Deadly Politics: Political Connections, Intergovernmental Transfers, and Mortality

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Abstract

Intergovernmental transfers finance most local government spending in developing and developed economies. The redistribution of government revenues, however, might be subject to distortions for political reasons. I ask whether political connections between heads of the central and subnational governments cause distortions in the allocation of transfers sufficiently large to affect individuals in local government jurisdictions. I exploit close elections within a regression discontinuity design and find that municipalities that become connected to the federal government through the election of a co-partisan of the president receive more transfers, spend more, and have 16% fewer deaths in the two years that follow local elections. The distortion in the allocation of operating transfers is negligible. However, political connections cause distortions in local government capital expenditure equivalent to 17% of all local governments' investment expenses. I find decreases in mortality from parasitic diseases, homicide, suicide, and transport accidents, suggesting that increased spending in several functions of government, besides health spending, is responsible for the decrease in overall mortality. This is supported by the finding that connected municipalities have lower health operating expenditures and admit fewer patients to health care facilities. I find evidence of a decreasing, convex relationship between mortality and government spending, suggesting that the reduction in deaths in connected regions does not compensate for the increase in deaths in the unconnected ones.

JEL: D72, H51, H72, H73, H75, H77, I15

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1 Introduction

Intergovernmental transfers constitute the primary source of local government revenue and finance most local government spending in developed and developing economies. 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.[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 not entirely based on efficiency criteria (Khwaja and Mian, 2005). Evidence that political connections between grantor and grant receiving governments cause distortions in government behavior that affect the allocation of transfers is extensive.[3] Whether such distortions are sufficiently large to affect individuals of local government jurisdictions, however, is an open question.

This study presents new evidence on the social costs of political connections. More specifically, I ask two questions. First, whether political connections between grantor and grant receiving governments affect, to the same extent that affect the allocation of transfers, local government jurisdictions' outcomes. Second, I ask whether political connections have any aggregate impact on outcomes. As noted earlier, local government jurisdictions of both

[1]Source: Government Finance Statistics Data - IMF. See figures A1 and A2 in the appendix 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 central governments' ability to provide varying levels of public goods and services, which are, in theory, more efficient than a uniform provision of such services.

[3]Spanish municipalities that become connected with the two upper-tier grantor governments receive 40% more grants than the other set of municipalities (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).

developed and developing economies are highly dependent on transfers, and transfers on political grounds are a widespread practice, observed in several of these economies. Knowing whether political connections have an adverse effect on local outcomes, therefore, is of great interest from a policy standpoint and can lead to policies that may increase welfare in various countries.

To answer these questions, I examine connections between the federal and local governments in Brazil and how these connections affect mortality in Brazilian municipalities.[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 local leader is from the same party as the president.[5]

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, such as 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). 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] For this reason, I use mortality rate as an outcome to study the impact of political connections on local government jurisdictions' outcomes.

[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.

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

[6]Source: Government Finance Statistics Data - IMF. See figure A3 in the appendix for country-level statistics.

Brazil makes for an excellent case to study whether and how political connections affect outcomes. Brazilian municipalities are highly dependent on intergovernmental transfers: although declining over the years, 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 in 2017 and transfers from the federal government 49%. Furthermore, empirical studies show that the country is also subject to distortions in grant allocation due to political connections between the presidency and local governments. Brollo and Nannicini (2012) find that, in years that precede local elections, municipalities not run by a party in the federal coalition receive a twenty-five percent cut in discretionary transfers for capital expenditure. 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.[7]

Whether a municipality becomes connected or not might be correlated with unobservable shocks that affect health. Besides, if residents in a municipality know that they can benefit from having a mayor with a close relationship with the federal government, they might vote for the president's party in local elections. To address these identification challenges, I exploit quasi-experimental variation, generated by close elections, in municipalities' assignment into political alignment. I compare municipalities where aligned mayoral candidates barely won and barely lost the election. 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 zero percent margin of victory of politically connected mayoral candidates, I use this measure as the assignment variable in a Regression Discontinuity Design (RDD). This

[7]Municipalities in higher population brackets receive additional transfers under the *Fundo de Participação dos Municípios* (FPM) revenue-sharing program. Between census years, the government uses population estimates to determine municipalities' revenue shares in the program.

measure informs how distant a municipality was from becoming connected in terms of the relative number of votes. As shown by Lee (2008), such a treatment assignment mechanism creates variation in treatment assignment that is as good as random in a neighborhood of the discontinuity threshold. The RDD identifies the local average treatment effect (LATE) of political alignment on municipality outcomes for the subset of municipalities where the election of a connected candidate was decided by a close margin (Lee and Lemieux, 2010).

The data consists of mortality results, election outcomes, and local government finance statistics for all 5,570 Brazilian municipalities from 2002 to 2017. Mortality is measured as the per capita number of deaths in a municipality in a given year from some given cause and was constructed from death certificates of every individual that died in the country between 2002 and 2017. I examine hospitalization authorization forms of every individual in the country admitted to a health care facility to construct municipality-level hospital admissions data. Election data consist of election outcomes of all mayoral elections between 2000 and 2016, which I use to construct the assignment variable used in the RDD, the margin of victory of politically connected mayoral candidates. I use party affiliation records to identify the party affiliation of ministers and elected mayors during their term periods. Financial data consist of municipality-level information on discretionary transfers from the federal to local governments and local government spending.

The RDD estimate of the effect of political alignment on mortality shows that municipalities that become connected to the federal government through the election of a copartisan of the president have, on average, 0.72 fewer deaths per one thousand residents than municipalities that do not become connected, a difference of 16% in the number of deaths. The estimate is robust to the choice of bandwidth and model specification.[8] This result suggests that some action of the federal government towards municipalities, motivated

[8]Throughout the text, I use the local linear estimate obtained using a mean square error optimal bandwidth as the benchmark estimate of LATE, and, for robustness, I report local quadratic estimates as well as local linear and local quadratic estimates for half and twice as large bandwidths.

by municipalities' political identity, drives mortality rates up in unaligned regions. When considering different definitions of political alignment, that is, different definitions of the federal coalition, this and other 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).

Intergovernmental transfers allow local governments to increase spending by increasing their revenue, which can, in turn, improve local outcomes (Litschig and Morrison, 2013). Discretionary transfers in Brazil are conditional on some capital or operating expenditure.[9] While discretionary transfers accounted for only 2% of transfers from the federal to local governments in 2017, discretionary transfers for capital expenditure financed a substantial share of local governments capital expenditures, 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 the remaining of my analysis, I try to connect the change in mortality observed earlier to potential distortions in the allocation of this type of transfer.

Consistent with previous studies, I find that connected municipalities receive, on average, R$26.55 more per capita discretionary transfers for capital expenditure and R$5.88 more per capita discretionary transfers for operating expenditure than unconnected regions, a difference of 53% and 40% in the amount of transfers, respectively. This distortion in

[9]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.

transfers is equivalent to 9% of all capital expenses, but only 0.2% of operating expenditures. It is improbable, therefore, that political alignment will have any substantial impact on local governments 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 R$48.07 increase in per capita capital expenditure, equivalent to 17% of all capital expenses. The distortion in the allocation of transfers caused by political connections is substantial and hugely affects local governments' ability to make investments, which might affect municipality outcomes.

I show that an aggregate measure of expenditure, such as capital expenditure, is preferable over spending on a specific function of government, such as health, to explain the decrease in mortality in connected regions. Municipalities that become connected to the federal government 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). 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 true.

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 after a municipality loses alignment status. The three sets of results discussed here 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 transfer due to political connections.

To connect the decrease in mortality in connected municipalities to the observed increase in capital spending, I establish the causal link between local government capital spending and mortality. Using the exclusion restriction that political alignment only affects mortality through capital spending, I use political alignment as an instrument for local government capital expenditure to identify its effect on all-cause mortality.[10] I find that a one percent increase in local government capital spending is associated with a 0.93% reduction in all-cause mortality. Moreover, estimates of the effect of capital spending and squared capital spending on mortality point out a decreasing, convex relationship between the two variables. Because the federal government is constrained by a fixed budget to make transfers in any given year, this last result suggests that the political allocation of transfers might be inefficient. Because municipalities in the RDD setup are virtually identical, except for political alignment, a reasonable level of transfers is the average of what is observed in transfers to connected and unconnected municipalities, and moving away from this level

[10] The identification strategy here relies on the assumption that political alignment only affects mortality through capital spending. There are limited ways through which political alignment might affect municipality outcomes in Brazil. One way is through local government spending, which can be decomposed into capital and operating expenditure. As shown earlier, political alignment only affects capital spending. Another way is through direct federal government spending in municipalities. These are large development and infrastructure programs that are very likely to affect mortality. However, as discussed in more detail in section 2, it is very unlikely that resources from national programs are allocated on political grounds. Additionally, in section 6.5.1, I present evidence that political alignment does not affect mortality through channels that affect growth.

of transfers might increase mortality at the national level, as suggested by the quadratic relationship described earlier. This is consistent with models of demand for health and health investment that assume decreasing returns to scale in the health production function, which have several advantages over models that assume constant returns to scale (Ehrlich and Chuma, 1990; Galama, 2015). Galama et al. (2012) test the two assumptions and find suggestive empirical evidence in favor of decreasing returns to scale.

The contributions of this paper are threefold. 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 the allocation of transfers. 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 sufficiently large 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. 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. Estimating the causal link between government spending and health outcomes is subject to many identification challenges. Early studies on the subject find either unreasonably small or statistically insignificant effects (Kim and Moody, 1992; McGuire et al., 1993; Musgrove, 1996). In a cross-country comparison, Filmer and Pritchett (1999) find that the variation in government spending explains less than 0.15% of the variation in mortality. Besides, many studies rely on fixed effects or cross-country comparisons of different health systems for identification (Martin et al., 2008). My approach utilizes plausibly exogenous variation in local government spending to identify its effect on mortality.

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 a broader measure of health spending, but find no significant impact of spending on infant 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 for of decomposing health spending into capital and operating expenditure and considering spending on other functions of government as well.

The remainder of this paper develops as follows: section 2 briefly describes models of tactical redistribution. Section 3 outlines some relevant aspects of Brazilian politics and intergovernmental transfers. Section 4 describes data. Section 5 discusses empirical approach and identification strategy. Section 6 presents the results. Section 7 concludes and gives directions of future research.

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. However, they can swing if the 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 the 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 the 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 local government jurisdiction level, the opposing party will also benefit from central transfers. The model predicts that the central government will favor municipalities that are both swing and aligned, that is, municipalities 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, municipalities 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) distinguish between resources according to voters' perception of the source of the additional resource. If voters are sure 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 might 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

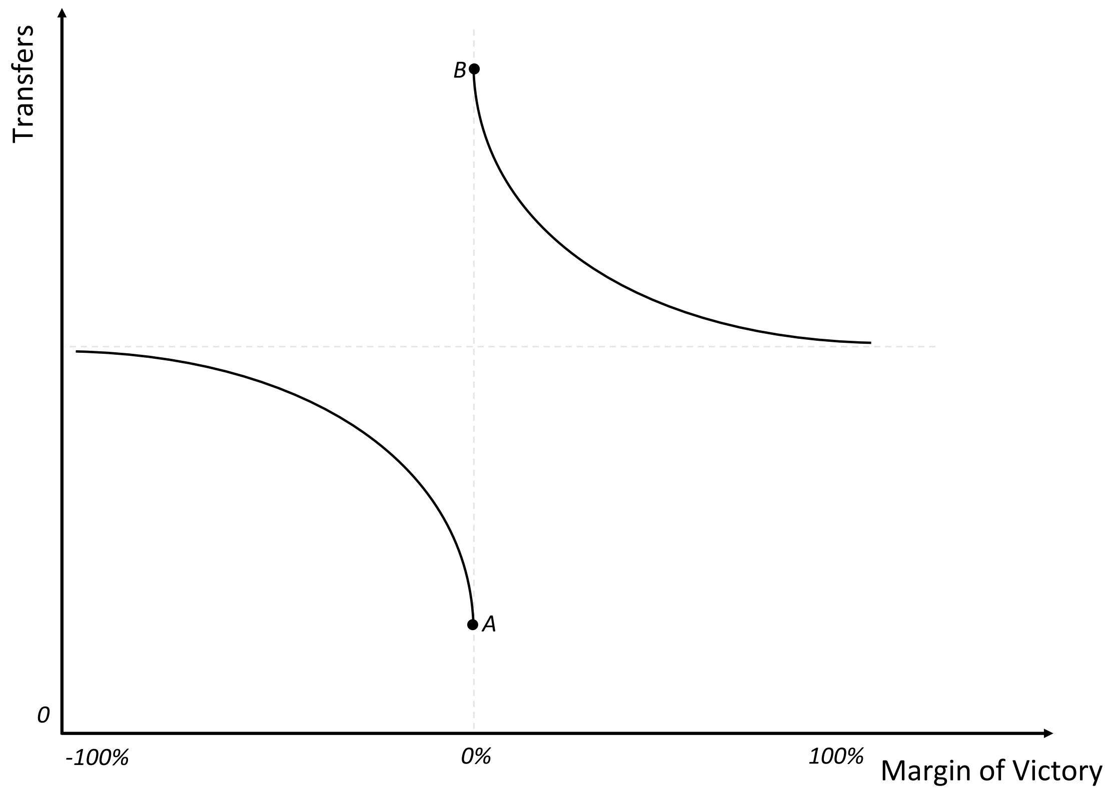


Figure 1: Political Alignment and Transfers

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.

municipalities will be favored with more government resources, but the distortion becomes larger as local government jurisdictions become more likely to swing.

The predictions of the two models are summarized in figure 1. Connected municipalities, those where politically connected mayoral 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 paper, the models predict a positive local average treatment effect of political alignment on transfers at the discontinuity threshold of zero percent margin of

Table 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.

victory, equals to $B - A$. Suppose it is reasonable to assume that 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.

3 Institutional Environment

3.1 Political Organization and Elections

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 in the country, followed by states and the union. An elected mayor runs municipalities. The federal government comprises two legislative houses, the Chamber of Deputies and the

Senate, and the executive, which is composed of the presidency and ministries of state. The president has the power to appoint ministers, and both the presidency and the 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, 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 other parties' members 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 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.[11]

Presidential and congressional elections occur every four years, followed by mayoral elections halfway through the presidential term.[12] 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

[11] In section 4, I describe how I defined the federal coalition as the list of parties depicted in table 1.

[12] 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.

Table 2: 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.

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.[13] If no candidate obtains an absolute majority, a runoff election occurs between the two candidates with the highest vote shares.

3.2 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). Intergovernmental transfers can be classified into two broad

[13]Valid votes exclude null and blank votes.

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 local government investments (last column in table 2). Discretionary transfers for operating expenditure, on the other hand, financed only 0.82% of local government operations (column 4 in table 2).

4 Data

4.1 Health Data

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,[14] deaths by infectious and parasitic diseases, homicide, suicide, and transport accident deaths.[15] 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.

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.

4.2 Elections Data

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

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

[15]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.

Court of Elections (*Tribunal Superior Eleitoral*).[16] 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 changed political alignment 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 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 definitions of political connectedness. The margin of victory of politically connected candidates is calculated as follows:

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

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

[16] 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.

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.

4.3 Financial Data

Municipality-level transfers and local government 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.

5 Empirical Approach

5.1 Econometric Model

Whether or not a municipality becomes connected to the federal government might be correlated with unobservable shocks that affect outcomes. Still, if individuals believe that they might benefit from the municipality becoming connected to the federal government, they might for the president's party in local elections. If this is the case, the set of regions that are not politically connected is not a valid counterfactual to the set of politically connected regions.

I exploit quasi-experimental variation in municipalities' assignment into political connectedness, generated by close elections, within a regression discontinuity design to work around these identification challenges. I do this by comparing municipalities where politically connected candidates barely won the election to those where politically connected candidates barely lost. In elections decided by close margins, 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 candidates. A municipality will only become connected to the federal government if an aligned candidate obtains a positive margin in a competitive election. The treatment assignment mechanism, therefore, is a discontinuous function of margin of victory, and a regression discontinuity design with margin of victory as the assignment variable can be used to identify the effect of interest. 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 of zero margin of victory, that is as good as randomized by an experiment. The discontinuous regression equation used in this work is given by:

$$Y_{it} = \alpha_l + \tau D_{it} + f_l(X_{it}) + D_{it}\left[f_r(X_{it}) - f_l(X_{it})\right] + U_{it} \tag{1}$$

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; X_{it} the RDD assignment variable, the politically connected mayoral candidate's margin of victory in municipality i in the election that precede t; f_l and f_r are polynomials on X_{it};[17]

[17] 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, $f_r(X_{it}) = \beta_{r1}X_{it} + \beta_{r2}X_{it}^2 + \ldots + \beta_{rk}X_{it}^k$.

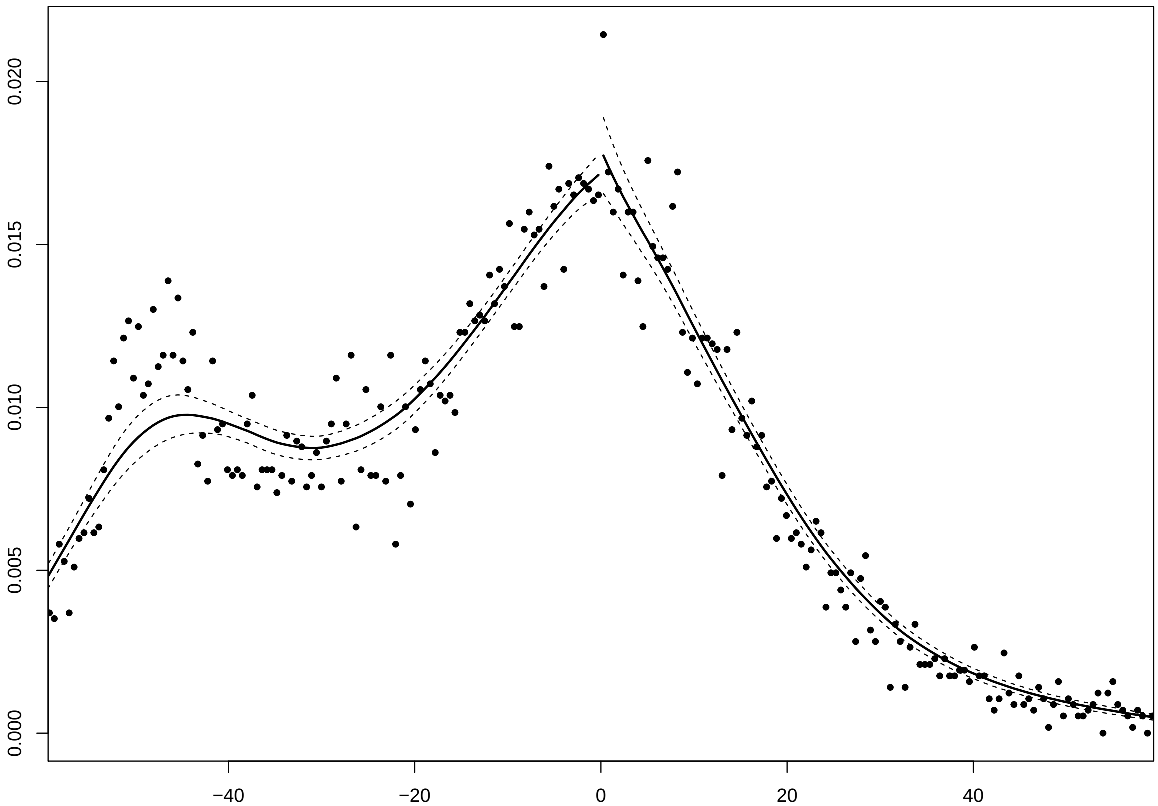


Figure 2: Density of the Assignment Variable

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.

and U_{it} an error term.[18]

5.2 Identification

The identification of τ relies on the assumption that individuals, or municipalities, in this context, can not precisely manipulate the assignment variable, the margin of victory of politically connected candidates. If such behavior exists, municipalities in the treatment and

[18]The use of covariates is irrelevant for the identification of local average treatment effects in regression discontinuity designs (Lee and Lemieux, 2010).

control groups are systematically different, and, consequently, $\hat{\tau}$ will be a biased estimate of τ. This assumption can be easily assessed by testing for the continuity of the density of X_{it} around the discontinuity threshold of zero percent margin of victory. If individuals can precisely manipulate X_{it}, we should observe a higher frequency of slightly positive values of the assignment variable. In figure 2 I test this assumption by estimating the density of X_{it} on both sides of the cutoff of zero percent margin of victory and comparing the densities at that point as they converge from both sides of the threshold. The test does not reject the null hypothesis that the density of X_{it} is equal on both sides of the cutoff, as $p - value =$ 0.4990116.

I provide additional evidence of the regression discontinuity design's validity by testing for differences in municipalities' baseline characteristics in the control and treatment groups. If the assignment into political connectedness is random at the discontinuity threshold, aligned and unaligned municipalities must not differ in their baseline characteristics. In tables A1 through A4 in the appendix, I present a balance test of some municipality characteristics prior to treatment assignment. 43 of the 44 characteristics that were tested are balanced, evidence that municipalities in a neighborhood of the cutoff of zero percent margin of victory are virtually identical.

5.3 Estimation

Equation 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).

Table 3: 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. $^{*}: p < 0.1$; $^{**}: p < 0.05$; $^{***}: p < 0.01$.

6 Results

6.1 Mortality Rate

Figure 3 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 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 3 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

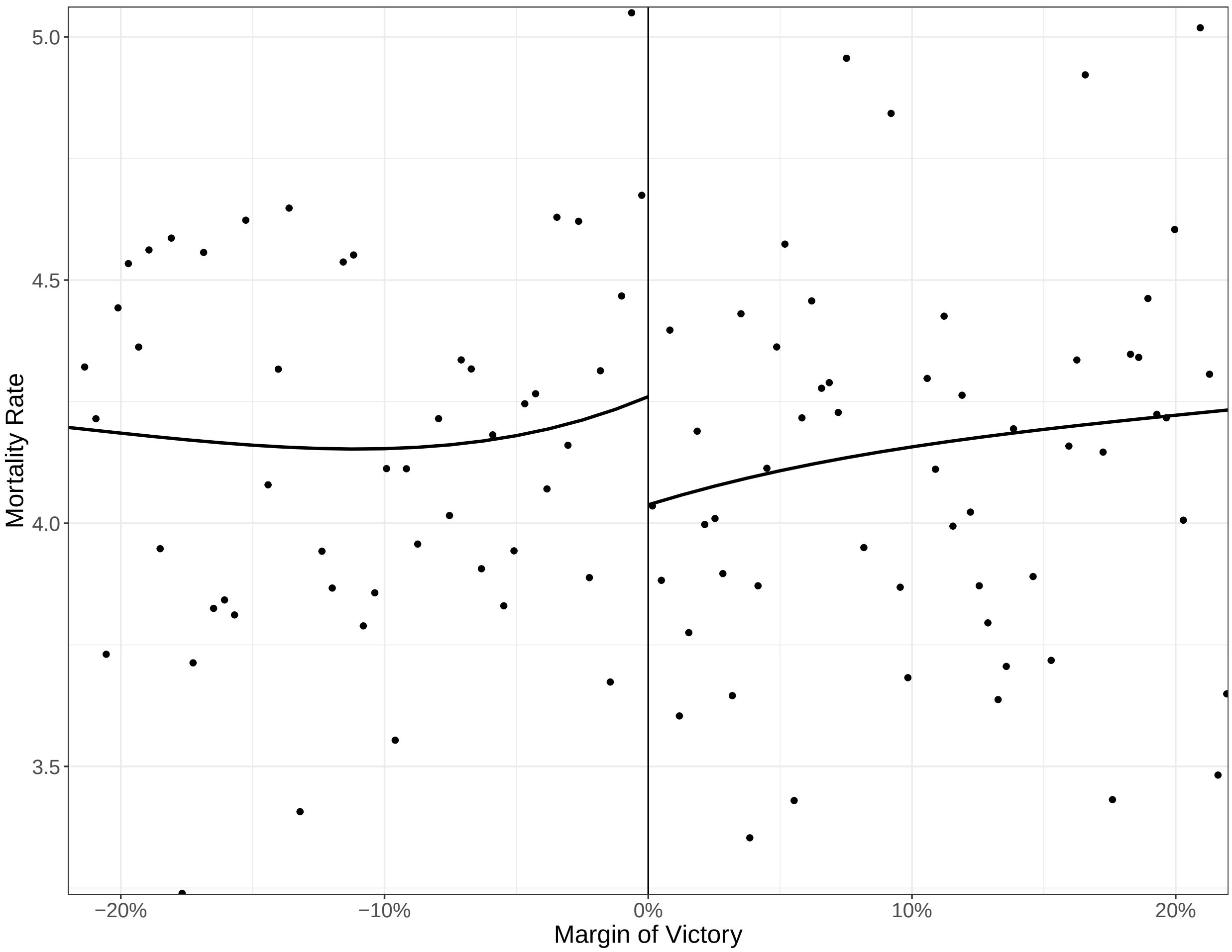
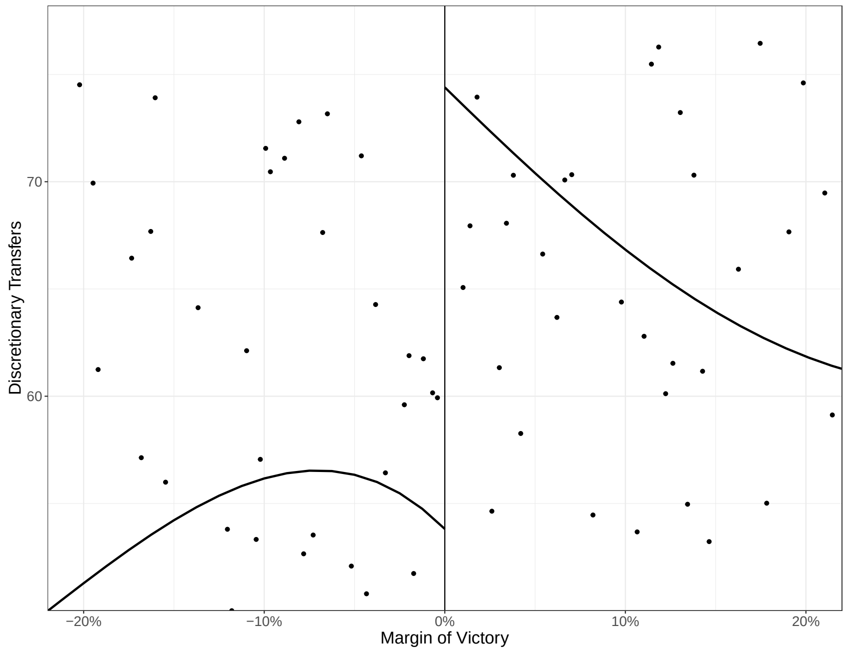


Figure 3: Discontinuity in Mortality Rate

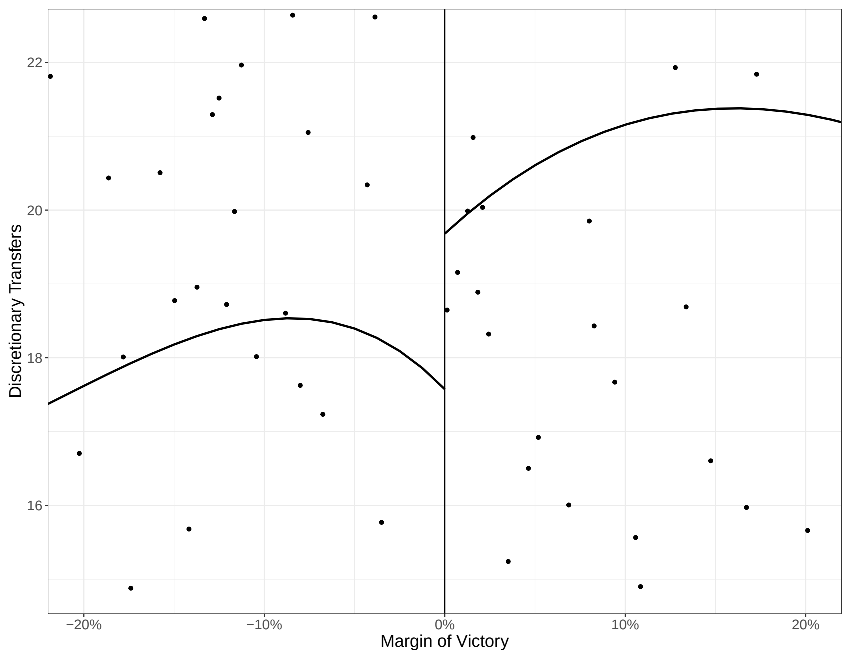
Notes: The figure plots population conditional mean functions of control and treated units. A fourth-degree polynomial was used to fit population conditional mean functions. Dots denote binned sample means. Points to the left of the discontinuity denote the mortality rate of municipalities where an aligned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

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 in the two years following local elections, relative to municipalities that did not elect an aligned mayor. The difference corresponds to 15.66% of the number of deaths in unconnected municipalities. Estimates are robust to the choice of bandwidth and model specification. This result is consistent with some actions of the federal government towards connected municipalities causing mortality to decrease. In the subsequent sections, I explore the potential mechanisms by which political alignment reduces mortality.

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 (as well as intergovernmental transfers and spending). These become statistically insignificant after just two parties are added to the definition of the federal coalition. (see tables A5 through A9 in the appendix). If municipalities that are not favored by the federal government and, consequently, receive fewer transfers, spend less, and have more deaths, as a result, are taken as treated, RDD estimates of the effect of political alignment on mortality, transfers, and spending will be biased towards 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. In the following sections, I explore whether it is reasonable to assume that political alignment affects mortality through increased transfers that finance local government spending.



(a) Discretionary Transfers for Capital Expenditure



(b) Discretionary Transfers for Operating Expenditure

Figure 4: Discontinuity in Transfers

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.

Table 4: 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. $^{*}: p < 0.1$; $^{**}: p < 0.05$; $^{***}: p < 0.01$.

6.2 Mechanisms

6.2.1 Intergovernmental Transfers

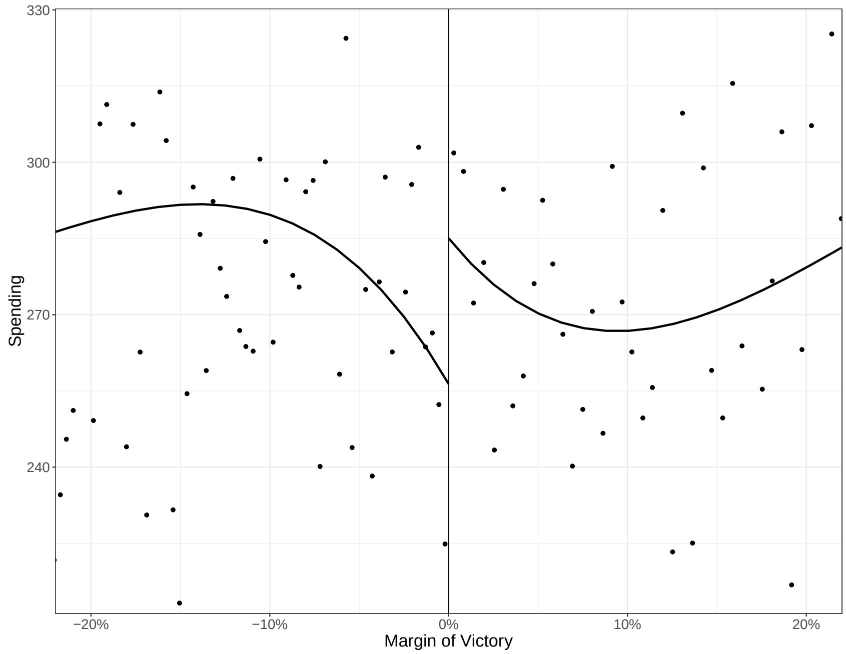
Figure 4 plots the discontinuity in discretionary transfers. Both types of transfers are consistently higher in aligned municipalities relative to unaligned jurisdictions, not only in regions where an aligned candidate's election was decided by a close margin, as predicted by the models in section 2, but also across a wide range of electoral outcomes.

Table 4 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 the distortions in local government capital expenditures caused by political connections explain the difference in mortality found earlier.

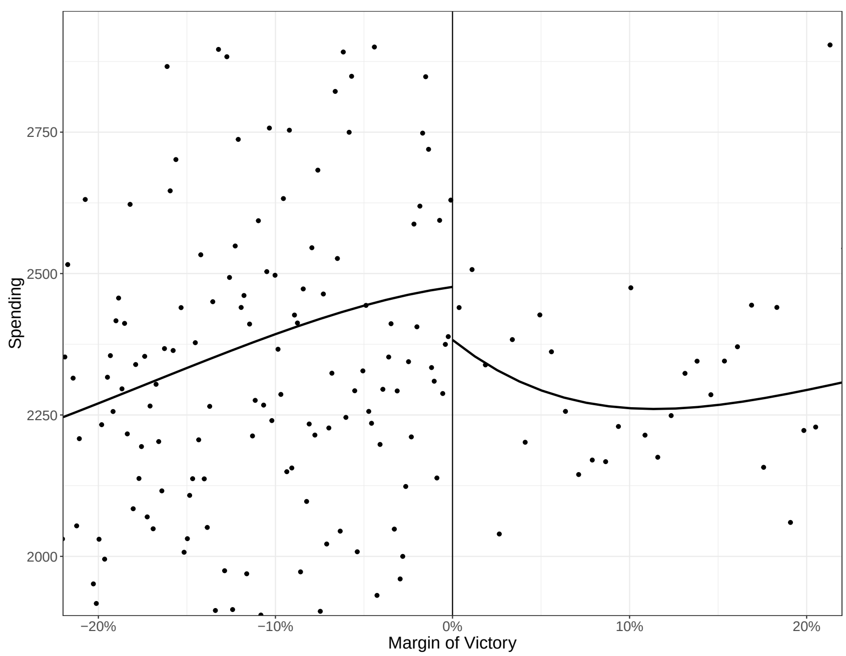
6.2.2 Local Government Expenditure

Figure 5 plots the discontinuity in local government spending. Again, it follows the same pattern as the one observed in the models in section 2, and the opposite of that observed in figure 3. 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 5 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



(a) Capital Expenditure



(b) Operating Expenditure

Figure 5: Discontinuity in Local Government 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 capital spending of municipalities where an aligned candidate lost the election. Points to the right denote the per capita capital spending of municipalities where an aligned candidates won the election.

Table 5: 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. * : $p < 0.1$; ** : $p < 0.05$; *** : $p < 0.01$.

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.

6.3 Health Spending Vs. Capital Spending

The first panel in table 6 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

Table 6: 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)
Causes of Death 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. $^{*}: p < 0.1$; $^{**}: p < 0.05$; $^{***}: p < 0.01$.

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 7 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 7). 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 8 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

Table 7: 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	-18.12***	-20.71**	-18.61***	-17.01***	-14.23	-20.66***
to the Health System	(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	1.66***	2.15***	1.87***	2.13***	1.38***	2.77***
to the Health System	(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 8: 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. $^{*}: p < 0.1$; $^{**}: p < 0.05$; $^{***}: p < 0.01$.

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 6 plots the long-term effect of political alignment on mortality. The estimate at $t = 0$ reproduces the estimate in the first column of table 3, 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

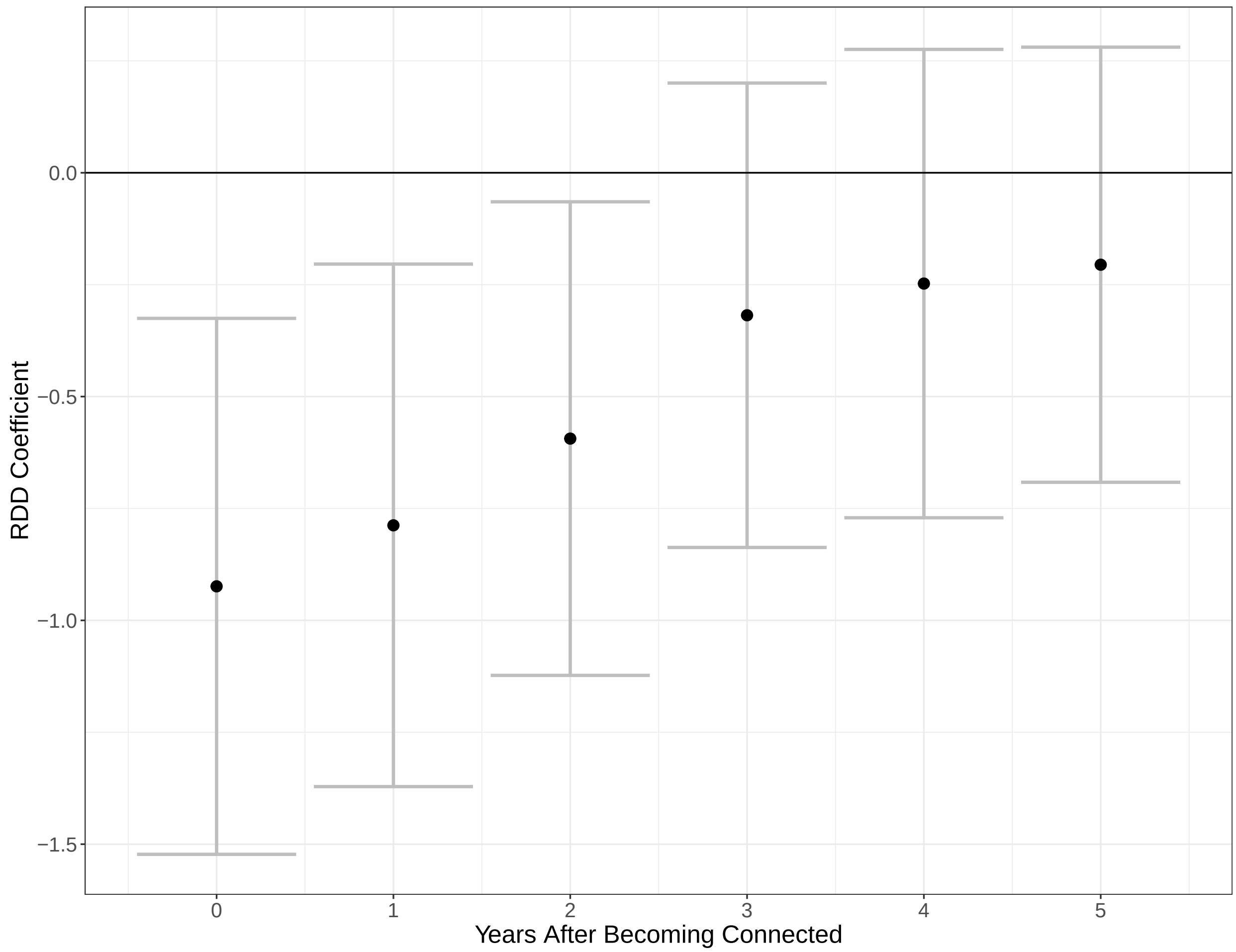


Figure 6: Effect of Political Alignment on Long-run Mortality Rate

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.

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.

6.4 Capital Spending and Mortality

Finally, I establish the causal link between capital spending and mortality. This is a last necessary step in order to show that mortality and capital spending are, in fact, inversely related. For identification, I use political alignment as an instrument for capital spending. The relevance of the instrument has been demonstrated in section 6.2.2. The second identifying assumption is the exclusion restriction that political alignment only affects mortality through capital spending. There are limited ways through which political alignment might affect municipality outcomes in Brazil. In addition to local government spending financed with intergovernmental transfers, political alignment can also affect direct federal spending in municipalities. These are large development and infrastructure programs, easily identified as federal government programs. As discussed in section 2, if voters are cognizant of the source of the additional expenditure, political alignment should not influence the allocation of government resources. Political alignment, therefore, should not affect the allocation of this type of government resources. In addition, it has been demonstrated that political alignment only affects capital spending. The first and second stage regression equations are:

$$\ln\left(MR_{it}\right) = \beta_1 + \beta_2 \ln\left(K_{it}\right) + f_l\left(X_{it}\right)\left(1 - D_{it}\right) + f_r\left(X_{it}\right) D_{it} + W_{it}\gamma_1 + \varepsilon_{1it}$$

$$\ln\left(K_{it}\right) = \alpha_l + \tau D_{it} + f_l\left(X_{it}\right)\left(1 - D_{it}\right) + f_r\left(X_{it}\right) D_{it} + W_{it}\gamma_2 + \varepsilon_{2it}$$

Table 9: 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. $^{*}: p < 0.1$; $^{**}: p < 0.05$; $^{***}: p < 0.01$.

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; W_{it} a vector o municipality characteristics; D_{it} the alignment dummy, as defined in section 5; f_l and f_r a second-degree polynomial function; and ε_{1it}, ε_{2it} stochastic error terms.

Table 9 shows the effect of capital spending on mortality. Columns 1 through 3 report OLS estimates, whereas columns 4 and 5 present IV estimates. Estimates show that a 1% increase in capital spending causes a 0.9276% decrease in mortality. Moreover, 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. The estimates in column 2 suggest a decreasing, convex correlation between the two variables. Because of the nature by which political connections affect outcomes in local governments jurisdictions in the study setup, a

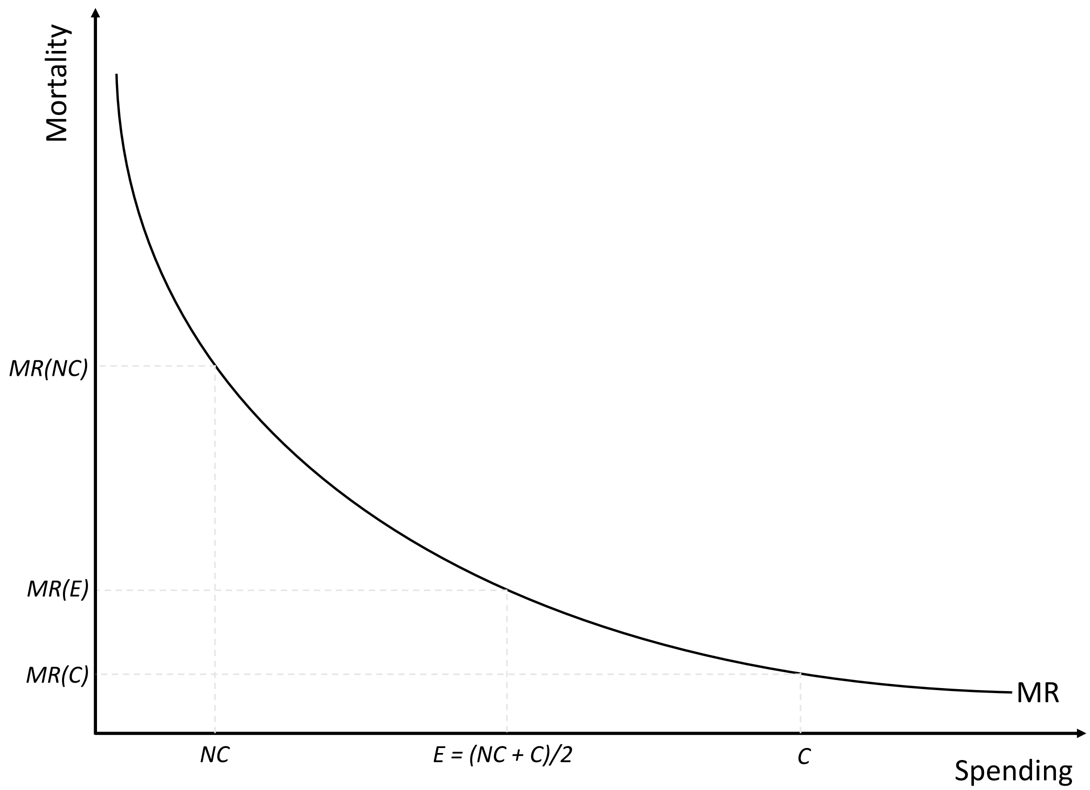


Figure 7: Convex Relationship Between Government Spending and Mortality

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

decreasing, convex relationship between local government spending and mortality 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 7 depicts this latter discussion and its implications for mortality, which are summarized in the following proposition:

Table 10: 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. $^{*}: p < 0.1$; $^{**}: p < 0.05$; $^{***}: p < 0.01$.

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, $MR(E) - MR(C) < MR(NC) - MR(E)$.

A formal proof of proposition 1 is given in the appendix.

6.5 Robustness Checks

6.5.1 Alternative Mechanisms

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 10 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.

6.5.2 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). 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 11: 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 11 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 12 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.

7 Conclusion

Intergovernmental transfers have long been regarded as an instrument for promoting subnational governments' local development and fiscal health. Several economies make use of intergovernmental transfers as a way to redistribute income and relax the budget of local governments. 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 this paper, I showed that political alignment between the president and

Table 12: 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. $^{*}: p < 0.1$; $^{**}: p < 0.05$; $^{***}: p < 0.01$.

elected mayors of Brazilian municipalities leads to an inefficient level of mortality, which I find to be driven by misallocation of intergovernmental transfers. Aligned municipalities have, on average, 0.72 fewer deaths per thousand residents, evidence that government actions towards municipalities differ based on their mayors' political affiliation and that these actions affect mortality. I present compelling evidence that such difference in mortality outcomes is driven by misallocations of intergovernmental transfers for capital expenditure, which affect local governments' ability to make investments. Aligned municipalities receive a significantly higher amount of transfers for capital expenditure, which translates into higher capital spending, causing mortality to decrease. The problem, however, is that the number of lives saved because of increased spending in aligned regions is less than the number of lives lost because of reduced spending in unaligned regions.

Empirical evidence has proved that the president favoring his party when deciding how to allocate transfers is a widespread practice, observed in both developed and developing economies. Brazil is a developing country with a moderate level of per capita income and, as such, has lower levels of government spending than more prosperous economies, such as the US and western European countries. Thus, the distortion in resource allocation observed in these countries might not be large enough to affect economic outcomes, or it might be costlier to change institutions that remedy this problem. One area for future research is to look at this problem from the perspective of a developed country. There might be, however, outcomes that are more sensitive to local government spending than mortality, and political alignment may lead to inefficient levels of these outcomes, even in developed economies. It is also essential to understand the costs of changing institutions to prevent government resources from being allocated on political grounds and its benefits. While I show that political alignment leads to an inefficient level of mortality, I do not quantify the benefits of moving to an equitable level of transfers. The answer to these questions is essential from an empirical perspective and a policy point of view, as they can significantly improve welfare.

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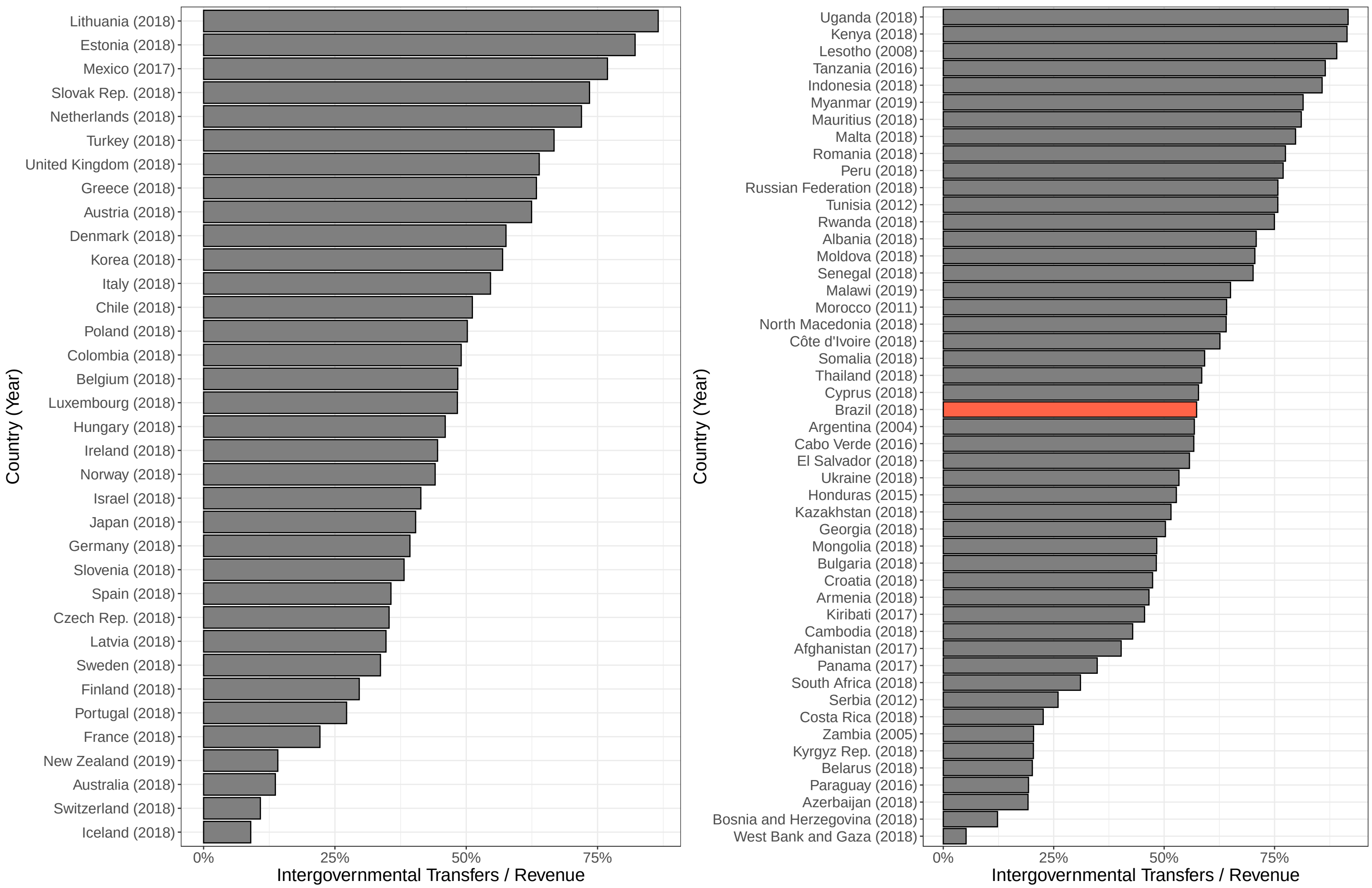
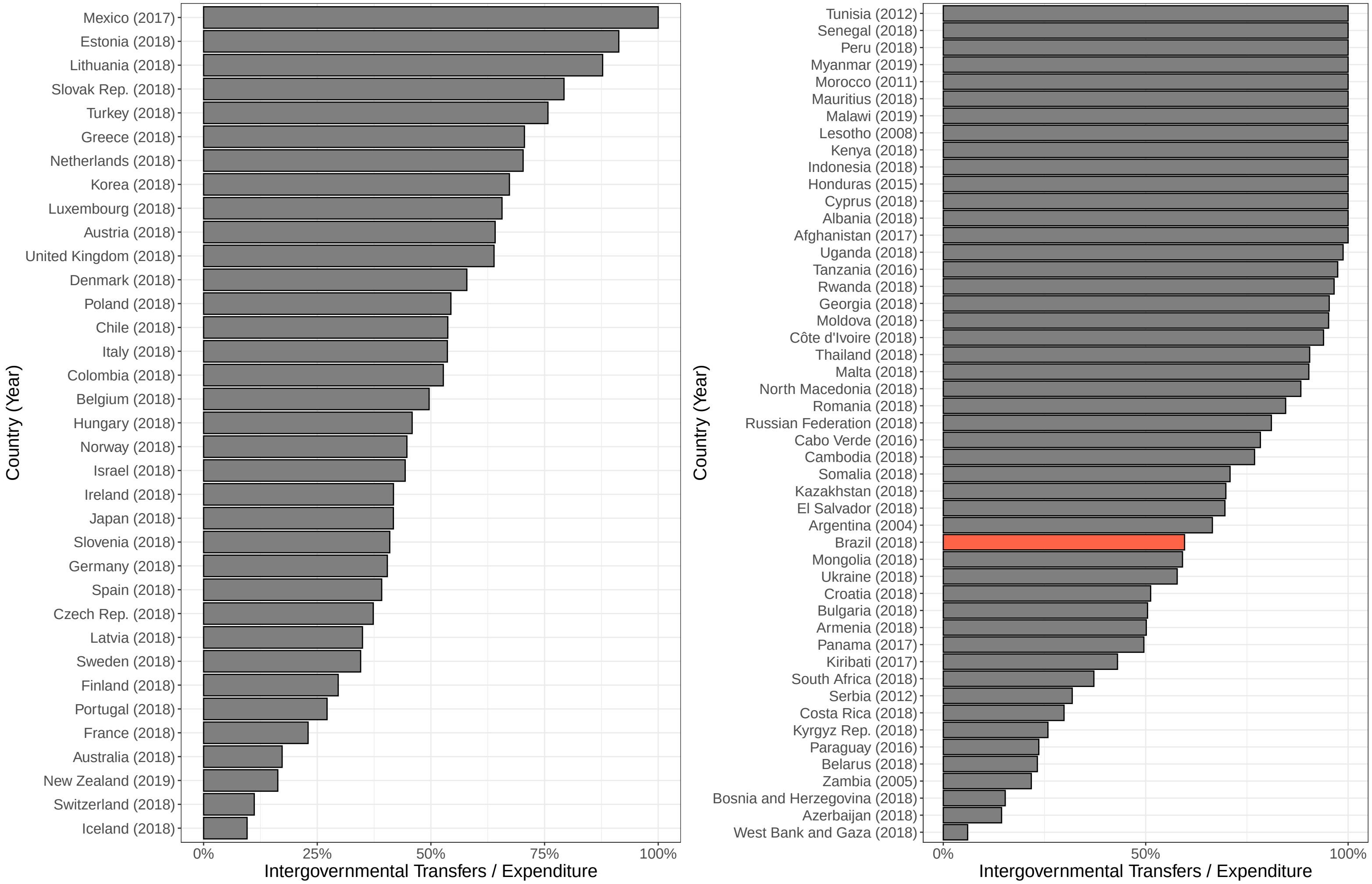
Appendix A Figures



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

Figure A1: 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.

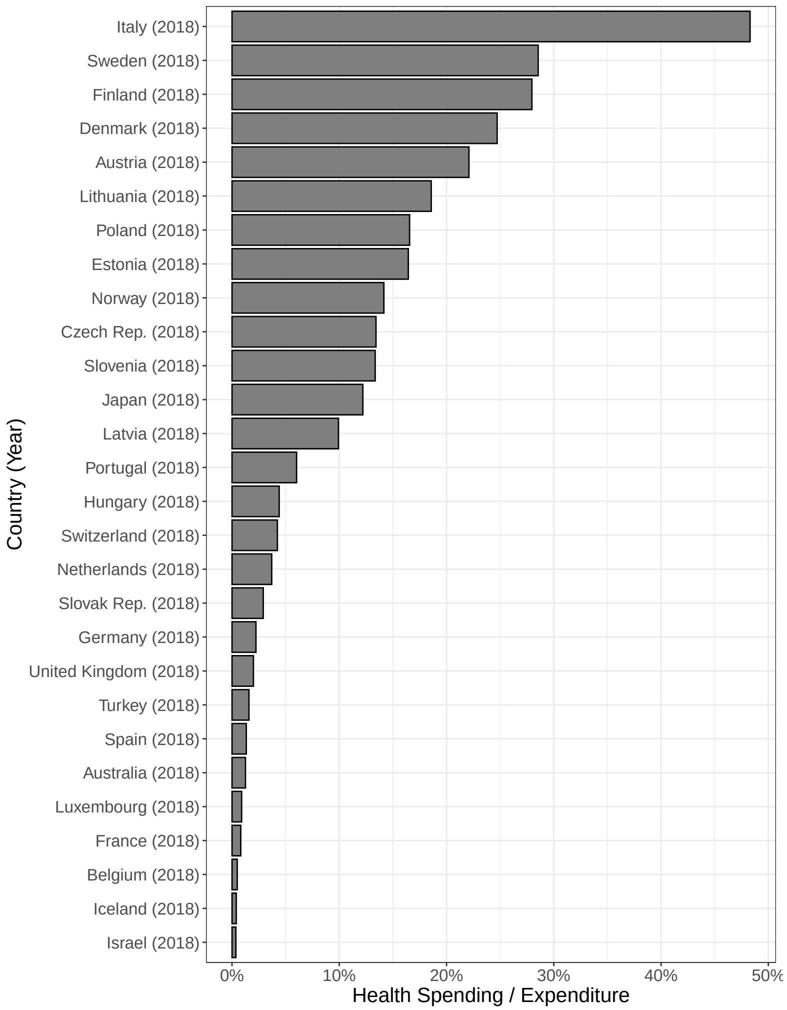


(a) OECD Countries

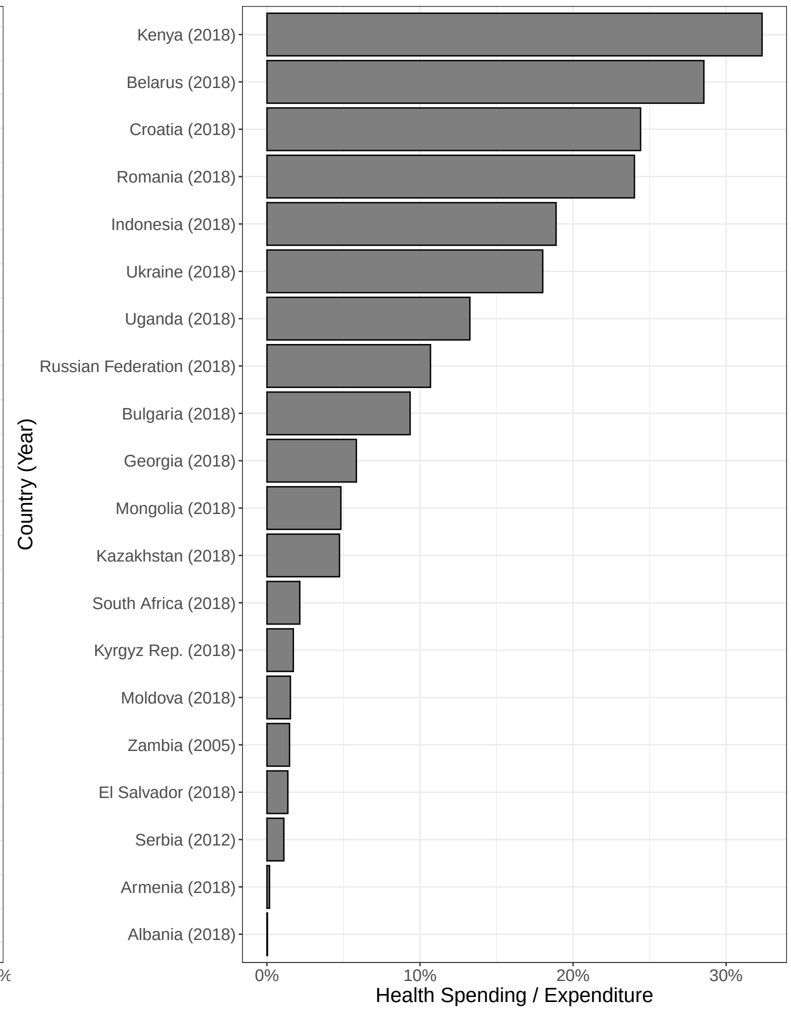
(b) Non-OECD Countries

Figure A2: 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 A3: 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.

Appendix B Tables

Table A1: 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 A2: 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 A3: 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 A4: 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 A5: 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. $^{*}: p < 0.1$; $^{**}: p < 0.05$; $^{***}: p < 0.01$.

Table A6: 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 A7: 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 A8: 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 A9: 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. $^{*}: p < 0.1$; $^{**}: p < 0.05$; $^{***}: p < 0.01$.

Appendix C Theoretical Derivations

C.1 Proof of Proposition 1

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, $E = (NC + C)/2$, 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 $MR'' > 0$, the 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:

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

$\blacksquare$