

Covid-19: Public Policies and Society's Responses



Quality information for refining public policies and saving lives

Policy Briefing Note 18

Pandemic remains severe, public policies fail, and compliance to social distancing decreases. Brazilian tragedy quickly approaches the 100,000 deaths mark. New actions are necessary

Conclusions

- Over 660 thousand lives have been lost and 17 million people have been infected around the world, equivalent to the population of the Netherlands or Ecuador. With almost 100,000 lives lost, Brazil has the second-highest death toll in the world.
- All Brazilian states, without exception, are at the highest risk stages when classified under the criteria of the Harvard Global Health Institute, measured by the 7-day average of new Covid-19 cases.
- 25 states relaxed social distancing measures between May and July. Several state governors have relaxed their policies even with rising infection and death rates, with the 7-day average new daily deaths at least 100% higher in June than in May in 17 states.
- Testing data and state expenditures confirm that most Brazilian states have chosen to use serological tests, also known as rapid tests, not considered the optimal option for accurate diagnoses and controlling the pandemic.
- Public policies adopted by the states were not part of integrated strategies grounded in mass testing programs and tracing infected individuals and their personal contacts.
- Regular production and disclosure of data by the states have improved, albeit still insufficient to design and implement high-quality public policies.

- There was a gradual decline in compliance with stay-at-home orders by the population. Mobility levels in July remained practically the same from mid-March levels.
- The omission of the Federal Government in drafting a national strategy remains at the root of the states' disarticulated responses and community behavior. The WHO recommendations were disregarded as well as the experience of the most successful countries for combating the pandemic.
- Although the results published in this Technical Note signpost a severe situation in Brazil, some policies can still be adopted to improve society's response to the pandemic.
- The recommendations suggested in this Technical Note were inspired by countries with the best effective responses in controlling the pandemic and are in consonance with the recommendations of the Harvard Global Health Institute and the WHO.
- The Solidarity Research Network is aware of the enormous challenge ahead to promote the public debate as the country nears the tragic mark of 100 thousand Covid-19 deaths and believes in the urgent need for further engagement by society to demand better responses from public authorities.

Introduction

In this policy brief we begin discussing the reasons propelling Brazil towards 100 thousand COVID-19 deaths after 5 months of the pandemic. The evolution in the number of cases and deaths in Brazilian states, insufficient testing policies, and the relaxation of social distancing measures, alongside vast deficiencies and inaccuracies in the data hamper the authorities' decision-making process. There is abounding evidence to help us understand the high infection rates and the overwhelming death toll.

States according to the COVID-19 incidence risk

The justifications for relaxing the coronavirus containment measures in the states seek to convey the idea that the pandemic is nearing its end. Nothing could be further from the truth. As Brazil approaches 100 thousand COVID-19 deaths, it is no longer possible to hide the severity of the situation, the high lethality of the pandemic in the country, much less the liability of public authorities for the Brazilian tragedy.

In an attempt to guide and recommend policies for mitigating and suppressing the pandemic¹, the Harvard Global Health Institute released a map classifying regions and localities according to the COVID-19 incidence risk, based on the incidence of new daily cases of the disease per 100 thousand inhabitants (Table 1).

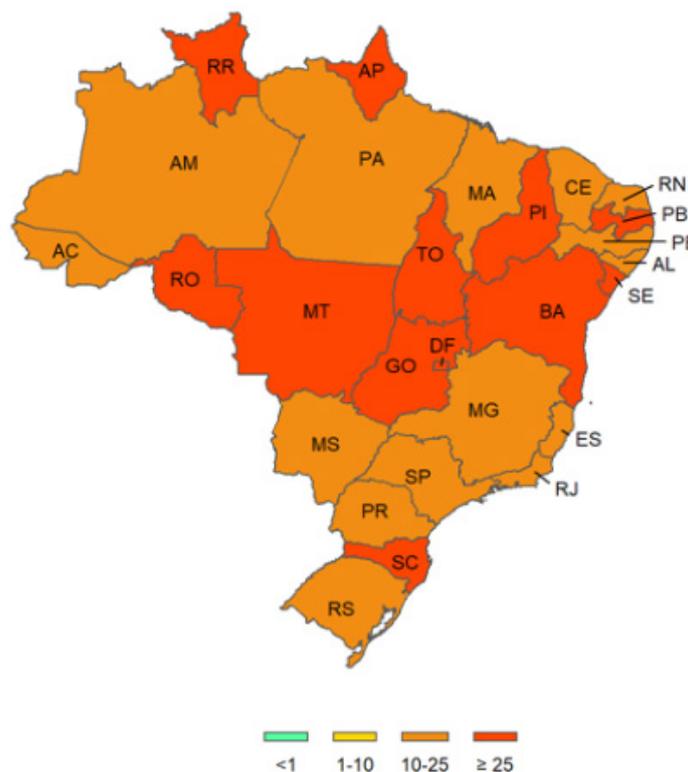
¹ For more information see <https://globalepidemics.org/key-metrics-for-covid-suppression/>.

Table 1 - COVID-19 Risk Levels according to the Incidence of New Daily Cases

Classification	COVID-19 Risk Level	Reference (Daily new cases in last 7 days per 100k inhabitants)
Red	High	>25
Orange	Moderate-high	10<25
Yellow	Moderate-low	1<10
Green	Low	<1

Source: Adapted from the *Harvard Global Health Institute*². Risk levels based on the average of new daily cases in the last 7 days per 100 thousand inhabitants.

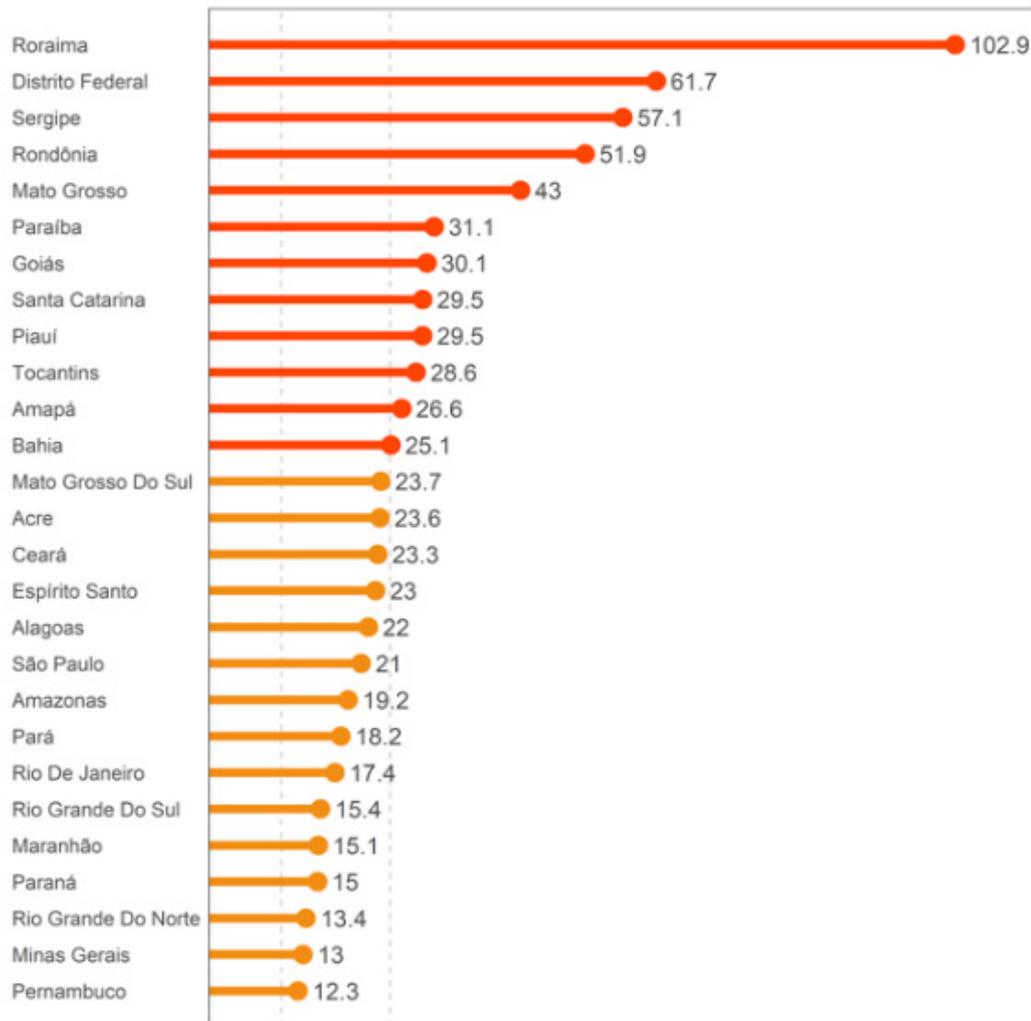
The Solidarity Research Network, based on data from the state health departments on the average number of new COVID-19 cases between July 19 and 25, adapted the Harvard criteria and assessed the risks of an aggravation of the pandemic in Brazil. The results indicate that all Brazilian states, without exception, are in the 2 highest risk zones among the 4 possible risk levels, shown in Figure 1. In other words, after 5 months of the pandemic, there is no Brazilian state with a low or moderate-low risk of spread.

Figure 1 - Brazil: New daily COVID-19 cases per 100,000 inhabitants

Source: Prepared by the authors based on the database compiled by Wesley Cota². Average between July 19 and 25, 2020.

Figure 1 shows that 15 states were at moderate-high risk (orange) and the remaining 11 states, plus Distrito Federal, were at high risk (red) in the week of July 19-25.

² Available at: <<https://github.com/wcota/covid19br>>.

Figure 2 - Moving average of daily new cases per 100,000 people in states and the Federal District

Source: Prepared by the authors based on data from the State Health Secretariats, compiled by Cota (2020)³. Average between July 19 and 25, 2020.

The Harvard Institute also suggests measures for controlling the pandemic based on risk level. Green-level states, in which the pandemic is most controlled, would be on the right path towards containing the infection spread and could further relax social distancing measures, while maintaining testing and tracing programs. Conversely, red represents high-risk situations in which the pandemic has not yet been controlled. In this case, states are advised to adopt stricter social distancing policies for people to stay at home and reduce the spread of the disease. Similarly, orange was used for states threatened with an acceleration in community spread, with the potential to return to the highest risk level. The successful measures for controlling the pandemic were also classified by the Harvard Institute as summarized in Table 2.

³ Available at: <<https://github.com/wcota/covid19br>>.

Table 2 - Pandemic control measures and classification of states according to COVID-19 risk levels

Classification	Covid-19 Risk Level	Reference (Incidence of new cases per 100k inhabitants 7-day moving average)	Intensity of Control Effort Needed	States
Red	High	> 25	Stay-at-home orders necessary.	Roraima, Distrito Federal, Sergipe, Rondônia, Mato Grosso, Paraíba, Goiás, Santa Catarina, Piauí, Tocantins, Amapá e Bahia
Orange	Moderate High	10 < 25	Strategic choices must be made about which package of non-pharmaceutical interventions to use for control. Stay-at-home orders are advised, unless viral testing and contact tracing capacity are implementable at levels meeting surge indicator standards.	Mato Grosso do Sul, Acre, Ceará, Espírito Santo, Alagoas, São Paulo, Amazonas, Pará, Rio de Janeiro, Rio Grande do Sul, Maranhão, Paraná, Rio Grande do Norte, Minas Gerais e Pernambuco
Yellow	Low Moderate	1<10	Strategic choices must be made about which package of non-pharmaceutical interventions to use for control.	
Green	Low	< 1	On track for containment, conditional on continuing use of viral testing and contact tracing for surveillance and to contain spikes and outbreaks.	

Source: The measures are those suggested by the classification system of the Harvard Global Health Institute.

We may further enhance the analysis and classification. Among the high-risk states, Roraima, Sergipe, Rondônia, Mato Grosso, and Distrito Federal reached maximum risk scores (for the week of July 16 to 22), with an average of over 40 new cases per 100 thousand inhabitants. Among the moderate-high risk states, Mato Grosso do Sul, Acre, Ceará, Espírito Santo, Alagoas, and São Paulo had an average of over 20 new cases (per 100 thousand inhabitants) in the aforementioned period, an alarming situation as they were at the threshold of the highest risk level. For these states, therefore, the recommendation would be more restrictive measures to control the pandemic, as summarized in Table 2.

The high infection levels and a death toll nearing 100 thousand people reinforce the need to reevaluate the internationally developed pandemic control strategies, particularly two measures that have proven to be efficient for reducing infection and lethality rates: (i) mass testing, followed by contact tracing and isolation of infected people and their contacts, and (ii) social distancing.

Testing as a strategy for controlling the pandemic

According to guidelines from the WHO and the United States Disease Control Center (WHO, 2020; CDC, 2020), pandemic control depends directly on mass testing, the only way to identify infected individuals and grasp the evolution of the pandemic. The testing strategy also serves to ground decisions about non-pharmacological measures for controlling the pandemic. Molecular RT-PCR tests identify the genetic material of the virus and, therefore, its mass application has been recommended by the WHO as a more effective strategy than serological tests.

Based on data from epidemiological bulletins and dashboards updated by the State Health Departments, we estimated the percentage of positive tests in relation to the total number of tests performed, as well as the positivity rate of RT-PCR tests⁴, as displayed in Table 3⁵. We also included the percentage of state expenditures on testing with RT-PCR and rapid tests (serological) as well as the hiring of tests, according to the data available on the dashboards of the state governments until July 22, 2020. Regarding the obtained information, we emphasize the lack of information on the federal dashboards and platforms on COVID-19 testing during the pandemic, which reduces the quality of our information and limits the analyses for understanding testing efforts in Brazil.

We also analyzed the guidelines issued by state executive authorities and classified them under the following categories: (i) increase in testing capacity, such as purchasing and installing labs; (ii) testing used as a surveillance tool, such as notifications and contact tracing; (iii) mandatory or increased access to tests by frontline professional groups. Table 3 also shows the percentage of guidelines for each category.

Table 3 - Positivity rate of all COVID-19 tests and RT-PCR tests, as well as state expenditures dedicated to RT-PCR tests (as a % of total test expenditures) and the share of guidelines (as a % of all guidelines) issued by state authorities for each category.

State	Positivity Rate		State Government Expenditures	State Guidelines (%)		
	Total Tests	RT-PCR Tests	RT-PCR Tests	Increased testing capacity	Use of tests for surveillance	Mandatory or increased testing for professional groups
Acre	28.78	66.67	86.65	80.00	20.00	0.00
Alagoas	38.77	57.63	21.63	54.55	36.36	9.09
Amazonas	32.55	44.92	20.81	100.00	0.00	0.00
Amapá	36.15	62.50	7.32	100.00	0.00	0.00
Bahia	28.42	66.43	32.26	91.67	8.33	0.00
Ceará	23.65	53.59	58.44	46.67	20.00	33.33
Distrito Federal	25.21	81.80	7.13	90.91	6.06	3.03
Espírito Santo	42.34	64.66	70.02	100.00	0.00	0.00
Goias	39.70	76.33	100.00	60.00	20.00	20.00
Maranhão	24.93	59.38	44.93	50.00	0.00	50.00
Minas Gerais	7.20	57.76	97.21	100.00	0.00	0.00
Mato Grosso do Sul	13.68	54.37	19.46	33.33	66.67	0.00
Mato Grosso	77.41	93.92	11.83	100.00	0.00	0.00
Pará	63.00	45.89	59.32	100.00	0.00	0.00
Paraíba	20.79	47.67	1.56	50.00	50.00	0.00
Pernambuco	24.70	54.57	100.00	100.00	0.00	0.00
Piauí	19.97	73.01	0.59	100.00	0.00	0.00
Paraná	36.72	58.46	71.03	42.86	42.86	14,29
Rio de Janeiro	35.09	55.45	0.00	50.00	50.00	0.00
Rio Grande do Norte	16.50	72.78	78.33	0.00	100.00	0.00
Rondônia	20.07	78.13	0.00	80.00	20.00	0.00
Roraima	20.09	72.73	0.00	50.00	0.00	50.00
Rio Grande do Sul	12.06	58.24	5.15	50.00	50.00	0.00
Santa Catarina	13.89	68.32	54.42	25.00	25.00	50.00
Sergipe	47.51	95.07	0.00	50.00	50.00	0.00
São Paulo	13.67	59.13	51.51	95.00	5.00	0.00
Tocantins	69.48	54.46	0.00	0.00	0.00	0.00

Source: SES. Tests performed between July 5 and 11, made available until July 22 and guidelines issued until June 2020.

As shown in Table 3, not a single Brazilian state obtained a positivity rate of 5% or below, as recommended by the WHO, whether in relation to the total tests performed or RT-PCR testing. Equally noteworthy is that the results regarding the positivity of RT-PCR tests are superior to the positivity of total tests across all states, except Pará and Tocantins. Regarding the amount spent with molecular RT-PCR tests in the total state expenditures on COVID-19 testing, we found that seven states did not disclose information about expenses with tests (zero value in table 3). Nine states incurred expenses exceeding 50% of reported expenditures (Goiás, Minas Gerais, Paraná, Acre, Rio Grande do Norte, Espírito Santo, Ceará, Santa Catarina, and São Paulo). The remaining states clearly prioritized serological tests, capable of detecting those who had prior contact with the virus and produced antibodies but not currently infected people.

Upon analyzing the guidelines issued by state authorities, we observed that only six states (Paraná, Santa Catarina, Alagoas, Ceará, Goiás, and Distrito Federal) issued guidelines addressing the use of tests as epidemiological surveillance tools, in addition to outlining which priority groups should be tested and the increased availability of COVID-19 tests. Significantly, all states issued guidelines for increasing the availability of tests, mainly regarding purchase of tests and supplies, except the states of Santa Catarina, Mata Grosso do Sul, and Rio Grande do Norte. Tocantins did not issue any guidelines regarding testing within the period.

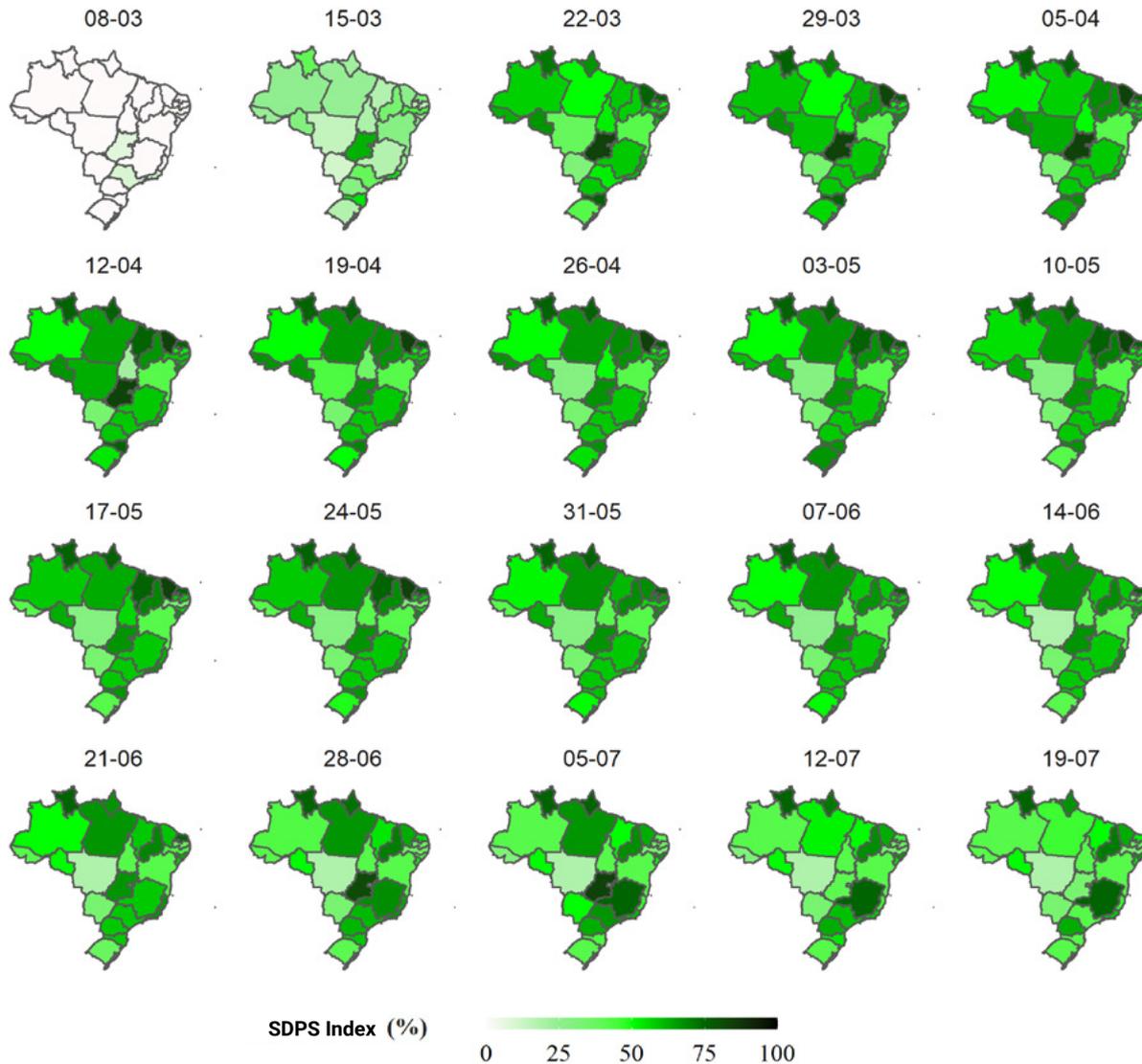
Strategies for Reducing Community Spread

Since our first bulletin and in several issues over the past 4 months, the Solidarity Research Network has been warning about the consequences resulting from the lack of a national pandemic containment strategy and the uncoordinated effort between the federal government and the states, beginning with the relaxation of social distancing policies. Figure 3 updates the application of the Social Distancing Policy Stringency Index for all states and the Federal District, from the beginning of March to July 20⁶.

4 The positivity rate was calculated as follows: $\text{Positivity} = \text{Detectable} / (\text{Detectable} + \text{Not Detectable} + \text{Inconclusive})$, from SIVEP-Gripe. As a reference of an adequate positivity rate, we followed the WHO guidelines which recommends a positivity rate below 5% for 14 days.

5 The data we used refer to: (i) the total number of tests performed and the number of cases; (ii) direct expenditures with testing, whether through purchases or contracts; and (iii) the guidelines issued by state authorities referring to this issue. Data on RT-PCR tests were obtained from SIVEP-Gripe, updated by the Ministry of Health, and published by the OpenDataSUS system (on July 21, 2020).

Figure 3 - Social Distancing Policy Stringency Index for all 26 states and the Federal District (from March to July 20)



Source: CGRT-BRFED (2020). The index ranges from 0 (no stringency) to 100 (highest possible stringency)

Figure 3 shows that after March, with the emergence of the first cases and deaths in São Paulo, all states adopted social distancing measures. The extent of these measures, however, varied between the states, although no Brazilian state adopted highly stringent measures as in other countries. This becomes clear upon comparing the stringency levels of Brazilian cities with Seoul, New York, Buenos Aires, and Madrid.

Relaxation measures adopted as early as June in several Brazilian states have mostly focused on commercial activities and non-essential services. The industry sector was less affected by relaxation as it had not been previously interrupted in most states. The first state to relax some of the non-essential commercial activities was Espírito Santo. Some states, such as São Paulo, enacted harsher measures on agglomerations while easing restrictions on trade and services activities in June. At the end of July,

6 The additive index considers the stringency level of policies that involve the suspension or recommendation to close: a) schools and universities, b) commerce and non-essential services, c) industries and, d) public and private gatherings. Some states have enacted measures to suspend activities across all sectors, except those deemed essential, throughout the state in the entire territory. These were the states that are coded as having the most stringent social distancing measures..

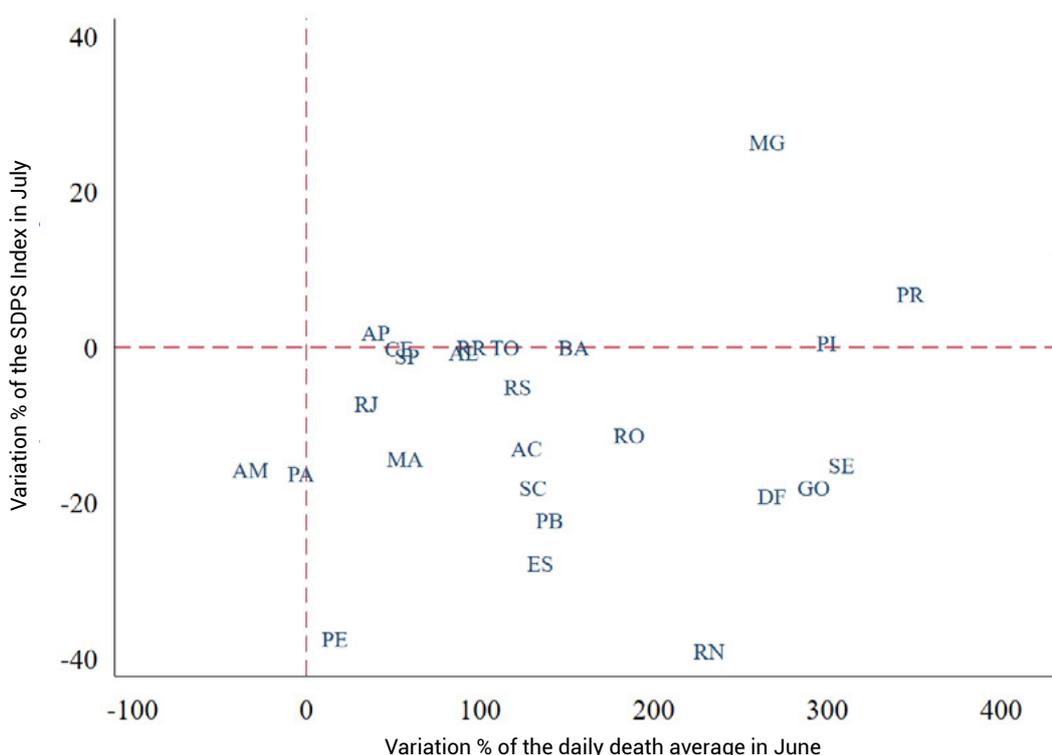
most states upheld the suspension of in-person school classes, although the states of Acre and Goiás entrusted this decision to the municipalities. The states also maintained measures to reduce the large gatherings people in public spaces and in private events, but some states such as Paraíba no longer limit the holding of public events (as long as some preventive measures are respected) since June 12.

The state of Ceará (between March 30 and May 31) and Goiás (between March 25 and April 18) were the states with the highest stringency score (83.3), while the state of Mato Grosso remained at the lowest level (18.7) for the most prolonged period, from June 12 to July 21. Since the onset of the measures in March, the states with the smallest stringency score until July 20 were Mato Grosso, Mato Grosso do Sul, Bahia, Tocantins, and Rio Grande do Sul, with averages between 32 and 48.1. The states with the highest average social distancing stringency policies in the period were Roraima, Ceará, Amapá, Rio Grande do Norte, and Goiás with averages between 75 and 69.6.

Despite the downward trend in deaths in May, June, and July, most states still have a higher average compared to May, which means that, even if declining, deaths are at a higher level when compared to May. Among the 27 Brazilian states, 17 had a daily death average at least 100% higher in June compared to May, among which only three states adopted more stringent measures in July: Minas Gerais, Mato Grosso do Sul, and Paraná. In the other 14 states, some adopted alternating stringency and relaxation measures, such as Goiás, Santa Catarina, and the Federal District in alternate weeks throughout the analyzed period. Bahia, Piauí, and Tocantins maintained relative stability in stringency for July; while Acre, Espírito Santo, Mato Grosso, Paraíba, Rio Grande do Norte, Rondônia, Rio Grande do Sul, and Sergipe reduced stringency, even with an average death rate 100,000 higher than in the previous month.

Only Pará and Amazonas witnessed a drop in deaths in June compared to May. A group of 8 states had an increase in the daily death average between 4% and 82% from May to June. In this group, Roraima, Ceará, São Paulo, Alagoas, and Amapá maintained relatively stable measures for suppressing the pandemic, while Maranhão, Pernambuco, and Rio de Janeiro reduced stringency.

Figure 4 - Variation Percentage of the daily death average (June 2020) vs. Variation Percentage of the Social Distancing Policy Stringency Index (July 2020)



Source: CGRT-BRFED (2020) and Cota (2020) based on epidemiological bulletins from the State Secretariats.

Figure 4 shows the relationship between an increase in deaths in June (horizontal axis) and the variation in social distancing measures (vertical axis) in July compared to the previous month (June 2020). We found that the majority of states relaxed their measures in July compared to June. However, only Amazonas and Pará witnessed a drop in the average monthly deaths in June, which could potentially justify relaxation measures. Thus, even with the increase in the average number of deaths in June compared to May, most governors opted to relax social distancing measures. The case of Mato Grosso is significant, as it witnessed a surge of 1,082% in the number of deaths in June and even amidst this alarming scenario decided to relax social distancing measures. The only states with a significant increase in isolation measures in July were Minas Gerais, Mato Grosso do Sul, and Paraná, all after a strong upsurge in deaths in June.

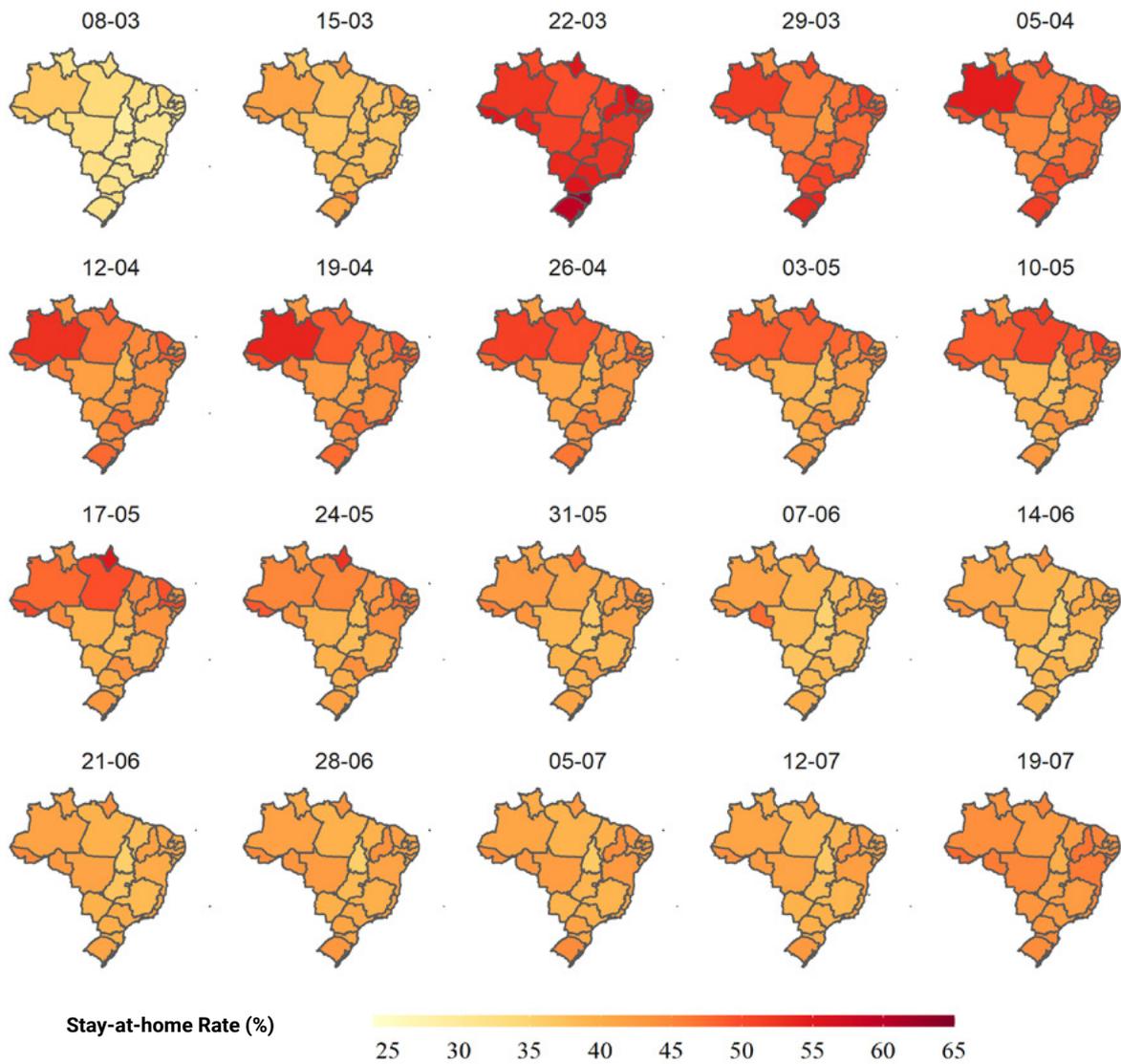
In fact, the data shows that states tend to relax measures more rapidly when the daily death average decreases (100% of states) or remains stable (37%) than increase social distancing stringency when faced with a growth in the death average (17%). In general, despite the increase in the daily death average, the states did not adopt more stringent measures to increase social distancing in July.

Population Adherence to Social Distancing Measures

For our analysis of the population's compliance with social distancing measures, we used the aggregated mobility data on the geolocation of approximately 60 million smartphone users across Brazil, as provided by Inloco⁷. By considering the percentage of cellphones that remain in the same geographic location during the day (from 6 am to 10 pm) as they were during the evening (from 10 pm to 6 am), Figure 5 shows the percentage of all cellphones that stayed at home during the day by state from March to July 20. There was a surge in the number of people who stayed in the same place during the day as they were at night across all states, in the first week after the beginning of social distancing measures. However, albeit counterintuitive, we find that this percentage was not higher in states with more stringent social distancing policies. For example, in the week of March 22 to 28, the state of Goiás recorded the highest average value in the Social Distancing Policy Stringency Index (SDPS) (0.88); on the other hand, on average, the percentage of people who stayed in their homes was 52.5%, lower than in Mato Grosso do Sul, the state in which the social distancing stringency index reached its lowest level (0.33) in the same week, and where, on average, 53.5% of people stayed in their homes during the day.

⁷ Inloco's location data is considered highly accurate as it has an estimated standard error of 2.8 meters for location measurements.

Figure 5 - Stay-at-home rate (in % of smartphones without geographic displacement) across the 26 states and the DF (from March to July 20, 2020)



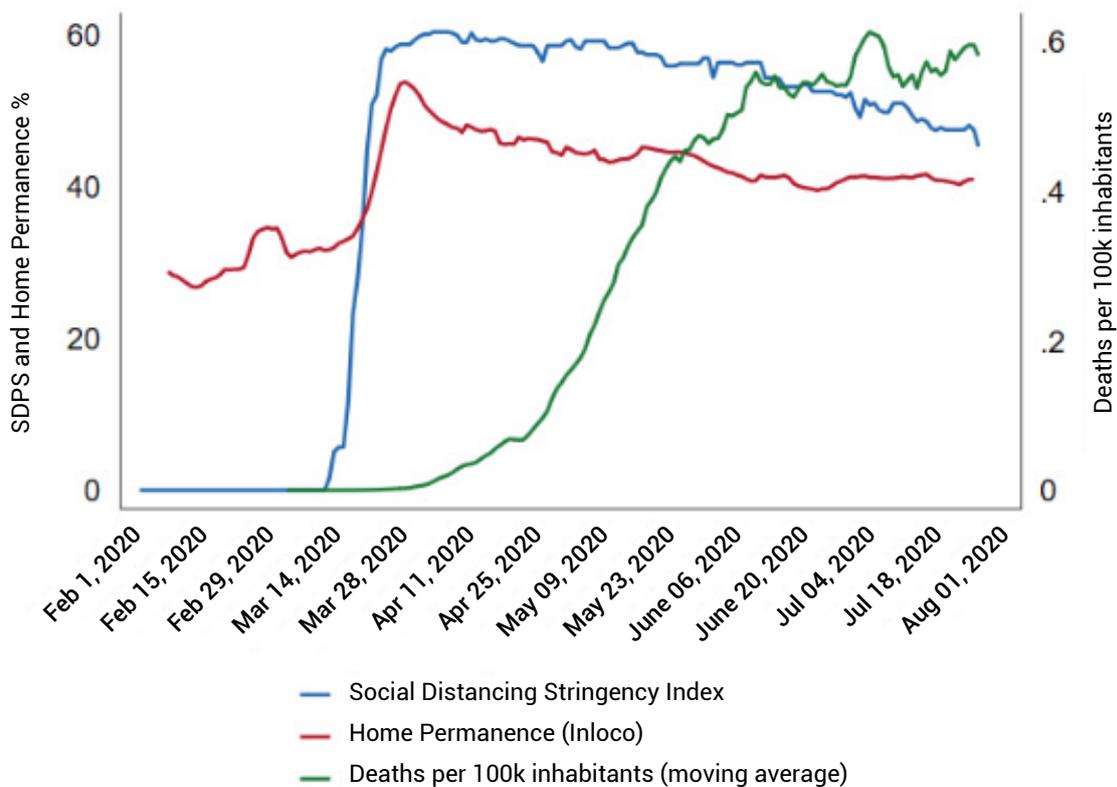
Source: Inloco, 2020.

The results for the state of Mato Grosso reflect a pattern identified throughout the entire period: stay-at-home rates are not considerably higher in states in which social distancing policies were more stringent. Another observed trend concerns the average levels of stay-at-home rates: while compliance to stay-at-home measures increased from 39.2% to 53.7% early on, there is a clear downward trend in the following weeks. The Southeast region emerges as the most active in terms of social distancing policies (68 index in the last measurement) since the second week of June, which stands in contrast with the worst social isolation levels: on average, only 39.96% of people stayed at home. Based on the Gross Value Added (GVA) of 2017, we cannot affirm that the divergent behavior in the states follows the economic structure, since states with a predominantly agricultural economy present isolation rates akin to more industrialized states.

Figure 6 shows the averages of the Social Distancing Stringency Policy (SDPS) index and the mobility of individuals during the day compared to the moving average of deaths per 100 thousand inhabitants in the 26 states and the DF. States adopted moderate policies to increase social distancing in March.

Nonetheless, as the pandemic worsened, rather than expanding measures state governments, in general, gradually relaxed measures over time, even with the nationwide surge in deaths. The increase in deaths was more significant in May and early June and, despite the significant increase in home permanence in March, there was a gradual decrease throughout April, May, and June. In other words, social distancing policies were relaxed alongside drops in isolation levels across all states, as illustrated in Figure 6.

Figure 6 - National Average of the Social Distancing Policy Stringency Index of States, Home Permanence, and Moving Average of Daily Deaths per 100 thousand inhabitants



Source: CGRT-BRFED (2020), Inloco (2020), and Cota (2020) based on epidemiological bulletins published by the State Health Secretariats.

Early Conclusions

- Despite the increase in public declarations about entering the final stage of the pandemic, all Brazilian states find themselves in a high or moderate-high risk situation.
- Public policies adopted by the states were not part of a national strategy, nor were they based on mass testing and contact tracing programs recommended by the WHO and suggested by the experience of other countries more successful in containing the pandemic.
- Insufficient testing in the country and failure to prioritize RT-PCR tests, which represent the most efficient and accurate standard for diagnosing infected individuals, continue to hinder the effectiveness of public policies to control the pandemic.
- Most states have opted for purchases and contracts to increase the number of available tests, but several states have preferred rapid testing. This decision underlines the underuse of RT-PCR tests for epidemiological surveillance, particularly for tracing the contacts of infected people so that they may be adequately instructed and quarantined.
- The states' guidelines have focused on increasing the availability of Covid-19 tests without complementary surveillance measures.
- While states have adopted measures to increase social distancing since March, partial or total relaxation in April, May, June, and July was followed by a significant and constant reduction in compliance to social isolation by the population.
- The lack of robust testing strategies combined with relaxation measures and reduced social distancing helps us to understand the risk faced by Brazilian states and the high death toll.

Recommendations

1. Increase the availability and application of RT-PCR tests to identify infected individuals, especially in states with insufficient structures and equipment to perform this type of testing in suspected cases.
2. Adopt measures that favor tracing, identification, and quarantine of contacts and infected individuals to enable diversified strategies to combat the pandemic.
3. Provide transparency, data, and information to society about the evolution of the pandemic in real-time, including the incidence of the moving average of **new daily cases** by separately identifying RT-PCR and serological tests.
4. Expand monitoring and enforcement of social distancing measures and resume more stringent policies to increase isolation in high-risk states.

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ABOUT

We are over 70 researchers, actively engaged in the task of improving the quality of public policies within federal, state, and municipal governments as they seek to act amidst the Covid-19 crisis to save lives. We dedicate our energies towards rigorous data collection, devising substantial information, formulating indicators, and elaborating models and analyses to monitor and identify pathways for public policies and review the responses presented by the population.

The Solidary Research Network has researchers from all scientific fields (Humanities as well as Exact and Biological Sciences) in Brazil and overseas. For us, the combination of skills and techniques is vital as we face the current pandemic. The challenge ahead is enormous, but it is particularly invigorating. And it would never have come to fruition if it weren't for the generous contribution of private institutions and donors who swiftly answered our calls. We are profoundly grateful to all those who support us.

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