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Gini Coefficient and Human Development Index: A Look at Indicators for Selected Amazonas Municipalities

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Abstract

As a way of perceiving the levels of human development and income distribution in the municipalities of the State of Amazonas, this article presents a reading on these questions, anchored in the data of the United Nations Development Program (UNDP) and the Brazilian Institute of Geography and Statistics (IBGE), focusing on the Indicators: Human Development Index (HDI) and Gini coefficient. It is noteworthy that the ideal in the use of the two indicators (Gini and HDI) for the analysis of advances, is that there is no coincidence. For example: if the HDI of Jutaí was systematically increasing in the analyzed period (0.187 in 1991, 0.304 in 2000 and 0.516 in 2010), the Gini results should decrease, a fact that did not necessarily occur in this sense. The Gini coefficient for the municipality in the aforementioned periods (0.542 in 1991, 0.800 in 2000 and 0.694 in 2010) shows that although there has been an improvement in terms of coverage in health, education and income, the latter variable is still the subject of clear concentration. It consists of an uneven distribution. It was also verified in this study, the issue that involves the selective collection of waste and the sewage network. These data reinforce that although the movements in raising the structure of this service have grown since 2008, they are minimal structures, well below the reality of demand, especially when reflecting

on the implications of this service on the health and quality of life of the population. population of these places.

Keywords: Gini coefficient; HDI; Municipalities of Amazonas.

Resumo

Como forma de perceber como estão os níveis de desenvolvimento humano e de distribuição de renda nos municípios do Estado do Amazonas, faz-se nesse artigo, uma leitura nestes quesitos, ancorados nos dados do Programa das Nações Unidas para o desenvolvimento (PNUD) e do Instituto Brasileiro de Geografia e Estatística (IBGE), focando os Indicadores: Índice de Desenvolvimento Humano (IDH) e Coeficiente de Gini. Destaca-se que o ideal no uso dos dois indicadores (Gini e IDH) para análise de avanços, consiste em que não ocorra coincidência. Por exemplo: se o IDH de Jutaí, foi sistematicamente se elevando no período analisado (0,187 em 1991, 0,304 em 2000 e 0,516 em 2010), os resultados do Gini, devem decrescer, fato que não ocorreu necessariamente nesse sentido. O coeficiente de Gini para o município nos referidos períodos (0,542 em 1991, 0,800 em 2000 e, 0,694 em 2010) demonstram que embora tenha havido uma melhoria nos termos de cobertura na saúde, educação e renda, esta última variável ainda é objeto de clara concentração. Consiste em uma distribuição desigual. Verificou-se ainda neste estudo, a questão que envolve a coleta seletiva dos resíduos e a rede de esgoto. Estes dados por si reforçam que embora a partir de 2008 as movimentações em elevar a estrutura deste serviço tenham crescido, são estruturas mínimas, muito aquém da realidade da demanda, principalmente ao se refletir a respeito das implicações deste atendimento na saúde e qualidade de vida da população destes locais.

Palavras-chave: Coeficiente de Gini; IDH; Municípios do Amazonas.

INTRODUCTION

Amazonas, is one of the seven Federation Units that form the Northern Region of Brazil. Formed by 62 municipalities, located at significant distances from the capital Manaus. In terms of territorial groupings, it is divided into four mesoregions: Norte Amazonense, Sudoeste

Amazonense, Centro Amazonense and Sul Amazonense; and thirteen microregions: Rio Negro, Japurá, Alto Solimões, Juruá, Tefé, Coari, Manaus, Rio Preto da Eva, Itacoatiara, Parintins, Boca do Acre, Purus and Madeira. IBGE data show that in 2010 there were 3,483,985 people in the State, in the Capital Manaus, 1.802,014 and in the Metropolitan Region, 2.106,322.

The proportion of population concentration in the Capital is justified by the strength of the economic activities that took place there, especially with the implementation of the Manaus Free Trade Zone in 1967. From this period onwards, the intensity of industry in the region caused the formation of a significant current migration from the municipalities of the State towards Manaus. The Metropolitan Region is comprised of eight municipalities: Manaus, Careiro da Várzea, Iranduba, Itacoatiara, Manacapuru, Novo Airão, Presidente Figueiredo and Rio Preto da Eva.

As a way of perceiving the levels of human development and income distribution in the municipalities of the State of Amazonas, this article presents a reading on these questions, anchored in the data of the United Nations Development Program (UNDP) and the Brazilian Institute of Geography and Statistics (IBGE), focusing on the Indicators: Human Development Index (HDI) and Gini coefficient.

The observed data consist of 16 selected municipalities: Barcelos, Boa Vista do Ramos, Boca do Acre, Caapiranga, Iranduba, Itacoatiara, Itamarati, Itapiranga, Jutaí, Manaus, Maraã, Parintins, Pauini, Presidente Figueiredo, Santa Izabel do Rio Negro and Tapauá. It is also verified which are the municipalities that have selective garbage collection and sewage network coverage.

The structure is thus defined: in addition to this introduction, the second section makes a brief consideration of the issue of reducing inequalities, considering it to be a legitimate need. In the third section, observations related to the results of the study are made. Finally, there is the Conclusion.

REDUCING INEQUALITIES - A LEGITIMATED NEED

The economic growth of Amazonas was initially demarcated with a strong dependence on extractivism. There was an excessive focus on these sources, without a due holistic look at the dimensions of this long-

term exploratory activity. This is how Homma, (2004) discusses the dependence and valorization of the activity as the sole and main motivation of economic sources. According to him, markets are the reason for the existence and disappearance of extractive economies. The transformation of a natural resource into a useful or economical product is the first step in the extractive economy. However, as the market begins to expand, the forces that cause it to decline also increase. The limited supply capacity of extractive products, leads to the need to carry out domesticated plantations and to the discovery of synthetic substitutes or another natural product.

The result was that in the long run, this activity declines, in the various varieties, especially with the potential product of rubber, which has not resisted factors such as, for example, the competition with the "domesticated" production of rubber in Malaysia by the English. Factors like this, highlight the need to discuss the type of growth that can actually be imposed, in certain economies, since the "market dynamics" does not always represent the ideal way to launch these bases. In the process of growth of the regional economy of Amazonas, the participation of the State has been visible, either by directing Programs with this objective or by sending resources to carry them out. However, the economic growth developed in the state, as it was concentrated in the city of Manaus, contributed to the intense growth of inequalities in other municipalities in the state. There is much to discuss in this regard, since the dimensions of the State are enormous. The gap between municipal data determined by geography, in certain circumstances, makes it more difficult to cover coverage closer to local demands.

In the perspective of Anjos Filho, (2013), one must consider that the development is not uniform among societies, nor in societies either. The binomial development / underdevelopment, therefore, is a phenomenon observed not only in the international context. At the internal level of States, we find groups with significant social, political or economic differences. In this way, taking into account that the promotion of equality also presupposes the problem of equality of groups, it is necessary to recognize in the portions of the population specifics regarding their right to development, under the penalty of perpetuation of inequalities. Within this focus, Article 3 of the 1988

Constitution supports this repair, considering that the following are fundamental objectives of the Federative Republic of Brazil:

I - Build a free, fair and solidary society;

II - Guarantee national development;

III - eradicate poverty and marginalization and reduce social and regional inequalities; and

IV - promote the good of all, without prejudice as to origin, race, sex, color, age and any other form of discrimination.

The capacity perspective supports the perception that "the ability to have an adequate standard of living in order to survive and develop - including adequate nutrition, safe water and basic sanitation, shelter and housing, access to education and social services and basic health - it is recognized as a fundamental human right, which governments and other actors are obliged individually and collectively to defend and support ", as (Costa 2008 apud Vizard, 2006, p.103).

The reduction of regional inequalities, at least since 1967, based on Industry, while providing economic heating in the City of Manaus, penalized it on the other hand, with the burden of bearing a population volume far beyond its capabilities. structural assistance in practically all modalities of social demands that can be conceived. Otherwise, the other municipalities apparently left to their own devices, had several problems intensified, as a result of the regional economic imbalance.

As of the 1988 Constitution, the Brazilian Municipality, which until then was merely an integral part of the Member State, was raised to the condition of federated entity, becoming an autonomous character of the so-called Federative Pact. As a result, it is certain that the reality of the Municipality has undergone major changes, resulting from its unprecedented role in the new pattern of federative organization that the Constitution has implemented. These changes were configured mainly in the changes that occurred in the distribution of tax resources and also in the process of decentralization of public policies, which gave the Municipality new political and administrative responsibilities (SANTOS and MATTOS, 2006, p.732).

The level of inequality in terms of income in Brazil and, more markedly in certain peripheral regions, as in the case of the municipalities of Amazonas, is still too painful. In spite of this, the

legislative advances that are periodically transferred to these areas are significant, in order to enable the minimization of these inequalities.

Thus, for Santos and Mattos, (2006, p.742), most of the new Municipalities, as well as most of the already existing Municipalities, have their municipal revenue very dependent on the income from transfers, in particular from the Participation Fund of Municipalities (FPM). This is made up of 22.5% of the sum of taxes on industrialized and income products. The FPM distribution criterion is directly proportional to the municipal population and inversely proportional to its per capita income. It is a source of municipal revenue with a redistributive bias that favors small municipalities located in less dynamic regions.

In this way, reducing or equalizing regional inequalities can contribute to poverty reduction. This, in turn, is understood as the result of the action of men, resulting from the ways in which they think, interpret and direct the construction of history, in the way they accept the minimum standards of survival of each individual present in society. In Brazil, the existence of poverty does not occur due to the lack of resources, but due to the unequal distribution of these, according to Wlodarski and Cunha, (2009).

The relationship between poverty and the environment is a cause widely discussed by Sachs. According to him, the exit from the double node of poverty and the destruction of the environment requires a relatively long period of more economic growth, at least in the South and East, in order to sustain the transition strategies. Economic growth, however, should not be the one we have known for decades, which freely externalizes social and environmental costs and which widens social and economic inequality. Growth through inequality, based on an unrestrained market economy, can only deepen the division between and within nations, (SACHS, 1993, p. 34).

According to Barros et al (2000 p. 124), poverty, of course, cannot be defined in a unique and universal way. However, we can say that it refers to situations of need in which individuals are unable to maintain a minimum standard of living consistent with the socially established references in each historical context. Thus, the conceptual approach to absolute poverty requires that we can initially build an invariant measure over time of the living conditions of individuals in a society. The notion of a poverty line is equivalent to this measure.

Ultimately, a poverty line is intended to be the parameter that allows a specific society to consider as poor all those individuals who are below its value.

RESULTS AND DISCUSSIONS

In this section, a reading of the data related to the concentration of income is made - the Gini Coefficient. The Gini coefficient is a measure of inequality developed by the Italian mathematician and statistician Conrado Gini and published in 1912 in the document Variability and mutability. It consists of a number between 0 and 1, where 0 corresponds to complete income equality and 1 to complete inequality. The Gini index is the coefficient expressed in percentage points, (SOLIGO, 2012, p. 21).

Gini coefficient

Income concentration is something that categorically exposes the problem of inequality. In order to demonstrate this aspect, at the first moment, a reading of the Gini Index data is made in a comparative study in Brazil, in the North Region, Amazonas and in the capital of the State.

Thus, it appears that there is a significant drop in this level of concentration in the country and in the other spheres analyzed. On the contrary, it appears that between the period 1991-2000, there was a spike in the level of this indicator in the City of Manaus. In reality, the increase in this index is related to the period in which the Brazilian economy suffered the severity of the failures of the economic packages, added to the process of commercial opening that took place under the Collor government, with a strong impact on the Manaus Free Trade Zone.

Table 1: Gini Index - People with income

	1991	2000	2010
Brasil	0,636	0,609	0,525
Norte	0,612	0,598	0,545
Amazonas	0,620	0,611	0,558
Manaus	0,593	0,640	0,633

Source: IBGE / Demographic Census – 1991, 2000, 2010

In the context of households, inequality is lower in rural households, both in Brazil and in the North and Amazonas regions. Which leads us to consider that in these areas the weight of unemployment is even lower, due to the economic representativeness that can originate in these areas: such as family farming and other productive modalities. Concentration in urban areas shows a systematic reduction.

Table 2: Gini Index - People with income per household

	Situação do domicílio	Ano	
		2000	2010
Brasil	Urban	0,585	0,527
	Rural	0,548	0,480
Norte	Urban	0,593	0,533
	Rural	0,534	0,476
Amazonas	Urbana	0,590	0,547
	Rural	0,487	0,470

Source: IBGE / Demographic Census – 1991, 2000, 2010

A close look at the State of Amazonas, there is the perception that the issue of concentration of income is much more intense in the municipalities of the State. In all municipalities there is an increase in this result, which makes it very clear that although there has been relative economic expansion in Brazil and in the State of Amazonas, the interior is still below the ideal income level, especially when compared with the capital Manaus.

The indexes of Caapiranga, Boa Vista do Ramos, Pauini, Itapiranga, Itamarati and even Itacoatiara, which is part of the Metropolitan Region of Manaus, are a clear demonstration of this event.

Table 3: Gini Index - Municipalities of Amazonas

Município	1991	2000	2010	Município	1991	2000	2010
Barcelos	0,439	0,638	0,736	**Jutaí**	0,542	0,800	0,694
Boa V. Ramos	0,493	0,690	0,609	**Manaus**	0,570	0,640	0,633
Boca do Acre	0,589	0,619	0,642	**Maraã**	0,449	0,552	0,697
Caapiranga	0,514	0,525	0,597	**Parintins**	0,622	0,613	0,594
Iranduba	0,468	0,583	0,602	**Pauini**	0,639	0,699	0,726
Itacoatiara	0,540	0,604	0,596	**Pres. Figueiredo**	0,607	0,621	0,538
Itamarati	0,467	0,655	0,776	**Santa I.R. Negro**	0,486	0,681	0,727
Itapiranga	0,486	0,555	0,673	**Tapauá**	0,417	0,621	0,602

Source: IBGE / Demographic Census – 1991, 2000, 2010

In the city of Manaus, in turn, understanding how the income is distributed, refers to the spatialization of this income, since in the capitalist city the housing places with the best infrastructure and location, tend to be occupied by the population of greater power purchasing. The contextualized income to the place of residence deepens and amplifies the denial of the right to the city by the inhabitants of Manaus, according to Bentes, (2014, p.74).

Human Development Index – HDI

Likewise, in this section, data from the Human Development Index (HDI) are analyzed, in an attempt to respond to the objective proposed in the present work. It consists of a number between 0 and 1, where 0 corresponds to no human development and 1 to total human development. Like the Gini index, the HDI is expressed in percentage points.

The Human Development Index was created by Mahbub ul Haq in collaboration with Indian economist Amartya Sen, winner of the 1998 Nobel Prize in Economics, the HDI is intended to be a general, synthetic measure of human development. Despite expanding the perspective on human development, the HDI does not cover all aspects of development and is not a representation of people's "happiness", nor does it indicate "the best place in the world to live". Democracy, participation, equity, sustainability are other aspects of human development that are not included in the HDI. The HDI has the great merit of synthesizing the understanding of the topic and broadening and fostering the debate. Currently, the three pillars that make up the HDI are: health, education and income, (UNDP).

It would not sound strange to say that the Capital of Amazonas, Manaus, has the highest HDI in 2010, (0.737). In 1991, this index was 0.521. Nevertheless, the municipalities of Tapauá, Pauini and Jutaí had in 1991 the indexes closest to zero (0), as shown in Table 4. In 2010 these were already leveled in median position, (0.502; 0.496; and 0.516). There are relative variations between the period 1991 and 2010, which lead us to the perception that there was an effort to raise these levels in the indicator. Obviously, there was a construction in a greater number of schools, covering health posts. In terms of income, the support from the “Bolsa Família” must have contributed to achieving a less painful result.

The destination given to waste resulting from daily consumption is still a problem very poorly managed by municipal governments. In the municipalities of Amazonas, this reality is challenging. According to the data shown in table 5, there was a number in Amazonas far below the population's capacity to generate waste. Even more serious is the disregard for the possibilities of generating income through this area. In addition to reducing the sources of outbreaks of various diseases, a quantity of material would no longer go to the beds of streams or inappropriate areas, generating income in a humanized way through recycling.

Table 4. Human Development Index (HDI) - Municipalities of Amazonas

Município	1991	2000	2010	Município	1991	2000	2010
Barcelos	0,317	0,384	0,500	**Jutaí**	0,187	0,304	0,516
Boa V. do Ramos	0,287	0,372	0,565	**Manaus**	0,521	0,601	0,737
Boca do Acre	0,288	0,401	0,588	**Maraã**	0,265	0,291	0,498
Caapiranga	0,258	0,403	0,569	**Parintins**	0,414	0,488	0,658
Iranduba	0,323	0,437	0,613	**Pauini**	0,177	0,287	0,496
Itacoatiara	0,408	0,491	0,644	**Pres. Figueiredo**	0,461	0,537	0,647
Itamarati	0,210	0,331	0,477	**S. I. Negro**	0,236	0,384	0,479
Itapiranga	0,409	0,478	0,654	**Tapauá**	0,151	0,293	0,502

Source: Atlas Brasil 2013 United Nations Development Program

The most relevant potential impacts of solid waste on the environment are undoubtedly at their final destination. The pollution associated with its management refers to the deposit on land without any care with the generation of leachate. This leachate can reach groundwater polluting the water used for consumption and residential supply, for example. Not least, landfills produce gases such as methane, which can be harmful to human health. Nevertheless, the great part of solid waste is still discharged directly into rivers and lakes without any treatment. The fundamental problem in the management of these damages refers to the fact that virtually all solid waste produces mixtures, which without proper treatment, cause damage to human health and the environment, (FERREIRA, 2014 apud NOGUEIRA, 2006).

Table 5: Municipalities with selective collection service by coverage area

Brazil, Federation Unit and Municipality	*2008*
Brazil	1.065
Amazonas	6
Coari	1
Guajará	1
Manacaupuru	1
Manaus	1
Maués	1
Parintins	1

Source: IBGE - Basic Sanitation Survey (2008)

Table 6: Number of municipalities with a sewage collection network

Brazil, Federation Unit and Municipality	*2000*	*2008*
Brazil	2877	3069
Amazonas	1	11
Autazes	-	1
Boca do Acre	-	1
Borba	-	1
Carauari	-	1
Coari	-	1
Fonte Boa	-	1
Manaus	1	1
Maraã	-	1
Nova Olinda do Norte	-	1
Presidente Figueiredo	-	1
Uarini	-	1

Source: IBGE - Basic Sanitation Survey (2008, 2008)

Sewage is one of the best ways to treat the origin of some diseases such as diarrhea. This pathology in the city of Manaus has even been one of the causes of most of the hospitalizations of children. Determined mainly by the precarious conditions of the sanitation of the environment, infantile diarrhea in developing countries reaches incidences that, sometimes, exceed ten episodes per child per year, according to Benício and Monteiro, (2000).

It is an area that still requires a substantial effort to promote an increase in the quality of life of the population of Amazonas. Until 2000, only Manaus had a sewage system. In 2008 this scenario is undergoing changes, however, still far from the Amazonian demands.

CONCLUSION

Environmental degradation and the depletion of resources affect the quality of life of society in general, but mainly the conditions of the poorest people, as they are more exposed to risky environments and, often, depend on nature as direct source of livelihoods - for example, agriculture or fisheries. The persistence of extreme poverty is unacceptable when there is no shortage of resources to meet the basic needs of the entire population, as punctuated by Serra and Serra, (2013).

If in the big cities the incidence of poverty is evident, the State of Amazonas is no exception to this rule. Although the effective mark of economic growth is present, in most Brazilian municipalities this reality is appalling. Especially in urban spaces, inequality and poverty live side by side.

Through the data worked here, it was noticed that the concentration of income in the municipalities of the State of Amazonas, at least until the year 2000 had indexes close to 1 (hum), which according to the Gini coefficient, there is an extremely uneven. There are cases such as in the municipality of Santa Izabel do Rio Negro, Pauini, Boca do Acre, Barcelos, Iranduba, Itamarati, Maraã, among others, in which this index increased considering the period from 1991 to 2010, which shows that the income was concentrated if even more.

In terms of health, education and income, the HDI showed a relative increase in this indicator, since the more the result tends to 1 (one), the more this place is directed towards total human development. Manaus leads with the highest rates, followed by municipalities such as Itacoatiara, Presidente Figueiredo and Parintins. Not that these municipalities have reached the maximum limit (they were in 2010 as a position between 0.6 and 0.7). Much remains to be done to achieve this result. However, it is known that the effort in recent years to increase coverage in the provision of health and education services, are already factors that in one way or another, in the long run, should contribute to a more expected result.

It is noteworthy that the ideal in the use of the two indicators (Gini and HDI) for the analysis of advances, is that there is no coincidence. For example: if the HDI of Jutaí was systematically increasing in the analyzed period (0.187 in 1991, 0.304 in 2000 and

0.516 in 2010), the Gini results should decrease, a fact that did not necessarily occur in this sense. The Gini coefficient for the municipality in the aforementioned periods (0.542 in 1991, 0.800 in 2000 and 0.694 in 2010) shows that although there has been an improvement in terms of coverage in health, education and income, the latter variable is still the subject of clear concentration. It consists of an uneven distribution. It was also verified in this study, the issue that involves the selective collection of waste and the sewage network. These data in themselves reinforce that although from 2008 the movements in raising the structure of this service have grown, they are minimal structures, well below the reality of demand, especially when reflecting on the implications of this service on the health and quality of life of the population. population of these places.

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