

Regional health inequalities: changes observed in Brazil from 2000-2016

Mariana Vercesi de Albuquerque ¹
Ana Luiza d'Ávila Viana ²
Luciana Dias de Lima ¹
Maria Paula Ferreira ³
Edgard Rodrigues Fusaro ⁴
Fabiola Lana Iozzi ¹

Abstract *Advances in reducing poverty and inequalities in the 2000s had a paradoxical effect in Brazil. This article examines how socioeconomic transformations, and the complexity of health services, are expressed in the regions established for planning purposes and the inter-governmental management of the Brazilian Unified Health System. An effort was made to identify and explain differences in the compositions of the 438 existing health regions and their spatial distribution by comparing situations observed in 2016 with those in 2000. Factor analysis and grouping techniques were used to construct a typology in the two years of the series, which was based on a diverse set of secondary data sources. It was found that there was an evolution in terms of income levels and service provision within the health regions, with a significant improvement in the socioeconomic conditions of the population. These results suggest that there was a positive impact from the combination of strategies related to social, economic and regional policies for the promotion of development, which generated more widespread well-being within the affected areas. However, limitations remain regarding the policies implemented for the universalization of the health system.*

Key words *Health inequalities, Regional health planning, Unified Health System, Health regions*

¹ Departamento de Administração e Planejamento em Saúde, Escola Nacional de Saúde Pública, Fundação Oswaldo Cruz. R. Leopoldo Bulhões 1480/Prédio da Ensp/709, Manguinhos. 21041-210 Rio de Janeiro RJ Brasil. mariana.albuquerque@ensp.fiocruz.br

² Departamento de Medicina Preventiva Faculdade de Medicina Universidade de São Paulo. São Paulo SP Brasil.

³ Fundação Sistema Estadual de Análise de Dados. São Paulo SP Brasil.

⁴ Departamento Intersindical de Estatísticas e Estudos Socioeconômicos. São Paulo SP Brasil.

Introduction

Brazil is marked by deep regional inequalities that are the result of a historical heritage that demarcates the territory use and the political and economic setup of the country.

Throughout the first half of the twentieth century development was focused on productive activities related to the geographic specificities of macro-regions, which produced diverse economic complexes that were not necessarily integrated with each other. The concentration of urban, productive activities in coastal areas (the northeast) and in large metropolitan centers (the southeast and south) expanded with the industrialization and rural-urban transition of the population¹.

From the 1970s a series of events marked the globalization of the country, when the state assumed a new role in promoting the competitive integration of places and regions within the worldwide market. There were significant changes at that moment, which included the following: increasing public and private investment in territorial fluidity (transportation networks and logistics, communication and information); the financialization and computerization of activities; the growth of productive specializations, with a redefinition of the role of the major cities as centers of finance, innovation, and economic and political control; the emergence of new frontiers of modernization and medium-sized cities, including the expansion of agribusiness in the midwest; more selective territorial integration, which was linked to the insertion of places and regions in the international market; and the growth of population mobility throughout the whole of Brazil².

Public policies encouraged international integration in a fragmented way, through the incorporation of new places, activities, technical systems and regulations, and configuring regions that were more and less concentrated, fluid, dense, competitive and interdependent in relation to the most advanced centers of world markets^{3,4}. This modernization resulted in a process of productive reorganization and also an increase in socio-spatial inequalities, which remained associated with the concentration of power in the hands of certain groups and the concentration of infrastructures and wealth in specific places and activities.

In general, the territorial configuration of the Unified Health System (SUS) expresses and reproduces regional inequalities in Brazil. In the

first decade of its implementation (1990-2000) the spatial distribution of public health services followed the trends of de-concentration and inequality that marked the globalization process⁵. Medium and highly-complex equipment remained largely concentrated in the state capitals, the major cities, and in a few regional poles, which resulted in a large variation in patient demand (higher in relation to more complex services) for the use of services⁶. The opposite occurred in the case of basic health care, particularly in relation to teams linked to the Family Health Program (PSF). There was a significant expansion in family health care in the poorest regions of the country, with greater limitations for its implantation in the metropolitan peripheries; more specifically the richer and more densely populated cities⁷. This pattern of supply distribution has had repercussions on social and geographical inequalities in access to health services, with important differences between residents of more or less economically developed regions^{6,8}.

In the 2000s, Brazil experienced a reduction in poverty and inequality^{9,10}, considering, in particular, the distribution of income at the base of the population¹¹, following a tendency that was contrary to that underway in rich and democratic countries¹², and Brazil became an example to the rest of the world. For example, changes at the beginning of this century can be measured by an increase in GDP, average municipal income, individual income, household consumption power and the level of schooling of the population. With regard to health indicators, Brazil also recorded significant gains, maintaining the trends of reducing infant mortality and increasing life expectancy that had occurred in previous decades, as well as attaining much better levels than other emerging and middle income countries in 2010^{13,14}.

However, research indicates that the advances observed in this period had a paradoxical effect in Brazil¹⁵. There has been a simultaneous reduction in the average levels of poverty and an increase in the distance between areas with lower and higher concentrations of poor people; inequalities are still high and they are significantly expressed in certain groups and social policies. The distribution of the poorest municipalities remained concentrated in the north and northeast in 2010, with the greatest reduction in poverty in the south and southeast.

In terms of health, the changes have also been contradictory. Although basic health care has been expanded in the country as a whole, in-

corporating the metropolitan regions, there has been a decrease in the supply of hospital beds, with an increase in the number of small hospitals in several municipalities¹⁶. Recent surveys have indicated the continuation of the concentration of medium and highly complex equipment in a limited number of cities, and the need for large redistributions between macro-regions and Brazilian states in order to provide certain services¹⁷.

Based on these considerations, the following questions arise: what are the changes related to regional inequalities that were evident in the Brazilian health system from 2000 to 2016 and what explanatory hypotheses can be drawn from the trends that were identified?

The objective of this study was to analyze how transformations related to socioeconomic conditions, as well as the supply and complexity of health services, are evident in the state regions in terms of the planning, negotiation and intergovernmental management of the SUS. An attempt was made to identify and explain differences in the composition of the health regions and their distribution in the Brazilian macro-regions (north, northeast, midwest, southeast and south) by comparing situations identified in 2016 with those in 2000.

Method

The patterns of inequalities were observed by constructing a typology that differentiated the 438 health regions in Brazil in February 2016 (www.datasus.gov.br) according to groupings with different socioeconomic profiles regarding the supply and complexity of health services. This typology was constructed based on a diverse set of data sources. The following were used: the Demographic Census conducted by the Brazilian Institute of Geography and Statistics (IBGE) (www.ibge.gov.br); the SUS databases available at Datasus (www.datasus.gov.br); and the System of Regional Accounts (IBGE).

The decision to use these data sources was based on the following six guidelines: a) valid, consistent and reliable data; b) data widely accepted and recognized by the respective technical areas; c) standardized and periodically updated data; d) data with national coverage that also allowed its disaggregation at the municipal level; e) data to be preferably accessible to the public and that allowed a minimum pairing at the municipal level; f) data presenting a historical series.

The variables selected to compose the typology expressed the conditions defined for the measurement of inequality patterns between regions (Table 1). The results were analyzed during two periods, 2000-2008 and 2010-2015, which were respectively denominated as the 2000 edition and the 2016 edition. The data years varied according to their periodicity and updating; the most recent edition of the source was chosen.

The most recent data (2016 edition) were used to perform the factorial analysis¹⁸, with extraction of the principal components for each of the dimensions described in Chart 1. Two factorial scores with zero mean and variance equal to 1 were generated to express the socioeconomic situation of the regions and the supply and complexity of the regional health system.

The level of socioeconomic development of the municipalities belonging to the health regions was measured by the factor related to socioeconomic development. The regions that had the highest values for this indicator were characterized by grouping the most urbanized, populous, industrialized and dynamic municipalities. The factor related to the supply and complexity of health services indicated the degree of complexity of the services offered in the regions. Higher values for this indicator were representative of a greater supply and complexity of the health system.

A k-means analysis was then performed using the two scores¹⁸ and five groups of regions were obtained. Using an analysis of the distribution of the two scores in the five groups it was possible

Table 1. Criterion for constructing the typology of the health regions, Brazil, 2016.

Socioeconomic development	Supply and complexity of health services		
	Low (-1.62217 to -0.12590)	Medium (-0.12591 to 1.16828)	High (1.16829 to 3.22391)
Low (-1.8811 to -0.3515)	Group 1		
Medium (-0.3514 to 0.8529)	Group 2	Group 3	
High (0.8530 to 4.0873)	Group 4		Group 5

Chart 1. Variables used to construct the typology, Brazil, 2016.

Dimension	Variables	Source	2016 Edition	2000 Edition
Socioeconomic development	Household income per capita (in Brazilian reais)	Demographic census IBGE	2010	2000
	GDP per capita (in R \$ 1.00)	Regional accounts IBGE	2013	2000
	% of people aged 10 and over with at least elementary education	Demographic census IBGE	2010	2000
	% of people aged 10 and over with at least high school education	Demographic census IBGE	2010	2000
	Population density	The authors	2010	2000
Supply and complexity of health services	Number of hospital beds per 1,000 inhabitants	CNES	Dec/2015	Dec/2005
	Number of doctors per 1,000 inhabitants	CNES	Dec/2015	Dec/2005
	% of beneficiaries of health insurance	ANS	Sep/2015	Dec/2000
	% of highly-complex hospitalizations out of total hospitalizations within the SUS	SIH	2014	2008

to re-write the groupings according to combinations of the two factors, which were expressed in the following three categories: low, medium and high (Table 1).

For the 2000 edition, the typology was reproduced by standardizing the variables corresponding to this edition according to the mean and standard deviations of their components obtained in the 2016 edition and applying the coefficients of the factorial scores obtained in the latter edition. These scores were subsequently classified according to the criteria presented in Table 2.

These procedures ensured that there was a comparison between the two periods because the standards for constructing the factorial scores were the same for the 2000 and 2016 editions. For the 2000 edition, the 438 health regions were drawn from the aggregation of existing municipalities in that year (5,507 in total). The 63 municipalities created since 2000 were aggregated in the same health regions as the municipalities from which they were formed.

Results

The five groups of health regions generated by the typology were as follows:

Group 1 - the main characteristic of this group was low socioeconomic development. In

the 2016 edition it included 175 regions with 2,151 municipalities that comprised 22.5% of the Brazilian population, which was located predominantly in the northeast region;

Group 2 - was characterized by medium and high levels of socioeconomic development and low levels of supply and complexity of local health services. It included 47 regions, 482 municipalities and 5.7% of the Brazilian population in the 2016 edition; the majority of these regions were located in the macro-regions of the mid-west, southeast and north;

Group 3 - represented the health regions with medium and high levels of socioeconomic development and service provision. In the 2016 edition it comprised 129 regions and 1,891 municipalities, which represented 20.3% of the Brazilian population. These regions were located predominantly in the southeast and south macro-regions;

Group 4 - was characterized by grouping regions with high socioeconomic development and medium levels of service provision. It included 27 regions, 300 municipalities and 10.6% of the Brazilian population, which was located largely in the southeast macro-region;

Group 5 - was characterized by regions with high socioeconomic development and high levels of service provision. It included 60 regions, 746 municipalities and 40.9% of the Brazilian population, which was located predominantly in the southeast and south macro regions.

Table 2. Distribution of health regions according to typology, Brazil 2000 and 2016.

Typology	2000			2016		
	Regions	%	Population	Regions	%	Population
Group 1	336	76.4	79,735,932	175	40.0	45,948,301
Group 2	17	4.1	8,395,337	47	10.7	11,652,320
Group 3	76	17.4	51,050,166	129	29.5	41,574,787
Group 4	6	1.1	15,955,438	27	6.2	21,593,928
Group 5	3	0.9	14,662,297	60	13.7	83,713,123
Total	438	100.0	169,799,170	438	100.0	204,482,459

Source: Datasus and IBGE. Designed by the authors.

A great evolution was observed in the levels of income and service provision among the 438 health regions during 2000-2010, with a significant improvement in the socioeconomic conditions of the population. Comparing the two editions of the typology, in 2016, 40% of the health regions were classified as Group 1, i.e. with a low level of socioeconomic development. When the socioeconomic and service provision standards of this edition were applied to the data from 2000, 76.4% of the health regions were in this group. In 2016, 46 million (22% of the population) lived in health regions situated within Group 1, while in 2000 this group included 79 million people (50% of the population) (Table 2).

In 2016, Groups 4 and 5 included 87 health regions. In 2000, only nine regions had similar socioeconomic levels and levels of service provision to those observed in these two groups in 2016. In 2000, these same two groups incorporated 18% of the Brazilian population, compared to 50% in 2016. The number of municipalities increased from 71 in 2000 to more than 1,000 in 2016.

It should be noted that in 2000 only three health regions had socioeconomic levels and levels of service provision similar to those observed in Group 5 in 2016. Of these, two were located in the state of São Paulo and one was in the state of Rio Grande do Sul.

These same trends were observed in the other groups. In 2000, 17 regions were classified in Group 2 (medium and high levels of socioeconomic development and low levels of supply and complexity of local health services) compared to 47 in 2016. In Group 3 (medium levels of socioeconomic development and medium/high levels of service provision/complexity of care) 76 re-

gions were classified in this group in 2000 compared with 129 in 2016 (Table 2).

In the Brazilian macro regions there was a change in the groups. In 2000 only six health regions from Group 3 and no health region from Groups 4 and 5 were located in the north and northeast macro regions. In 2016, with the exception of Group 5 in the north macro region, there was an increase in the number of regions from the various groups, with the presence of Group 4 (in 2016) and the expansion of Group 2 (between 2000 and 2016). This was despite the large concentration of regions in Group 1, with a combination of low socioeconomic development and low availability/provision of health services. The northeast region was characterized by a greater presence in Groups 3, 4 and 5 in 2016, which shows an improvement in the profile of socioeconomic development and service provision (Figure 1).

The midwest macro region was diversified in 2016 by a greater presence of Groups 2 and 3, thus characterizing itself by combining medium and high socioeconomic development with low and medium availability/provision of health services. The southeast and south macro regions presented deconcentration or internalization of development and the availability of services, with a strong presence of Groups 3 and 5 and an emphasis on the presence of Group 5 to a larger degree in the state of São Paulo.

Regarding the transition of the regions between the groups in the studied period, it was observed that of the 336 regions classified as belonging to Group 1 in 2000, 175 (52.1%) remained in Group 1 in 2016. These regions were located in the north and northeast macro regions. In terms of Group 2, there were 45 regions

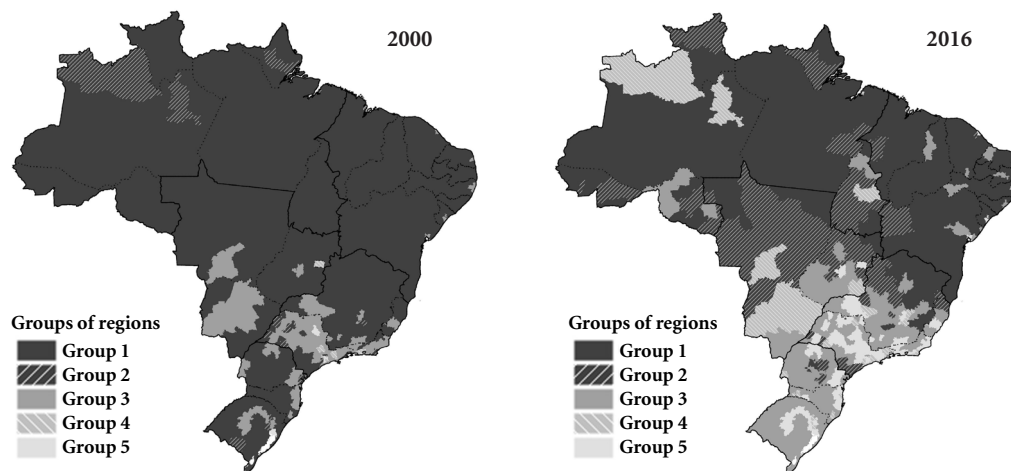


Figure 1. Distribution of the 438 health regions according to the typology of municipalities, Brazil, 2000 and 2016.

Source: Datasus and IBGE. Designed by the authors.

Note: Group 1 = regions with low socioeconomic development and with low, medium or high supply/complexity of health services; Group 2 = regions with medium or high socioeconomic development and low supply/complexity of health services; Group 3 = regions with medium socioeconomic development and with medium or high supply/complexity of health services; Group 4 = regions with high socioeconomic development and medium supply/complexity of health services; Group 5 = regions with high socioeconomic development and high supply/complexity of health services.

(13.4%) that showed improvement in socioeconomic conditions; these were located in the mid-west macroregion, northwest Minas Gerais and Tocantins. In terms of Group 3, 109 (32.4%) of these 336 regions moved from Group 1 (in 2000) due to improvements in socioeconomic conditions and service provision. These regions were located in the southern macro-region, in Minas Gerais and in the northeast coastal region. Six regions, which were located in the states of Tocantins, Minas Gerais, Rio de Janeiro, Santa Catarina and Mato Grosso do Sul, migrated to Group 4, with high socioeconomic development and medium service provision. In addition, a health region located in the state of Santa Catarina migrated from Group 1 to Group 5 between 2000 and 2016 (Figure 1).

In terms of Group 2, which comprised 17 regions in 2000, only two regions remained in this group in 2016; one was located in the state of Amapá and another was in the state of São Paulo. The other regions showed improvements in socioeconomic conditions and service provision. Of the 76 regions classified as Group 3 in 2000, slightly more than 80% migrated to Groups 4 and 5, mainly due an increase in economic de-

velopment. These regions were mainly located in the state of São Paulo and the coastal region of the south.

Between 2000 and 2010, per capita GDP grew, and per capita household income increased from R \$584 to R\$668 (Brazilian Reals, July 2010), with a significant reduction in poverty. The increase in the educational level of the Brazilian population was significant. Between 2000 and 2016 the percentage of people aged 10 and over with at least elementary education increased from 34.9% to almost 50% of the Brazilian population; those with a minimum of high school education increased from 19.3% to 31.8%.

Regarding the supply and complexity of health services, the number of beds per thousand inhabitants dropped from 2.5 in 2000 to 2.2 in 2016. Investment in the provision of hospital beds did not follow the growth trends of the other indicators that caused changes in the health regions in Brazil, i.e. the growth of population, income, GDP and educational level. At the same time that there was a general fall in the number of beds, there was an increase in the number of doctors per thousand inhabitants from 1.18 to 1.72. The share of private health plans, expressed

by the percentage of beneficiaries of such plans, also increased from 19.8% to 35.3% of the Brazilian population between 2000 and 2015.

Despite the improvements observed in the analyzed indicators, the inequality between regions persists. The household income of residents in the regions included in Group 1 was equivalent to 30% of that in Group 5. In Group 1, doctors who worked within the SUS represented 92% of the total number of doctors, compared to 70% in Group 5. In Group 5, 58% of the population had health insurance, whereas in Group 1 this percentage was equal to 5% (Table 2).

Discussion

Several factors may explain the changes in the territorial inequalities observed in the health regions. The first hypothesis is that they reflect a combination of social and economic policies (growth in income and levels of schooling) associated with regional development strategies.

In the 2000s, the Brazilian State took a new direction in terms of reducing poverty and inequality, which involved the adoption of different initiatives¹⁵. The latter included the following: income transfer policies (such as the 'Bolsa Família' Program and the Continuous Cash Benefit social assistance system); incentives to increase formal employment and the minimum wage; the expansion of educational resources; the increase in public investment in infrastructure; the expansion of services such as real estate credit; and the increase in production and consumption within the internal market.

According to Araújo¹, this new pattern of growth that was focused on mass production and consumption had different regional effects which particularly favored the north and northeast of Brazil because increases in the minimum wage had greater repercussions in the northeast, with results well above the Brazilian average. The dynamism of consumption subsequently resulted in the expansion of the food and beverage industries, and changes in housing policy resulted in the expansion of the civil construction sector.

Other strategies that were adopted focused explicitly on the territorial dimension of development and sought to value Brazil's regional diversities, stimulating new intergovernmental and intersectoral agreements¹⁹⁻²¹. The distribution of population within Brazil is another key variable that can help to explain the changes in the national scenario. The west central Brazil, part of the north, and the portion west of the northeast region were denser in terms of population, and the medium-sized cities grew more intensely during this period.

Health policy specifically followed proposals for regional development, either by being included in intersectoral projects, as in the case of the Health Plan in the Legal Amazon, or by investments in sectoral regionalization, or by attempts to improve the integration of health services, the distribution of resources and expanding access to services²²⁻²⁴.

More specifically, changes in the typology in the period 2000-2016 can be understood by the growth of the following components: per capita GDP; the level of income of Brazilian families; the level of education; the supply of doctors; and supplementary medicine.

Table 3. Main characteristics of the groups of health regions in Brazil 2016.

Characteristics	Group	Group	Group	Group	Group	Total
	1	2	3	4	5	
Average per capita household income (in Brazilian reais)	271	484	582	660	895	668
GDP per capita	9,230	21,975	23,111	30,023	37,286	26,446
People aged 10 or over with at least elementary education (%)	31.9	44	46.4	55.3	58.6	49.2
People aged 10 or over with at least high school education (%)	17.5	26.5	28.8	36.2	40.2	31.8
Beneficiaries of health plans in the population (%)	5.4	14.6	25.4	39.5	58.1	35.3
Doctors per thousand inhabitants	0.63	0.9	1.42	1.6	2.61	1.72
SUS doctors out of total doctors (%)	92.2	86.5	83.3	78.1	70.0	75.4
Hospital beds per thousand inhabitants	1.7	1.7	2.4	1.9	2.5	2.2
SUS beds out of total beds (%)	88.8	76.6	72.9	68.7	62.5	70.6

Source: Datasus and IBGE. Designed by the authors.

In the north, and especially in the midwest, the diversification of the represented groups is partially justified by the fact that in these two macro-regions socioeconomic development was particularly linked to the expansion of agriculture and mining, with great emphasis on exportation, the intense use of technology, and expansion of the logistical infrastructure (transportation and communication). Such activities resulted in population growth that was concentrated in a few urban centers, which was not always followed by investment and planning that was capable of absorbing the new demands for urban and social services. This socioeconomic dynamism, which occurred most intensely in the midwest, was partly accompanied by the expansion of health services.

The changes in the northeast of Brazil were characterized by improvements in the profile of socioeconomic development and service provision; however, this was extremely concentrated in only a few regions. One explanation for this was that the investment in, and expansion of, economic activities maintained the historical trend of concentration in state capitals and in traditional regional poles, and also a few areas of this macro-region were included in the recent process of the expansion of agribusiness (as in western Bahia).

In the southeast and south, the development and supply of health services was more internalized, especially in the state of São Paulo. This trend can be partially explained by the de-concentration of industries, services and urban population that occurred in these regions from 1980-1990. Furthermore, there has been an historical concentration of wealth, resources and services in the south and southeast, especially in the state of São Paulo, which is the core area of the richest macro-region in Brazil.

The improvement in the distribution of the health regions according to the typological groups, with an emphasis on the reduced importance of the weight of Group 1 during the period of 16 years, is indicative of how a combination of social, economic and regional policies may be a solution to raising economic production, as

well as generating well-being in a more disseminated form in regional terms (represented not only as better distribution of income but also as the provision of essential or universal public services). There was an expansion of primary health care services through the Family Health Strategy, which highlighted the regions that had previously been less favored by public and private healthcare provision. There was also an improvement in the regional distribution of medium and highly-complex services, as well as health professionals, which accompanied the regional growth of income.

Nevertheless, it is necessary to consider the limits of the policies that were implemented in the last decade in terms of the universalization of the health system. As Viana and Machado²⁵ have observed, the 'trigger' provoked by the growth of the economy and formal employment has had a greater impact on the expansion of the commercialization of private health insurance and plans compared to the expansion of the SUS due to the linkage of increases in federal spending to the nominal variation of GDP and the channeling of public resources to private sector financing (in the form of taxes, fiscal exemptions and various subsidies, including credit). In this study, this was clear from the increase in the number of beneficiaries of supplementary medicine and of doctors, who accounted for most of the changes observed in relation to the supply/complexity of the health system in various regions of Brazil.

Explicit regional health policies in recent years have produced some progress, such as prioritizing regional strategies for intergovernmental negotiation, investment, planning and expansion of the service network, in order to address health inequalities. However, some limitations have also been encountered, which stem from the sectoral logic of health policy and the health system, as well as inherited regional inequalities.

Consequently, given the current trends of changes in regional health inequalities in Brazil, the results for social protection are uncertain and depend on the centrality that will be given to social policies of a universal character in the development model that will be constructed over the coming decades.

Collaborations

MV Albuquerque, ALD Viana and LD Lima were responsible for analyzing the information, as well as designing and writing the article. MP Ferreira developed the methodological proposal, drafted the Methods section and participated in the analysis of the information. ER Fusaro and FL Iozzi collaborated in collecting and analyzing the information, drawing up the tables and figures, as well as revising the article. All the authors were responsible for the final review of the article.

Acknowledgments

This research was funded by the Ministry of Science, Technology and Innovation and the Ministry of Health. ALD Viana and LD Lima hold scholarships through the National Council for Scientific and Technological Development (CNPq).

References

1. Araújo TB. Tendências do desenvolvimento regional recente no Brasil. In: Brandão CA, Siqueira H, organizadores. *Pacto federativo, integração nacional e desenvolvimento regional*. São Paulo: Editora Fundação Perseu Abramo; 2013. p. 39-51.
2. Santos M, Silveira ML. *O Brasil: território e sociedade no início do século XXI*. Rio de Janeiro, São Paulo: Record; 2001.
3. Araújo TB. Dinâmica regional brasileira nos anos noventa: rumo à desintegração competitiva? In: Castro IE, Miranda M, Egler CAG, organizadores. *Redescobrir o Brasil 500 anos depois*. 2ª ed. Rio de Janeiro: Bertrand Brasil; 2000.
4. Castillo R. Região competitiva e logística: expressões geográficas da produção e da circulação no período atual. *Anais do IV Seminário Internacional sobre Desenvolvimento Regional*; 22 a 24 de outubro de 2008, Universidade de Santa Cruz do Sul - Unisc, RS, Brasil.
5. Almeida EP. *Uso do Território Brasileiro e os Serviços de Saúde no Período Técnico-Científico-Informacional* [tese]. São Paulo: Faculdade de Filosofia Ciências e Letras; 2005.
6. Oliveira EXG, Carvalho MS, Travassos C. Territórios do Sistema Único de Saúde: mapeamento das redes de atenção hospitalar. *Cad Saude Publica* 2004; 20(2):386-402.
7. Viana ALD, Elias PEM, Rocha JSY, Ibañez N. *Cadernos de atenção básica*. 2ª ed. São Paulo: Cedec/Consórcio Medicina USP; 2006.
8. Travassos C, Oliveira EXG, Viacava F. Desigualdades geográficas e sociais no acesso aos serviços de saúde no Brasil: 1998 e 2003. *Cien Saude Colet* 2006; 11(4):975-86.
9. Neri M. *A nova classe média: o lado brilhante da pirâmide*. São Paulo: Saraiva; 2011.
10. Pochmann M. *Nova classe média? O trabalho na base da pirâmide social brasileira*. São Paulo: Boitempo; 2012.
11. Medeiros M, Souza PHGF, Castro FA. A estabilidade da desigualdade de renda no Brasil, 2006 a 2012: estimativa com dados do imposto de renda e pesquisas domiciliares. *Cien Saude Colet* 2015; 20(4):971-986.
12. Piketty T. *O capital no século XXI*. Rio de Janeiro: Intrínseca; 2014.
13. Fundo das Nações Unidas para a Infância (UNICEF). *Committing to Child Survival: A Promise Renewed. Progress Report 2013*. New York: Unicef; 2013.
14. World Bank. *World Development Indicators 2013*. Washington: World Bank; 2013.
15. Arretche M, organizadora. *Trajetórias da desigualdade: como o Brasil mudou nos últimos 50 anos*. São Paulo: Editora da Unesp; 2015.
16. Ugá MAD, Lopez EM. Os hospitais de pequeno porte e sua inserção no SUS. *Cien Saude Colet* 2007; 12(4):915-928.
17. Viacava F, Xavier DR, Bellido JG, Matos VP, Magalhães MAFM, Velasco W. *Relatório de Pesquisa sobre interações na esfera municipal*. Projeto Brasil Saúde Amanhã. 2014. Rio de Janeiro: Ministério da Saúde, Fiocruz; 2014.
18. Hair JF, Anderson R, Babin B. *Multivariate data analysis*. Upper Saddle River: Pearson Prentice Hall; 2006.

19. Brasil. Ministério do Planejamento, Orçamento e Gestão. Secretaria de Planejamento e Investimentos Estratégicos e Centro de Gestão e Estudos Estratégicos. *Estudo da dimensão territorial do PPA*. Brasília: SPI/MP; 2006.
20. Brasil. Ministério da Integração Nacional. *Política Nacional de Desenvolvimento Regional. Sumário Executivo*. Brasília: Ministério da Integração Nacional; 2007.
21. Brandão C. Pacto federativo, reescalamento do Estado e desafios para a integração e coesão regionais e para legitimar políticas de desenvolvimentos regional no Brasil. In: Brandão C, Siqueira H, organizadores. *Pacto federativo, integração nacional e desenvolvimento regional*. São Paulo: Editora Fundação Perseu Abramo; 2013. p. 163-174.
22. Viana ALD, Machado CV, Baptista TWF, Lima LD, Mendonça MHM, Heimann LS, Albuquerque MV, Iozzi FL, David VC, Ibañez P, Frederico C. Sistema de saúde universal e território: desafios de uma política regional para a Amazônia Legal. *Cad Saude Publica* 2007; 23(2):S117- S131.
23. Viana ALD, Lima LD, organizadoras. *Regionalização e relações federativas na política de saúde do Brasil*. Rio de Janeiro: Contra Capa; 2011.
24. Duarte LS, Balbim R, Contel FB. Regionalização da saúde e ordenamento territorial: análises exploratórias de convergências. In: Boueri R, Costa MA, organizadores. *Brasil em Desenvolvimento 2013 - Estado, Planejamento e Políticas Públicas*. Brasília: IPEA; 2013. v. 1, p. 147-172.
25. Viana ALD, Machado CV. Capitalismo e Estado Social: qual o sentido do SUS? A doença holandesa da política social brasileira. In: Plataforma Política Social. *SUS: Entre o Estado e o Mercado*. Caderno Temático n. 4; maio de 2014. [acessado 2016 jul 10]. Disponível em: <http://goo.gl/RJyfTl>

Article submitted 27/05/2016

Approved 04/08/2016

Final version submitted 04/10/2016