

NOVEL CORONAVIRUS (SARS-COV-2): SPATIAL DIFFUSION AND ANOTHER LEVEL FOR THE SOCIALIZATION OF INVESTMENTS IN BRAZIL

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Abstract

The aim of this article is to analyse the spatial diffusion patterns of Covid-19 in Brazil, considering the organization of transport systems, the urban network, and spatial interactions. It is also important to highlight some of the State strategies and actions necessary to combat the epidemic and encourage economic development. Transport systems and their flows are diffusion vectors of the novel coronavirus throughout the territory, and this process permeates different moments of spatial interactions within the hierarchical context of the urban networks. In the case of Brazil, the advance of Covid-19 has assumed elevated levels, given the precariousness of the equipment of social reproduction, particularly over recent years. The deepening neoliberalism in Brazil is added to an erratic policy for combating the pandemic, thereby counteracting the pressing need for the socialization of investments in Brazil.

Keywords

Covid-19; Urban network; Transports; Spatial Interactions; Socialization of investments.

NOVO CORONAVÍRUS (SARS-COV-2): DIFUSÃO ESPACIAL E OUTRO PATAMAR PARA A SOCIALIZAÇÃO DOS INVESTIMENTOS NO BRASIL

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Resumo

O artigo objetiva analisar os padrões de difusão espacial da Covid-19 no território brasileiro, considerando a organização dos sistemas de transportes, a rede urbana e as interações espaciais. Destacam-se também algumas estratégias e ações do Estado necessárias para combater a epidemia e influir no desenvolvimento econômico. Os sistemas de transportes e seus fluxos são vetores da difusão do novo coronavírus no território e esse processo permeia distintos momentos das interações espaciais no contexto das hierarquias das redes urbanas. O avanço da Covid-19, no caso brasileiro, tem assumido níveis elevados, dada a precariedade dos equipamentos de reprodução social, principalmente nos últimos anos. O aprofundamento do neoliberalismo no Brasil soma-se a uma política errática de combate à pandemia, contrariando a necessidade premente de socialização dos investimentos no país.

Palavras-chave

Covid-19; Rede urbana; Transportes; Interações espaciais; Socialização dos investimentos.

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Introduction

Covid-19 (Coronavirus Disease, identified in 2019) is a disease caused by Sars-CoV-2¹, a virus initially identified in the Chinese city of Wuhan, and which has spread to other countries by means of transport². This is a highly infectious virus, the characteristics of which have impacted negatively on the health of both the population and the global economy. It has been thus far estimated that 54.8% of the first cases of contamination within Brazilian territory originated in Italy, whereby the virus possibly arrived via the Milan-Guarulhos air route (CÂNDIDO *et al.*, 2020).

1. Sars-CoV-2 (Severe Acute Respiratory Syndrome Coronavirus 2) is the scientific name of the virus that causes Covid-19, as opposed to the previous, Sars-CoV-1, detected in 2002. The virus is also called novel coronavirus (PAHO, 2020).

2. Massive levels of infection, in the form of a pandemic, by Sars-CoV-2 have been recorded, originating in Wuhan, China. However, there is evidence of virus circulation outside China before the pandemic phase was reached. For example, viral loads of Sars-CoV-2 were found in sewage samples in the city of Florianópolis (SC) in November 2019 (FONGARO *et al.*, 2020). FONGARO, G. *et al.* SARS-CoV-2 in Human Sewage in Santa Catalina, Brazil, November 2019. Preprint Server for Health Sciences, 2020. Available at: <https://www.medrxiv.org/content/10.1101/2020.06.26.20140731v1>. Viewed on: July 19, 2020.

The diffusion of the pathogen and the ability to control it do not essentially reside in the size of the population, in the demographic concentration nor in the technical density of the territory or the spatial interactions that it enables. This ability is based on the structure, mode of production, policies and priorities of a given society. Hence, when value is given to life, and to the social planning and management of the means of production, there is a tendency towards greater efficiency in combating epidemics. Countries such as China, Vietnam, Cuba, South Korea, New Zealand and others, have dealt with the Covid-19 pandemic more effectively, controlling the spatial spread of the virus, notably through the interruption/reduction of some social/spatial interactions plus greater hygienic efficiency.

Although advances in transport technologies have expanded spatial interactions, this is not however, the essential factor in the global spread of novel coronavirus. The primary element is in the action systems, responsible for defining the structures, functions and forms of the transport network. As Marx stated (2011), every form of production forges its own legal, political relations, etc. It is these systems of actions and technical objects (SANTOS, 1996) that define the heterogeneous distribution of transport and its flows, substantiating territorial inequalities.

The current globalization is characterized by a greater circulation of goods, capital and people than in the globalizations of the past (HIRST; THOMPSON, 1999), resulting in an increased capacity to spread the virus. This dynamism, however, does not correspond to an adequate distribution of the socially produced wealth, which obeys its own laws in each mode of production (MARX, 2011). The quota of social production (distribution) received by low-income segments has attained very low levels in the capitalist periphery, whether in the form of wages or in the equipment of social reproduction, a fact that is negatively reflected in the Covid-19 contamination levels of these social groups. Furthermore, the object and action systems (SANTOS, 1996) are highly selective, so much so that, in countries on the capitalist periphery (such as Brazil), infections are spatially distributed according to the hierarchies of urban networks and, in view of this, the topologies and typologies of transport networks. Therefore, the stages of the spatial diffusion of Covid-19 are primarily as follows:

1. Novel coronavirus entered Brazil through air transport, via the middle and upper classes, especially through activities involving work and tourism on the European continent. However, these segments were less impacted, since they are able to benefit from public and private infrastructures

consistent with their social status. The unequal spatial distribution and its economic effects have a negative impact on low-income groups.

2. Consequently, Covid-19 diffuses through connections and/or spreads amongst the middle and upper classes, combining three levels: i) from the main airline hubs³, which obey a hierarchy of airline flows that corroborate the main nodes of the Brazilian urban network; ii) from airports located in important nodal points of the urban network towards their hinterlands, by road transportation (shorter interurban distances); and iii) contagion that occurs mainly between members of the same family and in closer employment relationships, often involving people of a higher social status, who have benefited from and/or had contact with people who have made international flights (beginning of the domestic contagion).
3. Diffusion through the use of road transport presents a number of levels, such as: a) short distance interurban (commuting from home to work); b) long distance interurban (such as interregional and interstate); c) certain hub cities (average and medium-sized cities or government regional headquarters) to the interior of their immediate hinterlands (municipalities in the region of influence of the cities); and d) intraurban, exponentially through public transport. Thus, domestic contagion expands and increases the number of fatalities, since it affects populations in urban peripheries, inland cities/towns and places where large crowds of people and low social indicators occur, particularly in Brazil's favelas (slum neighborhoods).
4. From June 2020, spatial diffusion changed direction within the urban structure, moving from a higher hierarchy of the interurban and intraurban network towards a logic of multiple circuits and of return. The role of regional centrality in a number of cities promoted a social movement from the smaller towns to the major centers that generate and accumulate wealth, so that some metropolises, such as São Paulo and Rio de Janeiro, began to stabilize and reduce the numbers of contagions and deaths, while inland and in other parts of the Brazilian territory there was an increase in the rates (maintaining the mean number of deaths above a thousand from the beginning of the second half of May 2020). It is here that, once again, class differences deepen, since capitalists and top executives work in isolation, managing a mass of clustered workers in spaces conducive

3. Airports that centralize operations and where there is a large flow of passengers. These function as distribution and connection points for different types of flights (regional, domestic, international and intercontinental).

to the interpersonal transmission of the virus, as is the case with meat processors, factories and large businesses (malls, department stores, supermarkets and others). The contagion/infection system currently takes place within a network of multiple circuits, with no control or planning to interrupt this typology, thereby expressing the socioeconomic and political relations organized territorially in Brazil.

In addition, taking into account the negative economic and social effects of neoliberal policies, aggravated by the Covid-19 pandemic, it is essential to encourage investments with a high capacity for socialization. Based on an economic development policy, the Brazilian State needs to leverage “truly” effective demands, especially public equipment, focusing on the groups most affected by the pandemic, namely, low-income people. Investments in improving public health and education, housing, basic sanitation, transport and other bottlenecks is important for socializing investments in Brazil, which thereby indicates a way out based on the project economy (RANGEL, 2005 [1959]), in which economic and social planning is what determines the direction of macroeconomics and the various public policies.

Therefore, the present article aims to analyze the spatial diffusion patterns of novel coronavirus within the Brazilian urban network, based on the location of confirmed cases, correlated with the organization of transport systems. It is also highlighted that some State strategies and actions are necessary in order to combat the horizontal and vertical diffusion of Covid-19, as well as some pathways towards recovering the Brazilian economy.

1. Spatial interactions and the means of spatial diffusion of novel coronavirus

The logic of the spatial distribution patterns of Covid-19 cases is similar to that of other epidemics, i.e., they are related to the intensities, directions, frequencies, duration times and qualitative aspects of spatial interactions. This ensemble of attributes of spatial interactions varies according to the stages reached by social relations, the size of the population and the technological standards of society, with emphasis on transport. Central countries and cities with a greater participation in the global urban network generally present greater economic dynamics, thus requiring intensity in the use of different technologies for interactions with other countries and within their own territory. Hence, their dynamics and forms of spatial interactions identify them as receptors and diffusers of Sars-CoV-2.

However, this assertion is not an absolute truth, since, depending on the combination of multiple determinations, the structure and developmental stage of a society may imply obstacles, thereby complicating solutions for epidemics. The resolution of any problem lies in the political, economic, social and cultural structure and processes of society, i.e., in the way it produces and reproduces its existence. According to Marx (2011), it is not what men produce that counts, but rather the social form in which they produce.

The international spread of Covid-19 first occurred through commercial passenger aviation, following, primarily, the configuration and logic of the urban hierarchy, air transport and the populational arrangement of cities. It was faster and spatially more diffuse/comprehensive in the most populous cities and in the capitals of countries and provinces. The first countries to confirm contamination from December 2019, include Thailand, Japan, South Korea, Singapore, the United Arab Emirates and other Asian nations - countries that maintain significant economic flows with China and were therefore affected before isolation initiated in Wuhan. Concomitantly, the virus spread to several western nations, such as the United States, Canada, Italy, Spain, France etc., during the month of January 2020. As of February 2020, cases were confirmed in peripheral countries (particularly in Latin America), such as Brazil and Ecuador.

The spatial distribution of Covid-19 occurred from the largest to the smallest hubs, from the most densely populated cities, with the most industries, services and middle class, to the smallest. However, this typology of distribution and high levels of contamination are not a rule, since they interact with other determinations, such as the gross domestic product (GDP), family income, cultural standards, educational and technological levels and other economic and social aspects, cases of basic sanitation, housing, employment, quality/effectiveness of urban mobility, etc. of a society. Thus, the ability to contain the spread and intensity of contagions, as well as to guarantee efficiency in treating those infected, is mainly associated with the optimization of State planning and investments, in addition to the commitment and responsibility of public managers⁴. The aspects of spatial diffusion, contagion levels and the capacity to treat are broader and more diverse than an explanation

4. It is also important to detect the class and class identity of the public managers. In Brazil, LIDE (Group of Business Leaders) and other business organizations play an active role in public opinion and government decisions. Thus, it is necessary to reflect on the role, responsibility and legal accountability of public managers and other social agents in the face of the growing number of contagions, deaths and other harmful aspects to public health, as well as the direction of the economy.

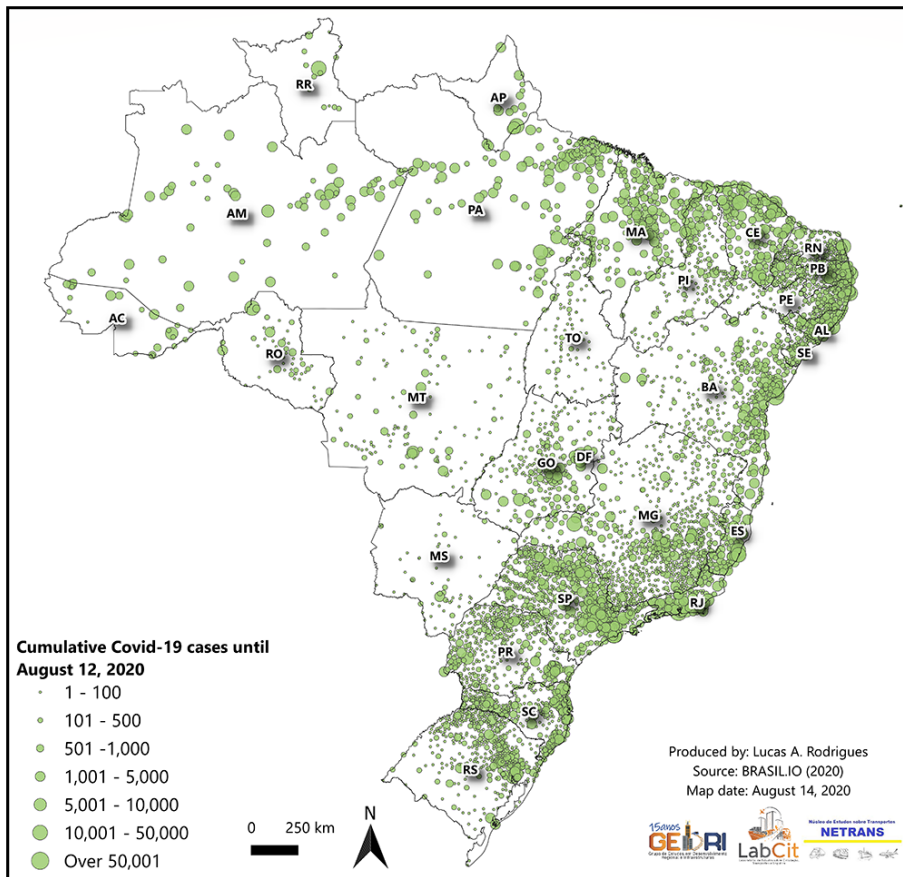
solely based on high population density and patterns of spatial interactions⁵. However, in certain countries, such as Brazil – In which there was/is a combination of inefficient public policies, widespread denial of the effects and severity of the disease by public managers and society, in which economic agendas are favored based exclusively on the exploitation of labor – diffusion and contagion levels have presented a certain pattern.

Thus, spatial diffusion has followed the hierarchy of the urban network and the level of centrality of each city. The territorial division of labor extends into this system of cities, constituted as a result of the organization and formation of the transport network. Moreover, spatial distribution based on air transport is particularly outstanding, significantly complemented by the road network, clarifying important stages, as presented below.

1. Contagion through local/regional social interactions and through external/international relations (for example, flights from Europe to Guarulhos, in São Paulo, and to Galeão, in Rio de Janeiro, and their influence on the urban network of the hinterland airport network).
2. Contagion in the intraurban and interurban space, especially through public transport systems and some urban equipment of greater use and circulation, with its spread through the private cars.
3. Through interregional connections, with emphasis on those between the capitals and their more dynamic interior (the hub cities). As an example, we would mention in Amazonas the connection between Manaus and Tefé, Tabatinga and Parintins.
4. From regional pole cities to their hinterlands, such as Chapecó and Concórdia, in western Santa Catarina, and Londrina and Maringá, in northern Paraná.

5. Fang and Whaba (2020) assess that there is no direct relationship between population density and Covid-19 infection rates. The authors argue that population density is not an exclusively valid determinant, given that many densely populated cities (Shanghai, Beijing and Seoul) had fewer confirmed cases than many less densely populated cities. Many cities with a large population and population density are richer and more able to mobilize resources to fight epidemics. The cities with the highest rates in China were those with low population densities. In this case, high rates may be attributed to a strong economic connection to Wuhan (regardless of absolute distances). Infection rates decrease when the distance and economic flows are shorter. Thus, population densities may be more beneficial than harmful as the larger cities have more economies of scale in offering public and private services to their citizens, such as well-structured health services (ICU beds, more medical specialties and others), internet coverage, qualified information, delivery services and remote work, especially as there is greater specialization in large cities in the service sectors.

- Dissemination through networks of multiple circuit and contamination of return, generating new waves of infection in Brazil, as in the metropolitan regions of Fortaleza (CE), São Luís (MA), Belém (PA), São Paulo (SP) and Rio de Janeiro (RJ) (Map 1).

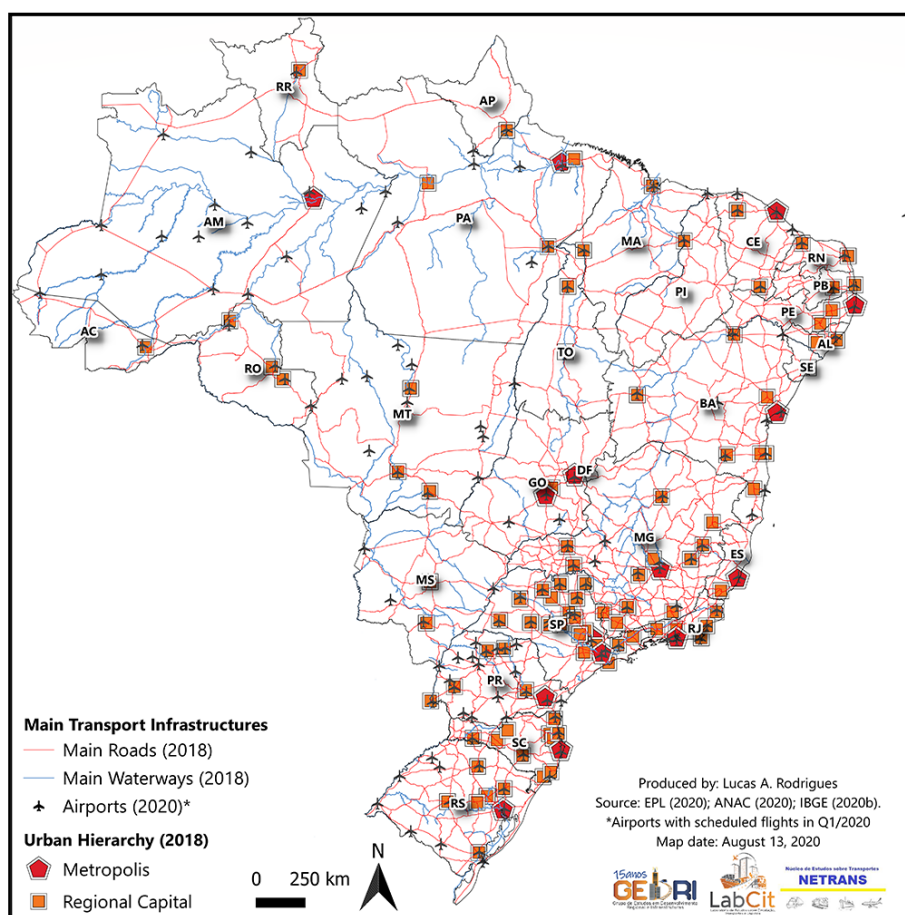


Map 1. Cumulative Covid-19 cases in Brazil until August 12, 2020.

Source: Brasil.IO (2020).

There are cases of Covid-19 in all Brazilian states, with significant concentrations in metropolitan regions, as well as in urban agglomerations, small and medium-sized cities (Map 1), although the logic of diffusion and density of cases follows the structure of the urban hierarchy. Thus, the role of urban mobility is central in the spread of the virus, which reinforces the need for planning mobility restrictions that take into account the various typologies and topologies of the urban networks, particularly the transport networks that exist regionally and even locally. This implies that the dissemination behavior across the network in the Northern region differs from that in the South, for example. They differ internally, i.e., the developmental stages of the technical objects (of object systems) of and in

the regional urban network are presented and organized with different structures, processes, functions and forms. Therefore, the diffusion and density of cases are regionally different. The diffusion patterns of novel coronavirus are different, since each regional centrality presents its own structure for spatial organization, with unique economic, social, political and cultural characteristics⁶. In addition, for a correct reading of this dynamic to be possible, it is essential to consider the spatial distribution and densities of the transport infrastructure in Brazil, especially airports, highways and waterways (Map 2).



Map 2. Main transport infrastructures and urban hierarchy in Brazil.

Source: EPL (2020); Anac (2020); IBGE (2020b).

6. Corrêa (2018) highlights that: a) jumps of spatial diffusion involves a major separation by area of emission and reception, in our case, of the virus, establishing a spatial discontinuity in its occurrence; and b) hierarchical diffusion confirms the hierarchy of central places. In general, based on the centrality and structure of transport, dissemination occurs, primarily, from the metropolises to the regional capitals and then, through them, to the hierarchically inferior centers. CORRÊA, R. L. *Caminhos paralelos e entrecruzados*. São Paulo: Unesp, 2018.

Insofar as negligence regarding the containment/treatment of Covid-19 is relatively general⁷ (irrespective of the local and regional capacities, in the Brazilian case), it is also important to correlate this network of infrastructures with urban hierarchies (Map 2), which initially, in general, in Brazil, were the most affected nodes.

The virus arrived in Brazil by air transport and, afterwards, penetrated into the territory through land modes (such as road and rail in the main metropolitan regions) and waterways (particularly in the North). The spatial breadth of air transport, added to the integration with regional airports and their importance in the regions of influence where they are located, partially justifies the Covid-19 cases in more isolated regions.

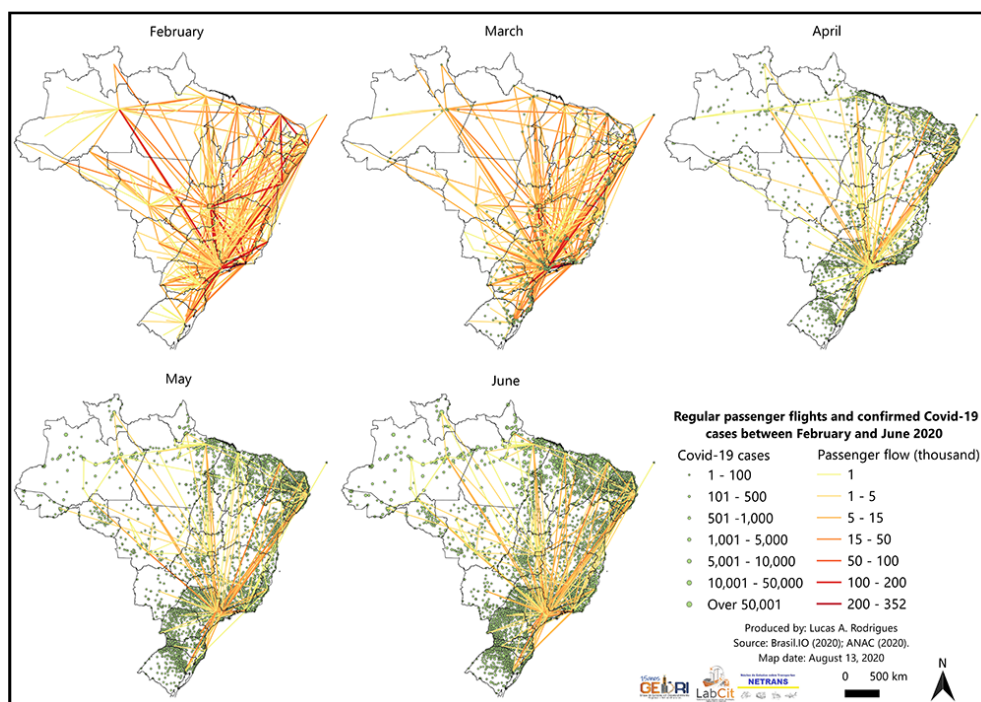
Destinations beyond the capitals are offered, especially, in the hub cities. However, at the moment, during the pandemic, with more restricted flight operations, called the “essential flights network” (April 2020), only the main regional cities have maintained operations, most notably those that receive flights covering a large area, such as Chapecó and Navegantes, in the state of Santa Catarina; Londrina, in Paraná; Uberlândia and Montes Claros, in Minas Gerais; São José do Rio Preto, in São Paulo; Petrolina, in Pernambuco; Juazeiro do Norte, in Ceará; Ilhéus and Porto Seguro, in Bahia, and Imperatriz, in Maranhão.

However, it may be noted that the essential flights network, established in April 2020, did not manage to contain the Covid-19 diffusion. By the end of March 2020, the disease had already spread across the major national airline hubs (São Paulo, Brasília, Rio de Janeiro, Manaus and other capitals) – i.e., prior to implementing the essential network -, which demonstrates how the delay and hesitation in applying certain policies were significant in failing to contain the virus in Brazil.

By the end of May 2020, the permanence of the essential flights network policy had not significantly changed the intensity of the spatial diffusion of Covid-19 (Map 3), the advance of which was effectuated through other modes of transport (land and water). Moreover, this concentration of flights, especially in the state of São Paulo, actually contributed to the circulation of novel coronavirus, considering the offer of flights in the hubs and their influence on the urban network that integrates the hinterland airports. Taking into account the three main airports of the

7. Public hospitals were overburdened in the state capitals and in many intermediary Brazilian cities (most notably regarding the use/occupation of ICU beds), since, in addition to attending local cases, these centers ultimately received many patients from the surrounding smaller towns. It is also common to see, in the Brazilian case, that many small town administrations “become accommodated” and restrict investments in health and, for this reason, transfer the sick to larger cities, with better health structures, a fact that adds to the burden on the public health system.

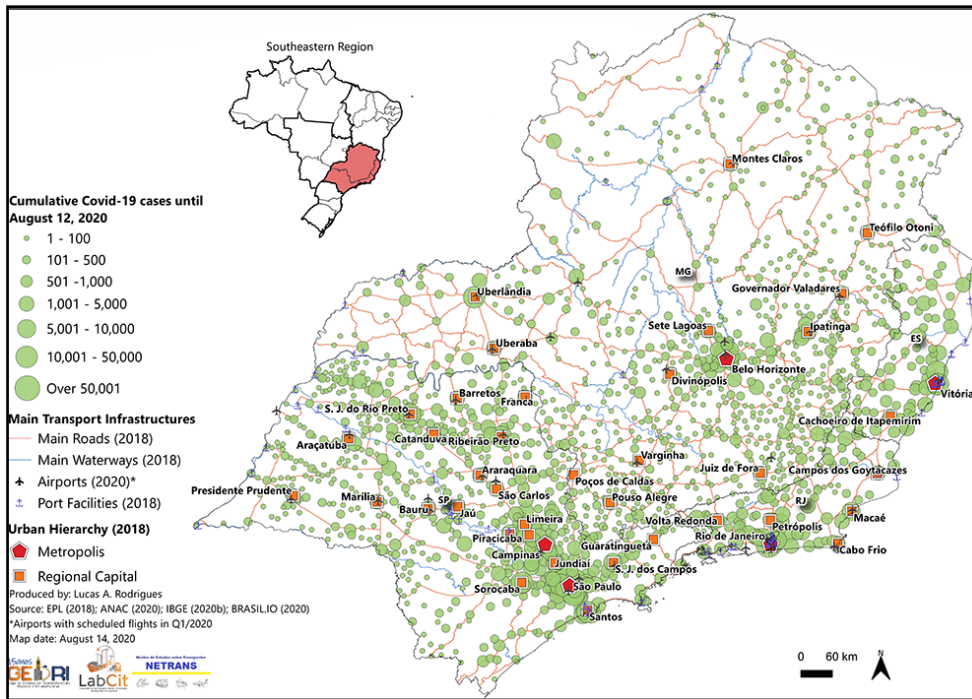
São Paulo macro-metropolis (Campinas, Guarulhos and São Paulo), in April 2020, there were 71 thousand landings and 102 thousand passengers made connections on regular flights (ANAC, 2020). In comparison with other cities, only Brasília (DF) presented a high number of connections, due to its centralized position within the national territory.



Map 3. Regular passenger flights and confirmed Covid-19 cases between February and June 2020.

Source: Anac (2020); Brasil.IO (2020).

In addition to receiving flights from all over Brazil, Guarulhos Airport (SP) is the main international hub in Latin America. Added to which, Galeão Airport, in Rio de Janeiro, due to tourism, receives passengers from many other countries. In turn, Presidente Juscelino Kubitschek Airport (DF) in Brasília maintained its direct connections with all the country's capitals during the pre-pandemic period, in addition to being an important domestic connection center. The other airports are linking points with national hubs and regional connection nodes, such as Manaus (AM), Porto Alegre (RS), Curitiba (PR), Cuiabá (MT) and Recife (PE). The dissemination of Covid-19 across Brazil was influenced by international and national flights, thereby intensifying cases, particularly in the Southeastern region, predominantly in the metropolitan regions of São Paulo and Rio de Janeiro (Map 4).



Map 4. Main transport infrastructures, urban hierarchy and cumulative Covid-19 cases in the Southeastern region until August 12, 2020.

Source: EPL (2020); Anac (2020); Brasil.IO (2020); IBGE (2020b).

Aspects such as the centrality of cities and population density and fixtures of transport, especially in the state of São Paulo, favor economic and population flows. Such aspects promoted a rapid spread of Sars-CoV-2 in the Southeast region (Table 1), spreading to small and medium-sized cities across the region, which together represented 52.71% of the total cases in the country (BRASIL, 2020).

Brazil and Regions	Population	Cumulative number of cases	Cumulative number of cases 100 mil/hab.	Cumulative number of deaths	Cumulative number of deaths 100 mil/hab.
Brazil	210,070,270	3,164,785	1,645	111,100	53
Southeast	88,371,433	1,208,618	1,368	49,903	56
Notheast	57,053,266	1,050,491	1,841	32,965	58
Midwest	16,281,136	367,672	2,258	7,712	47
South	29,933,455	340,637	1,138	7,607	25
North	18,430,980	489,234	2,654	12,913	70

Table 1. Cumulative cases of Covid-19 infections and deaths in the Brazilian regions until August 12, 2020.

Source: Newsletters and cases of novel coronavirus in Brazil per day. Brazil, 2020.

Produced by Rafael Matos Felácio.

It should be noted that, until August 12, 2020, while these cities had a high number of daily infections and deaths, these cases stabilized or decreased in metropolises and metropolitan regions - the latter totaling 47.29% of national cases (BRASIL, 2020).

Poor living conditions and the precariousness of public infrastructures and services available to low-income segments have aggravated the situation of the pandemic in Brazil, leading the country to assume one of the worst positions in the world with regard to combating and controlling Covid-19. The pandemic has highlighted the existing inequalities in Brazil in terms of income, sanitation, medical and hospital care, urban mobility, access to education and housing, etc.

Public transport is considered the main pivot in the domestic spread of the virus in cities and metropolitan regions. At the beginning of the pandemic, public transport services in a few Brazilian states and municipalities were completely suspended, but, as the pressures of local and regional economic sectors combined with a slight flattening of the contamination curve, state and municipal public managers reopened urban activities (commerce, services and industries, sparing only educational establishments) applying few criteria.

In the state of Santa Catarina, for example, public transport resumed operations in several municipalities as a result of restrictions being relaxed by the state government (June 8, 2020)⁸. It is a plain fact that a combination of the unrestricted relaxation of economic activities in the state (since April) and the return of public transport systems - due to corporate pressures aligned to the perception of controlling cases in the state - is related to the significant increase of Covid-19 cases in the cities of Santa Catarina. It should be mentioned that in this state, the number of deaths from Covid-19 continues in an upward trend in relation to the rest of the country, demonstrating a percentage variation of 25%, considering the mean of the last seven days (until August 15), in comparison with the mean of two weeks ago⁹ (CONSÓRCIO DE VEÍCULOS DE IMPRENSA, 2020).

In a logic similar to that of the essential flights network, other cities decided to concentrate public transport services onto a few lines and schedules, reducing passenger cars and buses. For example, in the last week of March, in the city of São

8. From June 8, 2020, public transport has gradually resumed operations in the municipalities of Balneário Camboriú, Biguaçu, Brusque, Chapecó, Concórdia, Criciúma, Joinville, Lages, Palhoça, São Francisco do Sul, amongst others.

9. Some calculations have used weekly moving means to calculate trends of growth or reduction of deaths/contagions. The methodology consists of considering the mean of cases during one week. In this methodology, the records of late cases, with delayed tests, or weekends are used for the next day of the week (for this reason they are “moving” averages).

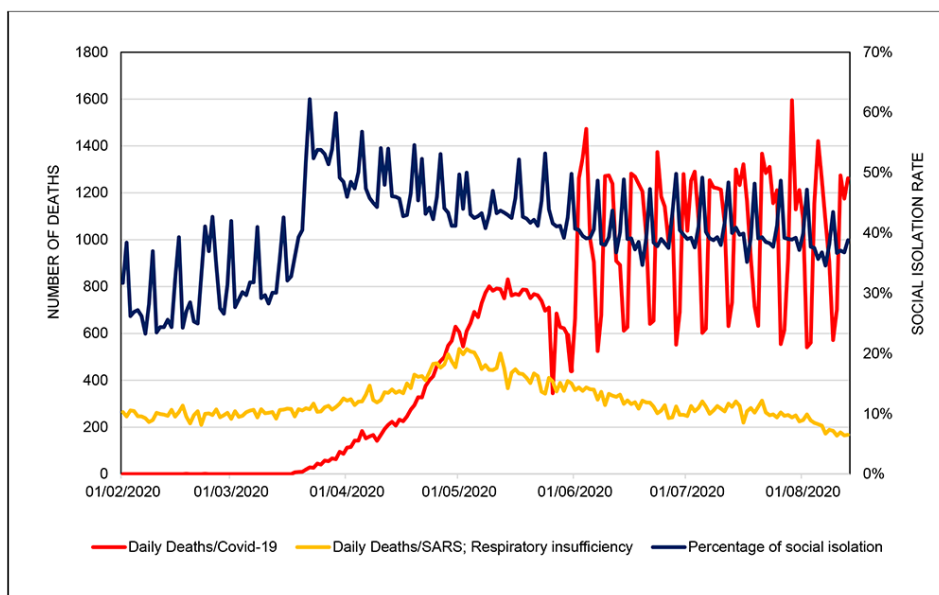
Paulo, seven thousand buses were removed from the streets, thereby reducing the offer of transport by 45% (SÃO PAULO TRANSPORTES, 2020). Although the objective was to stem the intraurban and metropolitan spread of the virus, these partial actions ultimately generated more gathering points and crowding on the buses in operation, thereby continuing the interpersonal transmission of Sars-CoV-2. Similar facts occurred with a reduction in the number of metropolitan CPTM trains and passenger cars in São Paulo, and in the BRT Rio. This signifies that a reduction in the supply of transport is not effective, if it is not accompanied by a policy of assertive social isolation and respecting recommended passenger limits during the pandemic.

It should be stated that, within this context, the social classes most at risk of contamination are those that are unable to remain in isolation, i.e., informal workers, nurses, nursing technicians and other professionals related to health, domestic workers and workers in the supply sector (supermarkets), who are captive users of public transport services¹⁰.

Thus, well-designed social isolation strategies are essential in order to maintain the spread of novel coronavirus at low levels (Graph 1). However, for this, it is necessary to create conditions so that people may remain at home with a secure supply of food, a guarantee of basic services (water, electricity, internet, etc.) and a “minimum income”. This refers back to the statement by Fang and Wahba (2000) that in many cases, cities with a higher population density are more likely to concentrate GDP, income and savings; thus, its economy of scale enables more public and private services to be offered, capable of helping in social isolation and in the treatment of pandemics¹¹. However, in Brazil, even the state and municipal governments most concerned with containing the advance of Covid-19, do so in a pusillanimous manner, yielding to the pressures of certain economic sectors and neglecting the task of making efforts to change their neoliberal bases.

10. In the case of São Paulo, it was observed that the neighborhoods with the highest rates of hospitalization (Cidade Ademar, Brasilândia, Sapopemba and Capão Redondo) corresponded to those served by the busiest lines during quarantine, precisely those whose origins or destinations were also low-income peripheral neighborhoods (Capão Redondo, Jardim Ângela, Brasilândia, Cachoeirinha, Sapopemba, Iguatemi, Cidade Tiradentes, Itaquera and Cidade Ademar) (Fapesp, 2020). FAPESP. *Deslocamento para o trabalho pode explicar concentração de casos de Covid-19 em alguns bairros de SP*. Available at: <https://agencia.fapesp.br/deslocamento-para-o-trabalho-pode-explicar-concentracao-de-casos-de-covid-19-em-alguns-bairros-de-sp/33625/>. Viewed on: July 19, 2020.

11. Meanwhile, it is necessary to clarify the statement regarding the advantages of spaces with a higher population density (large cities): in countries such as Brazil, denialism (banking on herd immunization), precarious education, disinformation, poor basic services and the accumulation of income (savings) of families, a lack of both planning and efficient public management, amongst other factors, make it difficult to combat the spread of contagion by Covid-19.



Graph 1. Social isolation index and number of deaths in Brazil: Covid-19; SARS (Severe Acute Respiratory Syndrome) and respiratory insufficiency until August 12, 2020.

Source: Inloco (2020); Brasil.io (2020), Central de Informações do Registro Civil (CRC) Nacional. (2020). Produced by Lucas Azeredo Rodrigues and Rafael Matos Felácio.

The rate of social isolation in Brazil demonstrates that little has been achieved in reducing social interactions, presenting sluggishness in strategic decision-making, applying few tests¹² and using little technology to prevent and combat Covid-19. It is not by chance that the contamination curve with the novel coronavirus has increased, while the isolation rate has been reduced (Graph 1), and which reached a mean of 36.8% on August 12, 2020. Recent results have shown a daily death rate of over one thousand (1,175 deaths of Covid-19 on August 12, 2020) (BRASIL.IO; INLOCO, 2020). On this date, there was a total of 3,164,785 confirmed cases and 104,201 deaths (CORONAVÍRUS BRASIL, 2020), demonstrating the serious context of the disease in Brazil¹³.

Considering the significant spread of Covid-19 in Brazil – most notably in the South, during the first half of July 2020 - temporary social isolation, conducted

12. Between March 5 and August 10, according to the Epidemiological Bulletin of the Ministry of Health, 5,397,908 RT-PCR tests were performed for Covid-19 in Brazil (BRASIL, 2020). BRASIL. Ministério da Saúde. *Boletim epidemiológico especial: doença pelo coronavírus, semana epidemiológica 32*. Available at: <https://www.saude.gov.br/images/pdf/2020/August/12/Boletim-epidemiologico-COVID-26.pdf>. Viewed on: August 16, 2020.

13. Currently, Brazil is second only to the United States in the number of infected people and in deaths, a fact that highlights the negligence of the State and the ineffectiveness of the policies adopted by the two countries to combat Covid-19. Even in the face of the negative scenario, Jair Bolsonaro and Donald Trump resist isolation measures, deny the severity of the disease, often blame China for the pandemic,

most efficiently in several European and Asian countries, is essential. Furthermore, restrictions on transport, “minimum income” security systems (some European countries), expansion of the Health Industrial Complex (China, Russia, South Korea and Vietnam) and wide-spread testing (South Korea and Vietnam), as an ensemble, from a model of appropriate practices in order to combat novel coronavirus¹⁴.

Regional singularities (including environmental), combined with deep internal inequalities, as well as a lack of guidance from the Ministry of Health¹⁵, the precariousness of public policies in this area and the cuts suffered by the Integrated Health System (known in Brazil as SUS) from Constitutional Amendment 95, negatively impact the capacity of the country’s public health system to contain the spread of Covid-19 throughout Brazil, alongside other diseases caused by viruses, which have revealed significant growth (for example, dengue, yellow fever and measles).

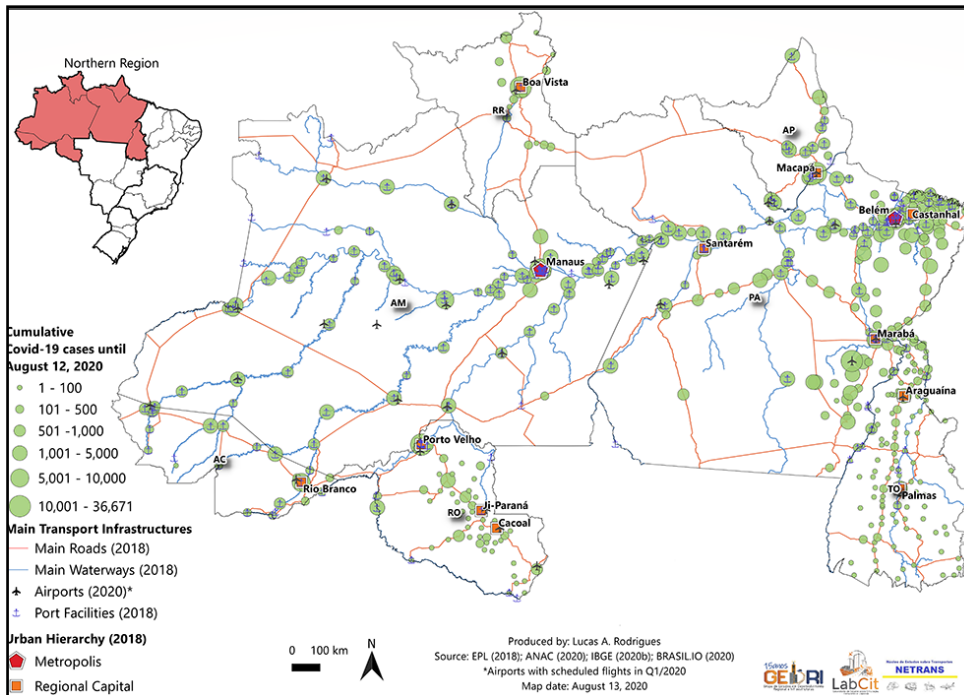
In addition to this, other difficulties faced, for example, in the North of the country (Map 5) are the lack of political norms (non-denialist) and the precarious working conditions of many health professionals aligned to low levels of testing, the high level of underreporting cases and the reduced accessibility to health equipment.

Travel in the North of the country is mainly conducted by river transport, and it is through this mode that the riverine communities are affected by novel coronavirus. Unsurprisingly, important nodes of the regional urban network and Amazonian river transport have high numbers of Covid-19 cases, such as Manaus, Coari, Tabatinga, Tefé and Parintins, in the state of Amazonas, Belém and Santarém, in Pará, Macapá, in Amapá, and Porto Velho, in Rondônia.

make fallacious statements, such as “The virus will go away as the weather warms up” or “The virus is under control in the country”; in addition, they restrict investments in the health area.

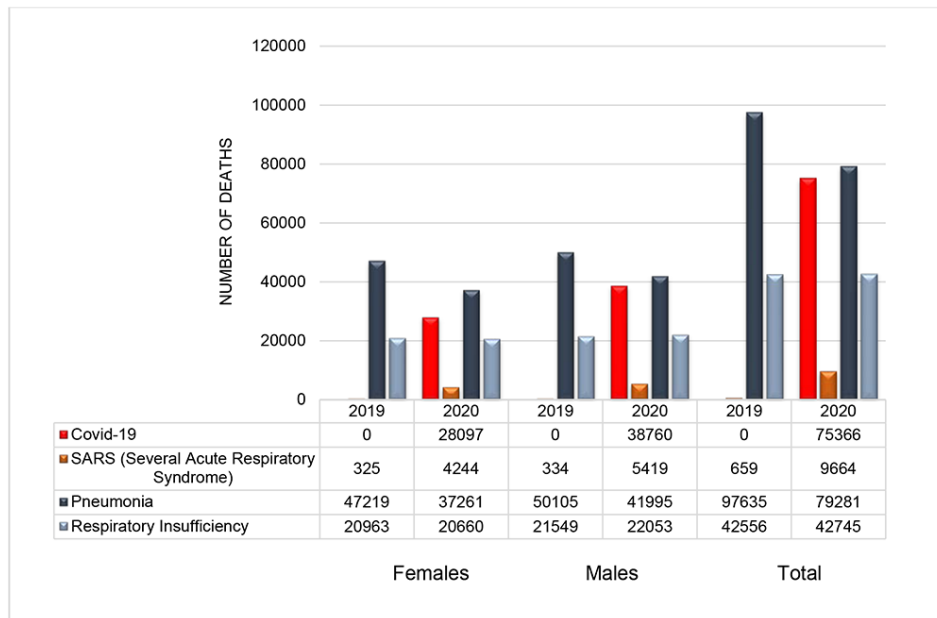
14. In mid-June 2020, another outbreak of Covid-19 was reported in Beijing (there were more than three hundred new cases in the city in two weeks). Therefore, the City Hall initiated a quick combat response, with emphasis on diagnosing the infected and strategic isolation (through the closure of schools, universities and some economic activities, in addition to the confinement of more than 500 thousand people living in residential areas considered at risk); it also restricted social interactions and quickly disseminated information to the population, requesting people not to leave the capital, in order to avoid, therefore, new waves of contamination in other Chinese urban centers (VALOR ECONÔMICO, 2020). VALOR ECONÔMICO. *China isola 500 mil pessoas na região de Pequim após novo surto de covid-19*. Available at: <https://valor.globo.com/mundo/noticia/2020/06/28/china-isola-500-mil-pessoas-na-regio-de-pequim-aps-novo-surto-de-covid-19.ghtml>. Viewed on: July 20, 2020.

15. Until August 15, 2020, the Ministry of Health was without a minister in the portfolio, temporarily occupied by active general Eduardo Pazuello.



Map 5. Main transport infrastructures, urban hierarchy and cumulative Covid-19 cases in the Northern Region until August 12, 2020.

Source: EPL (2020); Anac (2020); Brasil.IO (2020); IBGE (2020b).

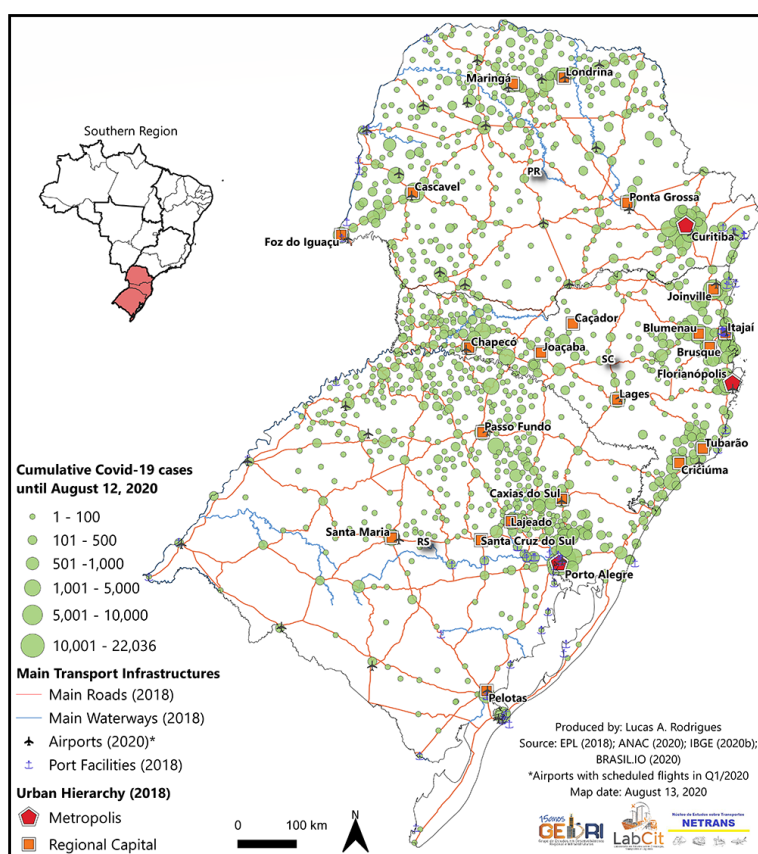


Graph 2. Comparison of the number of deaths from respiratory disease and Covid-19 between 2019 and 2020, based on the periods from February 1 to July 15 of each year.

Source: Central de Informações do Registro Civil (CRC) Nacional. (data used from February 1, 2019 to July 15, 2019 and from February 1, 2020 to July 15, 2020).

Produced by Rafael Matos Felácio.

Significant levels of underreporting not only affects regions with the lowest demographic occupation, as in the case of the Amazon: the whole country is affected. There are indications that infections in Brazil are up to fourteen times greater than the official figures reveal (COVID-19 BRASIL, 2020). These indications are also ratified by the comparative numbers of deaths in the months of February and May in the years 2019 and 2020. During these periods, there was an increase in the number of deaths from pneumonia, respiratory failure and severe acute respiratory syndrome (SARS). Between February 1 and July 15, 2020, 9,005 deaths more than SARS were identified than in the same period of 2019, i.e., an increase of 1,366% (Graph 2). The increase in deaths may be related to the underreporting of deaths from Covid-19, which, therefore, raises questions related to accounting the disease in Brazil.



Map 6. Main transport infrastructures, urban hierarchy and cumulative Covid-19 cases in the Southern region until August 12, 2020.

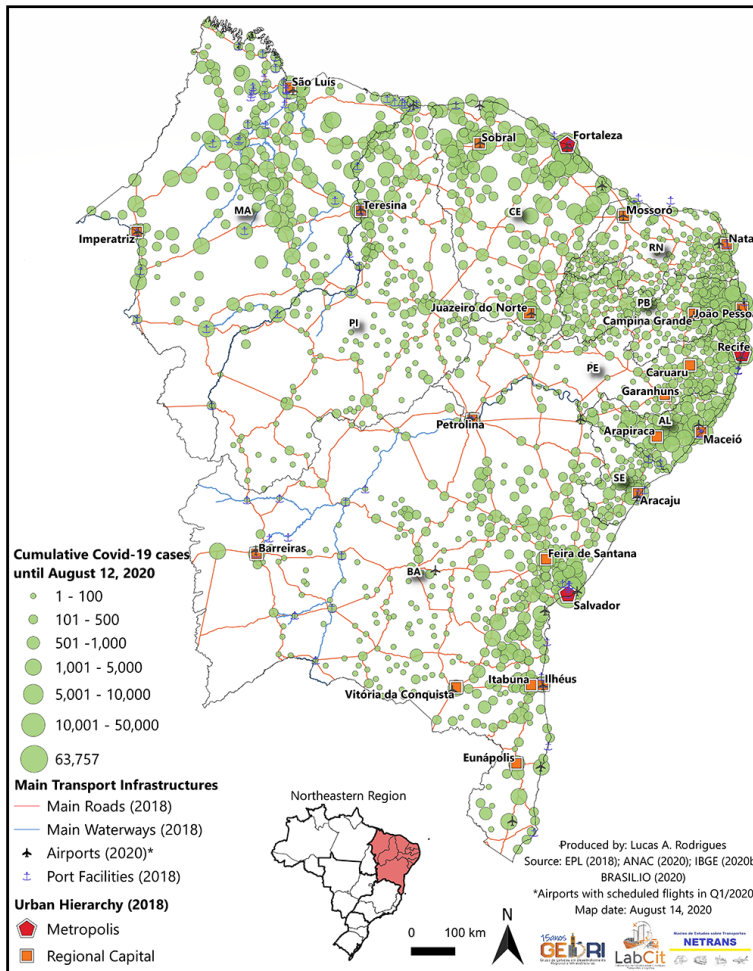
Source: EPL (2020); Anac (2020); Brasil.IO (2020); IBGE (2020b).

In the case of the Southern region, there is a significant incidence of Covid-19 infections amongst meat processing workers, as observed in the northwest of Rio Grande do Sul (Passo Fundo and Lajeado) and in the west of Santa Catarina (Chapecó and Concórdia). This highlights the need to understand regional characteristics in order to adopt effective actions to control the spread of the virus (Map 6). The “yo-yo”, or boomerang, system of isolation, i.e., the tightening-relaxing of social isolation, has also led to an increasing number of contagions and deaths that were more spaced out and more harmful to the economy. To a large extent, this has resulted from the lack of national political coordination and the “denialism” of the federal government, which has thus led the Supreme Federal Court to attribute public health decisions to the state and municipal administrators, thereby strengthening, “neolocalisms” (VAINER, 2007) and “neoterritorialisms” (SILVEIRA, 2020). Hence, each municipality has followed its own program, as local managers act according to their class identity and the correlations of local and regional political forces (many of them in direct confrontation with federal and state decisions and the public health authorities).

Industrial and commercial activities have influenced the transmission of Covid-19 due to gatherings of workers. In the Serra Gaúcha region, for example, the number of cases is high in Caxias do Sul and in the surrounding cities. This is also true in Santa Catarina, with a significant number in Blumenau, Joinville and Criciúma. Such facts reveal the precarious working conditions in Brazil and the lack of basic care, such as ergonomics, use of personal protective equipment, ventilation of closed environments, testing workers, etc.

The Brazilian context also expresses the precariousness of the social infrastructure. In the North, in the state of Amapá, only 58.9% of households are served by a supply of piped water; in Acre, 54.0%; in Pará, 51.4% and, in Rondônia, 43.4%. In the Northeast, only 69.1% of households have access to water, i.e., 12 million people do not have an available source of daily water from the general supply network. Thus, the simple act of “washing your hands” - important in preventing Covid-19 - is denied to millions of people in Brazil (SISTEMA NACIONAL DE INFORMAÇÕES SOBRE SANEAMENTO, 2020).

In the Northeastern region, Covid-19 has also spread intensively to cities in the interior, from large urban centers (Map 7). This process derives from the transport systems (notably the air and road modes), but becomes broadened in the face of the precarious conditions of work, sanitation and housing.

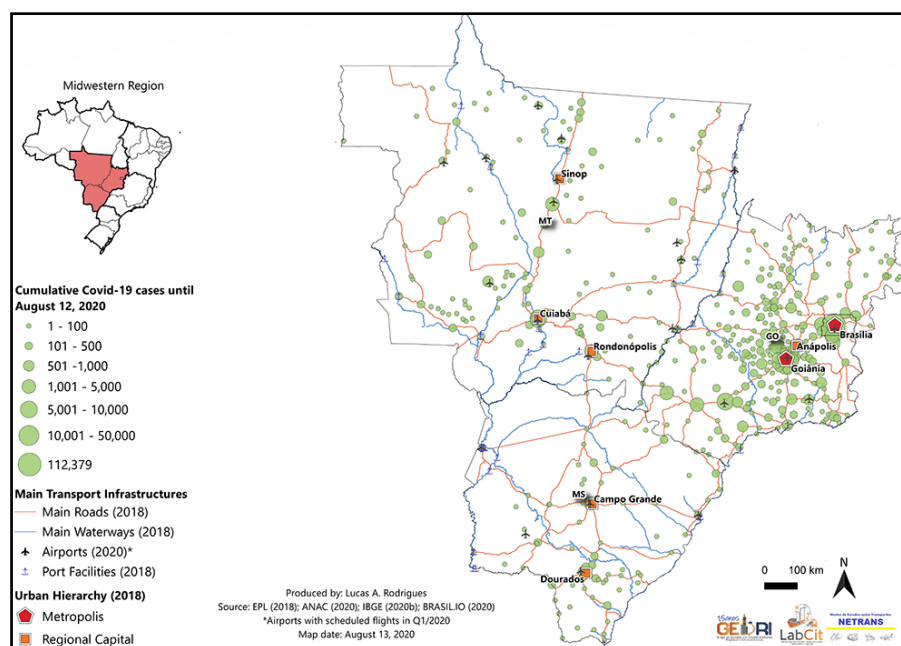


Map 7. Main transport infrastructures, urban hierarchy and cumulative Covid-19 cases in the Northeastern region until August 12, 2020.

Source: EPL (2020); Anac (2020); Brasil.IO (2020); IBGE (2020b).

Recently, a report by the Scientific Committee for Combating Coronavirus from the Northeastern Consortium (2020), coordinated by Miguel Nicolelis and Sérgio Rezende, warned of the “boomerang effect”. Obeying the hierarchical logic of the main urban network, the penetration of the virus into the northeastern territory, initiated in the state capitals, has moved towards the interior, particularly towards the regional capitals, such as Juazeiro do Norte (CE), Campina Grande (PB), Ilhéus (BA), Sobral (CE) and Imperatriz (MA). From there, the virus has spread throughout the region of influence, at the same time that the capital cities have begun to demonstrate positive effects from the lockdown (extremely restrictive social isolation). With a decrease in the number of cases in the capital cities, a relaxation of activities was resumed and, with that, a return in the growth of Covid-19 cases, thereby experiencing the “boomerang effect”.

As in the North, the concentration of ICU beds in the Northeast is in the capital cities, which therefore demands conditions of mobility; however, in this region, these are considerably precarious. This contributes to a continuous circulation between the regional capitals and the metropolises. If the first movement was capital-interior, what is now taking place is that the spread of the virus is moving in the opposite direction. This is an alert for the need to adopt restrictive measures regarding spatial interactions.



Map 8. Main transport infrastructures, urban hierarchy and cumulative Covid-19 cases in the Midwestern region until August 12, 2020.

Source: EPL (2020); Anac (2020); Brasil.IO (2020); IBGE (2020b).

The circulation and interiorization of the virus also spread into the Midwestern region. The Federal District, due to its role of national political centrality in the urban network, presented many cases, which, consequently, caused its spread to other parts of the region. In addition to the administrative issue, the actions of Brasília significantly occur in the airport and road connections, which leads to a greater circulation of people, goods and information. However, in the other states that make up this region, the cases of Covid-19 have also increased, especially in the capital cities of Goiânia, Campo Grande, Palmas and Cuiabá. The spread of contamination obeys the “fish bone” logic, i.e., cities that have formed along the main highways, such as the BR-163, which passes through Dourados and Campo Grande, in Mato Grosso do Sul, Rondonópolis, Cuiabá and Sinop, in Mato Grosso, and heads

towards Pará (Map 8). A large part of these virus propagating road routes cross indigenous reserves, traditionally under pressure from economic exploitation, which has resulted in several deaths of indigenous people being registered.

The Covid-19 pandemic has aggravated the Brazilian economic and social crisis, therefore, in view of this adverse situation, strategies must be adopted to resume development at a new level, under the guidance of the Brazilian State. The qualification of planning, promoting public and private investments and expanding public utility equipment and services are relevant aspects for the socialization of investments in Brazil, with a view to reducing the existing inequalities.

2. The economic crisis and the prospects facing the scenario of the Covid-19 pandemic

The Covid-19 pandemic has brought about a sharp slowdown in the global economy. A report released by the International Monetary Fund (IMF), for June 2020, projected a decrease of at least 4.9% in global GDP in 2020 and, in the case of Brazil, a decrease of 9.1%. The IMF estimates for the world's major economies indicate a severe recession, with drops of 10.2% for the Eurozone and 8.0% for the United States. Countries such as Italy and Spain are expected to record the biggest retractions in GDP, both with a drop of 12.8% (IMF, 2020).

Taking this scenario into consideration, planning and strategic investments must compose the central objectives of governments, since development programs and/or plans are fundamental in order to generate jobs, for income distribution and for improving health systems. The fight against Covid-19 and the resumption of economic growth in various countries (particularly in peripheral economies) depend, to a large extent, on the State's ability to exercise its role as planner and inducer, on the increase of public and private investment in economic and social infrastructures, on developing an effective treatment against the disease (medication and/or vaccine), on maintaining social isolation measures for the time necessary until the epidemic is brought under control, and on the valorization and expansion of public health systems, amongst others.

The most effective path is that of economic planning and of a greater State presence in bringing investments and in delivering private investments to strangled areas, i.e., it is up to the State to structure a project economy, as defined by Ignácio Rangel (2005 [1956]). Efficient State participation is pertinent so as to foster territorial development and support strategies at this time of a global crisis; therefore, planning, actions and investments are essential to combat the Covid-19 pandemic, to improve health systems and care for the sick, to recover effective demand and to create jobs in the various affected countries.

The State should encourage/direct public investments, mainly in relation to public utility equipment and services, since the inversions for the construction of hospitals, health centers, schools, daycare centers, urban public transport integration terminals, depollution of bays and rivers, expansion of basic sanitation and electricity networks in peripheral neighborhoods, amongst others, are essential for the quality of social reproduction and to boost the internal multiplier effect.

The economic crisis currently experienced was not necessarily created by the novel coronavirus pandemic. The recession preceded the epidemic and is only highlighted by low expectations for production and consumption. It was caused by neoliberalism and the lack of productive investments capable of generating greater socialization of investments, thereby generating employment and income. Countries such as China, Vietnam and South Korea, for example, in addition to dealing more effectively with the pandemic in the sphere of public health, are mitigating the impacts of the current economic recession, with strong investment plans in economic and social infrastructure.

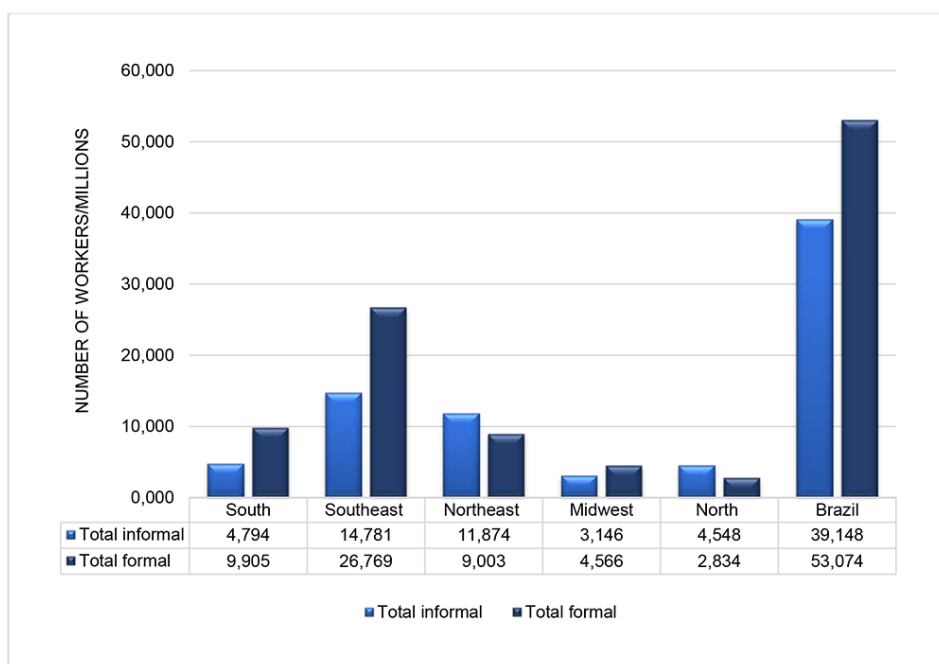
Although Brazil possesses the structural conditions for resuming the process of national development, since the Temer government and even more so with the Bolsonaro government, the structural base capable of sustaining the Brazilian macroeconomic development has suffered a progressive dilapidation, such as the destructuring of the oil production chain (with Petrobras), concessions in the energy sector (production and transmission), the attempt to sell Embraer to foreign capital and the cessation of using the Alcântara Base in Maranhão, attacks on universities and national scientific production, the weakening of labor relations, the increased deforestation and the transfer of public lands, amongst others. All of this makes it difficult to achieve endogenous growth (via import substitution), hinders the creation of new commercial partnerships and ultimately alienates many foreign investors.

Only the most profound crises have enabled major economic and social restructuring. The bases for resuming Brazilian economic growth are still available and need to be activated: basic infrastructure, capital, the domestic market, specialized services, integrated public health system (SUS), active trade, modern banking system, the demand of one third of the population to be included as a consumer of basic consumer goods, scientific capacity (in public institutions, such as universities, Embrapa, IBGE, Fiocruz, Butantã, and in private, such as Embraer, as well as Petrobrás), relative transport infrastructure and urban mobility, high food production capacity, public savings and many others. However, the problem of Brazil, inherited from the power pacts (the basic duality of the Brazilian economy, which Ignácio Rangel speaks of), is currently much more political (and also geopolitical) than economic capacity, such as the inability to deconcentrate wealth and income.

Scientific and technological development, health and education are excellent investment opportunities, which consequently need to be under the protection of the State. The pandemic has highlighted, even more than in the past, the federative dispute between central government and the states and municipalities. Moreover, in Brazil, since the 1988 Federal Constitution, there has been a significant political, administrative and financial decentralization. This dispute is a characteristic of neoliberalism, which has, amongst its ideological and political elements, the autonomy of territories and the expansion of fluidity and territorial competitiveness (SILVEIRA, 2020). In the face of an unprepared central government, the “fight” between the federal units and the Union in controlling the Covid-19 pandemic has become accentuated. States such as Maranhão, have used their autonomy to import respirators and hospital supplies directly from China. The consortium itself carried out by the states of the Northeast demonstrates that this opposition to the federal government is able to reach extreme levels. On the one hand, these attitudes, put into practice by state governments, especially those in the Northeast, are vital for quelling the pandemic. On the other hand however, a “Pandora’s box” is being opened, and this may further fragment the nation’s political and tax scales.

The recovery of the Brazilian economy (and its social gains) depends on internally resuming effective demand. Keynes (1982) highlights that the malfunctioning of capitalism results from a lack of demand, and this characteristic derives from the system’s own deficiency. Effective demand (consumption and investments) is what determines the volume of production and employment. The marginal propensity to consume and the amount of investments are directly related, since the working class has a greater incentive and capacity to consume with rising incomes. The marginal propensity to invest determines the level of employment in the region and/or country. However, the existence of insufficient effective demand (very characteristic in Brazil over recent years) is harmful to the jobs and income of the working class and also inhibits the production process (BELLUZZO; GALÍPOLO, 2017).

According to Rangel (2005 [1980]) and Keynes (1982), the “primary engine” of development - considering the conditions of each country - is related to adequate planning, increased state investments and the strategies adopted to stimulate the increase in the investments of capitalists. However, currently, in Brazil, there is a bottleneck in investments on the part of the State and corporate segments, especially in heavy construction and medium and high technology industries (SCHUMPETER, 2017 [1943]). Thus, when insufficient demand is created to employ the existing productive forces, there are negative impacts on the economy and society, most notably an increase in unemployment and informality and a decrease in income (Graph 3).



Graph 3. Number of formal and informal workers by Brazilian regions (Q1, 2020).

Source: PNAD; IBGE, 2020.

Produced by Rafael Matos Felácio.

In the first quarter of 2020, in the North and Northeastern regions, there were more informal workers than formal, which is a manifestation of the serious economic and social crisis currently in force (Graph 3). However, this precariousness is expressed not only in employment, but also in the public equipment and services aimed at low-income groups.

Keynes (1982) supported the socialization of investments, which may, however, only be realized through a developmentalist and activator policy of the “truly” effective demands, especially public equipment and services. However, this is impossible with the current Brazilian government, partly because there is no interest in building a true condition of national sovereignty. Furthermore, for Keynes, the imbalances inherent in the capitalist economy are not resolved by “market mechanisms”, thus contradicting economic liberalism. In the current moment of crisis, state intervention in the economy is essential, especially to combat the insufficient effective demand and the increase in unemployment, in informality, poverty and inequality.

The policies for socializing investments, along with the need to consider regional specificities, must be part of a national development project. In the case of China, one relevant characteristic is represented by the fact that the socialization

of investments is preceded by efficient planning and by a State that establishes an economic policy favorable to private investments, thus valorizing public-private cooperation. For Rangel (2005 [1980]), institutional changes were necessary in Brazil, in the case, for example, of transferring idle resources to non-idle areas (intersectoral), namely, capital and money, and of reorganizing activities between the State and private initiative. Understanding the dynamics and changes/transformations of the Brazilian and world economy is fundamental for structuring a project-based economy, with positive repercussions on the national economy, society and territory.

One of the main means of reducing unemployment and informality, of reducing poverty and inequality, in order to improve the living conditions of the population, is the socialization of investments, i.e., implementing public policies that may generate medium and long term macroeconomic and positive social effects in Brazil (BELLUZZO; GALÍPOLO, 2017). However, for this to occur, besides the political conditions, continuous, good quality planning is essential, which enables the coordination of strategies and actions involving the different federal entities and the use of resources from the private sector. In this sense, Rangel (2005 [1980]) indicated a number of paths for resuming Brazilian development, emphasizing the importance of investments in economic and social infrastructures. In addition to the investments carried out by the State, it is important to transfer idle resources to the bottleneck nodes - through an instrument of financial intermediation and an efficient legal/judicial framework that stimulates investments in production and infrastructure -, to adequate concessions and public-private partnerships (PPPs) across the country.

In order to combat the pandemic, investments are required in the public health system (SUS, in the Brazilian case), so as to acquire equipment, supplies and vehicles, to hire more specialized professionals, to assemble beds and construct hospitals and health centers, and for information and communication technology (to identify and monitor those infected), amongst other demands. The valorization of SUS is a strategy (or opportunity) to foster economic and social development, enabling the State to become a “major buyer” of health equipment produced inside the country. Brazil has a growing deficit in the trade balance linked to public health, which has accompanied the twenty-year period in the wake of constructing SUS. The deficit jumped from US\$ 3 billion in 1996 to US\$ 12 billion in 2016 (GADELHA, 2018), which reveals, on the one hand, how the governments of Luiz Inácio Lula da Silva and Dilma Rousseff endeavored to expand and equip the system and, on the other hand, its technological fragility, a corollary of economies historically subjected to the neoliberal model.

Currently, at least fifty countries in the world are restricting exports of advanced health products, obviously in favor of meeting domestic needs in times of Covid-19. Some of them have also strategically wagered on developing their own vaccine (China, Russia and Cuba)¹⁶, thereby maintaining technological independence in relation to the big international pharmaceutical companies and within the understanding of the possible seasonality of vaccination (semiannual or annual). In other words, this context would be favorable to forming a national health industrial complex, perhaps resulting from joint ventures with countries more likely to do so in this sector, in addition to investments in research and development and the use of cumulative Brazilian scientific knowledge.

However, the political and institutional conditions of Brazil at the present moment prevent the resumption of effective demand, economic growth and income distribution. Neoliberal politics and ideals of submission have dominated the Brazilian scenario since 2016 (coup/impeachment), preventing the creation of a national development project qualified to combat inequalities internally. In Brazil, despite the recession, many intellectuals, political parties and the current government are faithfully defending neoliberal politics, i.e., going against the process of economic and social development. Indeed, the ideas that they defend cause the job market to become even more precarious, with a significant increase in unemployment and informality. They go so far as to affirm that economic and fiscal adjustment and a cut in investments and workers' rights are necessary and may be mitigated by an increase in informal work, thus revealing the disregard with Brazilian society and economy.

In other historical moments of depression, such as the crises of 1929 and 2008, for example, several countries managed to quell the adverse effects on the economy and society through state interventionism and investments. This occurred in the United States, with the New Deal¹⁷, and, more recently, with China, South Korea, Vietnam, Russia, Germany and others. It is important to valorize public investment, as history has demonstrated its effectiveness for preventive purposes, in order to avoid greater damage in times of economic recession. Therefore, state investments

16. There are, for example, recent resurgences of Covid-19 outbreaks in France, Spain and other countries (with the need for new border closures). In this context, scientific research and the subsequent scale production of a vaccine are strategic actions, which even relate to national sovereignty. It should be mentioned that the first vaccine against the novel coronavirus was registered in Russia on August 11, 2020, and received the name Sputnik V. Brazil also has/would have the installed capacity to develop and produce a vaccine, with the Butantã Institute, Fiocruz, public universities etc.

17. The South Korean government - in addition to the U\$ 78.6 billion made available to combat Covid-19 and stimulate the country's economy in March 2020 - in July of this year announced a new U\$132.9 billion package to stimulate the growth and further modernization of the post-pandemic economy, under the name of New Deal. This plan is intended to make the South Korean economy "more green and digital".

in strategic sectors, such as education, health, housing, transportation, energy, basic sanitation (economic and social infrastructure), are important for combatting pandemics and stimulating economic dynamics within countries.

In the case of Brazil, the resumption of development depends on the State recuperating its role in planning and coordinating macroeconomic policy, through valorizing massive investments in infrastructure and public services. In other words, the way out of the internal crisis is not neoliberal policy, but a national development project that enables a return to creating jobs, fostering income distribution, reducing social and interregional inequalities, advancing in areas such as education, health, housing, sanitation, electricity, transport and urban mobility and valorizing science and technology (universities and public research centers).

This observation, above all, refers to a geopolitical position and consequently, to a confrontation with neoliberalism, i.e., to break away from a subordinate stance regarding imperialism and to establish new political and commercial alliances. However, this has proved impossible under the current government and depends on important changes in the institutional, political, economic, tax/fiscal structures. This, in turn, depends on a successful coalition between the forces of the left (and between the fractions of the left) and the group of representatives from the democratic and national-developmental fields.

3. Final considerations

The spread of Covid-19 is related to the territorial division of labor, in its most diverse scales, materialized in the urban network. This presents hierarchies, replete with systems of movement, with differing intensities and direction of flows. Taking the pandemic into consideration, the current moment requires: 1) combating spatial diffusion (horizontal – so as not to reach new spaces), which signifies reducing social relationships, especially spatial interactions; 2) reducing contagions (vertical - so as not to spread to the population living in a more restricted territorial space); 3) treating patients, which requires certain spatial interactions controlled and protected by the available health security technologies; 4) resolving the economic and social impacts; and 5) creating conditions for macroeconomic recovery.

In this sense, a “war effort” should be undertaken, since the only proven effective manner with which to contain/hinder, or slow down, the spread of Covid-19 - an important action for flattening the infection curve, ensuring availability of hospital beds and time for vaccine development - is, for the time being, the strategic reduction of spatial interactions (certain types of social relationships), while maintaining only those absolutely essential to fighting the virus (care for the sick, social assistance, etc.), and establishing a “basic income” for the vulnerable population.

Thus, strategically mitigating certain types of interactions across transport networks and routes will slow down the spatial spread of novel coronavirus. It should be remembered that the representatives of the Scientific Committee created by the Northeast Consortium affirm that it is essential to strategically suppress the types of circulation capable of increasing contagion in regions and cities with no or few cases of Covid-19.

The pandemic we are currently facing demonstrates the overlap of problems within the public health system, namely: 1) the care and deaths resulting from Covid-19; 2) the lack of professionals and equipment to provide care, especially, for urgent cases (novel coronavirus and other diseases); 3) a reduction in monitoring and caring for patients in general (hypertensive, diabetic, cardiac, cancer patients, tuberculosis, HIV/AIDS, etc.), which aggravates the cases and overloads the system with hospitalizations; 4) an increase in psychological problems within the Brazilian population, mainly related to the epidemic and unemployment; 5) deaths that could have been avoided by creating exclusive hospital spaces for treating Covid-19 and by intensifying hygiene and a greater offer of protective equipment for health professionals¹⁸.

Faced with this scenario, the State needs to act, with the aim of extending social isolation, and creating protection mechanisms, through public policies for the most vulnerable, since they are exposed to the most immediate effects of the pandemic and the economic crisis. Primarily, it is up to the State to expand/equip the public health system and prepare the country on a macroeconomic level, using heterodox economic policies. These must be planned to enhance investments and, consequently, lead to a new level of the socialization of investments in Brazil.

For this, it is important to highlight certain aspects: 1) encouraging consumption through renegotiation and reactivation of credit for individuals and companies at interest close to zero, in line with many recently-adopted international practices; 2) the conditioned use of public constitutional funds, such as the Workers' Assistance Fund (FAT), the Guarantee Fund for Time of Service (FGTS), the Basic Education Development Fund (Fundeb) and the National Health Fund (FNS), all aimed at activating productive forces and expanding health and education systems; 3) the issuance of currency for productive investments and for building assets (infrastructure), thus forcing import substitution, with emphasis

18. It should be mentioned that 77% of the deaths of pregnant women and women who have recently given birth due to Covid-19 occurred in Brazil, between February 26 and June 18, 2020 (TAKEMOTO *et al.*, 2020). TAKEMOTO, M. L. S. *et al.* The Tragedy of COVID-19 in Brazil: 124 Maternal Deaths and Counting. *International Journal of Obstetrics and Gynecology*, 2020. Available at: <https://obgyn.onlinelibrary.wiley.com/doi/abs/10.1002/ijgo.13300>. Viewed on: July 19, 2020.

on a policy of national content; 4) from the State, the transfer of public and private resources to under-invested areas (especially those that demand more labor); and 5) prioritizing international diplomatic relations and creating new commercial ties to maintain a more favorable and diversified trade balance (products with greater national content).

In the face of the economic recession and the Covid-19 pandemic, the promotion of public and private investments in economic and social infrastructures (notably public utility equipment and services) is essential in order to meet the needs, above all, of the low-income population and to generate formal employment. Reestablishing Brazilian economic and social development depends, to a large extent, on qualified State planning (project economics), on the socialization of investments (building hospitals, health centers, schools and public day-care centers; expanding urban public transport, electricity and sanitation in the peripheral areas of the urban space; building houses, etc.) and on increasing effective demand internally.

Considering that, at the moment, Brazil is in the domestic transmission stage of the virus and with one of the worst scenarios in the world in relation to the spread, this situation becomes even more serious for the vulnerable population, since this, in general, refers to people who live in suburban areas, where many residents occupy a reduced space, lack access to adequate infrastructure and hospital care and have difficulty in maintaining isolation, as they depend on informal, precarious work. This scenario has worsened in recent years, as a result of neoliberal policies that have increased inequality throughout the country and strangled investments in strategic areas of social interest.

Nevertheless, President Jair Bolsonaro and his team, particularly the economic team, led by Economy Minister Paulo Guedes, have heavily attacked civil servants, workers and their rights, science and technology, public universities, teachers and state companies. As if this were not enough, they have weakened education, health and public equipment and services (based on a highly conservative, neoliberal policy). These sectors, strategically attacked, are exactly those that have the greatest capacity to face the economic crisis, as well as being the most capable of mitigating the impacts of pandemics, especially that of coronavirus. The neoliberal discourse of austerity and containment of public spending - which has been a “dogma” in Brazil since the 2016 coup d’état and ratified by the Legislative and Executive powers - makes no sense, and prevents the recommencement of the economic activity and the expansion of the economic and social infrastructure.

Thus, Brazil has the capacity, resources and technology to resume its productive capacity and grow. There is also on the international agenda, an intellectual and political movement - stronger in Europe and the United States - called Green New Deal, which focuses on economic growth based on the reduction of economic and social inequalities combined with the fight against climate change through the use of renewable sources and resource efficiency. It would also be seemly, in the near future, to consider the development model coming from China, to discover how these discussions will become part of the field of possibilities, because one possibility, once implemented, becomes reality, and this is why we are able to define reality as a possibility already implemented and possibility as a potential reality (CHEPTULIN, 2004).

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