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ARTICLE

Federalism and health policy in Brazil: institutional features and regional inequalities

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Abstract *This article analyses the main characteristics of federalism in Brazil and its institutional relations with health policy. It discusses federalism from a classical perspective highlighting the essentially centralized nature of Brazil's system and the prevalence of decentralizing health policies underpinned by the principles enshrined by the 1988 Constitution.We used primary data obtained from an electronic questionnaire responded by secretaries of health sitting on the governing bodies of the country's health region and secondary data Ministry of Health databases covering the current health regions. The findings show that significant progress has been made in the implementation of regional governing bodies, yet without any significant impact on the reduction of deep regional inequalities in primary and hospital care. It concludes by suggesting that the persistence of inequalities is down to weak central coordination capacity and an inappropriate trade-off between a centralized federal system and competition between entities, thus undermining cooperative regionalization of the public health system as envisaged by the 1988 Constitution.*

Key words *Federalism, Regional inequalities, Unified Health System*

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Introduction

This article explores regional health inequalities in Brazil based on an analysis of the country's health regions. The institutional base for public healthcare provision in Brazil is the country's centralized federal system and a health policy underpinned by the 1988 Constitution, which provides for the vigorous decentralization of healthcare. As the results presented below will show, the state has not fulfilled its redistributive role in tackling health inequalities.

Federalism can be more centralized or decentralized. The adoption of decentralization policies, however, reflects an international trend towards decentralization to subnational entities (in federal countries) or local authorities (in unitary states).

The pattern of federalism of a particular country is not necessarily reproduced in policy design. That is to say, a centralized government can implement decentralized policies. This is the case with social policies in Brazil (despite strong centralization of economic policies) such as the Unified Health System (*Sistema Único de Saúde* - SUS). This article adopts the hypothesis that inequalities in the SUS are largely the result of these contradictions.

This study falls within a line of research created in 2013 that examines federalism in Brazil, covering topics such as: the decentralization crisis in the SUS[1]; political obstacles to regionalization[2]; regional inequalities based on an analysis of health regions[3]; the implementation of the Public Actions Organizational Contract (*Contrato Organizativo de* Ações *Públicas* - COAP)[4]; public participation and patterns of deliberative democracy[5,6]; and decentralization and regulation in relations between public and parastatal assets[7].

Enhancing the capacity of regionalization to reduce local health inequalities is fundamental to sharing national gains. The evolution of Brazil's federal system has been marked by cycles in which decentralization occurs to a greater or lesser degree according to the relative force of subnational entities. This study therefore comprises an analysis of government policies in which the argument is supported by underlying concepts and primary and secondary data[8].

Bearing in mind that a reduction in health inequalities can result from both redistributive centralization and cooperative decentralization conducted by subnational entities[9], we discuss the capacity of Brazilian federalism in its current configuration to reduce regional inequalities through social policy.

In order to test the explanatory power of this hypothesis, we analyze the capacity of regionalization to reduce health inequalities based on an analysis of disparities between health regions.

The section below discusses federalism in the classical sense highlighting its essential features and the politically motivated changes in its configuration in different historical phases, paying special attention to the division of powers. We then go on to discuss the political debate in Brazil surrounding federalism focusing on expert analysis of how it has influenced the decentralization of policy and healthcare. The next section analyzes the trajectory of the SUS in terms of decentralization drawing on the theoretical and conceptual framework outlined in the proceeding section. Finally, we discuss methodological considerations and present the results and final considerations.

Classical approaches to federalism

Federal systems are historically associated with geopolitical decentralization and the deconcentration of power. From this perspective, the patterns of cooperation and competition of the different systems have been the focus of specialized contemporary literature based on three frames of reference: the classical individualistic perspective present in Machiavelli's thought; classical contractualism, associated with American federalism; and a form of neocontractualism developed by Lijphart, among others.

Machiavelli proposed a typology of forms of territorial and political domination. In *Discourses on Livy* (published in 1531), a confederation of many States was seen as a form of sustainable power. Historical experiences, from the Etruscans to the Swiss League, show the absence of hierarchy between its members, who divided their conquests[10]. On the other hand, this system limited territorial expansion due to a shared consultation mechanism and the distribution of the advantages of territorial control. It is clear that confederations were more suited to the domination of small territories. Machiavelli drew attention to the fact that more decentralized states offered greater resistance to prolonged domination, even though, in principle, the decentralization of power (to baronies and the like) hampered the defense of lands.

The United States' Constitutional Convention, which took place in 1789, was the scene of intense debate and dispute between states and their political leaders, expressed in the Federal-

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ist Papers of 1788[11]. This political process gave rise to one of the most typical forms of federal systems in which the goal is the conservation of state powers in the highest degree and there is a clear separation of functions between the states and the Union, giving rise to judicial review and the balance between contradictions in order to prevent the concentration of power in individuals or regions. This classical debate highlights the advantages of separating functions for political accountability and the risk that free competition between local governments may favor the strongest. It is from this perspective that Arretche[12], discusses the trade-off between decentralization and redistribution.

The neocontractualist approach deals specifically with democracies consolidated during the construction of the welfare state. Consensus democracies were analyzed in an influential study conducted by Arend Lijphart[13]. In this form of government, the decision-making process results from successive public consultations and institutionally mediated agreements between minority and majority groups (circumstantial, regional or traditional). These arrangements afford better social and economic outcomes. Although decentralization and social protection can occur in unitary states (in the United Kingdom for example), consensus democracies are typical in federal systems (such as Germany and Belgium), where they display a proliferation of decision-making bodies (such as sectoral chambers and various multipartite bodies) that cut across the formal federal system. In such systems it is common to find different rules for protecting cultural minorities or regions which, despite sometimes lengthening decision-making processes, afford political sustainability and are redistributive.

Fundamental elements of these classical theories, such as the political decentralization that is typical to small states, the separation of federal functions, and solidarity as a balance between majority governments and the protection of minorities, are present in the political disputes waged in contemporary federal nations such as Brazil, as the following section shows.

The relationship between a centralized federal government and the decentralization of public policy in Brazil

The pendular movement between greater and lesser degrees of centralization as marked the experience of Brazil and other countries. Federal crises tend to reflect regional demands for better distribution of national resources or for greater protection of the interests of wealthier regions. Lassance[14] describes the construction of Brazil's federal system with reference to the evolution of American federalism and the horizontal separation of powers between the executive, legislative and judicial branches and the vertical division between the Union and subnational entities. He correctly argues that Brazil is characterized by the progressive concentration of power in the executive branch reinforced by its association with the presidential system of government. All this in the midst of alternate cycles of greater and lesser degrees of centralization and the conflicts that result from this configuration.

Abrúcio[15], analyzed these cycles, including the wake of the 1988 Constitution, in which fiscal and policy decentralization was molded by opposition to the centralized system imposed by the military regime. Even in the democratic cycle there have been constant sways between greater and lesser degrees of centralization due to the ultrapresidentialism established at the beginning.

In turn, a decline in the power of governments has been witnessed due to the macroeconomic adjustments made in the 1990s and state financial crises and the renegotiation of the states' debt with the federal government[16]. The progressive loss of capacity of state governments favored centralization, becoming a hallmark of Brazilian federalism[17]. Fiscal policy continued to be centralized even after an increase in the percentage share of local government funding in 2010[16], which failed to promote allocative justice. Although the Constitution envisaged a federal pact combined with the decentralization of policy and a balanced budget, historical structural factors have blocked the reduction of local inequalities. Vergolino[18] asserts that weak state government control combined with the decentralization of Union resources to subnational entities led to the failure of redistributive policies and an increase in territorial inequalities.

As studies of the redemocratization process in Brazil show[3,15,19,20], hopes were pinned on the capacity of public policy and the SUS as a paradigm to redistribute resources and tackle health inequalities.

In practice, however, the Brazilian federation was formed amidst the local oligarchization of power, which would demand a vigorous response from the federal government given through such policies. Today, inequality between municipalities is greater than that between the country's major regions[15]. There is an evident need for im-

proved central coordination to strengthen local and regional cooperation in favor of greater intergovernmental sharing[20].

With respect the conflict between decentralized policies and central control, Arretche[12] draws our attention to preexisting regional inequalities and incidents that took place throughout the construction of the federal pact, whereby Brazilian institutions have been shaped by regional divisions and fallback on the Union to ensure political balance between rich and poor jurisdictions. With respect to central-local relations, federations that concentrate regulatory powers in the Union favor a reduction in inequalities and the combination of this formula with local autonomy in policy implementation would be the best alternative for Brazil[3]. Cooperation flaws tend to reflect uneven capacities (financial and management) between subnational governments and a lack of adequate institutional incentives for the promotion of cooperation[19]. The way macroeconomic problems have been tackled and the manner in which development policies are implemented (inadequate or episodic) also weigh heavily[19,21]. Moreover, micro-level organizational failures contribute towards regional disparities. In the case of the SUS, this occurs either because state and local health authorities create organizational friction[22], or due to uneven coordination capacity across regional authorities resulting from exogenous socioeconomic factors[23].

Objectively speaking, there is no conclusive evidence of the advantages of decentralization in healthcare[13]. The uniqueness of Brazil's trajectory prevents the adoption of normative standards of what represents adequate policy. Other federations use a combination of territorial decentralization and centralized policy. A comparative review of a series of country case studies conducted by Roden[24] points in the same direction.

However, the national literature shows that there is wide scale acceptance of the virtues of decentralization, especially in relation to the municipalization and regionalization of the SUS[7], despite an increase in health spending across federal entities and little actual change in regional inequalities[25].Weaknesses in the health regions' governing bodies and unique local trajectories may have limited the effect of measures designed to promote cooperative regionalization[26].

A more comprehensive analysis of key national studies on this topic shows that the effectiveness of local and regional cooperation has been limited by the following factors: competition between subnational entities for financial resources; control over access to health services; and veto structures prompted by governing bodies with highly uneven capacities[5]. On the other hand, it is evident that major efforts have been made to create solid institutions that promote political cooperation between federal entities.

The political construction of the SUS and the challenges of regionalization

The implementation of the SUS under the aegis of cooperative federalism was innovative at both the domestic and international level. The system was defined by Article 198 of the 1988 Constitution and its legislative framework was oriented towards ensuring decentralization within a single unified system in accordance with the basic health laws which came into force in 1990.

Although overlaps are allowed, the functions of planning, promotion, and overall coordination fall on the Union, while the states are responsible for coordination at regional level. Local governments, apart from sharing local planning functions, are responsible for the direct provision of actions and primary and medium complexity care services. The effective functioning of tripartite governance mechanisms is therefore crucial for the effective functioning of the SUS.

The institutional trajectory of the SUS since the creation of the infraconstitutional legislation has been oriented towards the organization of this tripartite governance mechanism. This occurred through the development of operational rules and regulations culminating in Decree 7.508/11, which consolidated the regulatory framework.

The implementation of the SUS began with the Basic Operational Norm (BON) 01/1991and a vertical arrangement of intergovernmental relationships. Responsibilities were divided between the Union and the states/municipalities, being concentrated in the former while the latter were left with secondary roles. The responsibilities of subnational entities in relation to health actions and service provision were symmetrical and undifferentiated and they had little management autonomy. The process was conducted by the Ministry of Health based on the old *inampsiano* structure (referred to the old National Institute of Health Care – *Instituto Nacional de Assistência Médica da Previdência Social*– INAMPS), which dictated the rules for the transfer of funds and exercised control over financial execution of state and local government budgets.

The BON 01/1993 provided that state and local governments should be the managers of

the system and promoted a transition from the a health policy management model similar to that adopted by unitary nations to one that is typical of federations. In the new model, the Union retained the prerogative to set a national standard for decentralization and create a federal system of governance to mediate shared decentralization with subnational entities. The responsibility for the management of actions and service network (recruitment and planning) was gradually transferred to state and local governments.

It fell on the Union to dictate the rules of the game of a nationally unified system, thus strengthening its regulatory role. These functions were shared with state and local governments through the creation of tripartite cooperative institutions. However, this occurred in an asymmetrical fashion, with autonomy being proportional to the size of the network and the technical and operational capacity of each state or municipal government.

Decentralization was conducted through political action coordinated across the three spheres of government. National operational guidelines for the SUS were set via direct negotiations between representatives of the Union, state and municipalities in the Tripartite Intermanagers' Committee. This pattern was reproduced at state level with the creation of Bipartite Intermanagers' Committee(CIB). At both levels, the respective state and municipal health councils are the supreme deliberative bodies for the formulation of strategies and overseeing the implementation of policies.

Maintaining a cooperative governance orientation, BOM 01/1996 was oriented toward strengthening municipalization. Municipalities were awarded the status of key providers of health services, generating the challenge of comprehensiveness of healthcare.

In 2006, the *Pacto pela Saúde* (health pact) outlined a solidarity-based approach to regionalization, providing a clearer definition of roles and responsibilities and mechanisms to promote cooperation. Governing bodies were created for each health region that would serve as a model for the Regional Intermanagers' Committees (CIR, acronym in Portuguese) created by Decree 7.508 in 2011.

This decree sought to strengthen relations of mutual dependence between the different spheres of government. The COAP was created to direct cooperation, which encountered barriers to implementation basically resulting from commitments that depend on the political system[8].

The analysis presented here seeks to shed light on the capacity of the SUS to reduce health inequalities. Although socioeconomic factors and adequate regional development policy are of crucial importance, it is recognized that the institutional capacity of the SUS is also an important factor that contributes to reducing inequalities. The results presented below allow us to reflect upon the gains made and shortcomings in the implementation of Brazil's public health system in the 30 years since the creation of the SUS.

Methodological Considerations

The analysis considers the following aspects: the organizational capacity of CIRs (operational structure and institutional dynamics); the technological capacity of health regions and flux of service users based on hospital admissions (admission profile and migration of users); and the performance of the Family Health Strategy (ESF, acronym in Portuguese) based on population coverage and impact on the reduction of health problems.

The primary data on the capacity of CIRs was obtained by way of an electronic questionnaire responded by the secretaries of health sitting on health region governing bodies, covering all of Brazil's states except Roraima (where CIRs have not been implemented) and the Federal District (nonexistent).

The rate of return was 100% in all of the 25 states covered by the study except São Paulo, where it was only 57.8% due to access difficulties observed by previous studies[4]. The questionnaires were conducted between June and December 2017 and data was obtained for 410 of the 436 CIRs contacted.

The data on hospital care was obtained by concatenating 324 Hospitalization Authorization (*Autorizações de Internação Hospitalar* – AIH) reduced files for 12-month periods from27 states to obtain the average total cost of AIH in health regions by state, geographic region, and across the country as a whole. AIHs were broken down into two categories -patients residing outside the health region (patient migrations) and patients residing in the health region - to enable the analysis of migration of AIH. For the purposes of this article, the level of complexity of hospitalizations was determined based on the average total cost of AIH, where it is assumed that the greater the average cost the greater the level of complexity. The results are depicted using box plots showing vari-

ations in average total cost of AIH across health regions by state and region, and in table form, showing average total cost and average total cost according to patient residence by state and geographical region (Figure 1 and Table 2).

With respect to primary care, we analyzed coverage by Family Health Teams (ESF, acronym in Portuguese) by health region, their distribution and impact on healthcare at a regional level. There are many ways of calculating coverage of ESF as a percentage of total population. However, the consistency of indicators depends upon local government data generation capacity. For the purposes of this article, optimal coverage was set at 3,000 people per ESF team.

The effectiveness of primary care policies was measured based upon a well-known indicator that considers morbidity for a subset of health conditions. Hospitalizations due to these conditions should be largely prevented is policies are being implemented effectively. This analysis was conducted using data on principal cause of hospital admissions obtained from the Hospital Information System (SIH-SUS, acronym in Portuguese).

Results and analysis

Throughout the implementation of the SUS, major efforts have been made to develop regional coordination capacity. Originally charged to state health departments, these functions migrated to the regional governing bodies that were granted regulatory powers, such as CIRs. Based on the premise that Brazil's federal system tends towards centralization and it is therefore necessary to counterbalance this situation with a decentralizing health policy, effective regional coordination capacity is critical.

Data regarding the institutionalization and functioning of CIRs by state (Table 1) shows that the system of CIRs is well consolidated throughout the country. Almost all of the CIRs analyzed (96.8%) have approved agreed internal operating procedures. The percentage is lower only in the South Region (88.2%), due to the results of the states of Paraná and Santa Catarina.

Furthermore, 80.4% of the country's CIRs have an executive secretary to perform administrative tasks such as elaborating meeting agendas and recording meeting minutes. This proportion is higher in the Southeast (94.5%) and Center-West (92.1%) regions, reaching 100% in some states (Mato Grosso do Sul, Rio de Janeiro, Minas Gerais, Espírito Santo, Tocantins, Rio Grande do Norte, and Acre), and lower in the South (60.3%) and Northeast (72.2%) regions, where rates are lowest in the states of Paraná, Santa Catarina, and Piauí.

The indicators of CIR functioning show that the system of governance operates on a regular basis across the country. In this respect, 88.7% of CIRs experienced a maximum of two operational interruptions in their monthly meetings since their creation. The regularity of meetings was greatest and more homogenous in the South (98.5%) and Center-West (97.4%) regions. In 12 of the 25 states, regularity was 100%. Only the State of Amazonas showed low regularity.

Finally, average frequency of attendance of over 60% of CIR members at ordinary meetings was 80.4% in 2016. This rate was highest in the Southeast (92.1%) and South (88.2%) regions and lowest in the North (66.7%).

Based on these findings, it is undeniable that the national and state governing bodies stimulated regional cooperation. However, the shortcomings of cooperation are clearly evident from the analysis of the regional distribution of health services.

Table 2 shows the average total cost of AIH in health regions by state, region, and across the country as a whole, where it is assumed that the greater the average the greater the level of complexity of hospitalization and therefore regions with higher averages have better hospital care resources. In a balanced system, a health region should have the capacity to treat less complex cases and refer more complex cases to specialized services outside the region.

The results show that the average cost of hospitalizations due to patient migrations at state, regional and national level was clearly higher than that of hospitalizations of patients residing in the health region. This is the result of a long history of agreements regarding hospital beds and mechanisms designed to improve access to referral services, which, to a certain extent, have ensured access at a microregional level and should therefore be regarded as a sign of cooperative capacity. This corroborates the findings of a previous study regarding the decentralization of the SUS in the context of the COAP and new CIRs using data from 2013[3].

This internal balance was not observed, however, when variations in the average cost of hospitalizations between health regions within states and regions are taken into consideration. Figure 1 shows that variability in total average AIH

Table 1. Percentage of CIRs with internal procedures in place, executive secretary, functioning regularly, and active participation of members by geographical region and state, 2016.

State	Internal procedures in place	Executive secretary implemented of in process of implementation	Maximum of two interruptions since creation	Frequency of attendance of at least 60% of members
North	**100.0**	**85.7**	**76.2**	**66.7**
Acre	100.0	100.0	100.0	66.7
Amapá	100.0	0.0	100.0	33.3
Amazonas	100.0	88.9	33.3	55.6
Pará	100.0	92.3	76.9	46.2
Rondônia	100.0	83.3	83.3	100.0
Tocantins	100.0	100.0	100.0	100.0
Northeast	**97.0**	**72.2**	**93.2**	**70.7**
Alagoas	100.0	100.0	90.0	60.0
Bahia	96.2	96.2	92.3	76.9
Ceará	95.5	77.3	100.0	95.5
Maranhão	90.0	50.0	95.0	65.0
Paraíba	100.0	62.5	100.0	68.8
Pernambuco	100.0	58.3	83.3	66.7
Piauí	100.0	41.7	91.7	58.3
Rio Grande do Norte	100.0	100.0	75.0	25.0
Sergipe	100.0	57.1	100.0	85.7
Southeast	**100.0**	**94.5**	**80.3**	**92.1**
Espírito Santo	100.0	100.0	100.0	100.0
Minas Gerais	100.0	100.0	67.5	89.6
Rio de Janeiro	100.0	100.0	100.0	100.0
São Paulo	100.0	81.1	100.0	94.6
South	**88.2**	**60.3**	**98.5**	**88.2**
Paraná	77.3	36.4	100.0	90.9
Rio Grande do Sul	100.0	90.0	100.0	90.0
Santa Catarina	81.3	37.5	93.8	81.3
Center-West	**97.4**	**92.1**	**97.4**	**76.3**
Goiás	94.4	88.9	100.0	61.1
Mato Grosso	100.0	93.8	93.8	93.8
Mato Grosso do Sul	100.0	100.0	100.0	75.0
Brazil	**96.8%**	**80.4%**	**88.7%**	**80.4%**

Source: National Survey of CIRs (ENSP/Fiocruz).

cost across health regions is high in the states of Minas Gerais, Paraná, Rio Grande do Norte, and São Paulo which, while outliers are not present, show the highest interquartile range values (distance between the first and third quartiles) and greater prolongation. On the other hand, it is interesting to note that in the states of Amazonas, Ceará, Maranhão, and Piauí that, despite the presence of outliers, variability is low. States X, Y e Z showed the lowest average AIH costs.

Table 2. Average total cost of AIH by health region and migration of patients for Brazil, geographical region and state, 2016.

Region and state	Average costs (R$)		
	AIH Patient migration	AIH patients resident in health region	Overall AIH
North	**1,466.39**	**737.72**	**814.46**
Acre	1,342.59	794.23	834.24
Amazonas	1,558.47	865.45	888.66
Amapá	804.79	647.07	671.21
Pará	1,521.89	682.54	770.28
Rondônia	1,472.11	706.65	827.47
Roraima	779.59	719.78	723.48
Tocantins	1,596.94	833.26	993.70
Northeast	**1,749.71**	**897.86**	**1,063.63**
Alagoas	1,281.32	933.73	1,013.62
Bahia	1,902.53	860.83	1,000.03
Ceará	2,010.54	914.75	1,133.98
Maranhão	1,41130	639.35	749.04
Paraíba	1,509.94	929.98	1,069.38
Pernambuco	1,945.47	1,164.18	1,349.75
Piauí	1,518.25	708.19	862,48
Rio Grande do Norte	1,837.27	1,127.32	1,327.10
Sergipe	1,418.00	867.12	1,076.41
Southeast	**2,434.45**	**1,159.21**	**1,316.34**
Espírito Santo	2,114.23	1,188.52	1,276.37
Minas Gerais	2,500.60	1,175.78	1,383.47
Rio de Janeiro	2,184.61	1,114.86	1,169.73
São Paulo	2,444.67	1,161.76	1,327.54
South	**2,757.67**	**1,252.75**	**1,440.52**
Paraná	2757.47	1320.71	1,509.06
Rio Grande do Sul	2828.34	1172.64	1,386.13
Santa Catarina	2621.78	1264.08	1,409.59
Center-West	**1,791.72**	**992.49**	**1,115.72**
Distrito Federal	1,135.20	1,059.64	1,076.41
Goiás	2,096.40	988.65	1,217.76
Mato Grosso do Sul	3,042.47	1,110.62	1,160.86
Mato Grosso	1,819.13	833.09	937.87
Brazil	**2,125.78**	**1,062.12**	**1,214.66**

Source: SIH-SUS, DATASUS/Ministry of Health, 2016.

In relation to geographic region, it is important to highlight that the average cost of AIH in health regions in the Southeast and South are significantly higher than in other regions and than the national average (Table 2).

These findings show that, despite evident regulatory efforts to improve the regional distribution of SUS resources, the impact of the municipalization associated with regional coordination and federal promotion of decentralization has not been sufficient to compensate deep regional inequalities.

Microregional cooperation to ensure access to public hospital beds is an old practice within the SUS, which could explain the migration of patients between neighboring health regions, despite evident national disparities in more complex care.

In this respect, it is important to conduct an assessment of the ESF. As this strategy represents the first line of care commanded by the federal government and envisages the provision of uniform services across the country, regional inequalities are expected to be less pronounced

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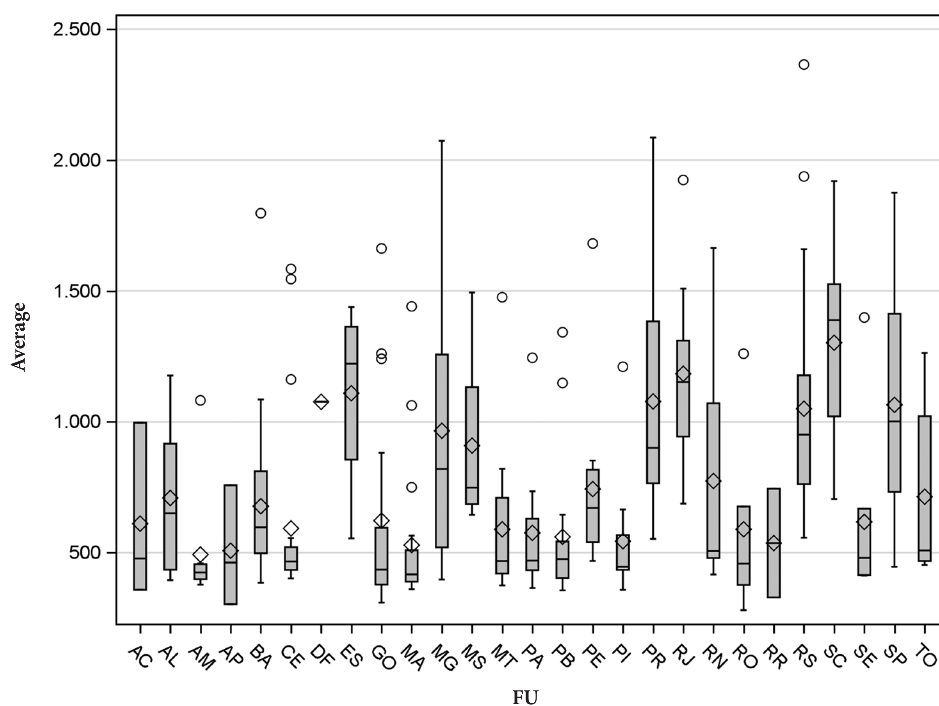

Figure 1. Variation of average AIH costs across health regions by state – Brazil, 2016.

Source: SIH-SUS, DATASUS/Ministry of Health, 2016.

than those in hospital care. However, the findings show that the similar patterns of regional inequalities are evident in primary healthcare.

Although 20 years have elapsed since the creation to the ESF and significant funding has been provided by the Ministry of Health, coverage varies considerably across the country's health regions, as Figure 2 shows.

The disparity between the medians and configurations of each box representing the states is so striking that it corroborates the observations made above regarding the fact that inequalities at local level are greater than those between the country's geographic regions.

Similarly, Figure 3, which shows the average cost of hospitalizations due to Ambulatory Care Sensitive Conditions (ACSCs) in health regions by state, show major disparities, ranging between R$ 350 (US$ 100) and R$ 2,800 (US$ 800).

Furthermore, the low degree of correlation between a set of primary healthcare indicators confirm major disparities in the distribution of primary healthcare resources (Table 3).

The data on the distribution of primary healthcare between health regions and variations between performance indicators confirm the low capacity of public policies to generate an incisive reduction in regional disparities, despite the measures adopted and vigorous decentralization. Despite this, the regional governing bodies are in place and functioning is more even across health regions than expected.

Final considerations

The findings show that Brazil's centralized federal system does not produce strong coordination of health policy at local level. The competitive aspect of federalism at the subnational level and socioeconomic factors highlighted in the specialized literature represent stiff obstacles to the ef-

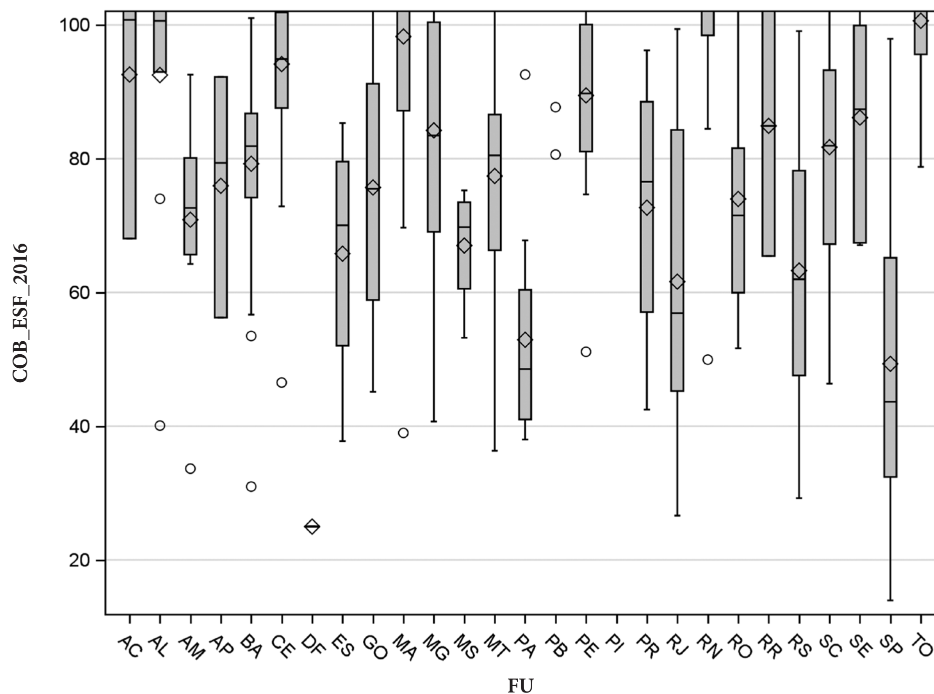

Figure 2. Boxplot of population coverage of the ESF across health regions by state – Brazil, 2016.

Source: DAB/SAS/Ministry of Health, December 2016. Considering one ESF per 3,000 population and population estimated by the IBGE for 2016.

fectiveness of redistributive policies and should be the subject of in-depth research as should the failures of state government coordination.

Studies on the capacity of the system and its institutional design to meet such wide-ranging and important objectives such as the reduction of regional inequalities, should observe the process in terms of trajectories and current conditions. In this article, the longitudinal dimension and trajectories were addressed using selected studies.

With respect to health policy, primary and secondary data was presented to corroborate the arguments. The findings point to two main elements.

With respect to regionalization, the findings show a high level of institutionalization of the CIRs, which implies willingness on behalf of the institutions to promote local cooperation and develop the redistributive potential of health regions. Another positive factor is a more suitable balance in hospital admissions, indicating good organization of health regions in relation to internal agreement mechanisms and between neighboring health regions, evident in the migration of more complex cases and direct care less complex cases. However, this greater balance should not negate the fact that there are significant inequalities in complex care between states.

With regard to primary healthcare provision, regional inequalities are equally striking, showing regional disparities that have not been corrected the model of decentralization adopted.

The efforts of the institutions, leaders and professionals who work in the SUS are evident and fundamental. However, the effective implementation of public policies requires important changes to the model of political, social and economic development to reduce the disparities that influence the outcomes of health policy. These factors should be investigated in greater detail by future studies.

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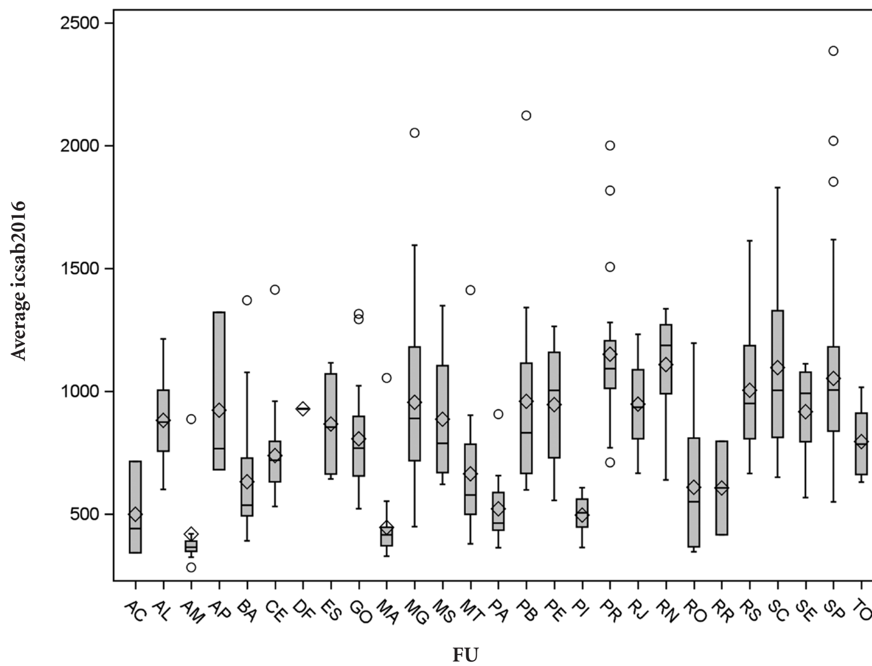

Figure 3. Boxplot of costs of Ambulatory Care Sensitive Conditions(ACSCs)across health regions by state – Brazil, 2016.

Source: Authors' elaboration based on analysis of reduced files of AIHs from the Hospital Information System (SIH-SUS, acronym in Portuguese).

Table 3. Correlations between selected indictors by health region – (N= 438).

	VAR 1	VAR 2	VAR 3	VAR 4	VAR 5	VAR 6	VAR 7	VAR 8	VAR 9	VAR 10
VAR 1	1.000	-0.051	-0.261	-0.028	0.105	0.029	-0.139	0.119	0.199	-0.309
VAR 2		1.000	-0.287	-0.075	-0.150	0.003	0.301	-0.109	0.099	0.055
VAR 3			1.000	0.003	0.100	0.023	-0.123	0.057	-0.055	0.083
VAR 4				1.000	-0.070	0.012	-0.052	-0.025	-0.045	0.000
VAR 5					1.000	-0.053	-0.258	-0.006	-0.169	0.078
VAR 6						1.000	0.071	0.052	0.079	0.009
VAR 7							1.000	-0.143	0.173	0.381
VAR 8								1.000	0.173	-0.256
VAR 9									1.000	-0.281
VAR 10										1.000

Source: SIM, SINASC, SIAB, SIA-SUS, SIH-SUS, 2015 and 2016.
Note 1: Considered Brasília and satellite cities as one "health region". Note 2: Pearson correlation coefficients.

Legend:
VAR 1 ESF population coverage (%) – 2016
VAR 2 Ration of number of primary care medical appointments per inhabitant - 2016
VAR 3 Ration of number of diagnosis examinations per medical appointment - 2016
VAR 4 Ration of number of image examinations per medical appointment - 2016
VAR 5 Federal transfer of funds as a proportion of total SUS funds (health regions) - 2015
VAR 6 Proportion of funds for primary care applied by health region in relation to total resources - 2015
VAR 7 Proportion of mother having 7 or more antenatal visits - 2015
VAR 8 Proportion of deaths due to undefined causes - 2015
VAR 9 Proportion of ACSCs - 2016
VAR 10 Average value of ACSCs - 2016

Collaborations

JM Ribeiro, MR Moreira, AM Ouverney, LF Pinto and CMFP Silva participated in the conception, data collection, analysis of the results and final writing of the article.

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