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Political discourse, denialism and leadership failure in Brazil's response to COVID-19

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ABSTRACT

The COVID-19 pandemic posed challenges for healthcare systems and political leaders across the globe. In this case study of Brazil, we argue that leadership failings at the highest level contributed to Brazil's relatively high and escalating death rates during 2020. Drawing on an analysis of a large amount of textual documentation drawn from media reports, we emphasise the role and consequences of President Jair Bolsonaro's political discourse and prioritisation of the economy. We focus on the first wave that swept across the globe between January and late June of 2020, arguing that Bolsonaro underplayed the seriousness of the epidemic, leveraged misinformation as a political strategy, promoted pseudoscience, and undermined the Ministry of Health. He also confronted subnational governments for adopting lockdown measures – a move that enabled him to blame regional governors for the short-term economic costs of COVID-19 related restrictions. We suggest that his denialist approach to climate change paved the way for his subsequent denialism of the seriousness of COVID-19 and for his undermining of social distancing, mask-wearing and other preventative responses supported by science. These sobering findings highlight the role that national leaders can play in undermining scientific approaches to both public health and the environment.

Introduction

The COVID-19 pandemic, which originated in China in late 2019, swept across the world in 2020 putting an abrupt end to international travel and prompting widespread country 'lockdowns' by March 2020. Most responses were guided by concerns to prevent hospitals from being overwhelmed and by epidemiological modelling showing that reducing contact between infected people and the broader population can significantly flatten the epidemic curve (Panovska-Griffiths, 2020). With case fatality rates varying from 1 and 7% and fatality rates of those requiring hospitalisation averaging 5% (Vincent & Taccone, 2020), most governments scrambled to reduce infections, but with differing policy measures and urgency.

This prompted the rise of a veritable cottage industry of popular commentary on country successes and failures at limiting COVID-19 death rates. South Korea New Zealand, and Australia became early poster children of sorts for their testing, contact tracing, quarantining and social

distance strategies (Sternlicht, 2020), whereas the U.S.A. and Brazil were criticised for their tardy response, and especially for having populist presidents who delayed and undermined scientifically governed public health responses to COVID-19 (Greer et al., 2021). Russia's reputation was more mixed, as it combined dubious authoritarian approaches with leadership on vaccine development (King & Dudina, 2021).

This paper focuses on the case of Brazil and draws particular attention to the leadership failings at the highest level during the initial response to COVID-19. We pay particular attention to political discourse during the first six months of the pandemic – the first wave that swept across the globe between January and late June of 2020 (Iftimie et al., 2020). This was a critical phase, where uncertainty was high, and where leadership was essential to ensure coordination and trust in government during the initial stages of an infectious disease pandemic (Kunicova, 2020).

We begin by providing background on Brazil's political institutions and the country-wide pandemic response. We then situate Brazil in a comparative context to show that its performance, in terms of COVID-19 death rates, worsened dramatically during 2020 and that by mid-year total deaths per million were significantly higher than predicted by its underlying demographic vulnerability (its obesity rate and share of population over 64). We then focus on the Brazilian political context, highlighting the negative role played by denialism, conspiracy theories, and misinformation at the highest level. The use of 'fake news' and the undermining of scientific authority are populist strategies that have played well in the political arena but have had dire implications for Brazil with respect to both the COVID-19 epidemic and environmental sustainability. We show that denial of science driven by economic interests was a hallmark of Brazil's COVID-19 response – just as it has been with its environmental response.

Our study contributes to a growing intellectual effort to understand how governments have responded to the pandemic (Greer et al., 2021). COVID-19 has highlighted the importance of interdisciplinary analysis for understanding public health threats and their solutions. What literature exists about health policy and politics in low- and middle-income countries is mostly focused on large and slow-moving health outcomes, such as infant mortality (Ramos et al., 2020), but COVID-19 presents exogenous shocks to almost every political and health system in the world. It is essential for public health researchers and social scientists to interrogate how and why governments have responded the way they have, and to investigate how effective these responses have been, what role leadership plays and what lessons we can draw f in preparing for other emerging diseases or pandemics (Greer et al., 2020).

Contextualising government's chief of executive leadership in Brazil

In early March, Brazil's Minister of Health announced the first cases of community transmission (i.e. infections which did not stem from interactions with individuals in foreign countries). On 4 February 2020, the Minister issued Ministerial Decree 188/2020, reporting the outbreak as a 'Public Health Emergency of National Importance'. In striking contrast to the efforts of the Ministry of Health (MoH) and regional governments, President Jair Bolsonaro opted not to follow World Health Organization (WHO) guidelines or evidence-based health policies (Lasco, 2020; Ortega & Orsini, 2020).

Bolsonaro, a populist president, came to power in 2018 through an alliance between economic liberals and social conservatives that helped him win the presidential election in October 2018 (Evans, 2018). Bolsonaro had benefitted politically from the corruption allegations that resulted in the impeachment of President Dilma Rousseff two years earlier, and was able to build on the momentum generated by her successor, Michel Temer, in rolling back Brazil's redistributive welfare state (Teixeira & Pinho, 2018). Bolsonaro's presidential political campaign and his three years in presidency were characterised by pro-market policies and the use of misinformation and anti-science rhetoric to discredit democratic institutions standing in the way of his agenda (Richard & Medeiros, 2020). Notably, his approach to environmental policies framed climate change as

part of an ideological war between the left and right, and between globalist control versus Brazil's sovereignty (Escobar, 2019).

Leaders such as Bolsonaro have been termed right-wing populist. These include President Rodrigo Duterte in the Philippines, former US president Donald Trump, and Matteo Salvini in Italy. Populist are leaders who appeal directly to their constituencies, without formal political inter-mediation (e.g. parties) and where expedient, without basing their policies or programmes in scien-tific or expert knowledge (Putzel, 2020). They claim to speak for ordinary citizens rather than 'elites' and emphasise family values and individual and national autonomy in support of reduced govern-ment regulation. Populists are adept at playing on people's fears, often using misinformation to do so. Particularly important for this study is the fact that modern right wing populists tend to 'reject scientific evidence, to attack independent media, to question judicial independence and to reject multilateral international rules' (Putzel, 2020, p. 421).

Populist leaders in Brazil, the Philippines, and the US (under Donald Trump) sought to dimin-ishing the potential threat posed by the pandemic, often engaging in folksy rhetoric and flamboyant political styles, whilst seeking to transfer blame for deaths and economic disruption to 'others' (e.g. subnational governments or the WHO) (Lasco, 2020). Their ability to shape the national political response was rooted in the political power accorded them by their country's constitution (Greer et al., 2020; Greer et al., 2021) yet the surprising aspect of Brazil's pandemic response is the extent to which it flew in the face of previous national responses to public health crises – notably with regard to the Acquired Human Deficiency Syndrome (AIDS).

Brazil was relatively well prepared for public health crises. National policy leadership is provided through the MoH, and in the case of AIDS, strong national industrial policy support was also lever-aged to support the production of antiretroviral therapies (Nattrass, 2008a, 2008b). Brazil has one of the largest public health infrastructures in the world and over the last three decades, has built a pub-lic health system that covers 75% of the population, with most of the remaining 25% are covered by private health insurance. Elected subnational governments, states, and municipalities, are respon-sible for policy coordination and provision of healthcare respectively. Most hospital treatment is provided by regional governments and is supported by a combination of national and regional funds. This devolved structure was important in providing the MoH and subnational governments with some autonomy to respond and even resist the president on COVID-19. Yet by spreading mis-information, undermining the MoH and delaying the release of national funds, Brazil's controver-sial and flamboyant president undermined, rather than supported, an effective, coordinated response.

Material and methods

In this study we begin by situating Brazil's COVID-19 epidemic in a comparative context to show that its reported COVID-19 deaths were significantly higher than expected given its country charac-teristics. We show trends in deaths per million over time and report the results of two ordinary least squares linear regression models on (logged) reported COVID-19 deaths per million of the popu-lation (obtained from https://ourworldindata.org/coronavirus) for March and June 2020. We restrict the analysis to countries with established epidemics at that time – proxied as having at least 50 recorded deaths from COVID-19. The regressions control for underlying demographic vul-nerability to COVID-19 as proxied by the obesity rate (prevalence of adults with an age-standar-dized Body Mass Index of greater than or equal to 25 obtained from https://www.who.int/gho/ncd/risk_factors/overweight/en/) and the proportion of the population over 64 (obtained from https://data.worldbank.org/indicator/). Obesity is an important marker of co-morbidity (Dietz & Santos-Burgo, 2020) and older people are much more likely to die of COVID-19 than younger people (CDC COVID-19 Response Team, 2020).

Regression residuals (the difference between actual and predicted logged COVID-19 deaths per million) are an indicator of the extent to which a country's performance is better or worse than

expected given its underlying demographic vulnerability. However, as the residual captures data generating errors as well as factors not accounted for in the model such as the nature and extent of government responses, existing health sector capacity, different variants of the virus etc., we classify relatively good and performers as those countries whose residuals are more than one standard deviation below or above the mean respectively. This method was previously used in AIDS research to identify those countries doing better or worse than expected given their country characteristics (Magadi & Desta, 2011; Nattrass, 2008a).

The use of pandemic data to highlight different country performances has clear limitations (Greer et al., 2021) and we focus most of our analytical attention on a qualitative investigation of political discourses and practices employed by Bolsonaro during the crucial early stages of the pandemic.

We analyse a large amount of textual data from the Brazilian media coverage of the pandemic, searching for the keywords 'coronavirus' and 'COVID-19' in the four leading Brazilian newspapers with nationwide coverage: Folha de São Paulo; Estado de São Paulo; O Globo; and Valor Econômico. We identified 7,295 newspaper reports between January and June 2020. These; all of these textual documents constituted the 'corpus' used in our analysis. O Estado de São Paulo is the oldest national newspaper (established in 1875). Folha de São Paulo was established in 1921, O Globo in 1925 and Valor Econômico in 2000. Newspapers can have political biases that might reflect on how messages are framed and who are recipients of this message (Marques et al., 2019). This does not affect our study as the corpus was used to identify the lexical patterns and the Brazilian president's discourses.

We used IRaMuTeQ software because it provides a set of statistical, linguistic, and graphical tools for analysing text and facilitates a mix of qualitative and quantitative analysis (Camargo & Justo, 2013). The software creates clusters of characteristic vocabulary and organises data to illustrate relationships between the clusters (Benites-Lazaro et al., 2017). In this study, we used the IRaMuTeQ' factorial correspondence analysis tool that represents, on a Cartesian plane, the different words and variables associated with each cluster. It assumes that the relationships between the partitions of a text and the linguistic forms used can be reduced to a few factors in most written documents (Camargo & Justo, 2013). Factor analysis is a method for investigating whether a number of variables are linearly related to a smaller number of unobservable factors (Tryfos, 1997). The fundamental intent of factor analysis is to determine the number and nature of latent variables or factors that account for the variance and covariance within a set of observed measures or indicators (Rahmawati et al., 2017).

Results

Figure 1 shows Brazil's COVID-19 deaths per million in comparative perspective. During the early part of 2020, Brazil's deaths per million were below that of North America and Europe, but by mid-year it had shot above them, and by the end of the year the gap had widened further. Brazil's rate was not the highest in the world – indeed, as of 30 June 2020, there were 13 countries including the US, the United Kingdom, Belgium, Spain, and Italy with higher deaths per million. Yet many of these countries were more demographically vulnerable to higher death rates than Brazil given their higher levels of adult obesity and greater share of the population aged over 64. Our regressions thus control for these underlying conditions, allowing us to ask in effect whether Brazil's performance was better or worse than would be predicted by its demographic vulnerability.

Table 1 presents the results of the regressions on logged total deaths per million from COVID-19 for 31 March 2020 and 30 June 2020. They show that demographic vulnerability accounted for about half of total cross-country variation in logged total COVID-19 deaths per million. Figure 2 plots the regression residuals which show that Brazil went from having a significantly lower than predicted death rate in March 2020 (that is, having a residual more than one standard deviation below the mean) during the early stages of the global pandemic to having a significantly higher
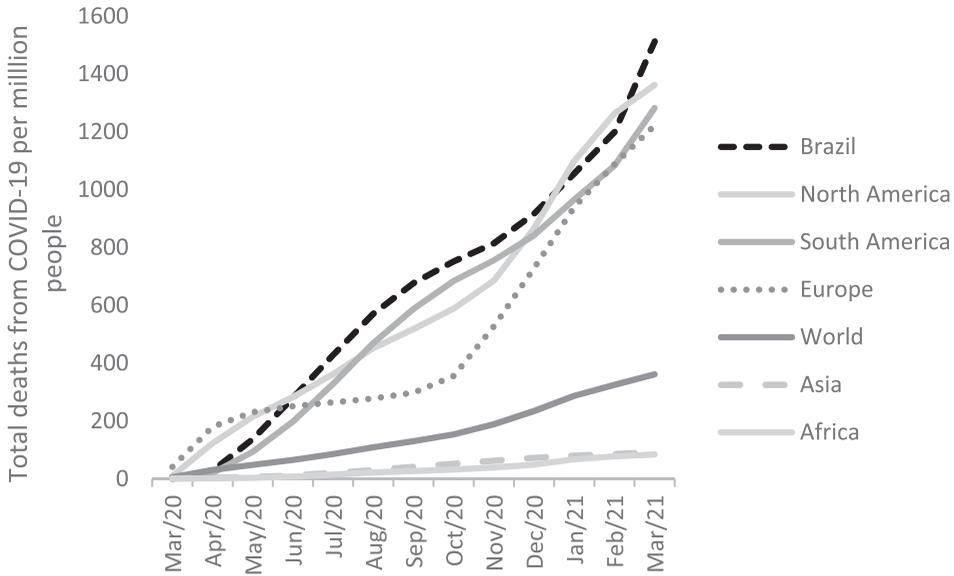
Figure 1. Total deaths from COVID-19 per million people (March 2020 to March 2021). Source: Constructed from data available from Our World in Data: https://github.com/owid/covid-19-data/tree/master/public/data (data downloaded 10 April 2021).

than expected death rate three months later. In unlogged terms, this represents a shift from 5 deaths per million lower than predicted as of March, to 237 deaths per million higher than predicted in June.

The result of the textual analysis helps shed light on some of the political reasons behind this disappointing trajectory. Looking into the textual data from the Brazilian media coverage on the COVID-19 pandemic, we start getting a better sense of the key political discourses during this period. Figure 3 shows the factor correspondence analysis that associates texts with modalities of a single characterisation variable and provides the most characteristic text segments for each cluster. In this case the corpus from Brazilian media was classified into four clusters. They are represented on two axes. Next to the centre of the two axes, we find the theme 'social distancing'. The horizontal axis divides the corpus into two themes 'Bolsonaro' (related to the Brazilian president) positioned at the top, and 'Social distancing.' Below the horizontal axis are the 'COVID-19 pandemic' (left) and 'Economy' (right).

We then narrow the focus onto the Brazilian president's discourses. Figure 4 presents the sub-cluster extracted from the cluster 'Bolsonaro' (Figure 3). We circled in red some words uttered by the government that minimised the seriousness of the pandemic such as 'little flu,' 'hysteria,'

Table 1. Deaths per million as a function of underlying demographic vulnerability (obesity rate and percent of population over 64).

Dependent variable: Log of total reported COVID-19 deaths per 1 million (for countries with at least 50 deaths from COVID-19 at the time)	Regression 1 31 March 2020	Regression 2 30 June 2020
Obesity rate	0.076** (0.019)	0.063*** (0.017)
Proportion of the population above 64	.105* (0.040)	.064*** (0.04)
Constant	−3.403** (1.156)	−3.84*** (0.403)
N	26	96
Adjusted R-squared	0.490	0.531
Prob > F	0.000	0.000
Breusch-Pagan / Cook-Weisberg test for heteroskedasticityProb > chi2	0.479	0.116
Mean VIF	1.02	1.17

$*p < 0.05$, $**p < 0.01$, $***p < 0.001$ (standard errors in parentheses).
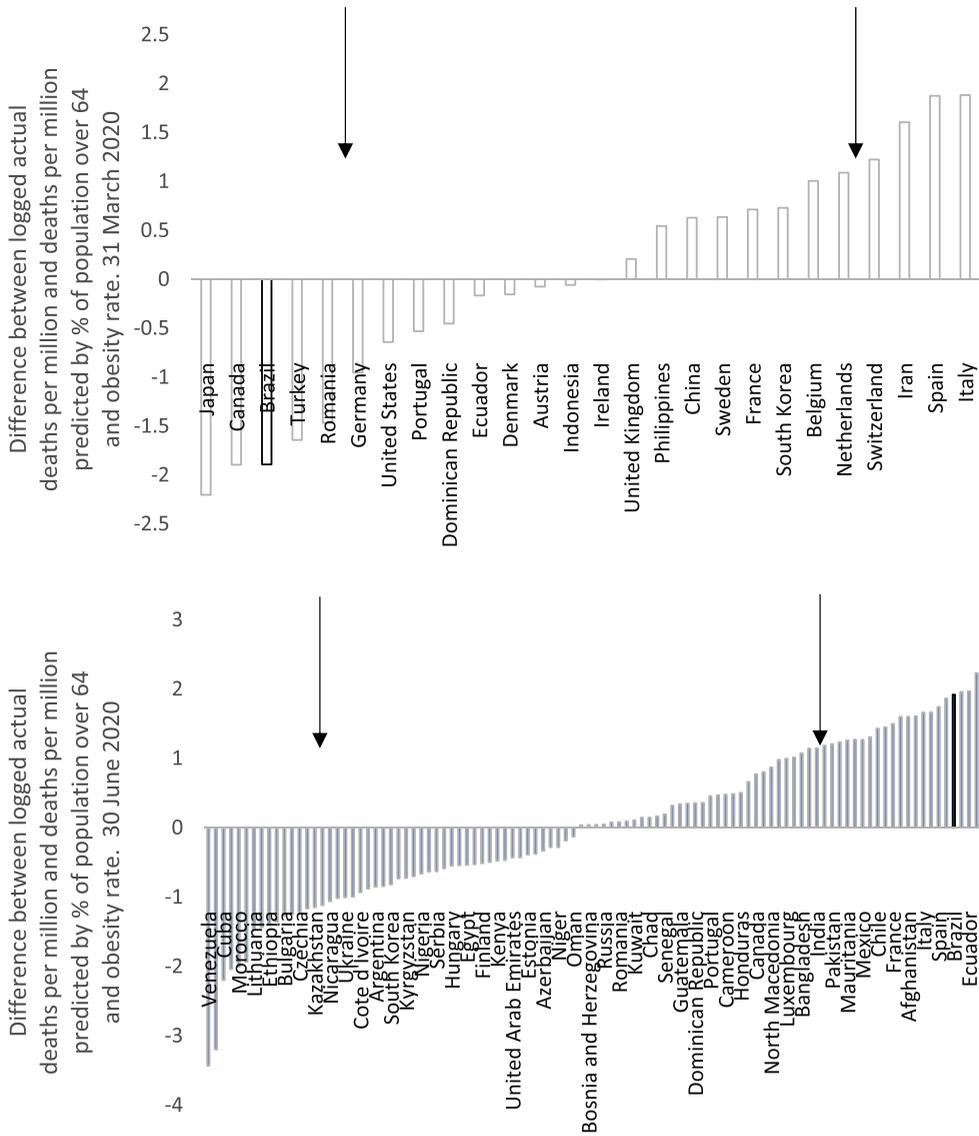
Figure 2. Residuals from Regressions 1and 2. The arrows indicate one standard deviation above and below the mean.

'criticize,' 'crowding,' (and which encouraged his supporters to protest against social distancing measures), and the word 'fake' linked to word 'Bolsonaro.' The Figure also shows a sub-cluster at the bottom, circled in red with words such as, 'Doria', 'governor', 'closure'. These indicate the confrontations that Bolsonaro had with regional governors who had decreed lockdowns in their states and municipalities. From this sub-cluster we extracted Bolsonaro's speeches to provide greater context.

Discussion

Bolsonaro and the false economy dilemma

President Bolsonaro's response to COVID-19 was associated with consistent prioritisation of the economy and the interests of capitalists. Like the other American populist president at the time,
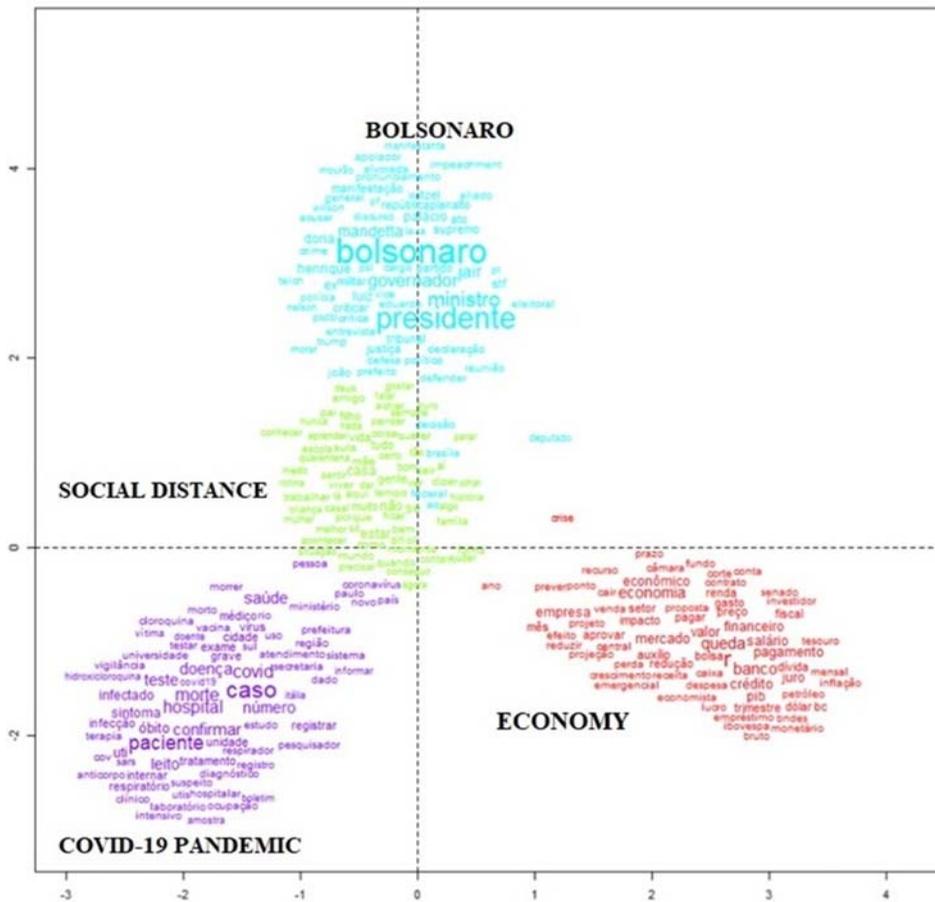
Figure 3. Factorial correspondence analysis representation from the Brazilian media corpus on coronavirus/COVID-19.

Donald Trump, Bolsonaro was keen not to 'stop' the national economy. Like Trump, he had also gained notoriety for supporting protests against government lockdowns, for touting unproven medicines (notably hydroxychloroquine) and for downplaying the seriousness of COVID=19, even vocally opposing state governors' decisions to impose social distance measures.

Since 2015 economic crises and austerity policies in Brazil had severely constrained public expenditure (Deweck et al., 2018). Paulo Guedes, an investment banker and minister of economy since 2019, was important politically for Bolsonaro by providing a 'seal of approval' for his pro-market policies as well as helping removing 'the stain of a possible affinity for 'statism' created by Bolsonaro's career in the military' (Evans, 2018, p. 50). Austerity has been justified in political terms since 2015 as necessary to avoid hyper-inflation and to promote private investment. Bolsonaro's political discourses reflected similar sentiments and during 2020 he used them as a weapon against COVID-19 measures that restricted economic activity in the short term.

From our results we extracted Bolsonaro's discourses reflecting concern for the economy rather than health, and opposition to governors who adopted lockdown measures:

> "People are being hysterical," he said. "If the economy sinks, Brazil sinks with it. And what interests do these political leaders have? If the economy ends, any government whatsoever comes to an end. (Estado de Sao Paulo – 17/March/2020)

Figure 4. Sub-cluster from Bolsonaro cluster.

Minimizar	Minimize	Ataque	Attack	Carreata	Motorcade
Autoritário	Authoritarian	Contradizer	Contradict	Restrição	Restriction
Histeria	Hysteria	Irresponsável	Irresponsible	Saúde	Health
Corrupção	Corruption	Distanciamento	Distancing	Afastamento	Fired
Negar	To deny	Isolamento	Isolation	Povo	People
Gripezinha	Little flu	Aglomeração	Crowding	Convocar	Summon up
Ignorar	To ignore	Manifestação	Manifestation	Ameaça	Threat

"In my opinion, there was too much concern with only one issue [health] and I couldn't not worry about the other [economy]". (Folha de Sao Paulo 25/June/2020)

"We regret that, sooner or later, this [social distancing] is going to have an influence what we import, even on the bread [we eat], the wheat. It's going to have an influence". (O Globo 27/February/2020)

It is important to note that the COVID-19 pandemic struck Brazil during an economic crisis that was already demanding increased social expenditure. President Bolsonaro persistently implied that there was a trade-off between measures to contain the epidemic (that would either restrict economic activities through social distancing and lockdowns or threaten his austerity approach by requiring increased government spending) and economic growth. There were clear echoes between this and his claims that there is a trade-off between environmental regulation and economic growth. Bolsonaro had previously argued that environmental regulations should be relaxed to stimulate economic growth and that, because nature reserves 'hinder development,' it would be better for Brazil to have fewer national parks (Simões, 2020). For example, in 2019, in addition to his austerity policies, Bolsonaro cut USD 46.36 million from the Ministry of the Environment and other relevant conservation programmes, threatening the monitoring and supervision initiatives necessary for preserving the Amazon forest (de Area Leão Pereira et al., 2019). Critics countered that Bolsonaro was promoting a false dilemma on the grounds that sustained economic growth requires a sustainable environment, a healthy population and government-financed social infrastructure including welfare and education.

Diminishing the importance of social distancing

The relationship between the topics 'Bolsonaro' and 'Social distancing' reflects the Brazilian president's discourses against this measure. We extracted some of these discourses:

> "If I decided to shake hands with people, I'm sorry. I didn't summon the people out onto the streets. I have every right [to shake their hands]". (Valor Econômico 16/March/2020)

> "In recent days we've had a governor who wanted to prevent people from going to the beach. Not only did it fail, but the number of people on the beaches increased." (Folha de São Paulo 18/March/2020)

> "A few state and local authorities have to abandon this 'scorched earth' concept; banning public transport, closing down trade and mass confinement" (O Globo – 24/March/2020)

> "I've got the constitutional right to come and go [as I please]. No one's going to hinder my freedom to come and go." (Valor Econômico 10/April/2020)

Despite the president's preferences, the MoH and most subnational governors initially remained firm in support of social distancing, business closures, and warning against untested treatments. Between March and May 2020, officials from the MoH held daily press conferences to provide updates on pandemic-related statistics and the decisions taken at the federal level. This was intended as a means of informing the population and to build compliance with the initiatives taken in response to COVID-19.

President Bolsonaro's skeptical position on COVID-19 led to an unprecedented degree of pressure on the MoH to avoid supporting social distancing measures and to advocate for the use of experimental (and controversial) treatments such as chloroquine. The MoH did not issue any national lockdown, social-distancing, or stay-at-home orders. Given the president's approach to the pandemic, it was difficult for the MoH to coordinate a response with state governments that were willing to follow WHO pandemic guidelines. Conflict between the President and the MoH, particularly, related to social distancing measures and other scientific recommendations, led to the replacement of two health ministers during this period, and thus instability in this institution.

Bolsonaro dismissed the health minister, Henrique Mandetta, after Mandetta called for the government to speak with one voice about social distancing – an implicit criticism of Bolsonaro (Coletta et al., 2020). In April 2020, Bolsonaro's supporters comprised the governors of four states, part of the military forces, and some government officials such as the Ministry of International Relations and some extreme-right wing groups. It also included local businessmen from different sectors such as large retailers, the food industry, the fitness industry and agribusiness; which later on became less supportive of the president, as we shall see (Wanzeller & Rios, 2020).

Bolsonaro's attempts to open the economy in the interests of business were contested. Notably, the Supreme Court banned a social media campaign prepared by presidential staff voicing opposition to the states' social distancing initiatives with the slogan 'Brazil cannot stop.'[1] Figure 4 shows the words 'injunction' (supreme court's preliminary order), 'justice,' 'court,' 'supreme,' 'STJ'. All of these refer to the Supreme Court's role in forbidding Bolsonaro from interfering in decisions by states and municipalities regarding the restriction of services and the movement of people during the coronavirus pandemic.

Denialism and simplification of the pandemic

From the topic 'Bolsonaro', we extracted key discourses about denial and the underplaying of the seriousness of the pandemic such as discrediting epidemiological findings and expressing disbelief over reported COVID-19 deaths. Here are some examples:

> "I don't believe those numbers" (O Globo – 27/March/2020)

Brazilians have to be studied. They don't catch anything. You see that guy jumping in sewage over there. He comes out, he dives back in and nothing happens to him. (Folha de São Paulo 26/March/2020)

"Even though the new coronavirus crisis may get worse, there's no reason to panic". (Estado de São Paulo 06/Mar/2020)

"Much of what we have here is a lot of fantasy … .this question of the coronavirus. It's not all that the mainstream media are saying about it". (Folha de São Paulo 10/March/2020)

To gain more control over the MoH, Bolsonaro appointed the active-duty army general Eduardo Pazuello as health minister. Pazuello took steps to disguise the reality of what was happening and was silent about social distancing measures. In June 2020, Pazuello made the controversial decision to reformulate the disclosure of epidemiological data, releasing only information about the number of deaths and confirmed cases in the previous 24 h rather than the number of accumulated deaths and infections (Machado & Fernandes, 2020). In response, a consortium of State Health Secretariats and a pool of media organisations established an online e-panel that was updated every day to monitor and compare the official data provided by the MoH with those provided by regional governments (G1, 2020a). Pazuello's decision was subsequently repealed by Brazil's Supreme Court.

It is worth noting that attempts to disguise reality were already evident in Brazil's environmental policies. In 2019, the environment minister, Ricardo Salles, dismissed the head of the National Institute of Space Research, Ricardo Galvão, because Galvão had warned about increases in deforestation (Monteiro, 2020). A well-known scientist, later recognised by the journal Nature in its list of top scientists in 2019 (Tollefson, 2019), Galvão had complained about the federal government's policies and made visible the way scientific advice on environmental policy and deforestation data were being pushed aside for political and ideological reasons. Reflecting the populist play-book, Bolsonaro in turn declared that Galvão had released data with the intention of harming the name of Brazil and its government (Londoño, 2019).

Misuse of science

There are other dimensions to Bolsonaro's political rhetoric and strategy including 'misusing scientific evidence' and 'blame avoidance'. He has a track record of using both misinformation and denialism as a political weapon to mobilise fear and prejudice through social media and to leverage support from conservative and anti-democratic groupings (Richard & Medeiros, 2020). Denialism can be understood as an attempt to keep 'uncomfortable knowledge' at bay (Rayner, 2012). This was certainly applicable to Bolsonaro who clearly perceived COVID-19 as a threat to his prioritisation of economic growth. Denialism has also been associated with 'fake' experts and pseudoscience (Diethelm & McKee, 2008; Nattrass, 2012). Nattrass (2012) has argued that AIDS denialists often engaged in a twin strategy of undermining the science of HIV/AIDS whilst promoting untested pseudo-scientific treatments – and that this was evident in South Africa under President Mbeki. A similar pattern was evident in Brazil through Bolsonaro's promotion of pseudoscience in touting easy solutions or treatments. This allowed him to keep pushing his keep-the-economy open agenda whilst portraying him also as a fixer.

Bolsonaro's initial response was to describe COVID-19 as a 'small flu' and a fantasy, and to draw on discredited or incomplete 'science' to justify limited government intervention. Some examples of these discourse are:

"And all countries are going to be free of the pandemic when 70% [of the people] have been infected and get the antibodies."(O Globo – 03/April/2020)

"As [the virus] is coming, it has to be diluted. Instead of part of the population being infected over a period of two or three months, let's [make sure] it's over six, seven, or eight months" (O Globo – 17/March/2020)

"According to the people we've been talking to, this treatment (with hydroxychloroquine), which started here in Brazil, has to be administered up until day four or five of the first symptoms appearing". (O Globo – 08/April/2020)

"When young people up to 40 contract the virus, In principle they're not going to have a problem. Now let's suppose these young people get infected now, it would be a barrier in the future for not transmitting the virus to the elderly." (O Globo – 01/April/2020)

Bolsonaro also supported initiatives such as 'vertical isolation', which means quarantine only for the elderly, in a misinterpretation of some models and other studies that were available only as pre-prints (Chikina & Pegden, 2020). By using non-peer reviewed papers and making strong statements without empirical evidence, Bolsonaro and his associates gave a patina of scientific respectability to their construction of a moral economy narrative framed around the right to earn a living: 'Measures taken by some governors and some mayors were excessive because they hit the wheels of the economy'.

In April 2020 Bolsonaro began an aggressive campaign in support of the use of chloroquine and hydroxychloroquine to treat COVID-19 patients. Such strong advocacy was against the advice of Minister Mandetta, who was subsequently fired and replaced by a respected physician, Nelson Teich (Mazui, 2020). Teich also resisted President Bolsonaro's plans to adjust the clinical protocols for COVID-19 treatment and resigned less than a month after taking the position (Verdélio, 2020). Such disputes spread confusion and contradictory recommendations on how to deal with the COVID-19.

Conventional scientific advice, especially where this was seen as eroding the short-term ability of business to earn a profit, was undermined or ignored. In this regard, there were strong echoes, once again, with Bolsonaro's discursive framing of environmental policies. His Environmental Minister, Ricardo Salles, who is a strong supporter of commercial farming and mining on protected indigenous reserves, argued that global warming is a 'secondary issue', that environmental fines are 'ideological' and (Phillips, 2018). Similarly, the foreign affairs minister, Ernesto Araujo, declared that climate change is a 'Marxist conspiracy' to suppress western economies and promote the growth of China (Watts, 2018).

Nattrass (2012) has argued that such 'conspiratorial moves' work discursively to discredit science and to pave the way for untested claims and therapies. Richard and Medeiros (2020) argue similarly that Bolsonaro's use of anti-science rhetoric, accompanied by 'massive and orchestrated misinformation,' functioned as a political weapon during his 2018 election campaign. A consequence was that

during this period, anti-scientific theories that had no relevance in Brazil (for example, flat earth theories or negation of climate change) acquired strong advocates on the national level and paved the way for the dangerous equivalence between opinion and science. (Richard and Medeiros, 2020, p. 5).

Politically, this encouraged Bolsonaro's followers to understand his disregard of science as a courageous break with 'the system' rather than 'simple populist pyrotechnics' (Richard and Medeiros, 2020, p. 6).

Blame avoidance

Finally, it is important to recognise the regional political dimension of Bolsonaro's response to COVID-19 and his ongoing conflict with regional governors, including his conflict with the presidential-hopeful and governor of Sao Paulo (Fonseca et al., 2021). Important resistance to Bolsonaro came from state governors, particularly from Sao Paulo – Brazil's important financial centre, richest, and most populous state – whose governor gained visibility in responding to the pandemic in the absence of a coordinated national response.

In mid-April 2020, Brazil's Supreme Court ruled that states and municipalities may enforce their own social distancing measures and that the federal government cannot reverse such decisions. This

allowed governors to fill the void, at least in part, left by the ineffective federal government response (though they also had to rely on Congress to ensure they received adequate funding). The ruling gave greater autonomy to subnational governments, but it also provided Bolsonaro with an opportunity for blame-avoidance. He stated on many occasions that governors and mayors were responsible for the consequences of quarantine measures, claiming that regional leaders' decisions to shut down non-essential activities would have catastrophic consequences 'far worse than the coronavirus' and that such individuals would be held accountable along with the Supreme Court (Coletta et al., 2020). Bolsonaro, ignored such arguments, opting instead to make political capital by blaming the short-term costs on governors:

> "In my opinion, there are some governors - I might even be wrong - who are taking measures that are going to do a lot of harm to our economy." (O Globo – 17/March/2020)

> "What a few governors and mayors are doing in Brazil is a crime. They're smashing up the country; they're destroying jobs." (O Globo – 25/March/2020)

> "Are people dying? They are. Do I regret it? Yes I do, I'm sorry. A lot of people are going to die, a lot, but a lot more will die if the economy continues being destroyed by these measures (coming from local government)." (O Globo – 14/May/2020)

> "The people are soon going to find out that they've been deceived by these governors and by a large part of the media with regard to this matter of the coronavirus." (Folha de São Paulo – 22/March/2020)

Conclusion

Our empirical analysis confirms that Brazil's COVID-19 epidemic worsened dramatically during the course of 2020 and that its COVID-19 deaths per million by mid-year were significantly higher than predicted by its underlying demographic vulnerability. Our political discussion and discursive analysis support the argument that President Bolsonaro undermined the country's response and likely exacerbated the epidemic. Our contribution to the emerging literature on the political dimensions of COVID-19 is twofold:

First, we analysed Bolsonaro's discourses in a systematic way, complementing many observers' characterisation of Brazil's response to the COVID-19 pandemic as weak and undermined by the controversial and disruptive behaviour of President Bolsonaro. We also drew attention to the discursive frames that shaped the debate around this crisis: the false dilemma of economic catastrophe, denialism, diminishing the importance of social distancing, misuse of science, and blame. In so doing, our findings support Lasco's (2020) analysis of Bolsonaro's medical populism – that is, the political style of responding to public health crises that pits 'the people' against 'the establishment.' By disaggregating Bolsonaro's discourses, we were able to better understand how the COVID-19 pandemic was framed at the highest level in Brazil during the first wave of the epidemic.

Second, we highlighted the role of denialism and related conspiratorial moves against science. The denial or marginalisation of scientific advice works politically to undermine the legitimacy of scientific expertise and associated institutions – thereby undermining these alternative sources of influence and power. Fortunately, in the case of Brazil, the federal political system provided space for regional governors to mount scientifically based responses to COVID-19 and to push back against the president's denialism.

Bolsonaro's denialist approach to COVID-19 reflected his earlier stance on climate change. His environmental discourses assert that environmental considerations should not be allowed to inhibit industry and have been framed by the assumption that concerns about climate change are alarmist and that they may even be a foreign plot to prevent Brazil from developing. This is not much different from ignoring scientific expertise during the COVID-19 pandemic and in presenting a similarly false trade-off between health and economic growth. However, in contrast to climate change, it proved difficult for Bolsonaro to deny the immediate reality of an increasing death rate and the

onset of economic recession. His strategy thus evolved to shift the blame for slower economic growth onto governors seeking to respond more emphatically to COVID-19. Undermining science, firing expert government officials, and discrediting data delayed a response to climate change in a way similar to the Brazilian national government's response to COVID-19 (Associated Press, 2020; Watts, 2018). The consequence, however, was the sadly mounting number of unnecessary deaths and Brazil's humiliating title as the epicentre of the pandemic in Latin America.

In 2021, a year after the first case was diagnosed, Brazil was one of the countries most affected by the pandemic, with several variants of coronavirus identified, including the P.1 variant that appears more contagious (Sabino et al., 2021). After months of fast and sustained transmission, with a major impact upon the health system and the very fabric of the Brazilian society, the time-varying reproduction number was slightly below 1 as of May 31 (based on figures available at that time, i.e. 16,841,408 cases and 470,842 deaths).[2] Brazil began its COVID-19 vaccination rollout on 17 January 2021, yet president Bolsonaro continued his misinformation discourse. In December, Bolsonaro declared that he would not take the vaccine and 'if you turn into a crocodile, it's your problem', with regard to possible side effects of Pfizer's vaccine (Daniels, 2021). In April 2021, Brazil's Congress launched an inquiry into the federal government response to COVID-19, including questions about the president's strategies and discourses (Marcello and Boadle 2021).

Under Bolsonaro government, the destruction of the Amazon rainforest accelerated, assisted by Bolsonaro's denial of the dangers posed by unchecked fires and his support for primary economic development based on unsustainable natural resource extraction in the area. If Brazil's contested strategy on COVID-19 consolidates around Bolsonaro's pseudoscientific approach, it is likely that Brazil will continue to ignore international coordination efforts based on scientific evidence to respond to future public health crises and to protect the environment.

Bolsonaro's actions have implications not only for dealing with epidemics like COVID-19 but also for sustainable economic development. His urge to keep the Brazilian economy going, even at the cost of significantly higher death rates from COVID-19 and of the destruction of the Amazon rainforest, reflects the prioritisation of short-term economic considerations at the cost of environmental and social sustainability.

Political leadership matters and there is an urgent need to understand how and why governments have responded differently to the pandemic (Greer et al., 2020). Many argue correctly that it is essential to prioritise advice from the professional public health community and social scientists (Sachs et al., 2020; Shah, 2020). Yet we need to move beyond simply calling on leaders to take the science more seriously – a strategy that is almost certain to fail politically if leaders have incentives to ignore such calls. Bolsonaro's approval ratings actually increased during 2020 (G1, 2020b) which implies that his strategy resonated successfully within a significant portion of the electorate even as death rates increased. Understanding the political determinants of populism, especially as they apply during pandemics, is a crucial area for further research.

Notes

1. "Medida cautelar na Arguição de Descumprimento de Preceito Fundamental 669" https://www.conjur.com.br/dl/liminar-barroso-proibe-campanha-brasil.pdf (accessed Jan 10, 2021).
2. https://raw.githubusercontent.com/mrc-ide/global-lmic-reports/master/BRA/index.pdf (accessed June 14, 2021). To the best of our knowledge, there is no updated estimates taking in full consideration the very recent increase in the number of new cases and deaths (with 17,412,766 cases and 487,401 deaths reported as of June 14 2021), see https://coronavirus.jhu.edu/map.html (accessed June 14, 2021).

Disclosure statement

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