Deadly Politics: Political Connections, Intergovernmental Transfers, and Mortality

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A Dissertation presented to the Graduate Faculty
of the University of Virginia in Candidacy for the Degree of Doctor of Philosophy

Department of Economics

University of Virginia
November, 2021

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Abstract

Intergovernmental transfers finance most local government spending in developing and developed nations. The redistribution of government revenue across subnational governments, however, might be subject to distortions for political motives, such as political connections. It is well documented by the literature that central governments favor the politically connected with increased resources, but evidence on the extent to which such distortion affects individuals in local government jurisdictions is scarce. Throughout this dissertation, I seek to answer whether co-partisanship between the heads of the central and subnational governments affect government behavior to such an extant that it also affects outcomes of local government constituencies. I examine connections between the federal and local governments in Brazil and how these connections affect local outcomes.

In chapter 1, I study how political connections between the federal and local governments in Brazil affect mortality rates of Brazilian municipalities. Whether municipalities become connected to the federal government might be correlated with unobservable shocks that affect mortality. Besides, residents can vote for the president's party in local elections if they know they can benefit from being connected to the federal government. To address these identification challenges, I exploit quasi-experimental variation in municipalities political connectedness, generated by close elections, within a regression discontinuity design (RDD). I compare municipalities where co-partisans of the president barely won and barely lost the local race. I find that municipalities that become connected to the federal government experience a 16% reduction in mortality, equivalent to 0.72 fewer deaths per one-thousand residents. The result suggests that some action of the federal government toward municipalities, motivated by thee political identity of the local politician, drives mortality rates down in aligned jurisdictions.

In chapter 2, I investigate whether distortions in transfers allocation could ex-

plain the reduction in mortality found in chapter 1. While intergovernmental transfers financed approximately 90% of all local spending in Brazil in 2017, discretionary transfers could match only a small fraction of that figure, at about 2% of total local spending. Discretionary transfers conditional on capital expenditure, however, financed one-fourth of all investments made by local governments in the same year, and large distortions in this type of transfers could be consequential for mortality. I find that political connections increase the amount of discretionary transfers for capital expenditure received by aligned jurisdictions by 53% and investment spending by 20%. The difference is substantial and equivalent to 17% of all local investments. I estimate the effect of political alignment on long-term mortality, and I find that mortality is low for several years after municipalities lose their initial connection, which supports the claim that political alignment affects mortality through capital transfers, as local investments allow for a permanent expansion of public service provision. Estimates of the effect of political alignment on cause-specific mortality also suggest that the differences in all-cause mortality found earlier are likely due to increased spending in several functions of government. This is supported by the finding that connected municipalities have lower health operating expenditures and admit fewer patients to hospital beds, which suggests that fewer individuals seek health care in connected jurisdictions due to higher spending in other areas. Finally, I test for alternative mechanisms that could explain the results in chapter 1, namely channels that could affect mortality through economic growth and the election of left-leaning politicians, and I find no evidence that these could affect health outcomes.

In 3 I study whether political connections played a role in the allocation of health resources during the COVID-19 pandemic. I leverage detailed data on health inputs available through the Brazilian publicly funded health system (SUS) to show whether resources to address the pressure created by the COVID-19 pandemic on health systems have been distributed to local governments on political grounds. These were heavily branded federal and state government resources, which allow me to conjecture about an alternative mechanism that could explain the difference in all-cause mortality discussed in chapter 1, i.e., the allocation of resources that, according to voter's perception, were entirely funded by upper-tier governments, such as national program spending and large infrastructure projects. I find no evidence that medical resources were disproportionately distributed to the politically connected during the COVID-19 pandemic, which leaves little to no room for other channels to explain the results presented in chapter 1.

JEL Classifications: D72, H51, H72, H73, H75, H77, I15
Keywords: Political Connections, Intergovernmental Transfers, Government Spending, Adult Mortality

Acknowledgements

I am grateful to my advisors, Sandip Sukhtankar, Amalia Miller, and Shan Aman-Rana, for their guidance, support, and time devoted to the successful completion of this dissertation. I extend my gratitude to Jonathan Colmer, Daniel Gingerich, and Jishnu Das, for valuable feedback at many stages of this work. I am also thankful to the many faculty and students at the University of Virginia and seminar participants at the Annual Washington Area Development Economics Symposium for their helpful comments and suggestions. This work would also not be possible without the help of Jacalyn Huband, from UVA Research Computing. Finally, I am thankful to the UVA Graduate School of Arts and Sciences and Bankard Fund for Political Economy for their financial support.

This dissertation is dedicated to my wife, Flávia, and to my parents, José and Lúcia.

Contents

1 On the Effects of Political Connections on Mortality **1**
1.1 Introduction . . . 1
1.2 Conceptual Framework . . . 6
1.3 Institutional Environment . . . 8
1.3.1 Political Organization . . . 8
1.3.2 Elections . . . 9
1.4 Data . . . 10
1.4.1 Health . . . 10
1.4.2 Elections . . . 11
1.5 Empirical Approach . . . 12
1.5.1 Econometric Model . . . 12
1.5.2 Identification . . . 14
1.5.3 Estimation . . . 15
1.6 Results . . . 16
1.6.1 Mortality Rate . . . 16
1.7 Conclusion . . . 17
1.8 Figures . . . 19
1.9 Tables . . . 26

2 On the Mechanisms Through Which Political Connections Affect Mortality **33**
2.1 Introduction . . . 33
2.2 Intergovernmental Transfers and Local Government Spending . . . 37
2.3 Data . . . 38
2.3.1 Revenue, Transfers, and Spending . . . 38
2.3.2 Health . . . 39
2.4 Results . . . 39
2.4.1 Intergovernmental Transfers . . . 39
2.4.2 Local Government Expenditure . . . 40
2.4.3 Health Spending Vs. Capital Spending . . . 41

2.4.4 Capital Spending and Mortality 44
2.5 Robustness Checks 47
2.5.1 Economic Growth 47
2.5.2 Political Alignment Vs. Election of a Workers' Party Mayor . 48
2.6 Conclusion 49
2.7 Figures 51
2.8 Tables 59

3 Political Connections, COVID-19 Pandemic, and the Allocation Medical Resources 74
3.1 Introduction 74
3.2 The COVID-19 Pandemic in Brazil 79
3.3 Data 80
3.4 Results 81
3.5 Conclusion 83
3.6 Figures 85
3.7 Tables 91

List of Figures

1.1 Intergovernmental Transfers and Local Government Revenue 20
1.2 Intergovernmental Transfers and Local Government Expenditure . . . 21
1.3 Health Spending and Local Government Expenditure 22
1.4 Political Alignment and Transfers 23
1.5 Density of the Assignment Variable 24
1.6 Discontinuity in Mortality Rate 25

2.1 Discontinuity in Discretionary Transfers for Capital Expenditure . . . 51
2.2 Discontinuity in Discretionary Transfers for Operating Expenditure . 52
2.3 Discontinuity in Local Government Capital Expenditure 53
2.4 Discontinuity in Local Government Operating Expenditure 54
2.5 Effect of Political Alignment on Long-run Mortality Rate 55
2.6 $\hat{\beta}_2$ Simultaneous Equation Bias 56
2.7 $\hat{\beta}_3$ Simultaneous Equation Bias 57
2.8 Convex Relationship Between Government Spending and Mortality . 58

3.1 Number of ICU Beds Available through SUS Over Time 85
3.2 Number of Pneumology Beds Available through SUS Over Time . . . 86
3.3 Number of Ventilators Available through SUS Over Time 87
3.4 Number of Resuscitators Available through SUS Over Time 88
3.5 Number of Physician-Hours per Week Available through SUS Over Time 89

3.6 Number of Nurse-Hours per Week Available through SUS Over Time 90

List of Tables

1.1 Parties in the Federal Coalition and Seats in the Chamber of Deputies 26
1.2 Municipality Baseline Characteristics Balance Test 27
1.3 Municipality Baseline Characteristics Balance Test - Continued 28
1.4 Municipality Baseline Characteristics Balance Test - Continued 29
1.5 Municipality Baseline Characteristics Balance Test - Continued 30
1.6 Effect of Political Alignment on Mortality Rate 31
1.7 Effect of Political Alignment on Mortality Rate 32

2.1 Descriptive Statistics 60
2.2 Effect of Political Alignment on Discretionary Transfers 61
2.3 Effect of Political Alignment on Local Government Expenditure . . . 62
2.4 Effect of Political Alignment on Discretionary Capital Transfers . . . 63
2.5 Effect of Political Alignment on Discretionary Operating Transfers . . 64
2.6 Effect of Political Alignment on Local Government Capital Expenditure 65
2.7 Effect of Political Alignment on Local Government Operating Expenditure 66
2.8 Effect of Political Alignment on Mortality by Cause of Death 67
2.9 Effect of Political Alignment on Health Expenditure and Non-Discretionary Transfers to the Health System 68
2.10 Effect of Political Alignment on Hospital Admissions 69

2.11 Effect of Capital Spending on Mortality 70

2.12 Effect of Political Alignment on Economic Growth 71

2.13 Effect of a Workers' Party (PT) Mayor Election on Mortality 72

2.14 Effect of Political Alignment with Non-Workers' Party Governor on Mortality and Discretionary Transfers 73

3.1 Effect of Political Alignment with the Federal Government on the Allocation of Health Resources During the COVID-19 Pandemic 92

3.2 Effect of Political Alignment with the Federal Coalition on the Allocation of Health Resources During the COVID-19 Pandemic 93

3.3 Effect of Political Alignment with the State Government on the Allocation of Health Resources During the COVID-19 Pandemic 94

3.4 Effect of Political Alignment with the State Coalition on the Allocation of Health Resources During the COVID-19 Pandemic 95

Chapter 1

On the Effects of Political Connections on Mortality

1.1 Introduction

Intergovernmental transfers constitute the primary source of local government revenue and finance most local government spending in developed and developing economies.[1] It has long been argued that intergovernmental transfers have the potential to increase the welfare of local government jurisdictions by allowing for a decentralized provision of public goods and services (Oates, 1972, 1999).[2] Political connections, however, might distort optimal decision making and lead to allocation choices that are not entirely based on efficiency criteria (Khwaja and Mian, 2005). The political allocation

[1] On average, 46% of local government revenue in OECD countries and 55% in non-OECD countries derives from transfers, which finance 50% and 71% of their local government spending, respectively. See figures 1.1 and 1.2 for country-level statistics.

[2] Subnational governments have an informational advantage over the central government concerning local preferences and the cost of providing public goods and services. Besides, political or legal constraints might limit the central governments' ability to provide varying levels of public goods and services, which are, in theory, more efficient than a uniform provision.

of intergovernmental transfers is a widespread practice that has been observed in several economies, and not restricted to the developing world.[3] Whether such distortion in transfers allocation affect individuals of local government jurisdictions, however, remains an open question.

In this study, I ask two questions. First, whether political connections between grantor and grant-receiving governments affect local outcomes to the same extent that affect transfers allocation. Second, whether political connections have any aggregate impact on these outcomes. The answer to these questions is of great relevance from a policy standpoint: as noted earlier, local governments of both developed and developing nations are highly dependent on transfers, and transfers on political grounds is a common practice among politicians. Knowing whether political connections adversely affect local populations can, therefore, aid on the design of policies that seek to correct potential side effects of political transfers.

To answer these questions, I examine connections between the federal and local governments in Brazil and how these connections affect municipalities' mortality rates.[4] I look at a particular type of connection, one relevant for the context of large economies with robust institutional environments: the co-partisanship between heads of the central and subnational governments. More specifically, I define a municipality as being politically connected when its mayor is from the same party as the president.

[3]Spanish municipalities that become connected with the two upper-tier grantor governments receive 40% more grants than their counterparts (Solé-Ollé and Sorribas-Navarro, 2008); aligned municipalities in Germany receive more grants from the state governments (Baskaran and Hessami, 2017); in the US, congressional districts aligned to the federal government receive more federal outlays for government programs (Berry et al., 2010); co-partisanship between US governors and the president increases federal funds made to these states, while states opposing the president's party in Congressional elections are penalized (Larcinese et al., 2006); alignment between federal and state politicians increases the amount of grants made to American states (Grossman, 1994); Portuguese municipalities ruled by the prime minister's party receive more transfers (Pinho and Veiga, 2007).

[4]Municipalities constitute the smallest administrative region in the country. When talking about local governments, I am referring to the body of government that governs municipalities.

Alternatively, I define a municipality as being politically connected when its mayor is from a party in the federal coalition, the collection of parties that make up the presidency and federal government ministries.

Because intergovernmental transfers finance large shares of local government spending, mortality might be sensitive to distortions in transfers allocation for a couple of reasons. First, mortality is an outcome that is likely to be affected by government spending in several functions of government.[5] Second, health is one of the main components of local government spending in developing and developed economies: approximately one-tenth of all local government spending is categorized as health spending in both OECD and non-OECD countries.[6] In addition to that, Brazil makes for an excellent case to study whether and how political connections affect local outcomes. Brazilian municipalities are highly dependent on intergovernmental transfers: 84% of local government revenue in 2017 derived from transfers, of which 54% came from the federal government alone. Intergovernmental transfers financed approximately 90% of local government expenditure and transfers from the federal government 49%. Furthermore, it is well documented by a number of empirical studies that Brazil is subject to distortions in transfers allocation due to political connections between the federal and municipal governments.[7]

Political alignment is arguably an endogenous feature that might be correlated

[5] E.g. health (Bokhari et al., 2007; Bhalotra, 2007; Farahani et al., 2010), education (Ludwig and Miller, 2007; Grépin and Bharadwaj, 2015; Buckles et al., 2016), public security (Perova and Reynolds, 2017), and environment (Luechinger, 2014; Tanaka, 2015; Deryugina et al., 2019).

[6] Source: Government Finance Statistics Data - IMF. See figure 1.3 in the appendix for country-level statistics.

[7] Brollo and Nannicini (2012) find that municipalities not run by a party in the federal coalition receive a twenty-five percent cut in transfers in years that precede local elections. Litschig (2012) shows that the practice is not restricted to resources over which the federal government has discretion. The author finds that population estimates entering the formula used in Brazil's most extensive revenue-sharing program were manipulated to benefit the coalition ruling the country in the early 1990s.

with municipalities' unobservable characteristics that affect health and other outcomes. Besides, if residents in a municipality know that they can benefit from having a mayor with a close relationship to the federal government, they might vote for the president's party in local elections. To address these identification challenges, I exploit quasi-experimental variation in municipalities' assignment into political connectedness, created by close elections. I compare municipalities where aligned mayoral candidates barely won and barely lost the ballot. In these municipalities, randomness plays an essential role in determining the election outcome and, consequently, whether the municipality becomes connected. As the probability of treatment assignment changes discontinuously around the threshold of zero percent margin of victory of politically connected mayoral candidates, I use this measure of political alignment as the assignment variable in a regression discontinuity design (RDD).

In this chapter, I use data on mortality results and election outcomes of all 5,570 Brazilian municipalities for the 2002-2017 period. I construct measures of mortality rate from the death certificates of all individuals who died in the country between 2002 and 2017. Death certificates contain information about municipality of residency and municipality of death of the deceased, as well as the exact date of death, allowing me to aggregate these data on the municipality-year level. Mortality is measured as the number of deaths per one thousand residents in any given year. Election data consist of election outcomes (number of votes of all mayoral candidates in a given race) from all mayoral elections that took place between 2000 and 2016, which I use to construct the RDD assignment variable. I use party affiliation records to identify the party affiliation of elected mayors and federal government ministers during their term periods.

Municipalities that become connected to the federal government through the election of a co-partisan of the president experience a 16% decrease in the number of deaths in the years that follow local elections. When considering the federal coalition as the definition of political alignment, estimates are attenuated and become statistically insignificant, suggesting that mainly municipalities ruled by the president's party benefit from becoming connected to the federal government. This result is consistent with the federal government allocating transfers for party strengthening rather than coalition management (Boas et al., 2014). The result suggests that some action of the federal government toward municipalities, motivated by municipalities' political identity, drives mortality rates down in aligned jurisdictions. I explore this conjecture in detail in the next two chapters of this dissertation

The remainder of this chapter develops as follows. In section 1.2 I briefly discuss the so-called models of tactical redistribution, which explain why politicians would benefit the politically connected in the first place. In section 1.3 I outline some relevant aspects of Brazilian politics and elections. In section 1.4 I describe data sources and variable construction. In section 1.5 I discuss in detail the estimation approach, outline the identification strategy, and present the validity tests for the regression discontinuity design. In section 1.6 I present model estimates and the subsequent discussion of results. Section 1.7 concludes. In chapter 2 I run a thorough investigation of the effects of political alignment connections on intergovernmental transfers and local government spending, in an attempt to explain the results discussed in this chapter. In chapter 3, the last chapter of this dissertation, I discuss contributions and analyse government behavior during the COVID-19 pandemic, when there was an unprecedented increase in medical resources available through the Brazilian publicly funded health system.

1.2 Conceptual Framework

Models of tactical redistribution build on Dixit and Londregan (1996) to explain why politicians might favor one group of regions over others based on their political identity. The authors assume that politicians act not only to improve the welfare of local populations but also to maximize reelection prospects. To achieve this goal, politicians can either target swing constituencies, as in Lindbeck and Weibull (1987), or direct resources to core supporters, as defended by Cox and McCubbins (1986). The model considers two parties competing for votes by directing resources to voters who differ in their ideological preferences. Voters prefer to vote for politicians close to them on the ideological spectrum, but can swing if transfers are sufficiently large to offset the loss of utility derived from voting for an opposing party.

Arulampalam et al. (2009) extends on this model by accounting for the fact that receiving districts might be under control of parties that oppose the grantor government. As in Dixit and Londregan (1996), voters reward transfers from the central politician with votes. However, to the extent to which voters are unaware of the source of additional expenditure, the party that controls the grant receiving government will also benefit from the increased expenditure financed with federal transfers. If both grantor and grant receiving governments are under control of the same party, this party receives the full electoral benefit from increased expenditure at the local level. If, in opposition, the ruling party at the central level is different from the ruling party at the subnational level, the opposing party will also benefit from central transfers. The model predicts that the central government will favor regions that are both swing and aligned, that is, regions where voters have little attachment to the party in power at the local level and are controlled by the central politician's party. In addition to that, constituencies that are both swing and unaligned will be discriminated against with reduced transfers. These are districts where transfers might reinforce an opposing party's presence by increasing the reelection prospects of an unaligned candidate.

Asher and Novosad (2017) also distinguish between resources according to voters' perception of the source of additional resources. If voters are aware about the source, there should be no difference in the amount received by aligned and unaligned regions. Resources such as national program spending and large infrastructure projects are examples of such resources. If, on the other hand, voters can not entirely attribute the additional spending to the central or local-government politician, distortions in resource allocation arise. Intergovernmental transfers fall within this category, as local governments ultimately choose how to spend this money. As in Arulampalam et al. (2009), their model predicts that aligned municipalities will be favored with more government resources, but distortions become larger as local government jurisdictions become more likely to swing.

The predictions of the two models are summarized in figure 1.4. Connected constituencies, those where politically connected candidates obtained a positive margin, receive more transfers, and distortions in the allocation of transfers are exacerbated the more competitive the local election was in the previous dispute. With regard to the research design employed in this study, the models predict a positive local average treatment effect of political alignment on transfers at the discontinuity threshold of zero percent margin of victory, equals to $B - A$. It is reasonable to assume that local spending increases with transfers, and mortality decreases with spending. In that case, we should expect a positive effect of political alignment on spending but a negative effect on mortality.

1.3 Institutional Environment

1.3.1 Political Organization

Brazil is a federal republic, formed by the union of 26 states and a federal district, that together consist of 5,570 municipalities. Municipalities constitute the smallest administrative region of the country, followed by states and the union, and are ran by elected officials referred to as *prefeitos* (mayors). The federal legislative is composed of a lower and upper house, the Chamber of Deputies and the Senate, while the federal executive is formed by the presidency and ministries. The president has the power to appoint ministers, and both the presidency and ministries have some discretion over the allocation of intergovernmental transfers.

Because of the large number of active political parties in the country, 33 in 2020, with 24 of these parties holding at least one of the 513 seats in the Chamber of Deputies, it is hard for the president to build a ruling majority in the congress with members of his party. A simple majority of 257 votes is necessary to approve laws proposed by the executive, including the budgetary law, which sets out the expenses and revenues realized by the federal government in any given year. As seen in the first column of table 1.1, the president's party has always occupied less than half of the seats necessary to approve its budget. One margin used to build a ruling majority is to nominate members of other parties to head ministries of state. This collection of parties is usually referred to as the federal coalition and usually votes with the president's party. The last three columns in table 1.1 list the parties in the federal coalition with the most seats in the Chamber of Deputies, followed by the number of seats occupied by these parties. As seen, the federal government needs support from at least three other parties to attain a ruling majority.[8]

1.3.2 Elections

Presidential and congressional elections occur every four years, followed by mayoral elections halfway through the presidential term.[9] In all layers of government, members of the executive are elected for a four-year term, which starts on January 1 of the year following elections and concludes on December 31 of their fourth year in office. Voting is mandatory for every individual aged 18 to 70 years and optional for those between 16 and 18 or over 70. Candidates must be affiliated with a political party to run in the election, and no independent candidacy is allowed. Elections for the executive branch are direct and follow a majority system, with different rules applying to municipalities, depending on the number of eligible voters. In municipalities with less than 200,000 registered voters, a plurality rule applies, and the most voted mayoral candidate is elected, regardless of obtaining the absolute majority of votes. By contrast, in municipalities with more than 200,000 voters, a majority rule is applied, and a mayoral candidate must attain at least 50% of valid votes to be elected.[10] If no candidate obtains an absolute majority, a runoff election occurs between the two candidates with the highest vote shares.

[8] In section 1.4, I describe how I defined the federal coalition as the list of parties depicted in table 1.1.

[9] This timing in elections implies that the political alignment of municipalities *might* change every two years, either through the election of a mayor aligned to the federal government or the election of a president aligned to the local government.

[10] Valid votes exclude null and blank votes.

1.4 Data

1.4.1 Health

I analyze the death certificates of every individual who died in Brazil between 2002 and 2017 to construct all-cause and cause-specific mortality measures. The data were obtained from the Mortality Information System (*Sistema de Informações sobre Mortalidade* - SIM) of the Ministry of Health (*Ministério da Saúde*) and contain, among other information, information about the municipality of residence and municipality of death of the deceased; date of birth and date of death; and cause of death according to the 10^{th} revision of the International Classification of Diseases (ICD-10) of the World Health Organization (WHO). I use this information to count the number of deaths at the municipal level in any given year from any given cause. I consider all causes of death amenable to health care,[11] deaths by infectious and parasitic diseases, homicide, suicide, and transport accident deaths.[12] All-cause mortality is measured as the number of deaths in a municipality per one thousand residents, and cause-specific mortality as the number of deaths from some specific cause per one hundred thousand residents.

[11]Deaths amenable to health care are unnecessary untimely deaths that can be prevented by timely and effective medical care (Rutstein et al., 1976)

[12]For a complete list of causes of death amenable to health care and their respective ICD-10 codes, see Nolte and McKee (2004, p. 66). See ICD-10 Chapter I: certain infectious and parasitic diseases; ICD-10 chapter XX block X85-Y09: assault; ICD-10 chapter XX block X60-X84: intentional self-harm; and ICD-10 chapter XX block V01-V99: transport accidents, for a complete list of infectious and parasitic diseases, homicide, suicide, and transport accident causes of deaths and their respective ICD-10 codes.

1.4.2 Elections

I look at the election outcomes of all mayoral elections between 1998 and 2016, which were obtained from the repository of electoral data (*repositório de dados eleitorais*) of the High Court of Elections (*Tribunal Superior Eleitoral*).[13] These data contain the number of votes, party affiliation, and voter's ID of every mayoral candidate who ran for office in this period. I use this information to calculate the vote share and margin of victory of mayoral candidates. Because elected mayors can move to a different party after elected, I use party affiliation records, also available through the High Court of Elections, to identify the party affiliation of elected mayors during their term period. Party affiliation records contain information about the name, date of affiliation, termination date, and voter's ID, among other information, of every individual in the country that has ever been affiliated to a political party. I combine these two datasets using voter's ID and pinpoint the party to which elected mayors were affiliated during their term period using the affiliation and termination dates. Municipality-years in which elected mayors moved to a different party were excluded from the analysis.

I identify the parties in the federal coalition by searching for minister names in the party affiliation dataset. I obtained the list of minister names and their term periods in the gallery of former presidents of the Library of Presidency (*Biblioteca da Presidência da República*). The information is organized in the form of unstructured text, so I use regular expressions to extract minister names and term periods in the form of structured data. I then match these data to the party affiliation data using names and obtain a list of parties in the federal coalition in any given year by looking

[13] Mayors elected in 1998 concluded their terms on December 2002. Those elected in 2016 started their terms in 2017, matching the period for which mortality and financial data are available.

at the term periods. I rank parties in the federal coalition by the number of seats in the Chamber of Deputies. I can finally calculate the margin of victory of politically connected candidates for any of the definitions of political connectedness. The margin of victory of politically connected candidates is calculated as follows:

$$X_i = \max_{i \in C}\{VS_i\} - \max_{j \in NC}\{VS_j\}$$

where X_i denotes candidate i's margin of victory; VS_i candidate i's vote share; C the president's party or the set of parties in the coalition, depending on how political connectedness is defined; and NC the set of unaligned parties. In municipalities with more than 200,000 voters where no candidate obtained an absolute majority, the politically connected candidate's margin of victory will be calculated at the runoff election.

1.5 Empirical Approach

1.5.1 Econometric Model

Whether or not a municipality becomes connected to the federal government might be correlated with unobservable shocks that affect outcomes. In addition to that, if voters in a local government jurisdiction believe they might benefit from their municipality becoming connected to the federal government, they might vote for the president's party in local elections. To work around these identification challenges, I exploit quasi-experimental variation in municipalities' assignment into political connectedness, generated by close elections, within a regression discontinuity design. I compare municipalities where politically connected mayoral candidates barely won the election to those where politically connected mayoral candidates barely lost the ballot. In elections decided by a close margin, randomness plays a central role in determining the election outcome and, consequently, whether municipalities will become connected or not. In this sense, comparing municipalities where political alignment was determined in a close election is the same as comparing municipalities where political alignment was assigned randomly.

I measure political alignment as the margin of victory of politically connected mayoral candidates. Municipalities only become connected to the federal government if an aligned candidate obtains a positive margin in the election. Treatment assignment, therefore, changes discontinuously at the threshold of zero percent margin of victory. Lee (2008) shows that such a mechanism not only satisfies minimum assumptions established in Hahn et al. (2001) for the identification of treatment effects in regression discontinuity designs but also generates variation in treatment status, in a neighborhood of the discontinuity threshold, that is as good as if randomized by an experiment. The discontinuous regression equation used in this work is given by:

$$Y_{it} = \alpha_l + \tau D_{it} + f_l(X_{it}) + D_{it}\left[f_r(X_{it}) - f_l(X_{it})\right] + U_{it} \tag{1.1}$$

where α_l and α_r are the left and right hand side regression intercepts, respectively; $\tau = \alpha_r - \alpha_l$ is the RDD coefficient, that is, the effect of political alignment on the outcome variable Y_{it}; X_{it} the RDD assignment variable, the politically connected mayoral candidate's margin of victory in municipality i in the election that precedes t; f_l and f_r are polynomials on X_{it};[14] and U_{it} an error term.[15]

[14]Let k denote the degree of the polynomial function f_l. Then $f_l(X_{it}) = \beta_{l1}X_{it} + \beta_{l2}X_{it}^2 + \ldots + \beta_{lk}X_{it}^k$. Alternatively, $f_r(X_{it}) = \beta_{r1}X_{it} + \beta_{r2}X_{it}^2 + \ldots + \beta_{rk}X_{it}^k$.

[15]The use of covariates is irrelevant for the identification of local average treatment effects in

1.5.2 Identification

Let Y_1 be the value outcome Y takes if the municipality is treated by being politically connected, and Y_0 the value outcome Y takes if the municipality is not politically connected. The local average treatment effect (LATE) at the zero percent margin of victory of politically connected mayoral candidates, that is, at $X = 0$, is given by:

$$
\begin{aligned}
E\left(Y_1 - Y_0 | X = 0\right) &= \lim_{\varepsilon \to 0^+} E\left(Y | X = \varepsilon\right) - \lim_{\varepsilon \to 0^-} E\left(Y | X = \varepsilon\right) \\
&= \tau + \lim_{\varepsilon \to 0^+} E\left(\boldsymbol{W}\gamma + U | X = \varepsilon\right) - \lim_{\varepsilon \to 0^-} E\left(\boldsymbol{W}\gamma + U | X = \varepsilon\right) \\
&= \tau + \lim_{\varepsilon \to 0^+} \int_{\boldsymbol{W}} \int_{U} \left(\boldsymbol{W}\gamma + U\right) f\left(\boldsymbol{W}, U | X = \varepsilon\right) dU d\boldsymbol{W} - \\
&\quad \lim_{\varepsilon \to 0^-} \int_{\boldsymbol{W}} \int_{U} \left(\boldsymbol{W}\gamma + U\right) f\left(\boldsymbol{W}, U | X = \varepsilon\right) dU d\boldsymbol{W} \\
&= \tau
\end{aligned}
$$

where the term $\boldsymbol{W}\gamma$ was added to regression equation 1.1 for the sake of this discussion, and $\boldsymbol{W}$ is a vector of municipality's baseline characteristics. For the last equality to hold, I need to assume that the density $f(\boldsymbol{W}, U|X)$ is continuous at $X = 0$. Although I cannot test this assumption directly, since U cannot be observed, it is possible to test for the continuity of $f(\boldsymbol{W}|X)$. In other words, it must be the case that municipality baseline characteristics are balanced at $X = 0$ for local average treatment effects to be identified in regression discontinuity designs: if assignment into treatment is random, treatment and control units must not differ in their baseline characteristics at the RDD cutoff.

I provide evidence of the validity of this assumption by testing for differences in municipalities' baseline characteristics between aligned and unaligned municipalities

regression discontinuity designs (Lee and Lemieux, 2010).

within a regression discontinuity design. Of the 44 characteristics that were tested, 43 are balanced (tables 1.2 through 1.5), evidence that municipalities in a neighborhood of $X = 0$ are virtually identical.

In addition to testing for the balance of baseline characteristics, I test for the continuity of the density of the assignment variable at the discontinuity threshold of zero percent margin of victory. If assignment is random and treatment and control units have no precise control over the assignment variable, than the density of X must be continuous at the treatment-assignment cutoff (McCrary, 2008). If municipalities, or voters, can precisely manipulate X, we should observe a higher frequency of slightly positive values of the assignment variable. In figure 1.5 I test this assumption by estimating the density of X_{it} on both sides of the threshold of zero percent margin of victory and comparing the densities at that point as they converge from both sides of the cutoff. I test the null hypothesis that the density of X is the same on both sides of the cutoff and obtain a fairly large p-value of 0.5, failing to reject the null hypothesis at any reasonable significance level.

1.5.3 Estimation

Equation 1.1 is estimated using local polynomial regression estimation and inference procedures developed in Calonico et al. (2014), Calonico et al. (2018) and Calonico et al. (2019). Additionally, I report local linear and local quadratic estimates of τ, as suggested by Gelman and Imbens (2019).

1.6 Results

1.6.1 Mortality Rate

Figure 1.6 plots the discontinuity in mortality between connected and unconnected municipalities. The pattern observed in the figure is the opposite of that predicted by the models in section 1.2, which describe the relationship between political alignment and transfers: mortality falls at the cutoff as a consequence of political alignment. If mortality and spending are inversely related, this can be indicative that political alignment affects mortality through transfers, as intergovernmental transfers finance local government spending.

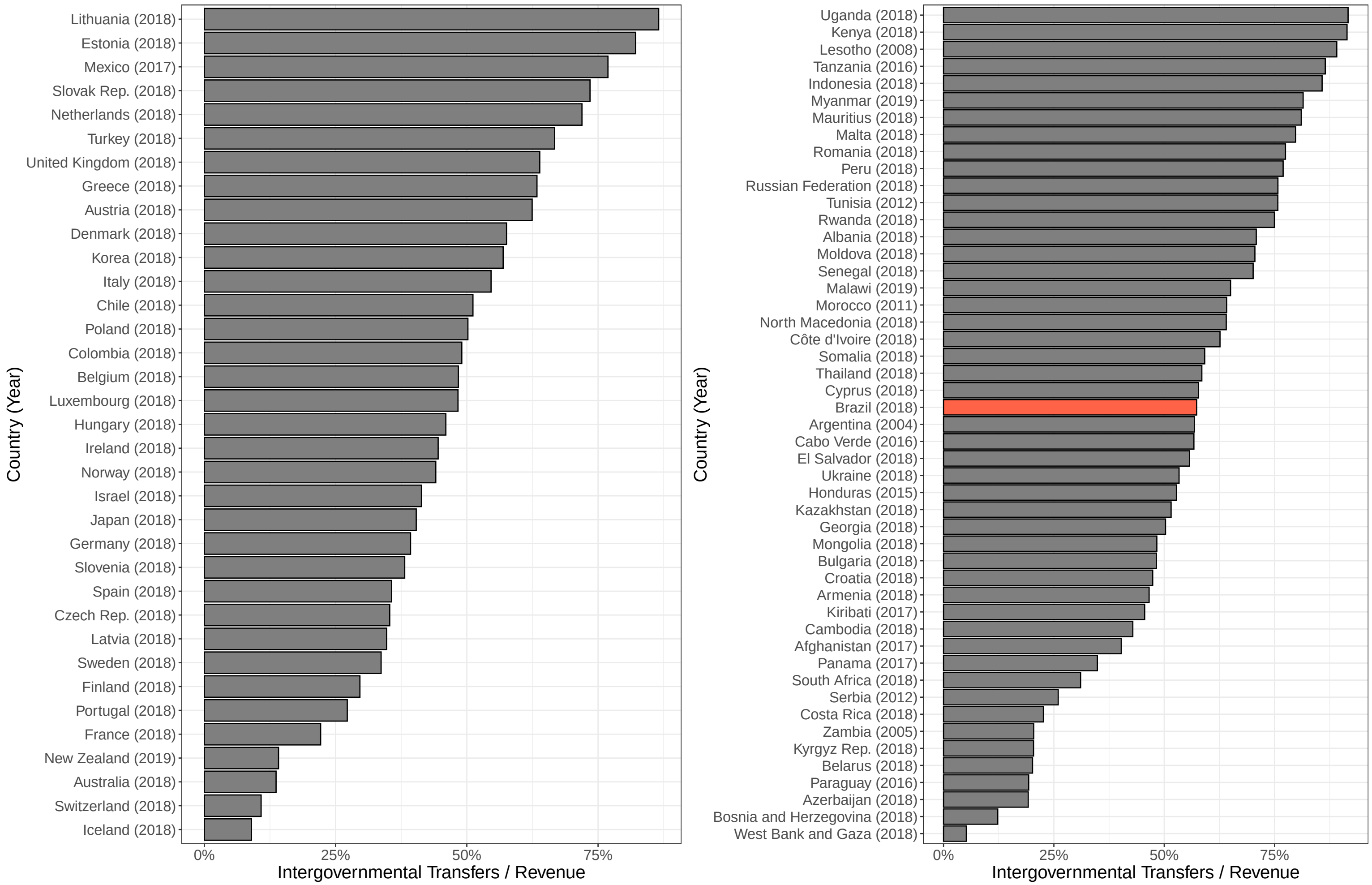
Table 1.6 estimates the size of the discontinuity in mortality rates. Columns 1 through 3 present local linear RD estimates, and columns 4 through 6 local quadratic RD estimates. Columns 1 and 3 present estimates obtained using a mean square error optimal bandwidth selector algorithm. For robustness, I present estimates using half (columns 2 and 5) and twice (columns 3 and 6) as large bandwidths. When a municipality becomes connected to the federal government through the election of a co-partisan of the president, mortality falls by 0.72 deaths per one thousand residents, relative to municipalities that did not elect an aligned mayor. This is equivalent to a 15.66% reduction in the number of deaths. Estimates are robust to the choice of bandwidth and model specification. This result is consistent with some actions of the federal government toward connected municipalities causing mortality to decrease.

Changing the definition of political alignment to one that considers parties in the federal coalition attenuates estimates of the effect of political alignment on mortality. These become statistically insignificant after two parties are added to the definition of federal coalition. (see table 1.7). If municipalities that are not favored by the federal government and have more deaths as a consequence are taken as treated, RDD estimates of the effect of political alignment on mortality will be biased toward zero. This result suggests that political transfers are designed for party strengthening rather than coalition management, as in Boas et al. (2014), that is, only municipalities governed by a co-partisan of the president benefit from connections with the federal government.

1.7 Conclusion

The political allocation of government resources is a widespread practice that has been observed in several economies, both large and small, free and despotic, developing and developed. Given the scope of political favoritism, it is of utmost importance to understand the consequences of such behavior, in special its impact on the populations of affected areas. In this chapter, I showed that political connections affect government behavior in such an extent that it also affects the mortality rates of aligned and unaligned local government jurisdictions. This result suggests that some action of the federal government toward municipalities, motivated by municipalities' political identity, reduces mortality rates in aligned jurisdictions or, alternatively, increases it in non-aligned regions. Although this answers the question of whether political connections affect government behavior to a certain degree that it will be consequential for local outcomes, it does not answer the question of how political connections affect individuals in local government jurisdictions. In the next chapter I try to answer this question by analyzing intergovernmental transfers from the federal to local governments in Brazil. Intergovernmental transfers finance large shares of local government spending in rich and poor economies, as discussed earlier. Besides, the majority of empirical studies that focus on countries with strong institutional environments find imbalances in grant allocation that are due to political connections.

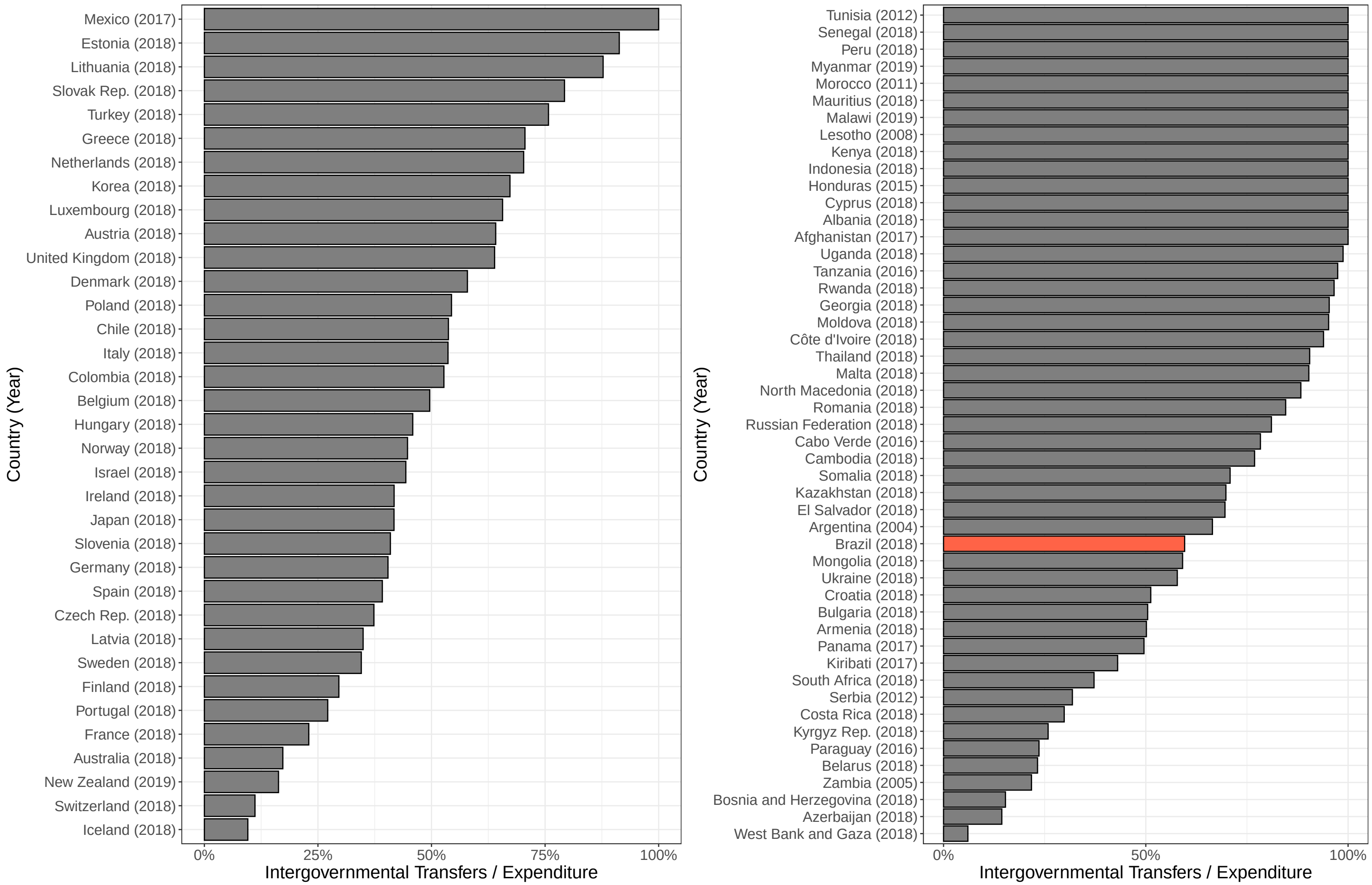
1.8 Figures



(a) OECD Countries (b) Non-OECD Countries

Figure 1.1: Intergovernmental Transfers and Local Government Revenue

Source: Government Finance Statistics Data - International Monetary Fund. The variable in the horizontal axis denotes the sum of intergovernmental transfers across all local governments within a country over the sum of local governments revenue.

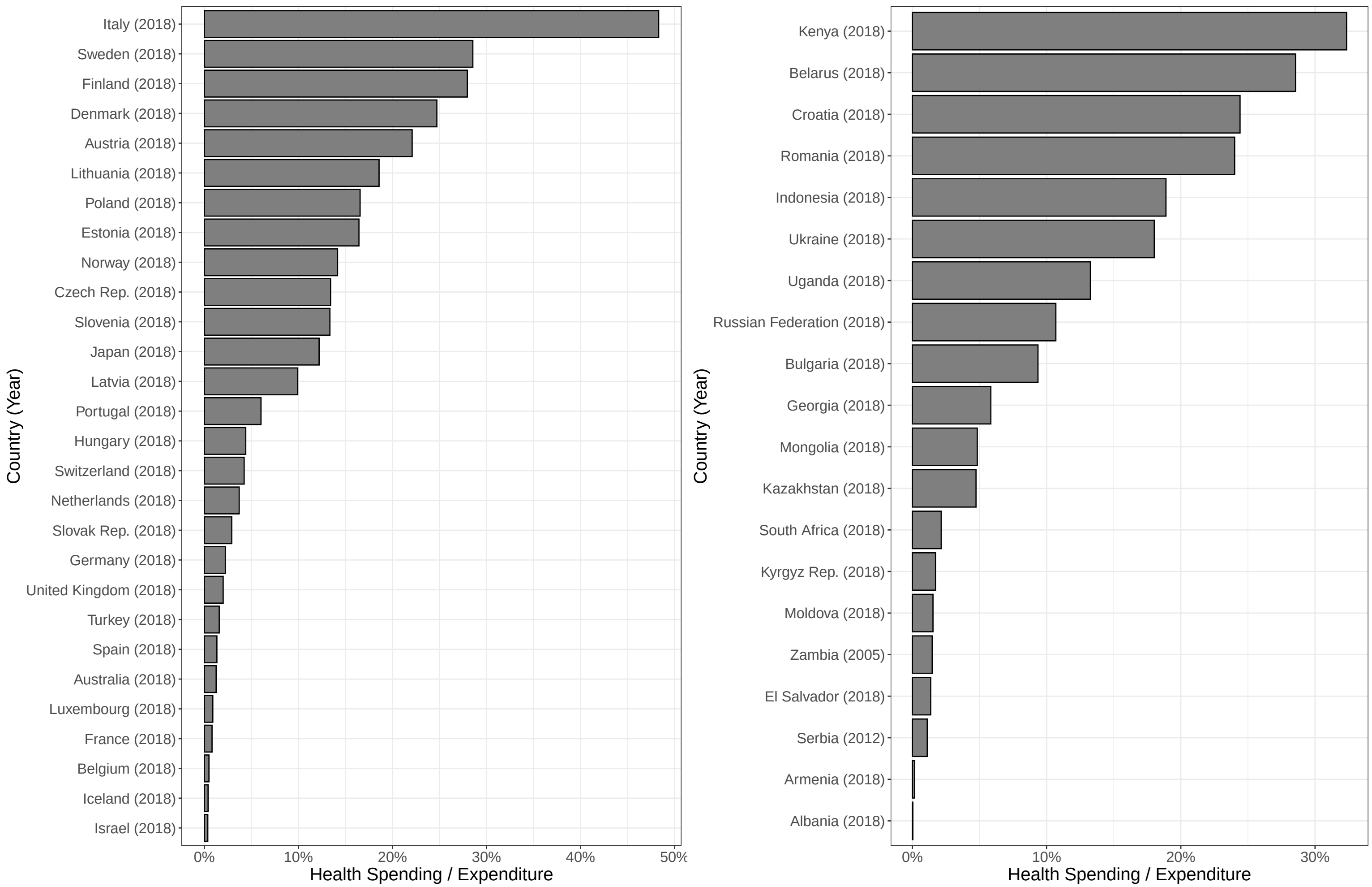


(a) OECD Countries

(b) Non-OECD Countries

Figure 1.2: Intergovernmental Transfers and Local Government Expenditure

Source: Government Finance Statistics Data - International Monetary Fund. The variable in the horizontal axis denotes the sum of intergovernmental transfers across all local governments within a country over the sum of local governments expenditure.



(a) OECD Countries

(b) Non-OECD Countries

Figure 1.3: Health Spending and Local Government Expenditure

Source: Government Finance Statistics Data - International Monetary Fund. The variable in the horizontal axis denotes the sum of local governments health expenditure across all local governments within a country over the sum of local governments expenditure.

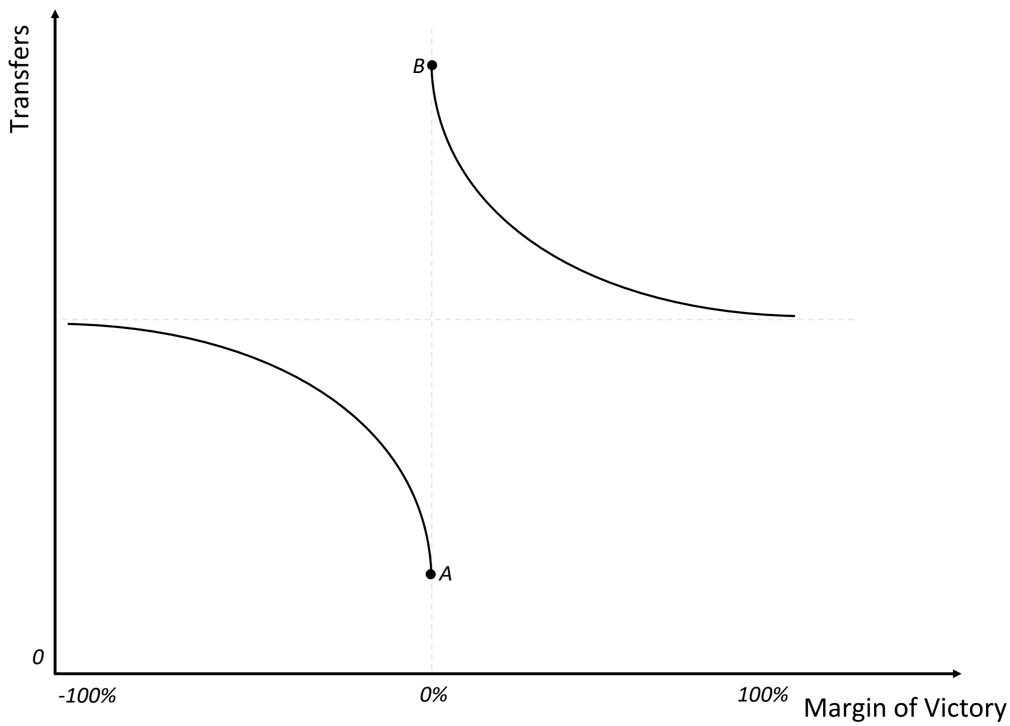


Figure 1.4: Political Alignment and Transfers

Notes: The variable in the horizontal axis denotes the margin of victory of politically connected mayoral candidates. The variable in the vertical axis denotes per capita discretionary transfers.

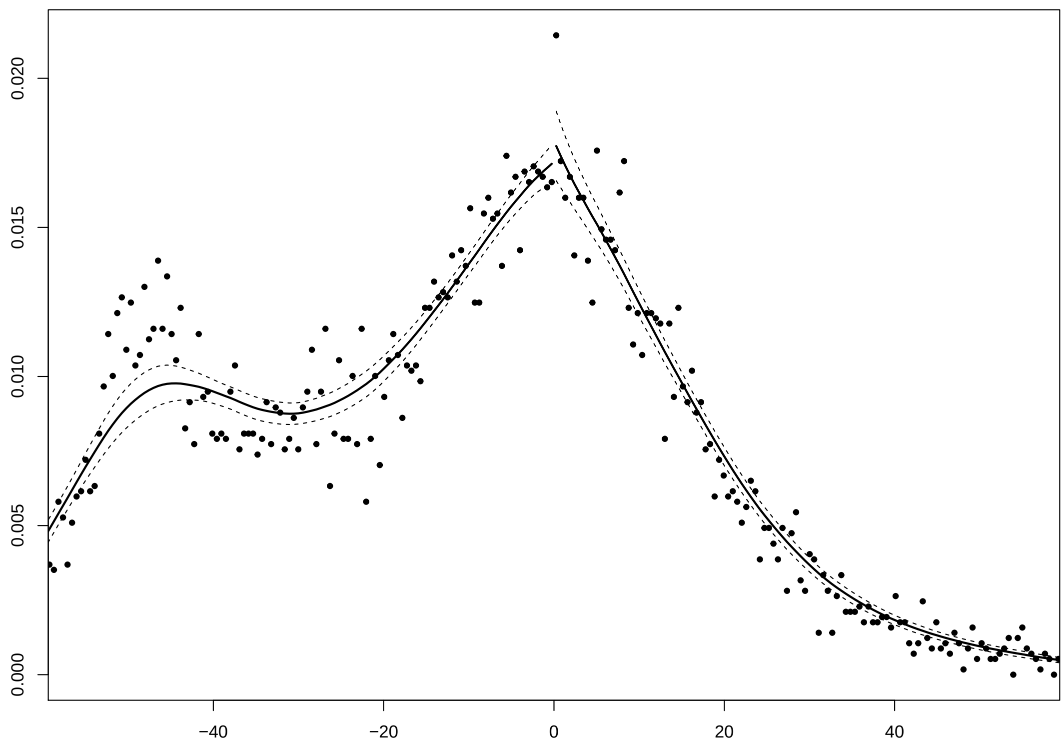


Figure 1.5: Density of the Assignment Variable

Notes: The figure plots the density of the assignment variable, margin of victory of politically connected mayoral candidates. Dots represent binned sample means and the solid lines nonparametric estimates of the density of the assignment variable, fitted separately at both sides of the cutoff of zero margin of victory. The dashed lines correspond to a 95% confidence interval.

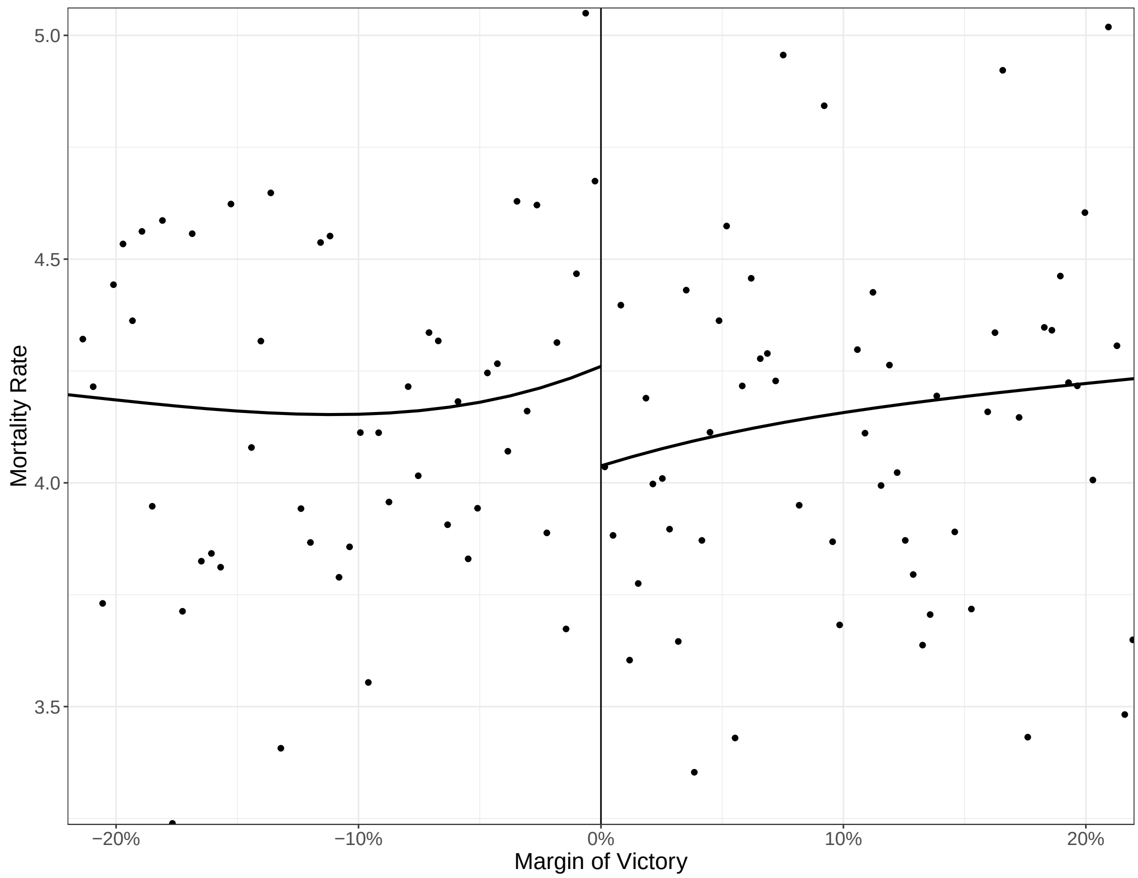


Figure 1.6: Discontinuity in Mortality Rate

Notes: The figure plots population conditional mean functions of control and treated units. A fourth-degree polynomial was used to fit population conditional mean functions. Dots denote binned sample means. Points to the left of the discontinuity denote the mortality rate of municipalities where an aligned candidate lost the election. Points to the right denote the mortality rate of municipalities where an aligned candidate won the election.

1.9 Tables

Table 1.1: Parties in the Federal Coalition and Seats in the Chamber of Deputies

		Federal Coalition		
Year(s)	President	Two Parties	Three Parties	Four Parties
2002	PSDB (102)	DEM, PSDB (207)	DEM, PSDB, MDB (293)	DEM, PSDB, MDB, PP (353)
2003-2006	PT (91)	PT, MDB (168)	PT, MDB, PP (216)	PT, MDB, PP, PTB (242)
2007-2010	PT (83)	MDB, PT (172)	MDB, PT, PP (213)	MDB, PT, PP, PSB (240)
2011-2014	PT (86)	PT, MDB (164)	PT, MDB, PP (208)	PT, MDB, PP, PR (249)
2015	PT (69)	PT, MDB (134)	PT, MDB, PSD (170)	PT, MDB, PSD, PR (204)
2017	MDB (65)	MDB, PSDB (119)	MDB, PSDB, PP (157)	MDB, PSDB, PP, PSD (193)

Notes: Table rows depict parties in the presidency and federal coalition in each of the administrations in power from 2002 to 2017. Parties selected from a list of parties where at least one affiliate has been appointed by the president to a ministry of state. Parties listed in ascending order of number of seats in the chamber of deputies. Number of seats in the corresponding legislature in parenthesis.

Table 1.2: Municipality Baseline Characteristics Balance Test

	Polynomial of Order					
	1			2		
Bandwidth	h*	h*/2	2h*	h*	h*/2	2h*
Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)
Urban	0.37	4.27	1.26	0.28	5.17	0.50
	(3.39)	(5.78)	(3.01)	(3.89)	(6.39)	(3.32)
Water	-1.13	0.57	-0.16	-2.25	2.23	-1.88
	(3.33)	(5.63)	(3.02)	(4.02)	(6.50)	(3.45)
Bathroom	1.78	4.15	1.10	2.48	4.15	0.95
	(2.53)	(3.93)	(2.30)	(2.86)	(4.32)	(2.52)
Toilet	0.65	3.56	-0.39	1.35	4.66	-0.49
	(4.34)	(7.20)	(3.82)	(4.84)	(7.71)	(4.12)
Sewer	5.91	18.53**	6.40	5.42	21.07**	6.03
	(4.36)	(7.49)	(4.01)	(5.56)	(8.93)	(4.74)
Trash	1.13	2.75	1.36	1.06	3.76	0.60
	(3.46)	(5.72)	(3.07)	(3.91)	(6.24)	(3.35)
Electricity	-0.13	1.76	-0.31	0.20	1.67	-0.27
	(1.15)	(1.57)	(1.05)	(1.26)	(1.71)	(1.14)
Fridge	0.21	2.19	-0.30	0.39	1.63	-0.43
	(2.17)	(3.48)	(1.95)	(2.40)	(3.73)	(2.08)
Washing	0.92	1.78	1.20	1.29	2.25	0.71
	(3.26)	(5.71)	(2.87)	(3.80)	(6.39)	(3.21)
Microwave	7.58*	34.21***	5.66	12.10**	36.31***	7.65*
	(4.37)	(8.22)	(3.94)	(5.25)	(9.18)	(4.43)
Phone	2.68	7.19*	3.64*	2.90	7.85	3.21
	(2.46)	(4.26)	(2.20)	(2.91)	(4.87)	(2.49)

Notes: The table shows the effect of political alignment on municipality baseline characteristics. Estimates obtained using local linear and local quadratic RD point estimation with robust bias-corrected confidence intervals and triangular kernel. Optimal and bias-correction bandwidths obtained using a mean squared error optimal bandwidth selector algorithm. Robust standard errors clustered at municipality level in parenthesis. Assignment variable: margin of victory of politically connected mayoral candidates. $^{*}: p < 0.1$; $^{**}: p < 0.05$; $^{***}: p < 0.01$.

Table 1.3: Municipality Baseline Characteristics Balance Test - Continued

	Polynomial of Order					
	1			2		
Bandwidth	h*	h*/2	2h*	h*	h*/2	2h*
Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)
Computer	-0.16	0.11	0.03	1.00	-1.88	-0.79
	(1.93)	(3.27)	(1.75)	(2.43)	(4.00)	(2.09)
TV	0.21	1.35	-0.18	0.32	1.12	-0.18
	(1.59)	(2.32)	(1.45)	(1.73)	(2.49)	(1.55)
Car	0.95	0.72	0.86	1.53	0.09	0.43
	(3.03)	(5.13)	(2.68)	(3.59)	(5.79)	(3.01)
AC	3.20*	5.29	3.18**	3.55	6.74*	3.49*
	(1.79)	(3.24)	(1.61)	(2.40)	(3.76)	(2.01)
PC HH Income	-26.98	-1.80	-19.91	-26.46	23.39	-40.78
	(64.43)	(110.72)	(57.86)	(75.46)	(125.51)	(64.72)
Lighting	-1.03	0.51	-0.86	-0.80	1.09	-0.98
	(0.74)	(0.89)	(0.64)	(0.79)	(0.86)	(0.78)
Pavement	-1.03	0.51	-0.86	-0.80	1.09	-0.98
	(0.74)	(0.89)	(0.64)	(0.79)	(0.86)	(0.78)
Cellphone	-2.12	-5.34	-1.70	-2.36	-6.09	-2.40
	(2.87)	(4.48)	(2.58)	(3.30)	(4.94)	(2.85)
Internet	-0.41	-2.06	-0.02	-0.39	-2.79	-0.62
	(1.93)	(3.35)	(1.74)	(2.29)	(3.74)	(1.95)
Female	0.06	0.08	0.11	-0.08	0.15	-0.05
	(0.18)	(0.30)	(0.17)	(0.26)	(0.40)	(0.22)
Age 0 to 1	0.03	0.05	0.02	0.02	0.04	0.03
	(0.06)	(0.09)	(0.06)	(0.07)	(0.11)	(0.06)

Notes: The table shows the effect of political alignment on municipality baseline characteristics. Estimates obtained using local linear and local quadratic RD point estimation with robust bias-corrected confidence intervals and triangular kernel. Optimal and bias-correction bandwidths obtained using a mean squared error optimal bandwidth selector algorithm. Robust standard errors clustered at municipality level in parenthesis. Assignment variable: margin of victory of politically connected mayoral candidates. $^{*}: p < 0.1$; $^{**}: p < 0.05$; $^{***}: p < 0.01$.

Table 1.4: Municipality Baseline Characteristics Balance Test - Continued

	Polynomial of Order					
	1			2		
Bandwidth	h*	h*/2	2h*	h*	h*/2	2h*
Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)
Age 1 to 5	0.08	0.20	0.07	0.05	0.24	0.11
	(0.22)	(0.36)	(0.21)	(0.26)	(0.40)	(0.23)
Age 5 to 10	0.08	0.18	-0.04	0.05	0.22	0.18
	(0.23)	(0.38)	(0.21)	(0.32)	(0.50)	(0.27)
Age 10 to 20	0.03	0.09	0.02	-0.04	0.05	0.13
	(0.37)	(0.61)	(0.34)	(0.44)	(0.70)	(0.38)
Age 20 to 30	0.16	0.63	0.15	0.26	0.65	0.21
	(0.26)	(0.43)	(0.24)	(0.31)	(0.47)	(0.26)
Age 30 to 40	0.12	0.30	0.12	0.19	0.24	0.09
	(0.23)	(0.40)	(0.21)	(0.28)	(0.46)	(0.24)
Age 40 to 50	0.01	-0.26	-0.04	0.01	-0.35	-0.05
	(0.30)	(0.47)	(0.27)	(0.34)	(0.50)	(0.29)
Age 50 to 60	-0.17	-0.51	-0.06	-0.19	-0.51	-0.29
	(0.28)	(0.45)	(0.25)	(0.36)	(0.54)	(0.31)
Age 60 to 70	-0.27	-0.45	-0.25	-0.30	-0.61	-0.28
	(0.26)	(0.42)	(0.23)	(0.26)	(0.41)	(0.23)
Age 70 to 80	0.00	-0.18	-0.05	0.00	-0.12	-0.07
	(0.17)	(0.28)	(0.15)	(0.20)	(0.33)	(0.17)
Age 80 to 90	0.00	-0.01	-0.04	0.00	0.05	-0.03
	(0.09)	(0.15)	(0.08)	(0.11)	(0.17)	(0.09)
Age 90 plus	0.00	-0.01	0.00	-0.01	-0.01	0.00
	(0.03)	(0.05)	(0.02)	(0.04)	(0.06)	(0.03)

Notes: The table shows the effect of political alignment on municipality baseline characteristics. Estimates obtained using local linear and local quadratic RD point estimation with robust bias-corrected confidence intervals and triangular kernel. Optimal and bias-correction bandwidths obtained using a mean squared error optimal bandwidth selector algorithm. Robust standard errors clustered at municipality level in parenthesis. Assignment variable: margin of victory of politically connected mayoral candidates. $^{*}: p < 0.1$; $^{**}: p < 0.05$; $^{***}: p < 0.01$.

Table 1.5: Municipality Baseline Characteristics Balance Test - Continued

	Polynomial of Order					
	1			2		
Bandwidth	h*	h*/2	2h*	h*	h*/2	2h*
Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)
White	-3.52	-8.19	-2.72	-4.49	-8.87	-3.24
	(4.00)	(6.91)	(3.58)	(4.70)	(7.72)	(3.98)
Black	1.16	2.20	1.12	1.37	2.27	1.15
	(0.78)	(1.55)	(0.71)	(0.90)	(1.66)	(0.77)
Yellow	0.13	0.35*	0.06	0.25**	0.34	0.15
	(0.11)	(0.20)	(0.11)	(0.13)	(0.23)	(0.12)
Brown	2.45	5.50	1.77	3.15	6.75	2.30
	(3.50)	(5.95)	(3.12)	(4.12)	(6.60)	(3.47)
Indigenous	-0.57	-0.76	-0.61	-0.28	-0.60	-0.41
	(0.64)	(1.17)	(0.58)	(0.90)	(1.61)	(0.74)
Literacy	0.41	0.37	0.45	0.54	0.53	0.27
	(1.47)	(2.47)	(1.30)	(1.68)	(2.75)	(1.42)
In School	-0.05	0.39	-0.36	-0.29	0.31	-0.33
	(0.60)	(0.84)	(0.55)	(0.63)	(0.85)	(0.57)
Years Schooling: 0	-1.29	-8.72	-0.62	-2.37	-12.85	-1.55
	(5.28)	(13.91)	(4.48)	(7.10)	(17.09)	(5.21)
Years Schooling: 1 to 9	-0.63	-8.36	-1.96	-2.85	-9.23	-0.74
	(3.85)	(10.10)	(3.28)	(6.09)	(15.29)	(4.51)
Years Schooling: 10 to 12	1.37	9.32**	0.50	2.74	11.75***	1.06
	(2.01)	(3.77)	(1.77)	(2.48)	(4.42)	(2.04)
Years Schooling: 13 plus	1.76	7.56**	1.36	2.83	9.65***	1.70
	(1.49)	(3.05)	(1.34)	(1.94)	(3.58)	(1.57)

Notes: The table shows the effect of political alignment on municipality baseline characteristics. Estimates obtained using local linear and local quadratic RD point estimation with robust bias-corrected confidence intervals and triangular kernel. Optimal and bias-correction bandwidths obtained using a mean squared error optimal bandwidth selector algorithm. Robust standard errors clustered at municipality level in parenthesis. Assignment variable: margin of victory of politically connected mayoral candidates. $^{*}: p < 0.1$; $^{**}: p < 0.05$; $^{***}: p < 0.01$.

Table 1.6: Effect of Political Alignment on Mortality Rate

	Polynomial of Order					
	1			2		
Bandwidth	h*	h*/2	2h*	h*	h*/2	2h*
Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)
Mortality Rate	-0.72***	-0.83**	-0.82***	-0.86***	-0.73**	-0.88***
	(0.16)	(0.33)	(0.15)	(0.17)	(0.31)	(0.14)
Magnitude	-15.66%	-16.94%	-17.77%	-18.51%	-15.12%	-18.95%
Bandwidth	7.56%	3.78%	15.12%	14.68%	7.34%	29.36%
Observations	5343	2777	9505	9312	5184	14406
Clusters	1842	1051	2810	2774	1798	3616

Notes: The table shows the effect of political alignment on mortality rate. Estimates obtained using local linear and local quadratic RD point estimation with robust bias-corrected confidence intervals and triangular kernel. Optimal and bias-correction bandwidths obtained using a mean squared error optimal bandwidth selector algorithm. Robust standard errors clustered at municipality level in parenthesis. Assignment variable: margin of victory of politically connected mayoral candidates. The dependent variable denotes the number of deaths in a municipality per thousand residents. * : $p < 0.1$; ** : $p < 0.05$; *** : $p < 0.01$.

Table 1.7: Effect of Political Alignment on Mortality Rate

	Polynomial of Order					
	1			2		
Bandwidth	h*	h*/2	2h*	h*	h*/2	2h*
Parties in the Coalition	(1)	(2)	(3)	(4)	(5)	(6)
President's Party	-0.72***	-0.84**	-0.82***	-0.86***	-0.73**	-0.88***
	(0.16)	(0.33)	(0.15)	(0.17)	(0.31)	(0.14)
Magnitude	-15.67%	-16.95%	-17.78%	-18.52%	-15.13%	-18.96%
Bandwidth	7.55%	3.78%	15.11%	14.67%	7.34%	29.35%
Observations	5343	2773	9498	9311	5184	14402
Clusters	1842	1051	2809	2773	1798	3614
Two Parties	-0.19***	-0.12	-0.17**	-0.18**	-0.11	-0.19***
	(0.07)	(0.13)	(0.06)	(0.08)	(0.13)	(0.07)
Magnitude	-4.81%	-3.22%	-4.24%	-4.53%	-2.88%	-4.72%
Bandwidth	10.08%	5.04%	20.16%	16.99%	8.49%	33.97%
Observations	17452	9225	28452	25651	15164	35591
Clusters	3714	2492	4686	4490	3429	5069
Three Parties	-0.01	0.07	0.00	-0.01	0.11	-0.02
	(0.06)	(0.11)	(0.06)	(0.07)	(0.11)	(0.06)
Magnitude	-0.17%	1.97%	0.11%	-0.17%	2.83%	-0.46%
Bandwidth	15.09%	7.54%	30.17%	25.09%	12.54%	50.17%
Observations	24535	14019	35648	32875	21483	42698
Clusters	4686	3577	5260	5147	4432	5429
Four Parties	-0.02	-0.02	-0.01	-0.02	0.00	-0.02
	(0.07)	(0.11)	(0.06)	(0.07)	(0.12)	(0.06)
Magnitude	-0.48%	-0.64%	-0.20%	-0.58%	-0.08%	-0.61%
Bandwidth	14.68%	7.34%	29.37%	24.34%	12.17%	48.68%
Observations	24944	14285	36483	33525	21701	43688
Clusters	4907	3833	5384	5290	4674	5498

Notes: The table shows the effect of political alignment on the mortality rate. Panel one replicates the estimates presented in the main text; panels two to four add to the definition of political alignment parties in the coalition with more seats in the Chamber. Estimates obtained using local linear and local quadratic RD point estimation with robust bias-corrected confidence intervals and triangular kernel. Optimal and bias-correction bandwidths obtained using a mean squared error optimal bandwidth selector algorithm. Robust standard errors clustered at the municipality level in parenthesis. Assignment variable: margin of victory of politically connected mayoral candidates. The dependent variable denotes the number of deaths in a municipality per thousand residents. $^{*}: p < 0.1$; $^{**}: p < 0.05$; $^{***}: p < 0.01$.

Chapter 2

On the Mechanisms Through Which Political Connections Affect Mortality

2.1 Introduction

Intergovernmental transfers allow local governments to increase spending by providing additional revenue, which can, in turn, improve local outcomes (Litschig and Morrison, 2013). Discretionary transfers in Brazil are conditional on some capital or operating expenditure.[1] While discretionary transfers accounted for only 2% of transfers in 2017, discretionary transfers for capital expenditure financed a substan-

[1]Operating expenditure are expenditures intended to meet government bodies' operational expenses, including personnel expenses, interest on the debt, purchase of consumption goods, outsourced services, equipment maintenance, utilities, etc. Capital expenditure are expenditures intended to meet capital expenses: expenses related to the acquisition of machinery equipment, construction works, acquisition of shareholdings of companies, acquisition of real estate, granting of investment loans, etc.

tial share of local governments capital expenditure, 25%. On the other hand, discretionary transfers for operating expenditure financed only 0.3% of local governments operating expenditures. A large distortion in the allocation of capital transfers might, this way, affect the ability of local governments to make investments and expand the services provided to their populations, which might be consequential for mortality.

In this chapter, I ask whether distortions in transfers allocation due to political connections could explain the results discussed in chapter 1. Identifying the mechanisms through which political connections affect local government jurisdictions is an important task that could aid policy makers in designing a better mechanism of transfers.

In addition to the election data discussed in chapter 1, I use detailed data on revenue, transfers, and spending of all 5,570 local governments in Brazil. I revisit the death certificates data to construct a dataset on mortality rates by cause of death. Finally, I examine all hospitalization authorization forms issued during the 2002-2017 period to construct a municipality-level database on hospital-admission rates.

Consistent with previous studies, I find that connected municipalities receive, on average, 53% and 40% more per capita discretionary transfers for capital and operating expenditure, respectively. The distortion in discretionary transfers is equivalent to 9% of all capital expenses, but only 0.2% of operating expenditures. It is unlikely that political alignment will have any substantial impact on local government operating expenditure or affect mortality through this type of expenditure. In fact, when looking at local government spending, I find no significant difference in operating expenditure, but a 20% increase in per capita capital expenditure. The difference is equivalent to 17% of all investments made by local governments. As implied by the numbers, the distortion in investment spending created by imbalanced transfers for the purpose of capital creation is substantial and affect local governments' ability to make investments to a great extent, which might be consequential for mortality, specially if the extra funds are earmarked for areas that could affect health outcomes. I test this assumption by estimating the effect of political alignment on mortality by different causes of death, which could be associated to spending in different functions of government.

Connected municipalities have fewer deaths from causes amenable to health care, which are related to greater health spending (Rutstein et al., 1976); infectious and parasitic diseases, linked to greater sanitation, nutrition, and housing expenditure (Esrey et al., 1991; Katona and Katona-Apte, 2008; Cattaneo et al., 2009); suicide and homicide, related to greater social welfare and public security spending (Fishback et al., 2007; Rodrigues Gomes, 2020); and transport accidents, associated with greater road infrastructure investments (Reynolds et al., 2009; Gitelman et al., 2012). These results suggest that capital expenditure, an aggregate measure of government spending, is preferable over health spending alone to explain the reduction in mortality discussed earlier. It might be the case, however, that mortality from such causes decreases at the intensive margin, that is, after individuals receive medical care. I show that this is unlikely to be the case.

Local government health operating expenditures fall after the election of an aligned mayor. This result is consistent with fewer people seeking medical care due to increased spending in other functions of government, which would lower this type of expenditure. Political alignment also reduces the number of hospital admissions of individuals who live in connected municipalities, which gives support to the previous finding. Lastly, I find evidence that local government health capital expenditure increases with political alignment, which would explain the reduction in avoidable mortality.

Finally, all-cause mortality is lower for several years after a municipality becomes connected, which is consistent with the hypothesis that political alignment reduces mortality through capital spending, as capital spending allows for a permanent expansion of public service provision. The last three sets of results support my claim, based on the importance of discretionary transfers for local governments' capital spending, that local government jurisdictions can be seriously hurt because of distortions in the allocation of this type of transfers.

Consistent with models of decreasing returns to scale in the health production function (Ehrlich and Chuma, 1990; Galama, 2015), I find evidence of a decreasing, convex relationship between mortality and local government capital expenditure. I perform a series of Monte Carlo simulations over a large grid of possible parameters associated with capital spending and squared capital spending, and I show that the arguably nonnegative coefficient of squared capital spending is underestimated in an OLS regression with simultaneous equation bias. This rules out the possibility that the relationship between mortality and spending is linear in the study setup. Because the federal government is constrained by a fixed budget to make transfers, this result suggests that the political allocation of transfers is inefficient. Municipalities in the RDD setup are virtually identical, except for their political identity, and a reasonable level of transfers is, holding everything else constant, the average level of political transfers to connected and unconnected jurisdictions. Moving away from this level of transfers will increase mortality at the national level.

This chapter develops as follows. In section 2.2 I discuss the sources of revenue of local governments, with a special focus on intergovernmental transfers. In section 2.3 I introduce the new data sources and remark on variable construction. In section

2.4 I present a discussion on whether distortions in transfers allocation could affect mortality. In section 2.5 I analyse alternative mechanisms that could explain the results presented in the previous chapter. Section 2.6 closes this chapter.

2.2 Intergovernmental Transfers and Local Government Spending

Municipalities raise revenue from local sources, such as taxes, contributions, state-owned enterprises, credit operations, assets, and loan repayments; as well as transfers from the federal, state, and other local governments, which are referred to as intergovernmental transfers, and transfers from private and foreign organizations. Transfers constitute the main source of local governments revenue, 86.34% in the 2002-2017 period, and federal transfers alone 49.09% (column 2 in table 2.1). Intergovernmental transfers can be classified into two broad categories, namely non-discretionary transfers and discretionary transfers. The first type derives from legal, constitutional, or infra-constitutional enforcement. The second has no legal basis, and depends only on the will of the parties involved. Non-discretionary transfers formed the most substantial bulk of federal transfers, 94.48%, equivalent to 46.29% of local government revenue, while discretionary transfers amounted to a small share of 5.52% of federal transfers, or 2.76% of local government revenue. Discretionary transfers in Brazil are specific-purpose, matching transfers, meaning that are conditional on some type of expenditure, in this case on some capital or operating expenditure, and require the grant receiving government to match part of the amount received. Operating transfers are intended to meet government bodies' operational expenses, which include personnel expenses, interest on the debt, purchase of consumption goods, outsourced services, equipment maintenance, utilities, etc. On the other hand, capital transfers are intended to meet capital expenses: expenses related to the acquisition of machinery equipment, construction works, acquisition of shareholdings of companies, acquisition of real estate, granting of investment loans, etc. As implied, operating transfers can only be used to maintain public administration activities, whereas capital transfers allow for a permanent expansion of these activities through investments. Although discretionary transfers for capital expenditure corresponded to a minimal share of local government revenue, 1.91%, they financed 20.46% of all local investments (last column in table 2.1). Discretionary transfers for operating expenditure, on the other hand, financed only 0.82% of local government operations (column 4 in table 2.1).

2.3 Data

2.3.1 Revenue, Transfers, and Spending

Municipality-level revenue, transfers and spending data were obtained from the *Finbra* database of the Department of National Treasury (*Secretaria do Tesouro Nacional*). The data consist of revenue and spending data from all Brazilian municipalities from 2002 to 2017. I use data on discretionary and non-discretionary transfers and local government spending. More specifically, I use data on *(i)* discretionary transfers from the federal and state governments for capital expenditure; *(ii)* discretionary transfers from the federal and state governments for operating expenditure; *(iii)* non-discretionary transfers from the federal government for health capital expenditure;

(iv) non-discretionary transfers from the federal government for health operating expenditure; *(v)* local government total capital expenditure; *(vi)* local government total operating expenditure; and *(vii)* local government total health expenditure. All the financial variables are measured in per capita amounts.

2.3.2 Health

I use the information contained in hospitalization authorization forms (*Autorização de Internação Hospitalar* - AIH) to construct municipality-level hospital admissions data. The data were obtained through the Hospital Information System (*Sistema de Informações Hospitalares* - SIHSUS) of the Ministry of Health and contain detailed information about every hospital admission in the country from 2002 to 2017. The information includes the patient's municipality of residence, date of admission and discharge, among others. I count the number of hospital admissions at patients' municipality residence and the year of admission to a health care facility. Hospital admissions are defined as the number of admissions per one thousand residents.

2.4 Results

2.4.1 Intergovernmental Transfers

Figures 2.1 and 2.2 plot the discontinuity in discretionary transfers for capital and operating expenditure, respectively. Both types of transfers are consistently higher in aligned municipalities relative to unaligned jurisdictions, not only in regions where an aligned candidate's election was decided by a close margin, as predicted by the models in section 1.2, but also across a wide range of electoral outcomes.

Table 2.2 presents the RD estimates of the effect of political alignment on discretionary transfers from the federal to local governments. Political alignment increases per capita discretionary transfers for capital expenditure by R$26.55 in connected regions, a difference of 53.04% in the amount of transfers relative to unconnected regions. On the other hand, operating transfers increase by just R$5.88, a fraction of the increase in capital transfers. Estimates are robust to the choice of bandwidth and model specification. More importantly, the results show that the difference in capital transfers corresponds to a substantial share of local governments' capital spending, 9.26%. In contrast, the difference in operating transfers corresponds to a minimal share of local governments operating expenditure, 0.25%. It is very unlikely that political alignment will substantially impact local governments operating expenditure or affect mortality through this type of expenditure. It can, however, affect the ability of local governments to make investments, which might be consequential for mortality. The following sections discuss these assumptions and show that distortions in local government capital expenditures caused by political connections might explain the difference in mortality found earlier.

2.4.2 Local Government Expenditure

Figures 2.3 and 2.4 plot the discontinuity in local government capital and operating expenditure, respectively. Again, it follows the same pattern as the one observed in the models in section 1.2, and the opposite of that observed in figure 1.6. It is reasonable to assume that mortality and government spending are inversely related. In that case, this might suggest that the difference in capital spending between connected and unconnected regions presented in this section might explain the difference in mortality found earlier.

Table 2.3 presents estimates of the effect of political alignment on local government capital and operating expenditure. Political alignment increases spending in connected municipalities by R$48.07, a difference of 19.58% in spending relative to unconnected municipalities, and no significant increase in operating spending. Moreover, the difference in capital spending corresponds to 16.76% of all local governments' capital expenditures. The results are consistent with the discussion made in the previous section, that the distortion in the allocation of capital transfers is substantial and affects the ability of local governments to make investments, which might affect municipality outcomes. The results presented in the next sections attempt to connect this increase in local government capital expenditure in connected regions to the observed reduction in mortality. I start by ruling out health spending as the only determinant of mortality to show that such an aggregate measure of spending might explain mortality. I then establish the causal link between local government capital spending and mortality.

2.4.3 Health Spending Vs. Capital Spending

The first panel in table 2.8 shows the effect of political alignment on mortality by causes of death considered amenable to health care. These are unnecessary untimely deaths that can be prevented by timely and effective medical care (Rutstein et al., 1976). Municipalities that become connected to the federal government were able to reduce avoidable mortality by 15.73 deaths per one hundred thousand residents, a difference of 19.99% in the number of deaths. While the result suggests that aligned municipalities spend more on public health than their unaligned counterparts, we cannot rule out increased spending in other functions of government. Municipalities that become connected to the federal government also see a reduction in deaths from infectious and parasitic diseases: connected municipalities have, relative to unconnected municipalities, 1.51 fewer deaths per one hundred thousand residents from infectious and parasitic diseases. Such deaths can be avoided by improved water supply and sanitation (Esrey et al., 1991), nutrition (Katona and Katona-Apte, 2008), and housing (Cattaneo et al., 2009) government spending. Connected municipalities also have 2.59 and 0.66 fewer homicide and suicide deaths per one hundred thousand residents, respectively. Deaths from suicide and homicide are preventable with increased government spending on social welfare and public security (Fishback et al., 2007; Rodrigues Gomes, 2020). Lastly, connected municipalities have 1.03 fewer transport accident deaths per one hundred thousand residents, although not a statistically significant difference. Public investments in road infrastructure can reduce transport accident deaths and explain the difference (Reynolds et al., 2009; Gitelman et al., 2012). While these results suggest that overall mortality decreases followed by increased spending in several functions of government, it might also be the case that mortality from such causes decreases at the intensive margin, that is, after individuals receive medical care. To show that this is not the case and overall mortality decreases because of increased spending in several functions of government, I present next estimates of the effect of political alignment on local government health spending and the number of hospital admissions.

The first panel in table 2.9 shows the effect of political alignment on local government health spending. Local government jurisdictions that become connected to the federal government experience a decrease in per capita health expenditure. One possible explanation for such a result is that fewer people seek medical attention in connected municipalities due to increased spending in other functions of government, as this would lower health operating expenditures. Although I can not separately observe local government operating or capital health expenditure to verify this assumption's validity, as data are not available, data on conditional non-discretionary transfers to the health system might help solve this puzzle. In addition to a fixed component intended to provide municipalities with a minimum level of health spending, operating non-discretionary transfers to the health system also carry a variable term, designed to finance part of local governments operating and capital health expenditures. Operating non-discretionary transfers to the health system decrease when a municipality becomes connected to the federal government, implying lower health operating expenditure in connected municipalities (panel 2 in table 2.9). Capital non-discretionary transfers to the health system, on the other hand, increase with the election of a co-partisan of the president, meaning that health capital spending has also increased.

Table 2.10 shows the effect of political alignment on the number of hospital admissions (hospitalizations). The number of hospital admissions falls by 3.79 per one thousand residents following a connected mayor's election. This finding is consistent with the previous result that political alignment causes health operating expenditures to decrease and the hypothesis that alignment affects health through spending in several functions of government since it shows that fewer individuals seek health care in connected municipalities in the first place.

Capital spending allows for a permanent increase in public service delivery, as discussed earlier. Suppose political alignment affects mortality through this type of expenditure. In that case, alignment should have a long-lasting impact on health outcomes, as connected municipalities would be able to sustain higher levels of public service provision even after they lose alignment status. Figure 2.5 plots the long-term effect of political alignment on mortality. The estimate at $t = 0$ reproduces the estimate in the first column of table 1.6, the effect of political alignment on the two alignment years average mortality. The estimates at $t = 1, 2, 3, 4$, and 5 show the effect of political alignment 5, 6, 7, 8, and 9 years after a municipality first became connected, respectively. Mortality is lower for several years after a municipality becomes connected, consistent with political alignment, causing an increase in local government capital spending through transfers, as capital spending allows for a permanent expansion of public services. The result is also consistent with the finding that political connections only affect capital spending and that the distortion in capital transfers and capital spending relative to the average level of local government capital expenditure is substantial.

2.4.4 Capital Spending and Mortality

Finally, I show that mortality and capital spending are somewhat related. This is a last necessary step in order to show that political connections can affect mortality through capital spending. For the set of municipalities where the election of a politically connected candidate was decided by a small margin, I estimate the first equation in the following system of equations:

$$MR_{it} = \beta_1 + \beta_2 K_{it} + \beta_3 K_{it}^2 + \beta_4 X_{it}\left(1 - D_{it}\right) + \beta_5 X_{it} D_{it} + \boldsymbol{W_{it}\gamma_1} + \varepsilon_{1it} \tag{2.1}$$

$$K_{it} = \alpha_l + \tau D_{it} + \beta_6 MR_{it} + \beta_7 X_{it}\left(1 - D_{it}\right) + \beta_8 X_{it} D_{it} + \boldsymbol{W_{it}\gamma_2} + \varepsilon_{2it} \tag{2.2}$$

where MR_{it} denotes municipality i's mortality rate; K_{it} local government i's per capita capital expenditure; X_{it} the margin of victory of municipality i's politically connected candidate; $\boldsymbol{W_{it}}$ a vector of municipality characteristics; and D_{it} the alignment dummy, as defined in section 1.5. I also conduct Monte-Carlo experiments over 798,000 combinations of reasonable values for the β_2, β_3, and β_6 parameters in the system of equations above, in order to learn about the bias resulting from estimating equating 2.1 alone.

Table 2.11 presents the estimates. Columns 1 through 3 report OLS estimates, whereas columns 4 and 5 present IV estimates. Akaike and Bayesian information criteria statistics suggest that a quadratic fit is preferred over a linear one to explain the relationship between the two variables. Moreover, the estimates in column 2 suggest a decreasing, convex relationship between the capital spending and mortality. Evidence from the Monte-Carlo experiments (figures 2.6 and 2.7) imply that estimates of the β_2 and β_3 population parameters in a ordinary least squares (OLS) setting are overestimated and underestimated, respectively, suggesting that estimates in column 2 are upper and lower bounds for the true population parameters, and that the relationship between mortality and capital spending is indeed convex. This suggests that the political allocation of transfers is inefficient: municipalities around the RDD cutoff are virtually identical, and a reasonable level of transfers is the average of what is observed in transfers to connected and unconnected municipalities. Moving away from this level of transfers increases mortality at the national level because mortality and spending are not linearly related. The reduction in deaths in connected regions due to increased transfers and spending would not compensate for the increase in deaths in unconnected municipalities caused by reduced transfers and spending. Figure 2.8 depicts this latter discussion and its implications for mortality, which are summarized in the following proposition:

Proposition 1: Let MR describe the relationship between government spending and mortality, where $MR' < 0$ and $MR'' > 0$. Moving away from an equitable level of transfers, which allows otherwise identical regions to make the same amount of spending, E, such that connected regions spend C and unconnected regions $NC > C$, the decrease in mortality in connected regions, $MR(E) - MR(C)$, does not compensate for the increase in mortality in unconnected regions, $MR(NC) - MR(E)$, that is, $MR(E) - MR(C) < MR(NC) - MR(E)$.

Proof: Because $MR' < 0$ and $MR'' > 0$, Jensen's inequality states that:

$$MR\left(tNC + (1-t)C\right) < tMR(NC) + (1-t)MR(C)$$

for all $t \in (0,1)$. For $t = \frac{1}{2}$ in specific:

$$\begin{aligned}
&MR\left(\frac{1}{2}NC + \frac{1}{2}C\right) < \frac{1}{2}MR(NC) + \frac{1}{2}MR(C) \\
&\implies MR(E) < \frac{1}{2}MR(NC) + \frac{1}{2}MR(C) \\
&\implies 2MR(E) < MR(NC) + MR(C) \\
&\implies MR(E) - MR(C) < MR(NC) - MR(E)
\end{aligned}$$

$\blacksquare$

2.5 Robustness Checks

2.5.1 Economic Growth

There are alternative mechanisms through which political alignment might affect mortality. As discussed by Asher and Novosad (2017), political alignment can also affect the economic growth of politically connected regions, which could, in turn, affect mortality outcomes. The authors test for three potential mechanisms through which political alignment could affect growth, namely control over the implementation of regulation, control over the supply of credit from state banks, and public goods delivery. In this exercise, I test whether political alignment affects economic growth. This is different from testing whether political alignment affects the channels through which alignment affects growth. Alignment could affect these channels, but the distortions might not be sufficiently large to affect growth and, in turn, affect mortality.

Table 2.12 shows the effect of political alignment on local government jurisdictions' economic growth, as measured by per capita GDP. Estimates are not robust to model specification changes: I find no significant effect when using first-degree polynomials and significant effects that flip the sign when changing the bandwidth size using second-degree polynomials. This suggests that political alignment does not affect growth, and, more importantly, does not affect mortality through mechanisms that affect growth.

2.5.2 Political Alignment Vs. Election of a Workers' Party Mayor

For most of the 2002-2017 period, the presidency was under the control of a single party, the Workers' Party (PT) (table 1.1). If PT mayors are more tilted towards making social spending and reducing mortality, for instance, or are simply more competent in using available resources, the results presented up to this point can be confounded with the election of a PT mayor, and the discussion about political alignment and local outcomes invalid. In this section, I try to address this concern with two robustness checks. First, I compare the effect of a PT mayor election on mortality in two distinct periods, the six years from 1997 to 2002, when PT was an opposing party to the one in the presidency, and the six years from 2003 to 2008 when PT first assumed the presidency. Second, I show the effect of political alignment with a non-PT governor on mortality and discretionary transfers.

Table 2.13 shows the effect of a Workers' Party mayor election on mortality during the periods of 1997 to 2002 when the party in the presidency was an opposing party to PT, and 2003 to 2008 when the party in the presidency was PT. I find no significant difference in mortality between municipalities run and not run by PT when the party was not in the presidency. On the other hand, after a PT president's election, differences in mortality are considerable and statistically significant.

Table 2.14 shows the effect of political alignment with state governments on mortality and discretionary transfers. To answer whether the differences in mortality found earlier were due to political connections, as hypothesized, or due to a PT mayor's election, I restrict the analysis to states not run by a PT governor. The first panel in the table shows the effect of political alignment on mortality. Municipalities connected to the state governments have fewer deaths than unconnected municipalities. Connected municipalities also receive more capital and operating discretionary transfers from the state governments than unconnected municipalities.

The two pieces of evidence presented here suggest that differences in mortality presented at the beginning of this section are most likely due to political alignment between the central and local governments rather than a PT mayor's election.

2.6 Conclusion

Intergovernmental transfers have long been regarded as an instrument for promoting local development and the fiscal health of local government jurisdictions. Several economies make use of intergovernmental transfers as a way to redistribute income and relax the budget of local administrations. The allocation of government resources, however, might be subject to distortions for political reasons, and the knowledge about the consequences of such distortions is still scarce. In the previous chapter, I showed that political connections lead to distortions in resource allocation sufficiently large to affect local government jurisdictions' mortality rates. In this chapter, I present compelling evidence that such difference in mortality outcomes is driven by misallocation of discretionary transfers for capital expenditure, which affect local governments' ability to make investments. Not only discretionary transfers finance large shares of local investments, but distortions in transfers allocation that are due to political connections are equivalent to 17% of all investiments made by local governments. Aligned municipalities receive a significantly higher amount of this type of transfers, which translates into higher capital spending, causing mortality to decrease. The problem, however, is in the fact that the number of lives saved due to increased spending on aligned constituencies is less than the number of lives lost due to reduced spending on non-aligned regions, which points out the inefficiency aspect of political transfers.

In the next chapter, I study how political connections affected the allocation of several health inputs during the COVID-19 pandemic. During this period, there was an unprecedented increase in the number of these resources available through the publicly funded Brazilian health system, and governments had great discretion in the distribution of such medical goods. Because it was of common knowledge that these resources were being distributed by the federal and state governments, this allows me to test whether the allocation of resources that are similar to these in this dimension, such as national program spending and large infrastructure projects, are distributed on political grounds.

2.7 Figures

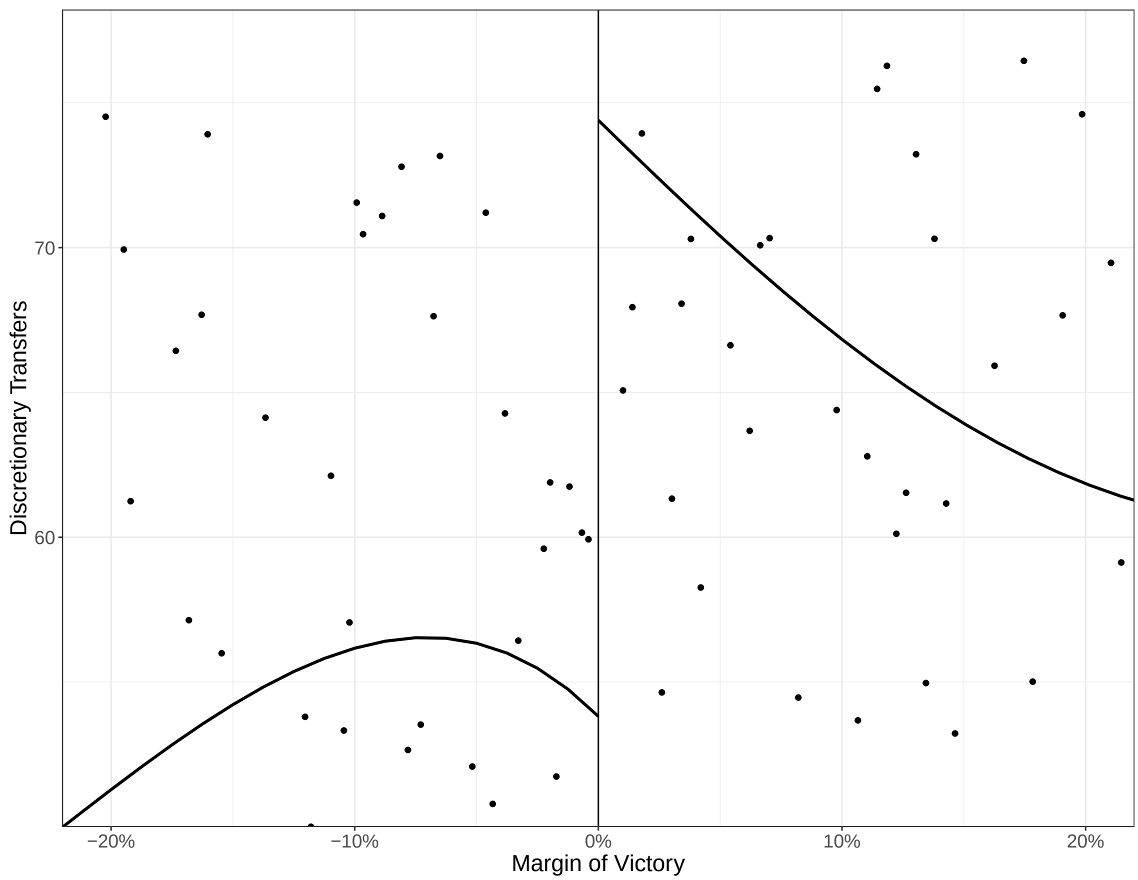


Figure 2.1: Discontinuity in Discretionary Transfers for Capital Expenditure

Notes: The figure plots population conditional mean functions of control and treated units. A fourth-degree polynomial was used to fit population conditional mean functions. Dots denote binned sample means. Points to the left of the discontinuity denote the per capita amount of transfers to municipalities where an aligned candidate lost the election. Points to the right denote the per capita amount of transfers to municipalities where an aligned candidate won the election.

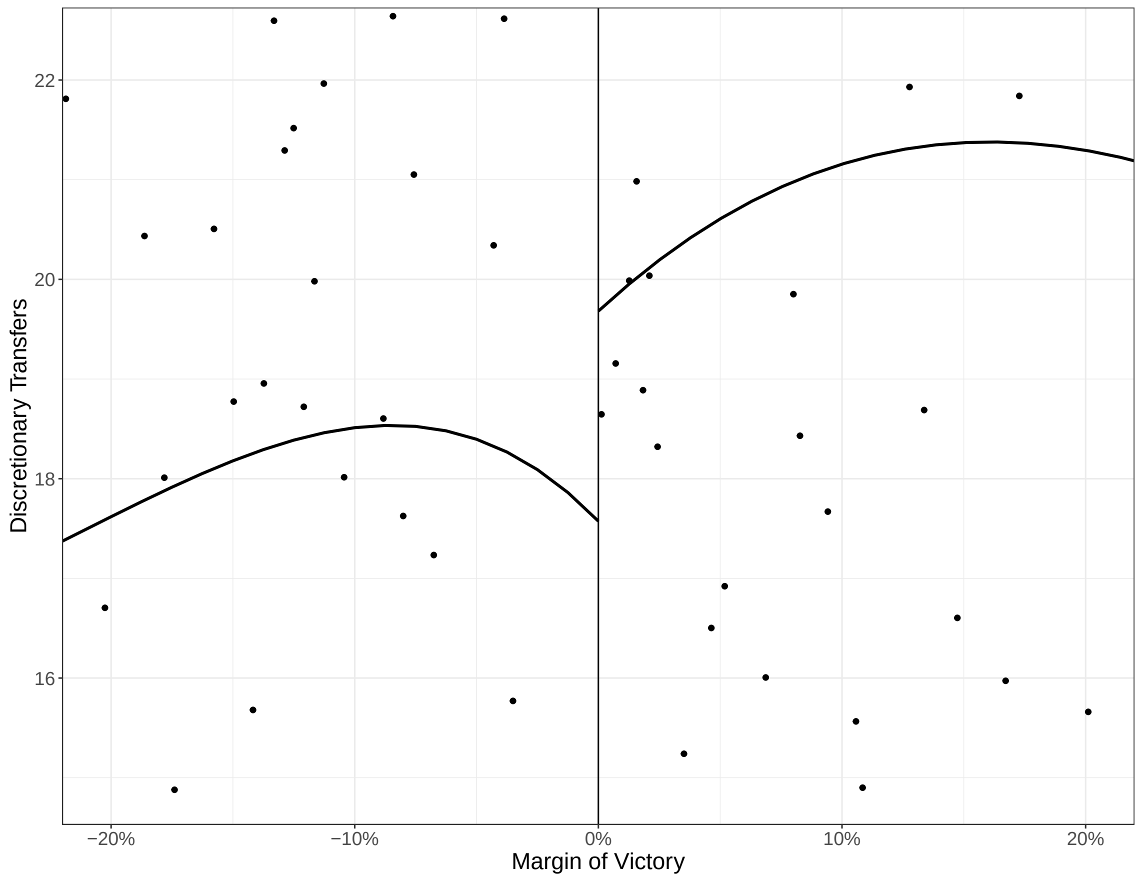


Figure 2.2: Discontinuity in Discretionary Transfers for Operating Expenditure

Notes: The figure plots population conditional mean functions of control and treated units. A fourth-degree polynomial was used to fit population conditional mean functions. Dots denote binned sample means. Points to the left of the discontinuity denote the per capita amount of transfers to municipalities where an aligned candidate lost the election. Points to the right denote the per capita amount of transfers to municipalities where an aligned candidate won the election.

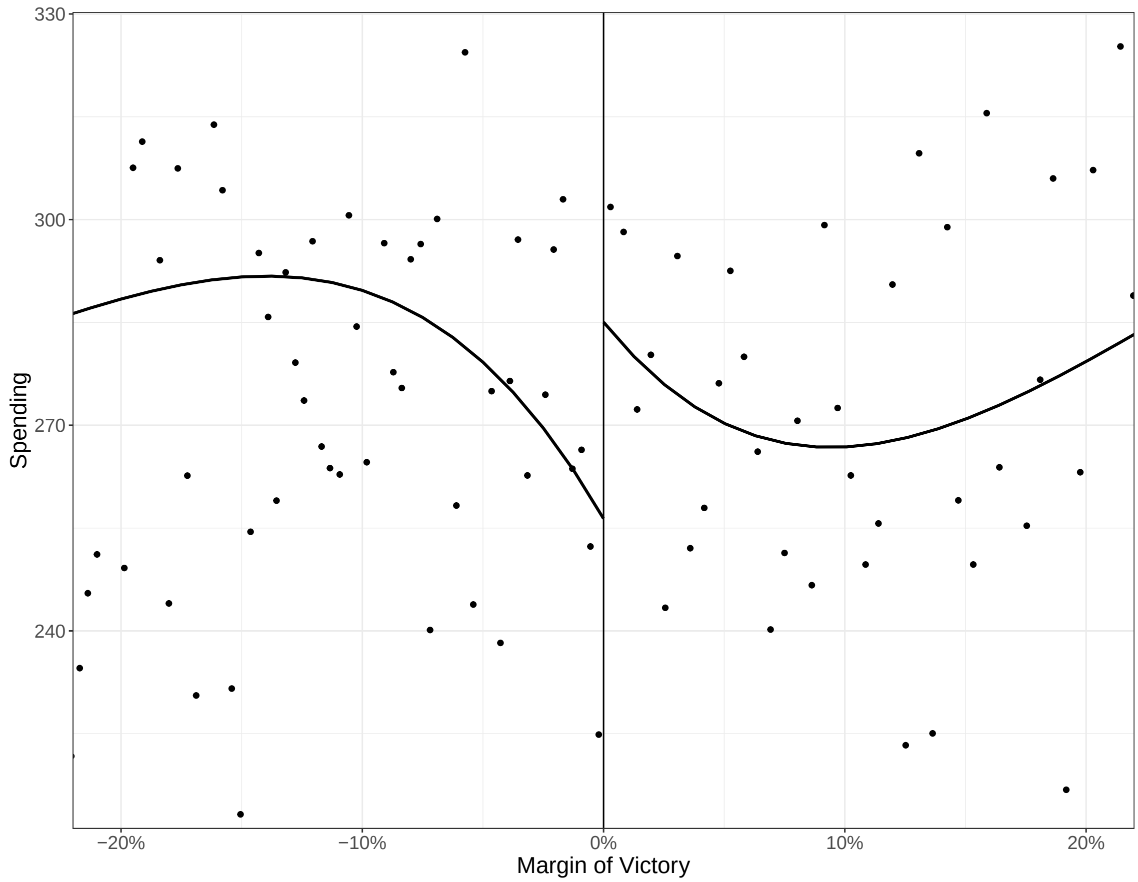


Figure 2.3: Discontinuity in Local Government Capital Expenditure

Notes: The figure plots population conditional mean functions of control and treated units. A fourth-degree polynomial was used to fit population conditional mean functions. Dots denote binned sample means. Points to the left of the discontinuity denote the per capita spending of municipalities where an aligned candidate lost the election. Points to the right denote the per capita spending of municipalities where an aligned candidates won the election.

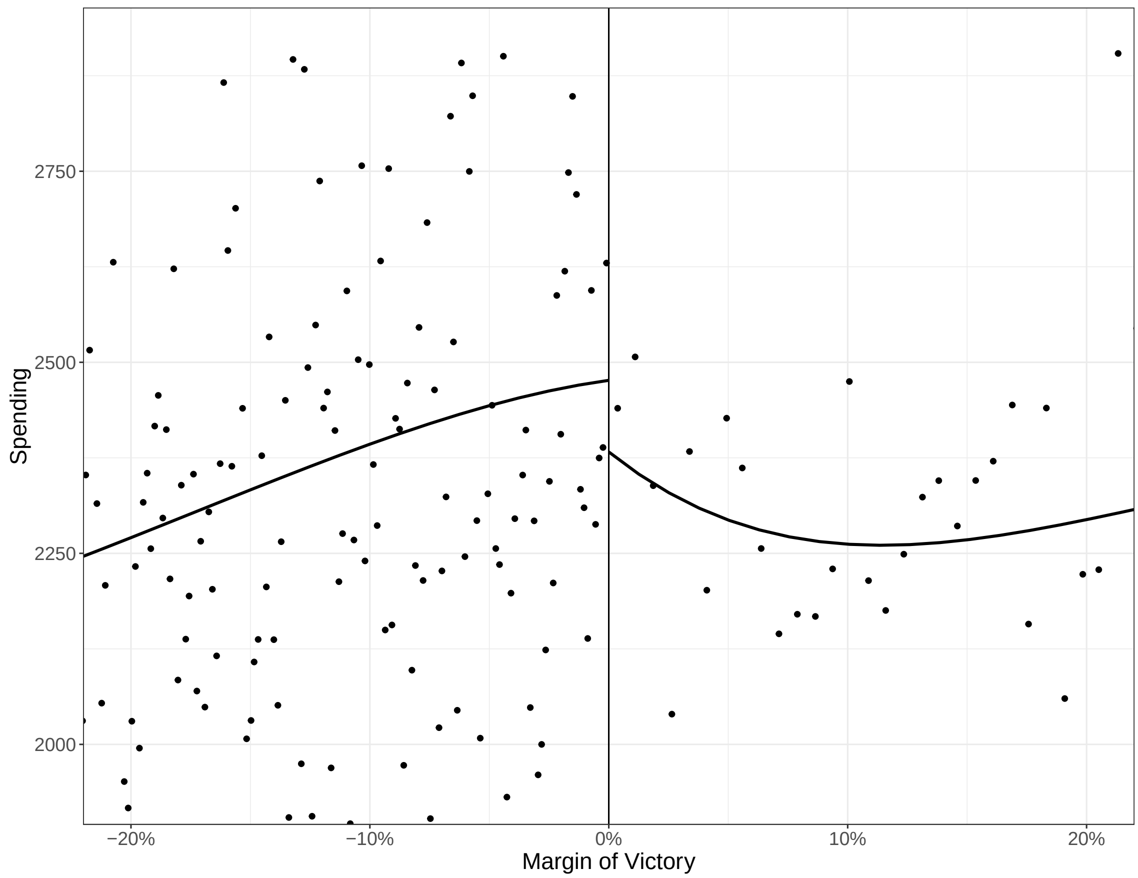


Figure 2.4: Discontinuity in Local Government Operating Expenditure

Notes: The figure plots population conditional mean functions of control and treated units. A fourth-degree polynomial was used to fit population conditional mean functions. Dots denote binned sample means. Points to the left of the discontinuity denote the per capita spending of municipalities where an aligned candidate lost the election. Points to the right denote the per capita spending of municipalities where an aligned candidates won the election.

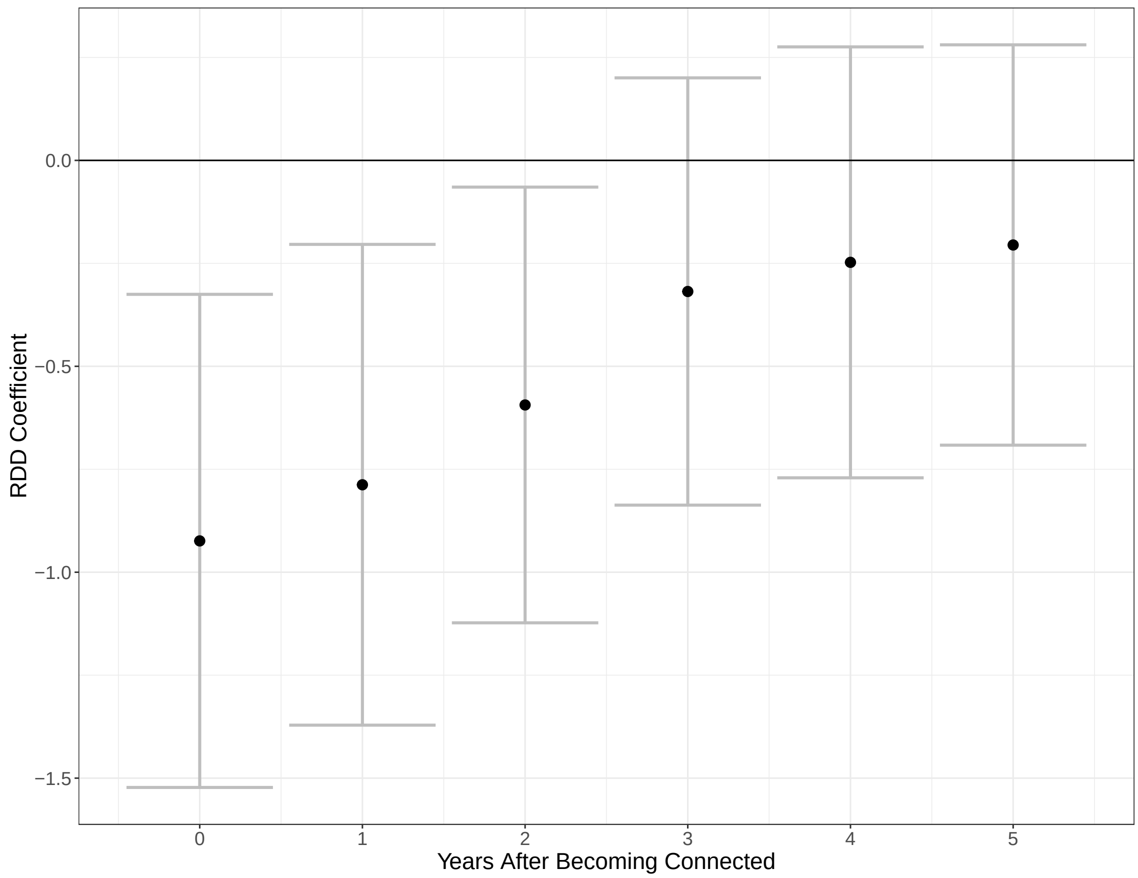


Figure 2.5: Effect of Political Alignment on Long-run Mortality Rate

Notes: The figure plots the effect of political alignment on long-run mortality rates. The two dashed lines represent a 90% confidence interval. Estimates obtained using local linear RD point estimation with robust bias-corrected confidence intervals and triangular kernel. Optimal and bias-correction bandwidths were obtained using a mean squared error optimal bandwidth selector algorithm. The dependent variable denotes the number of deaths in a municipality per thousand residents.

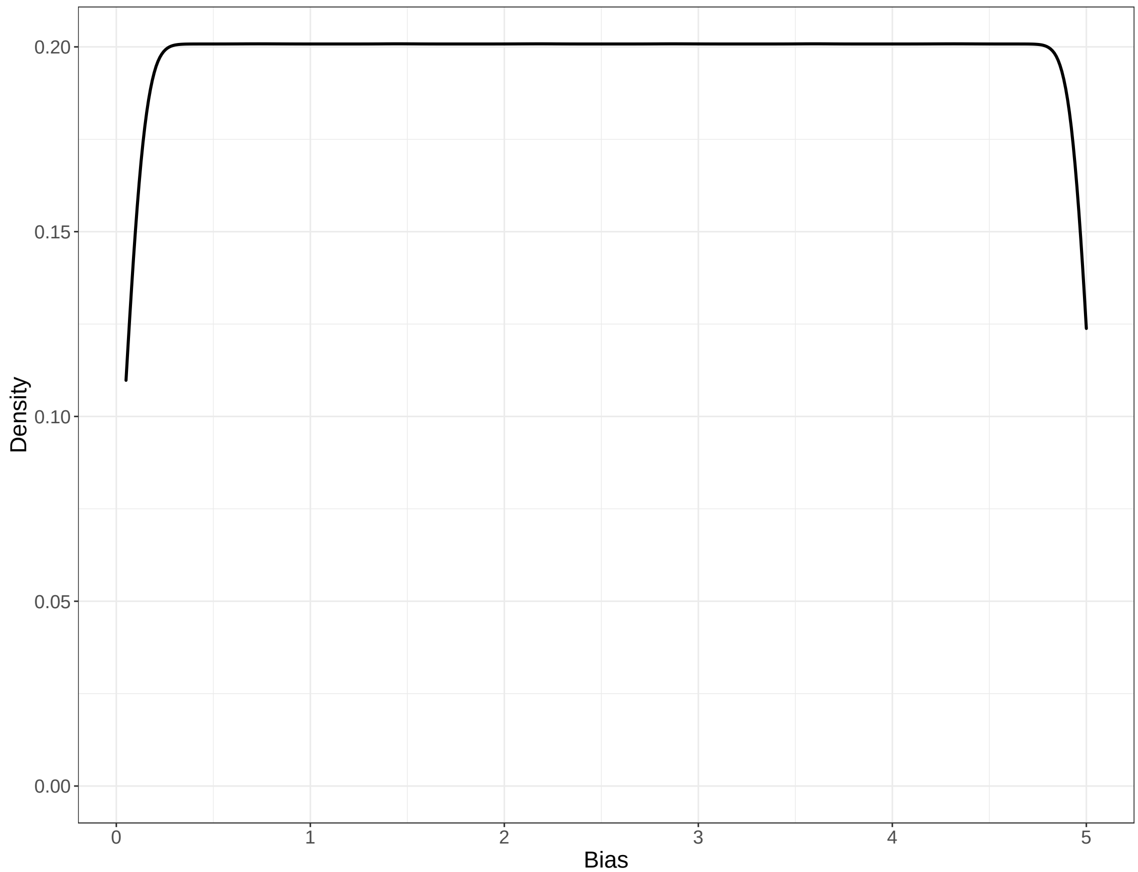


Figure 2.6: $\hat{\beta}_2$ Simultaneous Equation Bias

Notes: The figure plots the kernel density estimate of the $\hat{\beta}_2$ simultaneous equation bias, as obtained by a series of Monte-Carlo experiments.

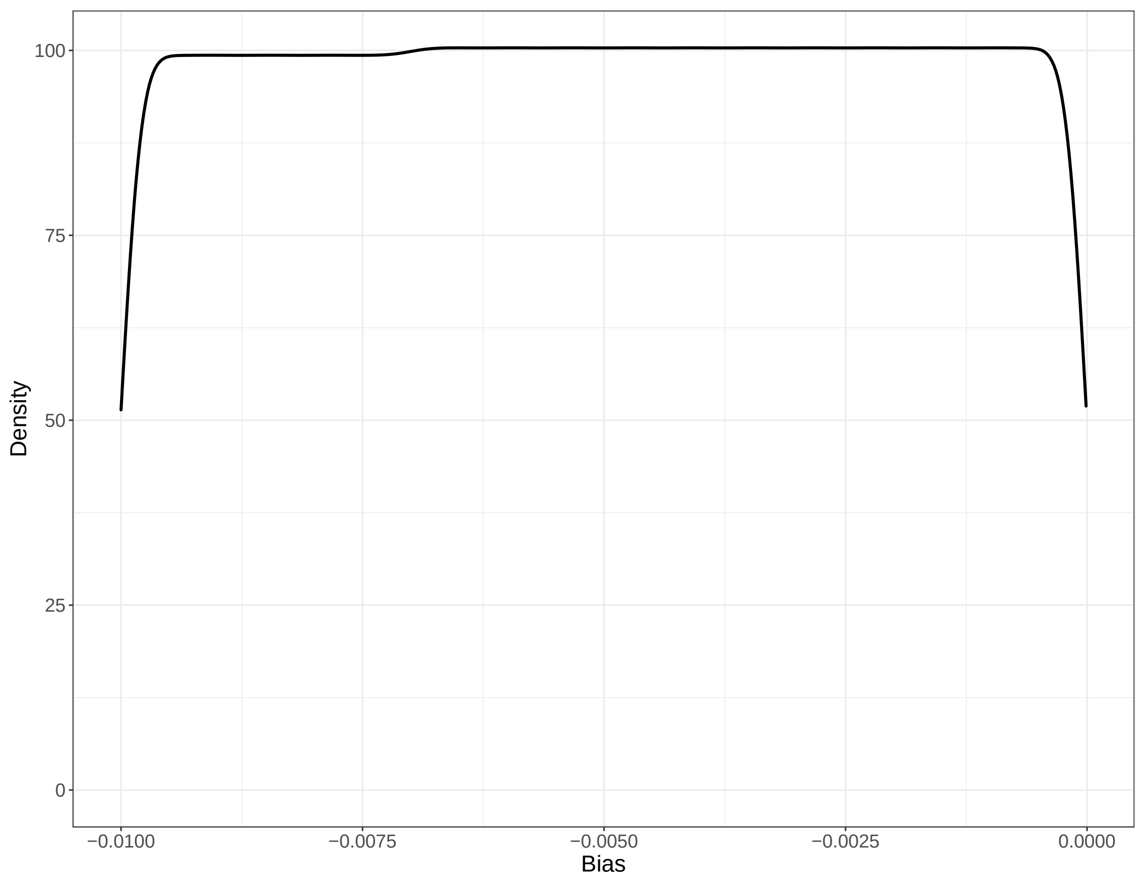


Figure 2.7: $\hat{\beta}_3$ Simultaneous Equation Bias

Notes: The figure plots the kernel density estimate of the $\hat{\beta}_2$ simultaneous equation bias, as obtained by a series of Monte-Carlo experiments.

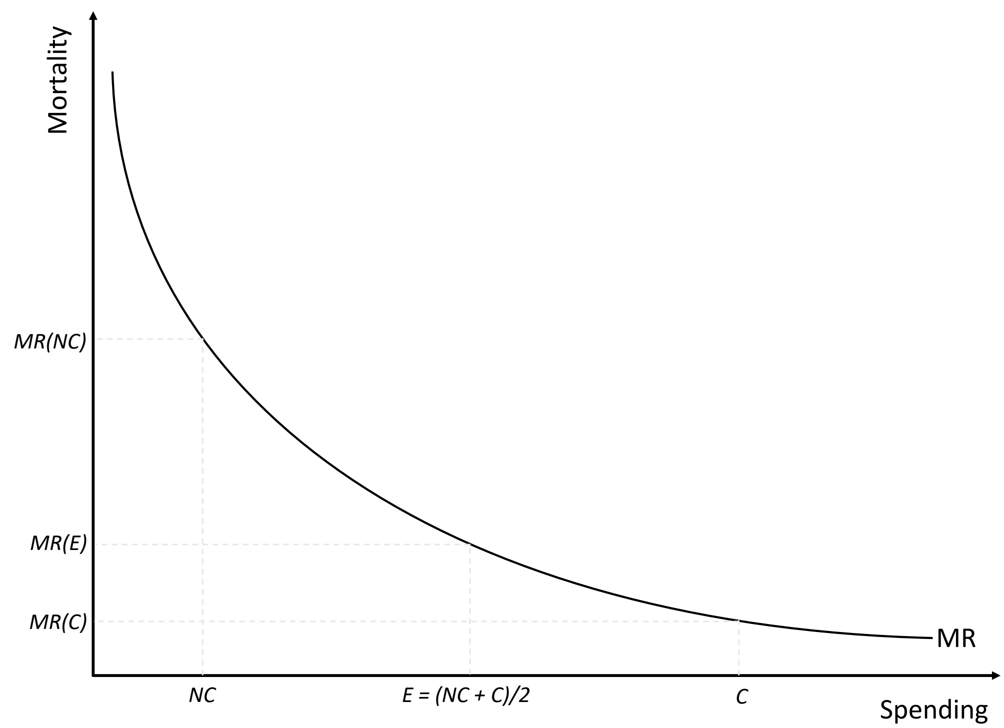


Figure 2.8: Convex Relationship Between Government Spending and Mortality

Notes: The variable in the horizontal axis denotes per capita government spending. The variable in the vertical axis denotes the mortality rate.

2.8 Tables

Table 2.1: Descriptive Statistics

	Total	% of Total Revenue	% of Operating Expenditure	% of Capital Expenditure
Total Revenue	2815.81	100.00		
Intergovernmental Transfers	2402.26	86.34		
Transfers from the Federal Government	1359.31	49.09		
Non-discretionary Transfers	1282.35	46.29		
Discretionary Tranfers	75.23	2.76		
for operating expenditure	19.4	0.82	0.98	
for capital expenditure	54.91	1.91		20.46
Other Transfers	1038.53	37.19		
Local Revenue	411.6	13.72		
Total Expenditure	2646.86			
Operating Expenditure	2358.13			
Capital Expenditure	286.87			

Notes: Variables measured at the municipality level. Statistics in the "Total" column describe per capita revenue and are expressed in Brazilian Reais. Statistics in the "% of Total Revenue" column represent the share of the respective revenue source with respect to total revenue. The statistics in the "% of Operating Expenditure" and "% of Capital Expenditure" columns denote the share of discretionary transfers for operating and capital expenditure with respect to capital and operating expenditure, respectively.

Table 2.2: Effect of Political Alignment on Discretionary Transfers

	Polynomial of Order					
	1			2		
Bandwidth	h*	h*/2	2h*	h*	h*/2	2h*
Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)
Capital Transfers	26.55***	23.56**	25.83***	28.30***	23.90**	25.44***
	(4.83)	(9.30)	(4.63)	(5.42)	(9.53)	(4.81)
Magnitude	53.04%	36.49%	51.05%	56.19%	36.38%	50.94%
Bandwidth	11.21%	5.60%	22.42%	18.56%	9.28%	37.12%
Observations	7311	3909	11922	10708	6231	16110
Clusters	2379	1457	3288	3067	2114	3865
Operating Transfers	5.88***	9.70***	5.12***	6.58***	9.86***	4.61***
	(1.61)	(3.09)	(1.57)	(1.72)	(3.10)	(1.59)
Magnitude	40.39%	89.37%	34.19%	47.46%	92.36%	30.61%
Bandwidth	10.87%	5.43%	21.73%	19.38%	9.69%	38.77%
Observations	7101	3783	11763	11020	6485	16578
Clusters	2331	1419	3248	3121	2181	3922

Notes: The table shows the effect of political alignment on discretionary transfers. Estimates obtained using local linear and local quadratic RD point estimation with robust bias-corrected confidence intervals and triangular kernel. Optimal and bias-correction bandwidths obtained using a mean squared error optimal bandwidth selector algorithm. Robust standard errors clustered at municipality level in parenthesis. Assignment variable: margin of victory of politically connected mayoral candidates. The dependent variables denote per capita transfers and are expressed in Brazilian Reais. $^{*}: p < 0.1$; $^{**}: p < 0.05$; $^{***}: p < 0.01$.

Table 2.3: Effect of Political Alignment on Local Government Expenditure

	Polynomial of Order					
	1			2		
Bandwidth	h*	h*/2	2h*	h*	h*/2	2h*
Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)
Capital Expenditure	48.07***	85.86***	49.60***	53.82***	68.28***	46.24***
	(11.64)	(23.51)	(11.49)	(12.16)	(21.76)	(10.95)
Magnitude	19.58%	37.99%	20.37%	22.29%	27.61%	18.54%
Bandwidth	8.93%	4.47%	17.86%	17.83%	8.91%	35.66%
Observations	6013	3124	10425	10414	6004	15659
Clusters	2074	1209	3024	3023	2070	3818
Operating Expenditure	5.18	-11.72	-15.67	49.81	-56.36	-0.44
	(60.00)	(108.94)	(59.22)	(67.66)	(116.11)	(61.76)
Magnitude	0.21%	-0.47%	-0.64%	2.07%	-2.19%	-0.02%
Bandwidth	10.73%	5.37%	21.46%	18.11%	9.06%	36.23%
Observations	7014	3725	11637	10512	6092	15815
Clusters	2315	1399	3229	3031	2087	3833

Notes: The table shows the effect of political alignment on local government expenditure. Estimates obtained using local linear and local quadratic RD point estimation with robust bias-corrected confidence intervals and triangular kernel. Optimal and bias-correction bandwidths obtained using a mean squared error optimal bandwidth selector algorithm. Robust standard errors clustered at the municipality level in parenthesis. Assignment variable: margin of victory of politically connected mayoral candidates. The dependent variables denote per capita spending and are expressed in Brazilian Reais. $^{*}: p < 0.1$; $^{**}: p < 0.05$; $^{***}: p < 0.01$.

Table 2.4: Effect of Political Alignment on Discretionary Capital Transfers

	Polynomial of Order					
	1			2		
Bandwidth	h*	h*/2	2h*	h*	h*/2	2h*
Parties in the Coalition	(1)	(2)	(3)	(4)	(5)	(6)
President's Party	26.55***	23.56**	25.83***	28.30***	23.90**	25.44***
	(4.83)	(9.30)	(4.63)	(5.42)	(9.53)	(4.81)
Magnitude	53.04%	36.49%	51.05%	56.19%	36.38%	50.94%
Bandwidth	11.21%	5.60%	22.42%	18.56%	9.28%	37.12%
Observations	7311	3909	11922	10708	6231	16110
Clusters	2379	1457	3288	3067	2114	3865
Two Parties	7.09***	-2.64	7.83***	5.03*	-5.11	6.75**
	(2.44)	(4.28)	(2.32)	(2.96)	(4.83)	(2.66)
Magnitude	13.44%	-4.33%	15.05%	9.09%	-8.35%	12.77%
Bandwidth	13.84%	6.92%	27.69%	18.31%	9.15%	36.62%
Observations	21736	12161	32084	26227	15717	35567
Clusters	4205	3082	4951	4575	3547	5108
Three Parties	5.78**	-2.78	6.51***	2.39	-3.11	4.70*
	(2.39)	(4.21)	(2.25)	(2.91)	(4.89)	(2.65)
Magnitude	11.00%	-4.81%	12.55%	4.31%	-5.42%	8.88%
Bandwidth	14.90%	7.45%	29.79%	18.61%	9.30%	37.21%
Observations	23624	13475	34435	27444	16349	37414
Clusters	4667	3558	5251	4925	3944	5350
Four Parties	2.82	-4.18	3.65	1.81	-6.93	3.04
	(2.55)	(4.35)	(2.49)	(2.87)	(4.48)	(2.62)
Magnitude	5.33%	-7.36%	7.02%	3.35%	-12.13%	5.87%
Bandwidth	12.59%	6.29%	25.18%	20.79%	10.39%	41.57%
Observations	21706	11981	33098	30150	18624	40110
Clusters	4725	3526	5313	5196	4448	5473

Notes: The table shows the effect of political alignment on discretionary capital transfers. Panel one replicates the estimates presented in the main text; panels two to four add to the definition of political alignment parties in the coalition with more seats in the Chamber. Estimates obtained using local linear and local quadratic RD point estimation with robust bias-corrected confidence intervals and triangular kernel. Optimal and bias-correction bandwidths obtained using a mean squared error optimal bandwidth selector algorithm. Robust standard errors clustered at the municipality level in parenthesis. Assignment variable: margin of victory of politically connected mayoral candidates. The dependent variable denotes per capita transfers and is expressed in Brazilian Reais. $^{*}: p < 0.1$; $^{**}: p < 0.05$; $^{***}: p < 0.01$.

Table 2.5: Effect of Political Alignment on Discretionary Operating Transfers

	Polynomial of Order					
	1			2		
Bandwidth	h*/2	h*	2h*	h*/2	h*	2h*
Parties in the Coalition	(1)	(2)	(3)	(4)	(5)	(6)
President's Party	9.70***	5.88***	5.12***	9.86***	6.58***	4.61***
	(3.09)	(1.61)	(1.57)	(3.10)	(1.72)	(1.59)
Magnitude	89.37%	40.39%	34.19%	92.36%	47.46%	30.61%
Bandwidth	5.43%	10.87%	21.73%	9.69%	19.38%	38.77%
Observations	3783	7101	11763	6485	11020	16578
Clusters	1419	2331	3248	2181	3121	3922
Two Parties	7.32***	0.62	0.93	9.41***	1.22	1.16
	(1.62)	(1.05)	(1.00)	(1.90)	(1.27)	(1.13)
Magnitude	60.24%	3.21%	4.82%	85.96%	6.90%	6.23%
Bandwidth	8.43%	16.87%	33.74%	10.62%	21.24%	42.49%
Observations	14616	24786	34544	17670	28319	37407
Clusters	3413	4478	5067	3787	4721	5187
Three Parties	7.06***	2.69**	3.02***	8.89***	2.48*	3.13***
	(1.74)	(1.06)	(1.02)	(1.99)	(1.31)	(1.16)
Magnitude	57.33%	14.74%	16.59%	82.19%	14.50%	17.73%
Bandwidth	8.53%	17.05%	34.11%	11.00%	22.00%	44.00%
Observations	15202	25905	36215	18752	30028	39487
Clusters	3803	4835	5313	4231	5058	5390
Four Parties	6.63***	2.71**	2.57**	7.47***	3.32**	3.02**
	(1.82)	(1.18)	(1.11)	(2.07)	(1.38)	(1.24)
Magnitude	57.51%	16.14%	14.80%	67.36%	21.76%	18.24%
Bandwidth	7.06%	14.13%	28.25%	9.58%	19.16%	38.33%
Observations	13378	23620	34819	17415	28835	39034
Clusters	3766	4857	5367	4309	5155	5460

Notes: The table shows the effect of political alignment on discretionary operating transfers. Panel one replicates the estimates presented in the main text; panels two to four add to the definition of political alignment parties in the coalition with more seats in the Chamber. Estimates obtained using local linear and local quadratic RD point estimation with robust bias-corrected confidence intervals and triangular kernel. Optimal and bias-correction bandwidths obtained using a mean squared error optimal bandwidth selector algorithm. Robust standard errors clustered at the municipality level in parenthesis. Assignment variable: margin of victory of politically connected mayoral candidates. The dependent variable denotes per capita transfers and is expressed in Brazilian Reais. $^{*}: p < 0.1$; $^{**}: p < 0.05$; $^{***}: p < 0.01$.

Table 2.6: Effect of Political Alignment on Local Government Capital Expenditure

	Polynomial of Order					
	1			2		
Bandwidth	h*	h*/2	2h*	h*	h*/2	2h*
Parties in the Coalition	(1)	(2)	(3)	(4)	(5)	(6)
President's Party	48.07***	85.86***	49.60***	53.82***	68.28***	46.24***
	(11.64)	(23.51)	(11.49)	(12.16)	(21.76)	(10.95)
Magnitude	19.58%	37.99%	20.37%	22.29%	27.61%	18.54%
Bandwidth	8.93%	4.47%	17.86%	17.83%	8.91%	35.66%
Observations	6013	3124	10425	10414	6004	15659
Clusters	2074	1209	3024	3023	2070	3818
Two Parties	-7.84	-26.95*	-9.32	-11.88	-31.97**	-8.43
	(7.89)	(14.03)	(7.56)	(9.00)	(14.50)	(7.96)
Magnitude	-2.62%	-9.26%	-3.11%	-3.96%	-10.84%	-2.83%
Bandwidth	9.29%	4.65%	18.59%	15.17%	7.58%	30.34%
Observations	15849	8270	26382	23048	13227	33166
Clusters	3570	2364	4601	4344	3226	5010
Three Parties	0.30	-23.48**	3.08	-14.19	-39.34***	-6.62
	(6.36)	(11.54)	(5.99)	(8.71)	(14.41)	(7.72)
Magnitude	0.11%	-8.20%	1.10%	-4.92%	-13.65%	-2.32%
Bandwidth	14.75%	7.37%	29.50%	15.11%	7.56%	30.23%
Observations	23418	13312	34228	23823	13616	34566
Clusters	4649	3539	5250	4689	3582	5261
Four Parties	0.27	-11.23	1.85	-12.63	-30.73*	-6.54
	(6.26)	(11.88)	(5.95)	(9.07)	(15.97)	(7.92)
Magnitude	0.10%	-4.13%	0.68%	-4.56%	-11.14%	-2.37%
Bandwidth	17.18%	8.59%	34.36%	16.34%	8.17%	32.67%
Observations	26887	15864	37451	25995	15204	36761
Clusters	5066	4126	5427	5017	4034	5408

Notes: The table shows the effect of political alignment on local government capital expenditure. Panel one replicates the estimates presented in the main text; panels two to four add to the definition of political alignment parties in the coalition with more seats in the Chamber. Estimates obtained using local linear and local quadratic RD point estimation with robust bias-corrected confidence intervals and triangular kernel. Optimal and bias-correction bandwidths obtained using a mean squared error optimal bandwidth selector algorithm. Robust standard errors clustered at the municipality level in parenthesis. Assignment variable: margin of victory of politically connected mayoral candidates. The dependent variable denotes per capita spending and is expressed in Brazilian Reais. $^{*}: p < 0.1$; $^{**}: p < 0.05$; $^{***}: p < 0.01$.

Table 2.7: Effect of Political Alignment on Local Government Operating Expenditure

	Polynomial of Order					
	1			2		
Bandwidth	h*	h*/2	2h*	h*	h*/2	2h*
Parties in the Coalition	(1)	(2)	(3)	(4)	(5)	(6)
President's Party	5.19	-11.69	-15.67	49.82	-56.37	-0.43
	(60.00)	(108.94)	(59.22)	(67.66)	(116.12)	(61.76)
Magnitude	0.21%	-0.47%	-0.64%	2.07%	-2.19%	-0.02%
Bandwidth	10.73%	5.37%	21.46%	18.11%	9.06%	36.22%
Observations	7014	3725	11637	10512	6092	15815
Clusters	2315	1399	3229	3031	2087	3833
Two Parties	-16.65	-57.42	12.67	-10.23	-40.79	6.94
	(39.58)	(68.66)	(35.50)	-43.52	(71.51)	(37.55)
Magnitude	-0.68%	-2.41%	0.52%	-0.0042	-1.73%	0.29%
Bandwidth	13.71%	6.86%	27.43%	21.99%	11.00%	43.99%
Observations	21498	11997	31837	28763	18176	37729
Clusters	4193	3064	4937	4747	3852	5196
Three Parties	-8.04	-47.70	23.46	16.00	-28.96	29.96
	(38.32)	(67.47)	(35.10)	(38.80)	(63.97)	(34.12)
Magnitude	-0.34%	-2.07%	0.99%	0.67%	-1.24%	1.27%
Bandwidth	13.19%	6.59%	26.37%	26.01%	13.00%	52.02%
Observations	21559	11966	32617	32440	21344	41964
Clusters	4496	3321	5182	5176	4476	5447
Four Parties	39.77	31.72	45.61	11.08	24.98	40.21
	(35.18)	(62.48)	(32.25)	(42.48)	(73.79)	(37.34)
Magnitude	1.72%	1.38%	1.98%	0.47%	1.10%	1.74%
Bandwidth	19.90%	9.95%	39.80%	25.40%	12.70%	50.80%
Observations	29459	17916	39450	33164	21843	43211
Clusters	5173	4387	5468	5319	4740	5505

Notes: The table shows the effect of political alignment on local government operating expenditure. Panel one replicates the estimates presented in the main text; panels two to four add to the definition of political alignment parties in the coalition with more seats in the Chamber. Estimates obtained using local linear and local quadratic RD point estimation with robust bias-corrected confidence intervals and triangular kernel. Optimal and bias-correction bandwidths obtained using a mean squared error optimal bandwidth selector algorithm. Robust standard errors clustered at the municipality level in parenthesis. Assignment variable: margin of victory of politically connected mayoral candidates. The dependent variable denotes per capita spending and is expressed in Brazilian Reais. * : $p < 0.1$; ** : $p < 0.05$; *** : $p < 0.01$.

Table 2.8: Effect of Political Alignment on Mortality by Cause of Death

	Polynomial of Order					
	1			2		
Bandwidth	h*	h*/2	2h*	h*	h*/2	2h*
Cause of Death	(1)	(2)	(3)	(4)	(5)	(6)
Amenable to Health Care	-15.73***	-15.00**	-17.80***	-18.71***	-13.11*	-19.00***
	(3.42)	(7.09)	(3.34)	(3.76)	(6.72)	(3.24)
Magnitude	-19.99%	-17.57%	-22.41%	-23.39%	-15.74%	-23.86%
Bandwidth	8.16%	4.08%	16.32%	15.25%	7.63%	30.50%
Observations	5779	2954	10059	9572	5387	14738
Clusters	1962	1118	2910	2828	1858	3662
Infectious and Parasitic Diseases	-1.51**	-1.93	-1.03	-1.92**	-2.46*	-2.13***
	(0.70)	(1.24)	(0.67)	(0.92)	(1.48)	(0.78)
Magnitude	-12.63%	-15.88%	-8.65%	-16.18%	-20.28%	-17.62%
Bandwidth	13.20%	6.60%	26.39%	16.03%	8.02%	32.07%
Observations	8538	4654	13483	9917	5666	15118
Clusters	2616	1655	3484	2884	1929	3709
Homicide	-2.49***	-1.53	-2.77***	-2.04**	-1.97	-2.65***
	(0.75)	(1.25)	(0.68)	(0.93)	(1.49)	(0.80)
Magnitude	-14.48%	-9.61%	-15.87%	-12.13%	-12.35%	-15.32%
Bandwidth	16.14%	8.07%	32.28%	19.39%	9.70%	38.79%
Observations	9970	5703	15194	11283	6654	16988
Clusters	2894	1941	3715	3121	2183	3922
Suicide	-0.66*	-0.15	-0.65*	-0.73*	-0.53	-0.66*
	(0.36)	(0.63)	(0.34)	(0.39)	(0.64)	(0.35)
Magnitude	-9.53%	-2.26%	-9.39%	-10.54%	-7.62%	-9.47%
Bandwidth	12.84%	6.42%	25.67%	22.20%	11.10%	44.40%
Observations	8398	4521	13319	12150	7443	18622
Clusters	2580	1616	3458	3273	2369	4077
Transport Accident	-1.03	-3.43**	-1.17	-1.25	-4.61***	-1.22
	(0.91)	(1.50)	(0.81)	(1.10)	(1.70)	(0.93)
Magnitude	-4.37%	-13.30%	-5.03%	-5.21%	-17.23%	-5.18%
Bandwidth	15.53%	7.77%	31.06%	20.39%	10.19%	40.77%
Observations	9693	5482	14875	11626	6922	17528
Clusters	2855	1886	3685	3173	2256	3983

Notes: The table shows the effect of political alignment on the mortality rate by cause of death. Estimates obtained using local linear RD point estimation with robust bias-corrected confidence intervals and triangular kernel. Optimal and bias-correction bandwidths obtained using a mean squared error optimal bandwidth selector algorithm. Robust standard errors clustered at the municipality level in parenthesis. Assignment variable: margin of victory of politically connected mayoral candidates. The dependent variable denotes the number of deaths in a municipality due to a particular cause of death per one hundred thousand residents. $^{*}: p < 0.1$; $^{**}: p < 0.05$; $^{***}: p < 0.01$.

Table 2.9: Effect of Political Alignment on Health Expenditure and Non-Discretionary Transfers to the Health System

	Polynomial of Order					
	1			2		
Bandwidth	h*	h*/2	2h*	h*	h*/2	2h*
Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)
Health Expenditure	-29.49*	23.80	-33.16**	-3.90	5.89	-16.87
	(16.47)	(25.75)	(16.32)	(16.34)	(26.99)	(16.08)
Bandwidth	20.11%	10.05%	40.22%	20.62%	10.31%	41.24%
Observations	11234	6658	16894	11385	6801	17178
Clusters	3161	2235	3966	3185	2271	3996
Op. Non-disc. Transfers to the Health System	-18.12***	-20.71**	-18.61***	-17.01***	-14.23	-20.66***
	(5.79)	(8.77)	(6.51)	(5.49)	(9.96)	(6.81)
Bandwidth	14.11%	7.06%	28.23%	22.98%	11.49%	45.96%
Observations	8773	4861	13705	12115	7453	18691
Clusters	2712	1746	3569	3326	2421	4129
Cap. Non-disc. Transfers to the Health System	1.66***	2.15***	1.87***	2.13***	1.38***	2.77***
	(0.06)	(0.05)	(0.10)	(0.12)	(0.10)	(0.14)
Bandwidth	2.65%	1.33%	5.30%	5.72%	2.86%	11.44%
Observations	991	536	1933	2075	1090	3895
Clusters	771	432	1389	1482	820	2408

Notes: The table shows the effect of political alignment on local government health spending and non-discretionary conditional transfers to the health system. Estimates obtained using local linear RD point estimation with robust bias-corrected confidence intervals and triangular kernel. Optimal and bias-correction bandwidths obtained using a mean squared error optimal bandwidth selector algorithm. Robust standard errors clustered at the municipality level in parenthesis. Assignment variable: margin of victory of politically connected mayoral candidates. The dependent variables denote per capita health spending and per capita non-discretionary conditional transfers and are expressed in Brazilian Reais. * : $p < 0.1$; ** : $p < 0.05$; *** : $p < 0.01$.

Table 2.10: Effect of Political Alignment on Hospital Admissions

	Polynomial of Order					
	1			2		
Bandwidth	h*	h*/2	2h*	h*	h*/2	2h*
Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)
Number of Admissions	-3.79***	-2.21	-2.89**	-2.54**	-4.28**	-2.27**
	(1.29)	(2.26)	(1.23)	(1.23)	(2.02)	(1.10)
Magnitude	-5.54%	-3.22%	-4.24%	-3.72%	-6.09%	-3.31%
Bandwidth	12.44%	6.22%	24.88%	29.07%	14.54%	58.15%
Observations	8185	4416	13022	14337	9218	22452
Clusters	2532	1587	3416	3605	2760	4441

Notes: The table shows the effect of political alignment on number of hospital admissions. Estimates obtained using local linear RD point estimation with robust bias-corrected confidence intervals and triangular kernel. Optimal and bias-correction bandwidths obtained using a mean squared error optimal bandwidth selector algorithm. Robust standard errors clustered at municipality level in parenthesis. Assignment variable: margin of victory of politically connected mayoral candidates. The dependent variables denote number of hospital admissions per one thousand residents. $^{*}: p < 0.1$; $^{**}: p < 0.05$; $^{***}: p < 0.01$.

Table 2.11: Effect of Capital Spending on Mortality

	OLS			IV	
	(1)	(2)	(3)	(4)	(5)
Mortality					
K	-0.1597***	-0.3172***		-1.5076**	
	(0.0298)	(0.0235)		(0.7119)	
K^2		0.00007739***			
		(0.00002064)			
ln(*Mortality*)					
$ln(K)$			-0.0738***		-0.9276*
			(0.0180)		(0.5505)
AIC	91552.16	91269.6	-	-	-
BIC	91851.43	91575.68	-	-	-

Notes: The table shows the effect of capital expenditure on mortality rate. Estimates obtained using IV estimation where political alignment was used as an instrument for capital expenditure within a regression discontinuity design. The independent variables denote per capita capital expenditure and are expressed in Brazilian Reais. The dependent variable denotes the number of deaths in a municipality per one hundred thousand residents. Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC) for the OLS models provided at the bottom of the table. * : $p < 0.1$; ** : $p < 0.05$; *** : $p < 0.01$.

Table 2.12: Effect of Political Alignment on Economic Growth

	Polynomial of Order					
	1			2		
Bandwidth	h*	h*/2	2h*	h*	h*/2	2h*
Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)
Growth	0.44	0.09	0.32	1.15**	-1.39**	1.22***
	(0.38)	(0.54)	(0.35)	(0.50)	(0.69)	(0.46)
Magnitude	9.70%	1.84%	6.97%	26.94%	-27.35%	29.45%
Bandwidth	21.15%	10.57%	42.29%	16.38%	8.19%	32.76%
Observations	11032	6627	16814	9378	5389	14294
Clusters	3217	2299	4027	2914	1971	3733

Notes: The table shows the effect of political alignment on economic growth. Estimates obtained using local linear and local quadratic RD point estimation with robust bias-corrected confidence intervals and triangular kernel. Optimal and bias-correction bandwidths obtained using a mean squared error optimal bandwidth selector algorithm. Robust standard errors clustered at the municipality level in parenthesis. Assignment variable: margin of victory of politically connected mayoral candidates. The dependent variable denotes local government jurisdictions' economic growth as measured by per capita GDP. $* : p < 0.1$; $** : p < 0.05$; $*** : p < 0.01$.

Table 2.13: Effect of a Workers' Party (PT) Mayor Election on Mortality

	Polynomial of Order					
	1			2		
Bandwidth	h*	h*/2	2h*	h*	h*/2	2h*
Period	(1)	(2)	(3)	(4)	(5)	(6)
1997 to 2002	-0.72	1.16	-0.60	-0.60	1.66	-0.72
	(0.61)	(0.98)	(0.57)	(0.80)	(1.16)	(0.65)
Magnitude	-12.92%	24.48%	-10.71%	-11.29%	36.35%	-13.02%
Bandwidth	12.85%	6.43%	25.70%	15.05%	7.53%	30.10%
Observations	375	194	664	427	224	776
Clusters	190	99	336	216	114	392
2003 to 2008	-1.10***	-3.52***	-1.25***	-1.31***	-3.11***	-1.39***
	(0.17)	(0.20)	(0.16)	(0.16)	(0.20)	(0.15)
Magnitude	-21.16%	-49.52%	-23.88%	-24.90%	-45.39%	-26.63%
Bandwidth	7.85%	3.93%	15.70%	15.77%	7.89%	31.55%
Observations	1533	838	2762	2770	1545	4600
Clusters	417	238	713	716	419	1154

Notes: The table shows the effect of political alignment on the mortality rate. Estimates obtained using local linear and local quadratic RD point estimation with robust bias-corrected confidence intervals and triangular kernel. Optimal and bias-correction bandwidths obtained using a mean squared error optimal bandwidth selector algorithm. Robust standard errors clustered at the municipality level in parenthesis. Assignment variable: margin of victory of politically connected mayoral candidates. The dependent variable denotes the number of deaths in a municipality per thousand residents. $^{*}: p < 0.1$; $^{**}: p < 0.05$; $^{***}: p < 0.01$.

Table 2.14: Effect of Political Alignment with Non-Workers' Party Governor on Mortality and Discretionary Transfers

	Polynomial of Order					
	1			2		
Bandwidth	h*	h*/2	2h*	h*	h*/2	2h*
Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)
Mortality Rate	-0.11	-0.46***	-0.09	-0.19**	-0.47***	-0.14*
	(0.08)	(0.14)	(0.07)	(0.09)	(0.15)	(0.08)
Magnitude	-2.86%	-11.80%	-2.34%	-4.99%	-12.08%	-3.73%
Bandwidth	11.96%	5.98%	23.92%	16.42%	8.21%	32.84%
Observations	14140	7650	21732	17651	10306	24620
Clusters	3606	2411	4445	4045	2966	4679
Capital Transfers	14.57***	13.26***	13.17***	16.24***	12.14**	14.08***
	(2.58)	(4.21)	(2.38)	(3.26)	(4.79)	(2.88)
Magnitude	58.25%	49.34%	51.05%	65.68%	45.61%	56.27%
Bandwidth	14.15%	7.08%	28.31%	17.53%	8.76%	35.06%
Observations	15563	8695	22668	17900	10631	24388
Clusters	3841	2687	4580	4133	3065	4713
Operating Transfers	5.27***	5.70**	5.80***	6.19***	5.34*	5.10***
	(1.48)	(2.48)	(1.36)	(1.81)	(2.97)	(1.58)
Magnitude	20.72%	21.34%	23.04%	24.59%	19.82%	20.09%
Bandwidth	15.27%	7.64%	30.55%	19.14%	9.57%	38.28%
Observations	16372	9355	23335	18851	11445	24996
Clusters	3951	2819	4627	4231	3221	4749

Notes: The table shows the effect of political alignment on mortality, discretionary capital transfers, and discretionary operating transfers. Estimates obtained using local linear and local quadratic RD point estimation with robust bias-corrected confidence intervals and triangular kernel. Optimal and bias-correction bandwidths obtained using a mean squared error optimal bandwidth selector algorithm. Robust standard errors clustered at the municipality level in parenthesis. Assignment variable: margin of victory of politically connected mayoral candidates. The dependent variables denote the number of deaths in a municipality per thousand residents and per capita transfers expressed in Brazilian Reais. $^{*}: p < 0.1$; $^{**}: p < 0.05$; $^{***}: p < 0.01$.

Chapter 3

Political Connections, COVID-19 Pandemic, and the Allocation Medical Resources

3.1 Introduction

The COVID-19 pandemic has created unprecedented pressure on healthcare systems around the world since its early days, forcing governments to acquire an unparalleled amount of medical resources to prevent their healthcare systems from collapsing. As with publicly funded resources over which politicians have discretion over distribution, there are concerns that medical goods to fight the COVID-19 pandemic were disproportionately reserved to the politically connected.

As a consequence of the World Health Organization declaring COVID-19 a pandemic, federal and state governments in Brazil triggered a legal mechanism called *estado de calamidade pública* (state of public calamity). By doing this, federal and state governments were able to spend more than what they were provided by their respective budget laws without the need of congressional authorization and without public procurement. This allowed governments to rapidly respond to the increasing pressure on health systems across the country and avoid/delay their collapse. The increase in medical supplies, such as ICU beds and ventilators, essential to treat severe cases of COVID-19, was unprecedented. In January 2020, month in which the WHO announced a "mysterious coronavirus-related pneumonia" in Wuhan, China, there were 14,466 adult ICU beds and 46,491 ventilators in Brazil available through the *Sistema Único de Saúde* - SUS (Unified Health System), the Brazilian publicly funded healthcare system. By the end of July 2021, the country almost tripled the number of ICU beds, adding 25 thousand new adult ICU beds, and increased the number of ventilators by 56%, or 28,963 new units. Governments could also expand the offer of human resources available through the SUS, increasing the number of physicians and nurses by 16% and 32%, respectively, faster than any other period in history.[1]

Politicians had great discretion in the distribution of these medical resources and, as such, political connections might have played a role in the decision of where to send the newly acquired health inputs. But rather than just asking whether political connections affected the allocation of medical resources to address the COVID-19 pandemic, this chapter aims to answer whether resources that were undoubtedly distributed by upper-tier governments from voter's perspective area allocated on political grounds. In section 1.2, I discussed models of tactical redistribution, which predict that political alignment will only play a role in the decision of where to allocate government resources if voters are not perfectly aware of the source of additional

[1]See figures 3.1 through 3.6 for more detailed information

expenditure. Media coverage during the entire pandemic stressed the efforts of both federal and state governments to acquire and distribute medical resources to help fighting the ongoing pandemic. By testing for differences in health inputs received by aligned and unaligned local constituencies, I seek to answer whether resources such as national program expenditure and large infrastructure projects, which should not cast doubt on source of funding, could explain the results discussed in chapter 1.

In addition to the election data discussed in chapter 1, which I expanded to include data on the 2018 and 2020 elections, I use data from the National Registry of Health Establishments, the CNES. The CNES allows me to keep track of any new medical resource made available through the SUS at a very disaggregated level and on a monthly basis. I aggregate the data on the municipality-quarter level and use this data to calculate the change in the number of ICU beds, pneumology beds, ventilators, resuscitators, and the number of hours per week physicians and nurses work at hospital sized facilities. The data ranges from the quarter starting in April 2020, the first full month after the federal and state governments declared state of public calamity, to the quarter ending in June 2021, the last month for which CNES data is available, for all the 5,570 Brazilian municipalities.

For identification, I rely on the same approach used in the first two chapters of this dissertation. In short, municipalities on both sides of the discontinuity threshold of zero percent margin of victory should be identical with respect to their baseline characteristics, and differences in the number of medical resources received by marginal aligned and unaligned local-government jurisdictions can be considered caused by political connections. If no differences exist, we can say that political connections do not play a role in the decision of where to send these resources and others similar. I test for differences in the allocation of health inputs for a variety of definitions of political connections, namely, co-partisanship between the municipality mayor and the president, state governor, and the federal and state coalitions. I use a regression discontinuity design (RDD) to estimate these differences at the margin.

I find no evidence that medical resources were disproportionately distributed to connected municipalities, for any of the six inputs considered or any of the four definitions of political alignment, even though politicians of both federal and state governments had great discretionary power in the allocation of these resources during the period under review. The finding is consistent with predictions from theoretical models in Arulampalam et al. (2009), Brollo and Nannicini (2012), and Asher and Novosad (2017) discussed earlier. More than that, it provides evidence that resources that share the same characteristic to the ones considered here, that is, they are known by voters to be funded by upper-tier governments, may not be allocated on political grounds. This greatly reduces the range of possible mechanisms that could explain the differences in mortality rates found in chapter 1 and give support to the thesis that political connections affect local populations through discretionary transfers for capital expenditure.

The contributions of this study are twofold. First, it adds to a growing literature on the social costs of political connections. Recent works on the subject have focused on measuring distortions in resource allocation. Arulampalam et al. (2009), for example, find that Indian states that are both swing and aligned to the central government receive, on average, 16% more transfers than states that are both swing and unaligned. My paper rather shows that distortions in transfer allocation are large enough to affect local outcomes. In this sense, my work is closely related to Asher and Novosad (2017), who show that political connections can affect the economic growth of politically connected regions through regulatory power. The authors, however, do not draw conclusions about the aggregate impact of political connections on local outcomes, given the nature of how political connections affect outcomes in the study setup. In my study, the political allocation of transfers is subject to budgetary constraints by the grantor government, and this allows me to conjecture about the efficiency of politically motivated transfers.

This study also contributes to the health economics literature. Early studies find either unreasonably small or statistically insignificant impacts of health spending on mortality (Kim and Moody, 1992; McGuire et al., 1993; Musgrove, 1996; Filmer and Pritchett, 1999). Other studies tried to improve on earlier approaches by decomposing government spending on subfunctions of government. Filmer et al. (1998) consider government spending in primary health care, rather than aggregate health spending, but find no significant differences in mortality. Gupta et al. (2002), on the other hand, find a significant reduction in mortality associated with health spending after controlling for primary health care spending. The results presented in this paper point out the importance of decomposing health spending into capital and operating expenditure, and considering aggregate capital expenditure.

The rest of this chapter develops as follows. In section 3.2 I present the timeline of events concerning the COVID-19 pandemic in Brazil and in the world that is relevant for my analysis, and discuss in detail the legal and economic consequences of the State of Public Calamity decrees. In section 3.3 I present new data sources and talk about variable engineering. Section 3.4 presents results and section 3.5 concludes.

3.2 The COVID-19 Pandemic in Brazil

On December 12, 2019, a cluster of individuals in Wuhan, China, began experiencing pneumonia-like symptoms from an unknown cause, suggesting a community-acquired outbreak from external agents, such as virus, bacteria, or other types of microorganisms. In January 2021, Chinese authorities isolated a novel coronavirus as the cause of the outbreak, the SARS-CoV-2, virus that causes the coronavirus disease 2019, or COVID-19. Only a few month later, on March 11, 2020, the World Health Organization (WHO), declared COVID-19 a pandemic, meaning that the virus has spread worldwide, at reach of a substantial number of individuals in several countries. By then, Brazil had already recorded its first COVID-19 case, and shortly after, on March 17, 2020, its first death by the disease.

As a consequence of these events, on March 18, 2020, the National Congress, at the request of the President of the Republic, decreed *Estado de Calamidade Pública* (State of Public Calamity). All the 26 states and the Federal District followed the federal government and also decreed their version of the state of public calamity, which has been in effect to this day, until at least December 31, 2021, if not extended by then.

The State of Public Calamity is a legal device, regulated by the constitution and complementary federal law, that can be triggered in cases of abnormal situation, caused by natural or inflicted disasters resulting in damages and losses, including life-threatening situations, that imply substantial compromise of public authorities response capacity.[2] By declaring State of Public Calamity, the federal and state governments make budget limits more flexible, which allow the exceptional allocation of

[2]See *Lei Complementar N. 101, de 4 de Maio de 2000* (Complementary Law No. 101, of May 4, 2000), available at http://www.planalto.gov.br/ccivil_03/leis/lcp/lcp101.htm.

more resources without the risk of committing fiscal crimes. The measure also legitimizes the establishment of urgent and provisional legal regimes, in order to contain the impacts of the calamitous situation. From a budgetary perspective, governments could break the ceiling of their respective budget laws and avoid the lengthy process of public procurements for the purchase of new public goods.

The increase in the number of medical resources available through the Unified Health System was unprecedented. Figures 3.1 through 3.6 plot the number of ICU beds, pneumology beds, ventilators, resuscitators, physicians, and nurses available through SUS by the end of each month, from February 2018 to June 2021. After March 2020, month in which the federal and state governments decreed State of Public Calamity, the number of health inputs started growing at a rate never seem before. The number of adult ICU beds in the country, for example, jumped from 14,469 units by the end of February 2020 to 39,975 beds by the end of June 2021, an 176% increase in the number of ICU beds available through SUS.

3.3 Data

In addition to the election data discussed in the first chapter of this dissertation, which was expanded to include data on the 2018 and 2020 elections, this study draws data from the National Registry of Health Establishments (*Cadastro Nacional de Estabelecimentos de Saúde* - CNES). The National Registry of Health Establishments is the official information system of health establishments in Brazil and records information on all health establishments in the country, regardless of their legal nature or whether they are part of the Unified Health System. The platform is the official record of the Ministry of Health regarding the reality of the installed capacity and health care workforce in Brazil in public or private health establishments.

I use data from three CNES files, the beds, equipments, and professionals files. These are monthly data at the bed, equipment, and professional level, respectively, describing a variety of information of every health input existing in the country. The information includes a detailed description of the type of bed, equipment, and professional; the municipality where the health input is located; the quantity available through the Unified Health System, among other information. I aggregate the data at the municipality-quarter-input level by counting the number of inputs available through the Unified Health System. More specifically, I count, at the municipality-quarter level, the number of ICU and pneumology beds; the number of ventilators and resuscitators; as well as the number of hours per week physicians and nurses work at hospital sized facilities. I use this data to calculate the quarterly change in health inputs across municipalities. All these variables are then expressed in units per one thousand residents. Figures 3.1 through 3.6 in the appendix plot the total number of health inputs in the country across time.

3.4 Results

Tables 3.1, 3.2, 3.3, and 3.4 show the regression discontinuity (RD) estimates of the effect of political alignment with the president, federal coalition, governor, and state coalition, respectively, on the allocation of health resources aimed to fight the COVID-19 pandemic. As before, columns 1 through 3 in all four tables present local linear RD estimates, whereas columns 4 through 6 present local quadratic RD estimates. Columns 1 and 3 present estimates obtained using a mean square error optimal bandwidth selector algorithm. For robustness, I present estimates using half (columns 2 and 5) and twice (columns 3 and 6) as large bandwidths.

Despite the federal and state governments having large discretion over the allocation of health resources during the entire period under review and being able to spend more than what was provided for by their respective budget laws without the need of congressional authorization, I find no evidence that health inputs to address the increase in hospitalizations due to the COVID-19 pandemic have been distributed on political grounds. I find no significant difference in the allocation of any of the six inputs considered in this study, regardless of the definition of political alignment being used.

One possible explanation for the null results, which is grounded on the predictions from models of tactical redistribution discussed in section 1.2, is that the origin of these additional health inputs was fully known by the voters in local government jurisdictions during the pandemic. The models state that, if voters are completely aware of the source of additional expenditure, there will be no leakage of benefits to local parties from resource allocation by upper level governments. In equilibrium, upper-tier governments will not distinct between aligned and unaligned local governments when deciding the destination of public resources. Media coverage during the entire pandemic stressed the efforts of both federal and state governments to acquire and distribute to local governments medical resources to avoid the collapse of the health system. It is reasonable to suppose that, at least concerning the allocation of health inputs during the period under analysis, voters in local government jurisdictions knew where these goods were coming from, which would explain the lack of significant differences in resource allocation across connected and unconnected municipalities.

The results in this section support the assumption that political connections affect mortality rates through discretionary transfers. It provides evidence that resources such as national program spending and large infrastructure projects, whose allocation can easily be attributed to the grantor government, are not distributed based on the identity of the local politician. This further limits the range of other possible mechanisms that can explain the difference in mortality rates between connected and unconnected local government jurisdictions.

3.5 Conclusion

In this chapter, I present additional evidence of the possible mechanisms through which political connections affect mortality rates and possibly other outcomes of local government jurisdictions. The theory of tactical redistribution predicts that strategic behavior only happens in situations where voters are unaware of the source of additional funding, and the electoral benefits from resource allocation leaks to the local politician, who can be from an opposing party. This compels central politicians to favor their political allies, causing imbalances in resource allocation. An example of such resource are intergovernmental transfers, which I show in chapter 2 be extremely sensitive to political connections, to the point that a substantial share of local investments are financed with political transfers. Resources that do not share this characteristic, that is, resources for which the origin is known to voters, should not be subject to disproportional allocation due to political connections, since the grantor government accrues the entire benefit of transfers. I test this theory by examining the allocation of medical resources during the COVID-19 pandemic, period in which there was an unprecedented increase in the amount of these goods available to citizens and governments had great discretion in their distribution, at the same time that media coverage stressed the efforts of the federal and state governments to acquire and distribute them to local governments across the country.

Differently of discretionary transfers, I find no evidence that medical resources were distributed on political grounds during the COVID-19 pandemic. With this results, one can infer that other resources known by voters to be funded by federal and state resources are also not allocated based on the political identity of the local politician. Examples of such resources are national program spending and large infrastructure projects, which could well affect mortality through political connections.

This work shows that the political allocation of intergovernmental transfers, a well known distortion in government behavior that has been observed by researchers in several instances, have wide consequences for the populations of local government jurisdictions, not only at the local level but also at the national level. It also presents policy makers with a thorough investigation of the source of such inefficiency, which can help on the design of a more efficient system of transfers.

3.6 Figures

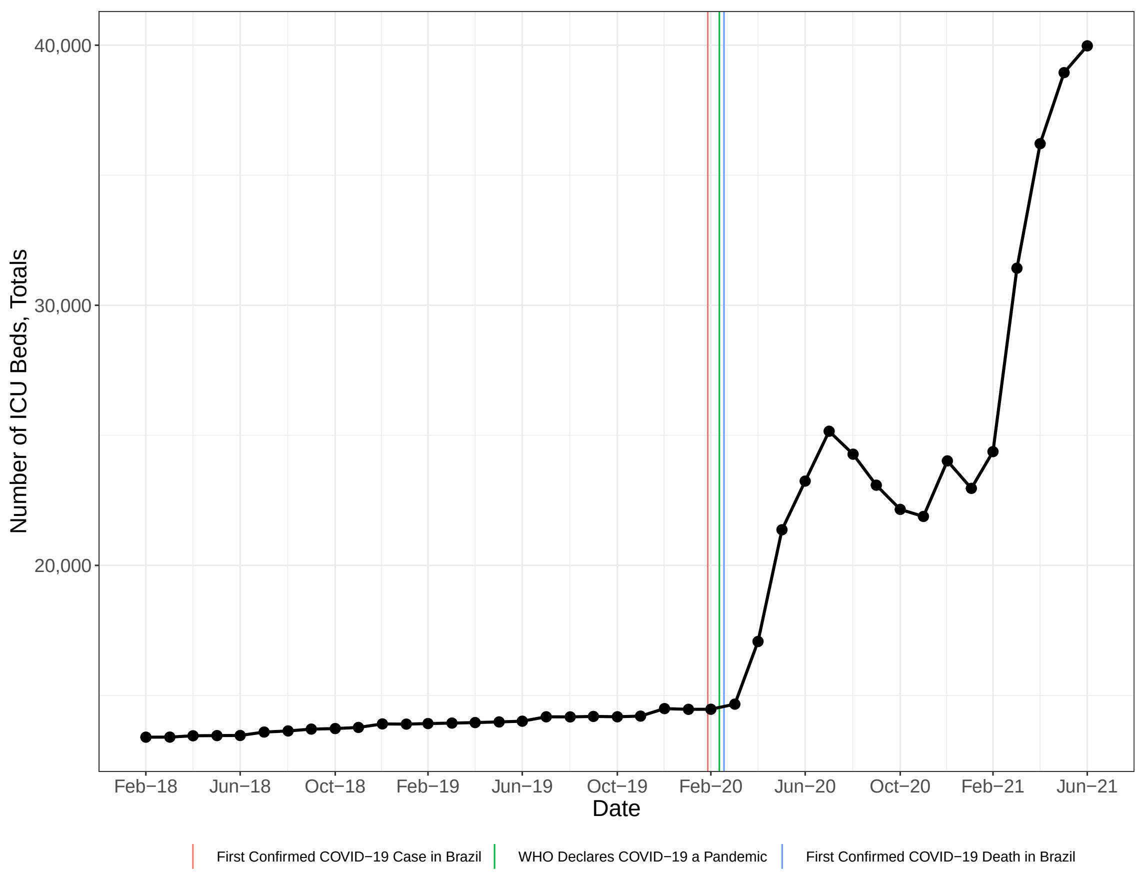


Figure 3.1: Number of ICU Beds Available through SUS Over Time

Notes: Number of ICU beds available through Brazil's publicly funded health care system, the *Sistema Único de Saúde* (SUS) - Unified Health System, as of the end of each month. Constructed from data available in the *Cadastro Nacional de Estabelecimentos de Saúde* (CNES) - National Registry of Health Establishments.

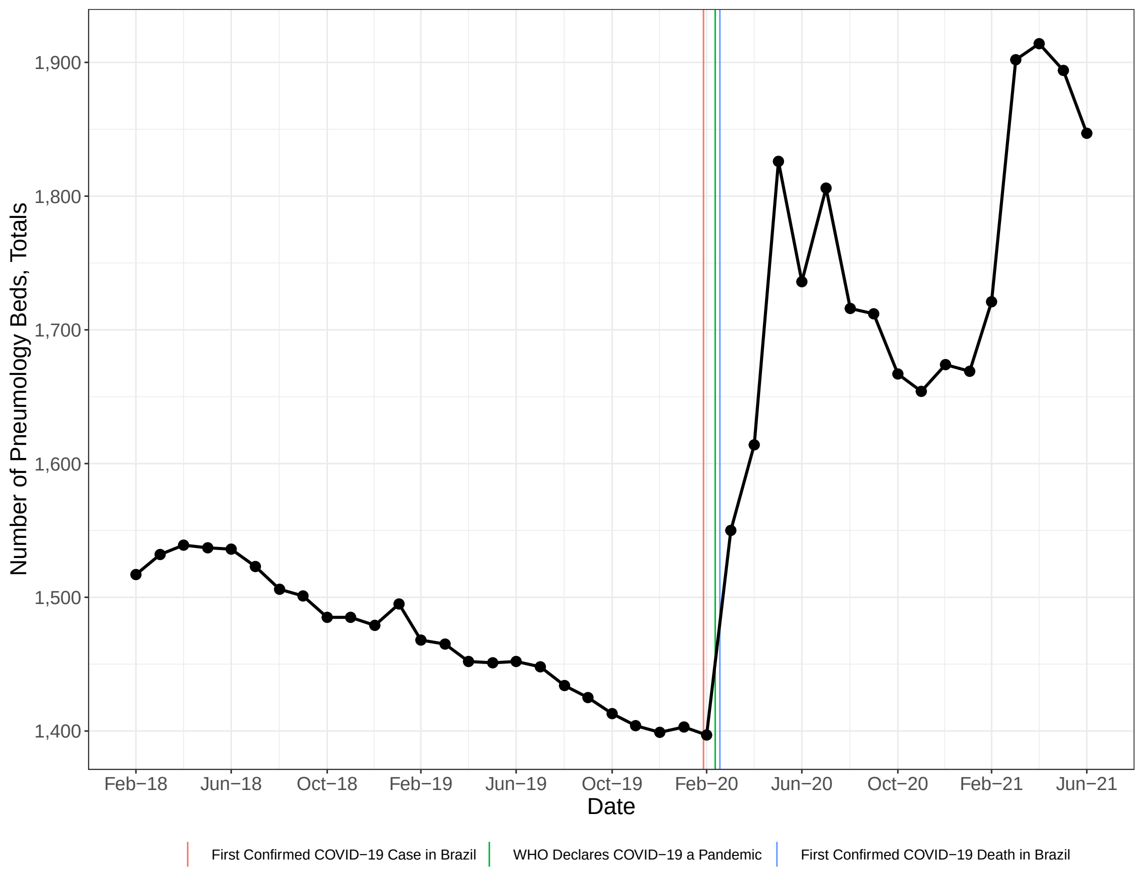


Figure 3.2: Number of Pneumology Beds Available through SUS Over Time

Notes: Number of pneumology beds available through Brazil's publicly funded health care system, the *Sistema Único de Saúde* (SUS) - Unified Health System, as of the end of each month. Constructed from data available in the *Cadastro Nacional de Estabelecimentos de Saúde* (CNES) - National Registry of Health Establishments.

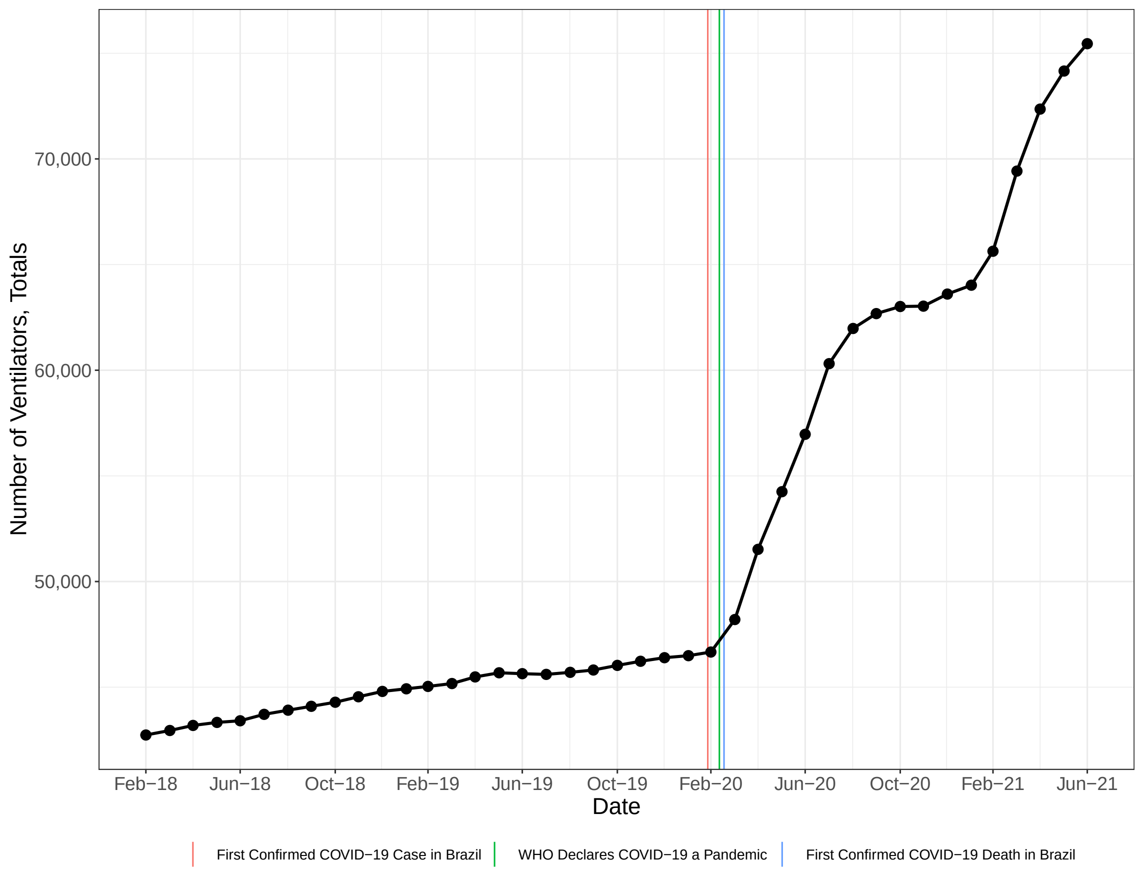


Figure 3.3: Number of Ventilators Available through SUS Over Time

Notes: Number of ventilators available through Brazil's publicly funded health care system, the *Sistema Único de Saúde* (SUS) - Unified Health System, as of the end of each month. Constructed from data available in the *Cadastro Nacional de Estabelecimentos de Saúde* (CNES) - National Registry of Health Establishments.

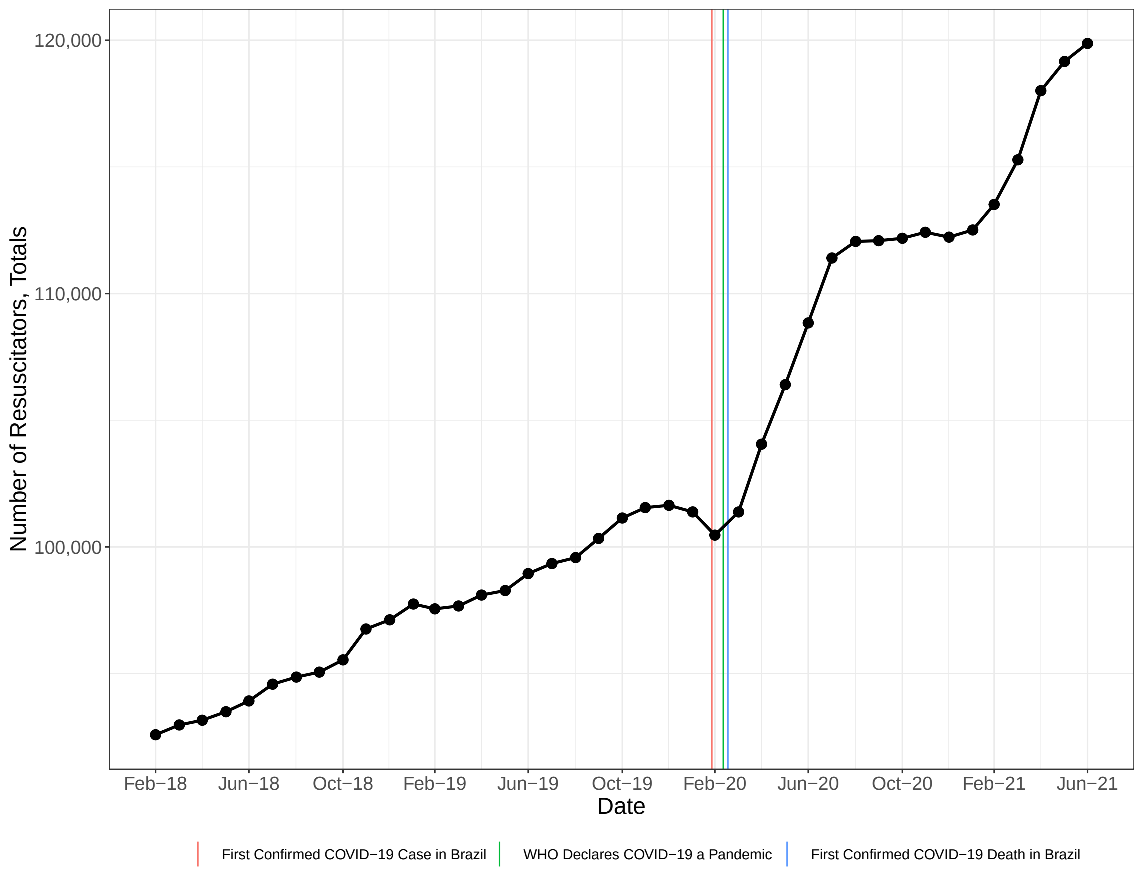


Figure 3.4: Number of Resuscitators Available through SUS Over Time

Notes: Number of resuscitators available through Brazil's publicly funded health care system, the *Sistema Único de Saúde* (SUS) - Unified Health System, as of the end of each month. Constructed from data available in the *Cadastro Nacional de Estabelecimentos de Saúde* (CNES) - National Registry of Health Establishments.

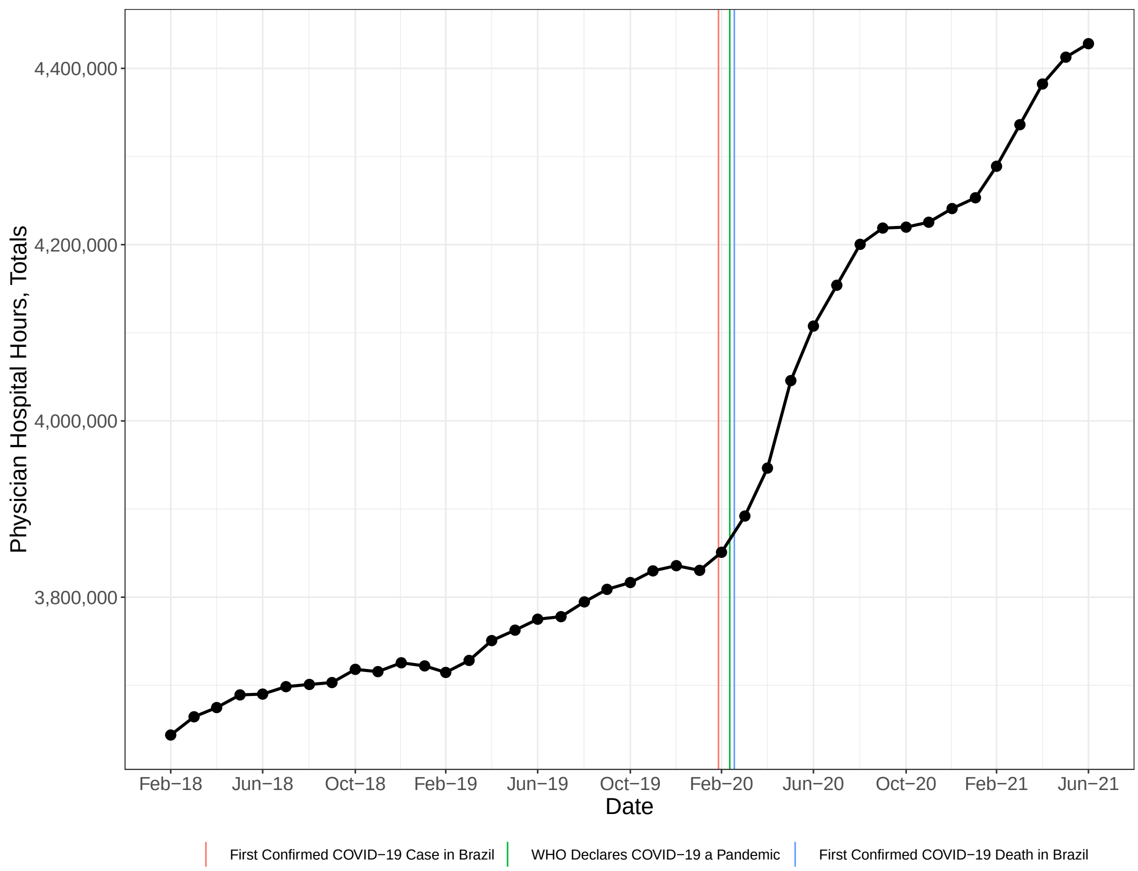


Figure 3.5: Number of Physician-Hours per Week Available through SUS Over Time

Notes: Number of physician-hours per week available through Brazil's publicly funded health care system, the *Sistema Único de Saúde* (SUS) - Unified Health System, as of the end of each month. Constructed from data available in the *Cadastro Nacional de Estabelecimentos de Saúde* (CNES) - National Registry of Health Establishments.

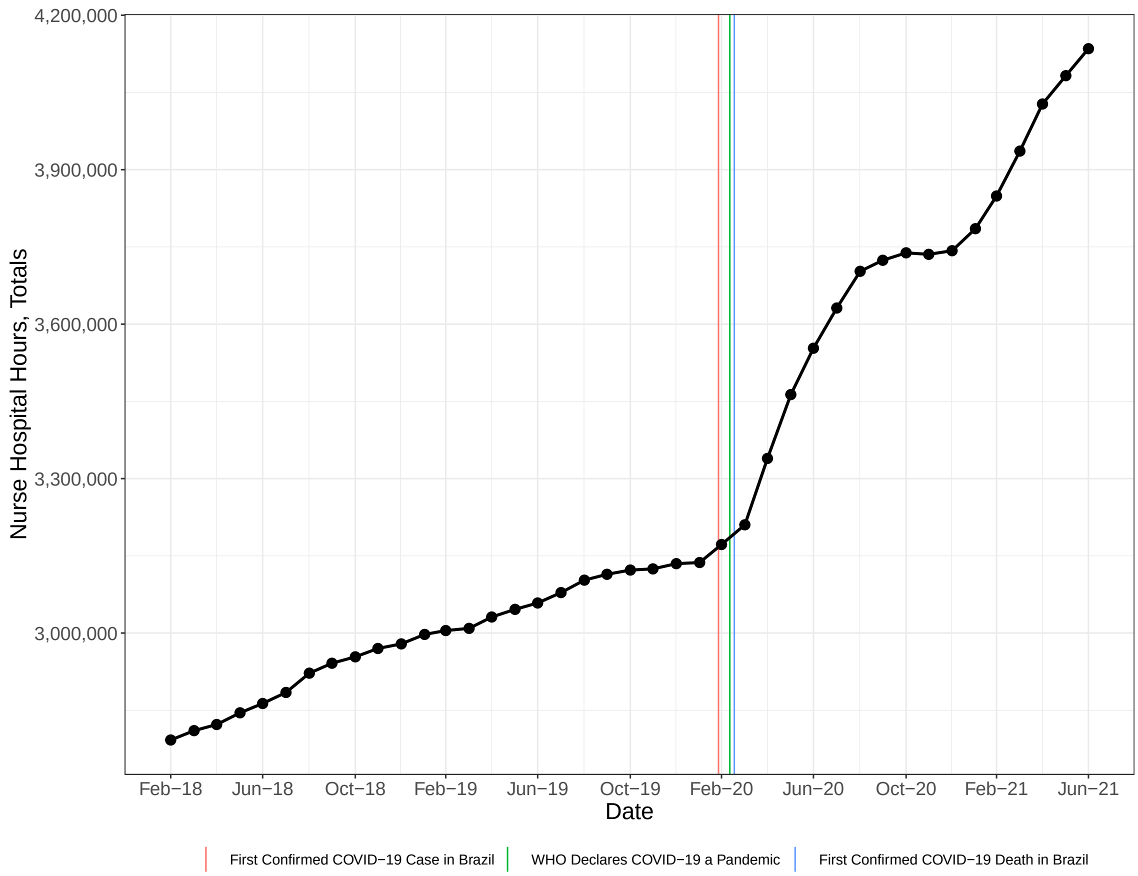


Figure 3.6: Number of Nurse-Hours per Week Available through SUS Over Time

Notes: Number of nurse-hours per week available through Brazil's publicly funded health care system, the *Sistema Único de Saúde* (SUS) - Unified Health System, as of the end of each month. Constructed from data available in the *Cadastro Nacional de Estabelecimentos de Saúde* (CNES) - National Registry of Health Establishments.

3.7 Tables

Table 3.1: Effect of Political Alignment with the Federal Government on the Allocation of Health Resources During the COVID-19 Pandemic

	Polynomial of Order					
	1			2		
Bandwidth	h*	h*/2	2h*	h*	h*/2	2h*
Health Input	(1)	(2)	(3)	(4)	(5)	(6)
ICU Beds	-0.05	-1.00	-0.41	1.04	-1.95	0.67
	(0.52)	(0.80)	(0.88)	(0.72)	(1.60)	(0.65)
Bandwidth	10.35%	5.18%	20.71%	12.76%	6.38%	25.51%
Observations	295	137	592	353	175	672
Clusters	130	59	255	153	76	293
Pneumology Beds	-0.07*	-	-0.12	-0.11	0.12	-0.16
	(0.04)	-	(0.08)	(0.07)	(0.10)	(0.13)
Bandwidth	11.73%	-	23.46%	22.35%	11.17%	44.69%
Observations	336	-	654	620	323	1159
Clusters	145	-	284	268	141	510
Ventilators	-0.79	2.38	-0.39	0.43	2.54	-0.48
	(1.32)	(2.84)	(1.28)	(1.71)	(4.12)	(1.57)
Bandwidth	18.55%	9.27%	37.09%	17.16%	8.58%	34.32%
Observations	529	260	933	492	243	866
Clusters	232	115	417	215	107	385
Resuscitators	1.09	1.79	1.05	1.15	1.54	1.10
	(2.06)	(6.40)	(1.77)	(2.53)	(6.79)	(1.84)
Bandwidth	13.92%	6.96%	27.83%	21.81%	10.91%	43.63%
Observations	380	196	721	614	313	1126
Clusters	164	85	313	265	136	497
Physician-hours per Week	121.29	-41.07	96.35	129.47*	1.93	82.92
	(76.52)	(85.42)	(72.35)	(78.39)	(76.19)	(73.73)
Bandwidth	10.57%	5.28%	21.13%	18.60%	9.30%	37.19%
Observations	303	143	601	535	261	954
Clusters	133	62	259	232	115	418
Nurse-hours per Week	97.23	120.55	65.63	150.14**	88.00	98.71
	(66.41)	(108.83)	(64.57)	(74.62)	(123.83)	(68.61)
Bandwidth	11.93%	5.96%	23.85%	15.14%	7.57%	30.28%
Observations	338	156	656	433	211	795
Clusters	146	68	285	188	92	344

Notes: The table shows the effect of political alignment on health resources allocation. Estimates obtained using local linear and local quadratic RD point estimation with robust bias-corrected confidence intervals and triangular kernel. Optimal and bias-correction bandwidths obtained using a mean squared error optimal bandwidth selector algorithm. Robust standard errors clustered at municipality level in parenthesis. Assignment variable: margin of victory of politically connected mayoral candidates. The dependent variables denote municipalities' quarterly change in health resources per 100,000 residents. $^{*} : p < 0.1$; $^{**} : p < 0.05$; $^{***} : p < 0.01$.

Table 3.2: Effect of Political Alignment with the Federal Coalition on the Allocation of Health Resources During the COVID-19 Pandemic

	Polynomial of Order					
	1			2		
Bandwidth	h*	h*/2	2h*	h*	h*/2	2h*
Health Input	(1)	(2)	(3)	(4)	(5)	(6)
ICU Beds	-0.59	-0.14	-0.74	-0.38	-0.03	-0.72
	(0.58)	(0.99)	(0.49)	(0.74)	(1.06)	(0.60)
Bandwidth	22.08%	11.04%	44.15%	27.79%	13.89%	55.58%
Observations	3070	1801	4497	3553	2198	5113
Clusters	1133	691	1621	1296	820	1847
Pneumology Beds	0.01	0.06	-0.01	0.07	0.02**	0.05
	(0.02)	(0.04)	(0.02)	(0.11)	(0.01)	(0.09)
Bandwidth	16.93%	8.46%	33.86%	17.69%	8.84%	35.37%
Observations	2585	1434	3961	2670	1497	4045
Clusters	961	561	1434	991	585	1467
Ventilators	1.38*	2.72	1.22*	2.07*	2.90	1.54*
	(0.76)	(2.12)	(0.72)	(1.06)	(2.62)	(0.86)
Bandwidth	18.51%	9.25%	37.02%	24.59%	12.30%	49.18%
Observations	2740	1571	4104	3283	1971	4763
Clusters	1020	613	1499	1211	754	1733
Resuscitators	-0.29	1.48	-0.27	0.42	1.68	0.04
	(1.26)	(2.91)	(1.08)	(1.79)	(3.66)	(1.41)
Bandwidth	26.01%	13.01%	52.02%	31.87%	15.94%	63.74%
Observations	3410	2082	4929	3805	2456	5314
Clusters	1253	793	1792	1388	917	1933
Physician-hours per Week	7.21	1.26	0.72	5.24	4.97	4.88
	(20.65)	(31.72)	(18.32)	(22.03)	(32.17)	(18.66)
Bandwidth	17.70%	8.85%	35.41%	30.93%	15.47%	61.86%
Observations	2677	1497	4048	3778	2417	5312
Clusters	993	585	1468	1370	898	1921
Nurse-hours per Week	33.82	49.55	26.44	32.68	52.61	28.15
	(26.92)	(52.83)	(24.03)	(28.62)	(50.92)	(23.54)
Bandwidth	15.85%	7.93%	31.71%	29.51%	14.76%	59.02%
Observations	2465	1356	3816	3678	2321	5231
Clusters	915	530	1386	1337	867	1894

Notes: The table shows the effect of political alignment on health resources allocation. Estimates obtained using local linear and local quadratic RD point estimation with robust bias-corrected confidence intervals and triangular kernel. Optimal and bias-correction bandwidths obtained using a mean squared error optimal bandwidth selector algorithm. Robust standard errors clustered at municipality level in parenthesis. Assignment variable: margin of victory of politically connected mayoral candidates. The dependent variables denote municipalities' quarterly change in health resources per 100,000 residents. $^{*}: p < 0.1$; $^{**}: p < 0.05$; $^{***}: p < 0.01$.

Table 3.3: Effect of Political Alignment with the State Government on the Allocation of Health Resources During the COVID-19 Pandemic

	Polynomial of Order					
	1			2		
Bandwidth	h*	h*/2	2h*	h*	h*/2	2h*
Health Input	(1)	(2)	(3)	(4)	(5)	(6)
ICU Beds	-0.68	-0.83	-0.69*	-0.63	-0.84	-0.83*
	(0.45)	(0.65)	(0.40)	(0.57)	(0.63)	(0.46)
Bandwidth	15.51%	7.76%	31.03%	20.93%	10.46%	41.86%
Observations	3859	2156	5643	4614	2832	6381
Clusters	1304	784	1770	1517	991	1963
Pneumology Beds	-0.05	0.03	-0.05	-0.01	0.02	-0.02
	(0.04)	(0.04)	(0.04)	(0.01)	(0.02)	(0.03)
Bandwidth	17.97%	8.98%	35.93%	16.42%	8.21%	32.84%
Observations	4226	2464	6031	4018	2257	5792
Clusters	1402	877	1869	1345	817	1805
Ventilators	0.60	1.00	0.49	0.76	1.01	0.44
	(0.44)	(0.97)	(0.40)	(0.52)	(1.04)	(0.44)
Bandwidth	18.88%	9.44%	37.76%	29.28%	14.64%	58.56%
Observations	4302	2540	6073	5428	3656	7056
Clusters	1440	908	1899	1731	1258	2168
Resuscitators	-0.02	1.43	0.03	-0.13	1.26	0.03
	(0.99)	(1.87)	(0.84)	(1.05)	(1.84)	(0.86)
Bandwidth	19.40%	9.70%	38.80%	35.08%	17.54%	70.16%
Observations	4400	2634	6174	5934	4145	7217
Clusters	1463	933	1920	1861	1391	2207
Physician-hours per Week	-25.90*	-31.30	-26.77*	-29.35	-35.39	-33.24**
	(15.17)	(22.88)	(13.92)	(18.01)	(23.73)	(15.00)
Bandwidth	13.70%	6.85%	27.40%	21.00%	10.50%	41.99%
Observations	3468	1891	5333	4630	2838	6381
Clusters	1195	693	1697	1521	993	1963
Nurse-hours per Week	-14.46	-22.09	-11.55	-20.69	-2.31	-19.94
	(14.62)	(26.82)	(13.97)	(19.53)	(30.04)	(16.38)
Bandwidth	18.65%	9.33%	37.31%	23.17%	11.58%	46.33%
Observations	4310	2534	6103	4891	3080	6627
Clusters	1429	900	1890	1589	1070	2031

Notes: The table shows the effect of political alignment on health resources allocation. Estimates obtained using local linear and local quadratic RD point estimation with robust bias-corrected confidence intervals and triangular kernel. Optimal and bias-correction bandwidths obtained using a mean squared error optimal bandwidth selector algorithm. Robust standard errors clustered at municipality level in parenthesis. Assignment variable: margin of victory of politically connected mayoral candidates. The dependent variables denote municipalities' quarterly change in health resources per 100,000 residents. $^{*}: p < 0.1$; $^{**}: p < 0.05$; $^{***}: p < 0.01$.

Table 3.4: Effect of Political Alignment with the State Coalition on the Allocation of Health Resources During the COVID-19 Pandemic

	Polynomial of Order					
	1			2		
Bandwidth	h*	h*/2	2h*	h*	h*/2	2h*
Health Input	(1)	(2)	(3)	(4)	(5)	(6)
ICU Beds	-0.29*	-0.21	-0.23	-0.23	-0.32	-0.35
	(0.17)	(0.31)	(0.16)	(0.26)	(0.34)	(0.22)
Bandwidth	22.69%	11.35%	45.39%	21.62%	10.81%	43.23%
Observations	10314	6305	14068	10039	6078	13764
Clusters	3147	2106	3951	3080	2047	3893
Pneumology Beds	-0.02	0.02	-0.02	-0.02	0.03	-0.02
	(0.02)	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)
Bandwidth	12.20%	6.10%	24.41%	20.38%	10.19%	40.76%
Observations	6724	3585	10797	9665	5809	13459
Clusters	2221	1275	3254	2988	1964	3834
Ventilators	0.41	0.49	0.33	0.37	0.56	0.28
	(0.30)	(0.68)	(0.27)	(0.30)	(0.60)	(0.26)
Bandwidth	15.54%	7.77%	31.08%	31.84%	15.92%	63.68%
Observations	8085	4502	12059	12156	8247	15484
Clusters	2595	1574	3547	3570	2636	4259
Resuscitators	-0.42	0.56	-0.37	-0.44	0.54	-0.35
	(0.47)	(0.96)	(0.41)	(0.51)	(0.94)	(0.42)
Bandwidth	16.90%	8.45%	33.80%	29.98%	14.99%	59.95%
Observations	8565	4835	12430	11842	7858	15348
Clusters	2718	1682	3633	3501	2546	4231
Physician-hours per Week	-9.07	-10.93	-8.99	-9.11	-9.67	-9.23
	(8.80)	(16.00)	(8.31)	(10.76)	(17.03)	(9.03)
Bandwidth	17.38%	8.69%	34.75%	26.27%	13.14%	52.55%
Observations	8778	4985	12654	11239	7122	14925
Clusters	2759	1718	3666	3360	2331	4134
Nurse-hours per Week	-0.76	0.78	0.05	-0.03	-2.74	-2.35
	(10.03)	(16.28)	(9.16)	(10.42)	(15.94)	(9.18)
Bandwidth	17.92%	8.96%	35.84%	33.21%	16.61%	66.43%
Observations	8954	5139	12807	12446	8527	15679
Clusters	2808	1765	3703	3612	2691	4268

Notes: The table shows the effect of political alignment on health resources allocation. Estimates obtained using local linear and local quadratic RD point estimation with robust bias-corrected confidence intervals and triangular kernel. Optimal and bias-correction bandwidths obtained using a mean squared error optimal bandwidth selector algorithm. Robust standard errors clustered at municipality level in parenthesis. Assignment variable: margin of victory of politically connected mayoral candidates. The dependent variables denote municipalities' quarterly change in health resources per 100,000 residents. $^{*}: p < 0.1$; $^{**}: p < 0.05$; $^{***}: p < 0.01$.

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