



Beyond partisan rhetoric: Institutional constraints and local COVID-19 policies in Brazil[☆]

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ABSTRACT

Background: Political polarization can influence policy responses, particularly during crises. While institutions aim to counterbalance these effects, their capacity to do so under stress remains underexplored. This study examines whether mayoral partisan ideology affected pandemic policymaking in Brazilian municipalities, a highly polarized context with a severe COVID-19 health burden.

Methods: We used a regression discontinuity design in 599 closely contested mayoral elections in 2016 to identify causal effects of partisan ideology on municipal pandemic responses in 2020. The analysis focused on formal policy measures and behavioral outcomes, particularly compliance with social isolation.

Results: Mayoral partisan ideology had minimal influence on formal pandemic policymaking at the municipal level, challenging assumptions based on national partisan cues. However, municipalities led by right-wing mayors showed lower compliance with social isolation in the short term, despite no significant differences in formal policies and overall compliance across the first year of the pandemic.

Conclusions: These findings highlight the complexity of partisan influence on health policymaking during crises. While national politics may shape public discourse, institutional structures and political and electoral interests can mitigate ideological effects on local policymaking.

1. Introduction

Contemporary publics and their elected representatives appear increasingly polarized, meaning divided, in many national contexts (McCarty, 2019). Such polarization has significant consequences for how citizens perceive and interact with one another (Iyengar et al., 2019), for the stability and longevity of governing coalitions, and numerous other issues. Particularly worrisome from a welfare standpoint, the global rise in political polarization has brought renewed attention to the impact of partisan political ideologies on policy responses related to public health (McCoy et al., 2018). Many studies have suggested that political ideology is a key determinant of health (Pabayo et al., 2015; Subramanian et al., 2009), while many have raised concerns that public health policies surrounding vaccination, reproductive or

mental health, addiction, and many other topics, are increasingly driven by ideological concerns as opposed to scientific evidence. While such hot-button issues grab national attention, much if not most of the actual delivery of public health policy is local. Understanding the consequences of partisan ideologies on local responses is essential, as it sheds light on the broader implications of political polarization and electoral turnover at the grassroots level.

Political institutions are the formal and informal rules, procedures, and organizations that structure the behavior of political actors and determine how power is acquired, exercised, and constrained within a political system. Operationally, they can be measured by the presence and characteristics of governing bodies (e.g., legislatures, executives, courts), rule-making mechanisms (e.g., constitutions, electoral systems), and enforcement structures (e.g., bureaucracies, oversight bodies).

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Political systems have a variety of institutional features, including bureaucratic insulation, separation of powers, and a federal system of government, that encourage stable, predictable, and effective governance despite tendencies toward “faction” (Madison, 1787) that political polarization has exacerbated. In addition to formal-legal political institutions, political scientists have long identified more informal institutions, such as political culture, norms of procedure, and expectations of civil society, as also playing important roles in constraining the policy discretion of political actors. However, how well these institutions perform under the extreme stress of a global crisis remains a critical and open question (Axelrod et al., 2021; Machado et al., 2014).

Particularly during crises such as the COVID-19 pandemic, the response to the pandemic has been highly politicized, ideological, and partisan across many national contexts. In the United States and Europe, COVID-19 has exacerbated pre-existing political polarization (Jungkunz, 2021). The behavior of Brazil’s former President, Jair Bolsonaro, like other populist leaders, has been linked to worse COVID-19 health outcomes in terms of cases and deaths (Fernandes and Fernandes, 2022). Ajzenman et al. (2023) provide an example of how the actions of the then-Brazilian president led to increased risky behavior following key public statements at the onset of the pandemic. Many scholars have attributed substantial responsibility for the politicization to elite actors, such as politicians or media figures (Kerr et al., 2021; Hart et al., 2020). Research has shown that the partisan political ideology of these elite actors can explain variations in community behavior during the pandemic in countries like Brazil, the United States, and Mexico (Ajzenman et al., 2023; Ayala-Cantu, Frattini and Morando, 2021; Barrios and Hochberg, 2021; Ramos et al., 2020).

This paper examines the influence of partisan political ideology on shaping Brazil’s pandemic policy response at the municipal level and how institutions responded to it. The rise of Bolsonaro has reshaped Brazilian politics, contributing to the emergence of programmatic right-wing parties. Meanwhile, left-wing parties, such as the Workers’ Party, have maintained their consistent programmatic perspectives. Nevertheless, our analysis shows that the political ideologies of mayors, as reflected by their party affiliations, had no significant impact on the adoption, timing, or continuation of policies during the COVID-19 pandemic. We argue that political institutions played a key role in preventing local governments from delivering politicized responses. We document that mayors have faced three key constraints in adopting Non-pharmaceutical interventions (NPIs): shared municipal authority, decentralized healthcare governance, and oversight institutions monitoring policy implementation.

Our results suggest a different dynamic surrounding local policy-making. Contrary to conventional wisdom, we find no relationships between elite signaling, mayoral policy action, and community behavior. NPIs to combat the COVID-19 pandemic are no different in municipalities with mayors from parties on the political Left, Right, or Center. Instead, arguments surrounding political institutions and mayors’ electoral interests are likely better explanations of mayors’ health policy decisions during the pandemic.¹ That is an important lesson, especially in light of the intense politicization we have seen worldwide—institutional resilience matters.

We draw on a unique dataset covering Brazil’s municipal pandemic responses and mayoral partisan ideologies, employing Regression Discontinuity Design (RDD) and survival modeling. Our central research question is: Does mayoral partisan ideology influence municipal responses to the pandemic? We break this question into sub-questions, assessing the impact of mayoral partisan ideology on timing, duration, and compliance of municipal measures.

¹ An important contextual element in implementing measures to mitigate the pandemic’s impact was the electoral calendar. In 2020, municipal elections were held in all 5570 Brazilian municipalities, both for the position of mayor and for city councils.

Brazilian governments, like most worldwide, implemented various NPIs to combat the COVID-19 pandemic, including stay-at-home orders, workplace and school closures, movement restrictions, gathering size limitations, and mask mandates. The rapid evolution of knowledge about the virus led to uncertainty among policymakers regarding the best course of action, as they balanced health, economic, and social values. This uncertainty led to an uncoordinated response to the pandemic, particularly, as already demonstrated, under federal systems (Touchton et al., 2021; Knaul et al., 2021). For instance, studies indicate that Brazil’s federal government relaxed NPIs relatively early to mitigate economic impacts (Fernandes et al., 2023), while many subnational governments maintained stricter measures, particularly in areas with high local COVID-19 transmission rates (Abrucio et al., 2021). Conversely, some Brazilian municipalities relaxed or abandoned NPIs independently of the president or the Health Ministry’s directives (Ferreira et al., 2021).

Our identification strategy addresses several issues inherent in our research question by relying on plausibly exogenous variation triggered by close elections. We use a close election design to determine assignment to treatment cohorts, which a large body of literature has shown to resemble random assignment (Brollo and Troiano, 2016; Boas et al., 2014). This design leverages the fact that the outcome of a close election is more idiosyncratic and “noisy” than that of elections with larger victory margins.

Findings show almost no differences in whether or how quickly mayors of different partisan ideologies enacted COVID-19 policies. However, we find a relationship between the mayor’s partisan ideology and short-term NPI compliance at the onset of the pandemic. This effect proved to be transient, dissipating rapidly within the initial weeks of the pandemic. While observing unofficial channels of elite influence is challenging, the absence of formal influence through political parties or ideological alliances suggests the strength of short-term informal channels. These may be more significant in times of uncertainty when pressures promoting institutional conformity are greater.

We organize the paper as follows. First, we review the literature on mayoral behavior and motivations for policy adoption and maintenance, as well as municipal residents’ compliance with these policies. We then examine the institutional framework shaping municipal government actions during the pandemic. Next, we provide context on the pandemic’s progression in Brazil and the varied municipal responses. Next, we outline our research design, data collection methods, and analysis techniques. We present our findings on the impact of mayoral partisan ideology on pandemic policies and compliance. Finally, we discuss the implications of our findings, highlighting the nuanced relationship between political ideology and policymaking under crisis conditions.

1.1. Motivations and behaviors surrounding mayoral policy decisions

This section reviews the literature in two areas: (1) mayoral behavior and motivations for policy adoption and maintenance, and (2) residents’ compliance with those policies. A large body of work explores what motivates politicians, usually grouped into three mechanisms: electoral incentives, ideological interests, and socialization. A fourth factor, institutions, tends to vary less but crucially conditions choices. We first examine what drives local politicians’ policy decisions before turning to the institutional constraints of Brazil’s Health System.

Politicians’ interests are often equated with electoral concerns. As elections become more competitive, politicians are more likely to adopt popular policies and maintain existing ones to win votes (Walker, 1969; Riker and Ordeshook, 1973). Studies on policy adoption and diffusion often highlight electoral cycles, where politicians deliver benefits near elections, sometimes adding partisan or ideological elements (Nordhaus, 1975; Alesina, 1988).

Beyond elections, ideology shapes policymaking. Policymakers act on ideas that go beyond vote-seeking (Sugiyama, 2007). As North (1990) argues, resource distribution decisions can reflect ideology, even

when they are at odds with electoral or financial interests. Ideology influences how actors filter information, perceive the world, and evaluate policies (Mullins, 1972), and governments with different ideological leanings yield distinct outcomes (Hibbs, 1977). While partisanship often serves as a proxy for ideology, it does not always align, especially outside the OECD, where many parties are personalistic rather than programmatic (Lucas and Samuels, 2010; Borges, 2021). Still, in Brazil, mayoral partisanship often correlates with policy choices, particularly in social policy and health (Wampler et al., 2019; Mayka, 2019; Rich, 2019). Mayors from the Workers' Party and other left-wing parties, for example, have historically championed health and education reforms (Sugiyama, 2012) and progressive social policies (Wampler et al., 2019; Sakurai and Menezes-Filho, 2010). We thus argue that national party ideologies generally align with those of mayors.

A third explanation is socialization. Politicians' behavior is embedded in networks of organizational and informal relationships that shape preferences (Kaufman et al., 1999). Personal and professional networks create meaning, legitimacy, and norms (Kilduff and Tsai, 2003; Passy, 2003). Formal networks encourage policy diffusion, as decision-makers rely on social cues and cognitive shortcuts (Walker, 1969; Balla, 2001), whereas informal networks—such as geographic proximity—motivate alignment with local peers (Mooney, 2001).

The socialization and ideological lenses are linked to residents' compliance through elite cues. In polarized contexts, such as Brazil during the COVID-19 pandemic, cues from party leaders, the media, and elites shape behaviors beyond voting (Levendusky, 2009). Backhaus et al. (2023) demonstrate the role of ideology in vaccine hesitancy globally, while Furst et al. (2024) find that this effect was strongest early in the pandemic, fading over time in Brazil.

During the COVID-19 pandemic, Brazil's polarized elites sent clear signals regarding policy compliance. Party positions were distinct and internally coherent, making it easier for residents to follow ideological and partisan cues (Levendusky, 2009; Jost et al., 2022; Druckman and McGrath, 2019). Finally, we turn to institutions. Unlike motivations rooted in interests, ideology, or socialization, institutions set the structural context within which mayors act, shaping both opportunities and constraints. That completes our framework, which links individual-level motivations to the broader institutional environment that shapes policy decisions.

1.2. Institutional constraints in the Brazilian health system

The design of the Sistema Único de Saúde (SUS) – Brazil's Universal Health System – positions municipalities as the central actors delivering healthcare services (Touchton et al., 2017; Wampler et al., 2019; Mayka, 2019; Rich, 2019). While Brazil's federal structure assigns the management of health services to state and municipal governments, the federal government's roles are broader and more closely related to long-term strategies such as coordination and funding (Fernandes and Pereira, 2020). State and municipal policymakers jointly determine the locations of hospitals and urgent care centers, with municipal governments typically overseeing the majority of these facilities.

Additionally, regional hospitals, strategically located in geographically advantageous areas, may be managed by local or state governments. Federal hospitals exist; however, they are typically affiliated with a medical research unit of a Federal University and offer a limited range of medical services (Teixeira et al., 2017).

Municipalities play a central role in implementing health policies, relying on financial transfers from the Ministry of Health or state governments, which make up a substantial share of their budgets (Machado et al., 2014). Additionally, mayors have significant discretion in the extent to which they implement and sustain programs, particularly in the short term, even though the most relevant policies are designed at the national level (Funk and Philips, 2018).

However, mayors face three key institutional constraints that hinder their ability to adopt and sustain Non-Pharmaceutical Interventions

(NPIs) to combat COVID-19. First, while mayors are the most powerful municipal actors, they are not the sole authorities in policy adoption and implementation. Municipal legislatures are required for many types of municipal policy actions, although they may be sidelined for shorter-term emergency measures. Likewise, municipal policy management councils have formal veto power over budget allocations in specific areas, such as health and education; however, in practice, mayors frequently circumvent their authority (Touchton et al., 2017; Wampler et al., 2019).

The second institutional constraint arises from Brazil's federal healthcare system. Under the National Health System, local governments are responsible for delivering most health services, while higher levels of government typically focus on system coordination and financial support (Fernandes and Pereira, 2020). Brazil presents a valuable case study of public health interventions during the pandemic, particularly regarding NPIs, as their implementation varied significantly across its 5570 municipalities, 26 states, and the Federal District (Touchton et al., 2021). Municipal and state governments differed in the strictness of distancing measures, mask mandates, density controls, and travel restrictions. Municipal governments remained tasked with managing hospitals and basic care units. In contrast, the federal government, in turn, was responsible for broader coordination of health activities, such as supplying ventilators or vaccines when municipal and state supplies were exhausted.

The third constraint stems from oversight institutions, which have taken measures at the state level to monitor and support municipal responses to the COVID-19 pandemic. These institutions play an important role in overseeing municipal governments and ensuring the adequate funding of the healthcare system (Fernandes and Teixeira, 2020). Oversight measures include the development of dedicated portals, the issuance of resolutions that establish public policy guidelines, and the implementation of new preventive measures. As detailed in Appendix J, only three audit institutions, out of 26 states and the Federal District, did not introduce new oversight measures related to the policies implemented by local governments in response to the pandemic (Luvizotto, 2020; Medeiros, 2023; Mendonça et al., 2020; Ribeiro et al., 2020).

2. Research hypothesis

The design of Brazil's SUS made pandemic response a municipal government issue. Governors and mayors tended to consider NPIs to combat the pandemic more thoroughly than national government officials, due to their institutional responsibility to provide basic healthcare services and maintain the healthcare system they managed from collapse. Furthermore, local officials are held accountable by voters for their handling of health issues (Fernandes et al., 2022; Wampler et al., 2019; Mobarak et al., 2011).

However, many NPIs proposed to combat the pandemic posed significant economic threats, reducing economic growth and employment levels, and creating a political burden that municipal governments must address or manage. It was, therefore, not evident during the pandemic what course of action a self-interested reelection-seeking mayor should have followed. It is essential to highlight that the election calendar in Brazil put all mayors and municipal representatives under electoral pressure due to the pandemic, as they needed to survive voters' short-term evaluation of their efforts.

The COVID-19 pandemic and ensuing health crisis put extraordinary pressure on the Brazilian health system, leading to overwhelming demand for services and the risk of collapse. NPI measures were important tools for decreasing pressure on the health system (Knaul et al., 2022; Touchton et al., 2021). Simultaneously, political polarization created a considerable divergence in public opinion on the appropriate set of public policies to pursue (Fernandes and Fernandes, 2022). Right-wing extremists, led by President Bolsonaro, opposed all NPI measures based on the belief that they would hinder the economy (Fernandes et al., 2023). This fact leads to our central hypothesis.

H1. The right-wing mayor adopted less stringent municipal NPIs to combat COVID-19.

While the close-election design provides a quasi-experimental approach to estimate the effect of elite mayoral partisan ideology on NPI adoption, maintenance, and compliance during the pandemic, the mechanism by which the partisan ideology of elite policymakers may influence local behavior is elusive.

We propose three theoretical alternative mechanisms. Political elites with policymaking authority may enact official policies that change community behavior. They may, for example, impose curfews, occupancy restrictions, school closures, or other measures that restrict popular mobility. Alternatively, political elites may promote informal measures related to the interpretation, application, and enforcement of policies and guidance regarding behavior. They may appear in a public place far from their home while applying for a shelter-in-place order or appear in photographs unmasked despite official orders, communicating to the public that compliance is optional despite official legal requirements. More officially, but still challenging to observe, political elites may convey to immediate subordinates that failure of the public to achieve compliance with official recommendations from oversight institutions will generate accountability, and such informal, and hard-to-observe, threats of sanction can progress downward from top levels of government (Searle, 2005; Cruz-García and Peiró-Palomino, 2019). While informal and formal policies are not exclusive, they do not invariably align. Assumptions about which mechanism predominately influences community behaviors could lead to vastly different understandings of the problem that politics poses for responding to public health and other crises.

Examining the determinants of local policymaking and how partisan ideology affects local decisions during pandemics is imperative. In next section, we detail our methods and data.

3. Methods and data

This research faces several methodological challenges. First, policy decisions are complex, and mayoral partisan ideology is only one among many factors shaping them. Second, mayors are not randomly assigned to cities; their election often reflects local partisan preferences. In Brazil, factors like population density, racial composition, and affluence predict both mayors' partisan affiliations and policy choices. Moreover, as strategic actors, mayors tailor policies to local needs, meaning that the municipal context can influence policy independently of ideology. To assess the impact of mayoral ideology on pandemic policies, we use two empirical approaches, both grounded in the idea that “close elections” approximate random assignment (see Appendix A for balance tests).

The first approach employs a regression discontinuity design (RDD) for close races, following Calonico et al. (2014, 2019). We analyze pandemic policies using both additive indices and latent indices (via one-parameter item response models) and measure NPI compliance with mobility data. All models use optimal bandwidths per Calonico et al. (2019). While RDD captures the overall and detailed stringency of municipal responses, it says little about the speed of decisions, a critical factor during crises like COVID-19. Maximum or average policy differences may mask important temporal variation. To address this, we adopt survival analysis as our second approach. Here, municipalities act as individuals, mayoral ideology defines treatment groups, and preserving pre-pandemic procedures resembles “survival.” We assess time-to-adoption (in weeks) using log-rank tests and visual diagnostics (Bland and Altman, 2004).

A significant challenge for both approaches is Brazil's fragmented multi-party system. In 2016, 29 parties competed and won close mayoral races, making cohort analysis impractical. We therefore classify candidates into broad ideological categories—left, center, right—following Codato et al. (2018), focusing on close elections where the top two came from different categories. For RDD, we further simplify the analysis by

categorizing the data into binaries (e.g., right-wing vs. non-right-wing) to define treatment contrasts clearly.

Our main results focus on right-wing mayors versus others, although Appendices F, G, and H explore variations, including “far-right” versus others or “left” versus others. As an additional robustness check, Appendix C uses RDD to test whether right-wing mayors spent less on health prior to the pandemic and whether they met Brazil's minimum health expenditure requirements. Lastly, Appendix K presents evidence of the robustness of null findings, showing the statistics of equivalence tests for these results.

3.1. Dependent variables

To measure these outcomes, we draw on multiple data sources. Social mobility data come from InLoco® (2020), a Brazilian technology firm that anonymously monitored over 60 million mobile devices across the country. InLoco's Social Isolation Index, publicly available, reports the percentage of devices that remained within 450 m of the user's home, providing an aggregate measure of compliance at the municipal level.

We source COVID-19 health data from BRASIL IO (2020), which compiles daily reports of COVID-19 cases and deaths from Brazil's state authorities (see Appendix D). Data on municipal policies come from three primary sources. First, the 2020 Pesquisa de Informações Básicas Municipais (MUNIC), conducted by the Brazilian Institute of Geography and Statistics (IBGE), offers detailed administrative records from 5467 of Brazil's 5569 municipalities, including whether social isolation measures were adopted, whether monitoring systems were implemented, and whether sanctions (such as fines or compulsory isolation) were applied.

Second, the Brazilian Confederation of Municipalities (Confederação Nacional de Municípios – CNM) provides data on six key municipal NPIs, documenting the first day of policy implementation (de Souza Santos, 2021; see Box 1). Finally, we supplement these sources with original data collection from 192 municipalities, using manual coding of NPI measures and survey responses from local leaders to capture details on specific policies and their adoption timing (Appendix I).

3.2. Main independent variable

In 2016, 5570 Brazilian municipalities held elections, but only a small number of these municipalities had close elections. Further, not all these elections had significant partisan ideological stakes in the sense of contestation between candidates that fell into distinct left-center-right categories. There were 509 elections with <3 % margin between the winning and losing party, which translates to 9.1 percent of total municipal elections. We present the distribution of close elections in Table 1, breaking down the ideological contests in our data. As discussed above, we use mayors' partisan identifications to infer ideology. Mayors from parties with right-wing political platforms are then categorized as ideologically right-wing. At the same time, those from centrist parties are categorized as centrist, and those from left-wing parties are categorized as left-wing.

We focus on the contests between mayoral candidates on the political right versus center and right versus left, as the Brazilian pandemic experience indicates a stronger radicalization of right parties toward denialist approaches and preferences for less stringent NPI measures (Fernandes et al., 2023). Hence, we have a distribution of 599 electoral contests between parties with different left-center-right ideologies, minus the 128 municipalities where the close election was between Center and Left-wing parties. We therefore present our data from the other 471 municipalities with close elections between mayoral candidates from Right-wing parties and parties from the left or center. Of those, 228 municipalities have a right-wing mayor, and 243 have a left- or center-wing mayor.

For those 471 municipalities, we present descriptive statistics for our

Box 1. Dimensions of NPI measures from CNM data collection

- a Creation of sanitary barriers (monitoring checkpoint for people entering and leaving the municipality);
- b Adoption of restrictive measures to reduce the circulation and agglomeration of people;
- c Adoption of social isolation measures, allowing only essential services;
- d Adoption of mask mandates;
- e Adoption of measures to reduce the supply of public transportation;
- f Adoption of measures for the relaxation of restrictive measures of social isolation.

Table 1
Close elections among parties from different political ideologies in Brazil.^a

	Left – Candidate Barely Lost	Center Candidate Barely Lost	Right Candidate Barely Lost	Total
Left Candidate Barely Won	–	64	96	160
Center Candidate Barely Won	64	–	147	211
Right Candidate Barely Won	85	143	–	228
Total	149	207	243	599

^a Left Parties: PC do B, PCB, PCO, PDT, PPL, PSB, PSOL, PSTU, PT. Center: PMDB, PMN, PPS, PROS, PSDB, PV, PHS, PPS. Right Parties: PAN, PEN, DEM, PGT, PL, PR, PP, PRB, PRN, PRONA, PRP, PRTB, PSC, PSD, PSDC, PSL, PSN, PST, PT do B, PTB, PTC, PTN, SD.

central continuous dependent variables in [Table 3](#): municipal NPI measures and social mobility.

Count of municipalities experiencing various types of close elections. For example, there were 85 close elections where the right candidate won by a narrow margin, and the left candidate lost by a similarly narrow margin. Source: Supreme Electoral Tribunal and [FGV CEPESP \(2024\)](#)

3.3. NPI measures

[Table 2](#) presents the number of municipalities that adopted various NPIs in the CNM dataset, as well as the number of municipalities that did not report this information. There is considerable variation in the adoption of NPI across municipalities. Almost all municipalities for which data is available implemented measures to restrict the movement or gathering of people. Additionally, a significant majority also relaxed pandemic measures several months after they were adopted. However, less than half of the municipalities adopted measures to limit public transportation or implement health checkpoints at municipal borders.

Based on these metrics, we introduce two summary indices to gauge the stringency of each municipality’s policies. First, we constructed a

Table 2
Descriptive statistics of the CNM dataset.

Item	Question	Did not adopt	Adopted	Missing
Q1.	Sanitary barriers (monitoring checkpoints for popular mobility at municipal borders)	166	163	142
Q2.	Restrictive measures to reduce the movement/agglomeration of people.	8	320	143
Q3.	Social isolation measures, allowing ONLY essential services.	72	256	143
Q4.	Mandatory use of face masks.	17	311	143
Q5.	Measures to reduce public transit	163	157	151
Q6.	Flexibility of restrictive measures and social isolation.	122	205	144

Source: CNM dataset.

Table 3
Summary measure of the stringency of municipal policies adopted by Brazilian municipalities from the CNM and MUNIC-IBGE Dataset.

categorical municipal stringency measures (CNM dataset)							
CNM dataset	1	2	3	4	5	6	Missing
NPI_MUN Categories							
Freq.	2	25	78	105	91	28	142
Percent	0.42	5.31	16.56	22.29	19.32	5.94	30.15
MUNIC IBGE dataset							
	0	1					Missing
NPI – Decree	83 ^a	388					–
NPI - Monitoring	242	229					–
NPI - Sanctions	183	288					
continuous municipal stringency measures (CNM dataset)							
Variable	Obs	Mean	Std. Dev.	Min	Max		
NPI_MUN	329	4.04	1.1	1	6		
Qtheta	471	0	0.18	–0.72	0.37		
Continuous municipal behavioral measures							
Average Social Isolation	389	0.39	0.03	0.27	0.54		

^a In 67 of those 83, there was no mandatory social isolation, defined by decree; besides non-response, but there were recommendations for social isolation. Source: CNM dataset, Munic/IBGE dataset, and InLocal

cumulative index (NPI_MUN) by tallying the NPI adopted in each municipality while inversely incorporating the responses in Q6. Second, we apply item response theory, utilizing the stringency of responses to determine the position of each municipality on an underlying spectrum of strictness, employing a one-parameter logistic model (Qtheta). We present a comprehensive overview of the local policy variables in [Table 3](#), as well as the compliance with social isolation.

4. Results

4.1. Mayors’ partisan ideology and municipal NPIs in Brazil

[Fig. 1](#) displays the estimated results for each Non-Pharmaceutical Intervention (NPI) adopted at the municipal level. It uses graphical bars to represent points and their confidence intervals, along with p-values for each regression. Bars crossing the zero axis indicate no significant confidence intervals. Detailed results are provided in the left half of [Table 4](#)² We reject the hypothesis of an ideology effect for all NPIs based on the RDD estimators, whether using continuous measures obtained from the CNM database, with additive or IRT-based measurements (Qtheta), the specific measures of the six dimensions from [Table 2](#), or the three measures obtained from the MUNIC/IBGE data. The

² In [Table 4](#), we present the full robust estimations. The conventional and bias-corrected results are presented in the [appendix](#). All results remain similar.

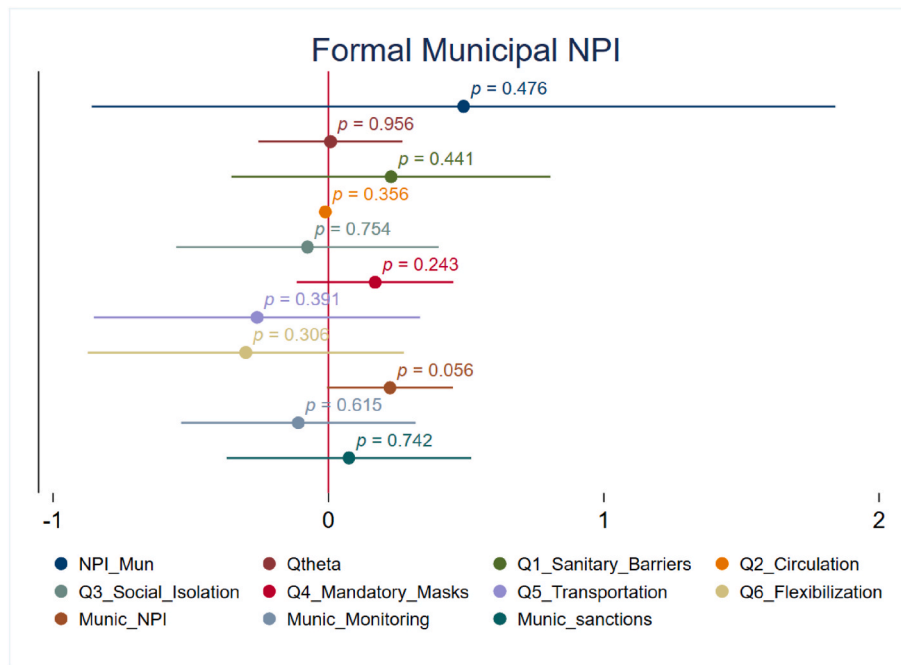


Fig. 1. The estimated effects of ideology on the adoption of NPI in Brazilian municipalities, 2020.

Table 4

Robust estimations of Municipal NPI and Social Isolation Compliance RDD Results.

NPI Policy Measures	Coef.	p-value	NPI Compliance – average social isolation	Coef.	p-value
	S.E.			S.E.	
NPI_Mun (additive)	0.491	0.476	Annual Mean	-0.012	0.533
Qtheta (IRT)	0.689	0.896	February	0.019	0.179
Q1 - Sanitary Barriers	-0.010	0.441	March	-0.019	0.038
Q2 - Restrictive measures on popular mobility	0.792	0.356	April	0.014	0.264
Q3 - Social Isolation Measures	-0.011	0.754	May	-0.030	0.513
Q4 - Mandatory Face Masks	-0.076	0.243	June	-0.017	0.915
Q5 - Limitations of Public Transit	0.170	0.391	July	0.023	0.908
Q6 - Flexibility of restrictive measures	-0.259	0.306	August	0.003	0.399
Decree - NPI: Mandatory measures	0.302	0.056	September	-0.019	0.970
Monitoring - NPI compliance	0.293	0.615	October	0.001	0.966
			November	0.030	0.667
			December	0.021	0.230
				0.033	0.028

only noteworthy estimate, albeit within the margin of acceptance of the null hypothesis and against our central hypothesis, indicates that municipalities with right-wing mayors enacted more formal decrees, making social isolation compulsory more frequently than municipalities with non-right mayors (p-value = 0.056). No effects were found for monitoring and sanctioning measures.

Hence, the data shows no significant effect of the mayor’s partisan

ideology on measures to promote social isolation or other NPIs. It should also be noted that in most of the models, the estimated effects are positive in the direction of greater stringency in municipalities governed by mayors from parties on the political right, which runs counter to initial expectations and conventional wisdom on the topic. Appendices F, G, and H also show the null results for far-right, left, and center-wing mayors for most NPI measures.

4.2. Behavioral measures: social compliance

Fig. 2 presents the results of estimating the effects of major partisan ideology on compliance with social isolation. Once more, each bar represents an estimated point for the indicated month or week on the stated date. Bars crossing the zero axis indicate no significant confidence intervals. Detailed results are provided in the right half of Table 4.

In the upper part of Fig. 2, we present the results for each month from February to December 2020, the pandemic’s first year, and the average social isolation compliance in each municipality with close elections. The figure demonstrates that the general effect of mayoral partisan ideology is null; the only exception is compliance rates with social isolation in March 2020 during the onset of the pandemic. Residents in municipalities with right-wing mayors were systematically less compliant with NPI in the initial phase of the pandemic. These findings are consistent with those of Ajzenman et al. (2023), who show that presidential speeches during the first two months of the pandemic had significant effects on municipalities with higher vote shares for President Bolsonaro between February and early April. However, no significant effect was found on the implementation of NPIs.

As noted in the previous section, there are no statistically significant differences in the stringency of municipal public policies adopted by mayors from right-wing parties compared to those from left- and center-wing parties. At most, we find a non-statistically significant relationship, indicating that mayors from right-wing parties adopted policies earlier than center- and left-wing mayors. Here, we find evidence suggesting that the enforcement of policies adopted by mayors at the beginning of the pandemic was less stringent in municipalities with mayors from right-wing parties. Still, the effect is small and disappears from April 2020 on.

The estimates indicate that in municipalities with right-wing mayors,

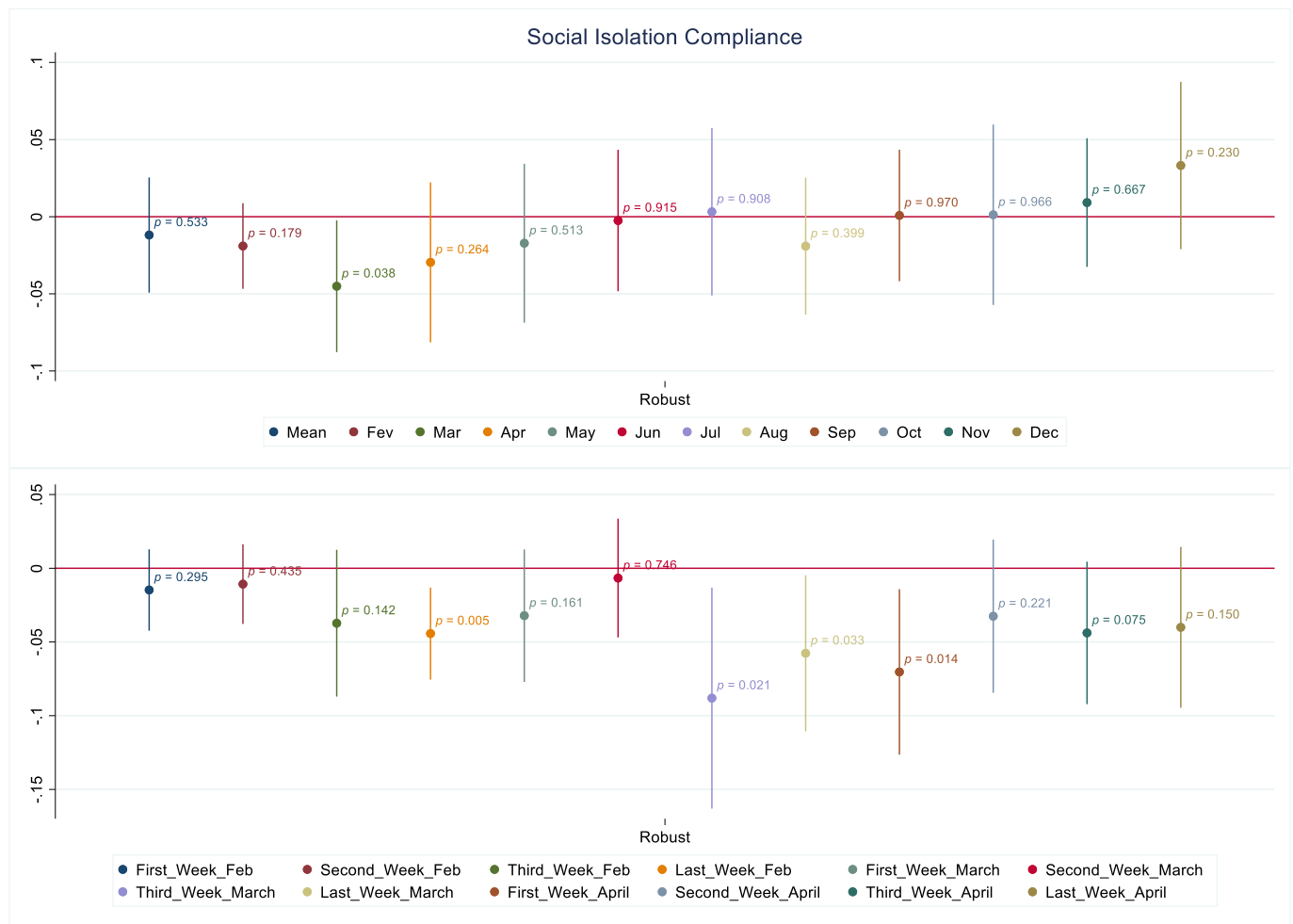


Fig. 2. The estimated effects of ideology on compliance with social isolation by month during 2020.

compliance with social isolation was, on average, 3.0 percentage points lower than isolation in other municipalities, but only for March 2020. Appendix G and H results also indicated a short-term effect in the first phase of the pandemic, as there is a clear positive short-term social isolation compliance for municipalities with the mayor from center-wing parties in March of about 5.6 percentage points higher and from left parties in February of about 4.6 points.

Based on this effect in March 2020, we analyzed the pandemic’s first two months in more detail. We examined social isolation from the first week of February 2020, three weeks before the first case of COVID-19 was identified in Brazil, to the remaining weeks in March and April, as shown in the bottom part of Fig. 2.

Once again, we found the same pattern, except for the negative and significant effect in the last week of February 2020, which disappeared in the following two weeks. The reduction in compliance with social distancing in municipalities with right-wing mayors occurred during the second half of March and the first week of April 2020. Estimated effects range from a drop of 8 percentage points in the third week of March to 6 points in the following week and 7 points in the first week of April. Nevertheless, beyond this timeframe, no significant effects were observed. It is essential to point out that the loss of significance is not associated with the increase in uncertainty of the estimated models. As the confidence intervals remain relatively stable, the loss of effect results from reducing the size of the estimated coefficient.

The second half of the first month of the pandemic in Brazil is precisely the moment in which President Jair Bolsonaro spoke out for the first time in a more incisive way against the policies of social isolation.

However, any effect from this rhetoric disappears from the data by the end of April 2020, which points to the practical impossibility of right-wing mayors mirroring Bolsonaro’s political positions over the pandemic’s entire course.

In Appendix H, we show a strong positive short-term effect in the increased social isolation compliance in municipalities with center-wing mayors from about 17 percentage points compared to the other municipalities in the third week of March.

4.3. Additional results

The survival analysis conducted across various policy domains, including non-essential commercial activities, education, industrial activities, transportation, public sanitation, quarantine measures, and mobility restrictions, shows no statistically significant differences in the adoption or duration of policies based on mayoral partisan ideology and NPIs to combat COVID-19.

The results related to non-essential commercial activities, industrial activities, transportation, quarantine measures, and mobility restrictions are not based on mayoral ideology. In the education sector, mayors from parties on the center/left were more likely to discontinue NPI policies. They exhibited a faster rate of policy termination than their right-wing counterparts. Also, evaluating public sanitation measures shows that center/left mayors might have implemented these measures slightly faster. Nevertheless, neither difference was statistically significant. We provide detailed results in Appendix I.

Our findings regarding COVID-19 cases or deaths are striking, as we

find no effect of the mayor's political ideology. Although we found some impact on compliance with social isolation, the lower compliance rate in municipalities governed by right-wing mayors did not result in statistically significantly higher COVID-19 cases or deaths.

As the COVID-19 pandemic began in Brazil in March 2020, municipalities with less social isolation during this period likely experienced a later spike in cases. Nevertheless, throughout the year, the results show no systematic change in municipal outcomes due to mayoral ideological variation, whether analyzing policy stringency or popular behavior and health outcomes from the pandemic. We present these results in detail in [Appendices F, G, and H](#), which compare ideological subgroups (extreme right, left, and center) with all other parties, providing additional nuance to our findings. Across all comparisons, the estimated effects on NPI adoption and social isolation compliance are generally small and statistically insignificant. The robustness checks using alternative ideological groupings reveal some variation in statistical significance—particularly due to the small sample of extreme-right mayors—but overall, they support the main findings, with effects broadly consistent in direction and structure across different comparisons. These results suggest that while ideological labels may shape pandemic discourse at the national level, they had limited influence on formal municipal responses. That supports the interpretation that institutional constraints and compliance mechanisms played a more decisive role than partisan alignment in shaping local public health actions during the early stages of the pandemic.

Finally, the results tell a different story when we analyze local health expenditures over the entire term. In [Appendix C](#), we show that, while all local governments met the legal requirement of allocating at least 15 % of their budget to health spending, regardless of ideological alignment, right-wing mayors consistently spent a smaller share of health expenditures before the pandemic. As a robustness check, this validates our methodological approach and, most importantly, demonstrates that right-wing mayors also act programmatically.

4.4. Institutional constraints on mayors

The results in the previous sections counter expectations surrounding elite signals and pandemic policy responses in Brazil and worldwide. Prior research and broad assumptions suggest that Brazilian mayors would follow partisan cues from the former president, leading opposition figures, and prominent governors to implement more or less stringent NPIs based on ideology. However, while all local governments met minimum health spending requirements, our analysis shows that right-wing mayors consistently allocated a lower share to health expenditures before the pandemic, reflecting programmatic behavior. Despite this, we find almost no partisan effects in our study, which is the first to draw on such a broad, deep, fine-grained dataset and to use rigorous identification strategies to estimate the effects of mayoral partisan ideology on NPIs.

This is a robust and relevant finding since previous ecological research has indicated that in Brazilian municipalities more in tune with the right, that is, with a higher percentage of voters for then-president Jair Bolsonaro, there was less social isolation, more confirmed cases, and deaths from Covid-19 ([Barberia et al., 2022](#)). In addition, survey research also shows that Jair Bolsonaro's supporters, who considered that he was managing the pandemic well, were also less respectful of social isolation measures ([Pereira et al., 2020](#)) and a reduced propensity to get vaccinated at the end of the first year of the pandemic ([Furst et al., 2024](#)). Comparative research also shows the behavior of medical populism ([Lasco, 2020](#)), in which populist leaders were associated with worse performance and lower effectiveness of NPIs, as in Brazil, England, and the United States ([Bayerlein et al., 2021](#)). The findings indicate that this connection, relatively canonical in the field, was not realized through the formal positioning of local politicians guided by effective ideological ties but rather by more general aspects of the electorate's behavior and political polarization.

We argue that, for Brazil, elite ideology was less influential in formal policy than other common factors, such as institutional resilience within the Health Ministry, responsiveness to local demands, or local political considerations, such as an impending mayoral election in 2020. Thus, institutions and interests are likely superior explanations for mayoral policy behavior than partisan ideology. To the extent that mayors did respond to elite signals, they did so mainly through informal and unofficial channels and not according to the official and formal mechanisms that many would have presumed.

Overall, we find that the national health system and its municipal implementation were resilient in the face of populist challenges to weaken the response to the COVID-19 pandemic at the national level. Additionally, electoral accountability mechanisms at the municipal level suggest that mayors are beholden more to their constituents than to the president and/or to a broader partisan ideological commitment regarding municipal policy.

We cannot adjudicate directly between these potential parallel explanations. However, we can draw on previous research showing that mayors are powerful in their municipalities, and residents readily attribute many social policy outcomes, especially health policy ones, to the mayors, with subsequent electoral rewards or punishments ([Mobarak et al., 2011](#); [Wampler et al., 2019](#); [Coelho, 2018](#)). These relationships are important for moderating political ideology and tailoring policy toward local preferences. For example, to the extent we do find differences across mayors' political ideologies, we observe mayors on the political left keeping schools open longer than other mayors, which may reflect constituent preferences, which, again, run counter to the national-level preferences of a less stringent response on the political right.

Furthermore, the unexpected strength of oversight systems may have mitigated the effects of polarization. For example, in the state of Acre, the state government's oversight institution created a COVID-19 Panel, a dedicated web portal to monitor cases, hospital beds, vaccination, and public expenditures related to the pandemic. Similarly, the state of Alagoas's oversight institution issued resolutions outlining directives and recommendations to tackle the health crisis. In the state of Amapá, the oversight institution established new preventive measures following health guidelines. The Bahia state oversight institution created the COVID-19 Information Panel, gathering data and governmental decisions pertinent to municipal actions during the pandemic. Likewise, the State of Ceará's oversight institution developed a dedicated monitoring panel for overseeing public sector actions against COVID-19. These measures may have influenced mayors to adopt different health and NPI policies than they would have just based on partisan ideology. A more comprehensive discussion is provided in [Appendix J](#); additional analyses can be found in [Luvizotto \(2020\)](#), [Medeiros \(2023\)](#), [Mendonça et al. \(2020\)](#), and [Ribeiro et al. \(2020\)](#).

Our study shows the importance of testing the conventional wisdom rather than accepting it uncritically, which, in Brazil, may reflect international public opinion marshaled against President Jair Bolsonaro during the COVID-19 pandemic. Moreover, our results are an important reminder that federal governments operate with an extensive web of accountability that, in Brazil's case, features 5569 municipal governments that appear to be more responsible to constituents that are literally and figuratively closer to these governments than to national politicians ([Praça and Taylor, 2014](#)). Mayors' electoral incentives may matter more for policy adoption and duration than national politicians' rhetoric, including from a co-partisan president. In turn, local policies operating within established institutional structures, such as Brazil's historically robust national health system, are likely more influenced by municipal needs than by national political trends, which is what advocates of federalism would hope.

5. Conclusion

This paper challenges the prevailing assumptions about the role of

national partisan ideology in shaping political responses at the municipal level. Contrary to expectations, our findings show that mayoral partisan ideology did not significantly influence the adoption or timing of Non-Pharmaceutical Interventions (NPIs) during the COVID-19 pandemic in Brazil. This result underscores the complexity of policy-making under crisis conditions and highlights the limitations of attributing policy decisions solely to partisan ideological motivations. Instead, institutional resilience, local demands, and electoral considerations may be more crucial in determining municipal responses to local problems.

Moreover, the nuanced relationship between mayoral partisan ideology and community compliance with NPIs suggests that informal channels of elite influence may be more significant than formal policy mechanisms for influencing residents' behavior, at least in the short term. For example, right-wing elites told followers that social isolation was not necessary and that the COVID-19 virus was not dangerous. Our data demonstrates that municipalities with right-wing mayors exhibited lower compliance with social isolation measures in the early stages of the pandemic, which suggests the public's attunement to these elite messages (Touchton et al., 2021). However, this effect was short-lived and disappeared by April 2020, when COVID-19 deaths became a reality. This finding points to the importance of understanding the informal and unofficial ways political elites can affect public behavior, particularly during periods of high uncertainty and institutional pressure. Right-wing mayors consistently spent less on health in the years leading up to the pandemic while still adhering to the minimum required legal expenditure levels, which suggests policy discretion based on their political views. Yet mayors face three key institutional constraints to their policy discretion in adopting and sustaining NPIs to combat COVID-19: (1) shared municipal authority, where legislatures and policy councils influence decision-making; (2) Brazil's federal healthcare system, which decentralizes service delivery while higher levels of government coordinate resources; and (3) oversight institutions, which monitor municipal responses and enforce public policy guidelines (Touchton et al., 2020; Mayka, 2019; Rich, 2019).

In conclusion, we make a significant contribution to the broader debate on the interplay between political ideology and policymaking. We highlight the resilience of local institutions and the critical role of electoral accountability in shaping policy outcomes, even in highly polarized political environments. Our results also challenge some conventional wisdom about the influence of partisan politics on pandemic responses and underscore the need for a more nuanced and context-specific understanding of how political dynamics impact public health policies. These insights are vital for designing more effective and responsive governance structures in future crises. Better institutions may be the right strategy to address politicized policies.

CRediT authorship contribution statement

Ivan Filipe Fernandes: Writing – review & editing, Writing – original draft, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Gustavo Andrey de Almeida Lopes Fernandes:** Writing – review & editing, Writing – original draft, Visualization, Validation, Methodology, Investigation, Formal analysis, Conceptualization. **Michael Touchton:** Writing – review & editing, Writing – original draft, Methodology, Investigation, Formal analysis, Conceptualization. **Brian Libgober:** Writing – original draft, Methodology, Investigation.

Ethics approval statement

This research is based exclusively on administrative, electoral, and policy data from public sources. No data were collected directly from human participants. Therefore, ethical approval by a Research Ethics Board was not required.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.socscimed.2025.118607>.

Data availability

Data will be made available on request.

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