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This work was inspired by my personal experience living with type 1 diabetes in Brazil. Navigating this chronic illness motivated me to explore the deep connections between healthcare and politics. I hope this thesis contributes to a better understanding of these issues.

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Treatment Disparities: Analyzing Variations in Healthcare Rates Across Brazil's Unified Health System (SUS)

A Thesis in International Relations

by

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Abstract:

Brazil's Unified Health System (SUS) was established to provide equal access to healthcare throughout the country. However, despite its universalist goals and national promises, the system still shows significant regional inequalities. This study analyzes the political, economic, and social factors that affect access to public healthcare, focusing on cancer diagnosis rates as a way to measure healthcare availability. A mixed-methods approach was employed, both quantitative and qualitative methods were used to examine cancer diagnoses, healthcare spending, and poverty levels, along with in-depth interviews to support the quantitative analysis. The results indicates that even though SUS has been designed to offer universal healthcare, large disparities in public investment and cancer diagnosis remain, especially in the North and Northeast regions. These areas face lower healthcare funding, higher poverty rates, and fewer cancer diagnoses, which all contribute to inequality, and a possible trend of underdiagnosis in cancer cases. The findings highlight the urgent need to reform the 1988 SUS framework in order to reduce these regional healthcare gaps between its primary economic centers and socioeconomically vulnerable regions.

Keywords: Unified Health System (SUS), Brazil, Regional inequalities, Universal healthcare.

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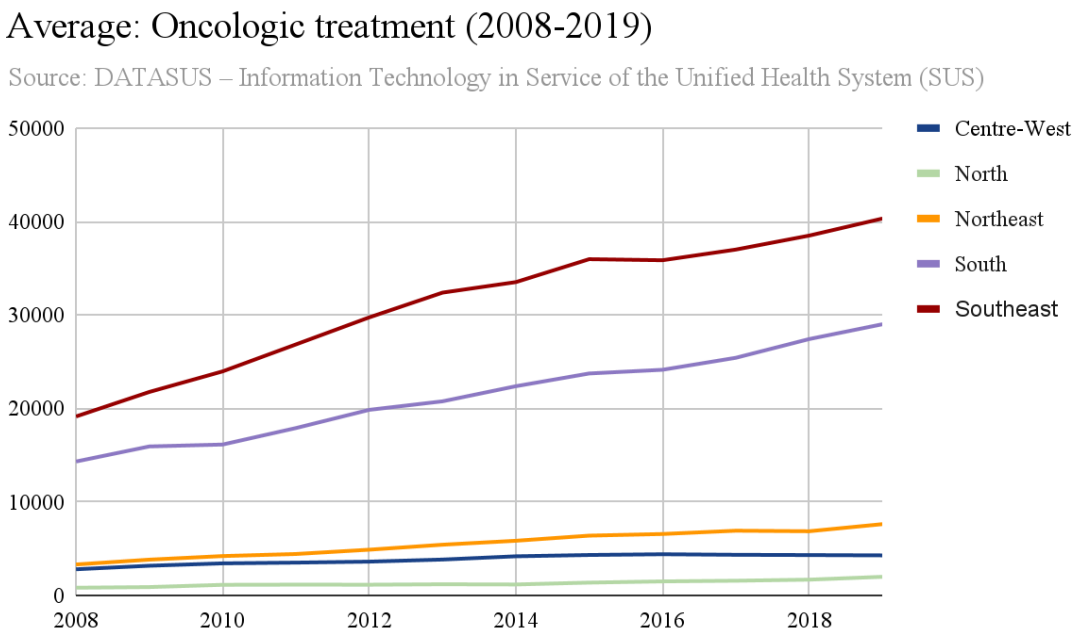
Introduction

In 1988, following the country's return to democracy, a new Federal Constitution was enacted, establishing the Unified Health System (Sistema Único de Saúde, or SUS) as the national healthcare framework. Protected by constitutional law, SUS was created with the goal of delivering equitable, accessible, and cost-free healthcare services to the entire Brazilian population.

However, the reality often falls short of the constitutional ideals. To better understand the current state of Brazil's government healthcare system, this thesis examins cancer diagnosis and treatment as indicators of healthcare access. The analysis reveals that Brazil's political regions are not receiving equitable healthcare services. The South and the Southeast regions show significantly higher rates of cancer treatment, which may be due to a higher number of diagnoses in those areas, or alternatively, may reflect limited access to healthcare in other regions, resulting in underdiagnosis and insufficient treatment in the North, Northeast, and Center-West.

Figure 1 highlights one of the many underlying inequalities that raise concerns about access to healthcare across Brazil's five regions. This graph serves as a starting point for this thesis, which seeks to explore the root causes of these regional disparities - disparities that stand in contrast to national laws guaranteeing Brazilians' universal rights. In addition to uneven cancer treatment rates, this study identifies significant regional differences in healthcare access, diagnosis rates, and poverty levels.

Figure 1: Number of patients undergoing oncological treatments in Brazil's public hospitals.



The initial analysis of the data raises important questions about the effectiveness of Brazil's so-called "Unified" Health System (SUS). At the center of this inquiry is a key question: why does access to healthcare appear to vary so significantly across Brazil's five regions, despite SUS's promise of nationwide equality? For example, if each region has similar access and similar populations, why are the average rates of cancer treatment so much higher for the South and Southeast compared to the other regions? Why aren't they similar to the rates for the other three regions that are largely similar? Are citizens in these regions exposed to significantly different levels of carcinogens? Or is it more likely to be due to economic and demographic differences in the populations in these regions?

This research focuses primarily on regional disparities in cancer diagnosis, exploring the political and economic factors that shape public healthcare outcomes. To better address this issue, the study examines a country's regions as distinct units of analysis, rather than focusing on individual states. Although Brazil is a federal state composed of over 5,000

municipalities, the regional division—North, Northeast, Central-West, Southeast, and South— created by the IBGE as a unit of analysis and measurement have been utilized by many scholars when studying healthcare, including the SUS database (DATASUS) and Haller (1998), who wrote about the regionalization of the country. The regions are tight together by persistent historical, socioeconomic, and infrastructural factors that go beyond the state borders and serve as a tool to reflect broader patterns of healthcare accessibility within the SUS. This choice is supported by existing studies that emphasize regional disparities in diagnosis rates, funding, and health outcomes (Da Silva Barbosa and Fagnani 2021; Boscariol 2017; Ribeiro et al. 2016). Overall, this regional approach offers a broader perspective on how access to SUS impacts overall cancer diagnosis and treatment rates.

This research specifically investigates disparities in access to healthcare through a quantitative analysis of cancer diagnoses, healthcare expenditures, and poverty rates across the country. To complement the data, a small number of in-depth interviews were conducted with a number of individuals, offering personal insights that help contextualize the quantitative findings. The limited interviews serve as testimonies to all the factors being measured by the quantitative. All the participants worked along with the SUS and have practice-based insights that helped contextualize the quantitative findings, particularly regarding regional disparities and institutional challenges rarely captured in official data. These interviews provide a more realistic view of how the public perceives and experiences the healthcare system. In addition to examining healthcare inequalities, the study also considers political, social, and economic factors that contribute to understanding the broader question of regional disparities in Brazil's supposedly unified health system.

The thesis is divided into five main parts. Part one, the literature review, provides the theoretical and contextual foundation for the study, examining existing research on Brazil's regional disparities, the development and legal structure of the Unified Health System (SUS),

and the broader political, economic, and social dynamics shaping unequal access to healthcare. This review identifies critical gaps and ongoing debates in the literature, which this thesis seeks to address—particularly the disconnect between SUS's universal mission and the persistent inequalities in regional healthcare accessibility, more importantly resulting in cancer diagnosis and treatment.

Part two introduces the thesis's core research questions and lays out the analytical approach used to explore them. It presents the rationale for focusing on cancer treatment disparities as a lens to assess the functionality of SUS across regions. By integrating both quantitative and qualitative methods, this framework seeks to understand how structural and systemic factors—such as public investment, medical infrastructure, and poverty—interact to produce uneven health outcomes. The section also clarifies how this analytical lens is grounded in both empirical data and theoretical insights, enabling a layered investigation of Brazil's healthcare system.

Part three focuses on methodological issues. It outlines the research design, including the use of both quantitative and qualitative methods. This part of the study details the primary data sources—such as national healthcare and poverty statistics—and describes the interview process, including how participants were selected and how their insights were integrated into the broader analysis. The mixed-methods approach aims to provide a more comprehensive understanding of the issues under investigation.

Part four presents the data analysis and findings. Here, the thesis examines regional disparities in cancer diagnosis and treatment rates, healthcare expenditures, and poverty levels. The discussion also incorporates perspectives from interview participants to enrich the interpretation of the quantitative data. Part five discusses the findings in greater detail, synthesizing the main results and reflecting on their implications for healthcare policy in Brazil. It argues that while SUS was founded on principles of universality and equity, the

outcomes of the system reveal substantial gaps between the vision and the reality of healthcare delivery. The discussion also explores the systemic issues contributing to these disparities and offers recommendations for policy reforms to address the regional inequities in healthcare. Finally, it identifies areas for future research to support the development of a more balanced and effective national health system.

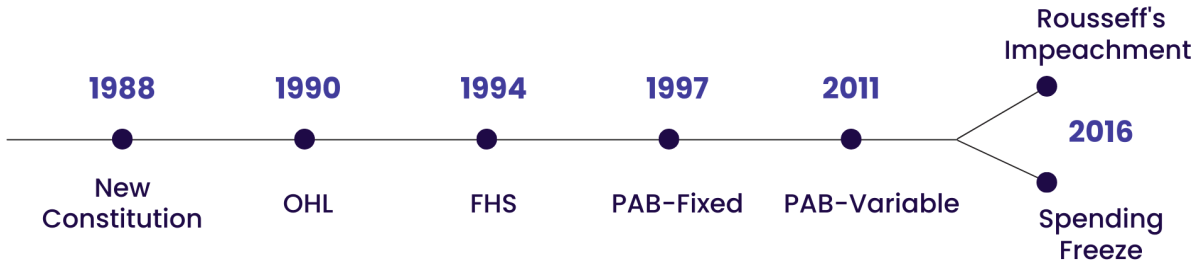
Literature Review

Although Brazil has been a federal republic since the 19th century, the country underwent twenty-one years of repressive military rule between 1964 and 1985. During this period, healthcare policy was shaped primarily by the regime's goal of expanding the private sector. In the 1970s, the authoritarian government implemented reforms that disproportionately favored private healthcare providers, aiming to turn healthcare into a profitable industry while neglecting the public sector (Ponte et al. 2010, chap. 6).

Democracy was restored during the 1980s, when Brazil's last military ruler, João Figueiredo, lost power amid widespread democratic grassroots movements. In 1985, following the end of Figueiredo's regime, President José Sarney took office and initiated the Constituent Assembly, which was responsible for drafting and passing a new Constitution. This landmark document redefined Brazil as a New Federal Republic, establishing a democratic government composed of 27 federative units—26 states and one federal district—serving a population of over 215 million people. The 1988 Constitution also reinstated fundamental civil rights, including political freedoms, regional autonomy, and the legal guarantee of free access to healthcare through the creation of the Sistema Único de Saúde (SUS), Unified Health System. However, despite the promise of national unity and democratic reform, the new Constitution did not erase the deep-rooted regional disparities

that continue to shape Brazil. These disparities remain evident in the country's administrative divisions and are often measured using regional metrics that highlight unequal development across different parts of the nation.

Figure 2. Timeline of Key Healthcare Policies and Events in Brazil (1988–2016)



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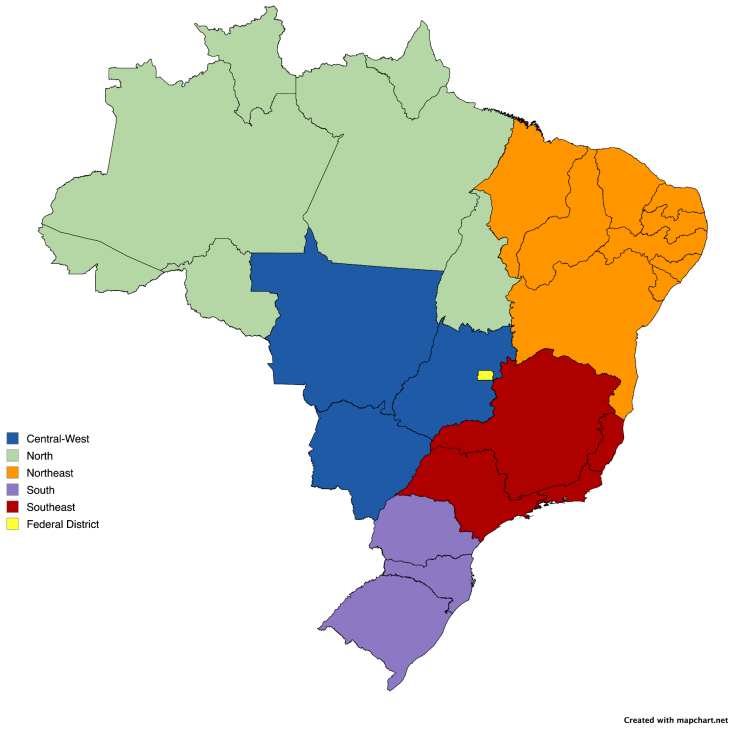
Despite the indissoluble political union among States, Municipalities, and the Federal District (Brasília), the government, scholars, and ordinary citizens frequently use regional metrics instead of focusing on the state or municipal levels. This is due to the commonalities between neighboring states, which allow for data aggregation and a better understanding of interconnected issues. The country was officially divided into the five regions we know today—the North, Northeast, Central-West, Southeast, and South—by the Brazilian Institute of Geography and Statistics (IBGE) in 1970. This division was made for scientific and statistical purposes, grouping states and municipalities that share similarities in terms of economy, human development, and infrastructure based on their geographical positioning

(Divisão Regional Do Brasil Em Regiões Geográficas Imediatas E Regiões Geográficas Intermediárias, 2017).

Figure 3 Brazil by IBGE's Five Official Macroregions



The North region, which includes seven of Brazil's 26 states, is known for its vast landscapes, including the Amazon rainforest and indigenous populations, factors that contribute to its high socioeconomic vulnerabilities due to the colonization history and low urban density. According to the Brazilian Institute of Geography and Statistics (IBGE), this region has an urban density of 8.93%, with a population of 18,182,253 (IBGE 2019), indicating that it is predominantly rural and sparsely populated. The economy is mainly based on primary industries, which results in a lack of infrastructure and investment due to low value-added output and reliance on fluctuating resource markets.

The Northeast, comprising nine of Brazil's 26 states, has long faced social and economic challenges that have delayed the accumulation of human capital in the region. These issues trace back to the colonial-era slavery market, which began in the 16th century and persisted until the end of the 19th century. The legacy of slavery not only caused deep social inequality but also led to unstable urban growth (Santos Bezerra 2016; Silva 2009). The region's lack of infrastructure, investment, and industrialization underscores its high socioeconomic vulnerabilities. It has an urban density of 24.23% with approximately 56 million inhabitants (IBGE 2019).

The Central-West region includes three of Brazil's 26 states and the Federal District, home to the capital, Brasília. Economically, the region is relatively balanced, owing to significant investment in agriculture and livestock, as well as the presence of the nation's capital. With an urban density of 10.28%, the region has a population of 16 million inhabitants.

The Southeast and South are Brazil's wealthiest regions, receiving substantial investment due to their industrial centers. Both regions are known for their concentrations of population, capital, and technology, explaining their dominance in national capitalism. The Southeast has an urban density of 36.45%, with approximately 88 million inhabitants (IBGE 2019; Boscariol 2017), making it the most urbanized and densely populated region in Brazil. The region has experienced higher economic development due to its historical emphasis on industrialization and urbanization. Today, the Southeast serves as Brazil's financial hub, contributing 53.3% of the national GDP (IBGE 2022). São Paulo, the wealthiest city in the country, is located in this region, as is Rio de Janeiro, Brazil's largest tourism capital.

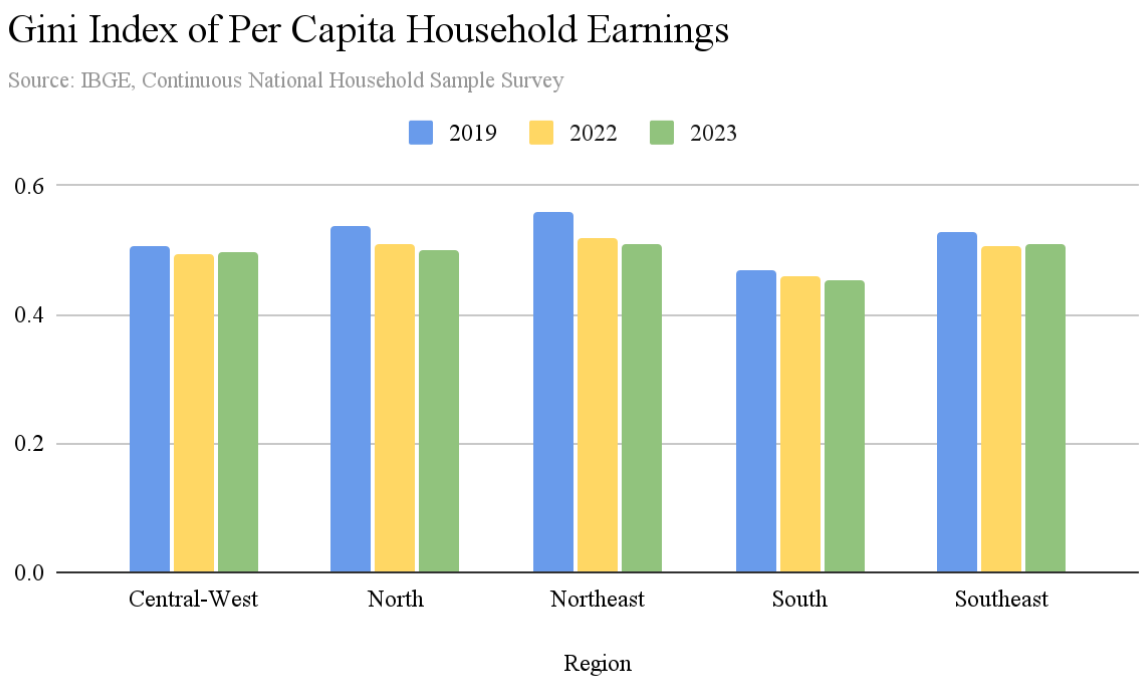
Lastly, the South region is notable for its high agricultural output, including soybeans, corn, tobacco, and livestock. The region also boasts a strong industrial sector, especially in

automotive, metalworking, textile, and service industries. With an urban density of 20.11%, the South is home to 29,016,114 inhabitants (IBGE 2019; Boscariol 2017).

Structural Inequalities and Their Political Implications

In addition to urban density levels and regional characteristics, it is also important to consider the World Bank's measurement of the country's income distribution, the Gini index. This index ranges from 0, indicating perfect equality, to 1, signifying perfect inequality (US Census Bureau 2021). In this context, the 2023 Gini index of per capita household earnings (at average yearly prices) shows that the Northeast region has the highest inequality in the country, with an index of 0.509, while the South has the lowest inequality, with an index of 0.454 (IBGE, Continuous National Household Sample Survey, 2023). Regions with higher Gini indexes likely experience greater healthcare demand, as fewer people may have access to privatized care, resulting in a higher flow of patients in government-run hospitals. Overall, the data on urbanization and inequality will help this research analyze public health outcomes and political decisions across the regions.

Figure 4: Gini Index of Per Capita Household Earnings



Furthermore, it is important to highlight that Brazil has a long history of money embezzlement, which may exacerbate existing inequalities between regions and contribute to the healthcare disparities identified by scholars such as Massuda et al. (2022), who emphasize the financial inequalities of the system and the challenges faced by the Northern regions, and Diegoli et al. (2023), who mapped healthcare variations across the country.

Although corruption is not the central focus of this research, it is a factor that could influence the findings presented and it remains a relevant contextual factor that may influence the practical implementation of public policies. While the findings presented by scholars such as Massuda et al. (2022) and Diegoli et al. (2023) are grounded in official data and legal frameworks, real-world outcomes may diverge due to systemic corruption, particularly in financial and legal processes. Moreover, the healthcare system is one of the sectors most affected by corruption. The Brazilian legal system facilitates the omission of information, meaning that the formulation of laws and the hiring of public agents often incorporate corrupt practices into the system due to significant discretion, particularly in areas related to public

procurement and bureaucratic appointments. Affecting both private and public healthcare services, including public-private partnerships (PPPs) (Farina 2017; De Michele et al. 2018). This discrepancy complicates the separation of theoretical political considerations from practical, on-the-ground implementation. The following section will examine the legal framework of the Brazilian healthcare system, analyzing how policy and law enforcement influence public health.

Constitutional Reform and the Creation of the Unified Health System

The 1988 Constitution not only established the New Federal Republic but also promised universal healthcare to Brazilian citizens. Article 196 of the Constitution states: "Health is a right of all and a duty of the State, guaranteed through social and economic policies aimed at reducing the risk of disease and other harms, and ensuring universal and equal access to actions and services for its promotion, protection, and recovery" (Constitution of Brazil, Art. 196).

This new right to healthcare only became a reality due to the 1986 Eighth National Health Conference, where academics, administrators, and health professionals advocated for the designation of health as a right (Machado and Silva 2019, 2-4). Through Article 200, the government promised tax-funded, comprehensive, and universal health accessibility through the creation of the Universal Health System (SUS).

The new constitutional promises created a bridge between health and legislation. It was important for Brazilian citizens that their rights be legally protected after a dictatorial government; prior to the 1988 constitution healthcare was limited to those who financially contributed to formal sector workers through the Instituto Nacional de Previdência Social (INPS),National Social Security Institute; and later the Instituto Nacional de Assistência Médica da Previdência Social (INAMPS), National Social Security Healthcare Institute;

working as private insurances while lower classes had to depend on philanthropy (Paim et al. 2011, 1783). Moreover, the creation of laws also benefited the government by strengthening the legitimacy of the new democratic political system. To solidify this ideal, several laws and important policies related to public health were created, but this paper will only analyze four: the Organic Health Law (Law 8080), Law 8142, the PAB-Fixed (Basic Health Care Floor policy) (Portaria GM/MS No. 1.409/2013), the PAB-Variable (Law 2488), and the Family Health Strategy (FHS).

First, in September 1990, Law 8080 was created. This legislation promised protection and recovery of the health system after the military regime. In addition, during that same year, Law 8142 promoted transparency and community participation in the management of the SUS (Machado et al. 2018; Carvalho 2016), once again reassuring the public of the government's commitment to democracy. Lastly, in 1994, the FHS policy was created. The FHS aimed to focus on primary care through multidisciplinary teams assigned to specific territories suffering from lack of treatment or health accessibility. This strategy became an essential part of the Unified Health System because it addresses geographical inequalities and helps correct and innovate financial arrangements, in addition to addressing socio-economic disparities. Its potential outcomes include increasing access to health services, decreasing mortality rates, and promoting equal regionalization of healthcare.

Massuda et al. (2022) analyzed the FHS policy to examine the financial structure of the Brazilian healthcare system. According to the authors, during its first five years, it showed promising results. However, they argue that throughout the 2000s, the distribution of federal funds began to neglect the healthcare system as a whole. Despite the Constitution’s theoretical framework ensuring equitable resource allocation, some municipalities—particularly in the North and Northeast—never received the necessary funds to support healthcare initiatives (Massuda et al. 2022, 16).

Moreover, when analyzing quantitative data, total health expenditures increased from 8.3% to 9.5% of GDP per capita between 2000 and 2018. However, this growth disproportionately benefited wealthier regions and larger municipalities due to the dominance of private healthcare spending, which accounted for over 58% of total health expenditures (Massuda et al. 2022, 2) While the FHS policy led to expanded access to health services, decreased mortality rates, and a reduction in social inequalities, the regionalization of healthcare outcomes remains uneven. Massuda et al. (2022) conclude that although the FHS is highly effective, it requires further federal support to correct existing regional disparities.

Following the broader goal of addressing structural inequalities and promoting balance between healthcare and society, the government continued to push for a decentralized healthcare system. This model allowed states and municipalities to act based on local needs, while the federal government was tasked with oversight to ensure national uniformity. Accordingly, the federal government sought to reformulate taxation in the late 1990s to correct disparities and improve the unification of public healthcare. The idea was to redistribute resources according to regional needs by decentralizing federal funds and increasing autonomy at the state and municipal levels.

As a result, the federal government began distributing resources through various mechanisms, leading to the creation of the PAB-Fixo (Basic Health Care Floor policy) in 1997. This law guarantees a fixed monthly amount of funding for each region based on a per capita formula, calculated through the number of people registered in the Basic Health Units (UBS) within each region. However, this reform primarily benefited major cities by increasing the budgets of already well-funded regions, while rural and less-developed areas—with limited infrastructure and poor UBS accessibility—continued to be neglected. This raised questions about the effectiveness of the government's PAB-Fixed rate calculation (Da Silva Barbosa et al. 2021; Ministry of Health 2024; Massuda 2022).

To address these inequalities, the government acknowledged the uneven distribution of health access across regions. In October 2011, inspired by the PAB-Fixed model, it passed Law 2488—known as PAB-Variável. This new rule aimed to adjust primary healthcare funding using performance evaluations, UBS productivity indicators, and incentives to calculate monthly rate values. The law's main objective was to implement federal priorities through municipal engagement. In addition to creating a more responsive funding system, the federal government also imposed a set of conditionalities: states must allocate at least 12% of their total revenue to healthcare, and municipalities must dedicate 15% (Massuda 2022, 16-17).

In this context, political management plays a crucial role in organizing funding flows and shaping the implementation of health policy. Following the establishment of key legislation that strengthened the SUS, the Brazilian political system began to confront new challenges that directly influenced the functioning of the healthcare system. After the end of the military dictatorship, Brazil entered a period marked by political instability and economic volatility. One significant event was the 2015–2016 economic crisis, which occurred during President Dilma Rousseff's administration. In 2016, Rousseff, the first female president of Brazil, was impeached—a political turning point driven by allegations of corruption and excessive government intervention (Menezes 2021, 5-8).

Her impeachment ushered in the administration of Michel Temer, whose economic policies included a freeze on federal public spending, notably in critical sectors such as healthcare. This measure severely constrained the capacity of the SUS and contributed to an increase in privatization and the expansion of public-private partnerships (PPPs). Temer's plan aimed to sustain the SUS while simultaneously opening segments of the system to profit-making ventures. While these developments are not the central focus of this thesis, they significantly influenced the management and structure of Brazil's healthcare system and

must be acknowledged to understand the broader political and financial context in which the SUS operates.

As the crises, legislation, and policies make clear, political management is essential to the functioning of the SUS. In this context, political management refers to the authority, investment priorities, and decision-making power held by different levels of government and institutions over healthcare policies, resource distribution, and service delivery. These responsibilities primarily fall to the Ministry of Health and legislative bodies.

Consequently, Ribeiro et al. (2018) argue that disparities in treatment rates across Brazil are the result of a contradictory and inconsistent political structure. Ribeiro et al. (2017) similarly point to a systemic political pattern that continues to drive the healthcare system toward crisis. Jesus and Senra (2017) offer further insight by analyzing the political management of healthcare, suggesting that since the decentralization of SUS, management has been "colonized" by financial and infrastructure interests, often at the expense of other critical areas of healthcare governance. These scholars argue for a simplified institutional framework—one that assigns greater responsibility to the federal government and promotes new healthcare policies that move beyond current models. In their view, these reforms should focus on regional equity, encouraging more effective coordination among federal, state, and municipal levels (Ribeiro et al. 2018; Ribeiro et al. 2017, 1034-1036; Jesus and Senra 2017, 1158-1160; Menezes 2021).

From this perspective, the instability in treatment rates may stem from the inability of Brazil's three-tiered system to align fiscal capacity with healthcare needs. This misalignment creates competition for resources and obstructs access to care. Many scholars have emphasized the economic dimensions of this issue, particularly how regional neglect, corruption, and inconsistent investment have deepened systemic inequalities. Still, the interaction between the public and private sectors has yielded important insights. Between

2008 and 2014, the federal government increased funding for private institutions offering complementary care. However, as private hospitals began expanding their roles in secondary and tertiary care, they attracted a larger share of public resources. Because these hospitals are mostly located in the South and Southeast, this trend has further skewed access to specialized services toward already privileged regions.

Oliveira et al. (2019) explore how this dynamic has affected funding distribution, particularly in the treatment of cardiovascular diseases. They found that private providers have received significantly more public funding than their public counterparts, offering more expensive services while placing strain on public health institutions. This trend may also be present in cancer treatment partnerships, raising questions about the fairness and efficiency of public investment. While this is not a direct critique of public-private partnerships (PPPs), it does highlight the imbalance between public and private actors and underscores the broader political challenges facing SUS. (Oliveira et al. 2019, 766)

Other scholars approach the concept of political management from a different perspective. Machado and Silva (2018), for example, argue that Brazil has faced political struggles related to healthcare since the SUS's creation. They contend that Brazil's position in the global economy, along with the characteristics of its political and social protection systems, have had a profoundly negative effect on the governance of public healthcare. Despite democratization and the establishment of a new institutional framework, Brazil underwent major economic and social transformations that ultimately destabilized the SUS's sustainability. These changes led to deepening inequalities, new threats to health security, a shortage of public capital, and an increasing dependence on private sector support.

In contrast to Machado and Silva's (2018) concerns, some scholars such as Paim (2018) have pointed to public-private partnerships (PPPs) as a potential solution to the ongoing resource and inequality challenges. However, this research takes a critical stance on

Paim's argument, particularly the idea of purchasing services from the private sector. While PPPs can offer temporary relief, they risk shifting the system toward financial dependency on private actors, thereby threatening the principle of universality that underpins SUS.

As private institutions are brought into the discussion, it is important to clarify that SUS was never intended to be an entirely government-run system. Rather, it was designed to guarantee access to healthcare for all economic groups, while also encouraging private sector participation through public-private collaborations. Despite the constitutional promise of equal and free access to healthcare—regardless of social, economic, or geographic status—private healthcare remains a prominent feature of the system. In 2019, only 28.5% of the population used private health insurance (De Souza Júnior et al. 2021, 2532). However, having private coverage does not preclude people from using public services like vaccination programs or medication distribution centers.

De Souza Junior et al. (2021) further illustrates this dynamic, showing that 37.5% of the population in the Southeast had private health insurance—the highest percentage in the country—compared to just 14.7% in the North (De Souza Junior et al. 2021, 2534). This discrepancy reflects broader socioeconomic inequalities between regions. Ultimately, these ongoing challenges go beyond legal frameworks and policy design; they reveal the structural weaknesses in government management and its relationship with society.

The broad institutional challenges and historical context of healthcare in Brazil have been outlined, but a more focused analysis is needed to understand the persistent inequalities in diagnosis and treatment rates. While SUS is constitutionally defined as a universal system, this research questions whether that promise holds true in practice. Despite its name, the "Unified" Health System remains fragmented in the lived experiences of Brazilian citizens, who often face stark disparities in access and quality of care. These inequalities are not abstract—they are visible across the country and deeply rooted in structural conditions. This

thesis hones in on three critical factors that contribute to these disparities: poverty, public health expenditure, and diagnosis.

Analytical Framework

One of the key contributors to poverty in Brazil is the deep inequality between rural and urban areas. This urban-rural divide is essential to understanding regional disparities in healthcare access and outcomes. The promise of universal healthcare under SUS often fails to account for these inequalities, especially in how certain diseases are addressed and how prevention is prioritized—or, in some regions, entirely overlooked. Numerous studies confirm that urban areas are significantly better equipped in terms of medical infrastructure, access to services, and the number of healthcare professionals. By contrast, rural populations face systemic disadvantages and are more likely to perceive their health as poor (Passarelli-Araujo and De Souza, 2023; Paim, 2018).

A key challenge in rural healthcare is the limited availability of services after initial hospitalization—particularly follow-up care and treatment for accidents or chronic conditions. These services are frequently located in other cities or even different states, forcing individuals to travel long distances without adequate transportation or support systems (Arruda et al., 2018). Understanding these disparities requires recognizing Brazil's geographic and economic diversity. The North and Northeast are the least urbanized regions, while the South is the most urban (IBGE - Coordenação do Meio Ambiente, 2024). This geographic divide reinforces how access to healthcare, even when technically free and universal, is deeply tied to spatial and financial inequality.

Passarelli-Araujo and De Souza (2023) emphasize that these issues are not just about distance—they are about systemic neglect. Lack of resources and poor geographic

distribution contribute to underutilization of healthcare services in rural regions, resulting in poorer outcomes, including a high number of unspecified deaths due to undiagnosed conditions. In 2008, only 8% of the rural population had private insurance covering hospitalization costs, compared to 19% in urban areas (Arruda et al., 2008). These gaps reflect growing political and economic strains on the SUS system.

Government spending further highlights the problem. In 2019, Brazil spent only 3.8% of its GDP on health (IBGE, 2019), while Chile—despite being smaller and with a similar GDP per capita—spent 5.7%. Hospitalization rates across Brazil's five regions also show stark inequality: the Southeast reported the highest rate of hospitalizations in 2023, while the Northeast—home to some of the poorest populations—has the lowest life expectancy. Meanwhile, the South and Southeast enjoy greater longevity and better health indicators. This raises critical questions: Are people in wealthier regions living longer simply because they have better access to doctors, diagnoses, and treatment? And are residents of the North and Northeast suffering not only from poverty but also from an absence of infrastructure capable of detecting and treating illness?

To better explore these questions, this research will focus on one disease: cancer. Cancer was chosen because it demands both continual treatment and timely diagnosis, making it a useful case to examine systemic inequalities. This dual focus will allow us to examine healthcare from two perspectives—diagnostic capability and long-term treatment availability—while identifying the structural barriers that persist.

Geographic accessibility is a particularly powerful factor in cancer care. Between 2009 and 2010, more than half of all SUS cancer patients had to travel for treatment, and those living in the North region traveled an average of 583 kilometers (approximately 362 miles) to reach a treatment center, most of which are concentrated in the Southeast and Northeast (Fonseca et al., 2022). Moreover, when patients receive diagnosis or treatment

outside their home region, it distorts regional statistics on disease occurrence, making it harder to assess local needs accurately. This insight builds on the work of Massuda, Passarelli-Araujo, and De Souza, offering a broader discussion on the consequences of treatment disparities and the obstacles surrounding diagnostic access and precision.

Most scholars agree that the barriers to healthcare in rural areas are not solely geographic; they are also socio-demographic. Access is not just about proximity—it also involves income, education, and infrastructure for diagnosis and prevention. When poverty, limited healthcare spending, and inadequate diagnostic resources intersect, they create a cycle of inequality. In underdeveloped areas, financial constraints suppress healthcare investment, which in turn restricts access and undermines outcomes.

Another major factor contributing to systemic inequality within Brazil's healthcare system is the intersection of geography and socioeconomic status. As Arruda et al. (2018) argue, healthcare accessibility is not only a reflection of but also a determinant of socioeconomic development. Low-income groups living in rural areas are significantly disadvantaged, with limited access to healthcare hubs and services. This creates a powerful argument that geographic inequality directly influences socioeconomic inequality—where limited infrastructure in health and education reinforces cycles of poverty and exclusion (Arruda et al., 2018, p. 6).

Adding to this, Paim (2018) highlights how financial constraints amplify these disparities. He explains that insufficient funding for SUS has led to the deterioration of its service network and reduced the ability to properly compensate healthcare workers. This shortfall directly impacts the expansion and maintenance of public infrastructure—especially in under-resourced areas—and aligns with Arruda's concerns about the limited availability of post-hospitalization and follow-up care. Paim (2018) further notes a growing reliance on the

private sector to fill these gaps, effectively pushing SUS toward a form of partial privatization (Paim, 2018).

These funding disparities also shape who gets diagnosed and treated—particularly in the case of diseases like cancer. According to Brazil's National Cancer Institute (INCA), 70% of the country's cancer cases are recorded in the South and Southeast. However, this statistic may reflect diagnostic access more than actual disease distribution. Regions with more healthcare investment, including access to both SUS and private systems, are more likely to detect and record cases. In 2019, for example, 31.5% of the South's population used private healthcare compared to just 9.08% in the North. Importantly, private healthcare use does not exclude individuals from accessing SUS services, giving wealthier regions the advantage of dual-system care and reinforcing health outcome disparities.

It's not only patients who suffer from unequal investment—healthcare workers are also affected. Arruda et al. (2018) point out the difficulty in maintaining a reliable service network in underfunded regions, especially where workers are underpaid or face delayed wages. Poorer, more remote areas struggle to attract and retain qualified professionals, leading many to relocate to urban centers where pay and conditions are better. This triggers a "snowball effect": fewer healthcare workers result in fewer services and fewer investments, which in turn deepens the shortage of care and undermines the overall quality of the system.

There are many reasons to question the equality of Brazil's universal health system. However, the findings of these scholars highlight some of the core inequalities that shape access to diagnosis and treatment. What emerges is a clear connection between poverty, lack of infrastructure, and underdiagnosis—an ongoing cycle that challenges the very principle of universality that SUS is meant to uphold.

Insufficient public funding can perpetuate systemic inequalities, disproportionately affecting marginalized populations. Disparities in healthcare access, and consequently in

diagnosis, are particularly evident in the correlation between poverty levels and the lack of diagnosis. Underfunded public health services struggle to provide comprehensive care, exacerbating existing inequalities. This section explores how limited public investment deepens these disparities, creating a cycle where vulnerable populations remain undiagnosed and underserved, further entrenching healthcare inequalities.

Lima e Costa et al. (2000) discuss the lack of diagnosis in senior patients in relation to their socioeconomic living conditions. Their findings support the notion that persons living in poverty (PLPs) are more likely to experience premature death due to inconsistent diagnoses. Their systematic health assessment of Brazil's elderly population reveals that causes of death are often undefined or poorly defined in the North and Northeast, likely due to inadequate diagnostic infrastructure, which can skew statistical data. The lack of standardized cancer treatment further illustrates the absence of a political agenda to address this critical issue. This non-compliance with standardized care highlights a deeper problem within Brazil’s healthcare system, particularly regarding cancer, which demands a coordinated response from both government and healthcare hubs.

Ribeiro et al. (2016) further confirm that poverty exacerbates diagnostic inconsistencies, noting that premature deaths are disproportionately high among black individuals. While race is not the central focus of this paper, it is crucial to acknowledge the broader socio-economic context in Brazil, where race and poverty intersect, contributing to regional disparities in healthcare access. IBGE data (2023) corroborates this, showing that the North and Northeast, regions that suffer from higher poverty rates and healthcare neglect, also have a larger concentration of people of color, linking healthcare neglect, poverty, and race.

Arruda et al. (2018) also explore how geographic and social vulnerability affect access to diagnosis and treatment, particularly in rural and urban areas. The author argues that

geographical location significantly influences diagnosis rates, with major rural areas suffering from a deficiency in diagnostic services. Limited access leads to a lack of health awareness, worsening the already insufficient medical assessments. While Arruda et al. (2018) agree on the negative impact of limited accessibility, some of their statements are inconsistent with the argument of this paper. For instance, they suggest that demand for medical services in rural areas increases with education, and that this is also true in urban areas. However, they overlook how education might influence a patient's likelihood of seeking medical assistance, leading to potential bias in their data. They also assert that inequality and poverty in Brazil are improving due to government social benefits, a claim this paper questions in the context of healthcare accessibility. These disagreements raise important questions about the role of political power in shaping public healthcare policies.

Kaliks et al. (2017) provide a focused study on SUS cancer treatment, highlighting that while the Health Ministry (MS), INCA, and Therapeutic Guidelines (DTs) set standards for oncology treatments across the public health system, many SUS oncology treatment centers fail to adhere to these protocols. Among 52 oncology treatment centers, 18 do not follow any institutional protocols. This lack of standardization makes it difficult to know where to refer oncology patients, based on their diagnoses. Kaliks (2017) further notes that 50% of the 86 SUS oncology hubs lack targeted therapy for lung cancer, and 60% do not provide standardized treatment for metastatic disease. These findings underscore the critical role that geography and socioeconomic conditions play in the diagnosis and treatment of cancer in Brazil. (Kaliks 2017, 5-6)

Drawing on insights from Part One of this thesis and the broader factors shaping access to healthcare in Brazil, the central themes informing this study’s analytical framework become clear. From these, two key questions emerge:

1. Why do certain regions experience disparities in accessibility and diagnosis?

2. How do governmental policies and regulations affect medical diagnosis?

With these questions in mind, the following section will outline the methods employed to further explore these issues, examining how socio-geographical and political dynamics shape healthcare outcomes in Brazil.

Methodology and Data

To investigate the research questions of this thesis, both quantitative and qualitative data will be analyzed to better understand disparities in treatment rates. This study draws on data from the Basic Health Indicators, the Health Public Budget Information System – Municipal Indicators (SIOPS), the Brazilian National Cancer Institute (INCA), DATASUS, and the philanthropic hospital Beneficência Portuguesa (BP). The analysis focuses on the period from 2000 to 2019, incorporating the 2018 OECD poverty rate study to inform the case study discussion. The dataset was intentionally limited to 2019 in order to avoid the possible distorting effects of the COVID-19 pandemic, allowing for a clearer assessment of pre-pandemic healthcare trends. These virtual archives include data on both public and private health services, with particular attention to specific Brazilian states and regions.

In addition to quantitative analysis, a limited number of in-depth interviews were conducted to supplement and critically engage with the findings. While the sample size is small, and nonrandom the interviews offer important qualitative insights. Participants included doctors, healthcare project managers, private sector partners, and academic experts, who either reinforced or challenged the quantitative data.

To address the research questions, this study analyzes quantitative data aimed at uncovering regional disparities in healthcare treatment across Brazil. The selected indicators include:

1. Average health expenditure per inhabitant by region (2000–2019)
2. Total cases of neoplasms[1] by region (2009–2019)
3. The distribution of doctors per 100,000 people by region (2019), and
4. Poverty rates by region (2018).

These variables allow for a multi-dimensional exploration of inequality in access, diagnosis, and treatment. The outcomes generated from this analysis may confirm systemic negligence toward the North and Northeast regions, as suggested in the literature, or potentially open space for new hypotheses and future lines of inquiry.

Although the original datasets were collected at the national and state levels, the methodology was refined to emphasize regional analysis—aligning with this paper's central concern: the regional disparities within Brazil's so-called Unified Health System (SUS). To ensure comparability, health expenditure data were recalculated to reflect regional per capita spending. Similarly, neoplasm cases were standardized to rates per 100,000 people, and poverty rates were aggregated by region to better illustrate socio-economic contrasts. This recalibration accounts for Brazil's stark regional population differences and allows for a fairer and more accurate comparison. In other words, state-level data were grouped together in order to create comparisons between the regional level.

Using a mixed methods approach (see for example Harvard Catalyst Community Engagement program 2020) this study draws on interviews with Brazilian healthcare professionals to complement the quantitative analysis. While the numerical data reveals significant disparities, qualitative insights help contextualize commonly accepted but under-examined beliefs—such as the idea that SUS is mainly used in the North and Northeast, while private care dominates elsewhere. Some studies support this view, however,

[1] Neoplasms, commonly referred to as tumors, are abnormal growths of tissue that occur when cells divide and grow uncontrollably. They can be benign (non-cancerous) or malignant (cancerous).

the absence of accessible or transparent data sources undermines the reliability and verifiability of their findings. To deepen this inquiry, six interviews were conducted with PPP representatives, government relations professionals, and doctors from non-profit hospitals. These perspectives help illuminate how political and institutional realities shape access, investment, and diagnosis, offering nuance to trends that raw data alone may not fully explain.

Table 1: Socio-Demographic Characteristics of Research Interviewees (N=6)[2]		
Characteristics	Categories	Frequency (N=6)
Gender	Male	3
	Female	3
Affiliated Sectors	SUS	1
	Private Healthcare	1
	Corporate Healthcare	3
	2+ Above	1
Ethnicity	100% Brazilian	
Organizations	Hospital Care, Beneficência Portuguesa, Albert Einstein & Oswaldo Ramos (NGO), Hospital de Caridade São Vicente de Paula, Hospital Santa Marcelina (SUS), Johnson & Johnson	

Since the quantitative data has already been discussed, the next step is to provide a perspective that complements and deepens the insights previously mentioned. Despite the strength of the quantitative findings, the limited qualitative data enhances the reader's understanding of commonly accepted notions within Brazilian healthcare that may appear

[2] 2+ Sectors Combined" indicates professionals working across multiple sectors. Interviewees' names are used when presenting their direct quotes in the findings section. However, this table presents aggregated socio-demographic data to summarize the sample.

under-researched precisely because they are socially assumed. A good example is the widespread belief that SUS is predominantly used in the North and Northeast, while private healthcare is more common in the other Brazilian regions. This led to a small set of interviews with a sample size of N = 6 (see Table 1). Among the participants were PPP representatives from Johnson & Johnson, government relations professionals, and doctors from non-profit hospitals in Brazil, all of whom provided first hand perspectives on how reality shapes the healthcare system and its inequalities, as well as how the government responds to variations in treatment rates.

Before starting the interviews, the Basic RCR and Human Subjects training was completed to ensure the protection of the the human subjects and reinforce ethical standards. The interviews aimed to understand how lived experience informs the healthcare system's structure and inequities, and how the government responds to variations in treatment rates. To analyze the relationship between Brazil's three-level political system and SUS, an interview protocol was created to standardize the discussion. The four main questions asked were:

1. How do political agendas and priorities influence SUS funding and resource allocation within the Brazilian regions?
2. Do you believe the government fails to ensure equitable investment between regions in the field of public health? Why?
3. From your personal perspective, do you agree that the Northern regions exhibit lower treatment rates for cancer due to resource shortages or lack of investment?
4. What specific measures are being implemented or considered to improve diagnostic capabilities and access to healthcare services in less-developed regions?

The systematized questions aimed to help identify disparities among the responses. The answers could also offer additional arguments to explain treatment rate disparities and, ideally, reinforce the central hypothesis. Interviews are an excellent method to approach the flexible nature of interpretation; questions can be adjusted to focus on the most pressing

concerns voiced by the interviewees. In short, both qualitative and quantitative approaches contribute to understanding the discrepancies in treatment rates.

This study operates under the assumption that treatment rates are unequal due to limited access to diagnostic services in less-developed regions—an outcome of unequal resource distribution across Brazil's geographic landscape. However, the findings will either confirm this belief or offer space for more complex or alternative hypotheses.

Ultimately, the goal is for the qualitative and quantitative data to complement one another, enabling this study to propose a well-rounded final hypothesis. A comprehensive analysis of the key factors influencing the variation in treatment rates across Brazilian regions is expected. In summary, this research seeks to inform policy discussions, providing evidence-based insights that could shape future strategies aimed at reducing regional disparities and improving the equity and effectiveness of the SUS.

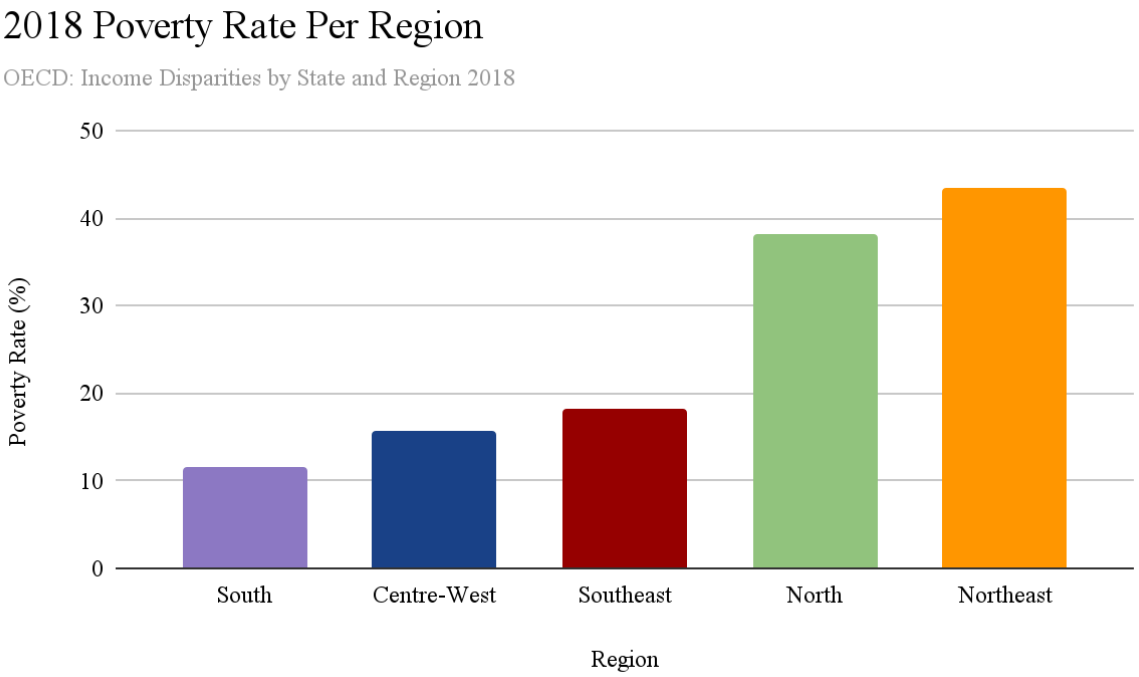
Findings

The analysis confirms what has been previously suggested: although Brazil’s healthcare system is constitutionally universal, regional disparities remain both persistent and pronounced. These inequalities are especially evident in the North and Northeast, where lower healthcare spending, higher poverty rates, and reduced diagnosis rates highlight systemic imbalances. To better capture these dynamics, the results are organized into five thematic sections: *Poverty Gaps and Healthcare Accessibility*, *Governmental Healthcare Funding*, *Neoplasm Diagnosis Rates*, and *Political Outcomes*. Each section explores a key dimension of the unequal implementation of SUS across Brazil’s five regions, linking structural conditions to differences in access and treatment.

Poverty Gaps and Healthcare Accessibility

The analysis of the past 19 years reveals persistent inequalities within the Brazilian healthcare system, with one of the most concerning gaps between the Northern regions and the Southeast. Poverty, which is disproportionately high in the North and Northeast, directly impacts cancer diagnosis rates and the allocation of public healthcare funding.

Figure 5: 2018 Poverty Rate per Region (Percentage)

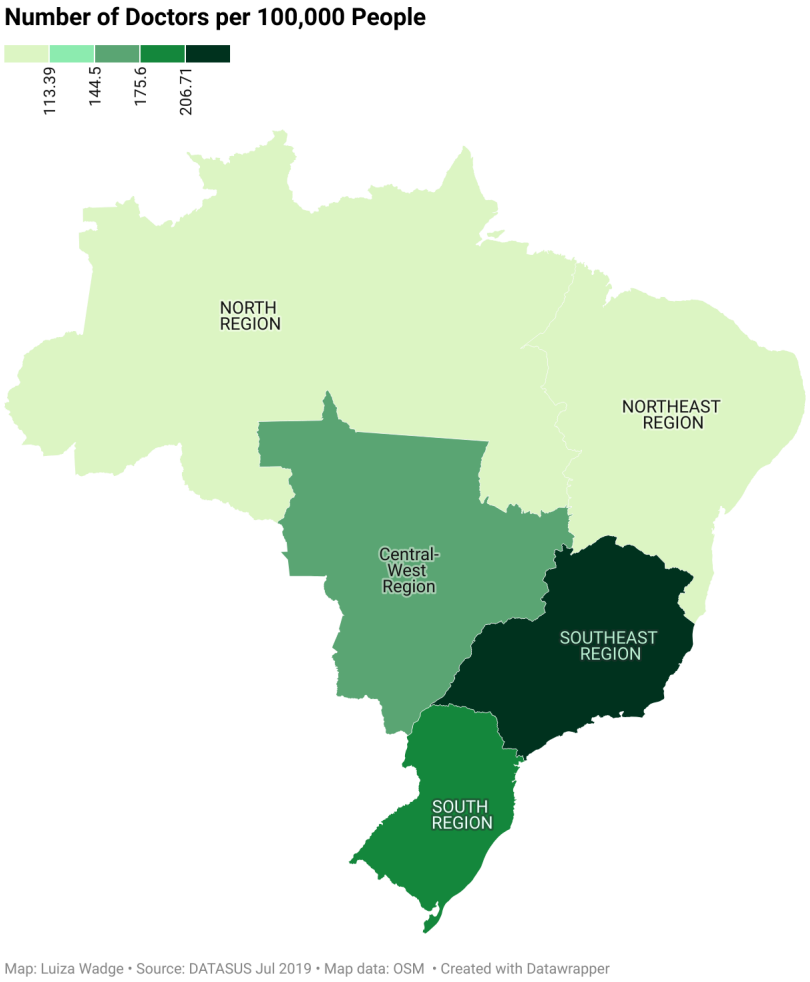


To understand these disparities, the first step was to examine the poverty rates across Brazil's five regions. Although the most recent data available is from 2018, it still provides valuable insights. As shown in Figure 5, both the North and Northeast regions experience significantly higher poverty rates compared to the rest of the country. The Northeast, in particular, has the highest poverty rate, exceeding 40%, while the South has the lowest at around 10%. Unfortunately, these disparities persist, as reflected in the 2023 Gini Index,

which mirrors the inequality levels observed in previous years, as discussed earlier in the background section.

Higher poverty rates are likely tied to a shortage of qualified healthcare professionals in the North and Northeast, as illustrated in Figure 6.

Figure 6: Distribution of Doctors per 100,000 Inhabitants by Region



This shortage translates into reduced access to diagnosis and treatment, as well as a diminished ability to afford or even reach healthcare services—factors that further hinder the economic development of these regions. Although Brazil's Unified Health System (SUS) is designed to ensure equal access for all citizens, the data reveal clear variations in healthcare

access, diagnosis, and treatment, particularly when comparing cancer care resources across regions.

Figure 6 shows that the North and Northeast have significantly fewer doctors—averaging just 113 per 100,000 inhabitants—compared to about 200 per 100,000 in the South. This disparity reflects unequal governmental attention and investment. A deeper look into the data also reveals that, as of July 2019, the North had only 4.9 hospital beds per 100,000 people designated for cancer care, while the South had 11.2 beds (DATASUS 2019). Similar gaps exist in care for other diseases such as cardiovascular conditions and AIDS, though they fall outside the focus of this study.

These structural gaps were echoed by healthcare professionals interviewed for this thesis. Doctor Lorena, a SUS physician, highlighted how poverty directly impacts day-to-day medical practice:

> "There is a socioeconomic disparity on a macro level among the regions—South, Southeast, North, Northeast, and Central-West—which influences infrastructure and health planning, leading to a shortage of doctors (...) You see many places operating with the bare minimum, you know? The bare minimum in terms of resources—both financial and essential work tools. Many places lack even the basics, and people have to make do with what they have." [3]

She also spoke about volunteer work in the Brazilian Sertão (Northeast), where she frequently encountered patients with advanced-stage skin cancer that could have been detected earlier if proper infrastructure and education were in place.

Doctor Batista shared similar concerns, emphasizing that beyond poverty, the lack of effective political management further complicates diagnosis and treatment.[4] The challenges raised by both doctors underscore how healthcare disparities are not only rooted in

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[3] Gabriella da Conceição Lorena de Mello, Doctor at Hospital Santa Marcelina, February, 10th, 2025

[4] Marcelo Batista, Coordinator of the Integrated Center for Hypertension and Cardiovascular Metabolism at the Hospital do Rim e Hipertensão, Associate Professor at the New England Medical Center/Tufts University – Boston, USA, and Researcher at the Hospital Israelita Albert Einstein, July, 15th, 2024

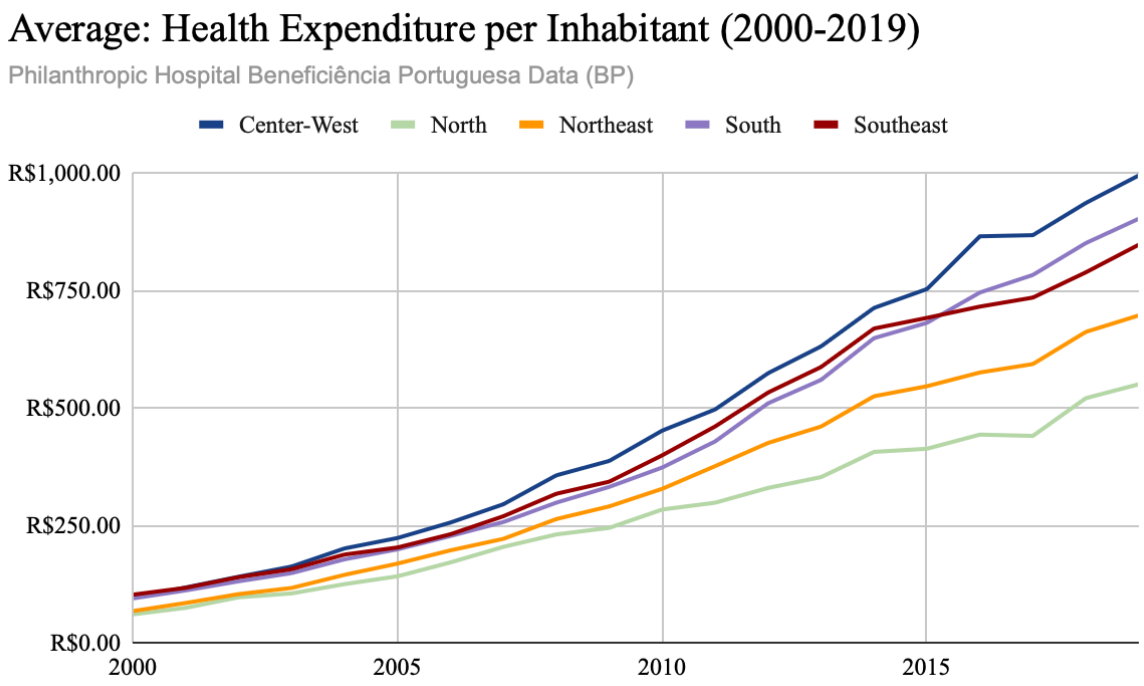
socioeconomic inequalities but also in uneven and insufficient public investment. This under-investment continues to deepen regional divides, making it increasingly difficult to meet the needs of Brazil's underserved populations.

Healthcare Governmental Funding

Governmental funding plays a crucial role in shaping the effectiveness of any healthcare system, particularly in underdeveloped regions. It directly influences the quality of services, investment in preventive care, availability of essential resources, and the protection of healthcare workers' rights. In this context, analyzing the average health expenditure per inhabitant becomes essential to understanding how funding disparities contribute to broader inequalities—especially in cancer diagnosis and treatment across different regions.

From this perspective, Figure 7 illustrates the average public health expenditure per inhabitant across Brazil during the first two decades of the twenty-first century. The data shows an overall upward trend in healthcare spending, but also reveals growing regional disparities among the regions. In the early 2000s, funding levels across regions were relatively balanced—possibly due to the recent decentralization of the healthcare system and favorable macroeconomic conditions such as low inflation and stable costs. However, starting around 2005, the gap between regions widened significantly, suggesting a growing divergence in resource allocation likely tied to governmental shortcomings.

Figure 7: Health Expenditure per Inhabitant, 2000 to 2019 (In R$)



The disparity became even more pronounced around 2015 during Brazil's economic crisis, a period marked by President Rousseff's impeachment and President Temer's shift toward privatization. For example, under Rousseff's administration, the North received an average of R$300 per capita in healthcare funding, while the Center-West received approximately R$750. Although public health investment has continued to grow nationwide, the North and Northeast regions lag behind, reflecting unequal infrastructure investment and limited access to resources—possibly driven by a profit-oriented logic in healthcare distribution.

As Dr. André Barral, a cardiologist at several hospitals including the NGO Hospital de Caridade São Vicente de Paula, noted, this trend contributes to significant disparities in health outcomes and creates an imbalance in the overall quality of care.

> "We should expect that most public investment would be directed to these regions [North and Northeast]; however, there is a tendency for health investments to be concentrated in economically more dominant and consequently more populous regions [South and Southeast], which generally *leads to an imbalance in both the quantity and quality of healthcare services* offered to the population."[5]

Beyond infrastructure, the unequal allocation of federal resources illustrated in Figure 7 contributes to the disorganization of the SUS system. One of the consequences is the lack of stable career incentives for public healthcare professionals, which often drives them toward the private sector in search of better conditions. Arnaldo Bartalo Jr., a government relations specialist, underscores the effects of inconsistent financial policies on the medical profession: “The lack of investment discourages doctors from working for SUS. They have received R$10.00 for consultations since 1995 without any readjustment. It is an *existential emptiness.*”[6]

On the same topic, Dr. Marcelo Batista echoes Bartalo’s concerns about the lack of incentives in the public healthcare system. During his interview, he emphasized that the concentration of doctors in the South is largely driven by the benefits offered by private hospitals. Dr. Batista, who graduated in medicine from the Federal University of Bahia (Northeast) in 1989, eventually relocated to São Paulo (Southeast) for personal reasons—a decision reflective of a broader trend. The migration of medical professionals to more affluent, urbanized areas contributes to the persistent shortage of qualified healthcare workers in the North and Northeast, further restricting access to diagnosis and treatment.

To better illustrate these regional disparities, the country’s five regions were grouped to highlight differences in public healthcare funding. The average health expenditure per inhabitant over the past nineteen years in each region was calculated as:

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[5] André Barral, cardiologist of NGO Hospital de Caridade São Vicente de Paula, interview by author, February 10th, 2025.

[6] Arnaldo Bartalo Jr., government relations specialist, interview by author, July 15th, 2024 .

$$\left(X_{region} = \frac{\Sigma\, region_{,year}}{20}\right)$$

Using these values, the three wealthiest regions—Central-West, South, and Southeast—was R$ 580.45. Calculated as:

$$\left(\frac{X_C + X_S + X_{SE}}{3}\right)$$

In contrast, the combined average for the North and Northeast was just R$ 405.00. Calculated as:

$$\left(\frac{X_N + X_{NE}}{2}\right)$$

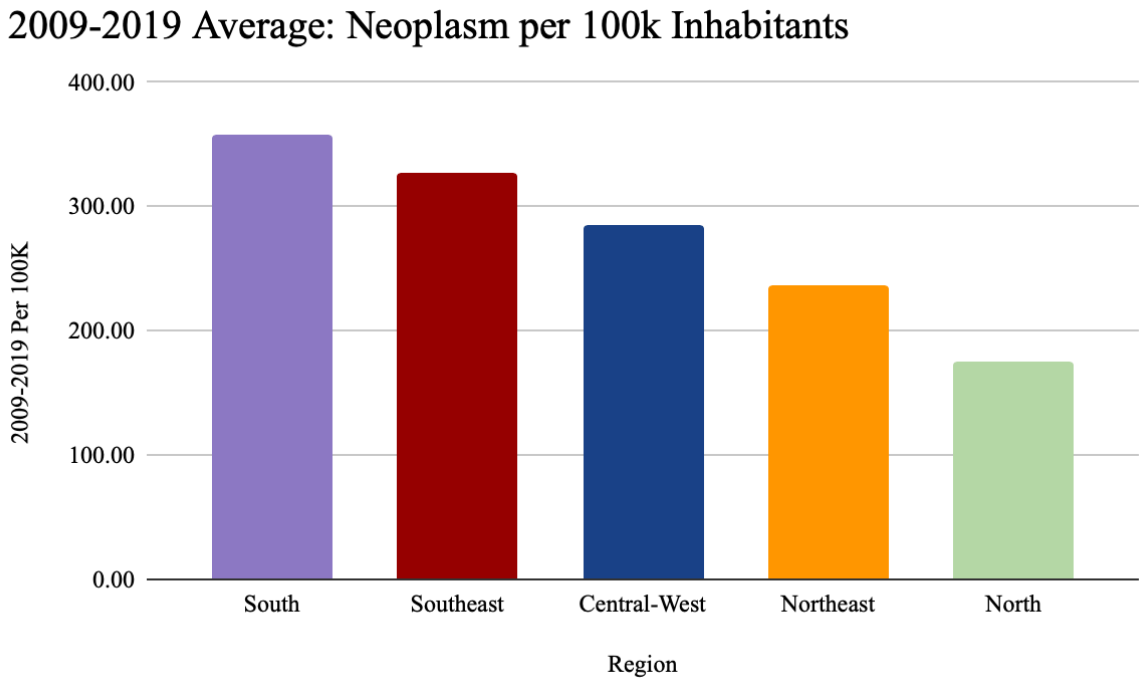
This R$ 175.45 gap per inhabitant is substantial and has direct implications for the availability of medical staff, equipment, research capacity, and access to specialized diagnostic procedures, such as those required for cancer detection. These financial disparities reinforce the argument that unequal health expenditure contributes to unequal health outcomes across Brazil.

Neoplasm Diagnosis

The lack of economic incentives and consistent funding not only undermines the structure of Brazil's healthcare system but also directly affects diagnostic and treatment capacities. Interviewees Dr. Marcelo Batista, Arnaldo Bartalo, and Dr. Gabriella Lorena de Mello all emphasized that the concentration of healthcare professionals in major urban centers results in reduced access to diagnosis, treatment, and quality care in smaller municipalities and socioeconomically disadvantaged regions. To further explore this imbalance, the study focuses specifically on cancer care as a measurable parameter for evaluating disparities in diagnosis and treatment.

Figure 8 illustrates stark regional differences from the 2009 to 2019 neoplasm average per 100,000 inhabitants. While these results can be interpreted in multiple ways, this research adopts the perspective that the lower diagnostic rate is in the North and Northeast signal concerning underinvestment in healthcare infrastructure, which can be confirmed by the amount of doctors per 100,000 inhabitants in those areas. In contrast, the higher rates observed are in the South and Southeast suggesting better access to screening and specialized services—privileges often tied to more favorable socioeconomic conditions.

Figure 8: 2009-2019 Average: Neoplasm per 100k Inhabitants



These disparities underscore how wealthier regions are better equipped to engage in preventive healthcare, ultimately contributing to earlier diagnoses and more effective treatment. As Dr. André Barral noted:

> The South and Southeast regions are the ones with the best socio-economic indicators and, consequently, have a higher life expectancy, which implies a greater incidence of cancer diagnoses. Furthermore, they also have better infrastructure for these diagnoses to be made, including the existence of screening programs for at-risk individuals, guiding the population about the need for early screening even when the disease is still asymptomatic, and training healthcare teams in active case finding of still-suspected cases.

As a result, individuals living in poorer regions are often either undiagnosed or receive a diagnosis at more advanced stages of the disease—typically when symptoms become severe enough for general practitioners to detect. This contributes to artificially lower reported incidence rates, which reflect not a genuinely lower occurrence of neoplasms, but rather the region's limited diagnostic capacity.

Political Outcomes

All previously discussed figures can be interpreted as reflections of broader political outcomes. The data points to a lack of cohesive political agenda and organizational structure within Brazil's healthcare system. Arnaldo Bartalo, a government relations specialist, reinforces this interpretation: "There is a lack of state policy, and the politicization of health is a waste of the promises in our constitution."[7]

Drawing from his experience in healthcare and public administration, Bartalo highlights persistent issues in coordination among the federal, state, and municipal levels of government. He describes a phenomenon known as duplication of resources, in which overlapping responsibilities lead to redundant funding, personnel allocation, or infrastructure development. This misalignment hinders efficient regionalization, causing misallocations

[7] Arnaldo Bartalo Jr., government relations specialist, interview by author, July 15th, 2024 .

and exacerbating existing inequalities in the distribution of healthcare services. These inefficiencies may explain why certain regions report disproportionately high per capita health expenditures. Bartalo further argues: “I would say we need government policy, not state policy, in order to fix the duplication of resources and regionalization problems.”[8]

Several interviewees echoed Bartalo’s concerns. Although the Brazilian healthcare system operates under a decentralized model, Bartalo and others advocate for a stronger national policy framework to promote better coordination across levels of government. One such proponent is Lilian Quintal Hoffman, who emphasized the importance of expanding the Program for Supporting the Institutional Development of SUS (PROADI-SUS)—a federally coordinated initiative that partners with six nonprofit hospitals in the Southeast to improve public healthcare management and service quality. These hospitals serve as national benchmarks in medical care, administration, and assistance.

Despite ongoing debates over the merits of decentralization versus centralization, the majority of interviewees expressed support for public-private partnerships (PPPs) as a necessary element in addressing systemic challenges. Programs like PROADI-SUS illustrate how private investment can enhance the operational capacity and quality of SUS.

Importantly, all six professionals interviewed expressed dissatisfaction with the current political management of the SUS. While their critiques varied, they consistently cited issues such as regional inequities, the absence of effective national and state-level policies, persistent shortages of resources and trained professionals, and, most frequently, poor governance. This shared frustration suggests that mismanagement within the public healthcare system is widely recognized among practitioners.

Taken together, the findings presented throughout this study point to multiple dimensions of regional disparity in Brazil’s healthcare system. The following section will

[8] Arnaldo Bartalo Jr., government relations specialist, interview by author, July 15th, 2024 .

synthesize these results and explore how they intersect, offering a comprehensive interpretation of SUS's structural challenges.

Ultimately, all evidence examined thus far converges on a central issue: the absence of a stable and integrated political framework. When asked about regional disparities in treatment and healthcare delivery, Bartalo specifically cited fragmented state policies and the politicization of healthcare as key barriers to equitable access.

Discussion of the Findings:

Why does the healthcare system differ between the five Brazilian regions despite a "Unified" Health System (SUS)? This research reaffirms a widely accepted premise in the literature: disparities in access to diagnosis and treatment across Brazilian regions stem from the unequal distribution of resources. While many scholars have linked lower treatment rates in the North and Northeast to insufficient access to diagnostic services, this study—through detailed analysis of both quantitative and qualitative data—advances the argument further. The findings confirm that, since the early 2000s, diagnosis rates in the Northern regions have consistently lagged behind, a trend that parallels lower health expenditures and higher poverty levels in these areas. In particular, the North and Northeast show greater reliance on SUS due to elevated poverty rates and limited private healthcare alternatives, reinforcing the need for proportionally higher public investment in these regions.

These findings offer a more nuanced understanding of how structural disparities shape healthcare outcomes and allow us to return to the central questions guiding this research. By revisiting these questions in light of the evidence presented, we can more clearly assess the multifaceted barriers to equitable healthcare across Brazil.

Why do certain regions experience disparities in accessibility and diagnosis despite SUS's constitutional promise of equal healthcare access? The analysis of both qualitative and quantitative data confirms that financial inequality is a primary driver of regional disparities in diagnosis and treatment. As Jesus and Senra (2017) note, the SUS has been "colonized" by financial logic—a shift that has not translated into effective financial management. The previous mentioned financial policies, PAB-Fixed and PAB-Variable, did not result in any improvement related to investment correction of inequality. As illustrated by figure 7, the public healthcare investment gap only grew, raising concern on the effectiveness of these policies. The system remains chronically underfunded, with certain regions more severely affected than others. Massuda et al. (2022) argue that this underfunding leads to imbalances in physician distribution across regions, a point echoed by interviewees Barral, Lorena, and Bartalo. For instance, Bartalo mentions that SUS doctors are paid R$10.00 per consultation (approximately USD 2.00), which offers little incentive for professionals to remain in underserved areas.

Although the scholars and interviewees did not specify this problem as exclusive to the North and Northeast, data visualizations (Figures 4 and 5) suggest the issue is most acute in these two regions. As Lorena argued, these areas operate with the "bare minimum" in terms of doctors and medical resources. Bartalo and Batista further highlight that low pay and inadequate infrastructure offer little motivation for health workers to stay in public service.

Another emerging theme is the role of public-private partnerships (PPPs) in health financing. While potentially beneficial, this is a contentious topic in Brazil. On the one hand, PPPs such as the PROADI program—endorsed by interviewees Hoffman and Bartalo—could alleviate financial pressures and expand diagnostic access in under-resourced areas. They may also help introduce new technologies and reduce regional disparities in treatment access.

However, as De Michele (2018) warns, Brazil's history of corruption makes PPPs vulnerable to mismanagement and embezzlement. Furthermore, overreliance on private investment risks weakening the foundational principles of SUS: decentralization, transparency, and social participation. If not carefully regulated, PPPs could reinforce inequality by diverting public resources to profit-oriented institutions.

How do socioeconomic disparities affect medical diagnosis? In theory, poorer regions like the North and Northeast should receive proportionally more funding. In practice, however, they remain severely under-resourced. Data from the philanthropic hospital Beneficência Portuguesa show higher cancer incidence in the South and Southeast. Yet this may reflect better diagnostic access rather than actual prevalence. The shortage of specialists—especially oncologists—in the Northeast, as mentioned by Dr. Lorena, suggests that many cases may go undetected or be diagnosed too late. Moreover, some cancer-related deaths might not be accurately recorded if the disease was never formally diagnosed, creating further gaps in epidemiological understanding. This data limitation underscores the need for more reliable diagnostic tracking methods within DATASUS and INCA.

Socioeconomic conditions also impact an individual's ability and willingness to seek medical care. Lower levels of health education mean patients may not recognize early symptoms or know when to seek help. While this study does not focus specifically on education, future research could explore its direct impact on diagnosis and treatment rates.

Geographical barriers are another major concern. Long distances to healthcare facilities—common in remote areas—delay or prevent diagnosis and treatment altogether. This is particularly dangerous for conditions requiring urgent surgical intervention. Additionally, indirect costs (e.g., transportation, time off work) discourage low-income

individuals from pursuing medical care, increasing the risk of late-stage diagnosis and poorer health outcomes (Fonseca et al., 2022).

How do governmental actions and regulations affect medical diagnosis? The findings point to political mismanagement as a key factor driving systemic healthcare disparities. Although SUS aims to ensure universal coverage, in practice, healthcare resources are concentrated in urban centers—primarily in the South and Southeast—leaving less developed regions underserved. This contributes to a vicious cycle: lack of specialists leads to delayed diagnosis and treatment, which increases disease burden, further discouraging health professionals from working in these areas.

Another issue is the political instability that disrupts health policy continuity. Frequent shifts in leadership result in erratic health strategies and complicate SUS governance. Decentralization, a core principle of SUS, can also hinder effective coordination. Kaliks et al. (2017) argue that decentralization contributes to fragmented service delivery and inequitable resource allocation, especially when national policies are treated as flexible guidelines rather than enforceable standards.

A more effective model might involve national standardization of essential services and protocols, while still allowing local adaptation based on regional needs. This could balance the benefits of decentralization with the consistency needed to reduce inequalities. Compensation is another key issue. The unchanged R$10.00 per-consultation rate since 1995—despite inflation and rising costs—reflects not only financial neglect but also ethical failure. This low remuneration forces physicians to prioritize quantity over quality, undermining the diagnostic process and putting patients at greater risk.

While all regions of Brazil experience some level of underfunding and mismanagement within the healthcare system, the disparities are particularly pronounced in

the North and Northeast. These regions, characterized by higher poverty rates and a greater dependence on SUS, face compounded challenges that exacerbate Brazil's healthcare inequality. The findings of this research highlight that these regions require more significant public investment to overcome systemic barriers to access, diagnosis, and treatment. The disparities observed in Brazil's healthcare system cannot be attributed to a single factor; rather, they stem from a complex interplay of systemic failures, including financial constraints, weak governance, flawed decentralization, professional disincentives, geographic barriers, and socio-economic inequality. Although the SUS system was founded with visionary goals of universal healthcare, its execution has fallen short, particularly in underserved areas.

This research also opens new avenues for future inquiry. There is a need for further studies on how targeted policy interventions could reduce regional disparities, and how public-private partnerships in health might have long-term effects—both positive and negative. Additionally, the role of education and health literacy in improving early diagnosis and treatment rates should be explored, along with an examination of the voices from underserved communities, whose perspectives could identify system gaps and help shape more effective policies.

Ultimately, achieving equity within Brazil's healthcare system will require more than just financial reform. It demands a stronger political will, structural reorganization, and a renewed commitment to the constitutional principles that inspired the creation of SUS. Only through these changes can Brazil hope to close the gap in healthcare access and ensure equal treatment for all its citizens.

Conclusion

In conclusion, this study has examined the disparities in healthcare access and diagnosis across Brazil's five regions, highlighting the systemic inequalities that continue to exist despite the presence of the "Unified" Health System (SUS). Among the many inequalities, the most concerning were differences in poverty levels, public investment, access to diagnostic services, and the shortage of doctors. These factors show that the North and Northeast face greater challenges than other parts of the country. A future study focused on the specific challenges in these regions would be valuable, as they have the lowest healthcare capacity, which limits potential solutions to the system's disorganization.

Despite the significant inequality gaps between regions, the theoretical framework behind SUS remains an ambitious initiative. However, in practice, the system offers free healthcare to only a part of the population. The national healthcare system needs clearer guidelines and stronger policies that guarantee citizens' rights—not only by addressing the financial inequalities at the core of the problem but also by improving other critical areas of the system. This research suggests that focusing only on financial management, without fixing the structural and administrative weaknesses, has made the system even more fragmented. Reforming the system to ensure equal attention and priority across all regions would improve not only the financial side of healthcare but also the educational and social conditions, supporting better political organization and long-term solutions.

In this context, this research's analysis of public healthcare expenditure shows that the PAB-Fixed and PAB-Variable funding mechanisms—although designed to support municipal healthcare financing—have not effectively reduced investment inequalities. Instead, they seem to disproportionately benefit economically developed regions, reinforcing disparities rather than helping to correct them. This finding creates space for further discussion on

financial policy, especially on how it might be more beneficial for SUS if PAB calculations favored regions with lower GDP per capita, rather than investing more in Brazil's wealthiest economic centers.

This analysis also invites deeper reflection on the structure of financial policies and their funding formulas, as well as the government's disorganization around regulations and rules for resource distribution. There are several alternative funding models that could include variables such as the number of hospitals or the percentage of the population that depends on public versus private healthcare. This kind of approach could benefit areas where the majority of people rely on SUS, helping to reduce healthcare inequality.

Finally, this paper also explored the growing role of Public-Private Partnerships (PPPs), and how former Vice President Temer supported this model by freezing public assets in 2016. It would be important to further study how this decision affected the country during the COVID-19 pandemic in 2020. A future analysis could help determine whether this decision increased inequality in regions already lacking public investment and whether it encouraged the expansion of private healthcare services that mostly benefit populations and regions with higher purchasing power.

This shift toward privatization highlights the need for transparency and comprehensive data to understand its long-term impacts. After reviewing many studies on this topic, it becomes clear that a complete analysis of healthcare across Brazil is still not possible. The government does not provide enough data to fully understand the connection between access to treatment and regional inequalities. Corruption also makes it harder to understand what the SUS truly looks like across different regions of the country. However, this research suggests that the South and Southeast receive more attention—partly because of

higher cancer diagnosis rates and greater investments—while the North and Northeast continue to be neglected due to long-standing challenges in accessibility.

The final argument of this paper is that there is a lack of awareness around the use of public healthcare in the North and Northeast. Most policies tend to favor the country's main economic regions, which largely use private healthcare, rather than focusing on areas where the population depends heavily on SUS services. Therefore, any future healthcare reform must consider whether the expansion of private healthcare actors respects the constitutional principles of universality and equity that form the foundation of Brazil's Unified Health System (SUS).

Finally, more research is needed to find concrete solutions to the main conclusion of this study: diagnosis rates are lower in some regions because the population does not have access to the healthcare promised by the constitution. Future studies should investigate how policies are being applied in the North and Northeast and explore why these regions do not achieve the same results as the other three. It would also be helpful to evaluate how past healthcare reforms have affected regional inequality, in order to develop better strategies to reduce these disparities.

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