

Does the Political Variable Explain the COVID-19 Event in Brazil?

*Eustógio Wanderley Correia Dantas*¹ 

*Jader Oliveira Santos*² 

*Alexandre Queiroz Pereira*³ 

Keywords

Spatial analysis
Geopolitics
Westernization
Pandemic

Abstract

In effectively confronting the Covid-19 pandemic, it is necessary to complement the contributions of Biomedical Sciences to those offered by the Human Sciences. The theoretical foundations derived from the treatment of the interaction of the infectious agent with the host, primates in formatting the guidelines adopted by the World Health Organization, faced strong opposition from government officials in countries such as Brazil, giving rise to critical pronouncements by researchers in the biomedical sciences in space offered by important scientific journals. Despite being fruitful and strategic in nature, we feel encouraged to consider the objective limits of such investiture, a direct reflection of the lack of dialogue with the Human Sciences, in the field of politics and, mainly, of urbanism. Taking as a starting point the unfolding of the phenomenon in Brazil, specifically in the metropolis of Fortaleza-Ceará, we will show how the "denial" posture is inserted in a broader context, encompassing both a representative political framework of a federative government and including postures of insurgency of the Local Governments (of the federative states) in relation to the Central Government as social and economic aspects that characterize a westernized country to establish impactful filtering genre in the implementation of policies of ordering and control of the singular space. In these terms, the drastic expansion of Covid-19 in Brazil denotes a paradoxical picture to represent: a political context of resistance by Local Governments to minimize the controversial actions and attitudes of the Central Government, specifically the creation of the Forum of Governors in the Northeast to guarantee incorporation WHO international guidelines; a trajectory of unequal and perverse modernization that corroborates the indication of a high number of cases and, mainly, deaths in precarious urbanization areas of cities such as Fortaleza, establishing the periphery as the territory of death, registered in areas with a high social vulnerability index of negatively impact the effective implementation of the social isolation policy.

¹ Universidade Federal do Ceará - UFC, Fortaleza – CE, Brazil. ewcdantas@gmail.com

² Universidade Federal do Ceará - UFC, Fortaleza – CE, Brazil. jadersantos@gmail.com

³ Universidade Federal do Ceará - UFC, Fortaleza – CE, Brazil. aqpufc@gmail.com

INTRODUCTION

The contrary position of governments from several countries worldwide to the founding scientific guidelines of Social Isolation Policies gave rise, almost simultaneously, to a series of publications by professionals of biomedical and related sciences, who used the platforms offered by scientific journals to publicize the postures and actions of heads of state like Prime Minister Narendra Modi (India) and President Jair Bolsonaro (Brazil).

Overall, this was a fruitful and strategic space to provide information on policies to combat Covid-19 in various countries on the same wavelength as Donald Trump's government in the United States (PADMA, 2021; TAYLOR, 2021). From this perspective, it is understandable how the Indian Prime Minister supported the thesis of the end of the pandemic crisis, with consequent relaxation of control measures (PADMA, 2021), and in Brazil, the President minimized COVID's effects by pronouncing against social control measures, defending the use of medications without any proven effectiveness (TAYLOR, 2021), and disrespecting science and scientists (GALVÃO-CASTRO et al., 2022).

Nevertheless, an alternative perspective encourages us to ponder the objective limits of such an investiture, which reflect the lack of dialogue with contributions gathered at the time by the Human Sciences in the political domain, especially urbanism.

We will develop a case study in the Brazilian metropolis of Fortaleza, in the State of Ceará to incorporate a broader context, given the country's framework of a Federative government, to include other political actors, mainly State Governors, postures of "insurgency" against the Central Government's pronouncements and guidelines.

Our evidence will show how high levels of contamination and death by Covid-19 occurred in the context of a clash between State Governors and the Central Government, leading to the creation of a Governor's Forum in the Northeast of the country, with legal and political achievements that enabled the incorporation of international control guidelines. On the other hand, this trajectory faced immeasurable difficulties, especially amongst the substrate of unequal and perverse urbanization, preserving the high social vulnerability indicators present since the beginning of the history of cities.

Thus, we describe the pattern of contamination of Brazilian cities instead of what occurred in the West, where age demographics

predominantly explain outcomes. In Fortaleza and Brazil as a whole, a socio-spatial approach is required to depict precarious areas (mainly in the Far West, Southwest, Far South, and Far East sectors of the city) in contrast to data on the expansion of COVID-19 in 2020, 2021 and 2022. This data clarifies the elements limiting the full implementation of social isolation and hygiene policies.

The resulting argument herein is an invitation to dialogue, which is fundamental to understanding sanitary problems in the urban environment and thus requires articulation between specialists from various areas. Such a dialogue is difficult to establish due to the intense specialization motivating research carried out in both biomedical and human sciences (focus on urbanism).

MATERIALS AND METHODS

Understanding the epidemic phenomenon reveals a filtering genre established by the place (SANTOS, 1988), considering a specific spatial context in which the phenomenon became evident, impacted, and was impacted in the implementation of spatial planning and control policies (Geographicity). An analytical procedure using cartographic language provides spatialization of data directly and indirectly related to the current pandemic.

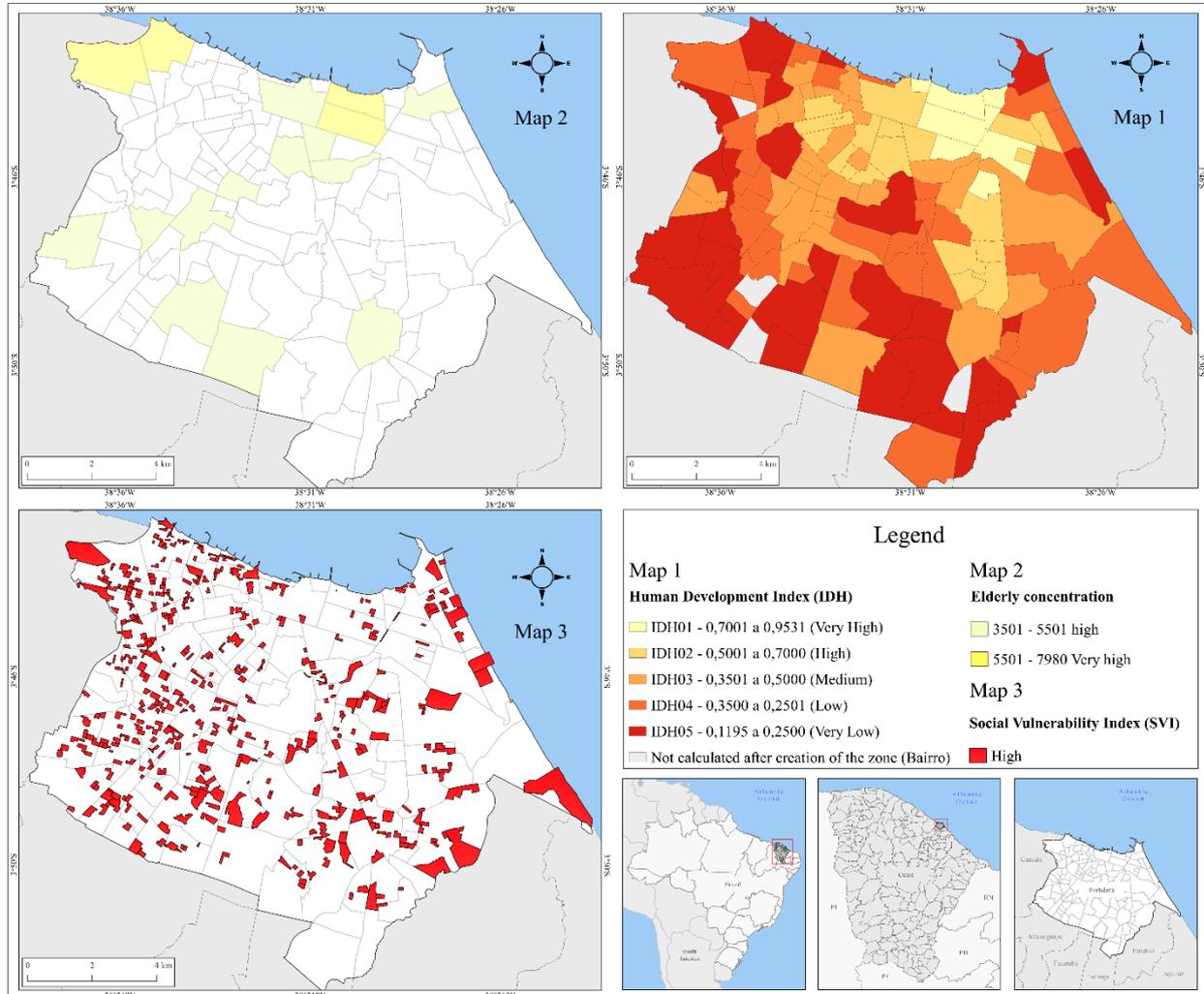
The directly related data come from the Health Transparency Platform of Ceará, *IntegraSUS*. Updated data on Covid-19 (investigated cases, confirmed cases, recovered cases, deaths, and mortality rate) are available daily and can be collected, analyzed, and systematized from April 2020. A set of monthly and annual cartograms synthesized by neighborhood representing the behavior of Covid-19 in the city were created and refined. The first interpreted the period in which the isolation policy was the fundamental vector of the interventions (2020), the second indicated developments in the vaccination policy (2021), and the last showed alarming quantitative impacts of contamination by a new strain of the virus (January to April 2022).

The indirectly related data are from the Instituto Brasileiro de Geografia e Estatística (IBGE), the Brazilian Institute of Geography and Statistics in English. These were essential in the elaboration of cartograms of Fortaleza, the map of concentration of the elderly population (Figure 1, map 2), and the socio-spatial indices: "Human Development Index" (Figure 1, map 1) were produced by the

Secretaria de Desenvolvimento Social de Fortaleza (PMF), Secretariat for Human Development in English. The "Social

Vulnerability Index" (Figure 1, map 3) was created by our research team from the Observatory of the Metropolises.

Figure 1 – Cartogram of Fortaleza indicating the Human Development Index (HDI) by neighborhood (map 1), neighborhoods with a higher concentration of elderly populations (map 2), and the High Social Vulnerability Index (SVI) by census tracts (map 3).



Source: IBGE (2010); Secretaria de Desenvolvimento Humano (2012). Elaborated by Carlos Silva, Eustogio Dantas and Jader Santos (2022).

The HDI examines the level of development at the neighborhood scale, ranging from 0 (worst) to 1 (best). The measurement considers three dimensions: i. Income – Average Monthly Income of people aged ten years or above; ii. Education – Percentage of the population aged ten years or above who are literate; and iii. Longevity – Percentage of the population over 64 years old living in the neighborhood. The index was used to visualize the city's characteristic fragmentation into elite and upper-middle-class neighborhoods, with an HDI from 1 to 2 and the middle, lower-middle and lowest classes, located in areas with an HDI from 3 to 5 (See Figure 1, map 1).

The Social Vulnerability Index (SVI), using the methodology of the Instituto de Pesquisa e Estratégia Econômica do Ceará (IPECE, 2014), aims to provide further breadth to the analysis. Analyzing census tracts of neighborhoods (the smallest unit of aggregation provided by the IBGE) indicates the areas of the city with high rates of vulnerability, thus correlating dimensions that enable families and individuals to respond to adversities or risks.

Four dimensions are employed to define the SVI: Housing - % of residents in their own homes; % of residents in households connected to the public water supply network; % of residents in households with a bathroom or toilet; % of residents in households connected to

the public sewage network or with a septic tank; % of residents in households with garbage collected by waste disposal services; % of residents in households with electricity; Income - Average monthly household income; % of households with per capita household income less than half the minimum wage; Variance of average household income; Education - % of the population aged 15 years or older who are illiterate; % of illiterate heads of households; Social Situation - Average of residents per household; Dependency ratio; % of women heads of households; % of household members.

To standardize the results, we adjusted the values to a system ranging from 0 to 1, considering:

$$Ips = Is - I-v / I+v - I-v$$

Where,

Ips: Standardized value of indicator "I" in the census sector "s";

Is: Value of indicator "I" in census sector "s";

I-V: Lowest value of indicator "I" among the universe of census tracts;

I+V: Higher value of indicator "I" among the universe of census tracts.

The closer to 1, the greater the social vulnerability in the spatial area (census sector) analyzed. Given the above, a hierarchy was created expressed in levels of vulnerability: High - for indicator values higher than the mean index added to the standard deviation value; High-Middle - for values higher than the mean value and lower than the mean plus the standard deviation value; Low-Middle - for values lower than the mean and higher than the mean minus one standard deviation; Low - for indices lower than the mean minus one standard deviation.

The focus of this study is the high level of vulnerability compared to the other census tracts analyzed and following the broader spatial cutout of the metropolis' neighborhoods (See Figure 1, map 3). Using the SVI was a stratagem to comprehend the level of extreme inequality persisting in the city and capable of refining the interpretation of inequality. It breaks with the analytical approach undertaken by Brazilian potentates, confined to the neighborhood scale. Thus, we can highlight the precarious areas within neighborhoods and more concentrated in the urban periphery.

FILTRATION ON THE SCALE OF THE AMERICAS- GEOGRAPHICITY I

The following analysis focused on a group of countries in the Americas, a territorial formation in which Brazil is inserted. The emphasis on modernization differs in the counterpoint of its territorial limits: "Far North" and "Central and South."

The West was transposed to the Far North (the United States and Canada) due to the transfer of population contingents from the "Old Continent" to the "New World." Based on a religious variable, this rearrangement denotes a cultural form of belonging (HERBERG, 1955) and so mobilized the process of constructing the West in the Americas. This matrix was based on forming a framework undisposed to dialogue with other peoples (indigenous and black inhabitants brought to move the colonial economy) and, therefore, establishing an eminently Western modernization process.

The Central and Southern portions are the countries that compose Latin America (from Mexico to Argentina, in its northern and southern limits), colonized mainly by Spain and Portugal. Their social structure is not based on the intense migration of Europeans. Consequently, their current demographic profiles indicate diverse ethnic mixing. It involves countries in which: i. colonization led to the near extermination of indigenous populations, as in Argentina, Uruguay, and Chile, as well as in island countries, such as Cuba; ii. the indigenous element predominates in the country's phenotype, as in the Andean countries; iii. the process of ethnic mixing was intense, generating a cultural and societal amalgamation based on the mestizo element, as in Brazil.

This characterization refers to well-defined nuances of western and westernized countries. The former represents the expanded West on the American continent, with the United States becoming important on the world stage. The latter is a block of westernized countries, with a political system and a modernization process bringing it closer to the West.

Among the American countries, we highlight those whose paths are at the extremes of the consolidation of a divided society and the devaluation of human life. In the United States, a fragmented society is visible, externalizing the discrepancy between the colonized universe (western white), responsible for the country's modernization process, the indigenous (ancestral inhabitants) who are abundant on reservations and less evident in cities, and

blacks (African Americans) who flock to cities, mostly in suburban areas. This issue currently incorporates the growing flow of Latin American immigrants ascribed to a position close to indigenous and black people (FRAGA *et al.*, 2010). In Brazil, the right to life is neglected or denied to many Brazilians from less affluent segments, mainly mestizos, blacks, and Indians. The first two are primarily present in high-risk housing areas (favelas). Indigenous people are invisible in this space as most of them live in Indigenous Reserves, plentiful in the North and Midwest of the country.

As the order of Western or Westernized Countries, this was persistently the globalized tone in the Americas, vis-à-vis the formation of distinctive geopolitics, directly impacting the position concerning the pandemic (SACHS, 2020a; ZIZEK, 2020). The most critical of these was the United States' approach, mainly under the Trump Government (PADMA, 2021; TAYLOR, 2021), which ranked first in the number of deaths and confirmed cases worldwide. Next is the externalization of a more complex dynamic in which Brazil comes second in the number of deaths worldwide, first among the Westernized countries in the Americas, and third in the number of cases (Table 1).

Table 1 – Total Number of Cases and Deaths due to Covid-19, the ten most affected countries

Ranking	Country	Deaths	Country	Cases
1	United States of America	974,179	United States of America	79,414,511
2	Brazil	660,108	India	43,029,044
3	India	521,358	Brazil	29,992,227
4	Russian Federation	369,995	France	25,243,085
5	Mexico	323,212	Germany	21,668,677
6	Peru	212,299	United Kingdom	21,216,878
7	United Kingdom	165,570	Russian Federation	17,912,157
8	Italy	159,784	Turkey	14,894,731
9	Indonesia	155,349	Italy	14,845,815
10	Iran	140,315	Republic of Korea	14,001,406

Source: WHO (2022).

In summary, the civilizational amalgam was fundamental in registering the countries of the Americas in the world system, generating contexts that filter innovations in different patterns and benefit from advances in science and technology, especially in the field of transport and communication, thus giving rise to differentiated evolutions in the treatment of the pandemic.

FOCUS ON BRAZIL, OBJECT OF STUDY – GEOGRAPHICITY II

Brazil's strategic position concerning the area officially recognized as initially contaminated with COVID-19 (Wuhan in China, in December 2019) and the first point of dispersal in the wider world (Italy) should have allowed positive developments to prepare the country in advance to fight the virus, benefiting from the knowledge accumulated in Asia and Western Europe. However, the Brazilian Central Government's alignment with the United States to permeate filtration based on a particular conservative

geopolitical context prioritizing the economy weakened the federative political base.

This articulation proved to be worrying in the fight against the pandemic in Brazil, blocking the classic and representative approach based on the Ministry of Health's know-how, which had been conceived and built over time in a fruitful dialogue with Governors and Mayors and subsequently employed in the fight against diseases such as H1N1, Dengue, Chikungunya, and Zika. This longstanding approach was shaken by the Central Government's recrudescence, leading to clashes with several regional governments and culminating in the involvement of the Supreme Court and the National Senate.

Given the above, the emergence of the Ações do Consórcio Nordeste no Combate ao Corona Virus (2022) created a forum for dialogue and discussion between governors from the northeastern states (advised by a scientific committee), aiming at actions to minimize the Central Government shortfalls. The consortium adhered to World Health Organization norms and guidelines. Fortaleza served as a test of how the mere transposition of the Western approach in the country was carried out.

Regrettably, regardless of this political advance, the most dynamic northeastern metropolises were severely affected by the virus, especially Fortaleza (ranking fifth, third, and

fifth regarding the number of cases, deaths, and deaths/100k inhabitants in the country, respectively, with values higher than Salvador and Recife (Table 2).

Table 2 – Confirmed Cases, Deaths, and Population in Brazil's ten most populous cities.

City (Region)	Population	Rank	Cases	Rank	Deaths	Rank
São Paulo (Southeast)	12,325,232	1	1,930,316	1	42,200	1
Rio de Janeiro (Southeast)	6,747,815	2	967,549	2	36,777	2
Brasília (Midwest)	3,055,149	3	695,637	3	11,630	3
Salvador (Northeast)	2,886,698	4	266,482	9	8,152	6
Fortaleza (Northeast)	2,686,612	5	345,221	6	-11,020	4
Belo Horizonte (Southeast)	2,521,564	6	389,027	5	7,747	8
Manaus (North)	2,219,580	7	290,624	8	9,752	5
Curitiba (South)	1,948,626	8	420,306	4	8,218	7
Recife (Northeast)	1,653,461	9	229,412	10	6,163	10
Goiânia ()	1,536,097	10	311,198	7	7,526	9

Source: IBGE (2010); Prefeitura de São Paulo (2021); Estado do Rio De Janeiro (2022); Distrito Federal (2022); Prefeitura de Salvador (2022); Prefeitura de Fortaleza (2022); Prefeitura de Belo Horizonte (2022); Governo do Distrito Federal do Brasil (2022); Prefeitura de Curitiba (2022); Estado de Pernambuco (2022); Prefeitura de Goiânia (2022); Estado do Amazonas (2022).

Paradoxically, even with the positive experience of the Northeast Consortium, it is necessary to decode the high negative ranking of Fortaleza compared to other metropolises in the region.

COUNTERPOINT OF LOCAL STATES TO NATIONAL GEOPOLITICS

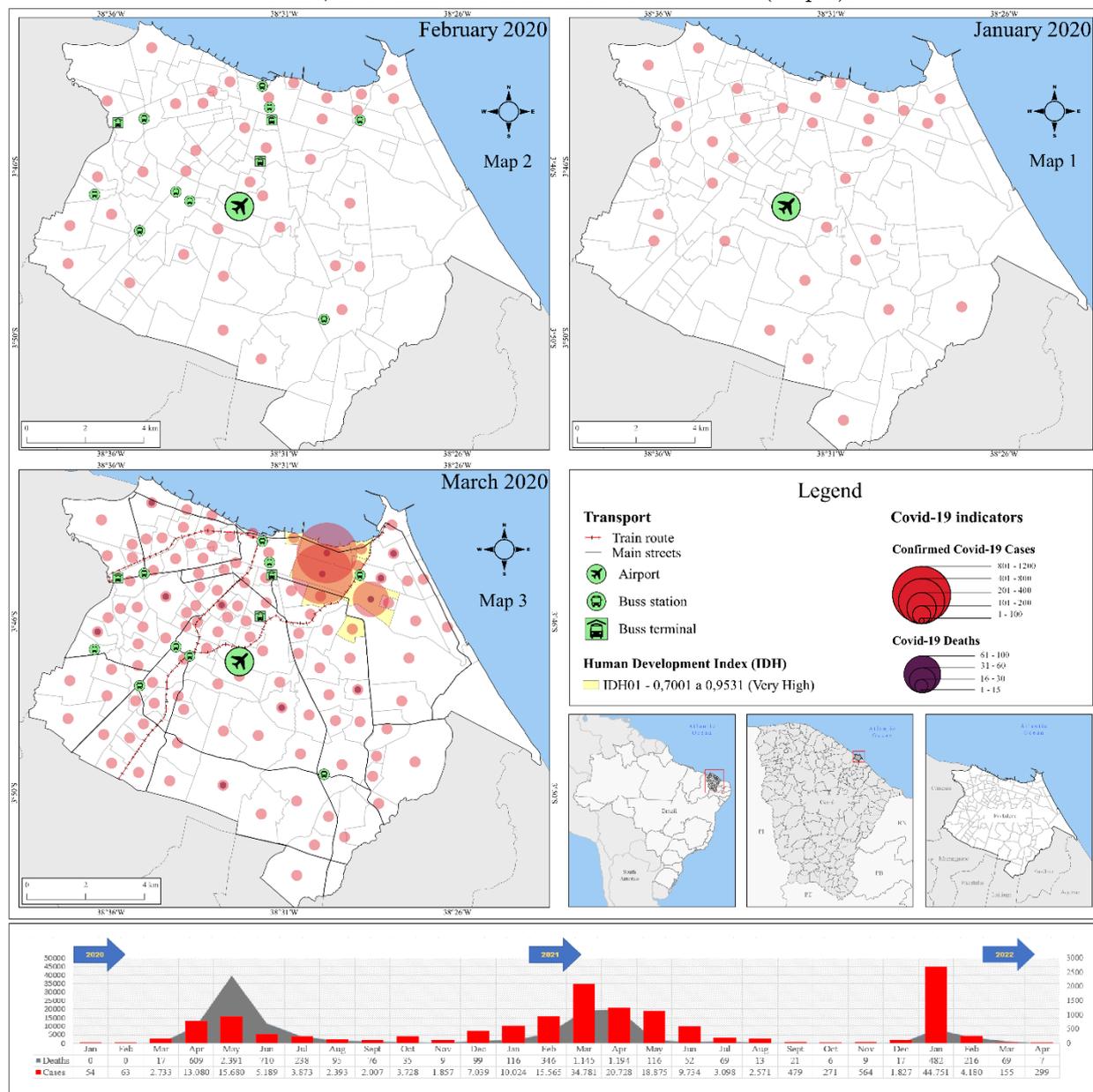
Western countries and their admirers have a powerful attachment to the right to come and go, which postponed border closure measures. Therefore, it is clear that the movement of travelers associated with tourism and leisure surpasses that of businesspeople and politicians among the flows between countries.

From the quantitative approach to finding evidence, the first actors are held accountable for the speed with which the virus took over the world. Western countries were mainly concerned about tourists from contaminated countries visiting their tourist cities and, concomitantly, with their own nationals

insisting on visiting contaminated countries. The Block of Westernized countries minimized the contribution of tourists from other countries and focused on dealing with the return flows of those insisting on visiting contaminated places. The latter approach justified Brazil's failure to adopt preventive measures, giving the go-ahead to the Carnival celebrations in February 2020.

The data about confirmed cases in January and February 2020, before the official recognition of the pandemic in March 2020, gives a glimpse of how Covid-19 arrived in Brazil. The relatively homogeneous distribution in Fortaleza's urban fabric (Figure 2, maps 1 and 2) is an under-addressed theme whose expression at fixed points justified the intensification-permission of contact between inhabitants and the in-transit carriers of the virus. A case in point is Fortaleza International Airport, which became the Air France-KLM/Gol HUB in 2018, thus strengthening the city as a tourist destination and passage point for in-transit passengers from other regions and countries.

Figure 2 – Distribution of Confirmed Cases of COVID-19 in Fortaleza in January, February, and March 2020, with overlaps considering the location of the Airport (map 1 and map 2), transport routes, and location of districts with an HDI 1 (map 3).



Source: IntegraSUS (2021). Elaborated by Carlos Silva, Eustogio Dantas and Jader Santos (2022).

In Fortaleza (gateway and travel corridor for tourists, businesspeople, politicians, and others), the reception logistics were consolidated based on the physical infrastructure and mobilized by professionals with varying levels of specialization and incomes (from the most modest manual workers to the most powerful, with command positions and involving a significant number of employees of airlines, stores, and public servants). This group of people, city residents in neighborhoods with diverse socioeconomic profiles, was exposed to the virus leading to contagion due to their contact with passengers from other countries in transit at the airport and local travelers

returning from their incursions into contaminated regions.

Thus, based on the association between professional category and housing locus, we believe that it is possible to understand the homogeneous distribution of the number of cases in the city's neighborhoods, establishing the participation of airport workers in the city's initial contamination. Unfortunately, governments did not give the above due consideration, focusing instead on dealing with international flows, specifically Brazilian tourists (typically the elite and middle class, eager to visit the West).

Given the above and like other Brazilian metropolises, the first cases are attributed to Fortalezenses returning from abroad, so the average profile of the first patients are residents of the city's wealthiest neighborhoods, with an HDI1 (See Figure 2, map 3), resulting from their high mobility. Thus, the city's North-Central sector was a locus of the illness and a transmission point of the disease in the city (DANTAS et al., 2020).

Illness locus and transmission point in the city

The fundamental assumption above justified governors' and mayors' actions to implement World Health Organization guidelines: personal hygiene measures, use of protective equipment (masks), and, in the case in question, adopting screening procedures for the first virus carriers in the city, with an indication to quarantine at home.

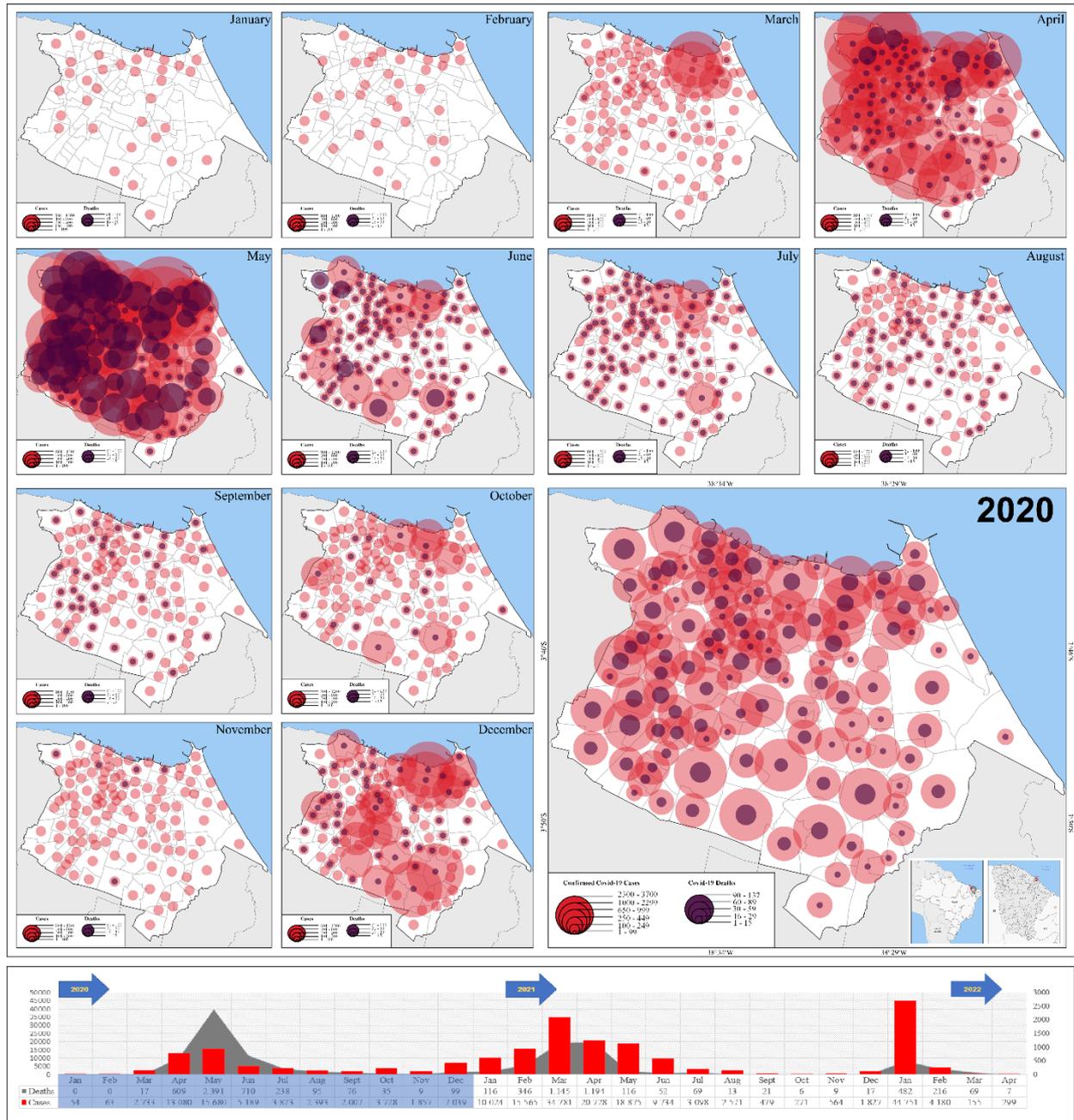
However, merely transposing health guidelines to the Brazilian reality did not produce the expected results. As in the West, the difficulty of monitoring by governments, resulting from the non-adherence to appropriate digital control platforms, followed by the structural basis of the elite family and upper-middle-class' non-compliance, generated a context that did not impede contact. On the contrary, isolated in their gated communities, the contaminated continued with their traditional use of domestic services. A massive contingent of professionals continued to work in the elite residential areas and residences of the

condominiums, entering them to provide demanded services. An "army" of professionals was in direct or indirect contact with contaminated people and, therefore, was susceptible to the disease. They commute daily using the strongly center-periphery public transport system (daily flow home-work and afternoon work-home) and were involuntarily involved in the Covid-19 transmission saga. As of April 2020, the public transport system was at the base of the contamination process sweeping the city, causing large-scale contamination, and founded on a dynamic circulation representative of connected Bus Terminals, Road Terminals, Metro Stations, and constituting points of transmission of the virus to popular housing areas (See Figure 2, Map 3).

From this substrate, it is possible to visualize how Covid spread in three different periods, 2020 (January-December), 2021 (January-December), and 2022 (January-February).

In 2020, in theory, the geometric progression process affected mainly the elderly populations, naturally affected by comorbidities. It reached its peak in May (the highest number of cases and deaths), indicating the arrival of the First Wave of COVID-19 in the city and the consequent reinforcement of the isolation policies implemented, including the lockdown. In the following months, an expectation of unfulfilled containment was created, and vis-à-vis a framework deemed stable, with the number of contaminated and dead at levels considered "tolerable" and decreasing, except for December (Figure 3).

Figure 3 – Fortaleza, a set of maps with a distribution of the number of cases and deaths per month (January to December) and a summary map of the quota registered in 2020.

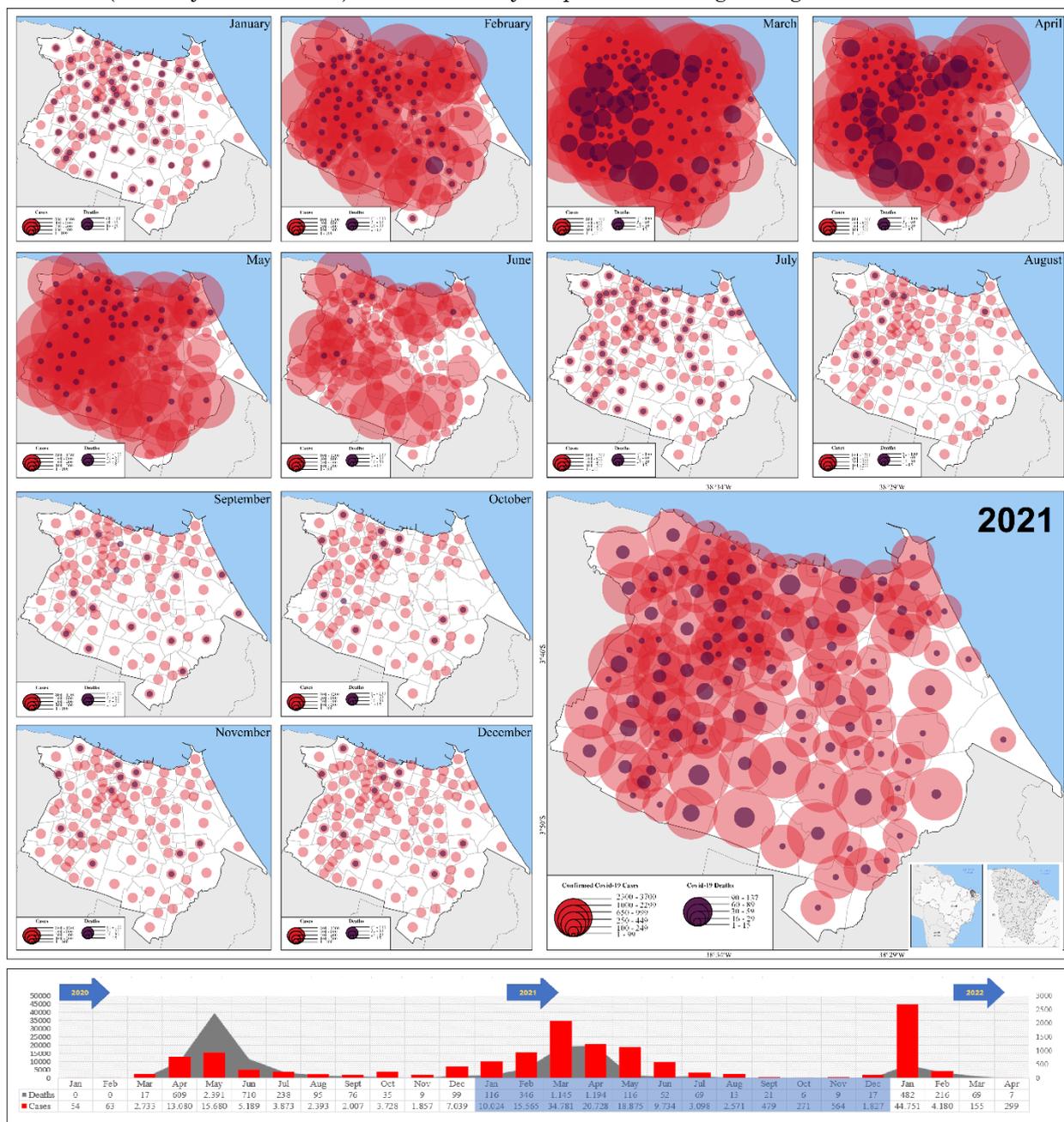


Source: IntegraSUS (2020). Elaborated by Carlos Silva, Eustogio Dantas and Jader Santos (2022).

In 2021, even after implementing the vaccination policy, the geometric progression was resumed with the Second Wave, which had a different configuration from the first. The contamination base was broader and, paradoxically, less severe than the representative curve of the number of deaths, probably due to the advance of vaccination against Covid-19 in the country, prioritizing elderly populations (over 60 years old), health professionals, and people with comorbidities. It

reached its peak in March due to the difficulty of state and municipal governments in enforcing social isolation policies at the previous levels. The reversal of the contamination scenario began in the following months, maintaining values higher than the numbers of cases in the first wave (months of April and May), with a clear-cut regression scenario from July (at levels considered tolerable – stabilization situation) (Figure 4).

Figure 4 – Fortaleza, a set of maps with a distribution of the number of cases and deaths per month (January to December) and a summary map of the contingent registered in 2021.

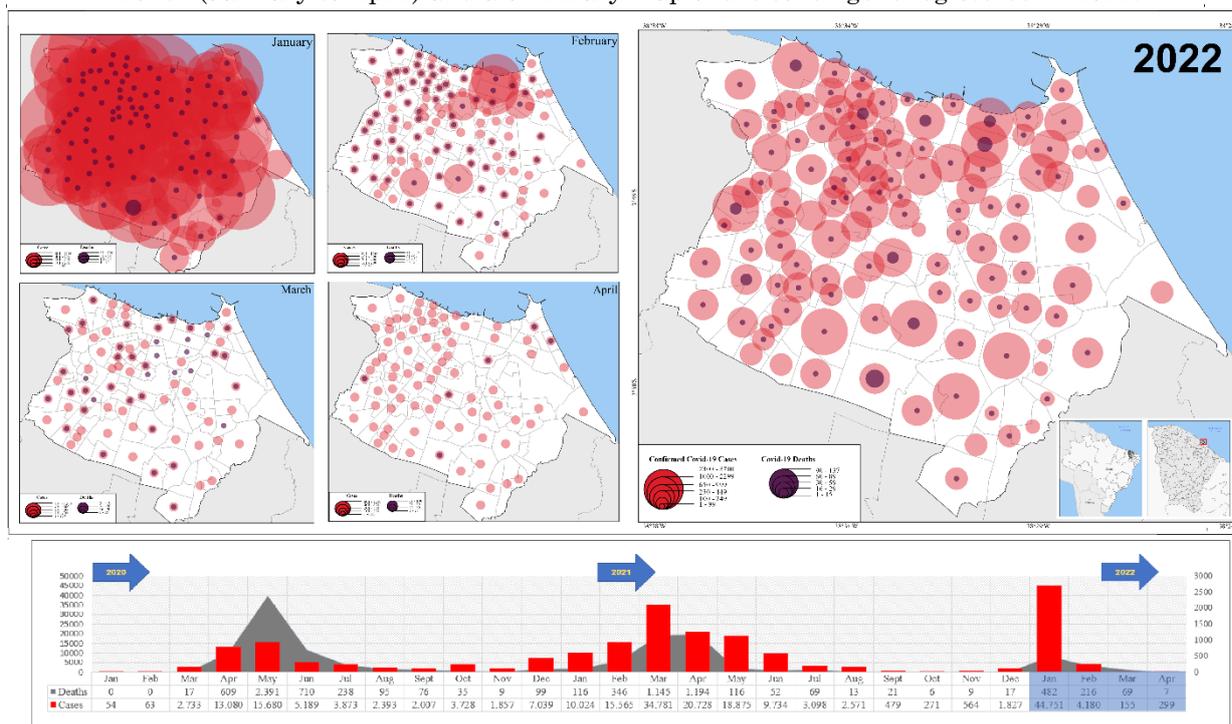


Source: IntegraSUS (2020). Elaborated by Carlos Silva, Eustogio Dantas and Jader Santos (2022).

In 2022, the advent of the Omicron Strain led to the resumption of contamination, reaching unthinkable levels in January 2022, with values higher than the peak months of the other waves, followed by an abrupt drop in the following

month. Although highly contagious, there were fewer extremely severe cases compared to the number of deaths in the peak months of the first and second waves (Figure 5).

Figure 5 - Fortaleza, a set of maps with the distribution of the number of cases and deaths per month (January to April) and a summary map of the contingent registered in 2022.

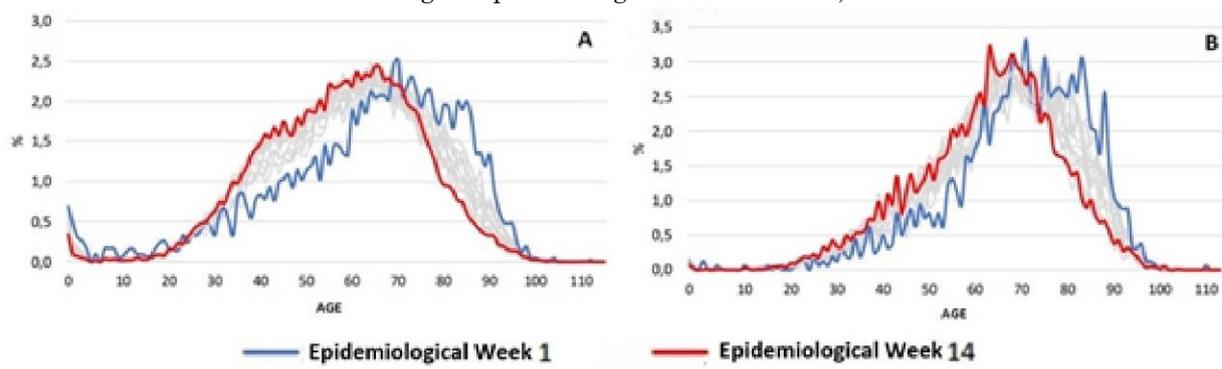


Source: IntegraSUS (2020). Elaborated by Carlos Silva, Eustogio Dantas and Jader Santos (2022).

Therefore, even in the scenario of the Northeast Consortium, with the governors' decrees becoming less rigorous over time, the "stabilization framework" built in the political domain and transmitted in the media was "unworkable" when dealing with economic pressure. The tertiary sector, especially leisure,

recreational, and sports activities, potentialized the confinement policy's exhaustion process. This table explains the rejuvenation of the profile of contamination and death by Covid in Brazil from 2021, following a global trend (FIOCRUZ, 2021) (Figure 6).

Figure 6 – Proportional Distribution of Cases (A) and Deaths (B) by Covid-19 in Hospitalizations According to Epidemiological Week. Brasil, 2021.



Source: Fiocruz. (2021) Adapted by Eustogio Dantas (2021).

Hence, municipal administrations faced increasing contingents of people eager for public and private socialization, who did not adhere to isolation decrees, wear masks, or adopt hygiene procedures. Squares, streets, and beaches in coastal cities were inundated by crowds of users at festive events, eager to meet friends in bars and restaurants and frequent the coastal

setting, generating a worrying picture of agglomeration.

Similarly, the world scale highlights the easing of control measures resulting from pressure from regional and international sports confederations. The Western standard reproduced in westernized countries had nuances that allowed the opening of borders to

the sports entourages involved in the Euro Cup (postponed from 2020 to 2021) and the America's Cup (2021). In the first case, the key argument was based on the positive results of the vaccination policy, together with the promise of compliance with the necessary health measures. After Colombia and Argentina refused to host the America's Cup, the Bolsonaro Government, supported by a group of Allied Governors (from Brasília, Rio de Janeiro, Goiânia, and Cuiabá), took a political stance enabling it to go ahead in Brazil, despite the slow pace of vaccination in the period. Notably, the international media failed to highlight the resistance from opposition governors.

From the spread observed in the years 2020, 2021, and the first two months of 2022, the geometric progression was followed by contexts considered to be stable. Covid-19 became clearly evident in the periphery, both in the number of cases and deaths. This behavior instituted a significant differential: the reinforcement of neighborhoods on the outskirts of Fortaleza as territories of death (DANTAS et al., 2020).

Territories of Death

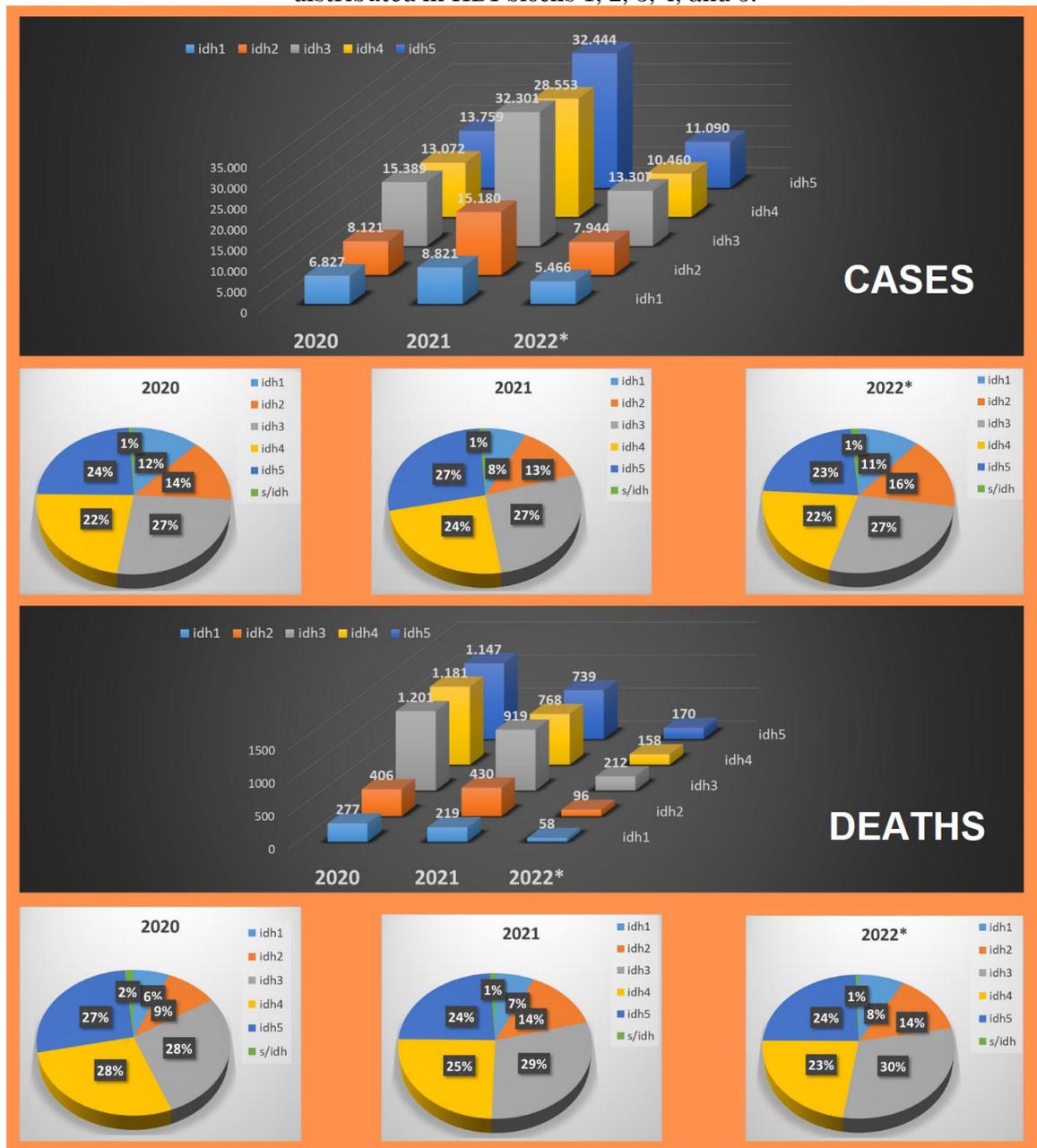
The neighborhood scale, typically used by governments and the media, is helpful for a first approximation, demonstrating Brazil's urbanization process that results from high levels of income concentration; it denotes the

exposure of a large portion of the peripheral population to conditions of high vulnerability. Indicators such as the Human Development Index (HDI) allow us to glimpse the pattern of Covid-19 in sets of neighborhoods with lower indexes (HDI 3, 4, and 5): in the general calculation, confirmed cases at the levels of 73%, 78%, and 72%; deaths involving 83%, 78%, and 77%, respectively in the years 2020, 2021 and 2022 (Figure 7).

In the prism of actions and measures adopted in the conceptual elements of the world problem related to the age theme (elderly populations), the substrate mentioned above was not considered by state and municipal governments, justifying a policy of mere transposition. This procedure masked the discrepancies in the spatialization of territories of death in Brazilian cities, located in areas with high rates of social vulnerability and circumscribed mostly and not exclusively in neighborhoods with a low HDI.

The above requires the consideration of high-risk residential agglomerations and a revision of the prevailing center-periphery view in the readings on Brazilian cities. It allows us to verify the limitations of a homogenizing reading of reality on the scale of neighborhoods or blocks of neighborhoods that minimize the representative picture of the inequality expressed in their interior, in the impoverished areas to be found in the city.

Figure 7 – Fortaleza, cases and deaths due to Covid-19 in 2020, 2021, and 2022 (January to April)(*), distributed in HDI blocks 1, 2, 3, 4, and 5.



Source: Secretaria de Desenvolvimento Humano (2012). Elaborated by Eustogio Dantas (2022).

A persistence marks Brazilian cities and explains their inhabitants' inability to implement the sanitary and social isolation measures indicated by the State. It is a dense and distinctive notion conceived and assimilated in the moniker favela. Territories in which public policies are rare, making access to infrastructure, services, and income impossible or limited. Consequently, housing units are precarious, built-in reduced areas with many inhabitants. A world in which the State's ineffectiveness leaves room for inadequate infrastructure and services, informality, and the resurgence of organized crime.

FROM CHARACTERIZATION TO STRATEGIC THINKING

Our criticism stems from an awareness of the implications of being confined to merely transposing health innovations designed and projected to the realities of the Western Metropolises. The role of opposition governors in minimizing the effects of the pandemic is unquestionable, as is the commitment to provide updated data to assist managers and the scientific community.

This availability was an unquestionable advance but was faced with the inability of

managers (subsidized by scientists) to use the data strategically. Aggravated by the speed with which Covid-19 spread worldwide and entered Brazil, unfortunately, the procedure above was not implemented. Traditionally run by health experts, employed in the Policy of Regionalization of investments and coping actions associated with endemic diseases by the Ministry of Health and involving the Health Departments of the States, it remained on paper.

Thus, we have carried out a cartography-based exercise of strategic reflection to deal with data related to a long period of contamination, involving several scales of analysis (of the city, neighborhood, and census tracts) and articulating the index of social vulnerability. This procedure considered the behavioral profile of Covid-19 contamination in Fortaleza based on absolute data to provide a ranking of the twenty most affected areas (circumscribed in neighborhoods) and considering two founding variables: demographic (age) and social (Social Vulnerability Index). Table 3.

By contrasting the twenty most affected neighborhoods in 2020, 2021, and 2022 (reaching the twenty-nine listed) with the sixteen neighborhoods with the highest frequencies of elderly in the city (high and very high) (Table 3), it is possible to demonstrate some inconsistencies when filtering based only on demographics.

When considering the sixteen neighborhoods with the highest number of elderly, there is an evident distribution in the following sectors: North-Central (6 neighborhoods – Meireles, Aldeota, Centro, Fátima, Joaquim Távora, and Tauape), Extreme West (2 neighborhoods – Barra do Ceará and Vila Velha), Southwest (4 neighborhoods – Montese, Parangaba, Bonsucesso, and Granja Lisboa), South (3 neighborhoods – Messejana, Mondubim, and Prefeito José Valter), and Extreme East (1 neighborhood – Vicente Pinzón) (Table 3).

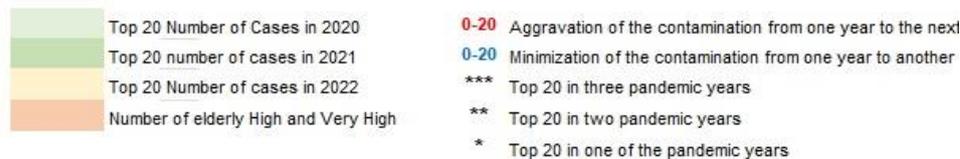
Given the full effectiveness of age in the distribution of cases and the number of deaths in the city, one would expect them to be included among the Top 20 in the years 2020, 2021, and 2022. However, it should be noted that of these: two do not appear in the listings above - Tauape and Granja Lisboa (13%); two only in one of the years – Bonsucesso (2021) and Joaquim Távora (2022) (13%); three in two years – Mayor José Valter, Vila Velha (years 2020 and 2021), and Fátima (years 2020 and 2022) (19%). The apparent validation of demographic filtering is only effective in nine neighborhoods: Meireles, Messejana, Aldeota, Barra do Ceará, Centro, Mondubim, Montese, Vicente Pinzón, and Parangaba (55%) (Table 3) (Figure 8).

The above leads us to perceive the situation in the other neighborhoods that wholly or partly occupy the remaining gaps. They represent a contingent of thirteen neighborhoods distributed in the North-Central sectors (Papicu, Cocó, Rodolfo Teófilo, and Dionísio Torres - the first two in the 2020 and 2021 listings, second and third in the 2022 list); Extreme West (Antônio Bezerra and Jacarecanga – the first in the 2021 and 2022 listings and the second in the 2020 listing); Southwest (Conjunto Ceará I, Serrinha, Bom Jardim, Granja Portugal, and Itaperi - the first two to appear in all listings, the third in the 2020 and 2021 listings and the last two in the 2021 listing) and Extreme South (Jangurussu and Passaré on all listings) (Table 3) (Figure 8).

The demographic dimension provided a first approximation, affecting the restricted sector of the city (North-central and areas with HDI 1 and 2) and in which precarious housing is less present in the landscape. These neighborhoods' contamination vector is directly and unequivocally related to age: Meireles, Aldeota, Centro, Fátima, and Joaquim Távora (Table 3).

Table 3 – Ranking of the twenty neighborhoods with the highest number of confirmed cases of Covid-19, years 2020, 2021, and 2022 (January to April), associated with the number of deaths; a greater number of elderly; HDI; city sector, and vector determining contamination.

	Bairro	Elderly	2020 (Jan-Dec)				2021 (Jan-Dec)				2022 (Jan-Apr)				IDH	Sector	Contamination Vector
			cases	Rank	deaths	Rank	cases	Rank	deaths	Rank	cases	Rank	deaths	Rank			
A	Meireles ***	Very High	2220	1	74	14	2237	9	73	6	1515	3	21	4	1	North Central	Age
B	Messejana ***	High	1875	2	110	2	3326	3	73	5	1017	8	11	26	3	Far South	Age-SVI
C	Aldeota ***	Very High	1843	3	71	16	3077	5	53	15	1637	2	26	2	1	North Central	Age
D	Barra do Ceará ***	Very High	1403	4	137	1	2231	10	38	28	1201	6	22	3	5	Far West	Age-SVI
E	Centro ***	High	1390	5	89	7	2680	6	90	3	953	9	20	6	2	North Central	Age
F	Conjunto Ceará I ***		1343	6	88	9	3603	1	73	4	1260	4	17	9	3	Southwest	SVI
G	Mondubim ***	High	1329	7	90	6	3480	2	98	2	1246	5	15	11	5	Far South	Age-SVI
H	Jangurussu ***		1228	8	89	8	3090	4	53	14	1798	1	14	12	5	Far South	SVI
I	Pref. José Walter **	High	1179	9	104	4	2626	7	102	1	571	28	39	1	3	Far South	Age-SVI
J	Passaré ***		1146	10	57	25	2571	8	49	17	1047	7	18	7	5	Far South	SVI
K	Bom Jardim **		1090	11	107	3	2141	11	61	9	110	103	1	101	5	Southwest	SVI
L	Montese ***	High	911	12	68	18	2074	13	55	12	828	13	14	13	3	Southwest	Age-SVI
M	Vicente Pinzón ***	High	903	13	75	12	2076	12	29	41	874	10	13	16	4	Far East	Age-SVI
N	Parangaba ***	High	899	14	52	30	1841	14	66	8	866	11	12	20	3	Southwest	Age-SVI
O	Vila Velha **	Very High	866	15	103	5	1718	18	50	16	640	24	14	15	4	Far West	Age-SVI
P	Papicu **		863	16	40	40	1345	27	26	49	679	18	9	30	2	North Central	Others
Q	Cocó **		861	17	33	53	871	56	15	74	706	16	4	58	1	North Central	Others
R	Jacarecanga *		825	18	75	13	1026	45	23	53	487	38	8	40	3	Far West	SVI
S	Fátima **	High	823	19	34	52	1362	26	46	20	863	12	13	17	2	North Central	Age
T	Serrinha ***		792	20	57	26	1769	17	47	19	673	19	21	5	4	Southwest	SVI
U	Antônio Bezerra**		788	21	64	19	1670	20	58	10	799	14	12	21	4	Far West	SVI
V	Granja Portugal *		773	22	78	11	1825	16	44	22	208	82	12	25	5	Southwest	SVI
W	Itaperi *		671	27	29	61	1841	15	45	21	640	23	14	14	3	Southwest	SVI
X	Bonsucesso *	High	610	30	63	20	1689	19	57	11	559	30	17	10	4	Sudoeste	Age-SVI
Y	Joaquim Távora *	High	696	24	40	41	1106	42	44	23	749	15	12	22	2	North Central	Age
Z	Tauape	High	557	37	61	22	1123	39	27	45	607	26	3	66	3	North Central	Age
Aa	Granja Lisboa	High	684	25	73	15	1542	22	32	35	343	55	11	28	5	Southwest	Age-SVI
Ab	Rodolfo Teófilo *		518	43	41	39	1197	34	48	18	696	17	8	37	3	Southwest	SVI
Ac	Dionísio Torres *		677	26	27	65	640	71	22	57	668	20	7	45	1	North Central	Others



Source: IBGE (2010); Secretaria Municipal de Desenvolvimento (2012); IntegraSus (2022) and IPEA (2022). Elaborated by Eustógio Dantas (2022).

In these terms, we had to deal with a complex socio-spatial framework under-prioritized by managers, the high Social Vulnerability Index (SVI) vector. In areas with HDI of 3, 4, and 5, there is a strong presence of precarious buildings in the landscapes of the neighborhoods located in the Far West, Southwest, and Far South, justifying the inclusion of Conjunto Ceará I, Jangurussu, Passaré, Jacarecanga, Serrinha, Antônio Bezerra, Granja Portugal, Itaperi, and Rodolfo Teófilo in the Covid-19 cartography of Fortaleza, list of the Top 20 (See Table 3) (Figure 8).

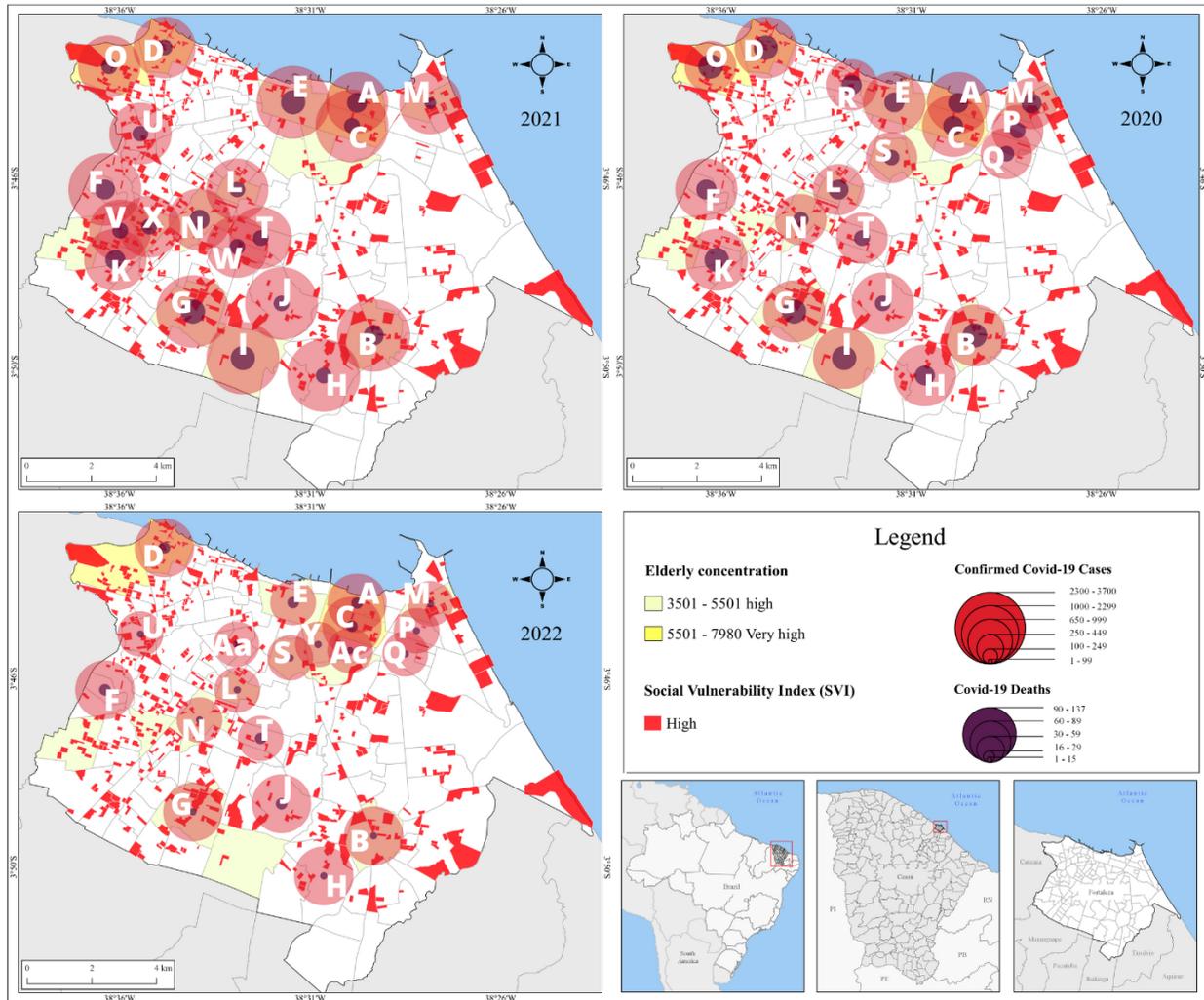
Leaving behind the two rationalities indicated above, we are faced with two different scenarios. The first relates to neighborhoods with contamination values associated with the

two vectors, the demographic (age) and the IVS. The first results from the high number of elderly and the second imposed by location (Far West, Southwest, and Far South of the city, and less so in the Far East), with a large number of precarious constructions in their landscapes: respectively the neighborhoods of Barra do Ceará and Vila Velha; Montese, Parangaba, Serrinha, Bom Sucesso and Granja Lisboa; Messejana, Mondubim, and Mayor José Valter; Vicente Pinzón. The second, classified as other vectors, involves neighborhoods with a high HDI (1 and 2), Papicu, Cocó, and Dionísio Torres, which do not have neighborhoods with a high contingent of an elderly population and whose landscape is strongly impacted by precarious buildings (areas with high SVI) (See Table 3)

(Figure 8). A theme to be explored in future research would correspond to neighborhoods in which the high level of mobility of the average

inhabitants exposes them to more significant risks and vis-à-vis their eagerness to enjoy leisure practices.

Figure 8 – Map Synthesizing the number of cases and deaths due to Covid-19 in the Top 20 neighborhoods of Fortaleza, years 2020, 2021, and 2022, overlapping the vectors of age contamination and high IVS.



A	Meireles	F	Conjunto Ceará I	K	Bom Jardim	P	Papicu	U	Antônio Bezerra	Z	Tauape
B	Messejana	G	Mondubim	L	Montese	Q	Cocó	V	Granja Portugal	Aa	Granja Lisboa
C	Aldeota	H	Jangurussu	M	Vicente Pinzón	R	Jacarecanga	W	Itaperi	Ab	Rodolfo Teófilo
D	Barra do Ceará	I	Prefeito José Walter	N	Parangaba	S	Fátima	X	Bonsucesso	Ac	Dionísio Torres
E	Centro	J	Passaré	O	Vila Velha	T	Serrinha	Y	Joaquim Távara		

Source: IBGE (2010); Secretaria Municipal de Desenvolvimento (2012); IntegraSus (2022) and IPEA (2010).

The strategic dimension in considering the top 20, corresponding to 16.6% of the total number of neighborhoods analyzed, is implicit in the high levels reached in 2020, 2021, and 2022 respectively, in the number of cases (41.2%, 40.1%, and 40.7) and deaths (36.2%, 39.1%, and 36.3%). This data can enhance the targeting of resources and actions to make the policy of isolation and vaccination more effective and according to multiple scales, from the neighborhood to areas with precarious structures. It is also possible to further focus on

actions in replicated neighborhoods in all Top 20 – 12 listings of the 29 nominees.

CONCLUSION

In addition to the controversial political framework at the national level, the research in Fortaleza indicates, on the one hand, the need to expand the discussion on the political variable, as well as treatment to consider other economic

and spatial variables important in deciphering the health issue and, on the other hand, from the analytical scope undertaken it is possible to replicate similar studies in other Brazilian metropolises (with allied governments and even opponents to the Government of President Bolsonaro).

The expansion of the political discussion was based on evidence of how the specificities of a federative country have been disregarded. This data corroborated the international media's creation of a strong and inflated image of the Brazilian President, to the point of ignoring the new opposition or different views represented by the Governors of Brazilian states. This opposition was mainly in the Northeast and adopted a strategic procedure by creating a regional forum (replicated in other regions) to counter and minimize the Central Government's harmful actions and absence in the region.

In general, considering economic variables allows us to indicate the difficulties faced by health policies from the start. We have shown how the West insisted on assimilating the idea of closing borders. At the time of the first wave, its actions reflected the attachment to the "right to come and go" in contrast to other concepts or values, often found in East Asia, such as the maxim of civility (HAN, 2020) or collective consciousness (SACHS, 2020b). In the second and third waves, the scale changed and was incorporated *pari passu* to inter (city) and intraurban (metropolitan). Pressure from economic sectors and users linked to tourism, leisure, and sports weakened the social isolation policy.

The spatial variable, focused on precarious urbanization, was neglected by governors and mayors in the control of Covid-19 in Brazilian cities and was derived from the simple transposition, in locus, of actions and procedures associated with other socio-spatial realities (i.e., western metropolises). Thus, spatial interventions ended up focusing exclusively on the demographic bias associated with the age dimension and justifying the vaccination policy.

From the criticism of governments (mainly on national and state scales), scholars have to make a detailed analysis of the behavior of the pandemic in Brazil. A representative table of countries where the geometric evolution of Covid-19, followed by an exponential drop until cases and deaths were equal to zero, did not occur. There is an indication of "stabilization" at levels considered tolerable by managers and disseminated by the national media that have a lesser impact on the Health System.

Thus, unmistakably rugosity, the historical legacy imposed on cities and evident in the

urban landscape, has been ignored and masked under the name favela, where the "Territories of Death" are established. This socio-spatial data is fundamental in explaining how universal sanitary guidelines were filtered according to location. Regrettably, this data has been neglected by rulers and explains the persistently high contamination and mortality rates linked to numerous diseases, including respiratory conditions, in Brazilian cities. This harsh reality points to the strong possibility of Covid-19 persisting in Brazilian metropolises, with its consequent transformation from pandemic to endemic (like arboviruses - ROCHA; ZANELLA, 2021).

ACKNOWLEDGMENTS

Ao CAPES PRINT Proc. 88887.312019/2018-00: Integrated socio-environmental technologies and methods for territorial sustainability: alternatives for local communities in the context of climate change. To FUNCAP for the aid to support the project *Lazer e Turismo Litorâneo nas Américas: study of the process of touristification in Brazil and Mexico*. To CNPQ for granting the Researcher Productivity Scholarship at levels 2 and 1.

REFERENCES

- CLAVAL, P. **La Géographie Culturelle**. Paris : Armand Colin 2012.
- CONSÓRCIO NORDESTE (2022). Potencial da região que mais cresce do Brasil no século 21. Salvador, 2023. Available : <http://www.consorcionordeste-ne.com.br/>. Access on: Dec. 12, 2022.
- DANTAS, E. W. C. Le Nordeste déconstruit où reconstruit. **Outre-Terre**, v. 56, p.198-218, 2019. <https://doi.org/10.3917/oute2.056.0200>
- DANTAS, E. W. C.; COSTA, M. C. L.; SILVA, C. L. S. . Fortaleza, de uma contaminação derivada dos lugares turísticos à transformação dos espaços de moradia em territórios de adoecimento e de morte. **Confins**, n. 45, 2020. <https://doi.org/10.4000/confins.29971>
- DISTRITO FEDERAL (2022). **Painel COVID-19 no Distrito Federal**. Brasília, 2023. Available: <https://covid19.ssp.df.gov.br/extensions/covid19/covid19.html#/>. Access on: Dec. 12, 2022.
- ESTADO DO AMAZONAS. **Transparência COVID-19**. Manaus, 2023. Available : https://www.fvs.am.gov.br/indicadorSalaSituacao_vie_w/60/2. Access on: Dec. 12, 2022.
- ESTADO DE PERNAMBUCO. **Boletim COVID-19 – Comunicação SES-PE**. Recife, 2022. Available : https://drive.google.com/file/d/1HaBLZl_HqHVBxnvD8-D0NBpoDdTmLO4r/view. Access on: Dec. 12, 2022.
- ESTADO DO RIO DE JANEIRO. **PASS – Portal de Acesso a Sistemas da SES**. Rio de Janeiro, 2022.

- Available : <http://sistemas.saude.rj.gov.br/>. Access on: Dec. 12, 2022.
- FIOCRUZ – Fundação Oswaldo Cruz. **Boletim Observatório Covid 19, Semanas Epidemiológicas 14 e 15, de 4 a 17 de abril de 2021**. jan. 12, 2021.
- FRAGA, L.R.; GARCIA, J. A.; HERO, R. E.; JONES-CORREA, M. J.; MARTINEZ-EBERS, V.; SEGURA, G. M. **Latino Lives in America**. Philadelphia: Temple University Press, 2010.
- GALVÃO-CASTRO, B.; CORDEIRO, R. S. B.; GOLDENBERG, S. Brazilian science under continuous attack. **The Lancet**, v. 399, n. 10319, p. 23-24, 2022. [https://doi.org/10.1016/S0140-6736\(21\)02727-6](https://doi.org/10.1016/S0140-6736(21)02727-6)
- GOVERNO DO DISTRITO FEDERAL DO BRASIL. **Casos Registrados no DF**. Brasília, 2022. Available : <http://www.coronavirus.df.gov.br/>. Access on: Dec. 12, 2022.
- HAN, B.-C. Por qué a Asia le va mejor que a Europa en la pandemia: el secreto está en el civismo. **El Pays**, 2020.
- HERBERG, W.. Protestant-Catholic-Jew : an Essay in American Religious Sociology. **Garden City**, New York: Doubleday & Co, 1955.
- IBGE - Instituto Brasileiro de Geografia e Estatística. **Censo Demográfico de 2010**. 2010. Access on: Dec. 12, 2022.
- IPEEC - Instituto de Pesquisa e Estratégia Econômica do Ceará. **Textos para discussão**. Fortaleza, 2014.
- INTEGRASUS. **Plataforma de Transparência da Saúde do Ceará**. Fortaleza, 2022. Available:<https://indicadores.integrasmus.saude.ce.gov.br/indicadores/indicadores-coronavirus>. Access on: Dec. 12, 2022.
- IPEA - Instituto de Pesquisa Econômica Aplicada **Índice de Vulnerabilidade Social**. Brasília, 2010. Available: <http://ivs.ipea.gov.br/index.php/pt/sobre>. Access on: Dec. 12, 2022.
- ROCHA, G.; ZANELLA, M. E. Análise da vulnerabilidade em saúde no estado do Ceará. **Revista Ibero-americana de Ciências Ambientais**, v. 12, p.472-488, 2021. <https://doi.org/10.6008/CBPC2179-6858.2021.004.0037>
- NATURE. Editorial - India, Brazil and the human cost of sidelining science. **Nature**, n. 593, p. 7-8, 2021. <https://doi.org/10.1038/d41586-021-01166-w>
- OBSERVATÓRIO DAS METRÓPOLES. **Fortaleza**. Fortaleza, 2022. Available : <https://www.observatoriodasmetropoles.net.br/fortaleza/>. Access on: Dec. 12, 2022.
- PADMA, T. V. (2021) Indian government should heed its scientists on COVID. **Nature**, n. 593, p. 9 <https://doi.org/10.1038/d41586-021-01140-6>
- PREFEITURA DE CURITIBA. **Cronograma da Vacinação**. Curitiba: 2022. Available: <https://coronavirus.curitiba.pr.gov.br/#numerosCovid>. Access on: Dec. 12, 2022.
- PREFEITURA DE BELO HORIZONTE. **Cronograma da Vacinação**. Belo Horizonte 2022. <https://prefeitura.pbh.gov.br/sites/default/files/estrutura-de-governo/saude/2022/>. Access on: Dec. 12, 2022.
- PREFEITURA DE GOIÂNIA. **Informe Epidemiológico COVID-19**. Goiânia, 2022. <https://saude.goiania.go.gov.br/goiania-contra-o-coronavirus/informe-epidemiologico-covid-19/>. Access on: Dec. 12, 2022.
- PREFEITURA DE FORTALEZA. **Coronavírus**. Fortaleza, 2022. Available: <https://coronavirus.fortaleza.ce.gov.br/>. Access on: Dec. 12, 2022.
- PREFEITURA DE SALVADOR. **Indicadores**. Salvador, 2022. Available: <http://www.saude.salvador.ba.gov.br/covid/>. Access on: Dec. 12, 2022.
- PREFEITURA DE SÃO PAULO. **Boletim Diário COVID- 19**. São Paulo, 2022. <https://www.prefeitura.sp.gov.br/cidade/secretarias/upload/saude/20220420>. Access on: Dec. 12, 2022.
- SACHS, J. D. **The Ages of Globalization**. Columbia University Press, 2020a. <https://doi.org/10.7312/sach19374>
- SACHS, J. D.. The East-West Divide in COVID-19 Control. **Project Syndicate**, 2020b.
- SANTOS, M.. **Espaço & Método**. São Paulo, Nobel, 1988.
- SECRETARIA MUNICIPAL DE DESENVOLVIMENTO HUMANO. **Desenvolvimento Humano, por Bairro, em Fortaleza**. Fortaleza, 2012. Avaiable: <https://pt.calameo.com/red/0040663398b78ea8e61ab.Fortaleza>. Access on: Dec. 12, 2022.
- TAYLOR, L. (2021). We are being ignored: Brazil's researchers blame anti-science government for devastating COVID. **Nature**, n. 593, p. 15-16. <https://doi.org/10.1038/d41586-021-01031-w>
- THE LANCET. Editorial - COVID-19 in India: the dangers of false optimism. **The Lancet**, v. 396, n. 10255, p. 867, 2020. [https://doi.org/10.1016/S0140-6736\(20\)32001-8](https://doi.org/10.1016/S0140-6736(20)32001-8)
- THERY, H.; MELLO-THÉRY, N. A. **Atlas do Brasil, Disparidades e dinâmicas do território**. 3. ed. São Paulo: EDUSP, 2018. v. 1. 392p
- URBAIN, J.-D. **L'Idiot du voyage**. Paris: Payot. 2002.
- WHO - World Health Organisation. **Coronavirus (COVID-19) Dashboard**. Available: <https://covid19.who.int/>, Geneva, 2022. Accessed on: april, 05, 2022.
- ZIZEK, S. **Pandemia: covid-19 e a reinvenção do comunismo**. São Paulo: Boitempo, 2020. <https://doi.org/10.2307/j.ctv16t6n4q>

AUTHORS' CONTRIBUTION

All authors offered substantial scientific and intellectual contributions to the study. The tasks of research conception and design, manuscript preparation and writing, and critical review were developed as a group.



This is an Open Access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited