








The COVID-19 pandemic in Brazil built on socioeconomic and political pillars

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The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) spread quickly to a global scale, and on 11 March 2020, the World Health Organization declared coronavirus disease (COVID-19) as a pandemic [1]. The virus is highly transmissible, and cases of COVID-19 have already been reported in 185 countries [2]. Currently, Brazil is the most affected country by the COVID-19 pandemic in South America with over 7.8 million cases and 196,561 deaths on 5 January 2021, and is one of the world's most affected countries, according to Johns Hopkins University [3]. The dynamics of the outbreaks seem highly variable amongst countries [2], and several factors seems to affect the behavior of COVID-19. In Brazil, some of the main contributors to the incidence, fatality and mortality of COVID-19 are socioeconomic factors (Figure 1). Similarly, these same factors were described previously in Brazil following the Zika virus epidemic, which caused microcephaly in children [4]. COVID-19 fatality can be driven by several socioeconomic factors in Brazil, such as the higher incidence of comorbidities due to low income, fewer medical staff, and especially highly trained medical staff, a low number of public health units and limited hospital supplies and equipment.

To deal with the short-term economic consequences of the pandemic, the Brazilian government has implemented emergency aid of 600 reais (equivalent to approximately 106 American dollars) to each low-income family whose monthly income per person does not exceed half the national minimum wage (this equates to 522.5 reais or 92 American dollars), or whose total family income is no more than three times the minimum wage (3,135 reais or 553 American dollars). The emergency aid is aimed to supplement the lack of income resulting from the cessation of work in order to establish a minimal condition of survival for these families while ensuring adherence to the restrictive measures of social distance. However, there are many

issues in the implementation of this aid, which prevents the effectiveness of the scheme. According to surveys carried out, 41% of favela residents did not receive this assistance [5]. As a result, adequate food, and the purchase of individual protective equipment such as masks and sanitizers are even more compromised. To try to overcome this barrier, Brazilians needs to leave home for work or try to find a job, increasing the potential for transmission of SARS-CoV-2. In the favelas of Rio de Janeiro, the virus's fatality rate is 11.2%; and the number of deaths as of 10 December 2020 was 2,901 [6], this is higher than all deaths in Japan, Australia, Denmark or Ireland [3]. It is noteworthy that the fatality rate for the whole of Rio de Janeiro is 6.2%. The main Brazilian health system (SUS) is undergoing a gradual dismantling, and privatization is reducing accessibility [7]. In addition, the Brazilian government has appointed military personnel to important positions in the Health Ministry that may compromise their efficiency. Misguided initiatives such as the hydroxychloroquine recommendation for the treatment of COVID-19 [7] and lack of interest in purchasing vaccines in advanced stages [8] demonstrate governance by political interests rather than for public health. Some federal units have been pressuring the Federal Government of Bolsonaro to build a vaccination plan and make an agreement with several vaccine manufacturers. Unsurprisingly, the neglect of the Federal Government has caused the federal units to take independent initiatives in this field. Moreover, the latest report from the Chamber of Deputies, states that after more than 9 months of the pandemic, Bolsonaro's government did not spend all the money reserved to hire new health professionals, hospital restructuring, field hospitals and diagnostic tests for prisons [9].

A typical factor to a country's COVID-19 mortality rate, and rate of poor outcomes, is the percentage of its population that is elderly [10]. However, in countries with economic problems and low economic capacity,

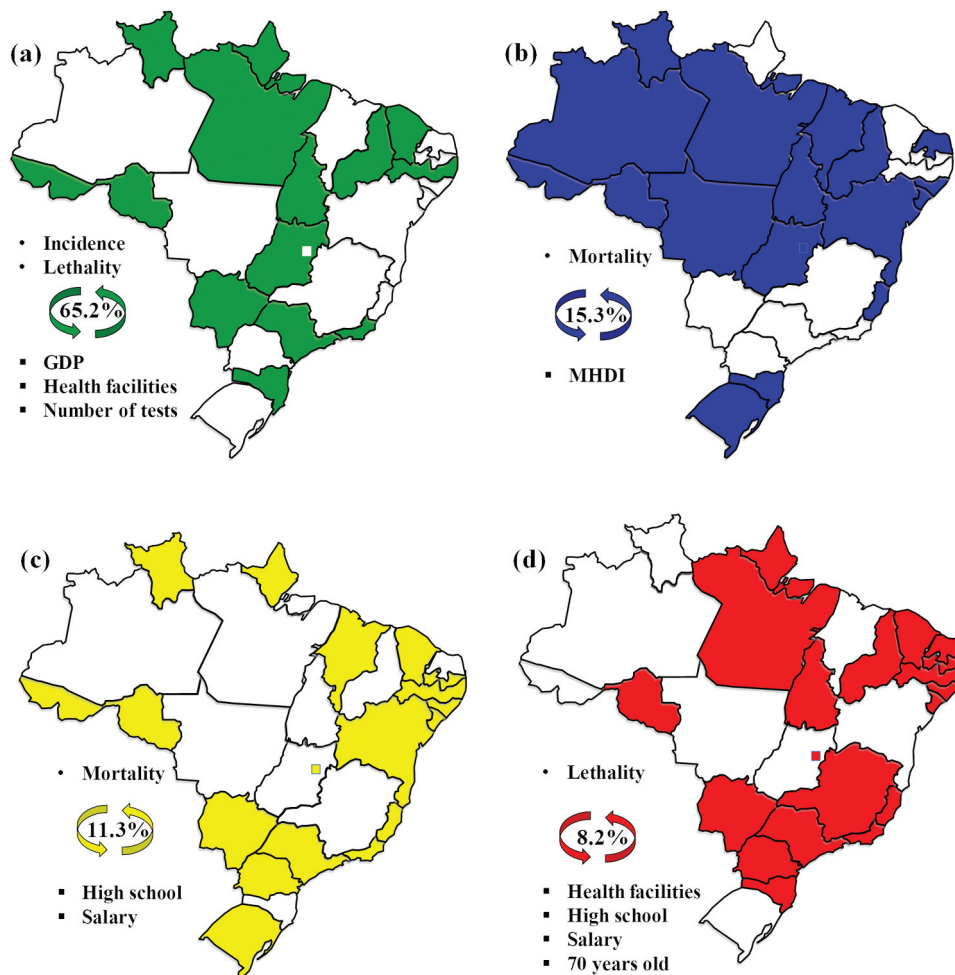


Figure 1. Principal components analysis of the main factors affecting the COVID-19 pandemic in each region of Brazil. Three components explain 51.5% of the variance. The percentage values indicate the numerical intensity of the factors. MHDI: Municipal Human Development Index, GDP: Gross Domestic Product. Data collected from <https://ciis.fmrp.usp.br/covid19/> and <https://cidades.ibge.gov.br/jnf.2020.03.005>.

the high prevalence of diseases is related to the high level of poverty. Socioeconomic difficulties are fuel to the fire caused by diseases, especially when the disease is preventable. In Brazil, the President has always neglected the pandemic by calling it a 'gripezinha' (small flu), and opposes social distancing, wearing a mask and lockdowns. The President's position against lockdowns has always been to alleviate concern about its effect on the country's economy, however, a post-pandemic economic recovery plan has not yet been presented or initiated. Therefore, measures to overcome economic problems which may contribute to the mitigation of future diseases are also being neglected, and thus undermining the country's long-term security.

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References

- [1] World Health Organization WHO. Director-General's opening remarks at the media briefing on COVID-19—11 March 2020. [cited 2020 Apr 29]. Available from: <https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19—11-march-2020>
- [2] Dong E, Du H, Gardner L. An interactive web-based dashboard to track COVID-19 in real time. *Lancet Infect Dis.* 2020;20::533–534.

- [3] Coronavirus Resource Center. Johns Hopkins University. [cited 2021 Jan 5]. Available from: <https://coronavirus.jhu.edu/map.html>
- [4] Souza WV, Albuquerque MFPM, Vazquez E, et al. Microcephaly epidemic related to the Zika virus and living conditions in Recife, Northeast Brazil. *BMC Public Health*. 2018;18:130.
- [5] Redação. Nas favelas, 41% das famílias não conseguiram auxílio emergencial, diz pesquisa. *Brasil de Fato*. [cited 2020 Oct 2]. Available from: <https://www.brasildefato.com.br/2020/06/29/nas-favelas-41-das-familias-nao-conseguiram-auxilio-emergencial-diz-pesquisa>
- [6] Painel Unificador COVID-19 Nas Favelas do Rio de Janeiro. [cited 2020 Dec 10]. Available from: <https://experience.arcgis.com/experience/8b055bf091b742bca021221e8ca73cd7/>
- [7] Ortega F, Orsini M. Governing COVID-19 without government in Brazil: ignorance, neoliberal authoritarianism, and the collapse of public health leadership. *Glob Public Health*. 2020;15:1257–1277.
- [8] UOL. COVID-19. Bolsonaro desautoriza acordo de Pazuello e diz que não comprará CoronaVac. [cited 2020 Oct 2]. Available from: <https://noticias.uol.com.br/politica/ultimas-noticias/2020/10/21/bolsonaro-responde-a-criticas-sobre-vacina-chinesa-nao-sera-comprada.htm>
- [9] IG. Governo Bolsonaro não usa dinheiro aprovado para combate à pandemia. [cited 2020 Dec 16]. Available from: <https://economia.ig.com.br/2020-11-25/governo-bolsonaro-nao-usa-dinheiro-aprovado-para-combate-a-pandemia.html>
- [10] Liu K, Chen Y, Lin R, et al. Clinical features of COVID-19 in elderly patients: A comparison with young and middle-aged patients. *J Infect*. 2020;80:14–18.