Incumbency Advantage in Brazilian Mayoral Elections [*]

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Abstract

Do incumbents enjoy an electoral advantage in a context of institutional instability? In many consolidated democracies incumbency status is a critical factor for the success of candidates. In contrast, evidence from the developing world points to no advantage or even adverse effects of holding office on the electoral chances of candidates. Yet, district preferences and the quality of both the incumbent and his challengers are usually unobserved and likely introduce biases when omitted from the model. Moreover, volatile party systems do not allow controlling for district preferences with previous electoral outcomes. Using data from 27,500 Brazilian elections, we apply both a regression discontinuity design and a novel difference-in-difference framework of repeated candidate pairs to estimate whether and under which conditions Brazilian mayors enjoy an electoral incumbency advantage, addressing these empirical challenges. We find that Brazilian politicians face a significant incumbency disadvantage.

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In July of 1997 the Brazilian Congress amended the Federal Constitution granting incumbents of executive offices (i.e. the president, governors, and mayors) the right to run for reelection for one consecutive term. The constitutional amendment brought back to life an institution that had been banned from Brazil's politics since the "First Republic" (1989-1930), when the renomination of "presidents of provinces" (governors) and "intendants of municipalities" (mayors) was usual practice of oligarchic governments.

Since the passage of the constitutional amendment in 1997, local elections have been held in 2000, 2004, 2008, and 2012 in more than five thousand municipalities[1] in Brazil. These elections were the first in which incumbent mayors where allowed to run for a second term.

Local governments in Brazil enjoy considerable political autonomy. Brazilian municipalities are currently among the most decentralized local governments in Latin America (Gibson, 2004). In particular, local governments are responsible for the organization and provision of public services of local interest (health, education, public transportation and welfare)[2], the protection of historical and cultural heritage, the parcelling and regulation of land use, as well as some targeted redistributive programs (Arretche, 2000).

Mayors have substantial authority over budgetary decisions and the allocation of government jobs. As a result, municipal elections matter and their importance is recognized by Brazilian voters. In an unusual constitutional arrangement, municipalities are in fact not even politically subordinated to the states they are located in, but are considered 'state-members' of the national federation on equal footing as states (Baiocchi, 2006). Given the importance of municipalities in the Brazilian federalist framework and, consequently, the political attractiveness of local executive offices, the central aim of this paper is to investigate the electoral advantage enjoyed by incumbents in local elections in Brazil.

There has been a long and ongoing debate among scholars and policy makers about the electoral effects of incumbency status in developing countries. This paper contributes to this litera-

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[1]Municipalities are the local political units throughout Brazil. They resemble counties in the US federation, except that they are considered to be politically autonomous entities and are administered by a single mayor and a city council who are elected every four years by its constituents.

[2]In health care, education and some other issue areas, there is substantial technical and financial cooperation between municipalities, states, and the national government.

ture by developing a model of incumbency advantage that takes into account candidates' quality and localities' characteristics in the context of a weakly institutionalized party system. This approach enables us to go beyond existing work that may suffer from various sources of bias. Drawing upon recent studies on incumbency advantage in the U.S. House of Representatives, as well as in Brazil and other developing countries, we propose a simple theoretical model and provide an empirical test using data from approximately 27,500 local races, including more than 50,000 individual candidates running for the office of mayor in 5,564 different municipalities.

Brazil is one of the world's largest democracies and thus a relevant case for examining the electoral consequences of incumbency. Our findings of an adverse effect of incumbency on electoral fortunes in municipal elections in Brazil contrast to what we find in many consolidated democracies, such as the United States and other OECD countries, advancing our understanding of incumbency effects in general.

The article is structured as follows. First, we summarize the literature on the electoral incumbency advantage in developing countries and, more specifically, in Brazil. We then discuss the institutional background of local elections in Brazil, highlighting some features of Brazil's party system and federalism. Next, we present a simple model of incumbency advantage from which we derive a statistical model. A discussion of the empirical results follows, using data from mayoral elections of 1996, 2000, 2004, 2008, and 2012. The conclusion summarizes the findings of the paper and discusses possible extensions.

Background and Literature Review

There is a long tradition of studying the electoral advantages of incumbents running for re-election in American politics[3]. This literature about the sources and the consequences of the

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[3]Existing studies of incumbency advantage have mainly been devoted, but are not limited to, the investigation of the personal advantage of candidates. The record of studies is simply too large to be mentioned here in full, but among the most significant studies, we might include: Erikson (1971; 1972), Cover (1977), Ferejohn (1977), Mayhew (1974), Ansolabehere, Brady, and Fiorina (1992), Ansolabehere, Snyder, and Stewart (2000), Cox and Katz (1996; 2002), Gelman and King (1990), and Levitt and Wolfram (1997). Ansolabehere and Snyder (2002) work specifically with executive officeholders at the state and federal level. Lee (2008) studies the incumbency advantage of political parties in elections to the US House of Representatives

electoral advantages of incumbency status has its roots in the Federalist Papers[4]. Today there is a general consensus that incumbents enjoy a large advantage in elections to the U.S. House of Representatives though the magnitude of this advantage remains controversial. In the last decades, over 90 percent of all incumbent legislators running for reelection have been successful (Levitt, 1994). Evidence for the U.S. suggests that incumbency provides advantages directly derived from officeholder benefits such as more media exposure and better access to resources to mobilize and to please the electorate. There is also evidence of some indirect advantages such as the ability to deter high quality challengers (Cox and Katz, 2002).

Evidence on the effects of incumbency in developing countries is still scarce. The few studies that have examined the electoral advantages of incumbency status usually find high rates of government turnover, elevated electoral attrition of the governing party share of the vote, and no positive (and at times a negative) effect of incumbency in terms of electoral outcomes[5]. Researchers have drawn on different arguments to explain the electoral disadvantage derived from the incumbency status in developing countries. In general, they point to a context of high political or economic instability and short electoral horizons, where the incentives to take part in rent extracting activities are too high to pass up for the chance of reelection.

Although the idea that holding office can provide future electoral benefits may seem intuitive and easy to understand, the question of how to properly estimate the independent effect of incumbency status on the electoral success of parties or candidates remains a nontrivial task. The naive application of simple OLS regression methods yields biased estimates. A positive relationship between incumbency status and electoral success does not ensure a causal relation between incumbency and electoral performance, mostly, because several unobserved attributes may be correlated both with becoming an incumbent in the first place and with electoral success in the next election. These confounding factors include, but are not limited to the fact that, high quality candidates are more likely to become incumbents and candidates might enter and

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[4]Hamilton wrote in one of his articles in the Federalist Papers: "There are few men who would not feel much less zeal in the discharge of a duty when they were conscious that the advantages of the station with which it was connected must be relinquished at a determinate period, than when they were permitted to entertain a hope of *obtaining*, by *meriting*, a continuance of them." (Hamilton, Madison and Jay, 2008, no. 72)

[5]See, for example, the works of Dix (1984) and Molina (2001).

exit strategically according to their assessment of future electoral odds. Ideally, estimates of incumbency status effects should take these unobservable or immeasurable factors as well as other observable differences of candidates, parties and places into account, yet that is infeasible in many contexts (Horiuchi and Leigh, 2009).

Part of the recent literature on incumbency effects in American Politics has employed a variety of *quasi*-natural experiment techniques to deal with these methodological issues. Levitt and Wolfram (1997) use the information from candidate pairs that face each other repeatedly. Ansolabehere, Snyder and Stewart (2000) use redistricting to identify the portion of the incumbency advantage that stems from an incumbent personal appeal with her constituents. Lee (2008) uses a regression discontinuity design to identify partisan incumbency effects in U.S. House elections.

Lately these three techniques have also been used to identify incumbency advantage in many other institutional contexts. Linden (2004), for instance, applies the theoretical framework later formalized by Lee (2008) to estimate the incumbency effects in Indian parliamentary elections at the national level. Linden finds that an incumbent legislator was 7 to 10 percentage points more likely to be elected than a non-incumbent candidate during the period of 1980-1989. After 1991, he identifies an incumbent disadvantage of 14 per cent.

Uppal (2008) applies the same regression discontinuity design, used by Linden (2004) for analyzing the national legislature, to estimate the effects incumbency status in Indian state legislative elections. For the period of 1975-2003, Uppal finds a strong negative effect of incumbency status on both vote share and the probability of a state legislator being reelected. More specifically, before 1991, the probability of a state legislator defending his seat was 15 percentage points lower than the chances of a non-incumbent candidate taking over. Furthermore, the vote share attrition was about 2 percentage points for incumbent candidates. After 1991, the disadvantage of incumbent candidates increased to 22 percentage points for the probability of winning and 3 percentage points of lost vote share. Notably, the negative incumbency effect on both vote share and the probability of being reelected estimated by Uppal at the state level is considerably larger than the effect estimated at the national level in Linden (2004).

Incumbency Effects in Brazil

The study of incumbency advantage in Brazilian politics is not as consolidated as it is in American politics. Nonetheless some empirical studies on political careers, primarily focusing on recruitment and retention of national legislators, have also examined turnover rates and incumbency advantage in the Brazilian National Congress[6].

Novaes (1994), Santos (1999), and Marenco dos Santos (2000; 2003a), for example, try to understand how performance in office, personal characteristics, and electoral vulnerability of incumbent legislators affect party recruitment and career decisions in the Brazilian Chamber of Deputies. Ames (2002), Figueiredo and Limongi (2001; 2002), and Schmitt (1999) study how institutional features, ideology, budgetary appropriation and other individual characteristics of legislators can affect the legislative work and its relation to the national executive.

Samuels (2000; 2003), Leoni, Pereira and Renno (2004), and Pereira and Renno (2001; 2007) investigate career choices and political survival strategies in the Brazilian Congress. More importantly, these studies show how the career decisions of legislators were deeply affected by the possibility of reelection granted to incumbents of executive offices after the Constitutional Amendment of 1997. Samuels (2003) examined the career decisions of Brazilian legislators in the lower house using a theoretical framework proposed by Schlesinger (1966). According to Samuels, turnover rates in Brazil are higher and political careers of national legislators are not as stable as those of their counterparts in the United States. Brazilian politicians are more oriented toward executive branch offices, mostly, but not exclusively at the local and state level. As Samuels (2003) points out, municipal executive positions are politically appealing in Brazil. Municipalities enjoy considerable discretionary power over budgets and jobs allocation. Thus, running for the local executive office is seen as an indication of progressive ambition.

Although the argument of Samuels is fairly persuasive, some historical evidence gathered by Santos (2005)[7] demonstrates that a much higher proportion of incumbent legislators opts for reelection instead of running for another office. Moreover, both retention rates and electoral

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[6]See Santos (2003b) for a good review of those studies

[7]These data are examined by Pereira and Renno (2007). The original data from Santos (2005) are available at: www.ucam.edu.br/leex.

performance of incumbent legislators seem to be quite steady over time. Figure 1 presents retention rates and electoral performance of national legislators for all 15 legislative elections held at national level during the period of 1950-2002. Except for the 1970 elections, when only 47 percent of all incumbent legislators chose to run for reelection, the majority of incumbents opted for reelection. On average, 68 percent of incumbent legislators stood for reelection. The electoral success of incumbent legislators is also quite high in Brazil if compared to other Latin American countries (Leoni, Pereira and Renno, 2004). Since 1950, on average 67 percent of all incumbents who ran for reelection were able to defend their seat.

[Figure 1 about here.]

Pereira and Renno (2007) highlight the change in the opportunity structures of political careers brought about by the reform of 1997. As a result of this modification, the president gained new relevance in national legislative elections. The ability of a president to affect the results of legislative elections stems from her capacity to attract votes for members of her party or coalition. This coattail effect in turn is affected not only by the popularity of the president but also by her incumbency status. The power of the chief of executive office to affect the legislative elections is considerably reduced when she is a *lame duck*, that is, when the president is not running for reelection. According to Pereira and Renno, in an open seat election the variables that capture the cooperation of an incumbent legislator and the executive branch during the previous mandate lose their explanatory power to predict the electoral success of incumbent legislators.

Ames (1994) offers an alternative perspective on the role of the president in Brazilian elections. He identifies a "reverse coattail effect" in which mayors offer electoral support to the president in exchange for future local benefits to municipalities. Ames shows that all presidential candidates did significantly better in those municipalities where the mayor represented their party. Therefore, in a context where partisan cues and roots in the electorate tend to be weak, it is not the mayors who depend electorally on the president, but the (institutionally strong) president who electorally benefits from local political organizations that are controlled by mayors[8].

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[8]It is worth noting that Ames' study not only was conducted before the reelection reform of 1997, but also that his analysis focuses merely on the 1989 presidential elections. As Ames observes himself: "The 1989 contest was

Although the approaches of Samuels (2000), Ames (1994), and Pereira and Renno (2007) may seem divergent, mostly because they point to different actors as the driving forces of the electoral game in Brazil, all of them rest on the same premises. That is, the survival strategies of politicians and parties in Brazil are deeply affected by its peculiar combination of robust federalism, a multiparty system, and institutionally strong presidentialism (Mainwaring, 1997). Furthermore, they all seem to agree that national forces such as the president and political parties are mediated by local influences empowered by strong federalism and an electoral legislation that tends to push national legislators to operate close to their local constituency.

When it comes to studies about incumbency advantage of executive office holders, the literature on Brazil is still incipient. Nonetheless, more recently some political economists have started to evaluate the impact of fiscal adjustment policies, political budget cycles, and the adoption of conditional cash transfer programs on the probability of reelection of mayors (or the election of their party nominee as successor). Mendes, Rocha and Amorim (2004), for instance, examine how the mayor's performance in office can contribute to the chances of being reelected. Meneguin and Bugarin (2001) analyze the relationship between fiscal policy performance and reelection opportunities for governors. Meneguin, Bugarin and Carvalho (2005) apply the theoretical framework developed in Meneguin and Bugarin (2001) to the 2000 mayoral elections data. Nakaguma and Bender (2006) study the relation between the compliance to the *Fiscal Responsibility Law*[9] and the reelection of Brazilian state governors. Sakurai and Menezes-Filho (2008) investigate the influence of government spending behavior on the probability of reelection of mayors in Brazilian municipalities.

The results of Meneguin et al. (2001; 2005) are particularly interesting because they stand in contrast to conclusions drawn from the political budget cycle literature. Their findings suggest that the possibility of reelection might function as a mechanism for constraining government spending. Rogoff (1990), on the other hand, argues that political cycles facilitate the perpetua-

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the first national decision since 1960, and less than one-third of the electorate had ever voted in a national election. None of the political parties contesting the 1989 election had been around in 1960, and most of the contending parties were less than two years old." (1994)

[9]The Fiscal Responsibility Law is a bill passed by Congress in May 2000 with substantial efforts by the economic team of Fernando Henrique Cardoso's administration. The law establishes hard budget constraints to federal, state and municipal governments and imposes tight controls on government salary raises.

tion in power, encourage fiscal distortions, and interfere negatively with public spending.

To summarize, these studies contribute substantially to advancing our understanding of some of the fiscal effects of the 1997 reelection amendment. In particular, they further our understanding about how the possibility of reelection can affect the spending behavior of the government. Nevertheless, this body of works adds very little to further our knowledge about the effect of incumbency status on the electoral success of politicians or parties.

Titiunik (2009) made the first serious effort to understand the electoral consequences of incumbency in Brazilian mayoral elections. She applies a regression discontinuity design (Lee, 2008)[10] to analyze the incumbency advantage of *parties* using Brazilian municipal election data from 2000 and 2004. Titiunik finds evidence of a strong adverse effect of incumbency status on both vote share and the probability of being reelected for the three largest parties[11] at the municipal level. For at least two of these three largest parties she finds significantly negative effects of incumbency in 2000 on both the probability of reelection and vote share in the subsequent election in 2004[12].

Our biggest critique of Titinuik's excellent effort at quantifying the effects of incumbency in Brazilian local elections is her focus on incumbency at the *party* level in a context where party brands are weak and enjoy little loyalty from voters (and candidates). In fact, the institutional environment of the Brazilian electoral system produces incentives for individual politicians to seek a personal vote. That is, rather than highlighting characteristics of their party, politicians tend to adopt individualistic campaign strategies (Samuels, 2002). In addition, the combina-

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[10]Lee uses a regression discontinuity design to estimate the party incumbency advantage in U.S. House elections. Formally, Lee's innovative approach consist of effectively comparing incumbents who won the previous race with slightly more than 50 percent of the vote (bare winners) with challengers who lost the previous race with slightly less than 50 percent of the vote (bare losers). Using this methodology, he finds that the incumbent party is approximately 40 percent more likely to defend its seat in the next election than the non-incumbent party is to take it over.

[11]The largest parties are those who won the largest number of municipal executive offices in 2000 elections, namely the Brazilian Social Democratic Party (PSDB), the Party of the Brazilian Democratic Movement (PMDB) and the Party of the Liberal Front (PFL).

[12]For the PMDB, the largest Brazilian party at the local level, she estimates that incumbency in 2000 reduced the probability of winning the 2004 election by one fifth. The estimated disadvantage of incumbency in terms of vote share for the PMDB is about 6 percentage points. For the PFL, incumbency in 2000 is estimated to negatively affect the probability of winning by approximately 20 percentage points and the vote share by almost 4.5 percentage points in the 2004 elections. Lastly, for the PSDB, the effect of incumbency on the probability of winning is also negative but is not statistically significant in several of the specifications considered by her. The estimated effects on the vote share are statistically insignificant in all cases (2009, 27).

tion of low levels of ideological polarization in the Brazilian party system and a majoritarian first-past-the-post voting system[13] lead to a strong prevalence of oversized party coalitions in elections to executive offices. In our data, in the 2000 elections, 74 percent of all local candidates were running on a party coalition platform. In 2004, that number is even higher with 81 percent of candidates being supported by more than one political party in their district.

Beyond the general weakness of parties in the Brazilian electoral system, there are additional institutional differences between the U.S. and Brazil that make an adoption of Lee's proposed regression discontinuity to the Brazilian context difficult. First, instead of a stable two-party system as in the U.S., in Brazil's multiparty system we observe 27 political parties. Instead of investigating the incumbency effect of these 27 political parties who took part in the mayoral elections in 2000 and 2004, Titiunik chooses to focus on only the three largest parties after the 2000 municipal elections - PMDB, PFL, and PSDB - whose combined share of all mayoral seats has steadily declined from 45 percent in the 2000 election to 29 percent in 2012. However, in the 2002 presidential election, Luiz Inácio Lula da Silva of the Workers' Party (PT – Partido dos Trabalhadores) was elected president. His election had significant coattails for the fortunes of the PT, which went from being the fourth major party in the 2000 mayoral election to capturing the most votes in the 2004 municipal elections. By any measure, since re-democratization the PT has been one of the most important parties in Brazil and should not be left out of the investigation. Finding an incumbency disadvantage at the party level for its three largest contenders may in fact be expected, given the large gains of the PT from 2000 to 2004 (with respective losses by the PMDB, PFL, and PSDB)[14]. A second institutional difference between the American and Brazilian electoral contexts is the presence of party switching. Unlike in the U.S., switching one's party is a common occurrence in Brazil, further indicating the weakness of po-

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[13]In elections for executive offices in cities with more than 200,000 voters, a runoff is required between the top two candidates if no one receives an absolute majority in the first round (50 percent plus at least one vote).

[14]The PT has gained steadily in the number of mayoral posts won (1996: 2.1%, 2000: 3.4%, 2004: 7.4%, 2008: 10.1%, 2012: 11.5%) and the share of votes in municipal elections (1996: 11.3%, 2000: 15.3%, 2004: 17.9%, 2008: 16.6%, 2012: 14.6%) it captured. In contrast, the three largest parties in Brazil - the PMBD, PFL, and PSDB, have significantly lost mayoral posts (1996: 58.5%, 2000: 58.9%, 2004: 48.9%, 2008: 35.9%, 2012: 30.9%) and national vote share (1996: 47.9%, 2000: 45.0%, 2004: 43.0%, 2008: 32.8%, 2012: 28.9%). Note, however, that given the PT's strength in urban areas and the state capitals, the number of mayoral seats won is only an incomplete representation of its strength.

litical parties. According to our records, almost 14 percent of all mayor individual candidates switched their political party in between the 2000 and 2004 local elections. Candidates likely change their political party for strategic reasons, for example, to improve their electoral chances or to enhance their access to political resources. In sum, while Titiunik presents the best effort to date to quantify the effects of incumbency in Brazilian local election her focus on *parties* rather than candidates along with the omission of the Worker's Party (PT) from the analysis leave significant doubts about the results.

In the remainder of the paper, we present a simple, candidate centered model for analyzing incumbency advantage in Brazilian local elections, its advantages over previous efforts, and some empirical results.

Methodology

Most methodological advances in understandings the effects of incumbency on electoral outcomes have thus far been in the context of majoritarian elections with stable two-party systems. In order to understand incumbency effects in the Brazilian context with majoritarian elections and a volatile multiparty system we propose some adjustments to these well-tested empirical methods.

Our starting point are candidates who repeatedly run for the same electoral post. In the simplest form, a candidate who runs for mayor as a non-incumbent in one election, wins, and then returns to the electoral arena in the subsequent election as an incumbent may provide us with an insight into how much better (or worse) such a candidate performs as an incumbent.

In our first analysis, we use a simple regression discontinuity design (RDD) comparing bare winners to bare losers and their electoral performance in the subsequent election. Such a design allows us to ignore the environment in which these candidates are running. In particular, any differences across municipalities should be washed out by the *de facto* randomization over who wins the election in close races. The drawback, of course, is that such randomization only occurs for very close races and thus may provide only limited insight into less close races.

In our second analysis, we address this issue by considering not individual candidates' re-

peated attempts to gain office but rather *repeated candidate pairs*. For intuition, consider two non-incumbent candidates running for office in election t, one of the candidates wins, and in the next election $t+1$ the two candidates face each other again, but now in new roles as incumbent and non-incumbent. We suggest that a difference-in-difference in these pair candidates' vote shares eliminates municipal, time, and candidate specific effects, allowing us to estimate the unbiased effect of incumbency. Instead of relying on the implicit randomization at a discontinuity threshold this method allows us to directly account for variation between candidates holding differences across time and space constant.

These two methods yield separate but complementary measures of the effect of incumbency on electoral outcomes. The following two sections provide some methodological background and are followed by the a description of the data and the empirical analysis.

Repeated Candidates

The close-race regression discontinuity setup (see Lee, 2008; Lee and Lemieux, 2009, for a detailed description) allows us to estimate the causal effect of incumbency on electoral performance. The sample for that analysis are candidates with repeated attempts to gain office.

For our methodological discussion, let there be K candidates in year t running for office in municipality i. For $k = 1, \cdots, K$, let V_{ik}^t be the vote share obtained by candidate k and $V_{i(1)}^t, \cdots, V_{i(K)}^t$ indicate the order of the vote shares in increasing order. The vote margin (or margin of victory) VM_{ik}^t of candidate k is defined as the vote share obtained by candidate k minus the vote share obtained by candidate k's strongest opponent[15]. Incumbency is defined as a dummy variable $I_{ik}^t \in \{0, 1\}$, so that a candidate is the incumbent $I_{ik}^t = 1$ if he won the previous election $VM_{ik}^{t-1} \geq 0$ and is a candidate in the subsequent election, and not the incumbent otherwise ($I_{ik}^t = 0$ if $VM_{ik}^{t-1} < 0$).

The outcome of an election is an "assignment' of one candidate to be the winner and hence,

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[15]Formally, we define the vote margin of candidate k as

$$VM_{ik}^t = \begin{cases} V_{i,k}^t - V_{i,(K-1)}^t & \text{if } V_{i,k}^t = V_{i,(K)}^t \\ V_{i,k}^t - V_{i,(K)}^t & \text{otherwise} \end{cases} \tag{1}$$

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if that candidate chooses to run again, to be the incumbent in the subsequent election. Marginal election winners are similar in all respects, but their election win, to bare losers of elections. Candidates are certainly able to influence their electoral fortunes to a certain extent. Importantly, however, candidates are unable to *precisely* control their assignment. Lee (2008) shows that as long as agents are not able to manipulate their assignment with certainty around the cutoff, the variation near the treatment threshold is randomized as though from a randomized experiment. As a consequence, all variables determined prior to the realization of the election outcome should have the same distribution above and below the cutoff. Testing these baseline covariates thus serves as an additional test of the validity of the regression discontinuity design we employ.

In our estimation, we start by modeling the vote margin of a candidate as a linear function of the candidate's lagged vote margin and an intercept shift for being the incumbent as follows:

$$VM_{ik}^t = \alpha + \tau I_{ik}^t + \beta VM_{ik}^{t-1} + \varepsilon_{ik}^t \tag{2}$$

Given that our linearity assumption of the effect of lagged vote margins on current vote margins is correct, τ is the causal estimate of incumbency on vote margin. Several other plausible parametric and non-parametric functional forms are tested as well to check whether our results are independent of the choice of functional form.

A second consideration is the interval of data we chose to employ for estimation. Theoretically, regression discontinuity design draws its validity from the ability to compare candidates just above and below the discontinuity point. However, as we narrow the band of data around the discontinuity point we use for estimation, the number of candidates within these bands is being reduced as well, hence reducing the sample size. We provide estimates for a number of different intervals to show our results are robust to the bandwidth of the interval chosen.

Beyond selecting the 'appropriate' interval and functional form around the discontinuity point, this choice reminds us that the inferences from our regression discontinuity design are largely limited to the sub-population of comparable candidates, that is candidates with vote margins close to the threshold. While regression discontinuity design allows us to exploit close

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elections for inference about the effects of incumbency, extrapolating our results much beyond this narrow interval around the cutoff point is less informative and may lead to potentially biased inferences. More importantly, this setup of the RDD approach does not lend itself well to considering information about the local electoral environment and the quality of other candidates in the race. To gain further confidence in our results on the direction and size of the incumbency effect on electoral outcomes, we carry out a second analysis focussing on *repeated pairs*.

Repeated Pairs

An analysis of repeated pairs of candidates provides an alternative way to isolate the variation in electoral returns caused by incumbency. Rather than comparing groups of bare winners and bare losers *across* municipalities, we now focus on *candidate pairs* over time *within* municipalities. As discussed in the literature review above, with standard regression techniques we encounter a variety of methodological challenges when analyzing the effects of incumbency. Most of these concerns can be ameliorated by a difference-in-difference approach using repeated candidate pairs as shown in the subsequent model derivation.

Let's start with the simple approach of regressing the vote share of candidates in an election on an indicator variable for incumbency status and see where things break.

For any candidate k in a given election year t running for office in municipality i, the voteshare V_{ik}^t obtained in the election, could be modeled as:

$$V_{ik}^t = \alpha_k + \beta I_{ik}^t + \theta_{it} + \varepsilon_{ik}^t \tag{3}$$

where α_k is a candidate specific fixed effect which measures fixed attributes of the candidate, most importantly including the "quality" or "strength" of the candidate. I_{ik}^t is an indicator for whether a candidate is the incumbent in the election and thus β is the quantity of interest and captures the advantage (or disadvantage) of incumbency. θ_{it} is a time-varying municipality specific fixed effect, and ε_{ik}^t is the error term. A substantive difference to models employed for estimating incumbency advantage in U.S. congressional elections is the absence of a stable

two-party system[16]. As a result of the weak and volatile Brazilian party system, we cannot include a "normal party vote" variable that would capture the district vote for a specific party apart from temporal and incumbency effects. A linear regression estimate of β in equation 3 would thus likely overestimate the advantages of incumbency. Note that θ_{it} captures both the temporal change in the national political arena as well as in each municipality. Municipality fixed-effects as well as a national time trend are thus absorbed by this term.

When estimating equation 3 in a standard regression framework, we are unable to separately include municipality specific fixed effects and candidate specific intercept shifts because nearly all candidates are only observed in one municipality. To tackle this problem, we focus on pairs of candidates within a municipality. Considering the vote shares of two candidates in a specific election in year t, we have

$$V_{i1}^t = \alpha_1 + \beta I_{i1}^t + \theta_{it} + \varepsilon_{i1}^t \tag{4}$$

$$V_{i2}^t = \alpha_2 + \beta I_{i2}^t + \theta_{it} + \varepsilon_{i2}^t \tag{5}$$

First-differencing equations 4 and 5, we obtain

$$\Delta V_i^t = V_{i1}^t - V_{i2}^t = (\alpha_1 - \alpha_2) + \beta (I_{i1}^t - I_{i2}^t) + v_{it} \tag{6}$$

which removes the municipality-specific effect but still leaves us with the difference in candidate qualities (α_1 and α_2) in the model. Since it is difficult to obtain a reliable ex-ante measure of candidate quality[17], we focus on repeated encounters of the same candidate pair[18].

Repeating the differencing procedure from above for all time periods in which the candidate

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[16]The basic idea of using repeat candidate pairs to estimate the electoral effects of incumbency and campaign spending comes from Levitt (1994; 1997).

[17]Early studies of incumbency advantage and campaign spending in the U.S. context simply excluded any measures of candidate quality and faced severe criticism regarding the bias this omission likely introduced. We agree with these criticisms.

[18]A pair of candidates is considered repeated if (i) the same two candidates run for mayor in the same municipality in at least two elections we observe and (ii) the incumbency status of at least one of the candidates in the pair has changed. Note that the second rule excludes many candidate pairs of repeated candidates in which neither candidate achieves to win office in any of the elections we observe.

pair is observed, we obtain

$$\text{in } t=1: \quad \Delta V_i^1 = V_{i1}^1 - V_{i2}^1 = (\alpha_1 - \alpha_2) + \beta(I_{i1}^1 - I_{i2}^1) + v_i^1 \tag{7}$$

$$\text{in } t=2: \quad \Delta V_i^2 = V_{i1}^2 - V_{i2}^2 = (\alpha_1 - \alpha_2) + \beta(I_{i1}^2 - I_{i2}^2) + v_i^2 \tag{8}$$

Differencing 7 and 8, but now across time periods, we get the following difference-in-difference equation:

$$\Delta V_i = \Delta V_i^1 - \Delta V_i^2 = \beta[(I_{i1}^1 - I_{i2}^2) - (I_{i1}^1 - I_{i2}^2)] + (v_i^1 - v_i^2) \tag{9}$$

Notice, that using this second differencing operation, we are able to remove unobserved measures of candidate quality as well. Of course, candidate pairs that repeatedly face each other are only a subset of the sample of all candidate pairs. In order for β to be a good estimate of incumbency advantage for the population of all candidates, the set of repeated pairs needs to meet some assumptions which are discussed in the results section.

Given that mayors are only allowed to seek consecutive re-election once, our data allows us to observe five possible combinations of incumbency of a repeated pair of candidates across two or more elections (see table 1), three of which are directly informative for our inference about the effect of incumbency[19].

Perhaps most straightforward is the case in which the two candidates first face each other when neither is an incumbent ($I_1^1 = I_2^1 = 0$; one of them wins $I_1^2 = 1$ and $I_2^2 = 0$, or $I_1^2 = 0$ and $I_2^2 = 1$), and in the subsequent election we can observe what effect the incumbency of the winner has on his election result (cases *Ia* and *Ib* in table 1).

Secondly, the candidate pair could first encounter each other with one of them already being an incumbent ($I_1^1 = 1$ and $I_2^1 = 0$, or $I_1^1 = 0$ and $I_2^1 = 1$), the incumbent loses to a third candidate, and in the subsequent election they are running with neither of them having the benefit of being the incumbent (cases *Ib* and *IIb* in table 1).

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[19]The table lists mirror images of each case as versions (a) and (b). This is probably superfluos because it only depends on the (arbitrary) order of candidates. However, we hope doing so allows the reader to better follow our analysis and make clear why we have positive and negative values for the difference-in-difference of incumbency status.

Lastly, again the candidates could encounter each other first with one of them already being incumbent ($I_1^1 = 1$ and $I_2^1 = 0$, or $I_1^1 = 0$ and $I_2^1 = 1$), but now the incumbent loses to her counterpart in the pair who will thus be the incumbent in the next election (cases *IIIa* and *IIIb* in table 1).

The remaining cases we observe in the data are not directly informative about the effect of incumbency on voting outcomes. In particular, in all of these cases the incumbency status of the candidates in the pair is the same in each encounter and hence does not allow us to draw any inferences about its effect.

Table 1 presents all possible combinations of incumbency which allow us to recover β by performing the difference-in-differences calculations outlined above. The top part of the table contains the cases which are informative for our analysis. The cases that are uninformative for our purposes but are part of the data are listed in the bottom part of the table.

[Table 1 about here.]

Data

All election data for Brazil, including the results for five mayoral elections from 1996 to 2012 used in this paper, are made available by the Superior Electoral Court (*Tribunal Superior Eleitoral*, TSE). In these five elections under consideration, we observe 50,229 candidates running for the office of the mayor in 5,565 different municipalities (27,622 overall races). The mean number of candidates per seat is 2.73 (median=2) ranging from a single unchallenged candidate up to fifteen candidates[20]. The average vote share of a candidate is 36.7 percent (median 41.6 percent). Only in the small subset of cities with more than 200,000 registered voters does the failure of any candidate to get the majority of the vote lead to runoff elections. In all other cities, a simple plurality suffices. As a result, successful candidates won the mayoral post with vote shares starting at a mere 23 percent and averaging 56 percent (median 54 percent).

The 2000 municipal elections were the first in which incumbent mayors where allowed to run

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[20]Since all candidates have to register with a party and each party can only nominate one candidate, the maximum number of candidates is effectively bounded by the number of parties.

for reelection. Since then about three quarters of eligible mayors chose to run for re-election, with 61 percent successfully being re-elected by their constituents. The average incumbent gets 51 percent of the vote, which is more than the average non-incumbent candidate receives. The average winning incumbent wins with 59 percent of the vote total, more than the 54 percent non-incumbent winning candidates are able to secure.

Most information on socio-economic figures for all the municipalities in the sample come from two censuses, 1991 and 2000. The data is provided by the Brazilian chapter of the UNDP in the *Atlas do Desenvolvimento Humano no Brasil* (Atlas of Human Development in Brazil) and includes more than 130 variables on income and development, education, health, inequality etc. disaggregated to the level of municipalities. Some additional figures for population, urbanization, and income are derived from partial results of the most recent census in 2010 provided by the Brazilian statistical agency (2012, IBGE).

Results

In the methods section above, we propose two separate analyses to identify and measure the effect of incumbency in Brazilian mayoral elections. First, we focus on the set of *repeated candidates* using a regression discontinuity design to identify the causal effect of being the incumbent in an election on the electoral outcome of the candidate. Second, we restrict our data to the set of *repeated pairs of candidates* using a standard regression framework and a difference-in-difference procedure to analyze the same phenomenon.

Repeated Candidates

Figure 2 illustrates the RD estimate of the incumbency advantage. It plots the estimated vote margin of a candidate running in election t as a function of his vote margin in time $t-1$. The horizontal axis measures the candidate's vote share minus the vote share of the strongest opponent in time $t-1$, while on the vertical axis the same quantity for the subsequent election in t is plotted.

[Figure 2 about here.]

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In the top panel of figure 2 the entire sample of candidates is plotted in gray. Each red dot is an average of the vote margin in time t within each 1 percent interval. To the right of the dotted vertical line, a candidate won the previous election; above the horizontal dotted line a candidate won the current election.

As is apparent from the figure, there is a clear discontinuous jump at the zero point of the x-axis. Candidates who barely win an election receive a significantly smaller vote share in the subsequent election, compared to candidates who barely lose. In other words, incumbents (bare winners in the previous election) receive significantly fewer votes in the subsequent election than bare losers. Incumbents face a disadvantage in Brazilian mayoral elections.

Unsurprisingly, in figure 2, we also observe a positive relationship between the vote margin of a candidate in election $t-1$ and election t. As a result, a simple comparison of means of bare election winners and losers would yield a biased estimate of incumbency advantage. Moreover, figure 2 exhibits some non-linearities: a linear specification may thus be inappropriate.

Table 2 provides evidence consistent with our graphical finding of an incumbency disadvantage. We estimate the effect of incumbency on vote margin varying the interval around the threshold included in the analysis as well as the shape of the functions fitted. For simplicity we use (i) a single linear trend with an intercept difference at the threshold, (ii) separate linear trends with potentially different slopes and an intercept shift, and (iii) separate quadratic trends with an intercept shift to allow for non-linearities[21]. Pooling data for all years observed in the

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[21]We estimate three model specifications: (i) Common Linear Trend, (ii) Separate Linear Trends, and (iii) Separate Quadratic Trends.

First, the model for a common linear trend is the simplest model regressing VM_{ik}^t on VM_{ik}^{t-1} forcing a common slope for the linear relationship between lagged vote margins on current vote margins allowing only for an intercept shift at the discontinuity point of $VM_{ik}^{t-1} = 0$. The model specification for a common linear trend is

$$VM_{ik}^t = \alpha + \tau I_{ik}^t + \beta VM_{ik}^{t-1} + \varepsilon_{ik}^t \tag{10}$$

Second, for the model with separate linear trends we allow for the possibility that there is a different linear relationship of VM_{ik}^t and VM_{ik}^{t-1} on each side of the discontinuity. The model specification for separate linear trends thus includes an interaction of the lagged vote margin and the indicator for incumbency

$$VM_{ik}^t = \alpha + \tau I_{ik}^t + \beta_1 VM_{ik}^{t-1} + \beta_2 I_{ik}^t * VM_{ik}^{t-1} + \varepsilon_{ik}^t \tag{11}$$

Third, the functional relationship of VM_{ik}^t and VM_{ik}^{t-1} is substantively unimportant. However, constraining the relationship to be linear when it is not could affect our parameter of interest τ as well. As a result, we allow for a more flexible functional form by using quadratic parameterizations on either side of the discontinuity point though this is asking a lot from the data when constraining the data to small intervals on either side of the discontinuity.

data, we find a consistent and significant negative incumbency effect across all specifications.

[Table 2 about here.]

When looking at the data separately by election, we obtain a more differentiated picture. Figure 3 provides a graphical estimate of the RD estimation by election year using non-parametric curves on each side of the threshold. As before, the red dots represent the average of the vote margin on the x-axis within each 1 percent interval. In the 2000 election (top left panel), incumbents face a large disadvantage in their reelection compared to non-incumbent opponents and are in fact likely to lose their re-election bid. Incumbents in all but the 2008 municipal elections (bottom left panel) face significant headwinds when embarking on a re-election bid[22].

[Figure 3 about here.]

Numerical estimates presented in table 2 confirm these results. On average, incumbents face a large and significant disadvantage compared to their non-incumbent challengers.

Balance Tests

Using a regression discontinuity design, we find a negative incumbent effect on electoral fortunes in Brazilian local elections. By construction, a regression discontinuity setup allows us to ignore other pre-determined baseline characteristics in our analysis, because we contend that these are by design approximately randomized near the discontinuity point. To test the validity of the RD design and to add confidence in the setup, we employ a balance test of these baseline covariates around the threshold. Table 3 presents the mean values of candidate, election, and municipal characteristics in the *subsequent election* for the groups of bare losers and bare winners (within a 1 percentage point interval from the threshold) along with p-values from a Welch two-sample t-test.

The model is then

$$VM_{ik}^t = \alpha + \tau I_{ik}^t + \beta_1 VM_{ik}^{t-1} + \beta_2 (VM_{ik}^{t-1})^2 + \beta_3 I_{ik}^t * VM_{ik}^{t-1} + \beta_4 I_{ik}^t * (VM_{ik}^{t-1})^2 + \varepsilon_{ik}^t \tag{12}$$

Across all specifications, the only parameter of interest remains the estimate of τ which is presented in the results tables.

[22]In the 2008 mayoral elections, incumbent candidates may even have had a slight, albeit statistically insignificant, advantage over their non-incumbent challengers.

[Table 3 about here.]

The balance test confirms that among the selected candidate, municipal, and election charac-
teristics none of the variables differ significantly (at the 1 percent level) across the threshold[23].
The balance test of selected pre-treatment variables supports our claim that all baseline charac-
teristics are approximately randomized around the threshold point. Importantly, even previous
incumbency does not allow candidates to influence the election outcome precisely. In addition,
several post-determined variables that should not differ across barely winning and barely losing
candidates, such as the party of the candidate, the vote share and vote margin of the winner in
the election, and the number of candidates, are uncorrelated with the treatment. In short, we are
confident that our RD setup is valid.

Stratifying our sample by municipal characteristics, such as education, income, and popula-
tion, or the party of the candidate yields no substantive insights[24]. Restricting the sample by
socio-economic variables within the narrow bands of election winners and losers required by
the RD setup is asking too much of the data.

Overall, we find strong evidence for a negative incumbency effect on electoral returns in
Brazilian mayoral elections. This negative effect amounts to a reduction of about 10 percentage
points in the vote shares of incumbents. Only in the 2008 elections, a period of buoyant eco-
nomic performance and an outgoing incumbent president with stellar approval rating, we find
no evidence that incumbents faced negative electoral effects[25]

The RD design provides few clear correlates among municipal characteristics that would
help trace the origin of this negative effect. Our results align with previous findings in the
literature that incumbents in developing countries actually face a disadvantage in elections, in
contrast to the findings for developed countries. The subsequent section provides a different but
complementary estimation method to present additional evidence to buttress these findings.

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[23]The balance tests for intervals of two or three percentage points around the discontinuity point provide nearly
identical results.

[24]Results are not shown and are available upon request.

[25]There is some evidence that the 2008 elections were indeed better for incumbents. In 2008, in 55% of the
mayoral elections incumbents were running (1996: none, 2000: 64%, 2004: 42%, 2008: 55%, 2012: 43%) and
more than two thirds were able to defend their seat (2000: 58%, 2004: 58%, 2008: 69%, 2012: 56%).

Repeated Pairs

To further add confidence in our findings, we propose an alternate method of estimating the effect of incumbency using repeated candidate pairs. Common to all statistical techniques employed to estimate the effects of incumbency is that we have to rely on a self-selected sample of candidates. Only for winning candidates who *choose* to run in more than one election can we estimate whether the candidate benefitted (or suffered) from his ability to run as an incumbent. When focussing on *repeated pairs of candidates* we potentially further magnify this issue of potential bias in our estimates because we are effectively selecting the sample on repeated-pair candidates. We have two responses to this issue. First, we repeat the regression design procedure above and apply it only to the sample of candidates appearing in repeated pairs. Our results are very similar to the ones found in the complete sample above and the conclusions remain identical to those presented in Table 2. In other words, using the RD setup on the subset of candidates in repeated pairs only, we find the same large negative incumbency effect[26].

Second, as outlined in the methodology section above, our goal in applying a difference-in-difference procedure is to be able to remove municipality, time, and candidate specific effects. The latter is particular important if we believe that mayoral candidates have differing political "ability" or "strength" which when excluded from the model could lead to an inaccurate estimate of the effect of incumbency on electoral outcomes. In particular, suppose politically talented candidates are to win mayoral office more often and also are able to gain reelection more often. Then without taking this candidate effect into account, our estimate of incumbency advantage would overestimate the true effect of holding previous office on election returns by attributing part of this unmeasured candidate strength to the advantage of incumbency. We feel the possibility of a magnification of the sample selection issue is outweighed by the benefits of removing municipality, time, and candidate specific effects through differencing.

The distribution of cases as described in table 1 is presented in table 4.

[Table 4 about here.]

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[26]For the RD results on the subset of candidates in repeated pairs see the online appendix.

Of the 5152 informative repeated candidate pairs encounters, the overwhelming majority (69%) are ones in which neither of the candidates is the incumbent in the first encounter, one of them wins the election, and the next time they face each other in their new roles of incumbent and challenger (case I a/b). We restrict our analysis to these repeated pairs because they offer the clearest test of the effect of incumbency[27].

Across the five municipal elections included in our study (1996-2012), in the majority of municipalities (62%) at least one repeated candidate pair can be identified. Nonetheless, as expected, repeated candidate pairs are not randomly distributed. Candidates deciding to run again (and thus likely to be part of repeated pairs) are more likely to be incumbents and be elected with higher vote shares. Winners in repeated pair elections appear to be winning with smaller margins, while runner-ups substantively obtain the same vote shares. In addition, repeated pairs are more likely after close elections with strong challengers and in municipalities that are a bit more populous and somewhat richer, but no different in terms of inequality or development levels. Note, that many of these associations affect the general likelihood of candidates running again (and thus be part in any analysis of incumbency status) rather than the results of our repeated pair analysis in particular.

So how can deal with these differences? One response would be to use these observables, match on them, and then estimate the effect of incumbency. Fortunately, however, due to our difference-in-difference setup few of the idiosyncrasies of the pool of repeated candidates or the municipalities in which they run is damning for empirical inference. Econometrically any *fixed* differences particular to municipalities, candidates, or time are differenced out. For example, suppose that candidates we observe in repeated pairs are on average more politically talented and as a result on average receive higher vote shares. Would this invalidate our analysis? No, be-

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[27]We performed our analysis for all pairs and these results are available upon request. However, we believe there are good reasons to believe that cases *IIa/b* and *IIIa/b* allow less clear cut inferences about the effects for incumbency. Consider, for example, case *IIa/b* in which two candidates face each other as incumbent vs. non-incumbent, the incumbent loses to a third candidate, and in the subsequent election the candidates in the pair are both non-incumbents. It may be hard to argue that these two, formally equal, non-incumbents are indeed the same. Being a former mayor may in fact continue to be a bonus or burden which would remain unmeasured in our specification. As a result, we focus on the cleanest and most intuitive of all setups in which candidates first meet as non-incumbents, one of the wins the election, and then they meet again as incumbent vs. non-incumbent (cases *Ia/b*).

cause within-candidate differencing across time periods would remove these candidate specific advantages. What matters is the *difference* in vote share between two candidates in repeated match-ups, conditional on a change in the incumbency status of one or both of the candidates in the pair. What if incumbents in some cities, say rural municipalities, fare particularly well? This should also not be of concern. Since we are differencing between candidates of one particular municipality, any city specific effects should be washed out as well.

As noted above, we find that winners of tight elections are more likely to be challenged by the same opponent in a subsequent elections. Incumbents which find themselves challenged again by the same opponent in the next election received a 6.6 percentage points lower vote share in the election that brought them into office compared to incumbents not facing a repeat challenger. Similarly, we do find evidence that these repeat challengers do in fact seem to be stronger than the average challenger. Compared to the average challenger they receive a slightly larger vote share in the first elections in which they meet their repeated opponent. But again, our proposed difference-in-differences setup allows and removes all fixed candidate qualities, resulting in an unbiased estimate of the effect of incumbency.

Lastly, before turning to the regression analysis, a few descriptive statistics on the distribution and frequency of these repeated candidate pairs. In about one fifth (21 percent) of all the mayoral races in our sample there is a pair of candidates that is considered a repeated pair by the definition stated above. Electoral races with repeated pairs occur in all states of the union (from 8 to 30 percent of all races by state) and years (from 19 to 23 percent of all races by election year). Overall, a sound majority of all municipalities in Brazil (62 percent) have such a repeated candidate pair in their mayoral elections from 1996 to 2012. Of the more than 5000 repeated pairs, the overwhelming share meets only twice (89 percent). However, there are some pairs with repeated match-ups (9.8 percent meet thrice, 0.7 percent even meet four times). In sum, repeated pair candidates occur frequently, and are a common feature across Brazil and all the municipal election years we analyze.

Equation 6 provides a direct link to the empirical test of the effect of incumbency. Using repeated pairs in Brazilian mayoral elections from 1996 to 2012 we obtain the results presented

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in table 5.

[Table 5 about here.]

In model 1, we see that the overall estimated incumbency effect in Brazilian mayoral elections is negative 7.4 percentage points[28]. However, as indicated in the discussion above, some dicing of the data is probably in order. In model 2, we allow for different effects of incumbency depending on the year of the repeated meeting of the candidates in a pair. We find that pairs meeting the first time in 1996 and then again in 2000, the incumbent faces a hefty disadvantage in a reelection attempt of 9.3 percentage points. In 2004, this incumbency disadvantage remains negative at 7.8 percentage points, and in 2008 the disadvantage shrinks to 2 percentage points for incumbents[29], followed by a large incumbent disadvantage of 10 percentage points in the most recent election in 2012.

As noted above, there is a substantial number of repeated pairs which did not meet in consecutive elections. In order to test for potential differences, in model 3, we interact the incumbency difference-in-difference with an indicator for whether the candidate pair met in repeated elections or not. We find a negative incumbency effect when looking only at pairs in consecutive elections, and a very large positive incumbency effect for pairs with temporal interruptions in their electoral stand-offs. Why this difference? Though we have not investigated this much further, we hypothesize that candidates who chose not to run in some intermittent elections apparently suffer the consequences. Voters may simply have a harder time to recall the name or important information about a candidate whom they last observed in an election eight or even twelve years ago. In these cases, incumbents in the subsequent election may have an easier time to convince voters of the purported merits of their own reelection. If the argument of recall holds any water, we would need to observe that a longer temporal absence from the political stage leads to a larger positive effect for the incumbent. This is exactly what we find, when we

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[28]Following the specification of equation 9, the fixed effects for time, the lower order term for *Incumbency.DiD*, and the overall model constant are excluded. Variables that are not fixed in space or time, e.g. whether the pair met in the previous elections, are included as lower order terms as well.

[29]Part of this change can plausibly be attributed to the buoyant mood and extraordinary economic growth during the Lula administration (2003-2010). In 2004 and even more so in 2008, many incumbent candidates, independent of their own party, on average received a favorable treatment from voters.

interact the difference-in-difference in incumbency with a count of how many elections ago the candidates in the pair last met (see model 4). While incumbents in pairs meeting in consecutive elections face a disadvantage at the polls, incumbents in candidate pairs having met last two elections ago face a 13 percentage points gain, or even 21 percentage points in candidate pairs who were on a hiatus for two elections. Similar declines in vote margin over time are observed independent of incumbency status. However, we don't think these results should be overvalued. Political candidates who choose to be absent from one or two elections may be different in other respects as well, perhaps in ways not captured here. Moreover, 89 percent of repeated candidate pairs meet in repeated elections, so repeated pairs in non-consecutive elections are a clear minority of the cases.

Conclusion

This paper provides an analysis of incumbency advantage in Brazilian municipal elections. We are able to address a range of shortcomings we identified in comparable existing analyses of incumbency advantage in developing countries. First, we apply a standard regression discontinuity design. Comparing close election winners to bare losers we find that incumbents face a substantial electoral disadvantage in municipal elections in Brazil. Second, we show that using repeated candidate pairs, we can estimate the effect of incumbency controlling for time, municipal, and candidate characteristics without being restricted to close elections. Doing so allows us to ameliorate concerns about the biases introduced by omitting the unmeasured quality and strength of political candidates and idiosyncratic preferences of municipal electorates. More specifically, we adapt existing ideas about using repeated candidate encounters to Brazil's multiparty system without having to rely on past district level party votes. Using data from Brazilian local elections allows us to work with a very large number of observations. This not only increases the power of the analysis, but also enables us to use information on many candidate pairs facing each other repeatedly in elections.

Overall, we find evidence of a strong negative effect of incumbency in Brazilian municipal elections. Moreover, the magnitude of this negative effect fluctuates over time, but remains in

place in the most recent elections in 2012. This adds to the growing evidence that incumbents in developing countries do not enjoy the same electoral advantages when running as the office holder as we observe in U.S. congressional elections.

Future analyses should focus on parsing the *origin* of this negative effect. The literature suggests a range of possible explanations for the findings, ranging from short time horizons, institutional constraints on re-election, fiscal effects etc. Many of these suggested causes for incumbency disadvantage point to a missing motivations for current office holders to perform well while in office and thus subsequently a punishment at the polls. Yet, given that incumbents *choose* to run for re-election themselves, this makes only limited sense. If politicians are (i) able to influence their future political fortunes (i.e. through good performance, low corruption, advantageous fiscal policy) and (ii) want to run for office in a subsequent election, then would we not expect incumbency to yield an advantage? We believe that the simple methodological difference-of-difference framework using repeated candidate pairs could be a good starting point for further inquiries regarding the extent and origin of incumbency effects, in Brazil and in other contexts.

References

Ames, Barry. 1994. "The Reverse Coattails Effect: Local Party Organization in the 1989 Brazilian Presidential Election." *The American Political Science Review* 88(1):95–111.

Ames, Barry. 2002. *The Deadlock of Democracy in Brazil*. University of Michigan Press.

Ansolabehere, Stephen, David Brady and Morris Fiorina. 1992. "The Vanishing Marginals and Electoral Responsiveness." *British Journal of Political Science* 22(01):21–38.

Ansolabehere, Stephen and James M. Snyder. 2002. "The Incumbency Advantage in U.S. Elections: An Analysis of State and Federal Offices, 1942-2000." *Election Law Journal* 1(3):315–338.

Ansolabehere, Stephen, James M. Snyder and Charles Stewart. 2000. "Old Voters, New Voters, and the Personal Vote: Using Redistricting to Measure the Incumbency Advantage." *American Journal of Political Science* 44(1):17–34.

Arretche, Marta T. S. 2000. *Estado federativo e políticas sociais: determinantes da descentralização*. Revan.

Baiocchi, Gianpaolo. 2006. Inequality and Innovation: Decentralization as an Opportunity Structure in Brazil. In *Decentralization and Local Governance in Developing Countries: A Comparative Perspective*. Cambridge, USA: MIT Press.

Cover, Albert D. 1977. "One Good Term Deserves Another: The Advantage of Incumbency in Congressional Elections." *American Journal of Political Science* 21(3):523–541.

Cox, Gary W. and Jonathan N. Katz. 1996. "Why Did the Incumbency Advantage in U.S. House Elections Grow?" *American Journal of Political Science* 40(2):478–497.

Cox, Gary W. and Jonathan Neil Katz. 2002. *Elbridge Gerry's salamander: the electoral consequences of the reapportionment revolution*. Cambridge University Press.

Dix, Robert H. 1984. "Incumbency and Electoral Turnover in Latin America." *Journal of Interamerican Studies and World Affairs* 26(4):435–448.

Erikson, Robert S. 1971. "The Advantage of Incumbency in Congressional Elections." *Polity* 3(3):395–405.

Erikson, Robert S. 1972. "Malapportionment, Gerrymandering, and Party Fortunes in Congressional Elections." *The American Political Science Review* 66(4):1234–1245.

Ferejohn, John A. 1977. "On the Decline of Competition in Congressional Elections." *The American Political Science Review* 71(1):166–176.

Figueiredo, Argelina Cheibub and Fernando Limongi. 2001. *Executivo e legislativo na nova ordem constitucional*. Editora FGV.

Figueiredo, Argelina Cheibub and Fernando Limongi. 2002. "Incentivos Eleitorais, Partidos e Política Orçamentária." *Dados* 45(2):303–344.

Gelman, Andrew and Gary King. 1990. "Estimating Incumbency Advantage without Bias." *American Journal of Political Science* 34(4):1142–1164.

Gibson, Edward L. 2004. *Federalism and democracy in Latin America*. JHU Press.

Hamilton, Alexander, James Madison and John Jay. 2008. *The Federalist Papers*. Wilder Publications.

Horiuchi, Y. and A. Leigh. 2009. "Estimating Incumbency Advantage: Evidence from Multiple Natural Experiments.".

Instituto Brasileiro de Geografia e Estatística (IBGE). 2012. "Censo demográfico 2010: resultados preliminares.". http://www.ibge.gov.br/english/estatistica/populacao/censo2010/default.shtm.

Lee, David S. 2008. "Randomized experiments from non-random selection in U.S. House elections." *Journal of Econometrics* 142(2):675–697.

Lee, David S. and Thomas Lemieux. 2009. "Regression Discontinuity Designs in Economics." *National Bureau of Economic Research Working Paper Series* No. 14723.

Leoni, Eduardo, Carlos Pereira and Lucio Renno. 2004. "Political Survival Strategies: Political Career Decisions in the Brazilian Chamber of Deputies." *Journal of Latin American Studies* 36(01):109–130.

Levitt, Steven D. 1994. "Using Repeat Challengers to Estimate the Effect of Campaign Spending on Election Outcomes in the U.S. House." *The Journal of Political Economy* 102(4):777–798.

Levitt, Steven D. and Catherine D. Wolfram. 1997. "Decomposing the Sources of Incumbency Advantage in the U. S. House." *Legislative Studies Quarterly* 22(1):45–60.

Linden, Leigh. 2004. "Are Incumbents Really Advantaged? The Preference for Non-Incumbents in Indian National Elections." Unpublished Manuscript.

Mainwaring, Scott. 1997. Multipartism, Robust Federalism, and Presidentialism in Brazil. In *Presidentialism and democracy in Latin America*. Cambridge University Press pp. 55–109.

Mayhew, David R. 1974. "Congressional Elections: The Case of the Vanishing Marginals." *Polity* 6(3):295–317.

Mendes, Marcos, Carlos Rocha and Alexandre Amorin. 2004. "O que reelege um prefeito?".

Meneguin, Fernando B and Maurício S Bugarin. 2001. "Reeleição e política fiscal: um estudo dos efeitos da reeleição nas políticas de gastos públicos." *Revista de Economia Aplicada, Riberão Preto* 5(3):601–622.

Meneguin, Fernando B., Maurício S. Bugarin, Alexandre X. de Carvalho, Maurício S. Bugarin Fernando B. Meneguin and Alexandre X. de Carvalho. 2005. *Que Leva um Governante à Reeleição?* Number no. 1135 *in* "Textos para Discussão - IPEA" Brasília: IPEA.

Molina, José. 2001. "The electoral effect of underdevelopment: government turnover and its causes in Latin-American, Caribbean and industrialized countries." *Electoral Studies* 20(3):427–446.

Nakaguma, Marcos Yamada and Siegfried Bender. 2006. "A emenda da reeleição e a Lei de Responsabilidade Fiscal: impactos sobre ciclos políticos e performance fiscal dos Estados (1986-2002)." *Economia Aplicada* 10(3).

Novaes, Carlos Alberto. 1994. "Dinâmica institucional da representação – individualismo e partidos na Câmara dos Deputados." *Novos Estudos - CEBRAP* 38:99–147.

Pereira, Carlos and Lucio Renn. 2001. "O que é que o reeleito tem? Dinâmicas polítiico-institucionais locais e nacionais nas eleições de 1998 para a Câmara dos Deputados." *Dados* 44(2):133–172.

Pereira, Carlos and Lucio Renno. 2007. "O que é que o reeleito tem? O retorno: o esboço de uma teoria da reeleição no Brasil." *Revista de Economia Política* 27(4).

Rogoff, Kenneth. 1990. "Equilibrium Political Budget Cycles." *The American Economic Review* 80(1):21–36.

Sakurai, Sergio and Naercio Menezes-Filho. 2008. "Fiscal policy and reelection in Brazilian municipalities." *Public Choice* 137(1):301–314.

Samuels, David. 2000. "Ambition and Competition: Explaining Legislative Turnover in Brazil." *Legislative Studies Quarterly* 25(3):481–497.

Samuels, David. 2003. *Ambition, federalism, and legislative politics in Brazil*. Cambridge University Press.

Samuels, David J. 2002. "Pork Barreling Is Not Credit Claiming or Advertising: Campaign Finance and the Sources of the Personal Vote in Brazil." *The Journal of Politics* 64(03):845–863.

Santos, André Marenco dos. 2000. *Não se fazem mais oligarquias como antigamente: recrutamento parlamentar, experiência política e vínculos partidários entre deputados brasileiros (1946-1998)*. Universidade Federal do Rio Grande do Sul.

Santos, André Marenco dos. 2003*a*. "Comparing houses of representatives: parliamentary recruitment in Argentina, Brazil, Chile and Mexico." *Teoria & Sociedade* 11(2):42–60.

Santos, Fabiano. 1999. "Recruitment and Retention of Legislators in Brazil." *Legislative Studies Quarterly* 24(2):209–237.

Santos, Wanderley Guilherme dos. 2003*b*. *O cálculo do conflito: estabilidade e crise na política brasileira*. UFMG.

Schimitt, Rogério. 1999. "Migração partidária e reeleição na Câmara dos Deputados." *Novos Estudos - CEBRAP* 54:127–146.

Schlesinger, Joseph A. 1966. *Ambition and politics: political careers in the United States*. Rand McNally.

Titiunik, Rocío. 2009. "Incumbency Advantage in Brazil: Evidence from Municipal Mayor Elections." Working Paper.

Uppal, Yogesh. 2008. "The disadvantaged incumbents: estimating incumbency effects in Indian state legislatures." *Public Choice* 138(1-2):9–27.

Figure 1: Retention rates and electoral performance in Brazil
Legislative National Elections (1950-2002)
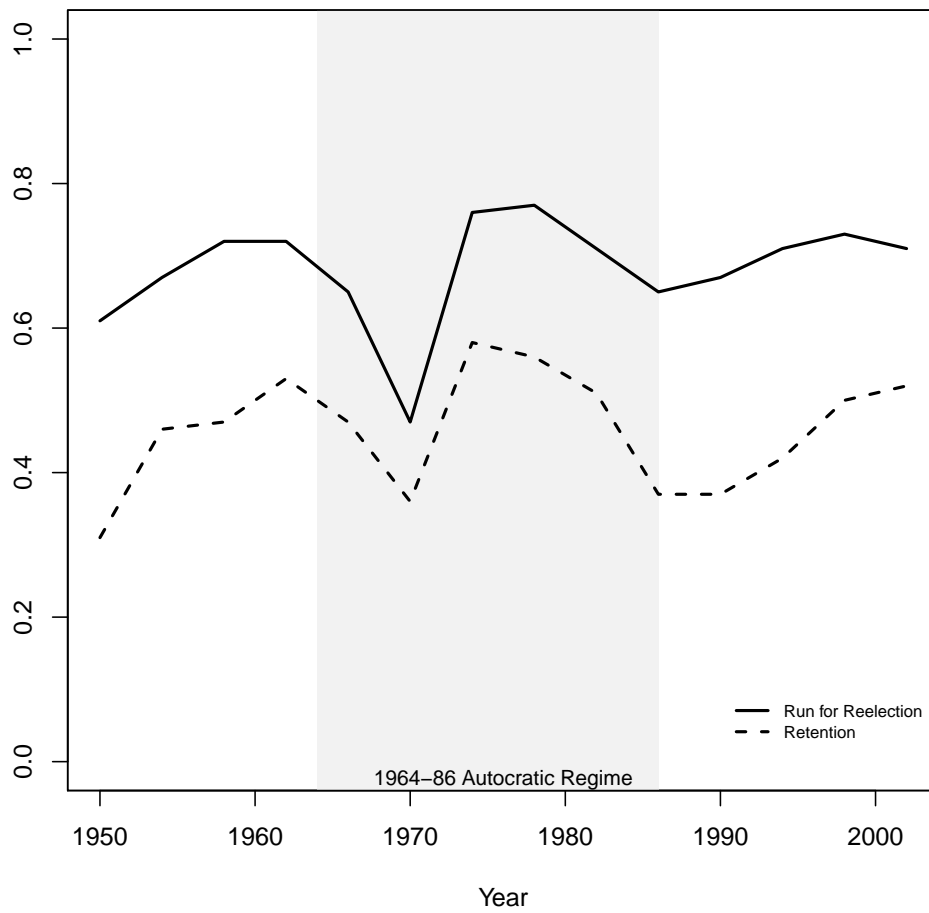

1964−86 Autocratic Regime

Run for Reelection
Retention

Year

Figure 2: Regression Discontinuity Estimate of the Incumbency Effect in Brazilian Mayoral Elections (1996-2012)

Whole Distribution

Partial Distribution
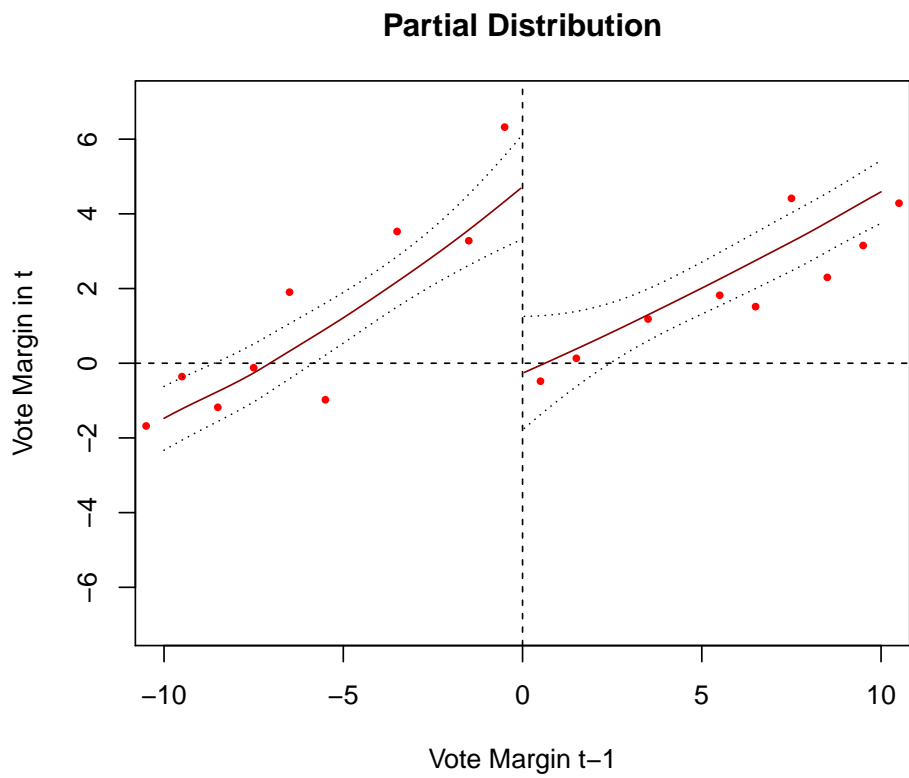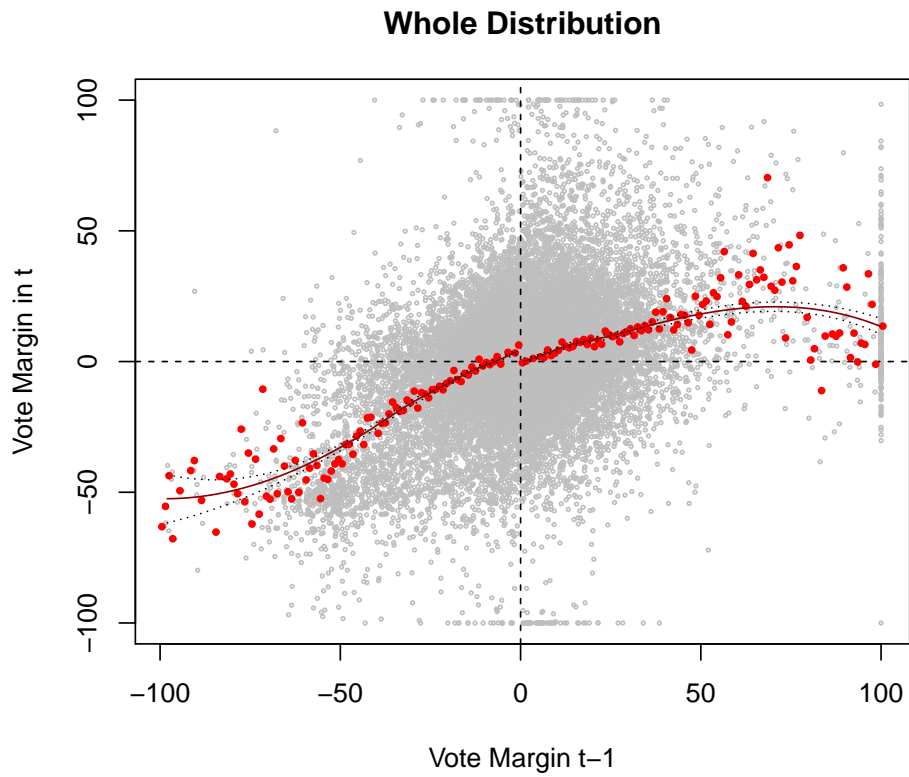
Figure 3: RD Estimate of the Incumbency Effect over Time
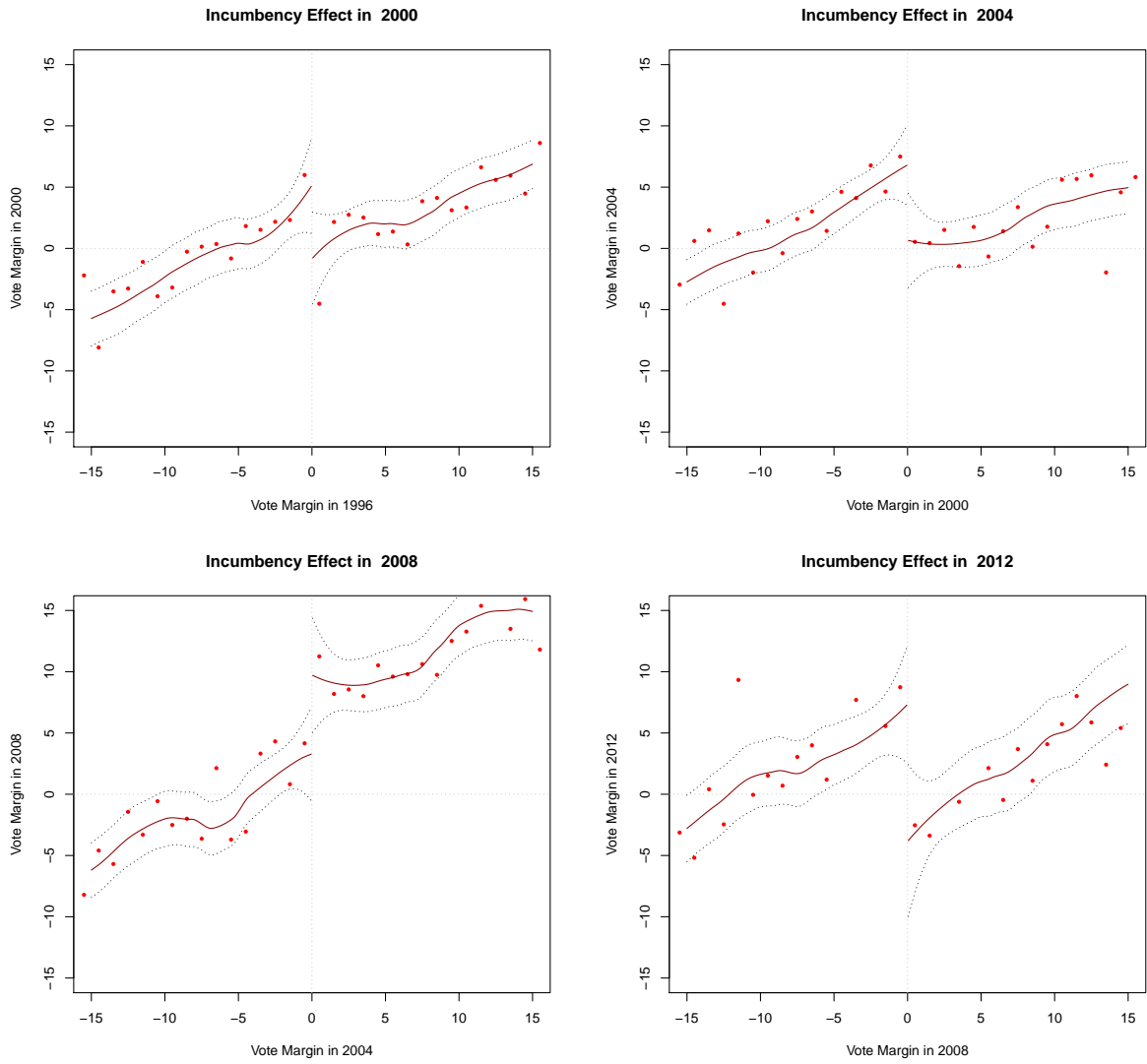
Table 1: Possible Incumbency Combinations for Repeated Candidate Pairs

| | Is candidate the incumbent? | | | | Difference-in-Difference |
| | t=1 | | t=2 | | |
case	cand 1	cand 2	cand 1	cand 2	$(I^1_{i1} - I^2_{i2}) - (I^1_{i1} - I^2_{i2})$
Informative Pairs					
Ia	no	no	no	yes	(0-0)-(0-1) = 1
Ib	no	no	yes	no	(0-0)-(1-0) = -1
IIa	yes	no	no	no	(1-0)-(0-0) = 1
IIb	no	yes	no	no	(0-1)-(0-0) = -1
IIIa	no	yes	yes	no	(0-1)-(1-0) = -2
IIIb	yes	no	no	yes	(1-0)-(0-1) = 2
Non-Informative Pairs					
	no	no	no	no	(0-0)-(0-0) = 0
	no	yes	no	yes	(0-1)-(0-1) = 0
	yes	no	yes	no	(1-0)-(1-0) = 0

Table 2: Regression Discontinuty Results of the Effect of Incumbency on Vote Margin (with varying bandwidths)

	+/- 1	+/- 3	+/- 5	+/- 10	+/- 100
All Years	(n=1142)	(n=3368)	(n=5524)	(n=9968)	(n=20423)
Common Linear Trend	-8.99	-5.57	-5.85	-4.31	-5.22
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Separate Linear Trends	-8.82	-5.56	-5.87	-4.36	-4.95
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Separate Quadratic Trends	-6.84	-6.28	-4.77	-5.95	-5.67
	(0.05)	(0.00)	(0.00)	(0.00)	(0.00)
Year 2000	(n=280)	(n=925)	(n=1467)	(n=2662)	(n=5462)
Common Linear Trend	-11.94	-9.23	-6.44	-3.39	-5.31
	(0.00)	(0.00)	(0.00)	(0.02)	(0.00)
Separate Linear Trends	-11.83	-9.26	-6.47	-3.70	-6.33
	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)
Separate Quadratic Trends	-9.30	-7.10	-7.86	-7.14	-3.84
	(0.14)	(0.04)	(0.01)	(0.00)	(0.00)
Year 2004	(n=285)	(n=792)	(n=1298)	(n=2371)	(n=5120)
Common Linear Trend	-7.71	-5.26	-6.90	-6.96	-9.74
	(0.07)	(0.03)	(0.00)	(0.00)	(0.00)
Separate Linear Trends	-7.51	-5.06	-6.50	-6.81	-8.37
	(0.07)	(0.04)	(0.00)	(0.00)	(0.00)
Separate Quadratic Trends	-8.55	-7.30	-3.94	-5.47	-7.03
	(0.19)	(0.05)	(0.16)	(0.01)	(0.00)
Year 2008	(n=314)	(n=889)	(n=1485)	(n=2652)	(n=5247)
Common Linear Trend	-3.12	3.34	0.58	1.98	1.13
	(0.51)	(0.21)	(0.78)	(0.20)	(0.20)
Separate Linear Trends	-2.66	3.32	0.53	1.81	1.47
	(0.58)	(0.21)	(0.80)	(0.24)	(0.09)
Separate Quadratic Trends	-3.17	0.70	4.01	0.28	-0.07
	(0.67)	(0.86)	(0.20)	(0.90)	(0.95)
Year 2012	(n=263)	(n=762)	(n=1274)	(n=2283)	(n=4594)
Common Linear Trend	-13.25	-11.97	-11.57	-9.88	-8.13
	(0.02)	(0.00)	(0.00)	(0.00)	(0.00)
Separate Linear Trends	-12.22	-11.87	-11.54	-9.88	-7.54
	(0.03)	(0.00)	(0.00)	(0.00)	(0.00)
Separate Quadratic Trends	-1.88	-14.10	-11.82	-12.04	-10.47
	(0.82)	(0.02)	(0.01)	(0.00)	(0.00)

Estimated effects are the difference in votemargin at the discontinuity point.
p-values in parentheses.

Table 3: Balance Test of Candidate, Election, and Municipal Characteristics for
Bare Election Losers vs. Bare Winners (+/- 1 percentage point interval)

	Bare Losers	Bare Winners	Difference	p-value
Candidate Characteristics	n=592	n=550		
Party - PMDB	0.24	0.24	-0.01	0.84
Party - PSDB	0.13	0.16	0.03	0.18
Party - PFL	0.09	0.10	0.02	0.37
Party - PT	0.07	0.09	0.02	0.22
Incumbency (t-1)	0.04	0.05	0.01	0.40
Incumbency (t-2)	0.02	0.03	0.00	0.84
Election Characteristics	n=372	n=270		
Vote Share Winner	54.57	54.16	-0.40	0.56
Vote Share Runner-up	39.46	39.75	0.29	0.67
Number of Candidates	2.67	2.74	0.06	0.46
Municipal Characteristics	n=372	n=267		
Population	23530.74	47033.93	23503.19	0.02
Income per Capita	169.15	177.45	8.30	0.32
Income Gini	0.56	0.56	0.01	0.18
Literacy Rate	78.35	78.39	0.04	0.96
Human Development Index	0.70	0.70	0.00	0.71

Table 4: Distribution of Incumbency Combinations for Repeated Candidate Pairs

| | How many elections ago did the pair meet the last time? | | | |
	1	2	3	Total
Ia/b	3528	157	63	3748
IIa/b	156	125	39	320
IIIa/b	800	275	9	1084
Total	4484	557	111	5152

Table 5: Repeated Pairs - The Effects of Incumbency on Vote Share
in Brazilian Mayoral Elections (1996-2012)

Dependent Variable: Voteshare.DiD	Model 1	Model 2	Model 3	Model 4
Incumbency.DiD	-7.37 *			
	(0.39)			
Incumbency.DiD x Year2000		-9.34 *		
		(0.67)		
Incumbency.DiD x Year2004		-8.25 *		
		(0.84)		
Incumbency.DiD x Year2008		-2.40 *		
		(0.75)		
Incumbency.DiD x Year2012		-9.97 *		
		(0.90)		
Not meet last election			-7.49 *	
			(1.57)	
Meet last election			-3.03 *	
			(0.57)	
Incumbency.DiD x Not meet last election			14.37 *	
			(1.57)	
Incumbency.DiD x Meet last election			-6.59 *	
			(0.57)	
LastMeet (t-1)				-3.03 *
				(0.57)
LastMeet (t-2)				-5.46 *
				(1.84)
LastMeet (t-3)				-12.00 *
				(3.16)
Incumbency.DiD x LastMeet (t-1)				-6.59 *
				(0.57)
Incumbency.DiD x LastMeet (t-2)				13.00 *
				(1.84)
Incumbency.DiD x LastMeet (t-3)				16.27 *
				(3.16)
N	3746	3746	3746	3746
adj. R^2	0.09	0.10	0.15	0.15
Resid. sd	23.86	23.68	23.02	23.01

Standard errors in parentheses; * indicates significance at $p < 0.05$

Constant and lower order terms for years are omitted following the specification of Equation 9.