Turnover: How electoral accountability disrupts the bureaucracy and service delivery*

Guillermo Toral†

September 4, 2020

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Abstract

Electoral accountability is fundamental to representative democracy. Yet, it can also be costly for governance because it leads to the turnover of bureaucrats (as well as elected officials), and to disruptions in public service delivery. I advance a theory of political turnover as a process that, starting the moment election results are out, generates concurrent processes of bureaucratic turnover and disruptions to public service delivery. To examine these turnover dynamics, I leverage a close-races regression discontinuity design, and monthly, administrative data on public employment and on healthcare service delivery in Brazilian municipalities. The results show that an electoral defeat of the incumbent unleashes a variety of bureaucratic turnover dynamics (hires, dismissals, and resignations, among both temporary and civil service bureaucrats) starting on the month of the election, and a decline in the delivery of healthcare services. These findings have substantial implications for theories of bureaucratic politics and democratic governance.

*I thank Ben Ross Schneider, Lily Tsai, Daniel Hidalgo, Natália Bueno, Jonathan Philips, César Zucco, and seminar participants at MIT and FGV São Paulo for helpful comments. I gratefully acknowledge Brazil's Ministry of Labor support for accessing the country's formal labor market datasets; and the financial support of the Lemann Foundation for fieldwork. Any remaining errors are my own.

†Assistant Professor of Political Science at Vanderbilt University: guillermo.toral@vanderbilt.edu.

1 Introduction

Theorists of representative democracy often point to political turnover as one of its fundamental ingredients. Przeworski famously defined democracy as "a system in which parties lose elections" (1991, 10). From various theoretical perspectives, scholars have long seen the turnover of elected officials as central to democracy. Political turnover, or the threat of it, is often seen as a disciplining device leading elected officials to be responsive to voter demands (Manin, 1997, 178). Political turnover can also be seen as resulting from prospective, rather than retrospective accountability, with voters using elections to select "good types" into office (Fearon, 1999). From these accountability perspectives, political turnover is an essential tool to reduce moral hazard and/or adverse election. From an elitist perspective on democracy, on the other hand, iterated political turnover is seen as ensuring that election losers will accept the results, since they have the prospect of coming back to power. Political turnover is, from this vantage point, critical for democratic survival, for compliance with rules, and for reducing political violence (Popper, 1962; Przeworski, 1999). Political turnover is so central to our understanding of democracy that numerous polities around the world use term limits to force the turnover of executive and/or legislative elected officials, on the assumption that increasing turnover improves the quality of democracy (Cain and Levin, 1999).[1]

While political turnover has multiple benefits for governance and accountability, it also imposes some costs through multiple, concurrent dynamics of bureaucratic turnover that, when significant enough, can disrupt public service delivery.[2] An electoral defeat of the incumbent can cause three dynamics of bureaucratic turnover: dismissals, hires, and resignations, under both the outgoing and the incoming governments. These overlapping processes of bureaucratic turnover can have a deleterious effect on public service delivery, at least in the short term, because they lead to the disruption of teams of providers, and potentially to the induction of less experienced bureaucrats.

This suggests political turnover may best be seen not as a *legal moment* (i.e., the day and time in which the election winner is sworn into office) but rather a *political process* starting when

[1]While term limits are common in contemporary presidential systems, they are not a modern invention. In Ancient Athens, for example, members of the Boule (the executive council) could only serve two consecutive years, and were barred from serving more than twice in their lifetime (Thorley, 2004, 29).

[2]Throughout the paper, I refer to the political turnover that occurs in consolidated democracies as a result of regular elections, the results of which are accepted by an overwhelming majority of society. Political turnover resulting from coups, revolutions, and irregular elections can be expected to have more disruptive effects on bureaucracies, public service delivery, and private sector economic activity, but I do not consider those situations here.

the election results that declare the defeat of the incumbent are public and accepted. This process ends only months after the winner takes office, when new management teams have been formed. While uncertainty over who will get access to power is "inherent in democracy" (Przeworski, 1991, 12), such uncertainty characteristic of competitive elections in democracy gives way to very high certainty, typically in a matter of hours when most votes are counted and results are published. This paper focuses on how that switch from uncertainty to certainty affects the turnover of bureaucrats and the activities public bureaucracies perform. These "transition periods" are not, as is commonly believed, periods of mere administration. Instead, they are periods of intensely political dynamics with important implications for development.

Recent research in political science, public administration, and economics has examined some of the effects of political turnover on public employment and service delivery, yet existing studies have some important limitations that this paper overcomes. First, most research to date examines year-to-year changes in public employment and/or public service delivery (Barbosa and Ferreira, 2019; Bolton et al., 2019; Colonnelli et al., 2019; Dahlström and Holmgren, 2019; Doherty et al., 2019b; Akhtari et al., 2018). Implicit in this choice is a view of political turnover as a discrete moment that takes place when election winners are sworn in. Examining month-to-month dynamics is useful for two main reasons. First, it gives us a more detailed view of the turnover process, starting on the month of the election. Next, it allows us to observe those effects of elections on bureaucratic turnover and public service delivery that are of opposite signs under lame-duck government and under the new administration. For example, outflows of bureaucrats under the last few months of an administration may be compensated with inflows of bureaucrats at the beginning of the next administration; and declines in service delivery under lame-duck governments may be reversed in the initial stages of the winner's mandate. Examining yearly data makes it difficult to observe those effects. The advantages of leveraging monthly data on bureaucratic turnover are well illustrated by the studies of Doherty et al. (2019a) and Iyer and Mani (2012), who use a sample of bureaucrats to examine turnover in national bureaucracies. This paper builds on their success by leveraging administrative, monthly data on the universe of public employees.

Second, most previous studies of the effects of political turnover on public employment focus on either hires, dismissals, resignations, or a more generic measure of bureaucratic exit, but they generally do not disaggregate these three types of flows. For example, data constraints do not enable Dahlström and Lapuente (2017) and Bolton et al. (2019) to identify the reasons behind the turnover of individual public employees in Sweden and the United States, respectively. Akhtari et al. (2018) examine effects on both inflows and outflows of teachers in Brazil, but they are not

able to identify whether teachers who leave a school do so because they resign or because they are dismissed. This paper advances our understanding of turnover dynamics by examining three types of turnover (dismissals, hires, and resignations) separately within the same empirical setting, and linking them to changes in public service delivery.

Finally, recent studies often examine the effect of political turnover by analyzing whether public employment outcomes differ on the first year of an administration, compared to other years (Bolton et al., 2019; Dahlström and Holmgren, 2019; Doherty et al., 2019a,b). This approach is not ideal to identify the causal effect of political turnover, since post-election years could be systematically different from other years regardless of the election outcome (for example, due to political budget cycles). It could also be that instances where the incumbent loses are systematically different (for example, more politically competitive) than those where the incumbent wins the reelection. While not feasible in all contexts, quasi-experimental approaches are better suited for identifying causal effects. I follow Colonnelli et al. (2019), Barbosa and Ferreira (2019) and Akhtari et al. (2018) in using a close-races regression discontinuity design to identify the causal effect of political turnover in Brazilian local governments.

This paper overcomes some of the theoretical and empirical limitations of existing studies by identifying the causal effect of an electoral defeat of the incumbent on month-by-month hires, fires, and resignations of public employees, as well as on the outputs and outcomes of the healthcare bureaucracy, through a regression discontinuity design with data on Brazilian municipalities. Close-races regression discontinuity designs, commonly used in political science and economics (Eggers et al., 2015), identify causal effects by essentially comparing instances where the incumbent barely wins the re-election and instances where they barely lose. I use close municipal elections in 2004, 2008, 2012 and 2016, and examine a series of employment and healthcare outcomes every month for a six-month period starting on October of an electoral year (i.e., the month when elections take place) and ending on March (i.e., three months after the election winner takes office). Hypotheses about the dynamics of turnover in this setting emerged from in-depth interviews with politicians conducted in the field.

Brazilian municipal governments are an ideal case to study the link between political turnover, bureaucratic turnover, and public service delivery. Brazilian municipalities hire large numbers of bureaucrats (both low- and high-skill) in order to provide primary services of education, healthcare, and social assistance to over 200 million people. Municipal governments have significant discretion over the hiring of bureaucrats. About two thirds of municipal bureaucrats are hired through a

civil service contract, where they are tenured for life after a short probationary period. The other third have significantly less protection and are therefore more easily affected by politicians' decisions. Mayors are elected every four years in majoritarian elections. Local elections are held simultaneously in all municipalities on the first Sunday of October every four years, and winners take office on January 1st. A final but critical advantage of the Brazilian case is that the federal government facilitates access to detailed data on both public employment and healthcare outcomes.

I use administrative data on public employment, healthcare outputs, and elections. To measure hires, fires, and resignations, I use identified, contract-level data for the universe of municipal employees obtained from Brazil's Ministry of Labor, which I aggregate as municipality-month counts of fires, hires, and resignations, by contract type (civil service versus temporary). To measure healthcare outputs and outcomes, I use municipality-month data from the Ministry of Health on home visits by community health agents, nurses and doctors; prenatal care check-ups and medical consultations with infants and small children; and deaths of infants and children. To measure the performance of mayors and their challengers I use official returns from the Supreme Electoral Court.

The results show that, in Brazilian municipalities with close elections, an electoral defeat of the mayor unleashes a series of bureaucratic turnover dynamics (hires, fires, and resignations) both before and after the election winner is sworn in. Under lame-duck governments there is an increase in the firing of workers (both temporary and tenured), as well as in the hiring of civil service employees. In-depth interviews with politicians suggest that outgoing governments increase firing to reduce the size of government –and thus improve their compliance with formal rules– before leaving office and losing control of the accounts. At the same time, anecdotes suggest hiring in the civil service is sometimes used to stack the deck against the election winner, by limiting their fiscal capacity to hire their own supporters. Resignations of bureaucrats also increase in the months immediately following the defeat of the incumbent. Finally, political turnover causes large increases in the hiring of temporary workers shortly after the election winner takes office.

An electoral defeat of the incumbent also causes significant declines in the delivery of healthcare services, but only in the months under lame-duck government. In particular, home visits by healthcare professionals, prenatal care check-ups and medical consultations with infants and small children all decline before the election loser leaves office. While I cannot causally link these declines of healthcare outputs to the turnover of healthcare bureaucrats, the size and timing of the effects, together with qualitative evidence from interviews, suggest that they are indeed connected. Infant and child mortality on the other hand do not appear to be impacted by the results of the election,

possibly because the effects of electoral turnover on public service delivery are too short-lived to have an impact of mortality. Yet, the declines in healthcare outputs (like check-ups or medical consultations) may still have an impact on health outcomes.

The paper suggests that the political strategies of lame-duck governments, while relatively overlooked until now, have important implications for bureaucratic governance and effectiveness. By analyzing the dynamics of political and bureaucratic turnover as well as their effect on service delivery, the paper contributes to theoretical and empirical debates about the link between politics, bureaucracy, and development. While electoral accountability and its corollary, political turnover, are fundamental to democracy, we should not remain blind to its less salubrious effects on governance and state capacity. Understanding the dynamics of turnover can enable the design of policies to mitigate some of its negative side effects.

2 Theory

I advance a theory about the links between political and bureaucratic turnover, and their influence on public service delivery, with four main components. First, I see political turnover not as a discrete moment but as a process that develops over the course of several months, since the election results are published and until several months after the election winner is sworn in. Second, an electoral defeat of the incumbent originates multiple, overlapping processes of bureaucratic turnover (including fires, hires, and resignations) that have different dynamics under the outgoing versus the incoming administration, and for temporary versus tenured bureaucrats. Third, the civil service system moderates some but not all of these turnover dynamics. Weberian bureaucracies are therefore not immune to these problems. Fourth and last, these processes of bureaucratic turnover have a negative impact on public service delivery, at least in the short term, through changes in the selection of bureaucrats, disruptions to teams, diversion of organizational resources for the management of outflows and inflows in human resources, and the weakening of within-government accountability under lame-duck governments. The paragraphs below develop each of these four points.

In contrast to the common view of political turnover as a discrete moment that occurs when an election winner is sworn in, I advance a theory of political turnover as a process starting the moment election results are confirmed and ending several weeks or months into the mandate of the winner.

This distinction matters in at least two ways. First, it broadens our attention to consider not only the employment decisions taken by incoming governments, but also those of lame duck governments in the interim between election day and the day when they actually leave office. Second, it calls for analyses of monthly or weekly changes in public employment throughout the transition period. Recent research by Doherty et al. (2019a) examining the exit of senior bureaucrats after elections demonstrates the value of analyzing monthly employment outcomes. Most research, however, examines yearly data, looking at how election results change employment outcomes and/or public service delivery in the year(s) following political turnover (Barbosa and Ferreira, 2019; Bolton et al., 2019; Colonnelli et al., 2019; Dahlström and Holmgren, 2019; Doherty et al., 2019b; Akhtari et al., 2018).

During the months following an electoral defeat of the incumbent, a series of concurrent processes of bureaucratic turnover take place, including fires, hires, and resignations. These bureaucratic turnover dynamics vary by contract type (civil service versus temporary), and by period (under the outgoing administration versus under the incoming one), because they are related to the incentives, concerns, and constraints of politicians and bureaucrats. While not all of these dynamics of bureaucratic turnover will necessarily take place in a given context (depending on those incentives, concerns, and constraints), most instances will see a variety of them occur over a short period of time.

While civil service systems and other institutional constraints matter for these bureaucratic turnover dynamics, Weberian civil service systems are not immune to all of them and in fact may generate their own unique turnover dynamics. Recent research has shown that even in contexts with high employment protections bureaucratic turnover surges after government changes. This is what Dahlström and Holmgren (2019) find in a study of Swedish agency heads, who work under fixed terms and with constitutionally-enshrined employment protections. A similar finding comes from a study of chief executive officers of state-owned enterprises in South Korea, even though they are formally insulated from political influence (Kim and Hong, 2019). In the United States, the turnover of federal senior civil servants has also been shown to increase after elections (Doherty et al., 2019a; Bolton et al., 2019). These scholars have pointed to several mechanisms through which electoral turnover affects the turnover of bureaucrats who benefit from formally strong employment protections, including voluntary exits by civil servants (because of anticipated policy conflicts, for example), less voluntary exits (because of more or less overt pressures), and transfers.

2.1 Bureaucratic turnover

I theorize four distinct processes of bureaucratic turnover following an electoral defeat of the incumbent. First, an increase in dismissals of employees in the months immediately after the election, both under the outgoing administration and under the incoming one. Second, an increase in hiring of employees in the first few months of the new administration. Third, an increase in resignations under both the outgoing and the incoming administrations. Finally, an increase in hiring of tenured bureaucrats under the outgoing administration.

An electoral defeat of the incumbent can lead to increased dismissals of public employees, both under the lame-duck government and in the early months of the winner's mandate. Election losers may choose to fire public employees for at least two reasons. First, they may use dismissals to adjust their spending after the expansions that are typical in the months leading up to the election. Politicians often manipulate economic outcomes and economic policy tools ahead of elections in order to maximize their re-election chances, leading to so-called political business and political budget cycles (Canes-Wrone et al., 2014). Similar cycles can be observed in public employment outcomes (Dahlberg and Mörk, 2011; Labonne, 2016; Pierskalla and Sacks, 2019; Cahan, 2019; Toral, 2019b). Firing of employees can be used to adjust spending after the elections. These adjustments may be stronger when the incumbent loses the election, since certainty over the immediate loss of power and control over the government's accounts may heighten concern over compliance with rules. Second, incumbents who lose the reelection may use firing decisions to punish certain bureaucrats for the outcome of the campaign. In either case, we would observe an electoral defeat of the incumbent to increase the number of dismissals.

Dismissals may also be used by the incoming administration in order to remove bureaucrats who they perceive will not be responsive to the new policy directions of the government and/or who may sabotage the new government's efforts. Richard Nixon famously made this logic explicit in his memoirs:

> "I urged the new Cabinet members to move quickly to replace holdover bureaucrats with people who believed in what we were trying to do. I warned that if they did not move quickly they would become captives of the bureaucracy they were trying to change. [...] 'We can't depend on people who believe in another philosophy of government to give us their undivided loyalty or their best work', I concluded. [...] 'If we don't get rid of those people, they will either sabotage us from within, or they'll just sit back on their

well-paid asses and wait for the next election to bring back their old bosses."' (Nixon, 1978, 352)

Political turnover can also disrupt the bureaucracy through the hiring of supporters by the winner of the election in the first few months of their mandate. There are two main, distinct rationales for politicians to do this. One rationale is using bureaucratic appointments to return favors to those who supported the campaign (e.g., donors, party operatives, etc.). This is what Colonnelli et al. (2019) find in their study of the employment outcomes of people who supported election winners relative to those of support election losers. They show that, in Brazilian municipalities, political supporters of the winner are much more likely to obtain a government job, and that both the probability of employment and the expected salary increase with the level of support. A different logic is to use appointments, as the Nixon quote suggests, to gain control over policy and implementation. This logic has been studied mostly in the context of American politics and especially presidential appointments (Moe, 1985; Aberbach and Rockman, 2009; Lewis, 2011), but can apply also in developing, decentralized and low-capacity settings (Toral, 2019a).

An electoral defeat of the incumbent can, on the other hand, also cause increases in hiring by the lame-duck government, which may use civil service hiring to constrain the hiring discretion of their opponent. By growing the size of the civil service before leaving office, election losers can limit their opponents' ability to hire their own supporters once they get to office. This rationale mirrors that of appointing so-called "midnight judges", an expression originating in the appointment of judges by US President John Adams right before leaving office in 1801 (Turner, 1960).[3] Appointing civil service bureaucrats may at first sight appear harder than appointing judges or issuing regulations, if not impossible. After all, civil service bureaucrats are selected after passing objective, competitive tests that often take months to implement. In practice, however, in many contexts candidates who pass a civil service exam are not automatically hired. Instead, approved candidates are added to a ranked list, and they are hired in order of performance as personnel needs arise. In certain contexts, therefore, lame-duck governments are legally able to hire civil service bureaucrats by simply adjudicating jobs to candidates in the approved list. By doing so, they can stack the deck against opponents by making it harder for the incoming administration to use those jobs and funds to hire their own supporters. Civil service hiring, while typically understood as politically neutral, can be mobilized by lame-duck governments with a political objective.

[3]Scholars have also studied "midnight regulations", a similar phenomenon whereby lame-duck administrations issue regulations before the end of their mandate (Brito and De Rugy, 2009; De Rugy and Davies, 2009).

Resignations are a third, important source of bureaucratic turnover after elections. An electoral defeat of the incumbent may lead bureaucrats to resign if they anticipate they will be dismissed and prefer to exit early to protect their long-term careers, to work for a different employer (in government or in the private sector), or to increase their chances of working for the new government. One of the mechanisms through which voluntary exit may happen is ideological incongruence. If bureaucrats prefer to work for organizations whose leaders have preferences aligned to them, or if they anticipate new leaders to mistreat them (for example by firing them, transferring them, or delegating less desirable work to them), they may choose to leave the bureaucracy. This is in fact what has been found among senior bureaucrats in Sweden (Dahlström and Lapuente, 2017) and the United States (Bolton et al., 2019). If bureaucrats anticipate these conflicts as soon as election results are out, it may be rational for them to leave even before the new leaders get into office, which has been shown to be the case in the transition from the Obama to the Trump administration (Doherty et al., 2019a).

2.2 Disruptions to public service delivery

The concurrent processes of bureaucratic turnover unleashed by an electoral defeat of the incumbent can disrupt public service delivery through a variety of mechanisms. The first and most obvious channel is the exit of bureaucrats with job-specific experience and know-how, and the entry of other bureaucrats with less endowments of both. A second, potential mechanism is the selection of systematically worse or systematically better bureaucrats. Politicians may for example prioritize loyalty over competence, and therefore substitute experienced bureaucrats with systematically worse ones. This is what recent research by development economists working on Brazil suggests (Colonnelli et al., 2019; Akhtari et al., 2018). Selection effects may also work in the opposite direction, however. In education, some programs are designed to identify and dismiss less effective teachers and substitute them with more effective ones. These programs can, if well implemented, have positive effects on service delivery in certain contexts (Adnot et al., 2017). Most research however finds generally negative effects of teacher turnover on learning (Ronfeldt et al., 2013), partly because of the disruptions that dismissing even less effective teachers has on the operations of schools (Hanushek et al., 2016). Since bureaucrats generally work in teams, public employees who are not fired nor resign may be negatively affected if some of their colleagues leave.[4]

[4]Even front-line providers who we tend to think of as autonomous workers (such as teachers) generally work in teams and as part of medium-sized organizations (like schools), and their effectiveness depends on

Political turnover can also impact public service delivery through mechanisms other than bureaucratic turnover. Bureaucrats who are not dismissed may be transfered to a different working unit as a result of turnover, as demonstrated in the Indian case by Iyer and Mani (2012). Procurement processes and contracts for service and goods providers may be interrupted or otherwise negatively affected after an electoral defeat of the incumbent. The ability and/or willingness of officials to monitor and motivate bureaucrats may decrease sharply once they know they will leave office in a few weeks or months. Bureaucrats' responsiveness to senior managers and to elected officials, and their level of effort, may therefore decline under lame-duck governments. Bureaucratic responsiveness and effort may increase once the winner takes office, but effectiveness may suffer in the initial months due to policy and managerial switches as well as learning.

In sum, I advance a theory of political turnover as a process that starts when election results are published and ends only months after the winner is sworn in. During that period, a series of distinct but concurrent processes of bureaucratic turnover take place, consisting of fires, hires, and resignations. Contrary to received wisdom, these overlapping dynamics of bureaucratic turnover respond not only to the actions of the new administration, nor are they eliminated by civil service systems. Moreover, the post-electoral bureaucratic turnover dynamics can have a deleterious impact on public service delivery, not only through the selection of less experienced bureaucrats, but also through more general disruptions to teams of service providers and public organizations more broadly. The months before and after election winners take office are therefore turbulent times for bureaucracies, partly as a result of the political strategies of both lame-duck and incoming governments.

3 Institutional setting

Brazilian local governments have a number of characteristics that make them an ideal case to examine the effects of political turnover on bureaucratic turnover and public service delivery: elections are generally competitive, local bureaucracies are relatively large, and politicians have significant discretion over the hiring and firing of bureaucrats. The availability of administrative data on bureaucrats and the activities they perform facilitates studying turnover dynamics.

Municipal elections take place every four years on the first Sunday of October, and consist

the stability of those organizations and teams (Kraft et al., 2016).

of simultaneous elections for a mayor, who is elected through a majoritarian system,[5] and for a variable number of city councilors, who are elected though a proportional, open-list system. Mayors can run for re-election only once. Local elections are generally competitive – in the most recent 2016 elections, almost 49% of the incumbents who ran were defeated.[6] Politicians are overseen by a network of horizontal accountability institutions, including audit courts, prosecutors offices, and standard courts that have been shown to reduce rent extraction (Ferraz and Finan, 2008; Litschig and Zamboni, 2019). There are 5,570 municipalities, most of which are small and poor.[7]

Municipal governments are responsible for providing primary services in healthcare, education, and social assistance. The local government workforce is often large, both as a share of the local population and as a share of the formal labor market.[8] The development challenges in all three areas are substantial, despite important improvements over the past couple of decades. Healthcare is typically the local public service that is most salient to voters (Boas et al., 2019, 395). Local governments are constitutionally mandated to spend at least 15% of their revenue in the provision of primary healthcare to the population. Healthcare services are provided universally to all residents, free of charge, under the umbrella of the Unified Health System (SUS, *Sistema Único de Saúde*). Municipal governments maintain a network of "basic health units" (UBS, *unidades básicas da saúde*) staffed with doctors, nurses, and other healthcare professionals. To assist with the provision of basic healthcare services, especially preventive care and particularly in rural areas, municipalities also hire community health agents (ACS, *agentes comunitários de saúde*), who generally have no tertiary education but are trained and work in their own community promoting health, preventing diseases, and providing maternal and child services (Ministério da Saúde, 2012b). More complex healthcare, like specialist consultations and hospitalizations, are generally provided by state governments, especially for residents of small municipalities. Private healthcare provision is common, particularly in larger municipalities, but for most citizens the public SUS is the only provider.[9]

[5] In municipalities with over 200,000 inhabitants (less than 2% in 2016), there is a runoff election if no candidate obtains an absolute majority of the votes. This runoff election takes place on the last Sunday of October.

[6] In fact, Klašnja and Titiunik (2017) show Brazilian mayors have a clear incumbency *disadvantage*.

[7] The median municipality has less than 12,000 inhabitants, per capita income of less than 500 Brazilian reais, or about USD 105 as per the 2010 census (Pinto et al., 2013).

[8] In average, municipal governments hired in 2016 4.7% of the local population and 38.2% of those employed in the formal labor market (data are my own calculations using the administrative employment data described in Section 4.3.

[9] In 2013, 61.13% of Brazilians used the services of a public basic health unit and 20.3% of a public hospital, compared to 18.53% who used the services of a private healthcare provider (Castro et al., 2019, 5).

Municipal politicians (mostly mayors and the secretaries they appoint) have discretion over the hiring and firing of bureaucrats, although their discretion differs significantly between the civil service and other hiring modes. The Brazilian constitution mandates that all permanent staffing needs be filled with contracts through a civil service system, where there is a competitive examination and the candidates with the best performance may be offered a position, which has tenure for life after a probationary period. Critically, however, the best performers are not automatically appointed. While politicians have no discretion in the ranking of candidates, they do have discretion to decide how many people to hire, and when. Furthermore, many professionals in healthcare and other policy areas are hired not in the civil service but through temporary contracts, either because the law allows it (e.g., to fulfill short-term staffing needs) or because of lax enforcement of the preeminence of the civil service. Employees in temporary contracts generally have 1-year contracts that can be terminated by the employer much more easily than civil service contracts. About one third of municipal employees are hired outside the civil service system.

In-depth interviews with bureaucrats and politicians across several states in Brazil suggest the plausibility of turnover effects on both employment and service delivery.[10] The logic was illustrated well by a municipal secretary of healthcare in the state of Ceará, when I asked them about whether an electoral defeat of the incumbent impacts government action:

> "A change in government stops everything, because of the transition... The population suffers as a result. For example, we were a reference municipality in the fight against dengue, but because of that transition dengue cases have increased by over 500%. Pregnant women who used to do prenatal check-ups regularly stopped, which led to fetal deaths, infant deaths, etc. [...] Workers stop working. Those who are in temporary contracts are dismissed, and contracts for example for transportation are canceled. The outgoing mayor does not want to have any more expenses. [...] Tenured professionals stay but with no conditions to do their job, with no materials."[11]

[10] See Appendix A for details on how interviews were conducted.
[11] Secretary of healthcare interviewed in the state of Ceará in August of 2017.

4 Research design

To estimate the average causal impact of political turnover, I leverage a close-races regression discontinuity design. This quasi-experimental design essentially compares instances where the incumbent barely loses the election to those where they are barely re-elected, to identify the causal effect of the election results (Eggers et al., 2015). I use this design to identify the effect of an electoral defeat of the mayor on dynamics of bureaucratic turnover (fires, hires, and resignations) as well as public service delivery in the months following the election, namely from October through March. Interviews with bureaucrats and politicians suggest that the most important effects of electoral turnover are felt in this six-month period.

4.1 Identification

The core of regression discontinuity designs is a forcing variable, with treatment determined sharply at a given threshold on the distribution of that variable. In this case, the forcing variable is the difference between the vote share of the strongest challenger to the incumbent and the vote share of the incumbent. Treatment is an electoral defeat of the incumbent, which is determined sharply when the forcing variable is positive, i.e. when the incumbent loses the election and a new administration comes in on January 1st. Conversely, if that difference is negative, the incumbent wins the election and there is no change of mayor on January 1st. Intuitively, this allows us to interpret a discontinuous jump of the outcome variable at the threshold as the causal effect of an electoral defeat of the mayor. More formally, treatment for municipality i in election cycle y, T_{iy}, is assigned by the difference between the vote share of the strongest challenger (V^o_{iy}) and the vote share of the incumbent (V^g_{iy}) : $D_{iy} = V^o_{iy} - V^g_{iy}$. $T_{iy} = 1$ if $D_{iy} > 0$ (i.e., the incumbent loses the election); $T_{iy} = 0$ otherwise.

The estimand of interest is $\tau = E[Y_{1iy} - Y_{0iy}]$, where Y_{1iy} and Y_{0iy} represent the potential outcome of interest (e.g., number of hires in October), under treatment (when the incumbent loses the election) and under control (when the incumbent wins the election). As long as average potential outcomes are continuous around the threshold, we can estimate the local average treatment effect (LATE) by taking the difference in the difference in means from above and from below the cutoff. This is the LATE for municipalities around the threshold, namely where incumbents run and they barely lose or barely win the election.

$$\tau = E[Y_{1iy} - Y_{0iy}|D_{iy} = 0] = \lim_{D_{iy}\downarrow 0} E[Y_{1iy}|D_{iy} = 0] - \lim_{D_{iy}\uparrow 0} E[Y_{0iy}|D_{iy} = 0] \quad (1)$$

The key assumption of this design is that potential outcomes are continuous around the threshold, so that the mean of the outcome of municipalities barely treated is a valid counterfactual for the mean of the outcome of municipalities barely untreated. Formally, we are assuming that $E[Y_{diy}|D_{iy} = d]$ is continuous in d around $D_{iy} = 0$ for both the treatment and the control groups (Imbens and Lemieux, 2008). While this assumption is empirically untestable, we can examine some of its observable implications. A key implication is that municipalities do not sort around the threshold. Obviously incumbents will try and win the election, but so will their challengers. Therefore, if the design is valid we should not observe a discontinuous jump in the density of the forcing variable around the threshold. Appendix C shows the histogram and density of the forcing variable, which has roughly a normal distribution and no signs of sorting or discontinuity around the threshold, as confirmed by the test proposed by McCrary (2008) and that of Cattaneo et al. (2020). While incumbents have influence over the difference between the vote share and that of their strongest challenger, they cannot manipulate it *precisely* (Lee and Lemieux, 2010). Reassuringly, pre-treatment covariates are continuous around the threshold (Appendix D).

4.2 Estimation and inference

Regression discontinuity designs require specifying the functional form of the regression on both sides of the cutoff, and choosing a bandwidth, i.e., the range of the forcing variable beyond which observations are excluded from the analysis. I use local linear regression with a triangular kernel smoother within the optimal bandwidth and with the robust bias correction described in Cattaneo et al. (2019), and apply it to the following estimating equation:

$$Y_{iy} = \alpha + \beta_1 T_{iy} + \beta_2 D_{iy} + \beta_3 T_{iy} D_{iy} + \gamma_y + \varepsilon_{iy} \quad (2)$$

Y_{iy} is the outcome of interest (e.g. new hires in October) for municipality i in the electoral cycle y. Since the dependent variables I use are count variables with skewed distributions, I add one and take the natural log, such that effects can be interpreted as percentage changes. T_{iy} is a treatment indicator: $\mathbf{1}$(vote share of strongest challenger $\geq$ vote share of the incumbent). D_{iy}

is the distance to the threshold in the forcing variable for observation iy. γ_y is an election fixed effect, which I include for efficiency (Calonico et al., 2019).[12] ε_{iy} is an error term. If potential outcomes are continuous around the threshold, β_1 in Equation 2 identifies the LATE in Equation 1: $\beta_1 = \hat{\tau}$. To estimate standard errors and confidence intervals I use the robust bias-corrected procedure (Calonico et al., 2014; Cattaneo et al., 2019). To choose the optimal bandwidth, I use the algorithm proposed by Calonico et al. (2020), and then show the sensitivity of the results to many alternative bandwidths.

For each month between October and March after an election, I run a separate model following Equation 2, which allows me to causally identify the effect of an electoral defeat for the incumbent on a given outcome for each of the months following the election. For public employment data, I pool data for the election cycles of 2004, 2008, 2012 and 2016. Because healthcare data are not available after 2015, models examining healthcare outputs and outcomes use data for the election cycles of 2004, 2008 and 2012 only.

4.3 Data

I exploit three sources of administrative data: candidate-level data for mayoral elections, contract-level data on the universe of municipal employees, and municipality-month data on healthcare outputs and outcomes. The data are from Brazil's Supreme Electoral Court, the Ministry of Labor, and the Ministry of Health, respectively.

To measure the effects of election results on the turnover of public employees I leverage the Ministry of Labor's RAIS dataset (*Relação Anual de Informações Sociais*), which includes the universe of formal labor market contracts, with employer and individual identifiers from 2002 to 2016. For each contract, the dataset contains the employer and the employee's unique identifiers; the date of hire and fire; the contract's type, the job's professional category, hours, and salary; and the employee's age and level of education, among other variables. I use municipal governments' unique employer code[13] to identify municipal employees. Descriptive statistics of the dataset are reported in Appendix B.[14]

[12] Results are very similar when excluding the fixed effects.

[13] In particular, I use municipal governments' CNPJ (*Cadastro Nacional da Pessoa Jurídica*), which I obtained from the National Treasury Secretariat.

[14] As shown in Appendix B, between 1 and 5 percent of the municipalities do not show up as having any employee. Municipalities that fail to report employment data to the Ministry of Labor are generally smaller,

To measure the effects of an electoral defeat of the mayor on public service delivery I use data from the Ministry of Health's Basic Healthcare Information System (SIAB, *Sistema de Informação da Atenção Básica*) on the outputs of municipal primary healthcare bureaucracies. First, I use data on the number of home visits done by community health agents, nurses, and doctors, who are the main healthcare professionals in Brazil's primary healthcare system. Home visits are an important component of Brazil's primary healthcare system not only as a substitute for patients with reduced mobility, but also as a complement of services provided in healthcare facilities (Ministério da Saúde, 2012a).[15] Despite their importance, home visits may be particularly sensitive to turnover dynamics because they may require transportation, especially in rural areas.

Second, I use data on the number of prenatal care check-ups (which may be done by nurses or doctors), medical consultations with infants (less than 1 year old), and medical consultations with small children (between 1 and 4 years old), by municipality and month, in healthcare facilities or at home. The data are collected by municipal secretariats of healthcare, consolidated by state governments, and cleaned by the federal government's SIAB. I focus on prenatal and child healthcare because of its importance for lifelong health (Forrest and Riley, 2004).

To examine effects on healthcare outcomes I use data on the number of infants (less than 1 year old) and small children (between 1 and 4 years old) who die due to avoidable causes (i.e., those attributable to weaknesses in the healthcare system), by municipality and month. The data are collected by municipal secretariats of healthcare using official death records, and aggregated by the federal government in the Mortality Information System (SIM, *Sistema de Informações sobre Mortalidade*). I focus on the mortality of infants and small children as proxies for overall population health outcomes, for two main reasons. First, child mortality has long been taken as an indicator for public health outcomes, as suggested by its inclusion among key indicators in the United Nations' Millennium Development Goals (United Nations General Assembly, 2000) and the Sustainable Development Goals (United Nations General Assembly, 2015). Second, the provision of primary healthcare services by Brazilian municipalities is systematically associated to lower infant

poorer, and less developed. Analyses presented in this paper are therefore not representative of all of Brazil but of municipalities that report data to RAIS. It is plausible however that this biases results towards zero, since poorer and less developed municipalities –where the clientelistic uses of public employment are more common and bureaucracies are smaller and less professionalized– are likely to experience more intense turnover dynamics.

[15] For example, home visits allow healthcare providers to change citizens' practices in order to prevent diseases and improve health outcomes. These at-home interventions are particularly important in rural and less developed areas.

and child mortality rates in Brazil (Bhalotra et al., 2019; Bastos et al., 2017; Rocha and Soares, 2010; Aquino et al., 2009). Third, other measures of population health (like number of patients hospitalized or the number of new cases of an infectious disease) may be biased because their measurement depends more heavily on bureaucratic activity.[16]

5 Results

Regression discontinuity analyses presented below show that an electoral defeat of the incumbent unleashes a variety of bureaucratic turnover dynamics (hiring, firing, and resignations), and a decline in the delivery of healthcare services. First, in the months after the election and before the winner is sworn in (that is, between October and December), the outgoing government increases the firing of temporary and, to a lesser extent, civil service employees. Second, they increase the hiring of tenured employees. Third, there is a significant increase in the resignation of public employees in that lame-duck government period. Fourth, these overlapping dynamics of bureaucratic turnover coincide with a decline in public service delivery, and in particular in home visits by healthcare professionals, prenatal care check-ups, and medical check-ups of infants and small children. Finally, electoral turnover causes a significant increase in the hiring of temporary workers in the first few months of the election winner's mandate.

5.1 Effects of electoral turnover on bureaucratic turnover

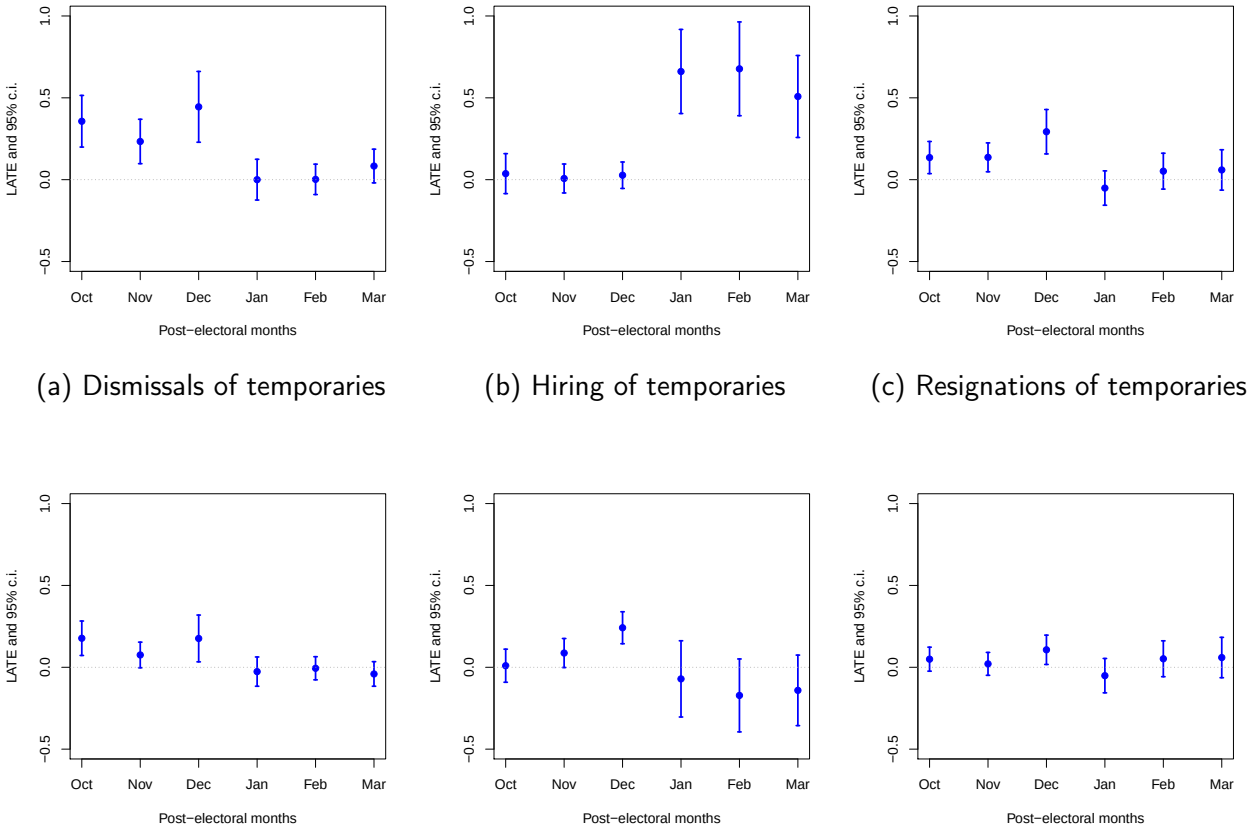
An electoral defeat of the incumbent leads to increases in the dismissal of public employees (especially temporary ones) by the outgoing government, as shown in panels (a) and (d) in Figure 1. Between October and December, dismissals of temporary employees increase in average by 42.9, 26.2 and 56%, respectively,[17] when compared to dismissals in those same months in municipalities

[16]For example, the effect of an electoral defeat of the incumbent on the number of infants who are underweight (a common indicator of health for babies) may be systematically biased if election results affect the number of infant check-ups. While we cannot rule out underreporting and other sources of bias in the mortality data, the significance of infant and child deaths makes it likely for that potential bias to be smaller.

[17]Since the dependent variables are in the logged scale, coefficients are to be interpreted as follows: the local average treatment effect of an electoral defeat of the mayor is a change in the outcome by $100 \times e^{\hat{\beta}} - 100\%$.

where the mayor wins the reelection ($p < 0.001$). In absolute terms, these effects correspond to few employees, since dismissals are not common in the months after the election. For reference, municipalities where the mayor wins the re-election fire, in average, 3 employees in the month of the election. Increases in dismissals among tenured employees are smaller both in relative and absolute terms, since dismissals of tenured employees are much less common.[18] Still, an electoral defeat of the mayor causes an increase of the dismissal of tenured employees by 19.4% in October ($p < 0.001$) and 19.2% in December ($p < 0.05$).

Figure 1: Effect of an electoral defeat of the incumbent on bureaucratic turnover



(a) Dismissals of temporaries (b) Hiring of temporaries (c) Resignations of temporaries

(d) Dismissals of civil servants (e) Hiring of civil servants (f) Resignations of civil servants

Each point and its robust bias-corrected confidence interval comes from a separate local linear regression discontinuity model, as per Equation 2. The dependent variable is in the natural-log scale. Elections take place on the first Sunday of October, and winners are sworn in on January 1.

Interviews with bureaucrats and politicians suggest that dismissals of temporary workers immediately after the defeat of the incumbent are meant to balance the accounts before handing

[18] In municipalities where the mayor wins the re-election an average of 1 tenured employee is dismissed.

the government over to the winner. A municipal secretary of administration (in charge of human resources) in the state of Rio Grande do Norte said the following, when asked about the transition period before his mandate:

> "There were cuts in personnel to hand the accounts cleaner, with resources in the account. Expenses were cut to hand over a more balanced city hall. [...] If there is no political turnover expenses do not drop."[19]

Horizontal accountability actors also point to this phenomenon. When asked about the decisions taken by lame-duck governments, a state prosecutor said:

> When a mayor loses the election, they try to save money and they try not to hand out the accounts in a bad state. Some of them do not really care and engage in scorched earth policy to make things difficult [for the opponent]. When the mayor wins [the re-election], there are no dismissals."[20]

Brazilian media sometimes report on the dismissal of public employees after a mayor's electoral defeat. News reports from three different municipalities in the central state of Tocantins in the weeks following the 2016 elections are illustrative. In the municipality of Porto Nacional, journalists reported dozens of public employees had been dismissed.[21] The mayor of the municipality of Miracema, in the same state, dismissed about 150 employees after losing the election. As a result of these dismissals, the school year would end in early November instead of ending in mid-December. The mayor argued the dismissals were necessary due to the municipality's financial situation.[22] Both of these cases were reported to the state's prosecutor's office. Since the law prohibits dismissals in the period from three months before to three months after the election, those decisions can be taken to court and reverted. In the municipality of Colinas do Tocantins, a judge forced the

[19] Secretary of administration interviewed in the state of Rio Grande do Norte in June 2018.

[20] Prosecutor interviewed in the state of Rio Grande do Norte in June 2018.

[21] "Prefeitura de Porto Natal faz demissão de funcionários em massa", G1, October 10, 2016, http://g1.globo.com/to/tocantins/noticia/2016/10/prefeitura-de-porto-nacional-faz-demissao-de-funcionarios-em-massa.html (last accessed September 3, 2020).

[22] "Prefeita demite funcionários e reduz ano letivo após não se reeleger no TO", G1, October 18, 2016, http://g1.globo.com/to/tocantins/noticia/2016/10/prefeita-demite-funcionarios-e-reduz-ano-letivo-apos-nao-se-reeleger-no.html (last accessed on September 3, 2020).

lame-duck government to re-hire about 200 temporary workers who had been dismissed after the election.[23]

Besides increases in firing, an electoral defeat of the incumbent also causes increases in the hiring of civil service employees at the end of the outgoing administration, as shown in panel (e) of Figure 1. Hires of tenured employees increase in average by 27.4% in December as a result of an electoral defeat of the mayor ($p < 0.001$). This effect is small in absolute terms,[24] but it is are substantially significant. Interview evidence suggests that these increases respond to a strategy of hiring civil service employees in order to decrease the opponent's leeway in hiring. Every civil servant that is hired before January means less financial resources that the incoming government can dedicate to hiring their supporters. Another secretary of administration in the state of Rio Grande do Norte reported of a case where an outgoing mayor inflated the bureaucracy with civil servants in order to stack the deck against the winner of the election:

> "The previous mayor hired many people [who had previously passed the civil service exam], especially after they lost the election, to make things harder for the new administration."[25]

This finding goes against the common view of civil service systems as politically neutral systems for staffing bureaucracies. When well implemented, civil service systems dramatically reduce (or eliminate) politicians' discretion on *who* to hire. Civil service systems do not, however, eliminate politicians' discretion on *how many* people to hire or *when* to do so. The quantity and timing of hires are important dimensions of human resources management in any organization (Shafritz et al., 2001), and these results suggest that politicians can make strategic use of them for political

[23] "Justiça manda prefeito recontratar servidores demitidos após eleições", November 4, 2016, G1, http://g1.globo.com/to/tocantins/noticia/2016/11/justica-manda-prefeito-recontratar-servidores-demitidos-apos-eleicoes.html (last accessed on September 3, 2020). Judicial processes about these causes can have serious consequences for politicians. For example, a former mayor of the municipality of Arinos the southeastern state of Minas Gerais who had dismissed workers after losing the election had his bank account (with over 1 million Brazilian reais) blocked by a judge at the beginning of the process. Source: "Ex-prefeito acusado de demitir servidores após perder eleições em Arinos tem bens bloqueados", G1, May 22, 2018, https://g1.globo.com/mg/grande-minas/noticia/ex-prefeito-acusado-de-demitir-servidores-apos-perder-eleicoes-em-arinos-tem-bens-bloqueados.ghtml (last accessed on September 3, 2020).

[24] In average, less than 1 civil service employee is hired in December after an election.

[25] Secretary of administration interviewed in the state of Rio Grande do Norte in June 2018.

gain.[26]

An electoral defeat of the incumbent also leads to significant increases in the hiring of temporary employees (not civil service ones) In the initial months of the new administration. Hires of temporaries increase in average by 93.7%, 96.8% and 66.2% in January, February and March of a post-electoral year, respectively, when compared to those same months in instances when the incumbent wins the re-election ($p < 0.001$). These results are in line with the finding by Colonnelli et al. (2019) and Barbosa and Ferreira (2019) that election winners use bureaucratic appointments as patronage resources.

Resignations of public employees are a third concurring phenomenon of bureaucratic turnover caused by an electoral defeat of the incumbent. Effects are displayed in panels (c) and (f) in Figure 1. The number of temporary workers who decide to leave their post increases in average by 14.4% ($p < 0.01$), 14.6% ($p < 0.01$) and 34% ($p < 0.001$) in October, November, and December, respectively, as a result of an electoral defeat. In average, in municipalities where the mayor wins re-election, about 1 temporary workers leaves in October, 1 in November, and 3 in December. Among civil service employees resignations increase in December by 11.3% ($p < 0.05$). Analyses of the effect of political turnover on resignations among high- and among low-pay bureaucrats, reported in Appendix I, suggest that increases are more pronounced among those with higher wages, which is consistent with a logic of "strategic exit" by more high-skilled bureaucrats who anticipate policy conflicts with the incoming government (Doherty et al., 2019a). Effects on dismissals and hires are roughly equivalent in the two subgroups.

5.2 Effects of electoral turnover on public service delivery

To examine whether electoral turnover hurts public service delivery, I leverage monthly data in bureaucratic outputs and outcomes in the healthcare sector. Interviews with healthcare professionals suggest that the delivery of services worsens during the last few months of an electoral year if the incumbent loses the election, partly as a result of bureaucratic turnover. I examine impacts on three sets of outputs: home visits by healthcare professionals (community health agents, nurses, and doctors); prenatal care check-ups, and medical consultations with infants (less than 1 year old)

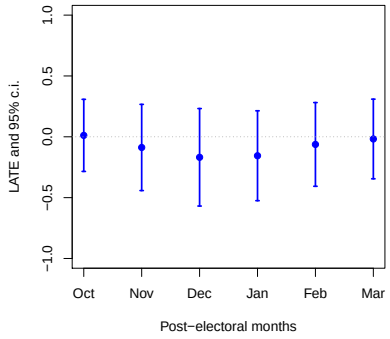
[26]As per article 73.V.c in the Electoral Law, the hiring of civil service bureaucrats is allowed during the last six months of the mayors' mandate if they had passed the corresponding exam before the hiring freeze period.

and small children (between 1 and 4 years old); and deaths of infants and small children.

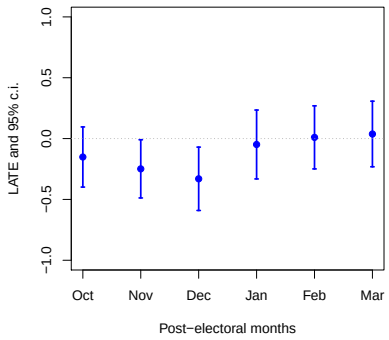
Political turnover causes a decline in the number of home visits done by healthcare professionals, as shown in panels (a), (b) and (c) in Figure 2. While election results do not appear to impact home visits by community health agents, home visits by nurses decline in average by 22% in November ($p < 0.05$) and 28.2% in December ($p < 0.05$), when compared to municipalities where the mayor wins the re-election. Home visits by doctors during the same period decline even more as a result of an electoral defeat of the incumbent, in average by 33.8% in November ($p < 0.01$), and 37.2% in December ($p < 0.001$). It seems, therefore, that the higher the skill level of public employees, the more their output is affected by the results of the election. These effects are substantively large. Municipalities without electoral turnover deliver, in average, 89 home visits by nurses, and 52 home visits by doctors in December of an electoral year.

Political turnover also has a negative effect on prenatal care check-ups and on medical consultations with both infants and children during the last month of the outgoing government, as shown in panels (c), (d) and (e) in Figure 2. The number of prenatal care check-ups declines in December in average by 24.1% ($p < 0.05$) as a result of an electoral defeat of the mayor. The number of medical consultations on infants declines in the same month by 21.6% ($p < 0.05$). Finally, the number of medical consultations with small children declines in average by 29.9% in December ($p < 0.001$). All these effects are substantively large: municipalities where the mayor wins the reelection perform, in average, 165 prenatal care check-ups, 37 infant medical consultations, and 74 child medical consultations in December of an electoral year.

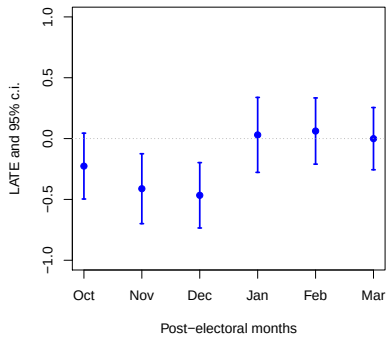
Figure 2: Effect of an electoral defeat of the incumbent on outputs of the healthcare bureaucracy



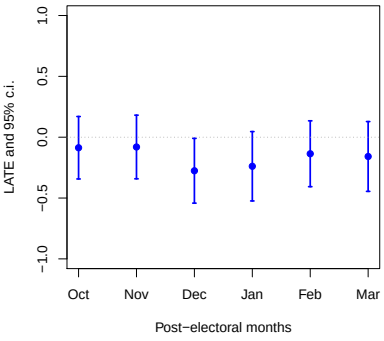
(a) Home visits by community health agents



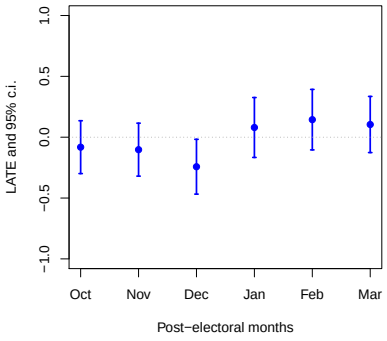
(b) Home visits by nurses



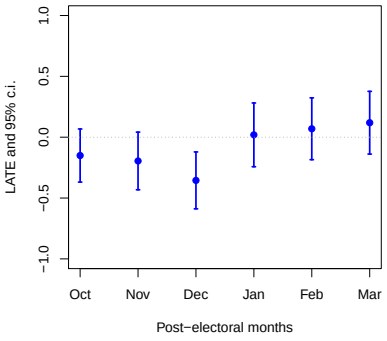
(c) Home visits by doctors



(d) Prenatal care check-ups



(e) Medical consultations, infants



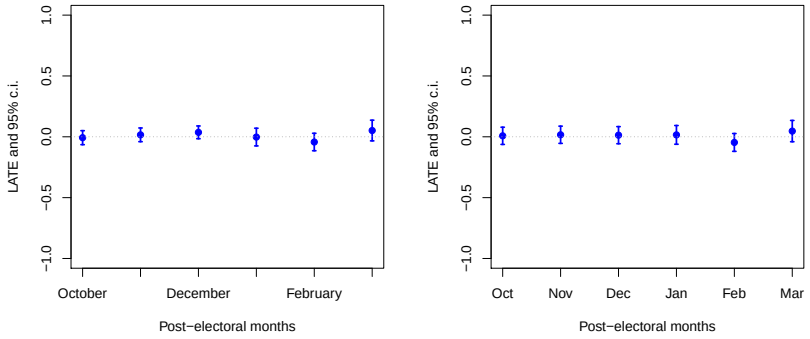
(f) Medical consultations, children

Each point and its robust bias-corrected confidence interval comes from a separate local linear regression discontinuity model, as per Equation 2. The dependent variable is in the natural-log scale. Elections take place on the first Sunday of October, and winners are sworn in on January 1.

5.3 Effects of electoral turnover on healthcare outcomes

Do the disruptions related to an electoral defeat of the incumbent lead to increases in infant and child mortality? The data suggest they do not. As shown in Figure 3, causal estimates are positive but not statistically significant. This may be due to the fact that declines in the delivery of healthcare services are too short-lived to have an impact on mortality. Other healthcare outcomes with more variation (and thus offering more statistical power) unfortunately are likely to be biased because of the negative effects of turnover on bureaucratic activity described above. Still, it is worth noting that albeit statistically insignificant the coefficients for November and December are positive.

Figure 3: Effect of an electoral defeat of the incumbent on deaths of infants and children



(a) Infant deaths (< 1 year old) (b) Child deaths (1-4 years old)

Each point and its robust bias-corrected confidence interval comes from a separate regression discontinuity model, as per Equation 2. The dependent variable is in the natural-log scale. Elections take place on the first Sunday of October, and winners are sworn in on January 1.

All in all, these regression discontinuity results show that an electoral defeat of the incumbent leads to a number of simultaneous but distinct processes of bureaucratic turnover and to the decline of healthcare services under the outgoing administration. These findings highlight the strategic decisions that election losers take during their last few months in office and how they can hurt public service delivery in the months following an election. The regression discontinuity design, the continuity of the forcing variable (shown in Appendix C) and of pre-treatment covariates (Appendix D), the robustness of results to many alternative bandwidths (Appendix G), and the failure of placebo tests (Appendix H) all lend support to the interpretation of these findings as causal effects.

6 Conclusion

Political turnover is central to the theory and the practice of representative democracy. This paper argues that, despite its many benefits, political turnover also has costs, at least in the short term, in terms of bureaucratic turnover (stemming from dismissals, hires, and resignations) and disruptions to public service delivery. The paper demonstrates this using a close-races regression discontinuity design and administrative data on public employment, healthcare service delivery, and health outcomes among Brazilian municipalities. Results show that an electoral defeat of the incumbent unleashes a series of concurrent, but distinct, bureaucratic turnover dynamics (fires, hires, and resignations) and a decline in the delivery of healthcare services. In particular, a defeat

of the mayor causes an increase in firing, resignations, and civil service hiring (but not temporary hiring) in the last few months of lame-duck governments' mandate; and an increase in temporary hiring in the first few months of the new government's mandate. A defeat of the mayor also causes declines in a variety of outputs of the healthcare bureaucracy, including home visits by nurses and doctors; prenatal care check-ups; and medical consultations with infants and small children. These effects are consistent with bureaucratic turnover disrupting public organizations in the short term, as suggested by interviews with politicians and bureaucrats.

The findings have important implications for how we think about political turnover and lame-duck governments. Rather than a discrete moment, or a process that develops in the first few months of the new government, political turnover may be best seen as process that starts when the uncertainty characteristic of competitive elections turns into the certainty of the incumbent's electoral defeat. The lame-duck government that ensues is not, as is frequently thought, constrained to mere "administration." Despite formal and informal rules limiting what they can do before leaving office, in practice lame-duck governments use their remaining time in office to exercise discretion in unequivocally political strategies. These strategies have received little attention in comparative politics to date.

The results presented in this paper also suggest that public employment in the civil service is not as insulated from political influence as is typically assumed. In Brazil, lame-duck municipal governments increase the hiring of civil service workers right before leaving office, through what could be called "midnight patronage." Interviews suggest this is a strategy whereby election losers use civil service hiring to "tie the hands" of election winners by reducing their fiscal capacity to hire their own supporters. Whereas the targeting of civil service jobs is generally protected from political influence through competitive examinations, in Brazil and elsewhere politicians retain discretion over the scale and the timing of civil service hiring. Results presented in this paper suggest politicians make a strategic use of this discretion.

Next, the paper implies that the fear of being prosecuted or exposed for potential wrongdoing after leaving office leads lame-duck governments to take decisions that significantly disrupt the bureaucracy. In the Brazilian context, an electoral defeat leads mayors to significantly increase dismissals of temporary workers before leaving office. Interviews with bureaucrats, politicians, and anti-corruption agents, as well as media reports, suggest that this phenomenon stems from election losers' heightened concern about being prosecuted, after leaving office and losing control of the accounts, for excessive spending on personnel and other hiring practices deviating from the

law. This suggests that there is an "incumbency advantage" in the control of information about government irregularities, even in a context with strong anti-corruption institutions, and that the prospect of losing that advantage can lead to disruptive decisions in the months before the election winner takes office.

Finally, the paper suggests that an electoral defeat of the incumbent can cause declines in public service delivery under lame-duck governments. Interviews suggest that these effects are driven by disruptions to teams of providers as well as the muddling of within-government accountability relationships. Principal-agent approaches to bureaucratic governance tend to assume that politicians are willing to monitor bureaucrats, but under lame-duck government bureaucrats may find themselves responding to officials who have little ability and willingness to push them to perform. The fact that negative effects of turnover on service delivery are found on highly visible and salient healthcare services, which have been found to improve healthcare outcomes, suggests the connection between political and bureaucratic turnover is of relevance to state capacity and human development.

Further research building on these findings could advance our understanding of the connection between political turnover, bureaucratic turnover, and public service delivery. Three directions for future work seem particularly promising. First, it would be useful to analyze what types of bureaucrats are most likely to be dismissed by lame-duck governments. If these are recent hires, that would be consistent with contractions being driven by fear of being prosecuted. If they are more established co-partisans, that would be consistent with election losers punishing their supporters for not helping get them reelected. Second, future research should explore further which types of bureaucrats and bureaucratic activities are less sensitive to the effects of political turnover, and why. That would help us design policies to limit the detrimental effects of political turnover on public service delivery. Third and last, research should examine the dynamics of patronage and public service delivery under lame-duck governments in different political and administrative contexts. Accumulating comparative evidence from around the world would help clarify the extent to which civil service and temporary hiring regulations, the strength of horizontal accountability institutions, or characteristics of party systems shape the dynamics of turnover.

On the policy front, the paper suggests there would be welfare gains from the design and testing of policies that can reduce its deleterious impact of political turnover on public service delivery. One avenue would be to shorten the period between elections and winners being sworn

in, which varies enormously around the world[27] but results here suggest provides opportunities for rent-seeking by lame-duck governments. Another strategy would be to strengthen the constraints on bureaucratic hiring and firing under lame-duck governments. Finally, another policy approach would be to safeguard the parts of the bureaucracy or bureaucratic tasks where disruptions are deemed less acceptable. The provision of healthcare services should definitely fall in that category.

[27]Consider for example the contrast between Mexico, the United States, and India. The latest national elections that led to political turnover in these three countries had transition periods (between the day results were published and the day winners took office) of about 5 months, 10 weeks, and 10 days, respectively.

Appendices

A In-depth interviews

In-depth interviews with local actors gave origin to the hypotheses tested in this paper, but were part of a larger empirical study of patronage in Brazil. Over 18 months of fieldwork (done between January of 2016 and June of 2019) I conduced 121 in-depth, semi-structured interviews with municipal bureaucrats and politicians, and with state-level horizontal accountability actors (like auditors and prosecutors).[28] I conducted these interviews in Portuguese, face-to-face, at the office of the interviewee, and with no audio recording device. I chose not to record interviews because some of the topics discussed were highly sensitive, including corrupt and illegal uses of public employment. While recording interviews would have allowed for more complete transcripts, it would have seriously hindered the reliability of the data and subjects' willingness to participate. Some subjects agreed to participate on the condition of anonymity or confidentiality. When quoting interviewees, I specify only their post, the state, and the month of the interview in order to safeguard their identity.

In total, I interviewed 51 municipal politicians, 54 municipal bureaucrats, and 16 horizontal accountability actors.[29] Three quarters of the interviews were done with bureaucrats and politicians in the social sectors, including 56 education officials, 25 healthcare officials, and 9 social assistance officials. Interviews were done in 45 municipalities in 7 states across 3 different regions of Brazil.[30] The states where fieldwork was conducted, mapped on Figure A.1 below, concentrate over half of Brazil's population. Interview locations were chosen to ensure variation in the political and socioeconomic contexts of fieldwork.

Within each municipality, fieldwork focused on the center, where government offices are. Only a few bureaucrats were interviewed in rural areas. I approached potential interviewees at their offices and requested an interview after introducing myself and the project. No compensation of any sort was offered to participants. Most subjects that I managed to speak to directly agreed to participate.[31] Interviews were semi-structured, and usually started as an open conversation about

[28] In-depth interviews were approved by MIT's Committee on the Use of Humans as Experimental Subjects under protocols 170593389 and 1806407144.

[29] 41 of of the 51 politicians were secretaries. 46 of the 54 bureaucrats were school directors, clinic managers, and social assistance center coordinators. Of the 16 horizontal accountability actors, 8 were state prosecutors or prosecutorial staff; 5 were state judges or judicial staff; and 3 were state audit court councilors or auditors.

[30] Interviews were done in the states of Ceará (43 interviews), Rio Grande do Norte (21), and Paraíba (15) in the northeast; Rio de Janeiro (19), Minas Geráis (10) and São Paulo (1) in the southeast; and Goiás (12) in the center-west.

[31] Some refused, mostly arguing they did not have time. Two subjects refused to participate because of

Figure A.1: States where interviews were conducted

the interviewee's background, the challenges they faced in their position, and their perception of public services in the municipality. As the conversation advanced, I followed up with questions about the local dynamics of public employment, including in some cases specific questions about the connection between political turnover, bureaucratic turnover, and public service delivery. I took handwritten notes during and after the interviews. The median duration of the interviews was one hour.

the research topic.

B Administrative labor market data

Table B.1: Micro-data of municipal employees, 2002-2016 – Descriptive statistics

Year	# municipal employers	# contracts (millions)	Non-tenure contracts (%)	# individuals hired (millions)	Invalid employee IDs (%)
2016	5449	5.98	32.20	5.44	0.00
2015	5496	6.04	33.32	5.46	0.55
2014	5507	6.08	34.03	5.52	0.54
2013	5486	6.10	35.21	5.50	0.54
2012	5483	5.86	34.41	5.35	0.53
2011	5480	5.70	35.25	5.21	0.55
2010	5496	5.53	35.44	5.06	0.53
2009	5469	5.36	35.26	4.93	0.52
2008	5472	5.16	34.05	4.73	0.55
2007	5475	4.81	33.58	4.46	0.57
2006	5481	4.57	33.36	4.25	0.62
2005	5431	4.24	32.76	3.97	0.77
2004	5366	3.90	29.83	3.66	0.87
2003	5350	3.76	30.29	3.53	0.98
2002	5309	3.61	32.35	0.21	94.06

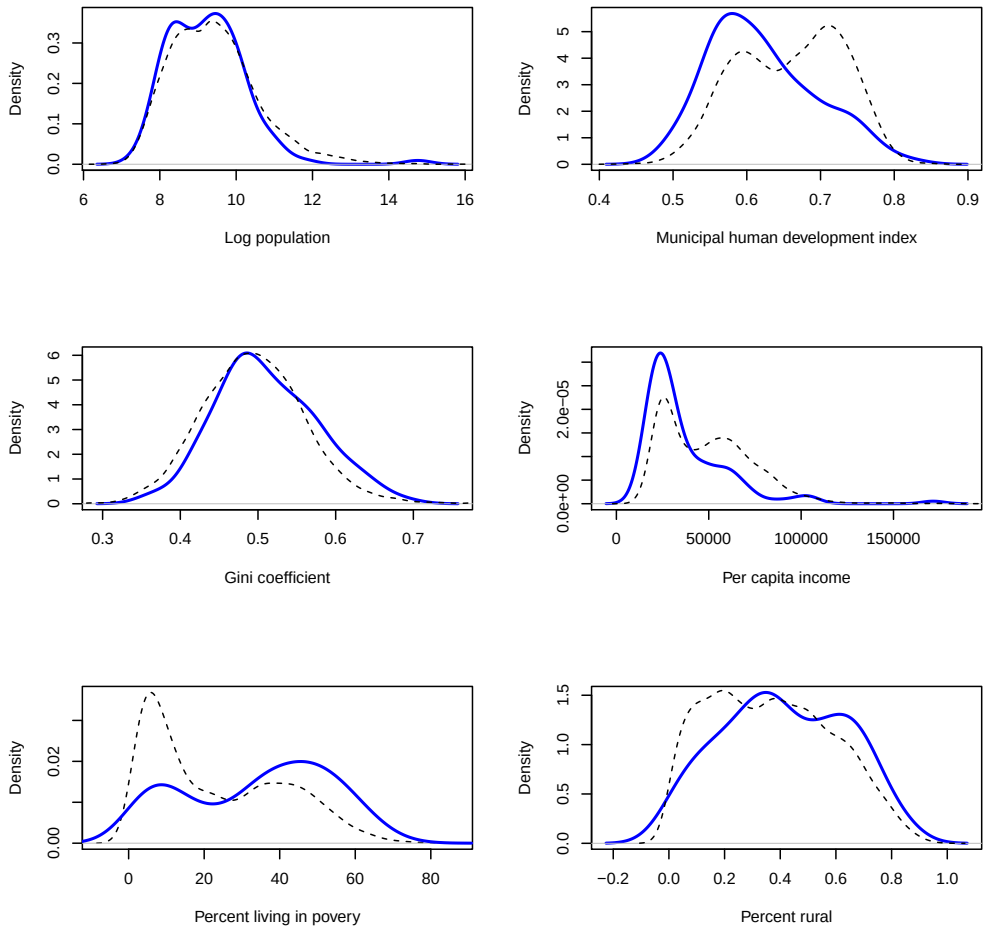
Municipal governments are legally required to report all employment data to the Ministry of Labor through the RAIS system. As pointed above, however, a minority of them (between 1 and 5%, depending on the year) fail to submit employment data. Technical staff at the Ministry of Labor confirmed that some municipalities indeed fail to report employment data to RAIS, and associated it to capacity issues and/or corruption.

To understand the kind of municipalities that are not reporting employment data to the Ministry of Labor, I examine the 123 municipalities which show as having no employees in January of 2016, and compare them to the whole set of municipalities on a number of outcomes from UNDP's Municipal Human Development Atlas (Pinto et al., 2013). Figure B.2 shows the results, with the thick blue lines corresponding to municipalities without RAIS data in 2016, and the dashed black lines corresponding to all municipalities. As can be seen in the plots, municipalities failing to report employment data tend to be smaller, less developed, more unequal, poorer, and more rural. This is consistent with both capacity and corruption mechanisms behind the missing data.

A couple of important conclusions stem from this descriptive analysis. First, data are not missing at random, with municipalities without information in RAIS being systematically different

than those included in the dataset. Second, municipalities that fail to report data to RAIS are poorer and less developed, in average. Therefore, to the extent that municipal development correlates with the political use of public employment, their exclusion from the data is biasing the results. This bias, however, is likely to be in the direction of attenuating results (i.e. bringing them closer to zero) in as much the cycles are a clientelistic phenomenon, as results shown in Section 5 suggest. In any case, results are not representative of the overall population of municipalities, but rather of those complying with the RAIS reporting requirement.

Figure B.2: Characterization of municipalities not reporting employment data for 2016



C Continuity of the forcing variable

Figure C.3: Histogram of the forcing variable

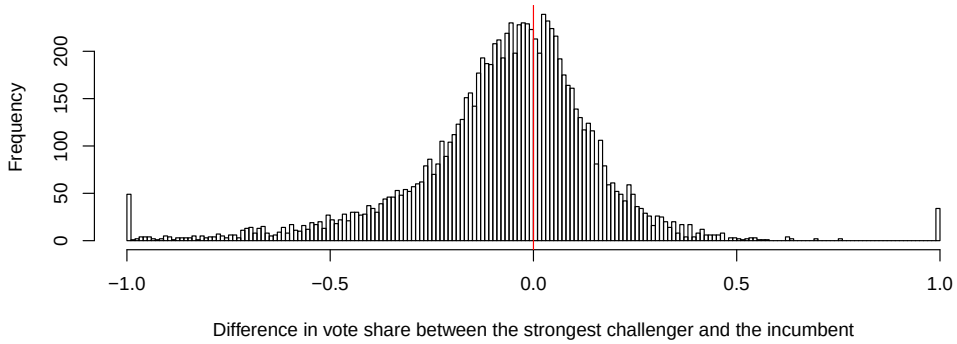


Figure C.4: Density of the forcing variable and McCrary (2008) discontinuity test

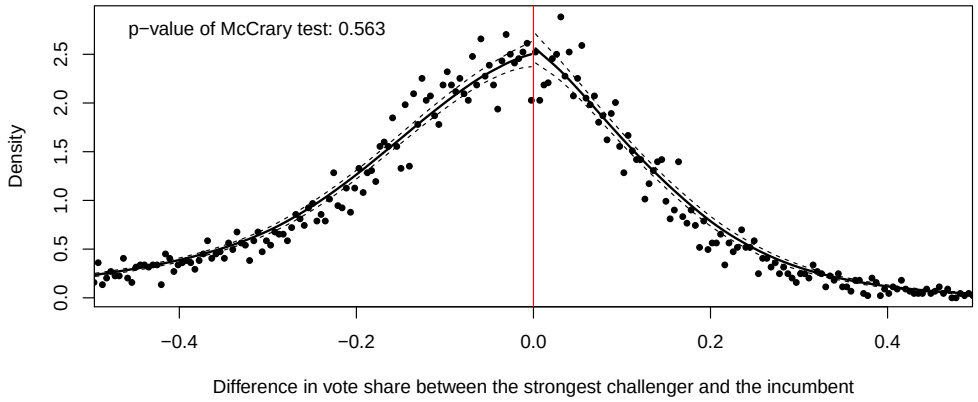
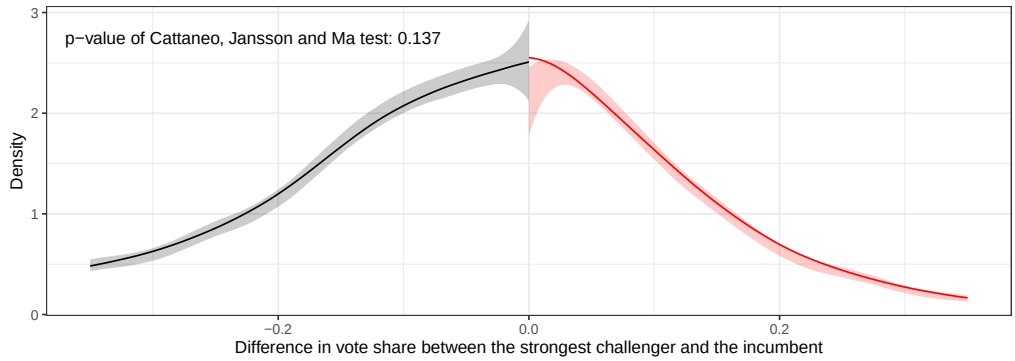


Figure C.5: Density of the forcing variable and Cattaneo et al. (2020) discontinuity test



D Continuity of pre-treatment covariates

To chek whether pre-treatment covariates are continuous around the threshold, I use them as dependent variables in the same model I use in the main specification, letting the bandwidth be determined for the Cattaneo et al. (2020) algorithm.

Table D.2: Effect an electoral defeat of the incumbent on pre-treatment covariates

	Population	Poverty	Size of government	PT	PSDB	PMDB
Incumbent defeated	-0.007	0.016	0.037	-0.002	-0.043	0.052
	(0.029)	(0.029)	(0.027)	(0.037)	(0.037)	(0.043)
Bandwidth	0.133	0.126	0.154	0.13	0.113	0.109
Observations	5218	5015	5779	3848	3446	3359

*p<0.05; **p<0.01; ***p<0.001. The bandwidth is determined by the algorithm of Calonico et al. (2020). Robust standard errors in parentheses. All regressions include election fixed effects. Population is the logged number of residents the year before the election. Poverty is the logged number of people who receive benefits from Bolsa Família (the largest conditional cash transfer in the country). Size of government is the logged number of municipal employees the year before the election. PT, PSDB and PMDB are dummies for whether the incumbent mayor belongs to those three political parties.

E Regression tables for results shown in Figures 1, 2 and 3

E.1 Effects of electoral turnover on bureaucratic turnover

Table E.3: Effect an electoral defeat of the incumbent on the logged number of dismissals of temporary employees

	October	November	December	January	February	March
Incumbent defeated	0.357***	0.233***	0.445***	0	0.002	0.083
	(0.08)	(0.069)	(0.11)	(0.063)	(0.047)	(0.053)
Bandwidth	0.132	0.136	0.138	0.133	0.145	0.151
Observations	4554	4665	4715	3405	3632	3728

*p<0.05; **p<0.01; ***p<0.001. The bandwidth is determined by the algorithm of Calonico et al. (2020). Robust standard errors in parentheses. All regressions include election fixed effects.

Table E.4: Effect an electoral defeat of the incumbent on the logged number of dismissals of civil service employees

	October	November	December	January	February	March
Incumbent defeated	0.177***	0.075	0.176*	-0.026	-0.006	-0.041
	(0.054)	(0.04)	(0.073)	(0.046)	(0.036)	(0.038)
Bandwidth	0.121	0.145	0.125	0.11	0.136	0.145
Observations	4231	4858	4372	2958	3472	3646

*p<0.05; **p<0.01; ***p<0.001. The bandwidth is determined by the algorithm of Calonico et al. (2020). Robust standard errors in parentheses. All regressions include election fixed effects.

Table E.5: Effect an electoral defeat of the incumbent on the logged number of hires of temporary employees

	October	November	December	January	February	March
Incumbent defeated	0.037	0.007	0.027	0.661***	0.677***	0.508***
	(0.062)	(0.045)	(0.041)	(0.131)	(0.146)	(0.128)
Bandwidth	0.135	0.187	0.121	0.151	0.133	0.133
Observations	4619	5713	4252	3738	3404	3405

*p<0.05; **p<0.01; ***p<0.001. The bandwidth is determined by the algorithm of Calonico et al. (2020). Robust standard errors in parentheses. All regressions include election fixed effects.

Table E.6: Effect an electoral defeat of the incumbent on the logged number of hires of civil service employees

	October	November	December	January	February	March
Incumbent defeated	0.01	0.087	0.242***	-0.071	-0.172	-0.141
	(0.052)	(0.045)	(0.05)	(0.119)	(0.114)	(0.11)
Bandwidth	0.114	0.165	0.138	0.114	0.148	0.128
Observations	4041	5328	4701	3035	3694	3328

*p<0.05; **p<0.01; ***p<0.001. The bandwidth is determined by the algorithm of Calonico et al. (2020). Robust standard errors in parentheses. All regressions include election fixed effects.

Table E.7: Effect an electoral defeat of the incumbent on the logged number of resignations of temporary employees

	October	November	December	January	February	March
Incumbent defeated	0.135**	0.136**	0.293***	-0.051	0.052	0.06
	(0.05)	(0.045)	(0.069)	(0.054)	(0.056)	(0.063)
Bandwidth	0.157	0.134	0.129	0.132	0.117	0.12
Observations	5124	4583	4476	3392	3108	3161

*p<0.05; **p<0.01; ***p<0.001. The bandwidth is determined by the algorithm of Calonico et al. (2020). Robust standard errors in parentheses. All regressions include election fixed effects.

Table E.8: Effect an electoral defeat of the incumbent on the logged number of resignations of civil service employees

	October	November	December	January	February	March
Incumbent defeated	0.05	0.021	0.107*	-0.051	0.052	0.06
	(0.037)	(0.036)	(0.046)	(0.054)	(0.056)	(0.063)
Bandwidth	0.157	0.14	0.124	0.132	0.117	0.12
Observations	5127	4752	4319	3392	3108	3161

*p<0.05; **p<0.01; ***p<0.001. The bandwidth is determined by the algorithm of Calonico et al. (2020). Robust standard errors in parentheses. All regressions include election fixed effects.

E.2 Effects of electoral turnover on public service delivery

Table E.9: Effect an electoral defeat of the incumbent on the logged number of home visits by community health agents

	October	November	December	January	February	March
Incumbent defeated	0.012	-0.088	-0.168	-0.156	-0.063	-0.018
	(0.151)	(0.181)	(0.204)	(0.188)	(0.176)	(0.167)
Bandwidth	0.118	0.134	0.103	0.116	0.118	0.127
Observations	3546	3878	3178	3500	3536	3739

*p<0.05; **p<0.01; ***p<0.001. The bandwidth is determined by the algorithm of Calonico et al. (2020). Robust standard errors in parentheses. All regressions include election fixed effects.

Table E.10: Effect an electoral defeat of the incumbent on the logged number of home visits by nurses

	October	November	December	January	February	March
Incumbent defeated	-0.151	-0.249*	-0.331*	-0.049	0.01	0.038
	(0.126)	(0.122)	(0.133)	(0.144)	(0.132)	(0.138)
Bandwidth	0.139	0.183	0.147	0.121	0.138	0.143
Observations	4004	4781	4150	3591	3987	4064

*p<0.05; **p<0.01; ***p<0.001. The bandwidth is determined by the algorithm of Calonico et al. (2020). Robust standard errors in parentheses. All regressions include election fixed effects.

Table E.11: Effect an electoral defeat of the incumbent on the logged number of home visits by doctors

	October	November	December	January	February	March
Incumbent defeated	-0.226	-0.412**	-0.466***	0.03	0.062	-0.001
	(0.138)	(0.147)	(0.137)	(0.157)	(0.139)	(0.13)
Bandwidth	0.128	0.127	0.136	0.102	0.13	0.144
Observations	3737	3729	3921	3124	3781	4077

*p<0.05; **p<0.01; ***p<0.001. The bandwidth is determined by the algorithm of Calonico et al. (2020). Robust standard errors in parentheses. All regressions include election fixed effects.

Table E.12: Effect an electoral defeat of the incumbent on the logged number of prenatal care checkups

	October	November	December	January	February	March
Incumbent defeated	-0.087	-0.08	-0.276*	-0.239	-0.136	-0.158
	(0.131)	(0.133)	(0.136)	(0.145)	(0.138)	(0.146)
Bandwidth	0.142	0.167	0.148	0.132	0.142	0.118
Observations	4050	4520	4179	3834	4052	3529

*p<0.05; **p<0.01; ***p<0.001. The bandwidth is determined by the algorithm of Calonico et al. (2020). Robust standard errors in parentheses. All regressions include election fixed effects.

Table E.13: Effect an electoral defeat of the incumbent on the logged number of medical consultations with infants

	October	November	December	January	February	March
Incumbent defeated	-0.082	-0.102	-0.243*	0.08	0.144	0.104
	(0.111)	(0.111)	(0.115)	(0.126)	(0.127)	(0.118)
Bandwidth	0.138	0.169	0.149	0.121	0.112	0.137
Observations	3958	4543	4178	3576	3386	3943

*p<0.05; **p<0.01; ***p<0.001. The bandwidth is determined by the algorithm of Calonico et al. (2020). Robust standard errors in parentheses. All regressions include election fixed effects.

Table E.14: Effect an electoral defeat of the incumbent on the logged number of medical consultations with children

	October	November	December	January	February	March
Incumbent defeated	-0.151	-0.195	-0.355**	0.019	0.069	0.119
	(0.111)	(0.121)	(0.119)	(0.134)	(0.13)	(0.131)
Bandwidth	0.154	0.164	0.159	0.125	0.121	0.132
Observations	4260	4457	4358	3695	3589	3819

*p<0.05; **p<0.01; ***p<0.001. The bandwidth is determined by the algorithm of Calonico et al. (2020). Robust standard errors in parentheses. All regressions include election fixed effects.

E.3 Effects of electoral turnover on healthcare outcomes

Table E.15: Effect an electoral defeat of the incumbent on the logged number of infant deaths

	October	November	December	January	February	March
Incumbent defeated	-0.007	0.016	0.037	-0.002	-0.043	0.052
	(0.029)	(0.029)	(0.027)	(0.037)	(0.037)	(0.043)
Bandwidth	0.133	0.126	0.154	0.13	0.113	0.109
Observations	5218	5015	5779	3848	3446	3359

*p<0.05; **p<0.01; ***p<0.001. The bandwidth is determined by the algorithm of Calonico et al. (2020). Robust standard errors in parentheses. All regressions include election fixed effects.

Table E.16: Effect an electoral defeat of the incumbent on the logged number of child deaths

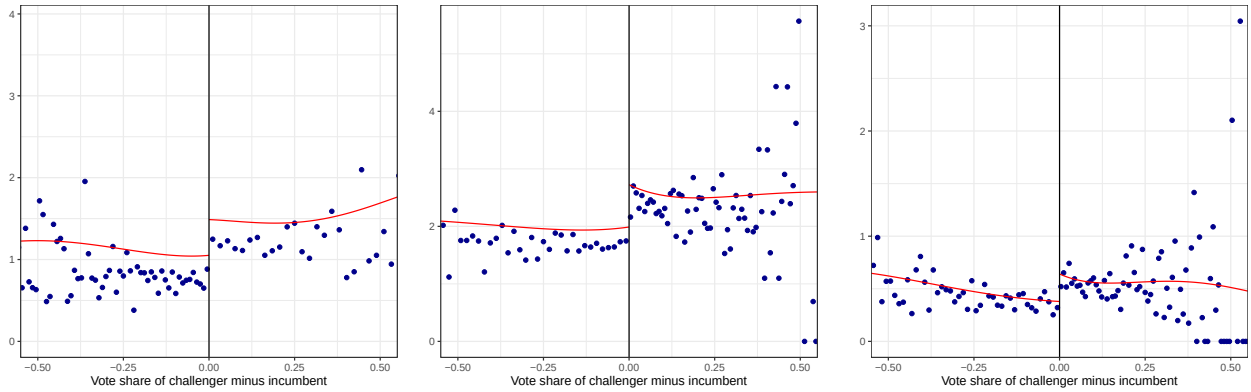
	October	November	December	January	February	March
Incumbent defeated	0.008	0.017	0.013	0.016	-0.046	0.047
	(0.036)	(0.036)	(0.036)	(0.039)	(0.037)	(0.045)
Bandwidth	0.152	0.143	0.135	0.128	0.124	0.116
Observations	4305	4132	3956	3806	3709	3523

*p<0.05; **p<0.01; ***p<0.001. The bandwidth is determined by the algorithm of Calonico et al. (2020). Robust standard errors in parentheses. All regressions include election fixed effects.

F Regression discontinuity plots of the main results

I focus on employment and healthcare outcomes measured in the month of December (right before election winners being sworn in), with the exception of hiring of temporaries for which I focus in the month of January.[32]

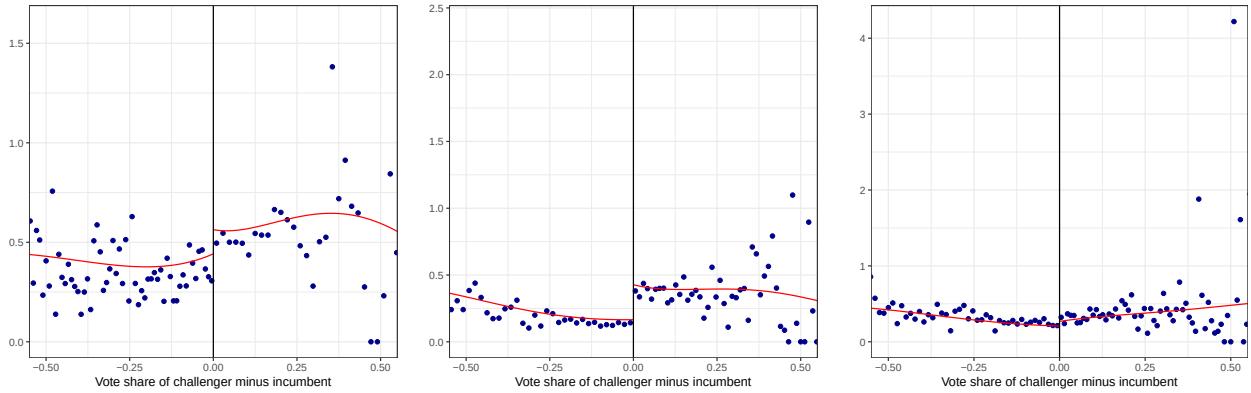
Figure F.6: RD plots for the main results in Figure 1



(a) Temporaries fired in December

(b) Temporaries hired in January

(c) Temporaries resigning in December



(d) Civil servants fired in December

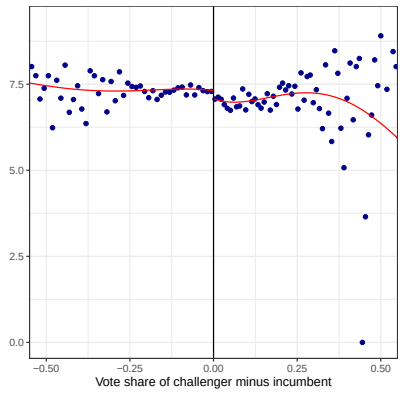
(e) Civil servants hired in December

(f) Civil servants resigning in December

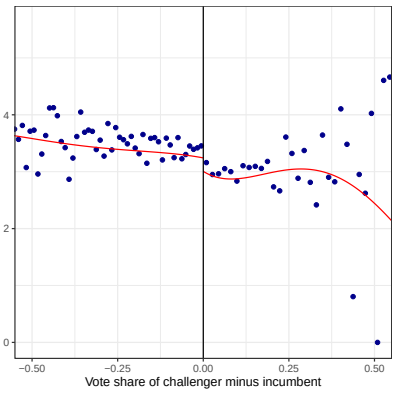
Dependent variables are in the natural log scale.

[32]Results for all other months are available from the author.

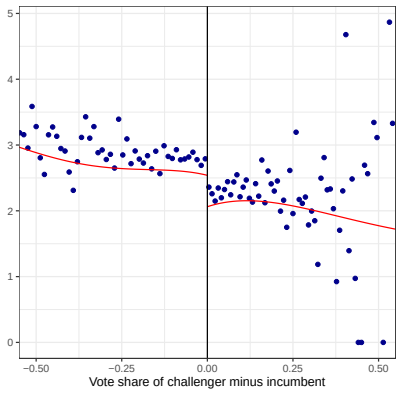
Figure F.7: RD plots for the main results in Figure 2



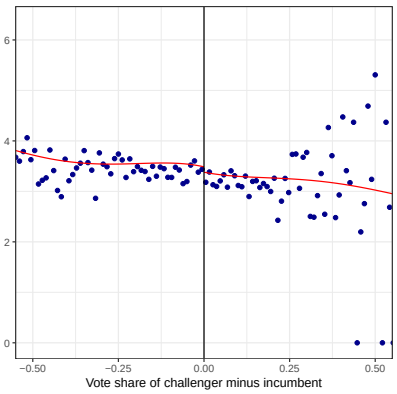
(a) Home visits by community health agents



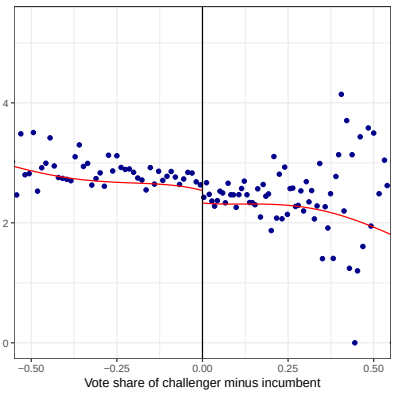
(b) Home visits by nurses



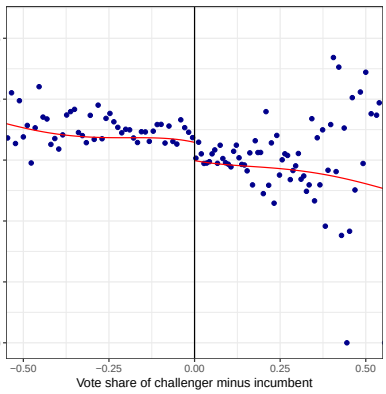
(c) Home visits by doctors



(d) Prenatal care check-ups



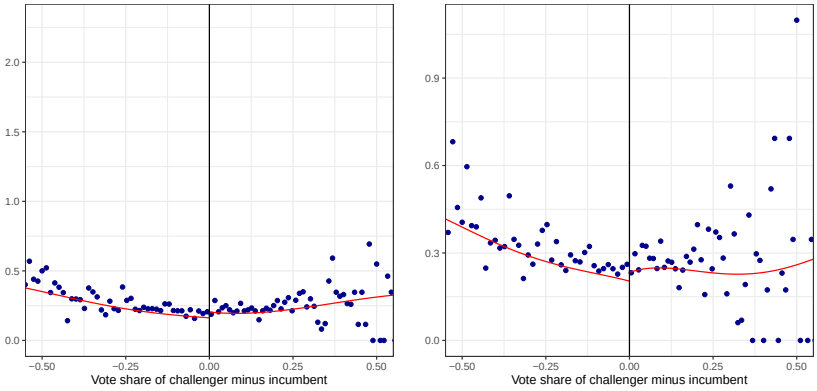
(e) Medical consultations, infants



(f) Medical consultations, children

Dependent variables are in the natural log scale.
All models correspond to outcomes in the month of December

Figure F.8: RD plots for the main results in Figure 3



(a) Infant deaths (b) Child deaths

Dependent variables are in the natural log scale.
All models correspond to outcomes in the month of December

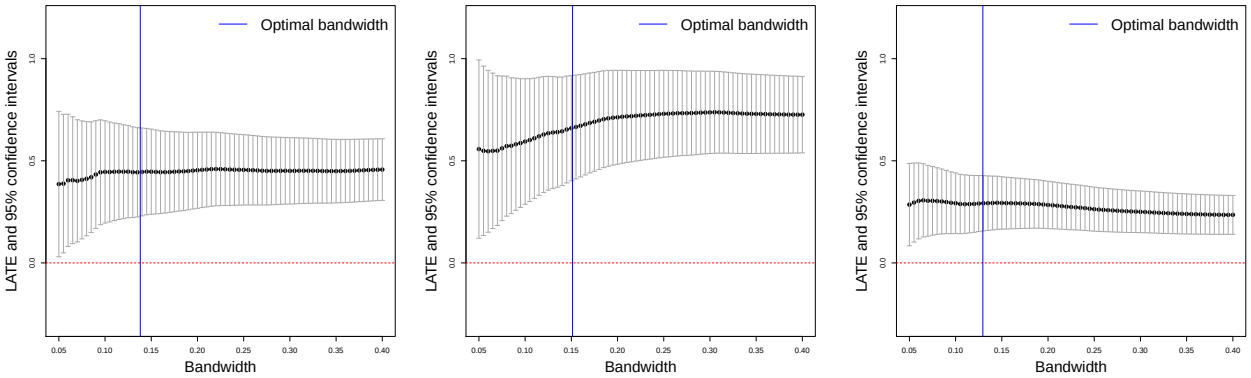
G Robustness of the main results to alternative bandwidths

To check the robustness of the results to alternative bandwidths, I replicate the results using as estimation bandwidth values from 0.05 to 0.4 (at intervals of 0.005).[33] I focus on employment and healthcare outcomes measured in the month of December (right before election winners being sworn in), with the exception of hiring of temporaries for which I focus in the month of January.[34] As shown in Figures G.9 and G.10, results are generally robust to alternative bandwidths deviating from the optimal one determined by the Cattaneo et al. (2019) algorithm.

[33]The robust bias-corrected estimation of Cattaneo et al. (2019) uses two bandwidths: an estimation bandwidth, and a bias-correction bandwidth. For this exercise, I use a bias-correction bandwidth equal to the estimation bandwidth multiplied by the ratio of the estimation bandwidth to the bias-correction bandwidth in the main model where both are chosen by the algorithm.

[34]Results for all other months are available from the author.

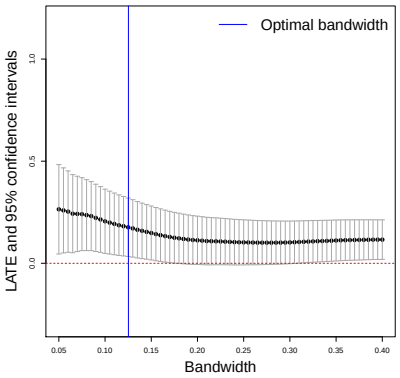
Figure G.9: Robustness of the main results in Figure 1 to alternative bandwidths



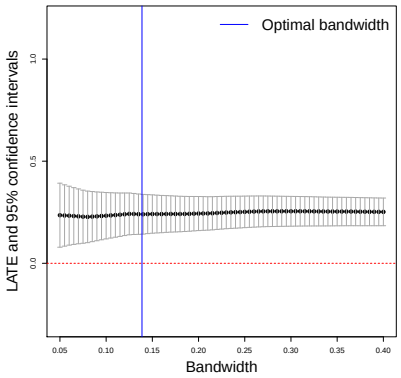
(a) Temporaries fired in December

(b) Temporaries hired in January

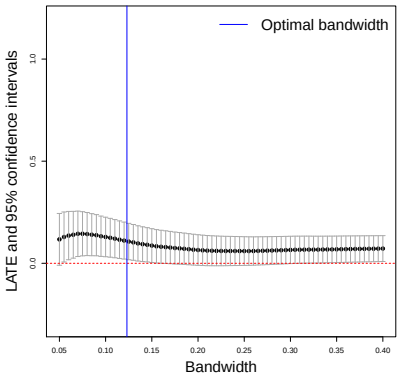
(c) Temporaries resigning in December



(d) Civil servants fired in December



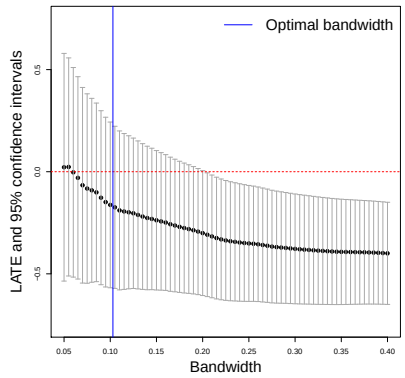
(e) Civil servants hired in December



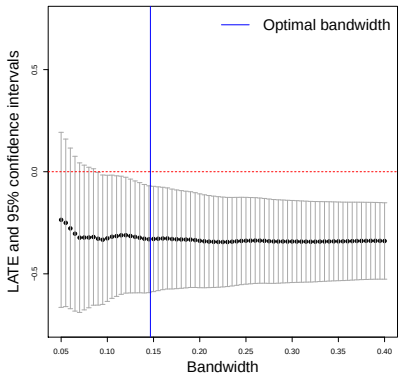
(f) Civil servants resigning in December

Vertical, blue lines mark the optimal bandwidth as selected by the (Calonico et al., 2020) algorithm.

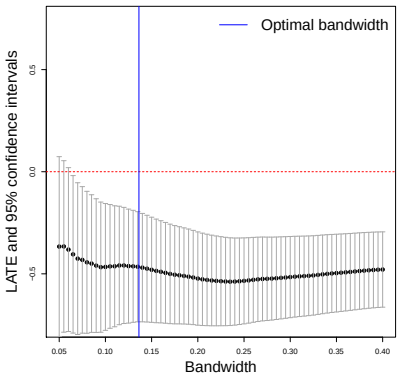
Figure G.10: Robustness of the main results in Figure 2 to alternative bandwidths



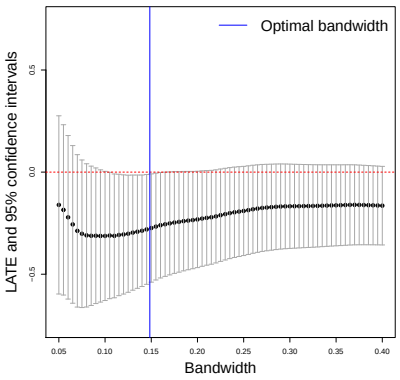
(a) Home visits by community health agents



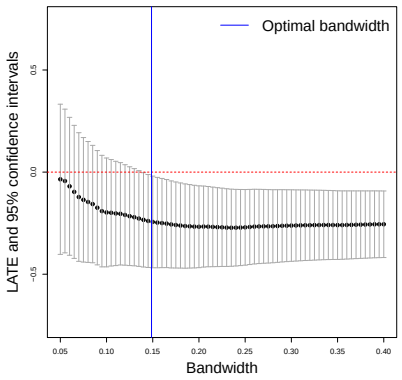
(b) Home visits by nurses



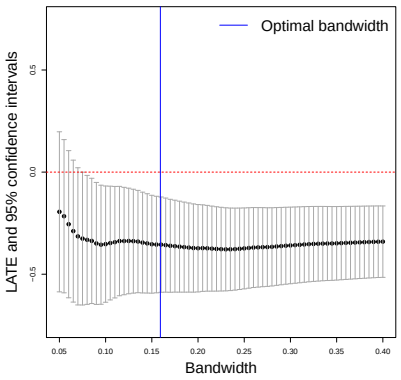
(c) Home visits by doctors



(d) Prenatal care check-ups



(e) Medical consultations, infants



(f) Medical consultations, children

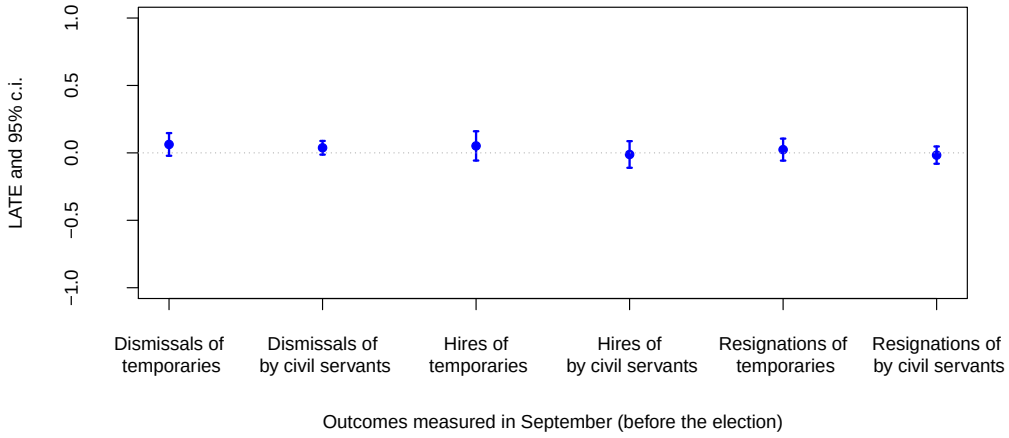
Vertical, blue lines mark the optimal bandwidth as selected by the (Calonico et al., 2020) algorithm. All models correspond to outcomes in the month of December

H Placebo tests

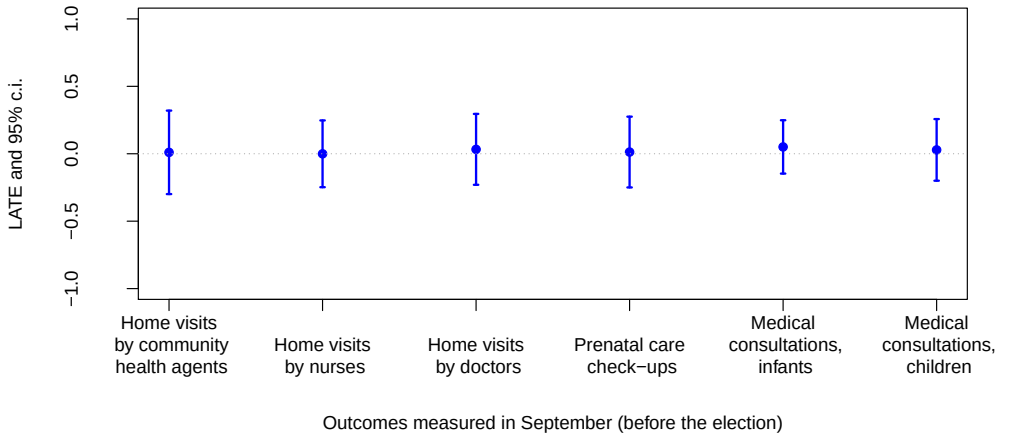
H.1 Placebo tests using outcomes measured before the election

I use outcomes for September (i.e., one month before the election) as a placebo test. None of these returns statistically significant effects, which lends validity to the design.

Figure H.11: Placebo tests using measures of the outcomes in September



(a) Bureaucratic turnover outcomes

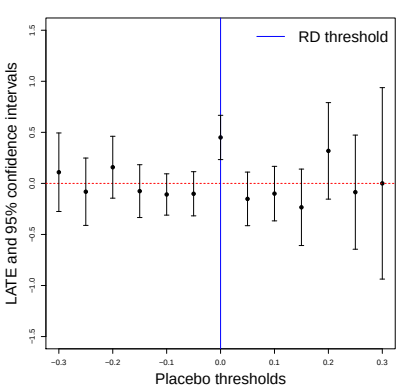


(b) Healthcare outcomes

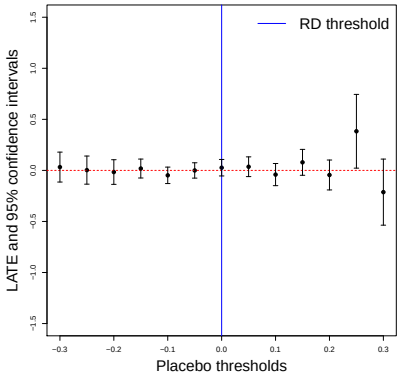
H.2 Placebo tests varying the RD threshold

I run placebo tests where I change the RD threshold to different points in the distribution of the forcing variable away from zero. For each model, I re-run the regression with a placebo threshold at 12 values, from -0.3 to 0.3. As shown below, very few of these placebo tests returns statistically insignificant results (8 of 168, which is what we would expect with $\alpha = 0.05$) .

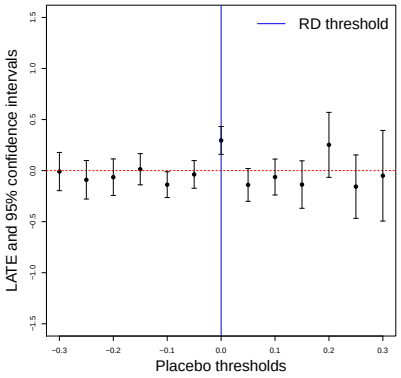
Figure H.12: Placebo tests varying the RD threshold for main results on bureaucratic turnover



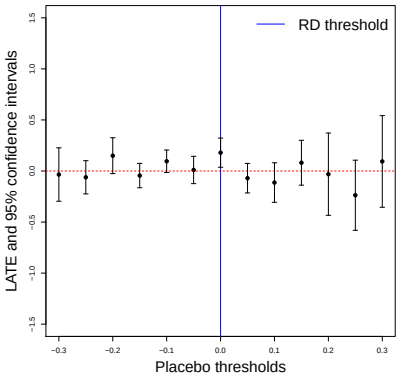
(a) Temporaries fired in December



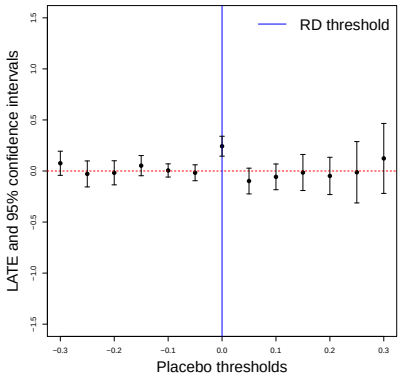
(b) Temporaries hired in January



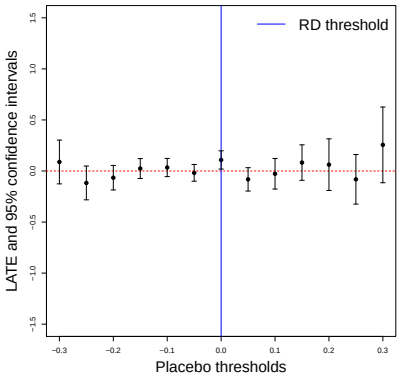
(c) Temporaries resigning in December



(d) Tenured fired in December



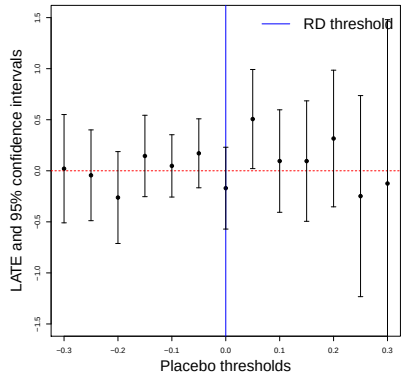
(e) Tenured hired in December



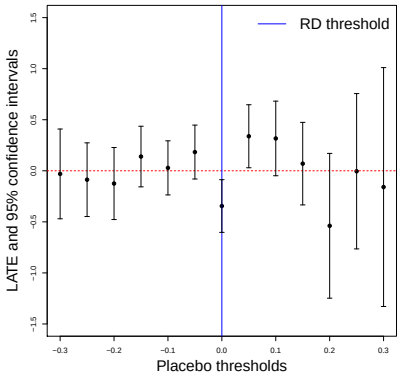
(f) Tenured resigning in December

Vertical, blue lines mark the actual RD threshold.

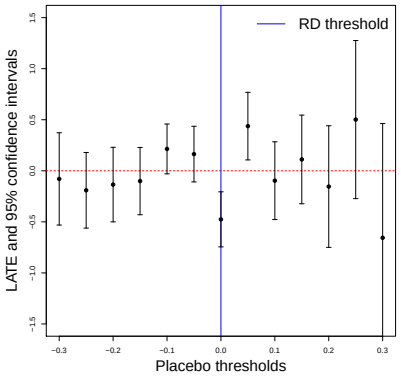
Figure H.13: Robustness to alternative bandwidths of results on healthcare outputs



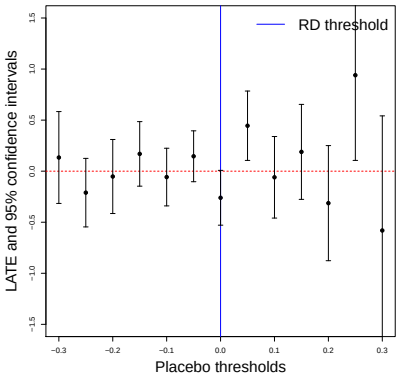
(a) Home visits by community health agents



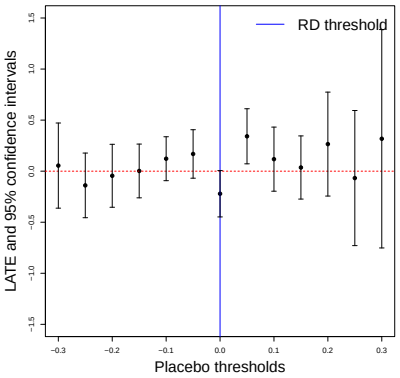
(b) Home visits by nurses



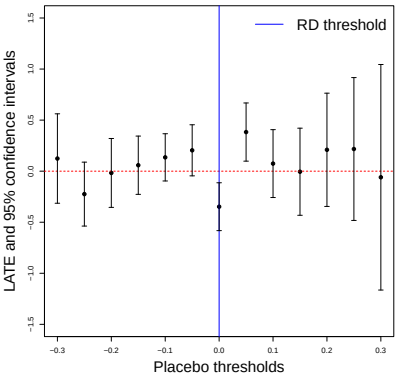
(c) Home visits by doctors



(d) Prenatal check-ups



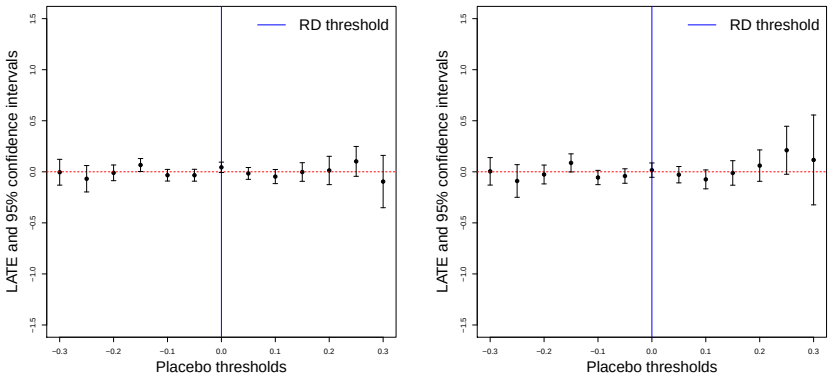
(e) Infant check-ups



(f) Child check-ups

Vertical, blue lines mark the actual RD threshold at zero.

Figure H.14: Placebo tests varying the RD threshold for main results on healthcare outcomes

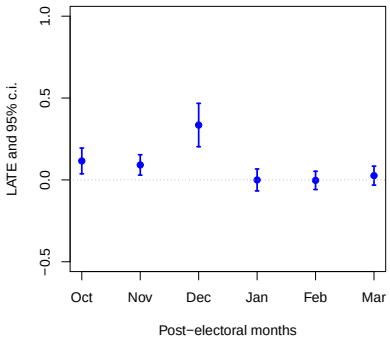


(a) Infant deaths (b) Child deaths

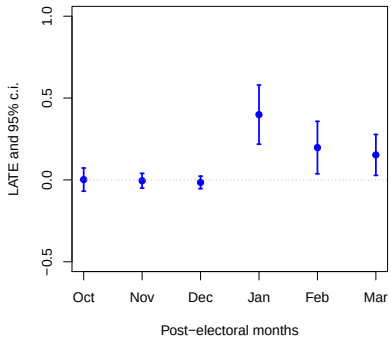
Vertical, blue lines mark the actual RD threshold.

I Effects of election results on turnover of subsets of bureaucrats

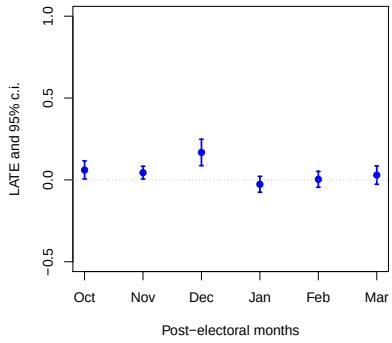
Figure I.15: Effect of an electoral defeat of the incumbent on bureaucratic turnover among high-pay bureaucrats (i.e., those whose mean salary is in the highest quartile of the distribution for a given year)



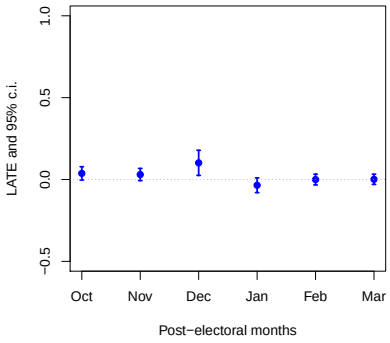
(a) Dismissals of temporaries



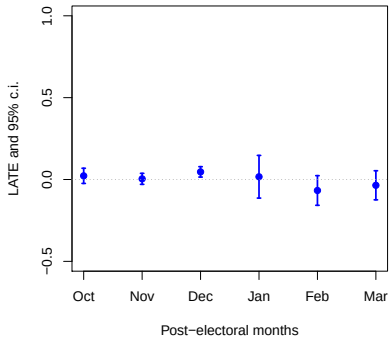
(b) Hiring of temporaries



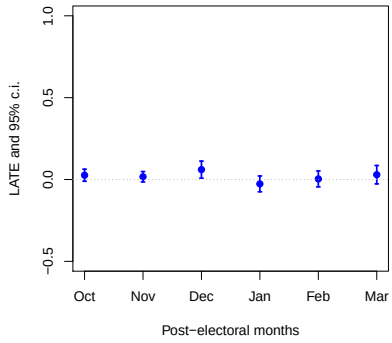
(c) Resignations of temporaries



(d) Dismissals of civil servants



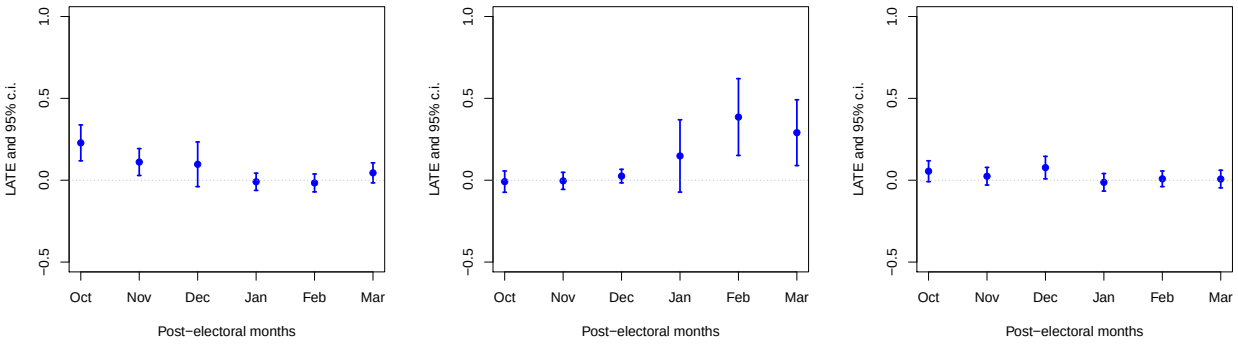
(e) Hiring of civil servants



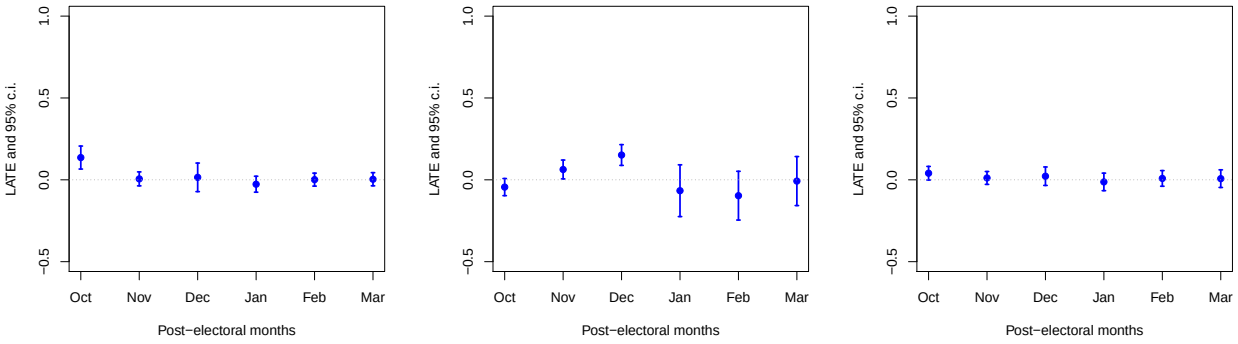
(f) Resignations of civil servants

Each point and its robust bias-corrected confidence interval comes from a separate local linear regression discontinuity model, as per Equation 2. The dependent variable is in the natural-log scale. Elections take place on the first Sunday of October, and winners are sworn in on January 1.

Figure I.16: Effect of an electoral defeat of the incumbent on bureaucratic turnover among low-pay bureaucrats (i.e., those whose mean salary is in the lowest quartile of the distribution for a given year)



(a) Dismissals of temporaries (b) Hiring of temporaries (c) Resignations of temporaries



(d) Dismissals of civil servants (e) Hiring of civil servants (f) Resignations of civil servants

Each point and its robust bias-corrected confidence interval comes from a separate local linear regression discontinuity model, as per Equation 2. The dependent variable is in the natural-log scale. Elections take place on the first Sunday of October, and winners are sworn in on January 1.

References

Aberbach, J. D. and B. A. Rockman (2009). The appointments process and the administrative presidency. *Presidential Studies Quarterly 39*(1), 38–59.

Adnot, M., T. Dee, V. Katz, and J. Wyckoff (2017). Teacher turnover, teacher quality, and student achievement in dcps. *Educational Evaluation and Policy Analysis 39*(1), 54–76.

Akhtari, M., D. Moreira, and L. Trucco (2018). Political Turnover, Bureaucratic Turnover, and the Quality of Public Services. *Working paper*.

Aquino, R., N. F. De Oliveira, and M. L. Barreto (2009). Impact of the family health program on infant mortality in Brazilian municipalities. *American Journal of Public Health 99*(1), 87–93.

Barbosa, K. and F. V. Ferreira (2019). Occupy government: Democracy and the dynamics of personnel decisions and public finances. Technical report, National Bureau of Economic Research.

Bastos, M. L., D. Menzies, T. Hone, K. Dehghani, and A. Trajman (2017). The impact of the brazilian family health strategy on selected primary care sensitive conditions: A systematic review. *PLoS One 12*(8), e0182336–e0182336.

Bhalotra, S., R. Rocha, and R. R. Soares (2019). Can Universalization of Health Work? Evidence from Health Systems Restructuring and Expansion in Brazil. *CDEP-CGEG Working Paper No. 72*.

Boas, T. C., F. D. Hidalgo, and M. A. Melo (2019). Norms versus action: Why voters fail to sanction malfeasance in brazil. *American Journal of Political Science 63*(2), 385–400.

Bolton, A., J. M. De Figueiredo, and D. E. Lewis (2019). Elections, ideology, and turnover in the US federal government. Technical report, National Bureau of Economic Research.

Brito, J. and V. De Rugy (2009). Midnight regulations and regulatory review. *Admin. L. Rev. 61*, 163.

Cahan, D. (2019). Electoral cycles in government employment: Evidence from us gubernatorial elections. *European Economic Review 111*, 122–138.

Cain, B. E. and M. A. Levin (1999). Term limits. *Annual Review of Political Science 2*(1), 163–188.

Calonico, S., M. D. Cattaneo, and M. H. Farrell (2020). Optimal bandwidth choice for robust bias-corrected inference in regression discontinuity designs. *The Econometrics Journal 23*(2), 192–210.

Calonico, S., M. D. Cattaneo, M. H. Farrell, and R. Titiunik (2019). Regression discontinuity designs using covariates. *Review of Economics and Statistics 101*(3), 442–451.

Calonico, S., M. D. Cattaneo, and R. Titiunik (2014). Robust Nonparametric Confidence Intervals for Regression-Discontinuity Designs. *Econometrica 82*(6), 2295–2326.

Canes-Wrone, B., T. S. Clark, and J. P. Kelly (2014). Judicial selection and death penalty decisions. *American Political Science Review 108*(01), 23–39.

Castro, M. C., A. Massuda, G. Almeida, N. A. Menezes-Filho, M. V. Andrade, K. V. M. de Souza Noronha, R. Rocha, J. Macinko, T. Hone, R. Tasca, et al. (2019). Brazil's unified health system: The first 30 years and prospects for the future. *The Lancet 394*(10195), 345–356.

Cattaneo, M. D., N. Idrobo, and R. Titiunik (2019). *A practical introduction to regression discontinuity designs: Foundations*. Cambridge University Press.

Cattaneo, M. D., M. Jansson, and X. Ma (2020). Simple local polynomial density estimators. *Journal of the American Statistical Association 115*(531), 1449–1455.

Colonnelli, E., M. Prem, and E. Teso (2019). Patronage and selection in public sector organizations. *Forthcoming in the American Economic Review*.

Dahlberg, M. and E. Mörk (2011). Is there an election cycle in public employment? separating time effects from election year effects. *CESifo Economic Studies 57*(3), 480–498.

Dahlström, C. and M. Holmgren (2019). The political dynamics of bureaucratic turnover. *British Journal of Political Science 49*, 823–836.

Dahlström, C. and V. Lapuente (2017). *Organizing leviathan: Politicians, bureaucrats, and the making of good government*. Cambridge University Press.

De Rugy, V. and A. Davies (2009). Midnight regulations and the cinderella effect. *The Journal of Socio-Economics 38*(6), 886–890.

Doherty, K. M., D. E. Lewis, and S. Limbocker (2019a). Executive control and turnover in the senior executive service. *Journal of Public Administration Research and Theory 29*(2), 159–174.

Doherty, K. M., D. E. Lewis, and S. Limbocker (2019b). Presidential control and turnover in regulatory personnel. *Administration & Society 51*(10), 1606–1630.

Eggers, A. C., A. Fowler, J. Hainmueller, A. B. Hall, and J. M. Snyder Jr (2015). On the validity of the regression discontinuity design for estimating electoral effects: New evidence from over 40,000 close races. *American Journal of Political Science 59*(1), 259–274.

Fearon, J. D. (1999). *Electoral accountability and the control of politicians: Selecting good types versus sanctioning poor performance*. Cambridge University Press.

Ferraz, C. and F. Finan (2008). Exposing Corrupt Politicians: The Effects of Brazil's Publicly Released Audits on Electoral Outcomes. *The Quarterly Journal of Economics 123*(2), 703–745.

Forrest, C. B. and A. W. Riley (2004). Childhood origins of adult health: A basis for life-course health policy. *Health Affairs 23*(5), 155–164.

Hanushek, E. A., S. G. Rivkin, and J. C. Schiman (2016). Dynamic effects of teacher turnover on the quality of instruction. *Economics of Education Review 55*, 132–148.

Imbens, G. W. and T. Lemieux (2008). Regression discontinuity designs: A guide to practice. *Journal of econometrics 142*(2), 615–635.

Iyer, L. and A. Mani (2012). Traveling agents: political change and bureaucratic turnover in India. *Review of Economics and Statistics 94*(3), 723–739.

Kim, B. H. and S. Hong (2019). Political change and turnovers: How do political principals consider organizational, individual, and performance information? *Public Choice 181*(3-4), 291–308.

Klašnja, M. and R. Titiunik (2017). The incumbency curse: Weak parties, term limits, and unfulfilled accountability. *American Political Science Review 111*(1), 129–148.

Kraft, M. A., W. H. Marinell, and D. Shen-Wei Yee (2016). School organizational contexts, teacher turnover, and student achievement: Evidence from panel data. *American Educational Research Journal 53*(5), 1411–1449.

Labonne, J. (2016). Local political business cycles: Evidence from philippine municipalities. *Journal of Development Economics 121*, 56–62.

Lee, D. S. and T. Lemieux (2010). Regression Discontinuity Designs in Economics. *Journal of Economic Literature 48*, 281–355.

Lewis, D. E. (2011). Presidential appointments and personnel. *Annual Review of Political Science 14*, 47–66.

Litschig, S. and Y. Zamboni (2019). Judicial presence and rent extraction. *Working paper*.

Manin, B. (1997). *The principles of representative government*. Cambridge University Press.

McCrary, J. (2008). Manipulation of the running variable in the regression discontinuity design: A density test. *Journal of Econometrics 142*(2), 698–714.

Ministério da Saúde, B. (2012a). *Caderno de atenção domiciliar*. Ministério da Saúde, Brasília.

Ministério da Saúde, B. (2012b). *Política nacional de atenção básica*. Ministério da Saúde, Brasília.

Moe, T. M. (1985). The politicized presidency. In J. E. Chubb and P. E. Peterson (Eds.), *The new direction in American politics*, pp. 235–271. Washington DC: Brookings Institution.

Nixon, R. M. (1978). RN: The Memoirs of Richard Nixon. *Nixon (New York: Grosset and Dunlap, 1978)*, 393–394.

Pierskalla, J. H. and A. Sacks (2019). Personnel politics: Elections, clientelistic competition and teacher hiring in indonesia. *British Journal of Political Science*, 1–23.

Pinto, D. G. C., M. A. C. Costa, and M. L. d. A. C. Marques (2013). *O índice de desenvolvimento humano municipal brasileiro*. Instituto de Pesquisa Econômica Aplicada (Ipea).

Popper, K. R. (1962). *The Open Society And Its Enemies*. Princeton University Press.

Przeworski, A. (1991). *Democracy and the market: Political and economic reforms in Eastern Europe and Latin America*. Cambridge University Press.

Przeworski, A. (1999). Minimalist conception of democracy: A defense. In I. Shapiro, C. Hacker-Cordón, et al. (Eds.), *Democracy's value*. Cambridge University Press Cambridge.

Rocha, R. and R. R. Soares (2010). Evaluating the impact of community-based health interventions: Evidence from brazil's family health program. *Health Economics 19*(S1), 126–158.

Ronfeldt, M., S. Loeb, and J. Wyckoff (2013). How teacher turnover harms student achievement. *American Educational Research Journal 50*(1), 4–36.

Shafritz, J. M., D. H. Rosenbloom, N. M. Riccucci, K. C. Naff, and A. C. Hyde (2001). *Personnel Management in Government: Politics and Process*. CRC Press.

Thorley, J. (2004). *Athenian democracy*. Routledge.

Toral, G. (2019a). The benefits of patronage: How the political appointment of bureaucrats can enhance accountability and effectiveness. *Working paper*.

Toral, G. (2019b). Political bureaucratic cycles: How politicians manipulate employment ahead of elections, and why it matters for human development. *Working paper*.

Turner, K. (1960). Midnight judges. *U. Pa. L. Rev. 109*, 494.

United Nations General Assembly, U. (2000). *Millennium Declaration*. United Nations.

United Nations General Assembly, U. (2015). *Resolution 70/1, Transforming our World: the 2030 Agenda for Sustainable Development*. United Nations.