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

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Abstract

Electoral accountability is fundamental to representative democracy. Yet, it can also be costly for governance because it causes turnover among bureaucrats (not just elected officials) and disruptions in the delivery of public services. This paper advances a theory of political turnover as a process that, starting the moment election results are published, leads to bureaucratic shuffles and depresses service delivery. I demonstrate these turnover dynamics through a close-races regression discontinuity design, using administrative data on public employment and on healthcare service delivery in Brazilian municipalities. The results show that an electoral defeat of the incumbent causes increases in dismissals, hires, and resignations of bureaucrats, and declines in public service delivery in the months following the election. These findings draw attention to the political strategies of lame-duck politicians, and highlight the intense and consequential bureaucratic politics that follow elections.

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1 Introduction

Przeworski famously defined democracy as "a system in which parties lose elections" (1991, 10). Like him, many scholars place political turnover at the core of their theories of democracy. Theories of both retrospective (Manin, 1997) and prospective accountability (Fearon, 1999), elitist theories of democracy (Przeworski, 1999; Popper, 1962), and populist and libertarian critiques of professional politics (Kurfirst, 1996) all see political turnover as a fundamental ingredient of democracy. The recurrence of political turnover is in fact commonly taken as an empirical indicator of democratic consolidation (Schedler, 2001).

This paper argues that, its many benefits notwithstanding, political turnover imposes some costs, at least in the short term, through concurrent dynamics of bureaucratic turnover and disruptions to public service delivery.[1] An electoral defeat of the incumbent causes increases in dismissals, hires, and resignations of bureaucrats in months immediately following the election. Election results also lead to disruptions in the delivery of public services by bureaucrats, due to these bureaucratic shuffles and to the worsening of within-government accountability.

In contrast to the standard view of political turnover as a discrete moment (i.e., the day when the election winner is sworn into office), this paper advances a theory of political turnover as a process that starts when election results are published and ends only weeks or months after the winner takes office, once new management teams have been formed. So-called transition periods are ridden with intense bureaucratic politics. On one hand, lame-duck officials make strategic use of their discretion over bureaucratic appointments, in response to the unique political incentives of incumbents who are about to leave office. On the other hand, bureaucrats respond strategically to a changing political environment, either by decreasing their level of effort until the winner is sworn in, or by leaving their jobs if they anticipate conflicts with the incoming administration. Contrary to received wisdom, civil service systems do not completely insulate bureaucracies from the problems surrounding political turnover.

This paper demonstrates the effects of electoral turnover on bureaucratic shuffles and public service delivery through a close-races regression discontinuity design (Eggers et al., 2015), leveraging data on Brazilian municipalities. I use this quasi-experimental design because simply comparing

[1] Throughout the paper, I refer to the political turnover that occurs in consolidated democracies as a result of regular and generally accepted elections. Political turnover resulting from coups, revolutions, and irregular elections can be expected to have more disruptive effects on bureaucracies and service delivery.

instances where incumbents lose and where incumbents are reelected may give us biased estimates of the effect of the election results. For instance, in places where the incumbent loses by a large margin local actors are likely to anticipate the electoral outcome, and bureaucratic turnover or declines in public service delivery may predate the election. In those cases, low levels of public service delivery may actually be more a cause than a consequence of the electoral outcome. To identify the causal effect of an electoral defeat of the incumbent, I compare outcomes in municipalities where the mayor barely loses to those where they barely wins the reelection. By examining what happens in such close elections, where the outcomes are uncertain ex ante, we can estimate the causal effect of political turnover.

Brazilian municipal governments are an ideal case to study the link between political turnover, bureaucratic turnover, and public service delivery. Municipalities in Brazil hire large numbers of bureaucrats in order to provide primary services of healthcare, education, and social assistance to over 200 million people. Mayors, who are elected in majoritarian elections, have significant discretion over the bureaucrats they oversee, whom they can hire with civil service contracts (which have life tenure) or with temporary contracts (which have few employment protections). 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 the availability of administrative data on public employment and on healthcare services.

Two additional reasons motivate my focus on healthcare. First, healthcare is the policy area most salient to voters at the local level (Boas et al., 2019, 395; Reis, 2016), so if we observe effects there it is plausible that we would also find them in other areas of government activity that are less exposed or less important to citizens. Second, municipal healthcare services have been shown to reduce infant and child mortality (Rocha and Soares, 2010; Aquino et al., 2009), a common proxy for the quality of healthcare in the developing world. If election results depress the delivery of these basic healthcare services it is plausible that they have impacts on human development.

I examine the effects of an electoral defeat of Brazilian mayors on three important types of bureaucratic turnover (dismissals, hires, and resignations) by contract type (temporary versus civil service). I also measure its effects on the delivery of key services in the healthcare sector, namely home visits by community health agents, nurses, and doctors; prenatal care check-ups; and medical consultations with infants and children. Combining data for four election cycles (2004 - 2016), I examine how an electoral defeat of the incumbent affects each outcome in the last quarter of their mandate and in the first quarter of the winner's mandate.

Regression discontinuity results show that electoral turnover unleashes a series of bureaucratic turnover dynamics (hires, fires, and resignations) in the months following the election. Under lame-duck governments there are large and significant increases in the dismissal of temporary workers and in the hiring of civil servants. In-depth interviews I conducted with prosecutors and politicians in several states[2] suggest that lame-duck politicians resort to dismissals in order to improve their compliance with legal rules about hiring before leaving office and losing control of the accounts. Interviews also suggests that the hiring of civil servants is sometimes used to stack the deck against the election winner, by limiting their fiscal capacity to hire their own supporters once in office. Resignations of bureaucrats also increase in the months immediately following the defeat of the incumbent. Finally, political turnover causes significant increases in the hiring of temporary workers immediately after the election winner takes office.

When it comes to public service delivery, results show that an electoral defeat of the incumbent causes significant declines in healthcare services in the months immediately following the election. In particular, home visits by nurses and doctors, prenatal care check-ups, and medical consultations with infants and children all decline in the last quarter of the mayor's mandate. While dynamics of bureaucratic turnover are likely connected to these effects, evidence suggests that other factors like the worsening of within-government accountability play an important role.

This study contributes to an emerging literature showing that there are important connections between political and bureaucratic turnover, in settings as diverse as the United States (Doherty et al., 2019a,b), Sweden (Dahlström and Holmgren, 2019), Brazil (Colonnelli et al., 2020) and Ecuador (Brassiolo et al., 2020); and that these connections may be detrimental to human development (Akhtari et al., 2020). In contrast to previous studies, however, this article emphasizes the political strategies of lame-duck governments, and the role they play in bureaucratic turnover and the decline of service delivery immediately after elections. By highlighting lame ducks' strategic use of their discretion over the bureaucracy, and bureaucrats' response to a changing political environment, this study advances a novel view of so-called transition periods, which have received scant attention in comparative politics. Further, this article shows that civil service bureaucracies are not immune to the detrimental effects of political turnover, thereby challenging the common assumption of civil service systems as completely insulated from politics.

[2]See Appendix A for details on how interviews were conducted.

2 A theory of turnover

Counter 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 perspective draws attention to the role of lame-duck politicians, and the strategies they follow, in the connection between political and bureaucratic turnover. Empirically, it calls for an analysis of outcome data at the monthly or quarterly level.

The dynamics of turnover are shaped by the incentives, concerns, and constraints of politicians, and therefore differ systematically under lame-duck government versus the new administration, and for temporary versus civil service employees. While both election losers and winners make use of their (formal and informal) discretion over bureaucratic appointments to pursue their goals, their divergent incentives and concerns lead to distinct turnover dynamics at the end of the loser's mandate and at the beginning of the winner's.

The strategies of lame-duck governments are shaped by two key motivations: preparing themselves for the vulnerability that comes after losing office, and setting the basis for a return to power. Politicians who lose a re-election bid arguably become more vulnerable to prosecution and conviction, for two key reasons. First, they lose some of their ability to exert formal and informal pressures over horizontal accountability actors. Second, their opponents get access to the government's accounts and thus gain information about potential malfeasance.[3] At the same time, politicians who lose a re-election bid are arguably concerned with maximizing their (or their political party's) chances of returning to office. This perspective on lame-duck politicians as actors seeking to minimize their vulnerability to prosecution and to maximize their chances of returning to power suggests they may engage in two strategic uses of bureaucratic shuffles during their remaining time in office.[4]

Lame-duck governments may use dismissals as a strategy to "clean the accounts" and reduce the chances that they will be prosecuted upon leaving office. Around the world, it is common

[3] In fact, recent research suggests that losing power increases politicians' chances of being convicted in court in India (Poblete-Cazenave, 2020) and Brazil (Lambais and Sigstad, 2020), despite judges' formal protections from political pressures in both. Relatedly, there is evidence that opposition politicians in the United States are more vulnerable to prosecution (Davis and White, 2019; Gordon, 2009).

[4] My focus here is on lame ducks' employment decisions, but they can pursue these goals through other means as well (e.g., regulation).

for politicians to expand the bureaucracy ahead of elections to boost their re-election chances (Cahan, 2019; Pierskalla and Sacks, 2019; Toral, 2019; Labonne, 2016; Dahlberg and Mörk, 2011). In contexts where such pre-electoral hiring strategies violate electoral, procedural or fiscal rules, politicians may seek to undo some of that bureaucratic expansion after the election in order to protect themselves from prosecution. I thus hypothesize that dismissals of temporary workers will increase after the incumbent loses the election (Hypothesis 1).

On the other hand, lame-duck governments may use hires in the civil service to constrain the hiring discretion of their opponent. By appointing civil servants (who have significant job security) right before leaving office, election losers can reduce the fiscal capacity of the new administration to hire their own supporters, and thus make their future return to office more likely.[5] Civil service hiring is typically seen as insulated from politics because civil servants are selected after passing objective, competitive examinations. In practice, however, candidates who pass a civil service exam are often not hired automatically. Instead, at least in civil systems of the Napoleonic tradition, 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 hiring pre-approved candidates. By making strategic use of their discretion over the timing of civil service hiring, election losers can reduce their opponent's ability to hire their own supporters and thus increase their own chances of getting back to power in the future. Hypothesis 2 is that lame-duck governments will increase hiring in the civil service.

I now turn to the dynamics of bureaucratic turnover after the election winner takes office. The key motivation of election winners, with regards to bureaucratic shuffles, is inducting political supporters into the bureaucracy. There are two distinct rationales for an incoming government to do this. One rationale is using bureaucratic appointments to reward campaign supporters (Colonnelli et al., 2020; Brassiolo et al., 2020; Barbosa and Ferreira, 2019). A different logic is to use appointments to better control public policy and implementation (Lewis, 2011; Aberbach and Rockman, 2009). In both cases we should expect election winners to increase hiring of temporary workers in their first few months in office (Hypothesis 3). By a similar logic, they may use dismissals 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 (Hypothesis 4).[6]

[5]This rationale mirrors that of appointing so-called "midnight judges", judicial appointments by some US presidents right before leaving office (Turner, 1960), or a similar phenomenon "midnight regulations" (Brito and De Rugy, 2009).

[6]US President Richard Nixon made this logic explicit in his memoirs: "I urged the new Cabinet members

Incumbent bureaucrats are not mere spectators of the political strategies of outgoing and incoming politicians. Instead, they can actively respond to them, thereby shaping the turnover dynamics of transition periods. Bureaucrats may react to the changing political environment is by resigning. One possible driver of resignations is (anticipated) ideological incongruence: if bureaucrats prefer to work for organizations whose leaders have preferences aligned to them, or if they anticipate new leaders will mistreat them (for example by firing or transferring them, or by delegating undesired work to them), they may choose to leave the bureaucracy (Bolton et al., 2019; Doherty et al., 2019a). Resignations could also ensue if bureaucrats anticipate they will be dismissed by the election winner and choose to exit early to protect their long-term careers, or to signal their distancing from the election loser. In any case, we would expect to see resignations increase in the months following electoral turnover (Hypothesis 5).

An electoral defeat of the incumbent affects not only the composition of the bureaucracy but also the activities bureaucrats perform. I expect political turnover to cause declines in the delivery of public services (Hypothesis 6). One key mechanism for electoral turnover to hurt service delivery is through bureaucratic turnover. Dismissals and hires can lead to the exit of bureaucrats with job-specific experience and know-how, and the entry of other bureaucrats with less endowments of both. Public organizations may be impacted by the selection of systematically better or systematically worse bureaucrats. Politicians may for example prioritize loyalty over competence, and therefore substitute experienced bureaucrats with systematically worse ones, as recent research on Brazil suggests (Colonnelli et al., 2020; Akhtari et al., 2020). Even if more competent bureaucrats are selected, the disruption of teams of providers may have a negative impact on public service delivery (Hanushek et al., 2016; Ronfeldt et al., 2013) because the effectiveness of bureaucrats often depends on the stability of the organizations and teams they are embedded in (Kraft et al., 2016).

Political turnover can also impact public service delivery through mechanisms other than bureaucratic turnover. Procurement processes and contracts for services and goods on which bureaucrats (regardless of contract type) depend to provide services may be interrupted or otherwise disrupted. Critically, the ability and/or willingness of officials to monitor and motivate bureaucrats may decrease sharply once all actors know the government will change 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.

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." (Nixon, 1978, 352).

In sum, I advance a theory of political turnover as a process starting when election results are published and ending only months after the winner is sworn in. During that period, a series of distinct but concurrent processes of bureaucratic turnover (dismissals, hires, and resignations) take place. An electoral defeat of the incumbent also causes declines in public service delivery through a variety of mechanisms, including bureaucratic turnover, disruptions to teams of providers, and the weakening of within-government accountability. Contrary to received wisdom, these turnover dynamics respond not only to the actions of the election winner, nor are they eliminated by civil service systems. Transition periods are therefore turbulent times for bureaucracies, and a valuable window through which to study bureaucratic governance.

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 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 of simultaneous elections for a mayor, who is elected through a majoritarian system,[7] 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 2016 elections, almost 49% of the incumbents who ran were defeated.[8] Politicians are overseen by a network of horizontal accountability actors, including judges, auditors, and prosecutors, which have been shown to reduce rent extraction (Avis et al., 2018; Litschig and Zamboni, 2019). There are currently 5,570 municipalities, most of which are small and poor.[9]

Municipal governments are responsible for providing primary services in healthcare, education, and social assistance. Therefore, the local government workforce is typically large, both as a share of

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

[8] In fact, Brazilian mayors have an incumbency *disadvantage* (Klašnja and Titiunik, 2017).

[9] As per the 2010 census, the median municipality has less than 12,000 inhabitants and per capita income of less than 500 Brazilian reais (or about USD284 at the exchange rate back then).

the local population and as a share of the formal labor market.[10] Despite important improvements over the past few decades in all three areas of social policy, development challenges are substantial.[11] Healthcare is typically the most salient policy area for voters in municipal elections (Boas et al., 2019, 395; Reis, 2016).

Municipalities provide primary healthcare services to all residents, free of charge, under the umbrella of the Unified Health System. To do so, they maintain "basic health units" or clinics. Each clinic is led by a manager, who is typically appointed by the mayor or the secretary of healthcare, and staffed with 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, 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, 2012d). 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 in larger municipalities, but most citizens rely exclusively on the public system.[12]

Mayors and the secretaries they appoint have discretion over the hiring and firing of bureaucrats. Such 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.[13] Critically, however, the best performers are not automatically appointed. While politicians have no discretion in the ranking of candidates, they do have discretion on the timing and magnitude of civil service hires. Still, about a third of municipal employees are hired through temporary contracts. Temporary contracts can legally be used for hiring political appointees or for hiring regular

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

[11] For example, child mortality in the median municipality (19 deaths under the age of 5 per 1,000 live births) is almost four times higher than in the average European Union country (less than 4 deaths per 1,000 births). Data are from the UNDP and the World Bank, respectively, and correspond to 2010.

[12] 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).

[13] After the probationary period civil servants can be dismissed only in extraordinary circumstances – for instance, if they are convicted for a corruption charge.

employees to fill short-term or urgent staffing needs. Temporary contracts are in practice also used sometimes in cases where the civil service should be used (e.g. for the hiring of nurses who fulfill permanent healthcare needs), although the practice is unconstitutional and politicians may be prosecuted for it. Employees in temporary contracts generally have 1-year contracts that can be terminated by the employer much more easily than civil service contracts.

4 Research design

To estimate the causal effect of electoral turnover on bureaucratic turnover and public service delivery I rely on a close-races regression discontinuity design, essentially comparing instances where the incumbent barely loses the election to instances where they are barely re-elected. This quasi-experimental design is important because simple comparisons of cases where incumbents win or lose the reelection are likely to be biased. If local actors anticipate that the incumbent will lose the re-election, bureaucratic turnover and public service delivery may be lower before the election. Descriptive data reported in Appendix C show that municipalities where the incumbent loses the election have systematically different patterns of public service delivery in the quarter *before* the election.

I use this design to identify the effect of an electoral defeat of the mayor on dynamics of bureaucratic turnover (fires, hires, and resignations) and healthcare service delivery in the two quarters following the election. Interviews with bureaucrats and politicians suggest that the most important effects of electoral turnover are felt in this six-month period. I use quarter-level data because my hypotheses are about turnover dynamics differing under the lame-duck and the new government.[14]

4.1 Identification

The core of regression discontinuity designs is a forcing variable, with treatment determined sharply at a given threshold along its distribution. In this case, the forcing variable is the difference between the vote share of the strongest challenger and the vote share of the incumbent. Treatment is the

[14]Using monthly instead of quarterly data leads to results of similar substantive and statistical significance. Results are available from the author.

electoral defeat of the incumbent, which is determined sharply when the forcing variable is positive. 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 c, T_{ic}, is assigned by the difference between the vote share of the strongest opposition candidate (V_{ic}^{o}) and the vote share of the incumbent (V_{ic}^{g}): $D_{ic} = V_{ic}^{o} - V_{ic}^{g}$. $T_{ic} = 1$ if $D_{ic} > 0$; $T_{iy} = 0$ otherwise.

The goal is to identify the difference in potential outcomes under treatment (i.e. the incumbent is defeated) and under control (i.e., the incumbent wins the re-election). Formally, the estimand of interest is $\tau = \mathbb{E}[Y_{1ic} - Y_{0ic}]$, where Y_{1ic} and Y_{0ic} represent the potential outcome of interest (e.g., number of hires in the quarter following the election), under treatment and under control. We can estimate the local average treatment effect (LATE) for municipalities around the threshold by taking the difference in the difference in means from above and from below the cutoff:

$$\tau = \mathbb{E}[Y_{1ic} - Y_{0ic}|D_{ic} = 0] = \lim_{D_{ic}\downarrow 0} \mathbb{E}[Y_{1ic}|D_{ic} = 0] - \lim_{D_{ic}\uparrow 0} \mathbb{E}Y_{0ic}|D_{ic} = 0] \tag{1}$$

The key assumption of this design is that potential outcomes are continuous around the threshold. Formally, we are assuming that $\mathbb{E}[Y_{dic}|D_{ic} = d]$ is continuous in d around $D_{ic} = 0$ 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. Incumbents will obviously try to 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 D 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 by 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). An additional observable implication of the lack of precise manipulation assumption is that there should be no discontinuous jumps in covariates around the threshold. Reassuringly, pre-treatment covariates are continuous, as shown in Appendix E.

4.2 Estimation and inference

Regression discontinuity designs require specifying the functional form of the regression on both sides of the threshold and choosing a bandwidth, i.e., the range of the forcing variable beyond which observations are excluded from the analysis. I follow the standard practice of using local linear regression with a triangular kernel smoother, and apply it to the following estimating equation:

$$Y_{ic} = \alpha + \beta_1 T_{ic} + \beta_2 D_{ic} + \beta_3 T_{ic} D_{ic} + \gamma_c + \delta \tilde{Y}_{ic} + \varepsilon_{ic} \tag{2}$$

Y_{ic} is the outcome of interest (e.g., dismissals of temporary workers in the last quarter of the mayor's mandate) for municipality i in the electoral cycle c. Since the outcomes are count variables with skewed distributions, I add one and take the natural log, such that effects can be interpreted as percentage changes. T_{ic} is a treatment indicator: $\mathbb{1}$(vote share of strongest challenger $\geq$ vote share of the incumbent). D_{ic} is the distance to the threshold in the forcing variable for observation ic. γ_y is an electoral cycle fixed effect and $\tilde{Y}_{ic}$ is the measure of the outcome in the quarter before the election, which I include for efficiency (Calonico et al., 2018). ε_{ic} is an error term. If potential outcomes are continuous around the threshold, β_1 in Equation 2 identifies the LATE. To estimate standard errors and confidence intervals I use the robust bias-corrected procedure (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.

4.3 Data

I leverage administrative data on elections, public employment, and healthcare service delivery. To measure the performance of incumbents and their challengers I use candidate-level data from Brazil's Supreme Electoral Court. 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*) between 2004 and 2016.[15] RAIS covers the universe of formal labor market contracts, and includes employer and employee unique identifiers, the dates of start and end of the contract, the contract's type, the reason for its termination, and the job's professional category, among other

[15]Since I do not have RAIS data for 2017, the 2016 election cycle is excluded from regressions for employment outcomes in the post-election year.

variables.[16] I generate counts of dismissals, hires, and resignations, by type of contract (civil service or temporary), for each municipality in each quarter around elections.[17]

To measure the effects on public service delivery I use data from the Ministry of Health's Basic Healthcare Information System (SIAB, *Sistema de Informação da Atenção Básica*). The data are collected by municipal secretariats of healthcare, consolidated by state governments, and published by the federal government at the municipality-month level. I use SIAB to generate counts of a number of healthcare services for each municipality in each quarter around elections.[18] 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; they help provide care to people with reduced mobility (including people in rural areas) and complement of services provided in healthcare facilities (Ministério da Saúde, 2012b). Second, I use data on the number of prenatal care check-ups, medical consultations with infants (less than 1 year old), and medical consultations with small children (less than 4 years old). Prenatal and child healthcare are frequently seen as central to lifelong health (Forrest and Riley, 2004) and used as proxies for the overall quality of healthcare systems.[19] Another advantage of examining prenatal and child care is that they are prescribed rather than elective, so they are less subject to variation in citizen demand.[20]

5 Results

Regression discontinuity results demonstrate that an electoral defeat of the incumbent causes increases in dismissals, hires, and resignations, as well as declines in the delivery of healthcare services, both before and after the election winner is sworn in. These effects are large and statistically sig-

[16] Additional details of the dataset are reported in Appendix B.

[17] I count as dismissals only contract terminations initiated by the employer (*exonerações a iniciativa do empregador*). I count as resignations only contract terminations initiated voluntarily by the employee (*exonerações a pedido*).

[18] SIAB only reports healthcare delivery data until 2015; thus the 2016 election cycle is not included in these analyses.

[19] For example, the United Nations' Millenium Development Goals included the reduction of child mortality and the improvement of maternal health as two among eight major development goals (United Nations General Assembly, 2000).

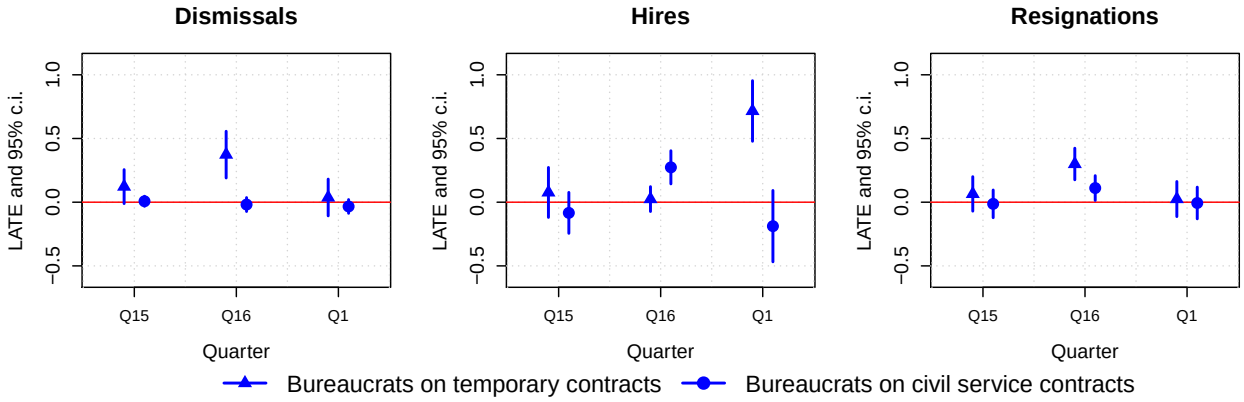
[20] For example, Brazil's Ministry of Health recommends at least 6 prenatal check-ups (Ministério da Saúde, 2012a) and at least 7 medical consultations for children in their first year of life (Ministério da Saúde, 2012c).

nificant.

5.1 Effects of electoral turnover on bureaucratic turnover

Figure 1 shows the effects of electoral turnover on dismissals, hires, and resignations, for temporary and civil service employees.[21] Each panel shows three sets of results. On the left, the effect of an electoral defeat of the incumbent on a given outcome during the three months before the election (July through September, or the fifteenth quarter of a mayor's mandate). Reassuringly, all these placebo tests return statistically insignificant effects. In the center, each panel reports the effect of an electoral defeat of the incumbent on bureaucratic turnover under the lame-duck government, that is during the three months between the election and the end of the incumbent's mandate (October through December, or the sixteenth and last quarter of their mandate). On the right, each panel shows the effects of the mayor losing the election on outcomes in the first quarter of the winner's mandate (January through March).

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



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. Q15 corresponds to the 15th quarter of a mayor's mandate (i.e., July through September of its last year). Q16 corresponds to the 16th and last quarter of a mayor's mandate (i.e., October through December). Q1 corresponds to the first quarter of the election winner's mandate (i.e., January through March). Elections take place on the first Sunday of October, and winners are sworn in on January 1st. Results for Q15 are placebo tests.

Dismissals

[21]Regression tables and discontinuity plots are included in Appendices F and H, respectively. Results without covariate adjustment are reported in Appendix G.

In line with Hypothesis 1, an electoral defeat of the incumbent leads to a large and statistically significant increase in the dismissal of temporary workers, as shown in the left-hand panel of Figure 1. Incumbents who lose the election increase dismissals of temporaries by 45.2% in the last three months of their mandate,[22] when compared to incumbents who win the re-election ($p < 0.001$). For reference, there are in average 24.2 dismissals of temporaries in the last quarter of an electoral year in municipalities where the incumbent wins. Election results do not have an effect on dismissals of civil servants, which are uncommon because of the legal protections these bureaucrats enjoy.[23] Contrary to Hypothesis 4, there is no increase in the dismissal of temporary employees under the new administration.

My interviews with bureaucrats and politicians suggest that dismissals of temporary workers immediately after the defeat of the incumbent are intended to balance the accounts before handing the government over to the winner. A municipal secretary of administration (in charge of human resources) in the northeastern 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."[24] Horizontal accountability actors also point to this phenomenon. A prosecutor in the southeastern state of São Paulo said that "it is common for an electoral defeat to lead to the dismissal of political appointees."[25] When asked about the decisions taken by lame-duck governments, a prosecutor in Rio Grande do Norte 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. [...] Once the mayor is out of office they are not able to afford equally good lawyers, and they know that [legal problems] can arrive later."[26]

Brazilian media provide additional qualitative evidence on the effect of election results on the dismissal of temporary workers. News reports about three municipalities in the central state of Tocantins are illustrative. For example, the local government of Porto Nacional was reported to dismiss large numbers of employees, especially in the education sector, immediately after an electoral defeat. The mayor argued this was necessary to adjust public expenses before leaving

[22]Since outcomes 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 $100 \times e^{\hat{\beta}_1} - 100\%$.

[23]In the average municipality where the incumbent wins, 0.56 civil servants are dismissed in the last three months of an electoral year.

[24]Municipal secretary of administration interviewed in the state of Rio Grande do Norte in June 2018.

[25]State prosecutor interviewed in the state of São Paulo in September 2018.

[26]State prosecutor interviewed in the state of Rio Grande do Norte in June 2018.

office (G1, 2016c). In Miracema, about 150 municipal employees were reportedly dismissed by the mayor after she lost the re-election, alleging the municipality was going through financial hardship (G1, 2016b). The electoral law prohibits dismissals of regular employees (but not political appointees) in the three months before or after the election, so some of these decisions can be taken to court.[27] In Colinas do Tocantins, for example, a judge forced the lame-duck government to re-hire about 200 workers who had been dismissed after the election (G1, 2016a). Media reports about this phenomenon are common in other states as well. For example, multiple municipalities were reported to dismiss employees after the elections, especially where the incumbent lost, in the northern state of Amazonas (A Crítica, 2016) and the southern state of Rio Grande do Sul (G1, 2012). A recurrent theme in all these news reports is the negative impact of dismissals on the delivery of education and healthcare services.

Hires

I now turn to the effect of electoral turnover on the hiring of bureaucrats. Results in the central panel of Figure 1 show that hiring also increases as a result of the incumbent losing the election. First, consistent with Hypothesis 3, hires of temporaries increase in average by 104.6% in the first quarter of a post-electoral year in municipalities where there is a new mayor, when compared to municipalities where the incumbent is re-elected ($p < 0.001$). Municipalities without turnover hire in average 86.5 bureaucrats in the first quarter of the post-election year. These results are in line with previous research showing that in Brazil election winners use bureaucratic appointments to reward their supporters (Colonnelli et al., 2020; Barbosa and Ferreira, 2019). Similarly to other horizontal accountability actors I interviewed, a prosecutor in the northeastern state of Ceará said that temporary contracts are often used as "political currency."[28]

Results also show that lame-duck governments take advantage of their last few months in office to hire civil servants, in agreement with Hypothesis 2. In average, municipalities where the incumbent loses see an increase of 31.5% in the hiring of civil servants, when compared to municipalities without electoral turnover ($p < 0.001$). For reference, 3.7 civil servants are hired in the typical municipality with no electoral turnover in the last quarter of an electoral year. Interviews suggests that these increases respond to a strategy of hiring civil service employees in order to decrease the opponent's leeway for hiring their own supporters upon taking office. Another secretary

[27] Article 73.V.a of the Electoral Law clarifies that employees in positions of trust (*cargos em comissão* and *funções de confiança*) may be dismissed during the pre- and post-electoral period.

[28] State prosecutor interviewed in the state of Ceará in August of 2017.

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."[29] This finding goes against the common view of civil service systems as politically neutral. Whereas civil service systems dramatically reduce (or eliminate) politicians' discretion on *who* to hire, they do not eliminate 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 gain.[30]

Resignations

Finally, resignations of municipal employees also increase in the months following the election as a result of the election, as shown in the right-hand panel of Figure 1. This lends support to Hypothesis 5. In average, an electoral defeat of the incumbent causes an increase of 35% in resignations among temporary employees ($p < 0.001$) and an increase of 11.7% in resignations among civil servants ($p < 0.05$). For reference, in localities where the incumbent wins the re-election we observe, in average, 6.5 resignations of temporaries and 3.4 resignations of civil servants. A key implication of this finding is that incumbent bureaucrats are not passive spectators of the political strategies of election losers and winners. Instead, they sometimes actively respond to this changing political environment, thereby shaping the bureaucratic politics of transition periods.

5.2 Effects of electoral turnover on public service delivery

Interviewees often associated the effect that an electoral defeat has on dismissals to declines in the delivery of public services. The logic was illustrated well by a municipal secretary of healthcare in the northeastern state of Ceará: "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%.

[29] Municipal secretary of administration interviewed in the state of Rio Grande do Norte in June 2018.

[30] 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 selection process before the start of the hiring freeze.

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."[31]

Regression discontinuity results shown in Figure 2 demonstrate that electoral turnover has large, negative effects on the delivery of healthcare services in the months following the election, in line with Hypothesis 6.[32] An electoral defeat of the incumbent causes declines in home visits of healthcare professionals, as shown in the left-hand panel. Visits by nurses and visits by doctors decline by 29.5% and 44.3%, respectively, as a result of the mayor losing the re-election ($p < 0.001$). The decline in home visits done by community health agents is not statistically significant. For reference, municipalities with no electoral turnover deliver in average 407.6 home visits by nurses and 330.6 home visits by doctors in the last quarter of the election year. These declines are not compensated by increases in the first quarter of the new administration.

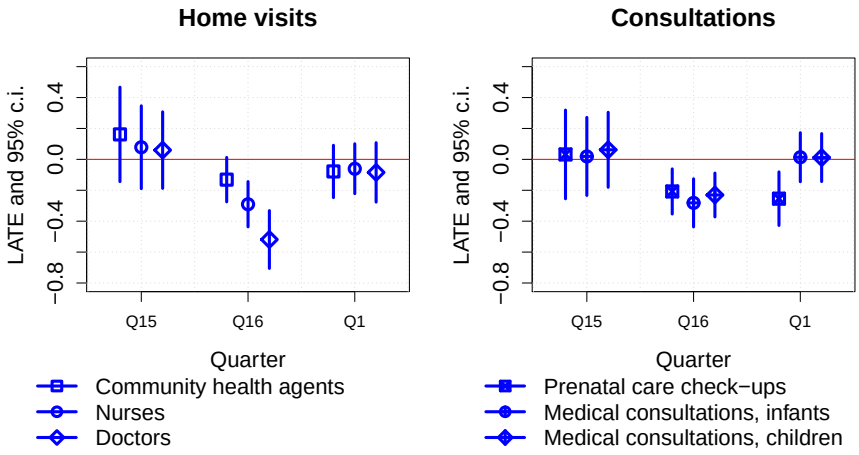
Electoral turnover also causes declines of maternal and child healthcare services. Prenatal care check-ups go down by 25% in the last quarter of the mayor's mandate as a result of their electoral defeat ($p < 0.01$). This effect persists into the first quarter of the new administration, where we observe 22.4% less prenatal care check-ups than in municipalities where the mayor wins the election ($p < 0.01$). Municipalities with no turnover perform in average 378.9 and 401.1 prenatal care check-ups in the last three months of an electoral year and the first three months of the post-electoral year, respectively. Medical consultations with both infants and children decline as a result of the mayor losing the election, by 29.6% and 25.2% percent respectively ($p < 0.001$). A typical municipality where the incumbent is reelected delivers 160.4 and 319.5 medical consultations to infants and to children during the last quarter of an electoral year. Like with home visits, these declines are not compensated by increases in service delivery when the election winner takes office.

These declines in the delivery of primary healthcare services may be driven by a variety of factors, including the dismissal of healthcare employees, other factors that could make it harder for them to work (like the lack of transportation to rural areas), and declines in bureaucratic effort and accountability to senior officials. The fact that effects generally disappear when election winners

[31] Municipal secretary of healthcare interviewed in the state of Ceará in August of 2017.

[32] As with employment outcomes, the placebo tests using healthcare services in the quarter before the election (Q15) all return null effects.

Figure 2: Effect of an electoral defeat of the incumbent on the delivery of healthcare services

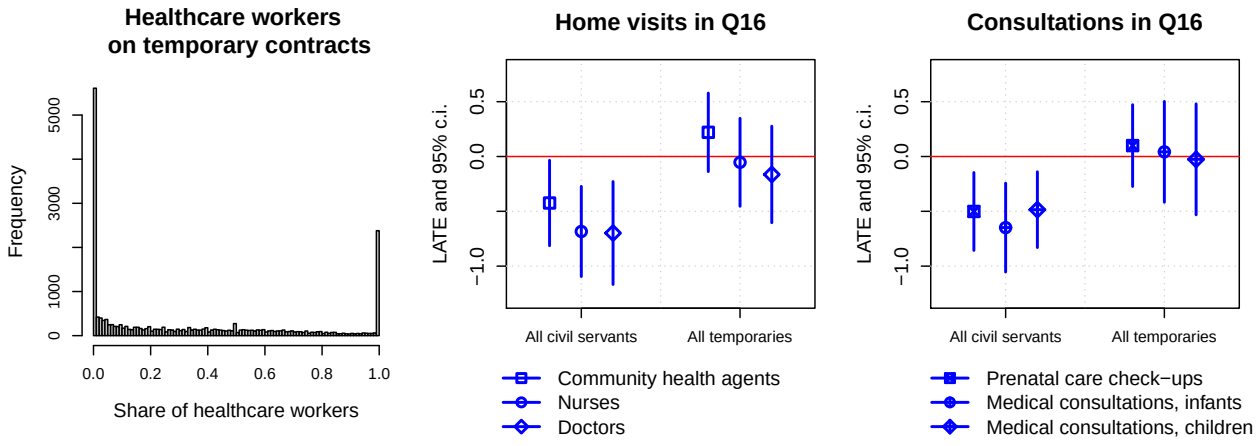


Each point and its robust bias-corrected confidence interval comes from a separate local linear regression discontinuity model, as per Equation 2. The dependent variable is in the natural-log scale. Q15 corresponds to the 15th quarter of a mayor's mandate (i.e., July through September of its last year). Q16 corresponds to the 16th and last quarter of a mayor's mandate (i.e., October through December). Q1 corresponds to the first quarter of the election winner's mandate (i.e., January through March). Elections take place on the first Sunday of October, and winners are sworn in on January 1st. Results for Q15 are placebo tests.

are sworn in suggests they may be driven by lame-duck politicians and senior officials being less able and/or less willing to monitor and exert pressure over bureaucrats. Two additional pieces of evidence are consistent with this interpretation. First, the effect of an electoral defeat of the incumbent on the dismissal of bureaucrats is much smaller among specialized healthcare workers like doctors, nurses, and community health agents (see Appendix K). Second, as shown in Figure 3, the effect of an electoral defeat for the incumbent on the delivery of healthcare services is large and significant in the subset of municipalities where all specialized healthcare workers hired in the quarter before the election have civil service contracts (and thus are protected from dismissal), whereas it is not significant in localities where these employees have temporary workers. This suggests that mechanisms other than dismissals are driving these results. While not definitive, the evidence is consistent with declines in healthcare services being caused by the worsening of within-government accountability dynamics in the months following an electoral defeat of the incumbent.

What do these declines imply for human development? While this question is hard to assess with SIAB data, large (if short-lived) declines in healthcare services that are critical for maternal and child well-being may hurt early childhood development. Consistent with this possibility, results included in Appendix M show that the number of babies up to date with their prescribed vaccines

Figure 3: Effect of an electoral defeat of the incumbent on the delivery of healthcare services, in municipalities where all specialized healthcare workers are on temporary contracts and in municipalities where all are on civil service contracts



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. Q16 corresponds to the 16th and last quarter of a mayor's mandate (i.e., October through December). Elections take place on the first Sunday of October, and winners are sworn in on January 1st.

goes down by 11.2% in the last quarter of the electoral year as a result of an electoral defeat for the incumbent ($p < 0.05$). More generally, if electoral turnover depresses the delivery of prescribed services that both healthcare professionals and citizens understand are important, it is likely to cause declines in other less salient but nonetheless important services.

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 and disruptions to public service delivery. The paper demonstrates these turnover dynamics using a close-races regression discontinuity design and administrative data on public employment and healthcare service delivery in Brazilian municipalities. Results show that an electoral defeat of the incumbent causes increases in fires, hires, and resignations of bureaucrats, as well as declines in the delivery of public services in healthcare, which is the most salient policy area at the local level for citizens. In particular, a defeat of the mayor causes an increase in

dismissals of temporaries, hires of civil servants, and resignations of both types of employees during the lame-duck government period; and an increase in temporary hiring during the first quarter of the new government's mandate. Additionally, home visits by nurses and doctors, prenatal care check-ups, and medical consultations with infants and children all decline as a result of the mayor losing the election. These declines are not compensated by increases in healthcare services after the election winner is sworn in. While bureaucratic turnover may very well contribute to the decline of service delivery, the evidence suggests part of these declines is driven not by dismissals but a worsening of within-government accountability after the incumbent loses.

The findings have important implications for how we think about political turnover and lame-duck governments. Rather than a discrete moment, political turnover is best seen as process that starts when the uncertainty characteristic of competitive elections turns into the certainty of the incumbent's electoral defeat and the ensuing transition of power. Contrary to received wisdom, the resulting lame-duck government, in office from election day until winners are sworn in, is not limited to mere "administration." Despite formal and informal rules limiting what lame-ducks can do before leaving office, in practice these governments use their remaining time in office to exercise their discretion over the bureaucracy in unequivocally political strategies. Bureaucrats also behave strategically in response to a changing political environment. The bureaucratic politics of so-called transition periods 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. 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 by hiring civil servants before leaving office in order to reduce their opponents' fiscal capacity to hire their own supporters once in office.

This study also suggests that the fear of being prosecuted or exposed for potential wrongdoing after leaving office can shape the actions lead lame-duck politicians during their remaining time in office. In the Brazilian context, an electoral defeat causes 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 findings presented in this paper suggest that the dynamics of political turnover can have an impact on state effectiveness. The fact that we see declines in healthcare services that have been shown to reduce infant mortality suggests that these dynamics can have an important effect on human development. Further, given that electoral turnover depresses the delivery of healthcare services, which are highly salient and visible to voters, effects may be even larger in other areas of government activity that are less visible and salient to citizens.

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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).[33] 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.[34] Interviews were done in 45 municipalities in 7 states across 3 different regions of Brazil.[35] 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. I approached potential interviewees at their offices and requested an interview after introducing myself and the project. No compensation of any sort was offered or given to participants. Most subjects that I managed to speak to directly agreed to participate.[36] Interviews were semi-structured, and usually started as an open conversation about 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 interviews was one hour.

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

[34] 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.

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

[36] Some refused, mostly arguing they did not have time. Two refused due to the research topic.

B Administrative labor market data

Table B.1: Micro-data of municipal employees, electoral and post-electoral years, 2004-2016 – 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
2013	5486	6.10	35.21	5.50	0.54
2012	5483	5.86	34.41	5.35	0.53
2009	5469	5.36	35.26	4.93	0.52
2008	5472	5.16	34.05	4.73	0.55
2005	5431	4.24	32.76	3.97	0.77
2004	5366	3.90	29.83	3.66	0.87

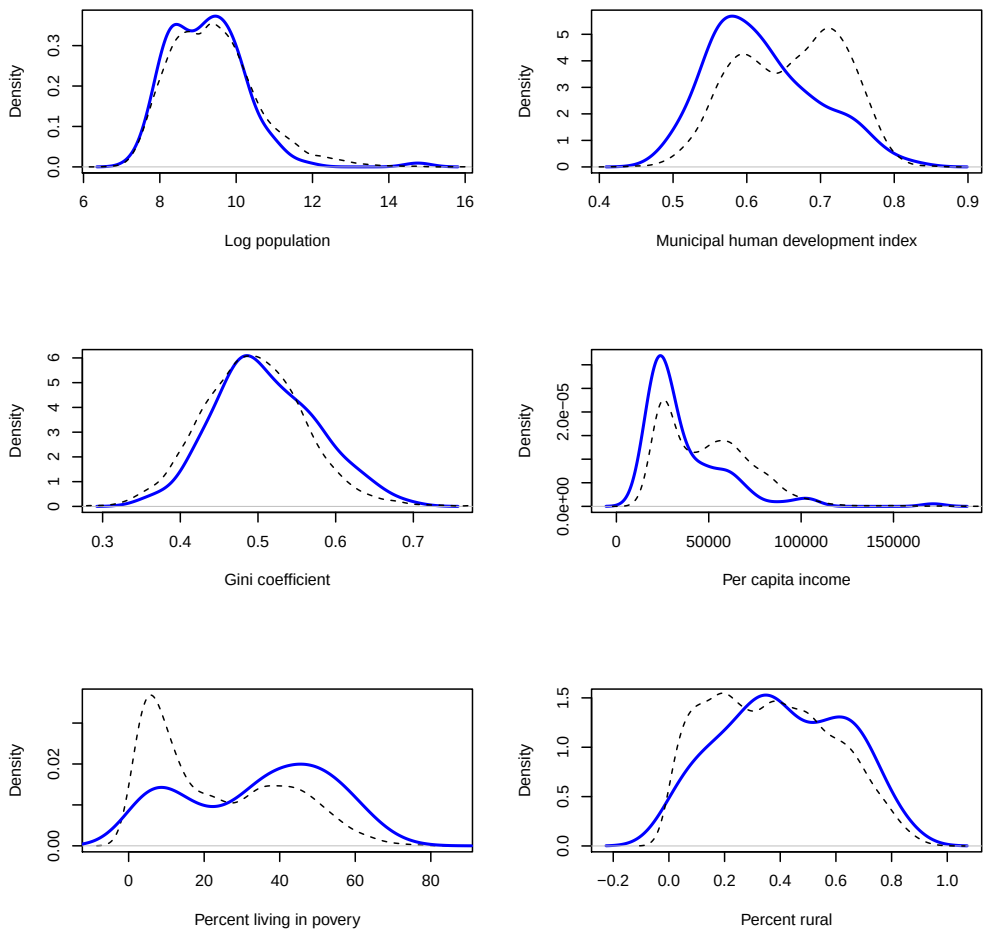
Municipal governments are legally required to report all employment data to the Ministry of Labor through the RAIS system. As pointed above, however, a minority of them (between 1 and 5%, depending on the year) fail to submit employment data. Technical staff at the Ministry of Labor confirmed that some 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 that do not report any 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.1 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.1: Characterization of municipalities not reporting employment data for 2016 (continuous line), compared to all municipalities (dashed line)



C Raw outcome means, by whether the mayor wins the re-election

Figure C.2: Raw data on bureaucratic turnover by whether the mayor wins the re-election

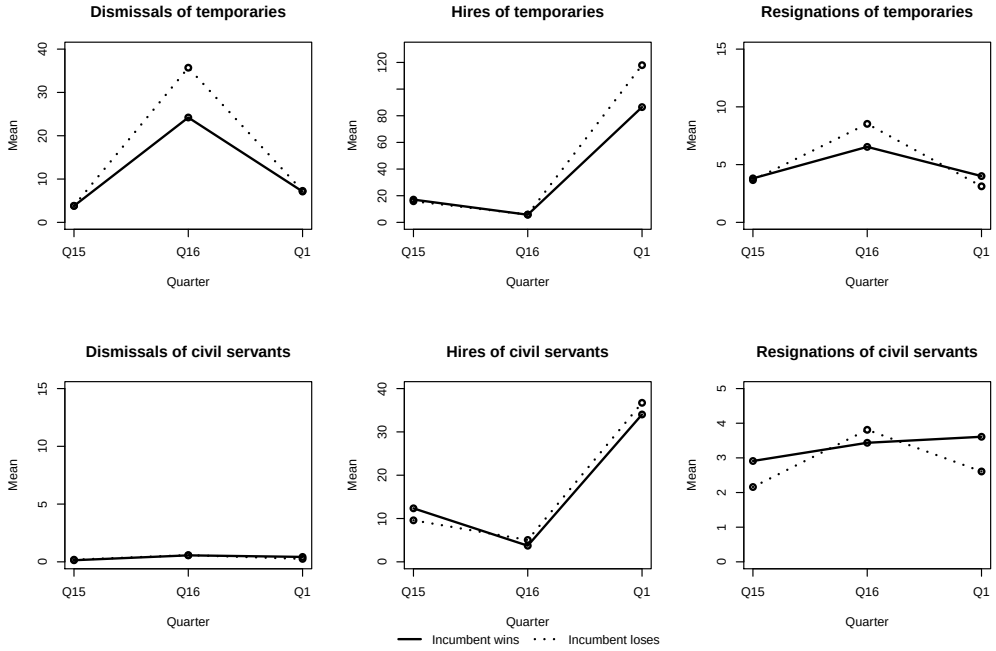
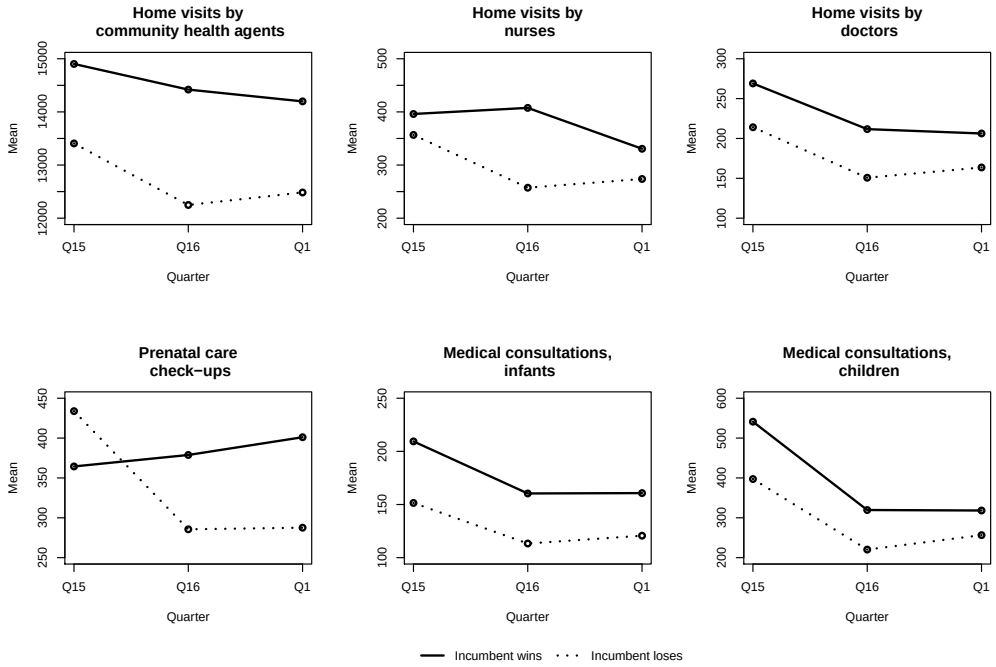


Figure C.3: Raw data on bureaucratic turnover by whether the mayor wins the re-election



D Continuity of the forcing variable

Figure D.4: Histogram of the forcing variable

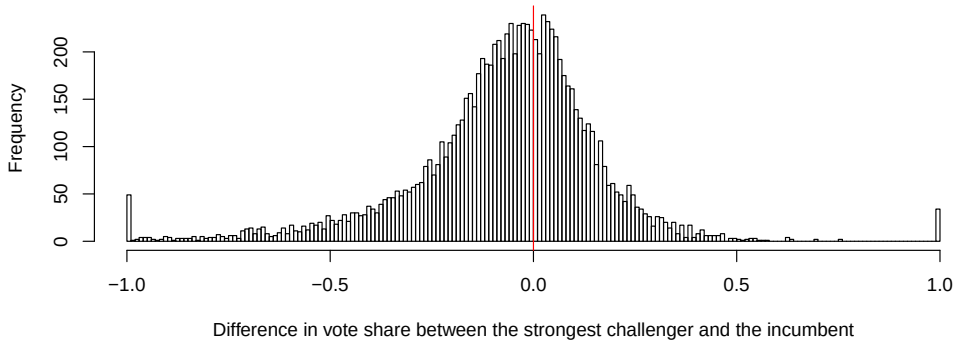


Figure D.5: Density of the forcing variable and McCrary (2008) discontinuity test

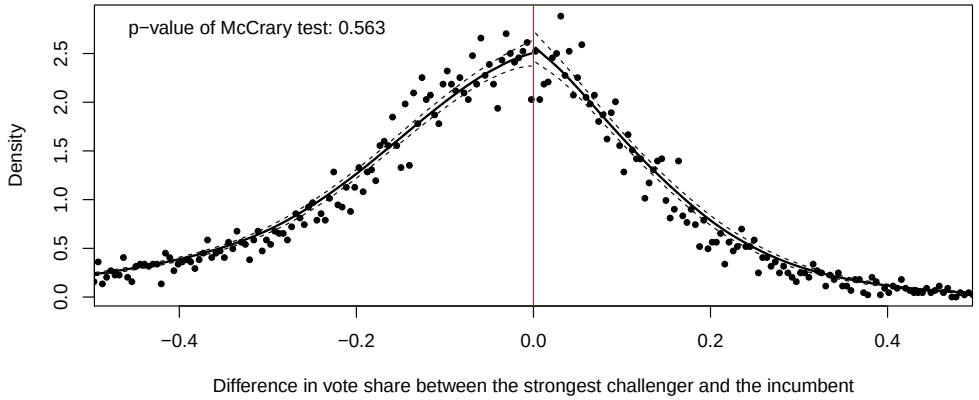
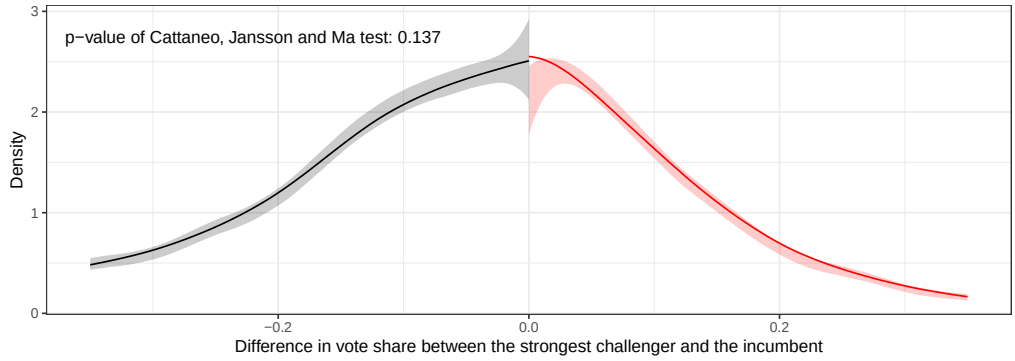


Figure D.6: Density of the forcing variable and Cattaneo et al. (2020) discontinuity test



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

	Population	Poverty	Size of government	PT	PSDB	PMDB
Incumbent defeated	0.072	-0.006	0.044	-0.002	-0.024	0.017
	(0.06)	(0.098)	(0.062)	(0.025)	(0.024)	(0.029)
Bandwidth	0.182	0.125	0.135	0.127	0.156	0.134
Observations	6441	4982	4089	3894	4522	4076

*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.

F Regression tables for results shown in Figures 1 and 2

F.1 Effects of electoral turnover on bureaucratic turnover

Table F.3: Effect an electoral defeat of the incumbent on dismissals of public employees

	Temporaries			Civil servants		
	Q15	Q16	Q1	Q15	Q16	Q1
Incumbent defeated	0.122	0.373***	0.037	0.008	-0.018	-0.033
	(0.068)	(0.093)	(0.074)	(0.02)	(0.028)	(0.027)
Bandwidth	0.126	0.153	0.134	0.126	0.192	0.131
Observations	4389	5043	3419	4377	5791	3385

Table F.4: Effect an electoral defeat of the incumbent on hires of public employees

	Temporaries			Civil servants		
	Q15	Q16	Q1	Q15	Q16	Q1
Incumbent defeated	0.077	0.024	0.716***	-0.084	0.274***	-0.188
	(0.1)	(0.05)	(0.121)	(0.082)	(0.066)	(0.143)
Bandwidth	0.138	0.166	0.159	0.172	0.13	0.109
Observations	4721	5339	3857	5455	4506	2937

Table F.5: Effect an electoral defeat of the incumbent on resignations of public employees

	Temporaries			Civil servants		
	Q15	Q16	Q1	Q15	Q16	Q1
Incumbent defeated	0.065	0.3***	0.025	-0.013	0.111*	-0.006
	(0.069)	(0.063)	(0.07)	(0.055)	(0.049)	(0.063)
Bandwidth	0.139	0.136	0.128	0.149	0.131	0.121
Observations	4737	4642	3330	4953	4538	3183

*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 follow the specification in Equation 2. Dependent variables are in the natural-log scale. Q15 corresponds to the 15th quarter of a mayor's mandate (i.e., July through September of its last year). Q16 corresponds to the 16th and last quarter of a mayor's mandate (i.e., October through December). Q1 corresponds to the first quarter of the election winner's mandate (i.e., January through March). Elections take place on the first Sunday of October, and winners are sworn in on January 1st. Results for Q15 are placebo tests.

F.2 Effects of electoral turnover on public service delivery

Table F.6: Effect an electoral defeat of the incumbent on home visits by community health agents (CHAs) and by nurses

	Home visits by CHAs			Home visits by nurses		
	Q15	Q16	Q1	Q15	Q16	Q1
Incumbent defeated	0.162	-0.131	-0.078	0.07	-0.35***	-0.061
	(0.156)	(0.073)	(0.086)	(0.137)	(0.085)	(0.082)
Bandwidth	0.099	0.115	0.161	0.119	0.124	0.153
Observations	3072	3478	4416	3559	3672	4265

Table F.7: Effect an electoral defeat of the incumbent on home visits by doctors and prenatal care check-ups

	Home visits by doctors			Prenatal care check-ups		
	Q15	Q16	Q1	Q15	Q16	Q1
Incumbent defeated	0.061	-0.585***	-0.084	0.009	-0.288**	-0.254**
	(0.127)	(0.108)	(0.098)	(0.147)	(0.088)	(0.088)
Bandwidth	0.151	0.092	0.124	0.137	0.102	0.1
Observations	4210	2858	3670	3943	3132	3107

Table F.8: Effect an electoral defeat of the incumbent on medical consultations

	Consultations with infants			Consultations with children		
	Q15	Q16	Q1	Q15	Q16	Q1
Incumbent defeated	0.01	-0.351***	0.014	0.059	-0.291***	0.012
	(0.129)	(0.093)	(0.081)	(0.124)	(0.086)	(0.079)
Bandwidth	0.126	0.104	0.133	0.128	0.116	0.131
Observations	3712	3193	3842	3754	3483	3817

*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 follow the specification in Equation 2. Dependent variables are in the natural-log scale. Q15 corresponds to the 15th quarter of a mayor's mandate (i.e., July through September of its last year). Q16 corresponds to the 16th and last quarter of a mayor's mandate (i.e., October through December). Q1 corresponds to the first quarter of the election winner's mandate (i.e., January through March). Elections take place on the first Sunday of October, and winners are sworn in on January 1st. Results for Q15 are placebo tests.

G Regression tables omitting controls

G.1 Effects of electoral turnover on bureaucratic turnover, omitting controls

Table G.9: Effect an electoral defeat of the incumbent on dismissals of public employees

	Temporaries			Civil servants		
	Q15	Q16	Q1	Q15	Q16	Q1
Incumbent defeated	0.124	0.533***	0.105	0.007	-0.015	-0.032
	(0.068)	(0.128)	(0.081)	(0.02)	(0.03)	(0.028)
Bandwidth	0.126	0.132	0.15	0.125	0.175	0.131
Observations	4382	4548	3717	4373	5498	3373

Table G.10: Effect an electoral defeat of the incumbent on hires of public employees

	Temporaries			Civil servants		
	Q15	Q16	Q1	Q15	Q16	Q1
Incumbent defeated	0.082	0.066	0.828***	-0.077	0.256**	-0.222
	(0.101)	(0.077)	(0.159)	(0.083)	(0.078)	(0.159)
Bandwidth	0.139	0.137	0.132	0.17	0.129	0.107
Observations	4743	4665	3396	5418	4477	2902

Table G.11: Effect an electoral defeat of the incumbent on resignations of public employees

	Temporaries			Civil servants		
	Q15	Q16	Q1	Q15	Q16	Q1
Incumbent defeated	0.067	0.352***	0.058	-0.012	0.084	-0.006
	(0.069)	(0.081)	(0.089)	(0.056)	(0.055)	(0.076)
Bandwidth	0.14	0.139	0.126	0.148	0.171	0.124
Observations	4755	4732	3279	4952	5433	3234

*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 follow the specification in Equation 2 but omit controls. Dependent variables are in the natural-log scale. Q15 corresponds to the 15th quarter of a mayor's mandate (i.e., July through September of its last year). Q16 corresponds to the 16th and last quarter of a mayor's mandate (i.e., October through December). Q1 corresponds to the first quarter of the election winner's mandate (i.e., January through March). Elections take place on the first Sunday of October, and winners are sworn in on January 1st. Results for Q15 are placebo tests.

G.2 Effects of electoral turnover on public service delivery

Table G.12: Effect an electoral defeat of the incumbent on home visits by community health agents (CHAs) and by nurses

	Home visits by CHAs			Home visits by nurses		
	Q15	Q16	Q1	Q15	Q16	Q1
Incumbent defeated	0.178	-0.018	-0.019	0.089	-0.218	-0.002
	(0.157)	(0.155)	(0.161)	(0.139)	(0.134)	(0.142)
Bandwidth	0.098	0.117	0.117	0.118	0.138	0.131
Observations	3050	3503	3525	3522	3969	3817

Table G.13: Effect an electoral defeat of the incumbent on home visits by doctors and prenatal care check-ups

	Home visits by doctors			Prenatal care check-ups		
	Q15	Q16	Q1	Q15	Q16	Q1
Incumbent defeated	0.064	-0.402**	-0.013	0.035	-0.096	-0.076
	(0.128)	(0.152)	(0.148)	(0.149)	(0.134)	(0.132)
Bandwidth	0.15	0.122	0.121	0.134	0.163	0.179
Observations	4191	3613	3590	3883	4444	4709

Table G.14: Effect an electoral defeat of the incumbent on medical consultations

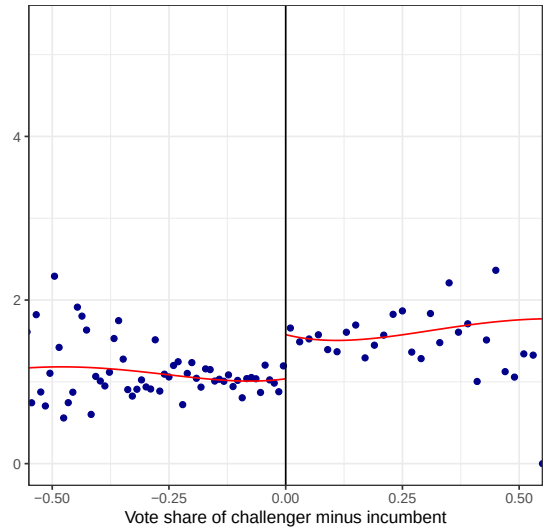
	Consultations with infants			Consultations with children		
	Q15	Q16	Q1	Q15	Q16	Q1
Incumbent defeated	0.027	-0.244	0.038	0.067	-0.174	0.069
	(0.13)	(0.128)	(0.134)	(0.124)	(0.111)	(0.129)
Bandwidth	0.125	0.138	0.125	0.127	0.169	0.125
Observations	3688	3972	3688	3728	4546	3692

*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 follow the specification in Equation 2 but omit controls. Dependent variables are in the natural-log scale. Q15 corresponds to the 15th quarter of a mayor's mandate (i.e., July through September of its last year). Q16 corresponds to the 16th and last quarter of a mayor's mandate (i.e., October through December). Q1 corresponds to the first quarter of the election winner's mandate (i.e., January through March). Elections take place on the first Sunday of October, and winners are sworn in on January 1st. Results for Q15 are placebo tests.

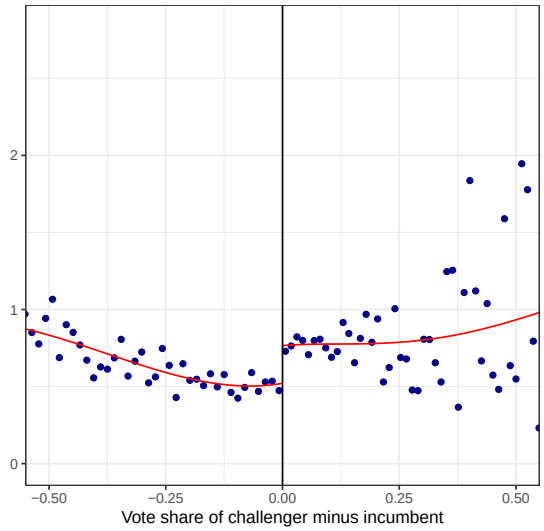
H Regression discontinuity plots of the main results

These are the RD plots (without covariate adjustment) for the main results. Plots for all other outcomes are available from the author.

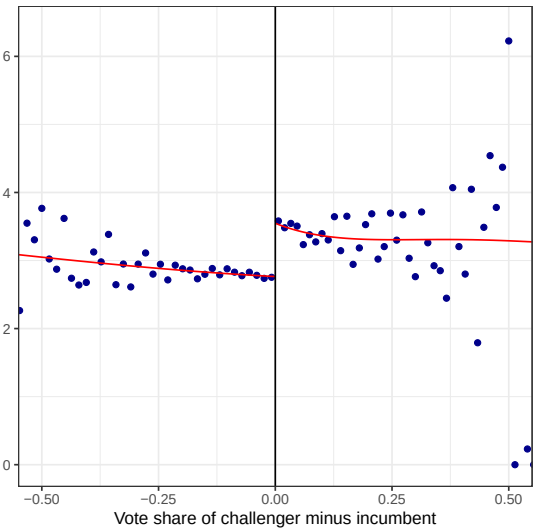
Figure H.7: RD plots for the main results in Figure 1



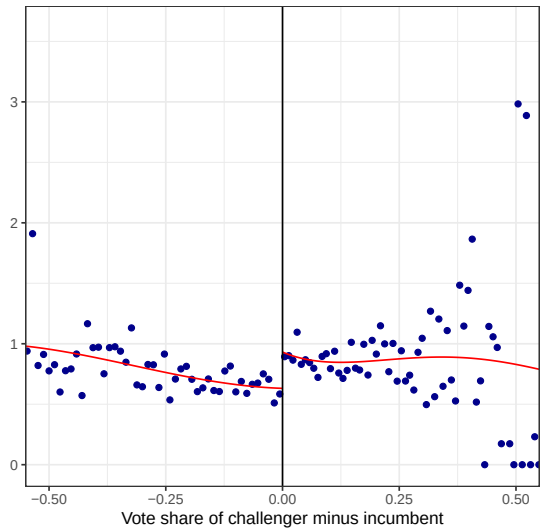
(a) Dismissals of temporaries in Q16



(b) Hires of civil servants in Q16



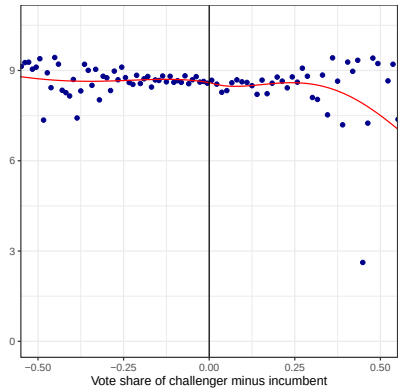
(c) Hires of temporaries in Q1



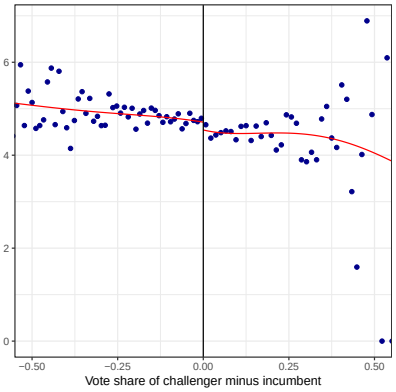
(d) Resignations of temporaries in Q16

Dependent variables are in the natural log scale.

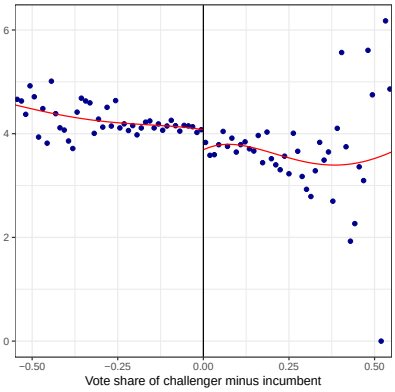
Figure H.8: RD plots for the main results in Figure 2



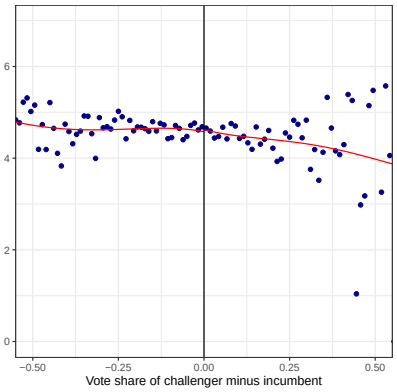
(a) Home visits by community health agents in Q16



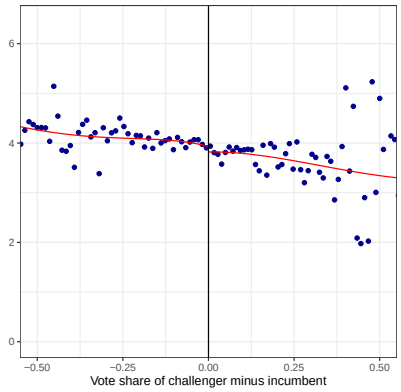
(b) Home visits by nurses in Q16



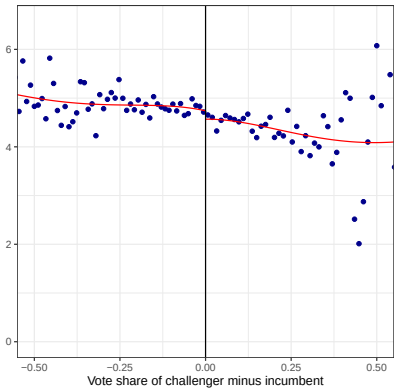
(c) Home visits by doctors in Q16



(d) Prenatal care check-ups in Q16



(e) Medical consultations, infants in Q16



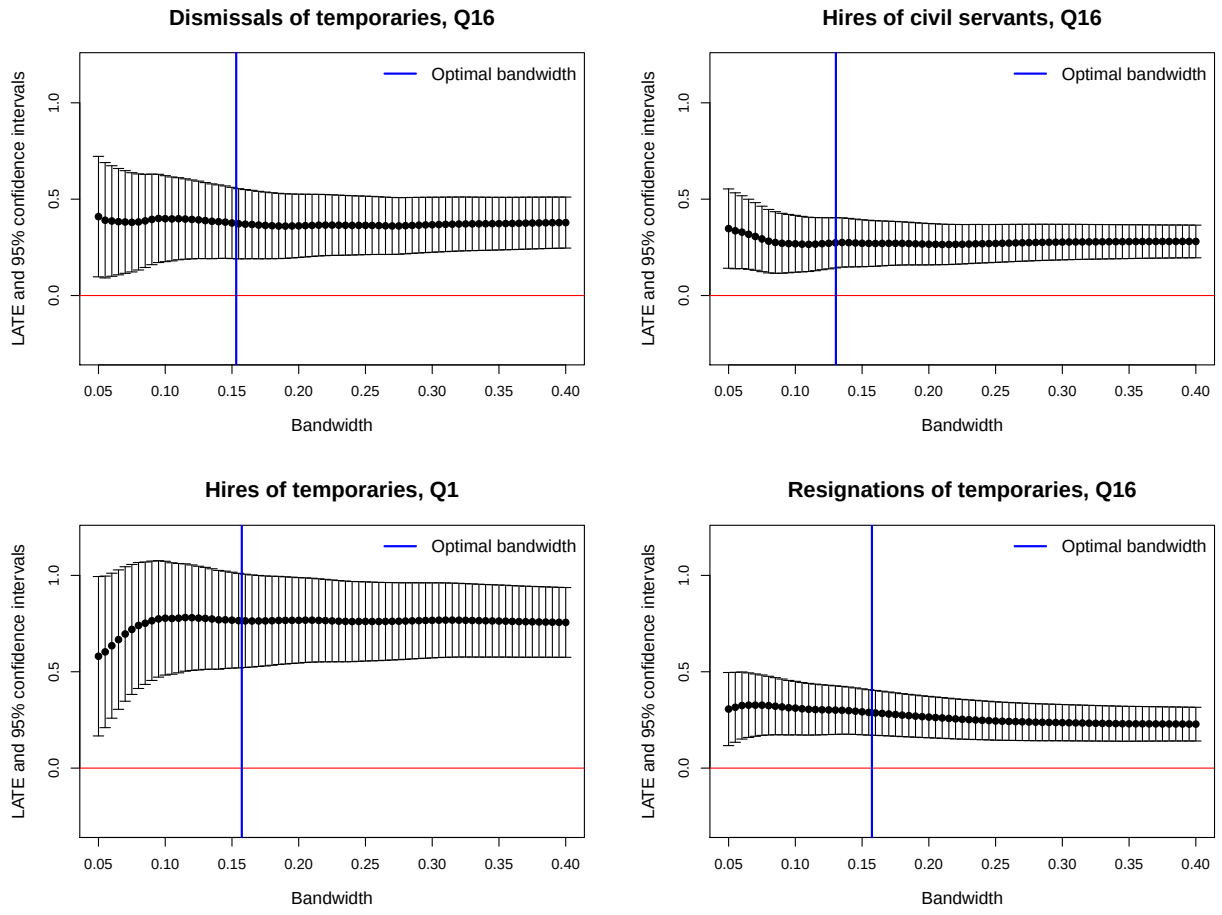
(f) Medical consultations, children in Q16

Dependent variables are in the natural log scale

I 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).[37] 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.[38] Results are generally robust to alternative bandwidths deviating from the optimal one determined by the Cattaneo et al. (2019) algorithm.

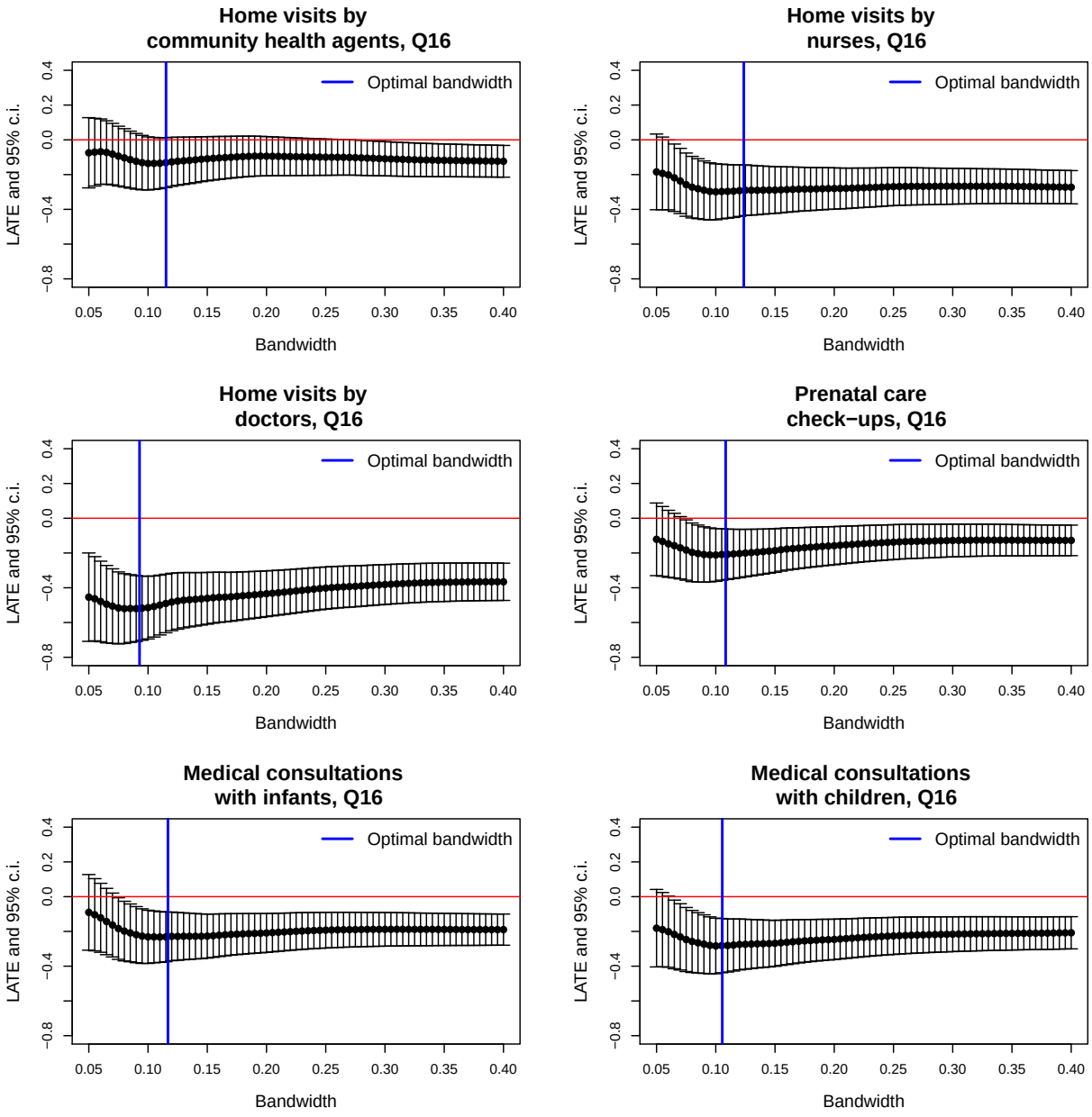
Figure I.9: Robustness of the main results in Figure 1 to alternative bandwidths



[37] 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.

[38] Results for other quarters are available from the author.

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



J Placebo tests with fake thresholds

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 -0.3, -0.2, -0.1, 0.1, 0.2 and 0.3. As shown below, only one of these placebo tests returns statistically significant results (1 of 60, which is less than what we would expect with $\alpha = 0.05$).

Figure J.11: Placebo tests varying the RD threshold for the main results in Figure 1

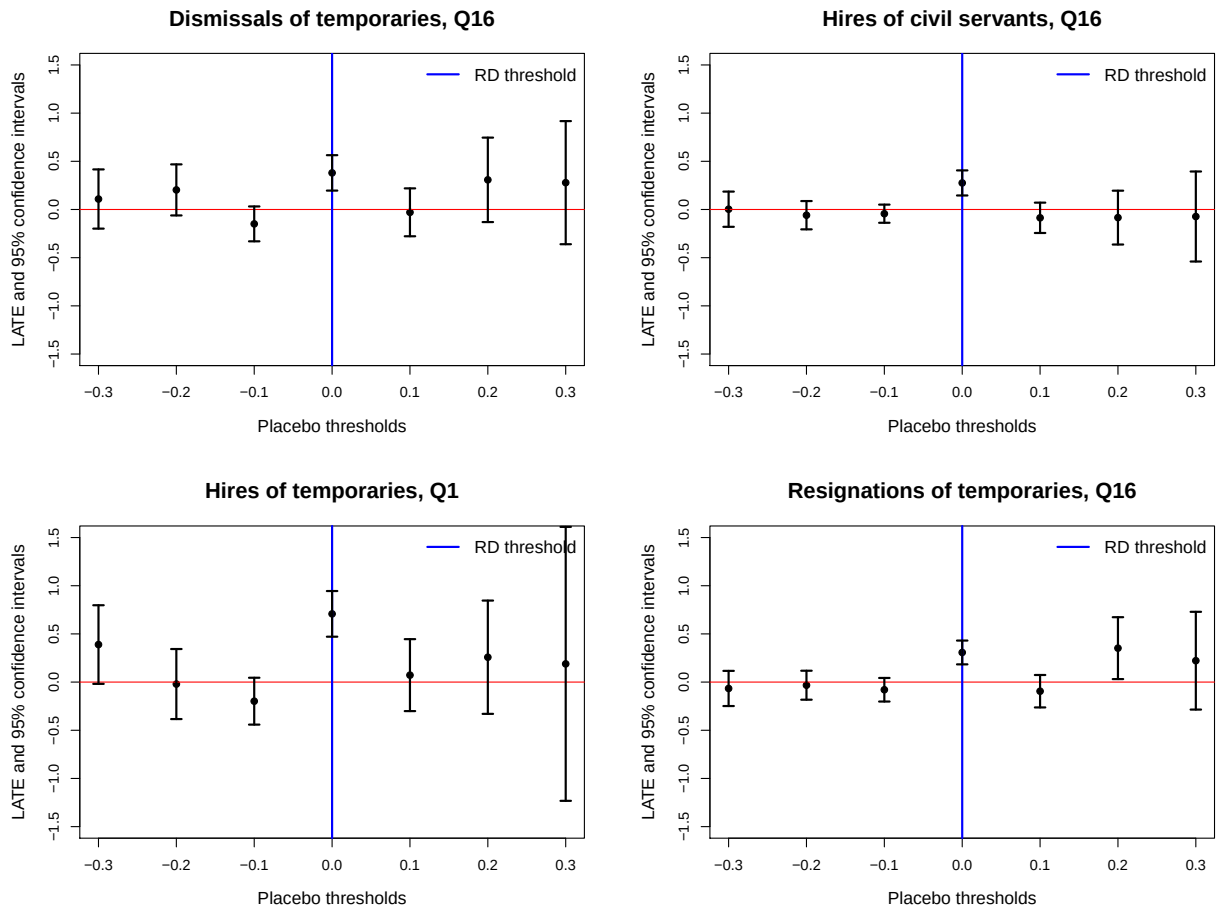
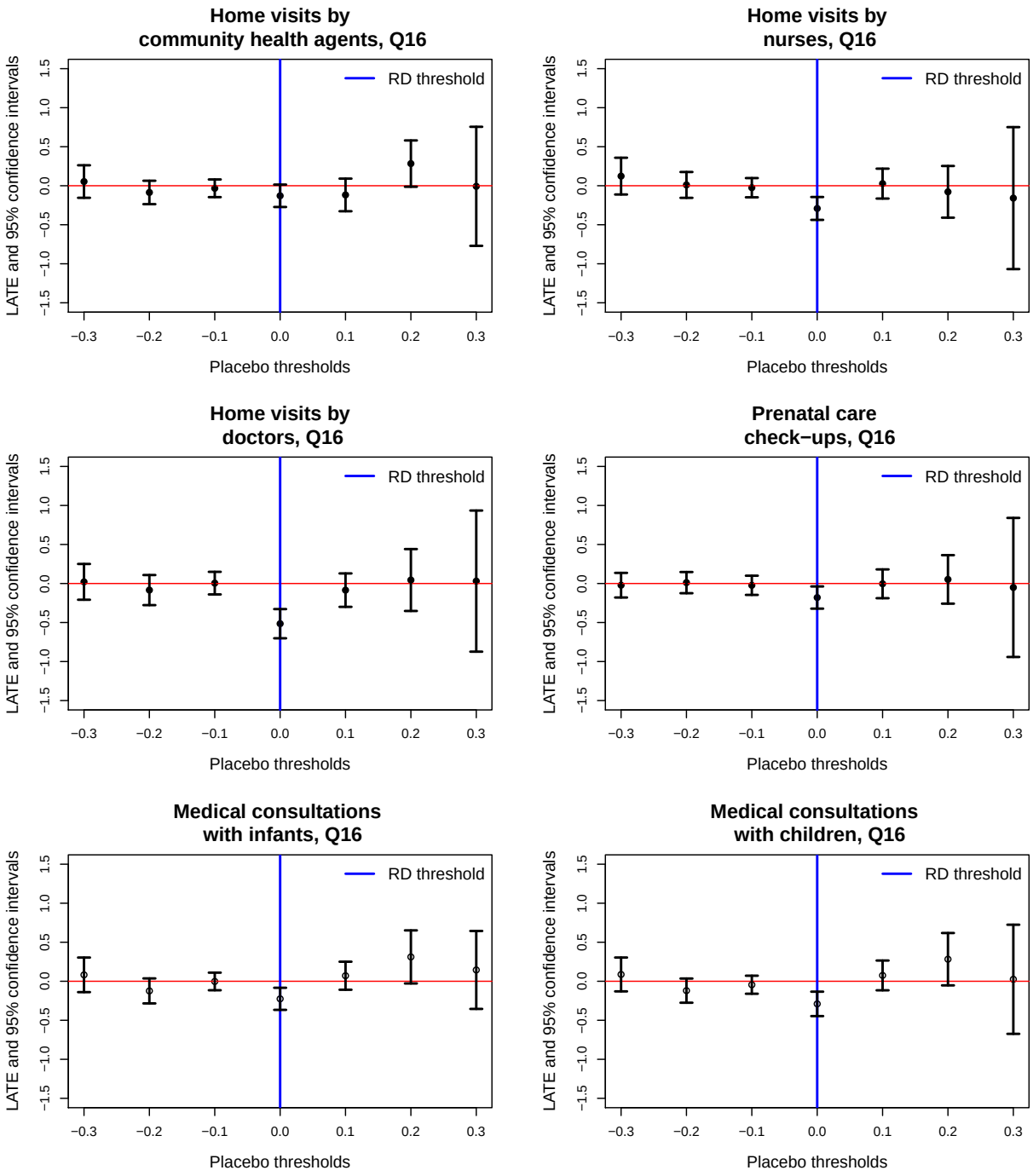


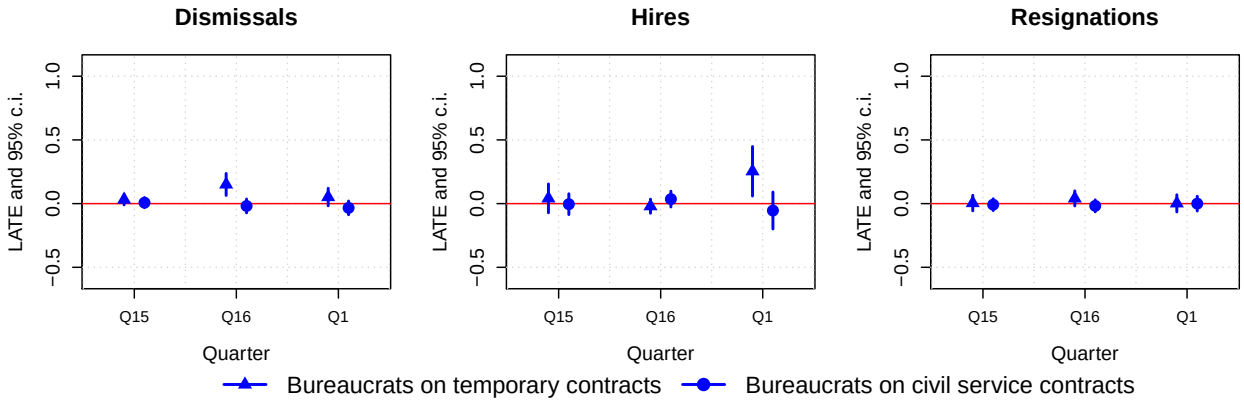
Figure J.12: Placebo tests varying the RD threshold for the main results in Figure 2



K Effects on bureaucratic turnover on specialized healthcare workers

This Appendix examines effects on the turnover of specialized healthcare workers, as identified through occupational identifiers. These include occupations like doctors, nurses, or community health agents, but do not include many workers in the healthcare sector that have more generic occupation codes, such as receptionists or drivers.

Figure K.13: Effect of an electoral defeat of the incumbent on bureaucratic turnover among specialized healthcare workers



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. Q15 corresponds to the 15th quarter of a mayor's mandate (i.e., July through September of its last year). Q16 corresponds to the 16th and last quarter of a mayor's mandate (i.e., October through December). Q1 corresponds to the first quarter of the election winner's mandate (i.e., January through March). Elections take place on the first Sunday of October, and winners are sworn in on January 1st. Results for Q15 are placebo tests.

Table K.15: Effect an electoral defeat of the incumbent on dismissals of specialized healthcare workers

	Temporaries			Civil servants		
	Q15	Q16	Q1	Q15	Q16	Q1
Incumbent defeated	0.032	0.15***	0.052	0.008	-0.018	-0.033
	(0.021)	(0.044)	(0.035)	(0.02)	(0.028)	(0.027)
Bandwidth	0.138	0.154	0.128	0.126	0.192	0.131
Observations	5380	5779	3812	4377	5791	3385

Table K.16: Effect an electoral defeat of the incumbent on hires of specialized healthcare workers

	Temporaries			Civil servants		
	Q15	Q16	Q1	Q15	Q16	Q1
Incumbent defeated	0.041	-0.02	0.254*	-0.004	0.036	-0.054
	(0.058)	(0.028)	(0.099)	(0.042)	(0.032)	(0.074)
Bandwidth	0.135	0.13	0.124	0.178	0.105	0.118
Observations	5296	5152	3712	6355	4361	3569

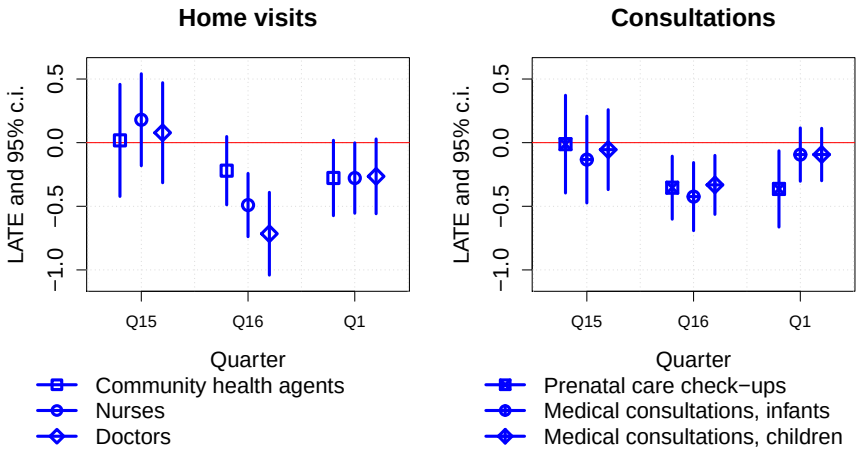
Table K.17: Effect an electoral defeat of the incumbent on resignations of specialized healthcare workers

	Temporaries			Civil servants		
	Q15	Q16	Q1	Q15	Q16	Q1
Incumbent defeated	0.004	0.041	0.002	-0.008	-0.017	0
	(0.031)	(0.03)	(0.034)	(0.024)	(0.024)	(0.03)
Bandwidth	0.146	0.141	0.141	0.124	0.155	0.131
Observations	5604	5454	4084	4948	5817	3857

*$p<0.05$; **$p<0.01$; ***$p<0.001$. *The bandwidth is determined by the algorithm of Calonico et al. (2020). Robust standard errors in parentheses. All regressions follow the specification in Equation 2. Dependent variables are in the natural-log scale. Q15 corresponds to the 15th quarter of a mayor's mandate (i.e., July through September of its last year). Q16 corresponds to the 16th and last quarter of a mayor's mandate (i.e., October through December). Q1 corresponds to the first quarter of the election winner's mandate (i.e., January through March). Elections take place on the first Sunday of October, and winners are sworn in on January 1st. Results for Q15 are placebo tests.*

L Effects on healthcare service delivery in localities where there are no dismissals of temporary workers

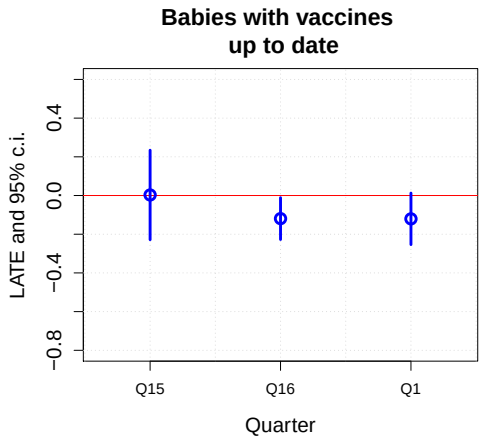
Figure L.14: Effect of an electoral defeat of the incumbent on the delivery of healthcare services in municipalities where no temporary employees are dismissed in the last quarter of the year



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. Q15 corresponds to the 15th quarter of a mayor's mandate (i.e., July through September of its last year). Q16 corresponds to the 16th and last quarter of a mayor's mandate (i.e., October through December). Q1 corresponds to the first quarter of the election winner's mandate (i.e., January through March). Elections take place on the first Sunday of October, and winners are sworn in on January 1st. Results for Q15 are placebo tests.

M Effects on the number of babies with vaccines up to date

Figure M.15: Effect of an electoral defeat of the incumbent on the number of babies with vaccines up to date



Each point and its robust bias-corrected confidence interval comes from a separate local linear regression discontinuity model, as per Equation 2.

Table M.18: Effect an electoral defeat of the incumbent on the number of babies with vaccines up to date

	Q15	Q16	Q1
Incumbent defeated	0.003	-0.119*	-0.121
	(0.118)	(0.055)	(0.068)
Bandwidth	0.122	0.129	0.138
Observations	3621	3789	3978

$^{*}p<0.05$; $^{**}p<0.01$; $^{***}p<0.001$. The bandwidth is determined by the algorithm of Calonico et al. (2020). Robust standard errors in parentheses. All regressions follow the specification in Equation 2. Dependent variables are in the natural-log scale. Q15 corresponds to the 15th quarter of a mayor's mandate (i.e., July through September of its last year). Q16 corresponds to the 16th and last quarter of a mayor's mandate (i.e., October through December). Q1 corresponds to the first quarter of the election winner's mandate (i.e., January through March). Elections take place on the first Sunday of October, and winners are sworn in on January 1st. Result for Q15 is a placebo test.

This Appendix presents results for the number of children below 1 year of age who are up to date with the prescribed vaccinations for their age. Results for Q16 are robust to alternative bandwidths – plot available from the author.