverty line.

A general conclusion that can be drawn from the results above is that Demography and Poverty must go together. This conjunction may be made constructing a poverty profile (ORSHANSKY, 1965; LOK-DESSALLIEN, 1998). An appropriate poverty profile demands the use of several variables to consider: (1) spatial heterogeneity; (2) inequality of gender and race; (3) differences in individual and familiar life cycles; (4) difficulties or easiness of internal migrants to adapt themselves to new life conditions; and (5) activity status and years of schooling. The examples of this section use an objective approach to poverty (considered as synonym of “lack of subsistence”, translated as having less than a minimum income, like half of the minimum wage), but the association between Poverty and Demography is even more clear important in a complex, multidimensional system, like Wilber (1975) purposed.

This statement is simply to be proven: when one develops a multidimensional index like Santos and Villatoro (2016), several dimensions are affected by demographic variables. The access to some services and facilities is still unequal, with more opportunities for those who have a better job or a higher educational attainment, for example. Thus, using a list of demographic variables during a poverty analysis is strictly necessary. A simple relationship between Demography and Poverty can explain the importance of considering these dimensions together, as suggested, i.e., by Avramov (2002) and Barros *et al.* (2015). The more unequal a society, the more some demographic characteristics play a major role to explain a deprivation contest. In a perfectly equal society (which does not imply the absence of poverty), poor and non-poor should have a very similar profile that does not justify the use of additional variables besides a poverty index.

In the real world, Poverty and Demography coexists: the relations between these areas are bidirectional (VIGNOLI, 2007), once “research on the links between population variables and poverty is fully valid and useful, since from the beginning of the scientific analysis of poverty, population factors have been considered in interaction with it” (VIGNOLI, 2007, p. 14, free translation). Moreover, relations between Poverty and Demography transcend variables like age, sex and race/color, and lie on the Demographic Transition:

(...) during periods in which there are windows of opportunity, when dependency ratios dip, there will be more productive workers. The effect on poverty reduction is twofold. On the one hand, lower dependency ratios tend to raise aggregate per capita incomes. (...) On the other hand, poverty may be reduced as a consequence of a more favourable distribution of family sizes within the population, as the number of dependants in poor families falls more than in non-poor families, which have fewer children to begin with. (HAKKERT, 2007, p. 3)

These elements show us that Poverty and Demography have multiple linkages and relations that go through micro and macro (UNFPA, 2012). More broadly, Economics may influence Demography and, therefore, affect Poverty in an uncountable number of ways (EASTWOOD; LIPTON, 2001).

5. FROM WHERE WE CAME TO WHERE WE GO: HOW MUCH WE EVOLVED?

The main objective of this paper was to understand, between the censuses of 1950 and 2010, the effective evolution in poverty analysis in Brazil. Moreover, what and where we still have to improve, and which are the current and major limitations of poverty analysis using census data were purposes to be achieved into this research. Using the available microdata for the last four censuses (1980 to 2010), a simple example was implemented in order to show: (1) how poverty evolved in Brazil; (2) the high degree of generalization provided by an objective approach; and (3) the relevance of considering demographic variables with the aim of designing an appropriate poverty profile.

We noticed that the evolution of census data collection since 1950 is uncontestable. The quality of counting and registering the population and its multiple aspects increases severally in the second half of the 20th century, in line with the observed by McCaa and Ruggles (2002) and McCaa (2012). More and more data were collected by the census sample questionnaire and the use of this information became, since the last quarter of the century, an even more common reality. Another positive remark is related to the evolution of Brazilian census *pari passu* with the development of poverty thought and its methods of analysis. On the one hand, more complex and multidimensional deprivation approaches have been created. On the other hand, the evolution of national census questions followed the international trend in registering population data and the studies about poverty and its measurement.

However, after analyzing the increasingly complexity of the poverty approaches, we conclude that, considering the Brazilian case, we must evolve a lot in order to obtain comprehensive data that allow us to measure poverty as a multidimensional not-only-objective phenomenon. Moreover, taking in consideration the innumerable demographic variables available in the national census is a mandatory issue to be solved. In most cases, as we can see in some of the references cited throughout the text, poverty is measured as a global phenomenon, not considering dimensions like spatial heterogeneity (in a smaller number of cases) or demographic characteristics of population (in a greater number of situations). The main problem is that this generalization – ever less present, fortunately – induces the association of poverty to a widespread fact that is not the undeniable reality.

To overtake the misspecification of poverty results, we have to consider two elements. The first is related to a clear trade-off: when one considers more variables in a poverty profile, the complexity of analysis increases and becomes slower, although more precise; on the other hand, reducing the number of factors accelerates the analyses but reduces the precision and the power of the results obtained. It is a fact that poverty is a widespread phenomenon that, where concentrated, attacks all kind of people; however, even among these people, the presence of inequality is a relevant factor that differentiates one poor from another. Some of the demographic variables can lose their explanatory effect among extremely poor people, but this does not occur with all the factors. A relatively simple manner to select a group of variables to properly describe poverty in a region is to analyze the behavior of inequality indices, as we highlight before.

The second element to be considered is that a multidimensional approach to poverty permits us to analyze, with more precision, the impact of sociodemographic variables in the explanation of a specific degree of poverty. With this purpose, the development and application of multidimensional techniques help us with the selection of deprived groups in a population, which is more difficult to be carried out when an objective, unidimensional measure of poverty is adopted. This statement exposes us that, when one combines more information to define poverty, the isolate power of the income variable decrease, resulting in a potential lesser degree of inequality, for example, between white and non-white people. Monetary poverty is highly associated to inequality between some specific population groups; however, deprivations are not restricted to income and the differences between groups (selected by some demographic characteristics) are not so whopping.

As a concluding remark, the evolution of Brazilian censuses in the last 60 years shows us that a better approach to poverty is even more possible. The data collected in each census are better, the number of details analyzable is increasing and the possible approaches to a real poverty profile are daily more developed and deployed. As a counterpart, it is time to include some subjective aspects of poverty in the census questionnaire, accompanied by attempts and tests of variables that collect information about the basic capabilities of a person. In the last 60 years, we have evolved a lot in terms of poverty analysis and the quality of its results, walking towards the multidimensionality. Nowadays, we need to go further and implement, as far as possible, elements that allow a more comprehensive view on Brazilian poverty.

MARIA, Pier Francesco de. **Evolution of poverty analysis through census data in Brazil (1950-2010)**. Revista Interdisciplinar Científica Aplicada, Blumenau, V.14, nº 2, p. 23-55 TRI II 2020. ISSN 1980-7031

REFERENCES

ALKIRE, S. Why the capability approach. **Journal of Human Development**, v. 6, n. 1, 2005a. p. 115-133.

ALKIRE, S. **Capability and functionings: definition & justification** (HDCA Introductory Briefing Note). Brewster: Human Development & Capability Association. 2005b.

ALTIMIR, O. La dimensión de la pobreza em América Latina. **Cuadernos de la CEPAL n. 27**. Santiago de Chile: CEPAL, 1979.

AVRAMOV, D. People, demography and social exclusion. **Population Studies n. 37**. Strasbourg: Council of Europe, 2002.

BAGOLIN, I. P.; ÁVILA, R. P. Poverty distribution among the Brazilian States: a multidimensional analysis using capabilities and needs approaches. In: ENCONTRO NACIONAL DE ECONOMIA, 36., Salvador, 2006. **Anais...** Brasília: ANPEC, 2006.

BARROS, R. P.; CARVALHO, M.; FRANCO, S. Pobreza multidimensional no Brasil. **Texto para discussão n. 1227**. Rio de Janeiro: IPEA, 2006.

BARROS, R. P.; CORSEUIL, C. H.; LEITE P. G. Labor market and poverty in Brazil. **Revista de Econometria**, v. 19, n. 2, 1999. p. 297-365.

BARROS, R. P.; HENRIQUES, R.; MENDONÇA R. S. Desigualdade e pobreza no Brasil: retrato de uma estabilidade inaceitável. **Revista Brasileira de Ciências Sociais**, v. 15, n. 42, 2000. p. 123-142.

BARROS, R. P.; FIRPO, S.; GUEDES, R.; LEITE, P. Demographic changes and poverty in Brazil. **Discussion paper n. 96**. Rio de Janeiro: IPEA, 2015.

BEDI, T.; COUDOUEL, A.; SIMLER, K. **More than a Pretty Picture: using poverty maps to design better policies and interventions**. Washington, DC: The World Bank, 2007.

BEVERIDGE, W. **Social Insurance and Allied Services** – Presented to Parliament by Command of His Majesty (The Beveridge Report). 1942.

BRASIL. Lei complementar n. 14, de 08 de Junho de 1973. Estabelece as regiões metropolitanas de São Paulo, Belo Horizonte, Porto Alegre, Recife, Salvador, Curitiba, Belém e Fortaleza. **Diário Oficial da União**. Brasília: Poder Executivo, 11 jun. 1973.

BRASIL. Decreto-Lei n. 399, de 30 de Abril de 1938. Aprova o regulamento para execução da Lei n. 185, de 14 de janeiro de 1936, que institue as Comissões de Salário Mínimo. **Diário Oficial da União**. Brasília: Poder Executivo, 07 mai. 1938.

CARNEY, P. C. The concept of poverty. **Public Health Nursing**, v. 9, n. 2, 1992. p. 74-80.

- MARIA, Pier Francesco de. **Evolution of poverty analysis through census data in Brazil (1950-2010)**. Revista Interdisciplinar Científica Aplicada, Blumenau, V.14, nº 2, p. 23-55 TRI II 2020. ISSN 1980-7031
- CARVALHO, M. *et al.* (2007), Uma aplicação da teoria dos conjuntos fuzzy na análise da pobreza: o caso das Regiões Metropolitanas do Sudeste brasileiro – 2000. In: ENCONTRO NACIONAL DE ECONOMIA, 35., Recife, 2005. **Anais...** Brasília: ANPEC, 2005.
- CASTEL, R. **As metamorfoses da questão social: uma crônica do salário**. Petrópolis: Ed. Vozes, 1998.
- CLARK, D. A. The capability approach: its development, critiques and recent advances. **GPRG Working Paper Series n. 032**. Swindon: Economic and Social Research Council, 2005.
- CODES, A. L. M. Modelagem de equações estruturais: uma contribuição metodológica para o estudo da pobreza. 2005. Tese (Doutorado em Ciências Sociais) – Faculdade de Filosofia e Ciências Humanas, Universidade Federal da Bahia, Salvador. 2005
- CORSEUIL, C. H.; FOGUEL, M. N. Uma sugestão de deflatores para rendas obtidas a partir de algumas pesquisas domiciliares do IBGE. **Texto para discussão n. 897**. Brasília: IPEA, 2002.
- DAVERN, M. *et al.* The effect of income question design in health surveys on family income, poverty and eligibility estimates. **Health services research**, v. 40, n. 5, 2005. p. 1534-1552.
- DAVIS, B. **Choosing a method for poverty mapping**. Rome: FAO, 2003
- DELEEK, H. La distribution inégale des dépenses sociales en Belgique. *Politiques et Management Public*, v. 3, n. 3, 1985. p. 97-130.
- DINIZ, M. B.; DINIZ, M. M. Um indicador comparativo de pobreza multidimensional a partir dos Objetivos do Desenvolvimento do Milênio. **Economia Aplicada**, v. 13, n. 3, 2009. p. 399-423.
- DREWNOWSKI, J. Poverty: its meaning and measurement. **Development and Change**, v. 8, 1977. p. 183-208.
- DREWNOWSKI, J.; SCOTT, W. The Level of Living Index. **Report n. 4**. Genebra: United Nations Research Institute for Social Development, 1966.
- EASTWOOD, R.; LIPTON, M. Demographic transition and poverty: effects via economic growth, distribution, and conversion. In: BIRDSALL, N.; KELLEY, A. C.; SINDING, S. (Eds.), **Population matters: demographic change, economic growth, and poverty in the developing world**. New York: Oxford University Press, 2001. p. 213-259.
- FERES, J. C.; MANCERO, X. El método de las necesidades básicas insatisfechas (NBI) y sus aplicaciones en América Latina. **Serie ‘Estudios estadísticos y prospectivos’ n. 7**. Santiago de Chile: Economic Commission for Latin American and the Caribbean, 2001.
- FERREIRA, F. G.; LANJOW, P.; NERI, M. A robust poverty profile for Brazil using multiple data sources. **Revista Brasileira de Economia**, v. 57, n. 1, 2003. p. 59-92.
- FLIK, R. J.; VAN PRAAG, B. M. S. Subjective poverty line definitions. **De Economist**, v. 139, n. 3, 1991. p. 311-330.

MARIA, Pier Francesco de. **Evolution of poverty analysis through census data in Brazil (1950-2010)**. Revista Interdisciplinar Científica Aplicada, Blumenau, V.14, nº 2, p. 23-55 TRI II 2020. ISSN 1980-7031

FUKUDA-PARR, S.; KUMAR, A. K. S. The Concept of Human Poverty. In: FUKUDA-PARR, S.; KUMAR, A. K. S. (Orgs.). **Readings in human development: concepts, measures and policies for a development paradigm**. Oxford: Oxford University Press, 2003. p. 38-47.

FURTADO, B. A. Índice de Vulnerabilidade das Famílias (2000-2010): resultados. **Texto para discussão n. 1835**. Rio de Janeiro: IPEA, 2013.

FURTADO, B. A. Índice de Vulnerabilidade das Famílias: atualização (2003-2009) e recortes geográficos. **Texto para discussão n. 1699**. Rio de Janeiro: IPEA, 2012.

GUSTAFSSON, B. Assessing poverty: some reflections on the literature. in **Journal of Population Economics**, v. 8, n. 4, 1995. p. 361-381.

HAGENAARS, A. J. M.; DE VOS, K. The definition and measurement of poverty. **The Journal of Human Resources**, v. 23, n. 2, 1988. p. 211-221.

HAKKERT, R. The demographic bonus and population in active ages. **Research Papers of Project RLA5P201 n. 7**. Brasília: IPEA/UNFPA, 2007.

HAKKERT, R. **Fontes de dados demográficos**. Belo Horizonte: ABEP, 1996.

HARRIS-WHITE, B. Poverty and capitalism. **Economic and Political Weekly**, v. 41, n. 13, 2006. p. 1241-1246.

HENNINGER, N. **Mapping and geographic analysis of human welfare and poverty - review and assessment**. Washington, DC: World Resources Institute, 1998.

HENNINGER, N.; SNEL, M. **Where are the poor?** Experiences with the development and use of poverty maps. Washington, DC: World Resources Institute, 2002.

IBGE. **Principais diferenças metodológicas entre as pesquisas PME, PNAD e PNAD Contínua (Nota técnica)**. Rio de Janeiro: IBGE, 2015.

IBGE. Metodologia do Censo Demográfico 2000. **Série Relatórios Metodológicos v. 25**. Rio de Janeiro: IBGE, 2003.

ILO (International Labor Office) **Employment, growth and basic needs: a one-world problem**. Report of the Director-General of the International Labour Office. Geneve: ILO, 1976.

KAGEYAMA, Â. A.; HOFFMANN, R. Pobreza no Brasil: uma perspectiva multidimensional. **Economia e Sociedade**, v. 15, n. 1, 2006. p. 79-112.

KAKWANI, N.; SON, H. H. Poverty analysis for policy use: poverty profiles and mapping. In: UNSD (Org.). **Handbook on poverty statistics: concepts, methods and policy use**. New York: UNSD, 2005. p. 292-323.

KAPTEYN, A. *et al.* Some Methodological Issues in the Implementation of Subjective Poverty Definitions. **The Journal of Human Resources**, v. 23, n. 2, 1988, p. 222-242.

- MARIA, Pier Francesco de. **Evolution of poverty analysis through census data in Brazil (1950-2010)**. Revista Interdisciplinar Científica Aplicada, Blumenau, V.14, nº 2, p. 23-55 TRI II 2020. ISSN 1980-7031
- KAZTMAN, R. **La medición de las necesidades básicas insatisfechas en los censos de población**. Santiago de Chile: Economic Commission for Latin American and the Caribbean, 1995.
- LOK-DESSALLIEN, R. **Review of poverty concepts and indicators**. New York: The United Nations Development Programme, 2001.
- LOK-DESSALLIEN, R. **Poverty profiles: interpreting the data**. New York: The United Nations Development Programme, 1998.
- LUSTOSA, T. Q. O.; FIGUEIREDO, J. B. B. Pobreza no Brasil: métodos de análise e resultados. **Pesquisa e Planejamento Econômico**, v. 20, n. 2, 1990. p. 353-380.
- MARIA, P. F. **Diferenciais sociodemográficos e espaciais da pobreza no Estado de São Paulo (1991-2015)**. 2018. Tese (Doutorado em Demografia) – Instituto de Filosofia e Ciências Humanas, Universidade Estadual de Campinas, Campinas, 2018.
- MARIA, P. F. **Pobreza no Brasil nos anos 2000: determinantes da redução**. 2013. Monografia (Bacharelado em Ciências Econômicas) – Instituto de Economia, Universidade Estadual de Campinas, Campinas, 2013.
- MARKS, G. N. Income poverty, subjective poverty and financial stress. **Social Policy Research Paper n. 29**. Melbourne: Melbourne Institute of Applied Economic and Social Research, 2007.
- McCAA, R. The big census data revolution: IPUMS-International. Trans-border access to decades of census samples for three-fourths of the World and more. **Revista de Demografía Histórica**, v. 30, n. 1, 2012. p. 69-88.
- McCAA, R.; RUGGLES, S. The census in global perspective and the coming microdata revolution. **Scandinavian Population Studies**, v. 13, 2002. p. 7-30.
- MESTRUM, F. **Mondialisation et pauvreté: de l'utilité de la pauvreté dans le nouvel ordre mondial**. Paris: L'Harmattan, 2002.
- MPC (Minnesota Population Center), **Integrated Public Use Microdata Series, International: Version 7.1** [dataset]. Minneapolis: IPUMS, 2018. <https://doi.org/10.18128/D020.V7.1>
- NARAYAN, D. *et al.* **Voices of the poor: crying out for changes**. New York: Oxford University Press; World Bank, 2000.
- NARAYAN, D. *et al.* **Can anyone hear us? Voices from 47 countries**. (Voices of the Poor – Volume I). Washington DC: The World Bank, 1999.
- ORSHANSKY, M. How poverty is measured. **Monthly Labor Review**, v. 92, n. 2, 1969. p. 37-41.
- ORSHANSKY, M. Counting the poor: another look at the poverty profile. **Social Security Bulletin**, v. 28, n. 1, 1965. p. 3-29.
- ORSHANSKY, M.; WATTS, H.; SCHILLER, B.R.; KORBEL, J. Measuring poverty: a debate. **Public Welfare**, v. 36, n. 2, 1978, p. 37-41.

MARIA, Pier Francesco de. **Evolution of poverty analysis through census data in Brazil (1950-2010)**. Revista Interdisciplinar Científica Aplicada, Blumenau, V.14, nº 2, p. 23-55 TRI II 2020. ISSN 1980-7031

OSTER, S. **The definition and measurement of poverty**. Boulder: Westview Press, 1978.

RAVALLION, M. Poor or Just Feeling Poor? On Using Subjective Data in Measuring Poverty. **Policy Research Working Paper n. 5968**. Washington, DC: The World Bank, 2012.

RAVALLION, M. **Poverty Comparisons**. Chur: Harwood Academic Publishers, 1994.

RAVALLION, M.; BIDANI, X. How robust is a poverty profile? **The World Bank Economic Review**, v. 8, n. 1, 1994. p. 75-102.

ROCHA, S. Pobreza no Brasil: a evolução de longo prazo. **Estudos e pesquisas n. 492**. Rio de Janeiro: Instituto Nacional de Altos Estudos, 2013.

ROCHA, S. **Pobreza no Brasil: afinal, de que se trata?** Rio de Janeiro: FGV Editorial, 2007.

ROCHA, S. **On Statistical Mapping of Poverty: Social Reality, Concepts and Measurement**. (Paper presented at the Seminar on Poverty Statistics). Santiago: 1997.

ROCHA, S. Estabelecimento e comparação de linhas de pobreza para o Brasil. **Texto para discussão interna n. 153**. Rio de Janeiro: IPEA, 1988.

ROWNTREE, B. S. **Poverty: a Study of Town Life**. London: Macmillan and Co, 1901.

RUGGLES, S. Big Microdata for Population Research. **Demography**, v. 51, n. 1, 2014. p. 287-297.

SALAMA, P.; DESTREMAU, B. **O tamanho da pobreza: economia política da distribuição de renda**. Petrópolis: Garamond, 2001.

SANTOS, M. E.; VILLATORO, P. A multidimensional poverty index for Latin America. **The Review of Income and Wealth**, v. 64, n. 1, 2016. p. 52-82.

SANTOS, M. E. *et al.* A multidimensional poverty index for Latin America. **OPHI Working Paper n. 79**. Oxford: Oxford Poverty & Human Development Initiative, 2015.

SAUNDERS, P.; WHITEFORD, P. Measuring Poverty: a Review of the Issues. **Discussion Paper n. 89/11**. Canberra: Office of the Economic Planning Advisory Council, 1989.

SEN, A.K. **Development as Freedom**. Oxford: Oxford University Press, 1999.

SEN, A.K. **Hunger and entitlements: Research for Action**. Helsinki: World Institute for Development Economics Research – United Nations University, 1988.

SEN, A.K. **Commodities and Capabilities**. Amsterdam: North-Holland, 1985.

SEN, A.K. **Poverty and famines: an essay on entitlement and deprivation**. Oxford: Oxford University Press, 1983.

SILVA, M. C. P.; BARROS, R. P. Pobreza multidimensional no Brasil. In: ENCONTRO NACIONAL DE ECONOMIA, 34., Salvador, 2004. **Anais...** Brasília: ANPEC, 2004.

MARIA, Pier Francesco de. **Evolution of poverty analysis through census data in Brazil (1950-2010)**. Revista Interdisciplinar Científica Aplicada, Blumenau, V.14, nº 2, p. 23-55 TRI II 2020. ISSN 1980-7031

SOUZA, P. H. G. F. A Distribuição de Renda nas Pesquisas Domiciliares Brasileiras: harmonização e compa ração entre Censos, PNADs e POFs. **Texto para discussão n. 1832**. Rio de Janeiro: IPEA, 2013.

STREETEN, P. Basic needs: some unsettled questions. **World Development**, v. 12, n. 9, 1984. p. 973-978.

STREETEN, P.; BURKI, S.J.; HAQ, M.U.; *et al.* **First things first: meeting basic human needs in developing countries**. Washington, DC; New York: The World Bank; Oxford University Press, 1981.

TOWNSEND, P. Podemos medir la pobreza en términos de privaciones múltiples. **Punto de Equilíbrio**, v. 13, n. 84, 2004. p. 8-10.

TOWNSEND, P. **The International Analysis of Poverty**. Hertfordshire: Harvester Wheatsheaf, 1993.

UNFPA (United Nations Population Fund). **Impacts of population dynamics, reproductive health and gender on poverty**. New York: UNFPA, 2012.

VAZ, F. M.; SOARES, S. S. D. Linhas de pobreza subjetivas para o Brasil. In: ENCONTRO NACIONAL DE ECONOMIA, 38., Salvador, 2008. **Anais...** Brasília: ANPEC, 2008.

VIGNOLI, J. R. América Latina y el Caribe. Pobreza y Población: enfoques, conceptos y vínculos con las políticas públicas. **Notas de Población**, n. 83, 2007. p. 11-40.

WILBER, G. **Poverty: a New Perspective**. Lexington: The University Press of Kentucky, 1975.