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Gender and Electoral Incentives: Women's Leadership During the COVID-19 Crisis

Gênero e Incentivos Eleitorais: Liderança Feminina na Crise da COVID-19

Mário Chaves Remígio de Oliveira
Orientador: Prof. Dr. Luís Eduardo Negrão Meloni

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MÁRIO CHAVES REMÍGIO DE OLIVEIRA

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Orientador: Prof. Dr. Luís Eduardo Negrão Meloni

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Abstract

In this paper, we study the effect of women's public leadership in times of crisis. More specifically, we use a regression discontinuity design in close mayoral races between male and female candidates to understand the impact of having a woman as a mayor during the COVID-19 pandemic in Brazil. We provide evidence that municipalities under female leadership had fewer deaths and hospitalizations per 100 thousand inhabitants and enforced more non-pharmaceutical interventions (e.g., mask usage and prohibition of gatherings) than male-governed localities. We also shed light on the potential mechanisms behind these outcomes. We show that our results are mainly driven by localities where the incumbent ran for re-election in the 2020 elections. In line with brand-new evidence, this suggests that gender differences in electoral incentives greatly shaped the policy and epidemiological results we observed in Brazil. Finally, we show that although female mayors who sought re-election outperformed their male peers in managing the COVID-19 crisis, there is no evidence they got an electoral premium over men in the subsequent local election.

Key words: Gender, Electoral Incentives, Leadership, COVID-19, Brazil

JEL Classification: J16, D72, D78, I18

Resumo

Neste trabalho, estudamos o efeito da liderança pública feminina em tempos de crise. Mais especificamente, utilizamos o método de regressão descontínua em eleições para prefeitos com uma margem muito pequena de votos entre candidatos homens e candidatas mulheres para compreender qual o impacto de se ter uma prefeita mulher durante a pandemia do COVID-19 no Brasil. Nossos resultados indicam que municípios com liderança feminina apresentaram menos mortes e hospitalizações por 100 mil habitantes e, além disso, tiveram mais intervenções sanitárias - como obrigatoriedade do uso de máscaras e proibição de aglomerações - em relação aos municípios governados por prefeitos homens. Ao investigar quais os mecanismos por trás desses achados, mostramos que os resultados se concentram em localidades que o prefeito incumbente concorreu à reeleição em 2020. Em linha com as novas evidências, nossos achados indicam que diferenças de incentivos eleitorais entre os gêneros influenciaram substancialmente a escolha de políticas públicas e, portanto, os resultados epidemiológicos que observamos no Brasil. Por fim, apesar dos nossos resultados indicarem que as prefeitas mulheres que concorreram à reeleição em 2020 foram melhores gestoras da pandemia que seus pares masculinos, não encontramos evidência de que isso as deu uma vantagem eleitoral sobre os homens nas eleições subsequentes.

Palávras Chaves: Gênero, Incentivos Eleitorais, Liderança, COVID-19, Brasil

Códigos JEL: J16, D72, D78, I18

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1 Introduction

The recent COVID-19 pandemic that afflicted the world brought social scientists' attention to the role that political leadership plays in moments of crisis. Although the literature documents that, in general, political leadership plays a role in shaping social and economic outcomes (Jones & Olken (2005), Yao & Zhang (2015)), a moment such as a pandemic presents an unusual and challenging scenario. Such a critical context can change the salience of specific policies and political attitudes for voters, changing politicians' electoral incentives and valuing specific politicians' characteristics. In this sense, little is known about the role of women as policymakers in times of crisis and how gender differences in attitudes and electoral incentives may affect a crisis management.

Several recent studies have examined political leadership's direct and indirect impacts on COVID-19 outcomes. Ajzenman et al. (2020), for example, showed that Bolsonaro's government anti-scientific rhetoric led to a reduced social distancing in pro-government localities during the pandemic. Bruce et al. (2022) looked into the role of female leadership: in that work, we show that Brazilian municipalities ruled by a female mayor presented fewer deaths and hospitalizations related to COVID-19 than male-ruled localities. In addition to this, Chauvin & Tricaud (2022) argues that gender differences in electoral incentives might explain the differences in attitudes toward the covid pandemic between female and male mayors in Brazil.

Following the effort of these recent studies on political leadership during the COVID-19 pandemic, this work is an extension of Bruce et al. (2022). Still using Brazil as a laboratory, we complement that study by bringing new evidence to its main results and investigating novel questions. Besides recalling Bruce et al. (2022)'s main results, we address and answer the following questions: Was the better performance of female leaders in the COVID-19 crisis mostly driven by electoral incentives? If yes, did they obtain any electoral premium in Brazil's 2020 municipal elections for doing so?

Identifying the effects of female leadership on policy, epidemiological, and electoral outcomes is challenging because of municipality-specific factors related both to the presence of female leaders and the outcomes we are studying. To avoid biases caused by these factors, we implement a Regression Discontinuity (RD) design which compares municipalities where a female candidate won against a male one by a narrow margin with the ones where the opposite occurred. This allows us to compare cities that are very similar in every characteristic but the gender of their mayor, thus identifying the effect of electing a female leader on our outcomes of interest. As should be, we complement this identification strategy by showing that - for each exercise we do - the municipalities are indeed balanced on several health, political, and sociodemographic characteristics at the threshold. In addition, we also present evidence that gender-related factors such as age, education, and occupation do not explain our results.[1]

From Bruce et al. (2022), we show that the presence of a female leader in Brazilian Municipalities had a negative, sizable, and significant impact on the number of COVID-19 deaths and hospitalizations per 100 thousand inhabitants. The results from our main specification show that electing a woman as a mayor, as opposed to a man, caused a decrease of 46.9 COVID-19 hospitalizations and 21.7 COVID-19 deaths - per 100 thousand inhabitants. These represent 30.4% and 37.2% of these variables average among places that elected a man. This new work brings novel evidence and interpretation to these outcomes. In line with the mechanism proposed by Chauvin & Tricaud (2022), we show that these results are mostly driven by mayors that seek re-election at the end of 2020. By restricting the original sample to localities where the incumbent ran for re-election in 2020, we find an even greater impact of female leadership: 39.5 fewer deaths and 70.4 fewer hospitalizations per 100 thousand inhabitants provoked by COVID-19. These outcomes correspond, respectively, to 85% and 59.5% to their averages among municipalities governed by men in this sample. Moreover, reproducing the same exercise to places where the incumbent did not seek re-election, no effect is left, and our estimates become statistically equal to zero.

We also show that electing a female mayor causes a statistically significant increase in the number of non-pharmaceutical interventions (NPIs) enforced in the municipality in 2020. First, we present this result for the aggregated sample

[1] In cases we find a potentially relevant imbalance, we control for the respective variable.

of localities with mixed-gender electoral races as part of the results of Bruce et al. (2022). Then, as part of this extension, we show that, in line with the better epidemiological outcomes, this higher adoption of containment policies by female mayors was concentrated in localities where the incumbent ran for re-election in 2020. Again, in the sample of municipalities where the incumbent did not run for re-election, we found no differences in containment policies' adoptions between mayors from different genders.

Finally, we assess if the better performance in COVID-19 crisis management by female mayors seeking re-election earned them an electoral premium in Brazil's 2020 municipal polls. We find no difference in re-election likelihood between mayors of different genders. In addition, we find little evidence that female incumbents received more votes for re-election than male ones. As we discuss further in this work, this is compatible with the evidence that voters are gender-bias when assessing the performance of mayors (Chauvin & Tricaud (2022)). Despite that, putting these results in perspective, we show that previous work indicates that incumbent women in Brazil were less likely than men to be re-elected, suggesting that outperforming men in the pandemic may have evened things out.

We perform a series of robustness checks. First, in each exercise involving COVID-19 outcomes, we also document similar point estimates using Severe Acute Respiratory Infection (SARI) deaths and hospitalizations as the dependent variables. SARI data are less likely to suffer from non-classical measurement error caused by strategic underreporting since they do not depend on a positive COVID-19 test for a diagnosis. Second, our main empirical exercises always present RD point estimates for both linear and quadratic polynomial specifications. Our main results are mostly robust to these two approaches. Third, we show that our main results are robust to different bandwidth length choices.[2] Finally, we reproduce our main RD estimations using placebo cutoffs, providing evidence that the outcomes we observe for the true threshold are not caused by chance but by some underlying causal mechanism related to the presence of female leadership.

[2]Although the optimal bandwidth we obtain may be considered large, it is consistent with other papers using close election as an RD design in Brazil such as Brollo & Troiano (2016) and Arvate et al. (2021).

Brazil offers an ideal setting to study whether female leaders responded better to the COVID-19 crisis and if they got an electoral premium doing so. First, Brazil was severely hit by the pandemic, with one of the highest mortality rates on the planet and considerable variation in deaths and hospitalizations across municipalities (Souza et al. (2020)). Second, Brazilian cities enjoyed autonomy in adopting containment policies during the pandemic. Third, Brazil held municipal elections in November 2020, allowing voters to reward or punish mayors while health crisis-related policies were still very salient to them. Finally, Brazil has 5,568 municipalities, hosting many competitive local elections which provides statistical power to compare outcomes in mixed-gender close races, as previous works have successfully done.

The most immediate contribution of this work is filling the gap between Bruce et al. (2022) and Chauvin & Tricaud (2022). These two works studied the COVID-19 pandemic in Brazil for the 2020 year, focusing on the role played by gender in leadership and taking advantage of local mixed-gender electoral races. Bruce et al. (2022) shows that localities governed by female mayors had overall better epidemiological and policy results in 2020. In turn, Chauvin & Tricaud (2022) present evidence that male mayors were more restrictive at the pandemic's beginning, while female mayors were more restrictive in that year's second semester due to gender differences in electoral incentives. We link these two studies presenting evidence that Chauvin & Tricaud (2022)'s proposed mechanism is behind the aggregated results we observe in Bruce et al. (2022).

This work also contributes to several strands of the literature. First, we add to the extensive research investigating the role of women as policymakers. Previous work documented how female leadership decreases corruption and improves policy and economic outcomes in developing countries, but does not affect these outcomes in developed nations.[3] Closely related to our work, Brollo & Troiano

[3] Afridi et al. (2017) show that female mayors are less likely to be involved in corruption in India, and Decarolis et al. (2021) show that bureaucratic corruption is less intense among women in Italy and China. Chattopadhyay & Duflo (2004), Clots-Figueras (2011), Clots-Figueras (2012), Bhalotra & Clots-Figueras (2014), and Baskaran & Hessami (2018) show that female leadership improves policy outcomes in India. In contrast, Bagues & Campa (2021), Gago & Carozzi (2021), Casarico et al. (2021), and Ferreira & Gyourko (2014) show that female leadership has no impact on outcomes in Spain, Italy, and United States.

(2016) document that female mayors lead to better prenatal care delivery and are less likely to engage in corruption, and Barbosa (2017) finds that electing a woman as a mayor does not affect educational outcomes.

To the best of our knowledge, the role of women as policymakers in critical times and the political factors that magnify their influence on policy outcomes have yet to be well understood. We make two main contributions to this literature. First, we provide evidence that electing a female mayor improved health outcomes during a pandemic, showing that female leaders fared better than male ones in dealing with a major global issue. Second, we shed light on the mechanisms that may explain gender differences in leaders' behavior. Although gender differences in policy preferences may play a role, we show that voter's gender bias and differences in electoral incentives may have a more significant impact, strongly shaping policies in a moment of severe crisis.

Our findings directly contribute to other recent studies analyzing how female leadership affects policies related to COVID-19 and the pandemic severity, which documented mixed results. Piscopo (2020), Aldrich & Lotito (2020) and Windsor et al. (2020) find that countries led by women had similar COVID-19 mortality than those led by men. Abras et al. (2021) document a negative association between COVID-19 outcomes and female leadership attributed to differences in health systems where women rule, not their leadership. In contrast, Garikipati & Kambhampati (2021) show that countries led by women had better results than those led by men and attributes such differences to earlier adoption to NPIs by female leaders. Using across state-level data from the US, Sergent & Stajkovic (2020) show that states led by women had fewer COVID-19 deaths and earlier stay-at-home-orders. We complement this literature by estimating the impacts of female leadership on COVID-19 epidemiological outcomes using within-country data and a method with high internal validity, thus providing credible evidence on how women outshone men as leaders during the pandemic.

Our findings also relate to the literature investigating the broad consequences of female political participation. Beaman et al. (2009) and Iyer et al. (2012) present evidence on the social consequences of political reforms that increased political representation of women in India. While the former finds a weakening in gender stereotypes, the latter finds a backlash in the form of an increase of violence against women. Evidence from the US context shows that extending the franchise to women increased per capita government spending and decreased infant and maternal mortality (Lott & Kenny (1999), Miller (2008), Bhalotra et al. (2020)). We complement this literature by showing that the importance of women's descriptive representation becomes especially relevant during a health crisis.

This work is divided into seven chapters, including this introduction. Chapter 2 describes the epidemiological and institutional scenario Brazil faced during the pandemic. In Chapter 3, we describe the data we use in this work and its sources. Chapter 4 present our empirical strategy and research design. After these more general chapters, there are two results chapters. Chapter 5 presents Bruce et al. (2022) main results and adds new elements to its discussion. In Chapter 6, we investigate electoral incentives' role in those results. Finally, Chapter 7 presents our concluding remarks.

2 Background

On March 11, 2020, after more than 118,000 cases in 114 countries and 4,291 deaths, the World Health Organization declared COVID-19 a pandemic.[4] By that date, Brazil had around 40 COVID-19 cases confirmed in its territory, having its first confirmed death on March 17. Unfortunately, the disease didn't take long to spread exponentially across the country. Led by a government with anti-scientific beliefs and attitudes (Ajzenman et al. (2020)), Brazil experienced one of the world's worst pandemic results.

In 2018, Brazil elected as president Jair Bolsonaro, a far-right politician, historically known for his controversial views on human rights and police violence and for his support for the Brazilian military dictatorship. With an authoritarian leadership style, Bolsonaro's presidency was marked by the reckless way it dealt with the COVID-19 crisis. The Brazilian federal government refused to follow international recommendations for the adoption of NPIs, declined to establish social distancing measures and to promote the use of facial coverage (Ferigato et al. (2020)). He repeatedly criticized governors and mayors for closing businesses, and proposed restricting social isolation measures to the elderly (Economist (2020b)). He also attended large political gatherings (Marcelino & Slattery (2020)) and publicly undermined science several times during the pandemic, calling COVID-19 "just a sniffle" (Economist (2020a)), advocating the use of unproven drugs such as Hydroxychloroquine (Londoño & Simões (2020)) and, more recently, doubting vaccines' safety (Daniels (2021)).

A solid democratic institutional context partially limited Bolsonaro's anti-scientific leadership damage in the pandemic's first year (Barberia & Gómez (2020)). In response to the pressing needs of states and municipalities to enforce NPIs to control the severity of the pandemic, the Brazilian Federal Supreme Court, in April 2020, decided that the federal government could not unilaterally dismiss decisions adopted by local governments to fight the pandemic (Supremo Tribunal Federal (2020)). This provided local governments with both the legal autonomy and policy instruments to mitigate the spread of the disease, mostly through Brazil's Unified

[4]Source: CDC Museum COVID-19 Timeline.

Health System - *Sistema Único de Saúde (SUS).*

Until the COVID-19 pandemic, Brazil had a successful history of national vaccination campaigns. With the formulation of the National Immunization Program (PNI) in 1973 and the creation of SUS in 1988, the country built remarkable federal governance concerning the control of vaccine-preventable diseases at the national level. This well-established structure was undermined by the federal government's lack of cooperation in a pandemic that required total institutional capacity (Fleury & Fava (2022)). The Bolsonaro government came to ignore Pfizer's vaccines offers and even mocked the CoronaVac vaccine - the first to be produced and applied in Brazil, in an independent effort of the São Paulo state and its highly respected scientific institute, the *Instituto Butantan*.[5][6] Amid this institutional disorder, immunization in the country was far less efficient than it could have been.[7] For example, Brazil took three months more than the US to reach the mark of a hundred vaccine doses administered per 100 people (Mathieu et al. (2020)), costing Brazilian residents' lives.

As seen, political and institutional disputes resulted in inadequate policy responses to the COVID-19 outbreak, and Brazil has become one of the hot spots of the pandemic. In its second and deadliest COVID-19 wave, which peaked in April 2021, Brazil reached the sad mark of more than 3,000 COVID-19 deaths per day. By November 1, 2022, Brazil had a death toll of 688,291 people, giving the country one of the highest mortality rates on the planet (Mathieu et al. (2020)), which becomes even more salient after controlling for its population's gender and age composition (Hecksher (2020)).

Since the 1988 Brazilian Constitution establishes free health care as a right, SUS targets free universal health coverage, which contrasts with the health systems of most developing countries Bhalotra et al. (2019). The majority of the population rely on it for medical treatment, as only 28% of the Brazilians have private health insurance IBGE (2019). Mayors play an essential role in health policy, managing 20% of the SUS resources Andrade & Lisboa (2002). Municipalities usually admin-

[5]Source: "Ao todo, 53 e-mails da Pfizer ao governo Bolsonaro ficaram sem resposta, diz Randolfe." (in Portuguese).

[6]Source: "Veja 10 vezes em que Bolsonaro criticou a CoronaVac." (in Portuguese).

[7]Source: "Bolsonaro Talked Vaccines Down. Now Brazil Has Too Few Doses.".

istrate smaller public health units that complement the supply of services in larger state and federal hospitals. These small units are a relevant supplier of health services in Brazil, as more than 60% of the population use their services Castro et al. (2019). Moreover, in line with the active role of mayors, health is usually a salient policy issue for voters during municipal elections Boas et al. (2019).

In 2020, Brazil experienced a relevant coincidence: amid the great health and social crisis the COVID-19 pandemic provoked, putting heavy responsibility over policymakers' backs, the country held a municipal election. While facing the COVID-19 threat, more than 100 million voters, distributed across 5,568 municipalities, went to the polls to choose their mayors and local councilors. Right at the moment when the dangers of the virus were evident, and so were the efforts to combat them, Brazilian citizens had the chance to judge the performance of their local leaders, being able to exchange them for new ones for the coming year.

3 Data

Electoral Outcomes

The bases of our analysis are the mixed-gender electoral races in Brazilian municipalities in 2016 and 2020. Brazil's Electoral Court - *Tribunal Superior Eleitoral (TSE)* - provides a highly detailed dataset on the results of every municipal election which contains various information on each candidate, including gender, age, schooling, occupation, and received votes. This dataset allows us to identify every mayor's bailout that a female candidate barely won against a male candidate (or the opposite). From that, we can also determine the incumbents and the candidates that ran for reelection.

Epidemiological Outcomes

Our main epidemiological and vaccine outcomes come from, respectively, the SIVEP-Gripe system and the SI-PNI system, which are both managed by Brazil's Ministry of Health - *Ministério da Saúde (MS)*. We combine information from these datasets with census population accounts from Brazil's National Bureau of Statistics - *Instituto Brasileiro de Geografia e Estatística (IBGE)* - to compute the number of COVID-19 deaths, hospitalizations, and vaccine's doses per 100 inhabitants at the municipality level, as it is standard in the epidemiology literature.

Policy Outcomes

To construct our policy outcomes we use data from three distinct sources. First, we compute health care spending per capita by combining budgetary information from the SICONFI (Brazilian Public Sector Accounting and Tax Information System) managed by Brazil's National Treasury (STN) with IBGE's population accounts. Second, we compute the number of hospital beds and ICUs hospital beds per 100 thousand inhabitants combining data from MS's National Register of Health Establishments (CNES) with IBGE's population accounts. Finally, we use data that allows us to identify if mayors adopted NPIs during the year of 2020, such as restricting entry in the municipality, limits on social gatherings, closure of non-essential businesses, compulsory use of masks, and reduced public transportation services. This information was obtained through a partnership between the research team from Santos et al. (2021) and Brazil's National Confederation of Municipalities. Between May and July, 2020, 72.3% of 5,568 mayors and the Federal District's government were surveyed via phone calls on local NPI policies related to the pandemic. [8]

Baseline Characteristics

To complement our analysis we obtained data on baseline characteristics from several sources. First, we use information from IBGE's MUNIC and MS's CNES to compute a set of policy and communication-related control variables at the municipality level before the 2016 election. Second, we compute a series of socioeconomic and demographic controls at the municipality level using the IBGE's census data. Third, using data about candidates' characteristics and vote shares from Brazil's Electoral Court, we compute mayor-level controls such as years of education, age and whether or not the candidate is a health sector worker. Finally, we calculate the municipal ideological score using Power & Rodrigues-Silveira (2019)'s party-level index from the 2016 election.

Data and Variables Description Tables

Complementing the detailed description we presented above, in Tables B.1 and B.2 we carefully elucidated the definition and source of the main variables we use in this work, separately for covariates and dependent variables.[9]

[8] More information on the methodology is available on Santos et al. (2021).

[9] We present references to key descriptive statistics in each results' chapter, according to each different sample we use through this work.

4 Empirical Strategy

Regression Discontinuity

It is not a trivial task to isolate and identify the causal impact of female leadership on policy, electoral, and epidemiological outcomes. It may be that municipalities' characteristics that affect our outcomes of interest are in some way associated with the mayor's gender. For example, having a woman as mayor may be positively correlated with a mostly female population, leading to fewer COVID-19 deaths since women are more likely to see this disease as a serious health problem, to agree with containment policies, and to comply with them (Galasso et al. (2020)). In this case, simply comparing localities with mayors of different genders could induce us to conclude that female leadership was causing the outcome when, in fact, the population sex composition was.

The Regression Discontinuity (RD) design allows us to get around this endogeneity problem by comparing cities where a female mayor barely won against a male mayor to those where the opposite happened. With this strategy, we may compare localities that are very similar in their characteristics but in their political leader gender.

Said that, we rely on a sharp regression discontinuity (RD) strategy with the following specification:

$$y_{ms} = \alpha + \beta FemaleMayor_{ms} + f(FemaleVoteMargin_{ms}) + \gamma_s + \epsilon_{ms}, \qquad (1)$$

where m denotes a municipality and s denotes a state. $FemaleVoteMargin_{ms}$ is the margin of victory of the winner female mayor candidate in the previous mixed-gender electoral race. $FemaleVoteMargin_{ms}$ is positive if the winner of the mixed-gender election was a female candidate and the second place was a male candidate, and negative if the opposite takes place. The independent variable $FemaleMayor_{ms}$ is an indicator which takes value 1 if our running variable $FemaleVoteMargin_{ms} \geq 0$ and zero otherwise. Finally, γ_s is a state fixed-effects term.[10] We estimate our equation assuming that $f(.)$ is a flexible polynomial on both sides of the threshold. Following Gelman & Imbens (2019) we estimate only first and second-degree polynomials for the optimal bandwidth calculated using the non-parametric procedure from Calonico et al. (2014). Our coefficient of interest β measures the effect of having a female mayor on outcome y_{ms}.

We choose a specification with state fixed-effects as our main one for several reasons. First, since treatment and control municipalities have similar frequency across states, we can increase the efficiency of our estimates without biasing them when adding fixed-effects (Calonico et al. (2019)). Second, as governors have autonomy to enforce NPIs, we compare municipalities subject to the same state-level regulation. Third, since Brazil is a large continental country, we decrease the chance of comparing municipalities where the first and second COVID-19 waves started before and after the end of 2020.

Validity of the RD design

In order to interpret β as causal we must satisfy two conditions: (i) our treatment does not affect baseline covariates and (ii) there is no manipulation of the running variable near the threshold. The first is equivalent to saying that our sample must be balanced for treated and untreated units in pre-determined municipality-specific characteristics. If these conditions hold, we can be sure that the gender of the mayor was as good as randomly assigned across municipalities at the threshold. This does not prevent the results we find may be caused by some mayor's characteristics correlated to gender. It might be that female mayors are more likely to have a degree in public health, which might help in fighting a pandemic. That said, we also test if mayors of different genders are balanced in potential relevant characteristics.

The very nature of the RD design requires that every time we base our estimates on a sample representing a different population, we should verify for the validation described above. That said, we proceed with validity discussion for every sample we use through this work. These discussions are located in the results'

[10]The fixed-effect term is added following the recommended approach in Calonico et al. (2019).

chapters.

5 Results I: Under Pressure

Introduction

In this section, I'll present the main results of Bruce et al. (2022), a paper I've co-authored. In this work, we have shown that Brazilian municipalities governed by female mayors had better epidemiological outcomes in the COVID-19 pandemic's first year, 2020. We also showed that female mayors were more likely to adopt nonpharmaceutical interventions (NPIs) to contain the spread of the virus in the same period.

Sample

As explained in Chapter 4, we adopt a Regression Discontinuity (RD) design to estimate the causal effect of female leadership. In Brazil, incumbent mayors in 2020 were in their last term year, i.e., they were elected in 2016. Hence, to carry on with our empirical strategy, we restrict our sample to Brazilian municipalities where the two best-placed candidates in the 2016 mayoral elections had opposite genders. Besides that, we restrict our sample to places that didn't hold a runoff. This leaves us with a 1222 municipalities sample.

In Tables B.6 and B.7 we present the key descriptive statistics for our main independent and dependent variables using this sample.

Validating the RD design

In order to interpret our estimates using this sample as casual, two conditions must hold: (i) our treatment must not affect baseline covariates, and (ii) there must be no manipulation of the running variable near the threshold.

In Figure A.1, we present the t-statistics and the standardized values of β in Equation 1 using our baseline covariates as dependent variables.[11] We find that all our baseline characteristics are balanced across places with a female mayor and

[11] Standardized coefficients are defined by $\tilde{\beta} = \frac{\beta}{\sigma_{covariate_{ms}}}$, where $\sigma_{covariate_{ms}}$ is the standard deviation of each covariate in the graph within the optimal bandwidth range.

a male mayor. Complementing this, Table B.5 shows that the balance also holds for municipalities' states. These evidences suggest that condition (i) holds.

In Figure A.2, we show that our running variable, $FemaleVoteMargin_{ms}$, does not present any bunching near the threshold. This is verified using a McCrary test which yields a p-value of 0.30 and, therefore, fails to reject the null of no manipulation in our running variable.[12] This suggests that condition (ii) also holds and our design has validity.

Results

COVID-19 (and SARI) deaths and hospitalization. Table 1 presents our RD estimates for our primary epidemiological outcomes: COVID-19 and SARI deaths and hospitalizations per 100 thousand inhabitants. Each of these dependent variables are represented by one column in Table 1. In Panel A, we estimate a linear polynomial; in Panel B, a quadratic polynomial.

Table 1 – Impact of female leadership on COVID-19 deaths and cases - RD estimates - - Full 1222 mixed-gender electoral races sample

	COVID-19 deaths per 100k pop.	COVID-19 hospitalizations per 100k pop.	SARI deaths per 100k pop.	SARI hospitalizations per 100k pop.
Panel A: Linear specification				
RD Estimator	-25.526	-46.9558	-19.9059	-48.0531
Robust p-value	0.0014***	0.015**	0.032**	0.08*
Robust conf. int.	[-41.1545, -9.8975]	[-84.6665, -9.2452]	[-38.1193, -1.6925]	[-101.7278, 5.6216]
CCT-Optimal BW	9.054	8.478	9.4189	8.5657
Eff. Number Obs.	508	484	524	487
Panel B: Quadratic specification				
RD Estimator	-21.7457	-51.0762	-20.6654	-58.6977
Robust p-value	0.015**	0.02**	0.04**	0.056*
Robust conf. int.	[-39.2945, -4.1969]	[-94.1926, -7.9597]	[-40.5064, -0.8243]	[-118.8668, 1.4713]
CCT-Optimal BW	15.81	15.6721	15.9106	16.7521
Eff. Number Obs.	792	786	797	816

Notes: This table reports our RD estimates of the effect of female mayors on the number of deaths and hospitalizations by COVID-19 and SARI per hundred thousand inhabitants in 2020 in Brazilian municipalities. Note that COVID-19 numbers are a subset of SARI numbers. Estimation proceeded over the 1222 municipalities in our mixed-gender elections sample, i.e., our full sample. Panel A shows the results for a first-degree polynomial estimation. Panel B shows the results for a second-degree polynomial estimation. Optimal bandwidths following Calonico et al. (2014) were chosen to minimize the mean squared error of the local polynomial RD point estimator. Following that same work, we report robust-bias corrected p-values and 95% CIs. All estimates account for state fixed-effects following Equation 1. Coefficients significantly different from zero at 99% (***), 95% (**) and 90% (*) confidence level.

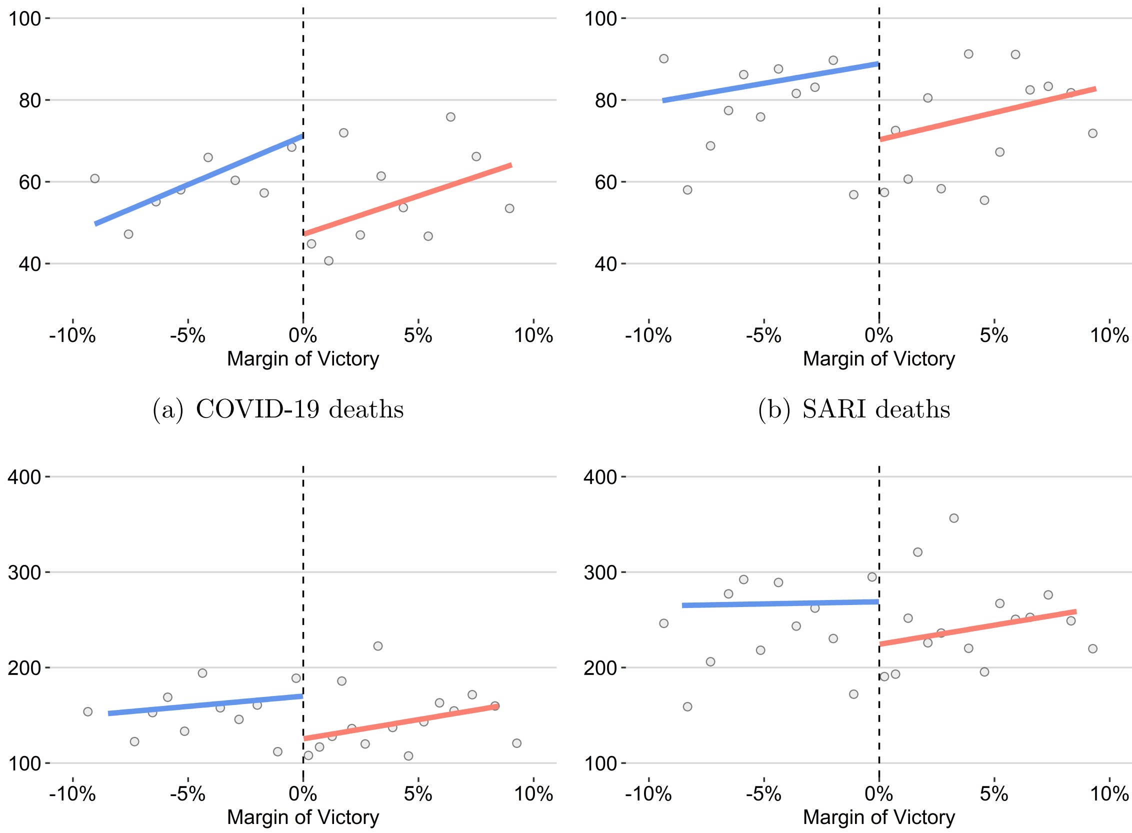
[12]See McCrary (2008).

In the first column, we show that municipalities that elected a female mayor experienced 25.52 fewer deaths per 100 thousand inhabitants, an impact that is significant at 1% confidence levels. This corresponds to 43.7 percent of the outcome average among municipalities that elected a male mayor, according to the values in Table B.7. In the second column of Panel A, we find a significant difference of 46.95 fewer hospitalizations per 100 thousand inhabitants, which accounts for 30.4 percent of the outcome average among the control municipalities. In the third and fourth columns we estimate the difference in SARI deaths and hospitalizations and document a difference of 19.90 fewer deaths and 48.05 fewer hospitalizations per 100 thousand inhabitants. These differences account for 24.65 percent of the average SARI deaths and 18.47 percent of the average SARI hospitalizations among the control municipalities. In Panel B, we report similar results using a quadratic polynomial specification.

Figure 1 presents graphically, with classic RD plots, the results we see in Table's 1 Panel A. These effects are robust to different bandwidth lengths, including the CER and MSE optimal bandwidths from Calonico et al. (2014), as we show in Figure A.3.

To rule out the possibility that our results are caused by chance rather than an underlying causal relationship, we reproduce our estimates for different values of the threshold for the victory margin in Figure A.4. If the effect we estimate is indeed related to the presence of a female mayor, we expect to find a negative and significant coefficient only at the true threshold. This is exactly what the figures show: the largest and most precise coefficients are at 0%.

Figure 1 – Impact of female leadership on COVID-19 and SARI deaths and hospitalizations per 100,000 inhabitants in 2020 - - Full 1222 mixed-gender electoral races sample



(a) COVID-19 deaths

(b) SARI deaths

(c) COVID-19 hospitalizations

(d) SARI hospitalizations

Notes: This figure shows graphically the effect of female mayors on the number of deaths and hospitalizations by COVID-19 and SARI per hundred thousand inhabitants in 2020 in Brazilian municipalities. Note that COVID-19 numbers are a subset of SARI numbers. Subfigure (a) presents the RD plot for COVID-19 deaths. Subfigure (b) presents the RD plot for SARI deaths. Subfigure (c) presents the RD plot for COVID-19 hospitalizations. Subfigure (d) presents the RD plot for SARI hospitalizations. Plots were generated accordingly to Calonico et al. (2015). We use a linear specification and a uniform kernel. Following Calonico et al. (2014), the optimal bandwidths were chosen to minimize the mean squared error of the local polynomial RD point estimator. All estimates account for state fixed-effects following Equation 1. For more details on these estimates see Table 1 Panel A.

Nonpharmaceutical Interventions. Attempts to contain the spread of the COVID-19 virus have been centered on policies such as mandatory mask use and commerce lockdowns - the so-called nonpharmaceutical interventions (Mellan et al. (2020)). Several pieces of evidence suggest that different combinations of these policies were very effective in reducing contamination (Lai et al. (2020), Candido et al. (2020), Flaxman et al. (2020)). That said, after documenting that municipalities led by women outperformed those led by men during the pandemic, we investigate which policy choices can explain this.

Using Santos et al. (2021) dataset, we estimate the impact of having a female mayor on the adoption of several NPIs. Panel A of Table 2 presents RD estimates for several NPIs using a linear specification. In the first column, we report our effects using the total number of interventions as the outcome. In the second through sixth columns, the outcomes are indicator variables for, respectively, enforcing facial covering, forbidding public gatherings, adopting *cordons sanitaires*, closing non-essential businesses, and reducing the frequency of public transportation. Results reported in this panel suggest that the enforcement of NPIs is the likely mechanism explaining the difference in deaths and hospitalizations documented in Table 1. In the first column we show that, on average, municipalities ruled by women adopted 0.371 more NPIs than those ruled by men. This effect is significant and represents an increase of around 10 percent compared to the number of interventions adopted in the control group. In the second through fourth columns, we document that women are 8 percentage points (p.p) more likely to adopt compulsory face-covering, 5.5 p.p. more likely to forbid agglomerations and 14 p.p. more likely to establish *cordons sanitaires* in their municipalities. Results in the remaining columns, however, are not significant. These results are displayed graphically in Figure A.5.[13]

[13] As shown in Table 2 Panel B, the estimates for face-covering and gatherings prohibition are robust to the quadratic specification. We provide other robustness checks in the Appendix: estimates are robust to different bandwidth lengths (Figure A.6) and placebo checks present the expected pattern from a true causal relation (Figure A.7). We highlight that as bandwidth is reduced, variance increases, but point estimates remain similar.

Table 2 – Impact of female leadership on non-pharmaceutical interventions, RDD estimates - - Full 1222 mixed-gender electoral races sample

	Number of NPIs	Face covering required	Gatherings prohibition	*Cordon sanitaire*	Closure of non-essentials	Public transport restriction
Panel A: Linear specification						
RD Estimator	0.371	0.08	0.055	0.14	-0.071	0.131
Robust p-value	0.057*	0.04**	0.066*	0.083*	0.414	0.221
Robust conf. int.	[-0.0109, 0.7538]	[0.0038, 0.1569]	[-0.0037, 0.1143]	[-0.0184, 0.298]	[-0.2396, 0.0986]	[-0.0783, 0.3395]
CCT-Optimal BW	10.254	15.671	9.479	12.224	10.053	10.784
Eff. Number Obs.	353	499	341	395	349	361
Panel B: Quadratic specification						
RD Estimator	0.308	0.086	0.068	0.141	-0.106	0.109
Robust p-value	0.168	0.058*	0.043**	0.144	0.253	0.321
Robust conf. int.	[-0.1302, 0.7468]	[-0.0031, 0.1752]	[0.0021, 0.1335]	[-0.0481, 0.3303]	[-0.2875, 0.0757]	[-0.1068, 0.3257]
CCT-Optimal BW	17.295	27.093	20.06	20.231	15.186	21.621
Eff. Number Obs.	533	658	567	572	487	589

Notes: This table reports our RD estimates of the association between female mayors and NPIs enforcement outcomes. Estimation proceeded over the 1222 municipalities in our mixed-gender elections sample, i.e., our full sample. The first column outcome is the total number of NPIs adopted. The remaining columns are dummies variables indicating whether a specific NPI was adopted. Panel A shows the results for a first-degree polynomial estimation. Panel B shows the results for a second-degree polynomial estimation. Optimal bandwidths following Calonico et al. (2014) were chosen to minimize the mean squared error of the local polynomial RD point estimator. Following that same work, we report robust-bias corrected p-values and 95% CIs. All estimates account for state fixed-effects following Equation 1. Coefficients significantly different from zero at 99% (***), 95% (**) and 90% (*) confidence level.

Mayor's characteristics. While our RD design accounts for municipality-specific omitted variables, it does not control for mayors' individual characteristics that are relevant for policymaking, such as age (Alesina et al. (2019)), education (Besley et al. (2011)) and ideology (Pettersson-Lidbom (2008)). To evaluate this, we test whether women that win close races against men are different in observable characteristics in Table B.8. The results suggest a difference in the level of education which is not robust to a quadratic polynomial and a difference in party ideology that is. In order to better understand the mechanism behind our findings, we run our main specification accounting for these two covariates following Calonico et al. (2019). We show that our results are robust to controlling for education and ideology of the mayor in Tables B.9 and B.10, suggesting that our findings are driven by female mayors' non-observable characteristics.

Potential Explanations

In the face of new evidence that came up recently in the literature, in this section, we are able to expand the discussion about potential explanations seen in

Bruce et al. (2022).

Preferences and attitudes. As previously documented by Funk & Gathmann (2014), women tend to have stronger preferences over healthcare investments. However, it is unlikely that this explains our results because health investment per capita did not increase after electing a woman either before or after the pandemic outbreak (Bruce et al. (2022)). Okten et al. (2020) documents that women adhere more to social distancing and hand-washing than men during the pandemic. A very relevant addition to that is the work of Galasso et al. (2020). Using original data from a survey conducted in 2020 in eight OECD countries, they show that women are more likely to see COVID-19 as a severe threat, to agree with containment measures adopted to stop the virus spread, and to comply with them. Moreover, these gender differences in attitudes toward COVID-19 are robust to controlling for several sociodemographic, employment, psychological, and behavioral factors. This comes up as a robust explanation of why women in leadership roles would adopt more NPIs than men to mitigate the pandemic's potential damages and suggests that more subtle preference features are likely to explain the choices of female leaders.

Electoral incentives. Chauvin & Tricaud (2022) present evidence that Brazilian female mayors in the pandemic's first year were less likely than male mayors to adopt containment policies early on. Nonetheless, this trend has reversed over time: the moment people got to be sure about the severity of the threat, female mayors started to adopt more NPIs than their male peers. What explain this difference? The authors argue that this gender-different performance in the COVID-19 crisis management in Brazil was highly due to differences in gender electoral incentives: voters are gender-biased, believing containment policies will be less effective if implemented by a female politician. That said, the moment voters perceived the pandemic as an inevitable threat, such that they were more willing to tolerate containment policies, the optimal (electoral) policy for incumbent women contemplated more of these policies than that of men.

The evidence and mechanism presented by Chauvin & Tricaud (2022) give an interesting explanation for our findings: electoral incentives led women to adopt more restrictive policies to contain the virus right when the number of deaths and cases started to grow, making voters sure of the disease's dangers.[14] This policy timing would explain why women-governed localities had better epidemiological outcomes in 2020. Moreover, this electoral incentives' explanation is compatible with the preferences one - they could have acted simultaneously. Together they could explain the timing and the intensity of NPIs adoption by female mayors and, hence, their better performance as crisis managers.

[14] According to Chauvin & Tricaud (2022), male mayors implemented more commerce restrictions than female mayors only very early on the pandemic (April and May), when deaths and cases were still very low. Right after this moment, the difference disappeared - until September, when women-governed localities started to adopt more of that restriction than men-governed localities.

6 Results II: Under Electoral Incentives

Introduction

According to the results presented in Chapter 5, municipalities governed by female mayors had fewer COVID-19 (and SARI) related deaths and hospitalizations than those headed by male mayors in 2020.[15] In addition, female mayors were also more likely to adopt nonpharmaceutical interventions than their male peers.[16] As discussed in that chapter's potential explanations sections, Chauvin & Tricaud (2022) argue that female and male mayors' different performances in the COVID-19 crisis management in Brazil were highly due to differences in gender electoral incentives. The evidence and mechanism they present mainly concern the difference in the timing of policies between mayors of different genders. Electoral incentives induced male mayors to be more severe towards the virus at the beginning of the pandemic when its dangers were unclear. Then this trend reversed, with female mayors being more restrictive the moment people were sure about the threats of the disease.[17] As they show, these results are mostly driven by mayors that were not term-limited and thus could run for re-election, suggesting that electoral incentives, in fact, played a strong role in that dynamics.

Chauvin & Tricaud (2022) study does not make any claim about the aggregate consequences, in epidemiological and electoral terms, of the dynamics they encounter. Given this, we then ask in this chapter: how much of the results we see in Chapter 5 were due to female mayors that seek re-election in Brazil's November 2020 municipal elections? Also, were they able to earn an electoral premium from their better performance in fighting the pandemic?

Sample

As explained in Chapter 4, we adopt a Regression Discontinuity (RD) design to estimate the causal effect of female leadership. In Brazil, incumbent mayors

[15]See: Table 1.
[16]See: Table 2.
[17]See more of this discussion on Chapter's 5 potential explanation's section.

that could run for re-election in 2020 were elected before in 2016. That said, to proceed with our methodology of choice, we'll break down in two the sample we used in Chapter 5. First, we will restrict our sample to first-time incumbents who won a mixed-gender race in 2016 and decided to run for re-election in 2020. This leaves us with a 657 municipalities sample that we will call the Re-election Sample - the main sample of this chapter. Second, we will consider all the mayors who won a mixed-gender race in 2016 and decided not to run for re-election in 2020, either because they couldn't or didn't want to. This leaves us with a 565 municipalities sample that we will call the Lame Ducks Sample.

For the Re-election Sample, we present the key descriptive statistics for our main variables in Tables B.15 and B.16. For the Lame Ducks sample, we present the same in Tables B.21 and B.22.

Validating the RD design

In order to interpret our estimates using both of this chapter's samples as casual, two conditions must hold in both of them: (i) our treatment must not affect baseline covariates, and (ii) there must be no manipulation of the running variable near the threshold.

Validating our Re-election Sample. In Figure A.8, we present the t-statistics and the standardized values of β in Equation 1 using our baseline covariates as dependent variables, for the Re-election Sample.[18] We find that most of all baseline characteristics are balanced across places with a female mayor and a male mayor in the Re-election Sample. Despite that, we must take a careful look at these results, which are described in Tables B.11 and B.12. In Table's B.11 Panel A, we find that women-governed places were 9 p.p. more likely to have epidemiological surveillance services in this sample. Although we could expect to find some imbalance by chance since we tested for many covariates, we chose to control for this variable in the empirical exercises using the Re-election Sample because we understand this kind of health service could directly affect a municipality's capacity to fight the pandemic, and thus bias our estimates for epidemiological outcomes.

[18]Standardized coefficients are defined by $\tilde{\beta} = \frac{\beta}{\sigma_{covariate_{ms}}}$, where $\sigma_{covariate_{ms}}$ is the standard deviation of each covariate in the graph within the optimal bandwidth range.

Table B.12 also presents a potentially relevant imbalance: it shows that women, on average, had a higher share than men in the PSD party (13.5 p.p. more) and a lower share in the PTB party (8.9 p.p. less).[19] Table B.13 reinforces this evidence showing that female mayors' parties are further to the right on the ideological index than male mayors' parties.[20] Political ideology and affiliation could affect our outcomes and bias our estimates through many channels. For example, it could be possible that women had their electoral performance affected in 2020 differently than men by a specific political momentum in the country, favoring some particular ideology. That said, we opt to control for parties' political ideology in this chapter's main specification.[21]

Counting on the adjustments we commented on above, we will assume that condition (i) holds in our re-election sample.

For condition (ii) also holds, this sample must not present bunching near the threshold, i.e., the running variable should be smoothly distributed around the cutoff in our sample. Visually, Figure A.9 may suggest some bunching on the right side of the plot (the female mayors' side). However, the McCrary test gave us a 0.17 p-value and then failed to reject the null hypothesis of the continuity of the running-variable density near the threshold.[22] Since there is no evidence of mayors, especially female ones, being capable of manipulating their vote margin, we'll suppose that condition (ii) also holds in the Re-Election Sample.

Validating our Lame Ducks Sample. A.16, we present the t-statistics and the standardized values of β in Equation 1 using our baseline covariates as dependent variables for the Lame Ducks Sample. These estimates are shown in detail in Tables B.17 and B.18. First, in Table B.17, Panel B, we observe those female-governed localities present a slightly smaller population than those male-governed; in Table B.18, we observe that female mayors are 14.3 p.p. more likely to be affiliated with the PMDB party than male mayors. That said, we opt to control

[19]PTB and PSD scores, respectively, 0.23 and 0.425 in Power & Rodrigues-Silveira (2019) ideological index, i.e., PSD is further to the right than PTB.

[20]This corresponds to their parties in 2016 election.

[21]Not only do we control for Power & Rodrigues-Silveira (2019) ideological index, but we also add dummy variables indicating affiliation to PSD and PTB parties.

[22]See McCrary (2008).

for these two variables in our empirical exercises using the Lame Ducks Sample. In line with that, we assume that condition (i) holds.

For condition (ii) also holds, this sample must not present bunching near the threshold, i.e., the running variable should be smoothly distributed around the cutoff in our sample. Figure A.17 presents a smooth distribution of the running variable around the cutoff, and the McCrary test has given us a 0.99 p-value.[23] This evidence strongly suggests we can't reject the null hypothesis of the continuity of the running-variable density near the threshold. Hence, condition (ii) holds in our lame ducks sample.

Results

COVID-19 (and SARI) deaths and hospitalizations. We want to assess if the epidemiological outcomes we observe in Chapter 5 are driven by female mayors that seek re-election in the 2020 municipal elections. We begin by showing that the results remain in the Re-election Sample and are stronger than those shown in Chapter 5.[24] Then, we show that the estimates turn zero when we use the Lame Ducks Sample.

All estimates in Table 3 use the Re-election Sample. This table presents our RD estimates for our primary epidemiological outcomes: COVID-19 and SARI deaths and hospitalizations per 100 thousand inhabitants. In Panel A's first column, we show that female-governed municipalities experienced 39.5 fewer COVID-19 deaths per 100 thousand inhabitants. In the second column of the same panel, we observe a significant difference of 70.4 fewer COVID-19 hospitalizations per 100 thousand inhabitants. These outcomes correspond, respectively, to 85% and 59.5% o these outcomes averages among municipalities governed by men, according to Table B.16. If we account for SARI deaths and hospitalizations, the results are very similar, as shown in columns 3 and 4. All these results are significant at the 5% level and robust to the quadratic specification, as shown in Panel B.

In addition, these effects are also robust to different bandwidth lengths,

[23] See McCrary (2008).

[24] Remember that in Chapter 5 we had a 1222 municipalities sample. By reducing that sample to places where the 2016 winner ran for re-election in 2020, we now have 657 municipalities.

including the CER and MSE optimal bandwidths from Calonico et al. (2014), as shown in Figure A.10. We also reproduce our estimates for different cutoff values in Figure A.11 , so we test for the possibility that our results are caused by chance rather than an underlying causal mechanism. If the effect we estimate is indeed related to the presence of a female mayor, we expect to find a negative and significant coefficient only at the true threshold. This is exactly what the figures show: the largest and most precise coefficients are at 0%. That said, the main results for epidemiological outcomes we see in Chapter 5 still hold for our re-election restricted sample, but not only that, they appear even stronger now.[25]

Table 3 – Impact of female leadership on COVID-19 deaths and cases - RD estimates - Just localities where the incumbent **ran again** in 2020

	COVID-19 deaths per 100k pop.	COVID-19 hospitalizations per 100k pop.	SARI deaths per 100k pop.	SARI hospitalizations per 100k pop.
Panel A: Linear specification				
RD Estimator	-39.4903	-70.4253	-42.7923	-71.3561
Robust p-value	0.0004***	0.0017***	0.0005***	0.0209**
Robust conf. int.	[-61.4676, -17.5129]	[-114.519, -26.3317]	[-66.9187, -18.6658]	[-131.9013, -10.8109]
CCT-Optimal BW	8.7785	8.962	9.1545	9.9798
Eff. Number Obs.	258	267	269	283
Panel B: Quadratic specification				
RD Estimator	-34.3511	-76.6974	-32.7688	-83.7015
Robust p-value	0.0073***	0.0063***	0.0197**	0.0423**
Robust conf. int.	[-59.4368, -9.2653]	[-131.6862, -21.7087]	[-60.3122, -5.2254]	[-164.4964, -2.9067]
CCT-Optimal BW	16.2479	15.843	16.2334	16.3382
Eff. Number Obs.	428	420	427	428

Notes: This table reports our RD estimates of the effect of female mayors on the number of deaths and hospitalizations by COVID-19 and SARI per hundred thousand inhabitants in 2020 in Brazilian municipalities. Note that COVID-19 numbers are a subset of SARI numbers. Estimation proceeded over the 657 municipalities in our mixed-gender elections sample, where the incumbent ran for re-election in 2020. Panel A shows the results for a first-degree polynomial estimation. Panel B shows the results for a second-degree polynomial estimation. Optimal bandwidths following Calonico et al. (2014) were chosen to minimize the mean squared error of the local polynomial RD point estimator. Following that same work, we report robust-bias corrected p-values and 95% CIs. All estimates control for epidemiological surveillance services, party ideology, and dummies indicating affiliation to PTB and PSD parties. All estimates also account for state fixed-effects following Equation 1. Coefficients significantly different from zero at 99% (***), 95% (**) and 90% (*) confidence level.

Table 4 reproduces the same exercise as above using the Lame Ducks Sample. As we observe in this table, we can not reject the null hypothesis of no effect of a female mayor's leadership in either specification for none of our four dependent

[25] See Table 1 for comparison.

variables. This suggests that Chapter's 5 epidemiological outcomes were driven by localities where the incumbent ran for re-election in 2020 municipal bailouts.

Table 4 – Impact of female leadership on COVID-19 deaths and cases - RD estimates - Just localities where the incumbent **did not run** in 2020

	COVID-19 deaths per 100k pop.	COVID-19 hospitalizations per 100k pop.	SARI deaths per 100k pop.	SARI hospitalizations per 100k pop.
Panel A: Linear specification				
RD Estimator	-1.1301	-6.9055	-2.4545	-14.082
Robust p-value	0.8942	0.7185	0.806	0.6376
Robust conf. int.	[-17.7858, 15.5257]	[-44.456, 30.645]	[-22.0392, 17.1302]	[-72.6662, 44.5021]
CCT-Optimal BW	10.0726	8.5892	10.7851	8.7227
Eff. Number Obs.	253	223	268	225
Panel B: Quadratic specification				
RD Estimator	-1.976	-3.4903	-4.3392	-3.3746
Robust p-value	0.8468	0.8642	0.7061	0.9109
Robust conf. int.	[-22.027, 18.0751]	[-43.4989, 36.5182]	[-26.8951, 18.2167]	[-62.4968, 55.7477]
CCT-Optimal BW	15.4758	17.1562	17.6769	19.0591
Eff. Number Obs.	356	375	377	386

Notes: This table reports our RD estimates of the effect of female mayors on the number of deaths and hospitalizations by COVID-19 and SARI per hundred thousand inhabitants in 2020 in Brazilian municipalities. Estimation proceeded over the 565 municipalities in our mixed-gender elections sample, where the incumbent did not run for re-election in 2020. Panel A shows the results for a first-degree polynomial estimation. Panel B shows the results for a second-degree polynomial estimation. Optimal bandwidths following Calonico et al. (2014) were chosen to minimize the mean squared error of the local polynomial RD point estimator. Following that same work, we report robust-bias corrected p-values and 95% CIs. All estimates control for population and for affiliation to the PMDB party. All estimates also account for state fixed-effects following Equation 1. Coefficients significantly different from zero at 99% (***), 95% (**) and 90% (*) confidence level.

Nonpharmaceutical Interventions. As we have done in Chapter's 5 results' section, we now investigate if there's a link between the better epidemiological results in women-governed cities and the adoption of NPIs by them. We show that the pattern we found for epidemiological variables remains: estimates indicate female mayors adopted more NPIs than male ones in localities where the incumbent ran for re-election, while in cities where the incumbent did not run, we find no such evidence.

All estimates in Table 5 use the Re-election Sample. Table 5 Panel A presents our RD estimates for several NPIs using a linear specification. In the first column, we report our effects using the total number of interventions as the outcome. From the second to the sixth column, the outcomes are indicator variables for a series of NPIs. In the first column, we show that, on average, women-governed municipalities adopted 0.45 more NPIs than those men-governed localities. This result is significant at the 5% level and corresponds to a 12% increase relative to this outcome's average in the control group. We also find a relevant and significant effect in columns 3 and 4. Female mayors were 8.6 p.p. more likely to prohibit public gatherings and 22.5 p.p. more likely to implement *cordon sanitaires* than male mayors.[26] According to what we see in Table B.16, these represent, on average, a 9% and a 37% increase over the control group averages for those variables, respectively. Panel B shows the Number of NPIs results is robust to a quadratic specification.[27]

Table 5 – Impact of female leadership on non-pharmaceutical interventions, RD estimates - Just localities where the incumbent **ran again** in 2020

	Number of NPIs	Face covering required	Gatherings prohibition	*Cordon sanitaire*	Closure of non-essentials	Public transport restriction
Panel A: Linear specification						
RD Estimator	0.4477	0.0195	0.0856	0.2251	0.0831	0.039
Robust p-value	0.0354**	0.7105	0.0964**	0.0662*	0.4863	0.7847
Robust conf. int.	[0.0306, 0.8649]	[-0.0833, 0.1222]	[-0.0153, 0.1866]	[-0.015, 0.4653]	[-0.151, 0.3173]	[-0.2406, 0.3185]
CCT-Optimal BW	16.1507	17.3357	10.5212	10.3775	11.5939	11.7759
Eff. Number Obs.	266	275	185	182	190	190
Panel B: Quadratic specification						
RD Estimator	0.5361	0.0327	0.0774	0.1931	0.0606	0.0897
Robust p-value	0.0618*	0.6525	0.2322	0.147	0.6473	0.6
Robust conf. int.	[-0.0265, 1.0987]	[-0.1097, 0.1751]	[-0.0496, 0.2043]	[-0.0679, 0.4541]	[-0.1991, 0.3204]	[-0.2456, 0.4251]
CCT-Optimal BW	19.8345	22.6073	15.5975	15.4815	17.3608	14.7171
Eff. Number Obs.	300	319	255	254	276	237

Notes: This table reports our RD estimates of the association between female mayors and NPIs enforcement outcomes. Estimation proceeded over the 657 municipalities in our mixed-gender elections sample, where the incumbent ran for re-election in 2020. The first column outcome is the total number of NPIs adopted. The remaining columns are dummies variables indicating whether a specific NPI was adopted. Panel A shows the results for a first-degree polynomial estimation. Panel B shows the results for a second-degree polynomial estimation. Optimal bandwidths following Calonico et al. (2014) were chosen to minimize the mean squared error of the local polynomial RD point estimator. Following that same work, we report robust-bias corrected p-values and 95% CIs. All estimates control for epidemiological surveillance services, party ideology, and dummies indicating affiliation to PTB and PSD parties. All estimates also account for state fixed-effects following Equation 1. Coefficients significantly different from zero at 99% (***), 95% (**) and 90% (*) confidence level.

Table 6 reproduces the same exercise as above using the Lame Ducks Sample. As we observe in this table, we find no evidence that mayors from different

[26] *Cordon Sanitaire* refers to controlling and monitoring the entrance and exit of people in the municipality.

[27] We provide other robustness checks in the Appendix: estimates are robust to different bandwidth lengths (Figure A.12) and placebo checks present the expected pattern from a true causal relation (Figure A.13). We highlight that as bandwidth is reduced, variance increases, but point estimates remain similar.

genders had different NPIs adoption in 2020's pandemic, except for closing non-essential businesses in the fifth column. Nonetheless, this result goes in the opposite direction of what we've found so far: we estimate female mayors were 18.7 p.p. less likely to adopt the closure of non-essentials than male ones. Moreover, this coefficient differs significantly from zero at the 90% confidence level at both specifications and reinforces the evidence that Chapter 5 outcomes were driven by female mayors who seek re-election.

Table 6 – Impact of female leadership on non-pharmaceutical interventions, RDD estimates - Just localities where the incumbent **did not run** in 2020

	Number of NPIs	Face covering required	Gatherings prohibition	*Cordon sanitaire*	Closure of non-essentials	Public transport restriction
Panel A: Linear specification						
RD Estimator	0.1445	0.0748	-0.0048	0.0644	-0.187	0.1204
Robust p-value	0.6283	0.1558	0.7136	0.5946	0.0966*	0.4579
Robust conf. int.	[-0.4405, 0.7296]	[-0.0285, 0.178]	[-0.0307, 0.021]	[-0.1728, 0.3016]	[-0.4076, 0.0336]	[-0.1975, 0.4382]
CCT-Optimal BW	9.6494	15.0439	6.5798	12.3954	9.7996	8.7304
Eff. Number Obs.	169	235	128	197	169	151
Panel B: Quadratic specification						
RD Estimator	0.0185	0.0866	-0.0231	0.1529	-0.2367	0.1553
Robust p-value	0.9481	0.1549	0.3237	0.3782	0.0651*	0.4343
Robust conf. int.	[-0.5396, 0.5767]	[-0.0327, 0.206]	[-0.0691, 0.0228]	[-0.1872, 0.4931]	[-0.4882, 0.0148]	[-0.234, 0.5445]
CCT-Optimal BW	21.5426	26.5062	7.897	15.1327	12.7217	13.9522
Eff. Number Obs.	279	309	144	237	203	219

Notes: This table reports our RD estimates of the association between female mayors and NPIs enforcement outcomes. Estimation proceeded over the 565 municipalities in our mixed-gender elections sample, where the incumbent did not run for re-election in 2020. The first column outcome is the total number of NPIs adopted. The remaining columns are dummies variables indicating whether a specific NPI was adopted. Panel A shows the results for a first-degree polynomial estimation. Panel B shows the results for a second-degree polynomial estimation. Optimal bandwidths following Calonico et al. (2014) were chosen to minimize the mean squared error of the local polynomial RD point estimator. Following that same work, we report robust-bias corrected p-values and 95% CIs. All estimates control for population and for affiliation to the PMDB party. All estimates also account for state fixed-effects following Equation 1. Coefficients significantly different from zero at 99% (***), 95% (**) and 90% (*) confidence level.

Electoral Premium. The results presented above suggest that, restricted to localities where the incumbent ran for re-election in 2020, female mayors outperformed male mayors in the COVID-19 crisis management. Besides that, evidence shows this was partially due to a difference in the NPIs' adoption level. So now, using our re-election sample, we ask: did this better leadership earn female mayors an electoral premium in the 2020 elections?

Table 7 shows our RD estimates for both of our electoral outcomes. In the first column, we see the results for a dummy variable indicating if the incumbent got re-elected in the 2020 municipal polls. In both specifications, linear or quadratic, the results indicate no difference in the likelihood of being re-elected between female and male incumbents that ran again in 2020. Column 2, in turn, shows results for the candidates' valid-votes share in the same election. Again, we can't reject the null hypothesis of zero effect in either specification.

Table 7 – Impact of female leadership on 2020 electoral outcomes - RD estimates - Just localities where the incumbent **ran again** in 2020

	Incumbent Was Reelected (2020)	Candidates' Valid-Votes Share (2020)
Panel A: Linear specification		
RD Estimator	0.0461	0.0338
Robust p-value	0.6469	0.1953
Robust conf. int.	[-0.1513, 0.2435]	[-0.0174, 0.0849]
CCT-Optimal BW	12.9419	9.6948
Eff. Number Obs.	349	282
Panel B: Quadratic specification		
RD Estimator	0.0737	0.0264
Robust p-value	0.5865	0.3573
Robust conf. int.	[-0.1919, 0.3394]	[-0.0298, 0.0826]
CCT-Optimal BW	16.3754	17.358
Eff. Number Obs.	433	444

Notes: This table reports our RD estimates of the association between incumbent female mayors seeking re-election and electoral outcomes in Brazil's 2020 municipal elections. Estimation proceeded over the 657 municipalities in our mixed-gender elections sample, where the incumbent ran for re-election in 2020. Panel A shows the results for a first-degree polynomial estimation. Panel B shows the results for a second-degree polynomial estimation. Optimal bandwidths following Calonico et al. (2014) were chosen to minimize the mean squared error of the local polynomial RD point estimator. Following that same work, we report robust-bias corrected p-values and 95% CIs. All estimates control for epidemiological surveillance services, party ideology, and dummies indicating affiliation to PTB and PSD parties. All estimates also account for state fixed-effects following Equation 1. Coefficients significantly different from zero at 99% (***), 95% (**) and 90% (*) confidence level.

In Figures A.14 and A.15, we extend our investigation on the electoral outcomes. Figure A.14(a) shows that our estimates for re-election likelihood are consistently no different from zero for several considered bandwidths lengths. In turn, Figure A.14(b) shows that our point estimates for candidates' valid votes are greater and statistically significant for small bandwidth lengths, getting smaller and hence losing significance in the optimal lengths.

In Figure A.15, we reproduce our estimates for different cutoff values. We highlight Figure A.15(b). In this figure, we observe that the greater and most precise estimate for the candidate's valid votes occurs at the 0% threshold, as we would expect if female mayors earned a valid-votes premium for their performance in the pandemic. But, again, we lack the statistical power to suggest this difference is statistically different from zero.

Discussion

Electoral Incentives. In Chapter's 5 Potential Explanations section, we discuss how the observed effects of electing a female mayor on epidemiological and policy outcomes could be driven by gender differences in electoral incentives, as in Chauvin & Tricaud (2022). This Chapter presents evidence that strongly supports that claim. First, by restricting our full mixed-gender electoral sample taken from the 2016 elections to localities where the incumbent ran for re-election in 2020, we observe that all previously estimated effects still hold, most of the time more substantial than before. Then, complementing that, we also reproduce the estimates restricting for localities where the incumbent did not run for re-election. In line with the electoral incentives hypothesis, the estimated effects disappear, and we find no apparent difference between female and male mayors' performance.

Chauvin & Tricaud (2022) argue that female and male mayors' different performances in the COVID-19 crisis management in Brazil were highly due to differences in gender electoral incentives. According to their suggested mechanism, voters are gender-biased, believing containment policies will be less effective if implemented by a female mayor. That, as their evidence shows, led female mayors to be less restrictive than male ones when the dangers of the disease were still uncertain because they could not afford the electoral cost voters imposed for doing so. However, the moment COVID-19's severity on social welfare got more evident, that trend reversed: women leaders could afford the political cost of adopting them more than their male peers, and doing so became electorally advantageous for them.

The evidence Chauvin & Tricaud (2022) find is mostly driven by mayors that were not term-limited and thus could run for re-election, suggesting that electoral incentives played a strong role in that dynamic. We presented evidence that supports this and shows that this dynamic had severe aggregated consequences for the pandemic's outcomes in Brazilian municipalities, with places governed by female mayors seeking re-election experiencing a lot fewer deaths and hospitalizations by COVID-19 than places governed by male mayors also electorally motivated.

Electoral Premium. Chauvin & Tricaud (2022)'s proposed mechanism does not predict an electoral premium or advantage for mayors of a specific gender. Instead, it only predicts that depending on the voters' perceived probability of an adverse external shock on public goods, such as a pandemic, mayors of different genders seeking maximizing votes will adopt policies to protect such goods with more or less intensity. The general prediction is that when the negative external shock is perceived as likely and dangerous, the optimal maximizing votes strategy for women will involve a higher level of containment policies than that of men. Nonetheless, it is not clear under what conditions, if any, one of these strategies would win against the other in the polls.

As presented in this Chapter's results section, we find no evidence of a difference in re-election likelihood between mayors of different genders. In addition, we find little evidence that women seeking re-election received a higher share of votes than men. That said, it is not clear that female mayors earned some electoral premium, although they clearly outperformed male mayors in fighting the COVID-19 pandemic. Nonetheless, Brollo & Troiano (2016) work may help us to put this result in perspective.

In a similar proposal to ours, Brollo & Troiano (2016) studied the effect of women's leadership on policy outcomes using Brazil's municipal mixed-gender (close) races. Using aggregated data from the 2000 and 2004 Brazil municipal elections, the authors provide evidence that cities with female mayors have better health outcomes and are awarded more federal resources. Moreover, as we did, they ask if that would put female mayors in a better position than male ones when running for re-election. The answer they find is no. Using an RD design, they find that a woman who wins a close election against a man is around 20 p.p. less likely to be re-elected. This result is a lot less favorable to women than we find, i.e., that women experienced at least an equal likelihood to men of being re-elected in the 2020 municipal elections. This raises a question for future work: Could female mayors' performance in the COVID-19 crisis explain their historical improvement in re-election results?

7 Conclusion

In this work, we showed that electing female mayors caused a large and significant decrease in deaths and hospitalizations caused by COVID-19 during the pandemic's first year in Brazil. In line with recent advancements in the literature, we complement that by showing that these outcomes were mainly driven by localities where the incumbent ran for re-election at the end o that same year. Finally, we show that although electoral incentives may have led women to outperform men in the COVID-19 crisis management, they were as likely as men to be re-elected in the subsequent elections, i.e., they did not get an electoral premium over men.

Given the local nature of our RD findings, drawing inferences on female leaders in general in tackling global pandemic containment requires further empirical support. Nevertheless, our findings add evidence to the body of research that, in many different settings, finds positive effects of female leadership on policy outcomes. More specifically, we showed how, in our context, these leaders performed better than men during a severe crisis.

Our findings are not exclusive to the hypothesis that gender differences in preferences may have influenced the different gender attitudes towards the pandemic. But, despite that, these findings suggest that how voters assess the performance of leaders of different genders significantly impacts policy choices and outcomes, even in a severe crisis. In Brazil's pandemic, this saved many lives in women-governed cities but may have cost some others in men-governed ones.

Our findings also raise some questions for future research. It leaves an open question: why did female mayors who sought re-election not earn an electoral premium over their male peers, even though they performed much better than them? This question becomes particularly relevant when we consider how salient the policies and outcomes we studied were when voters went to the polls in 2020. This reinforces the importance of better understanding how voters' gender-bias may impact politicians' selection and their attitudes, especially in times of crisis.

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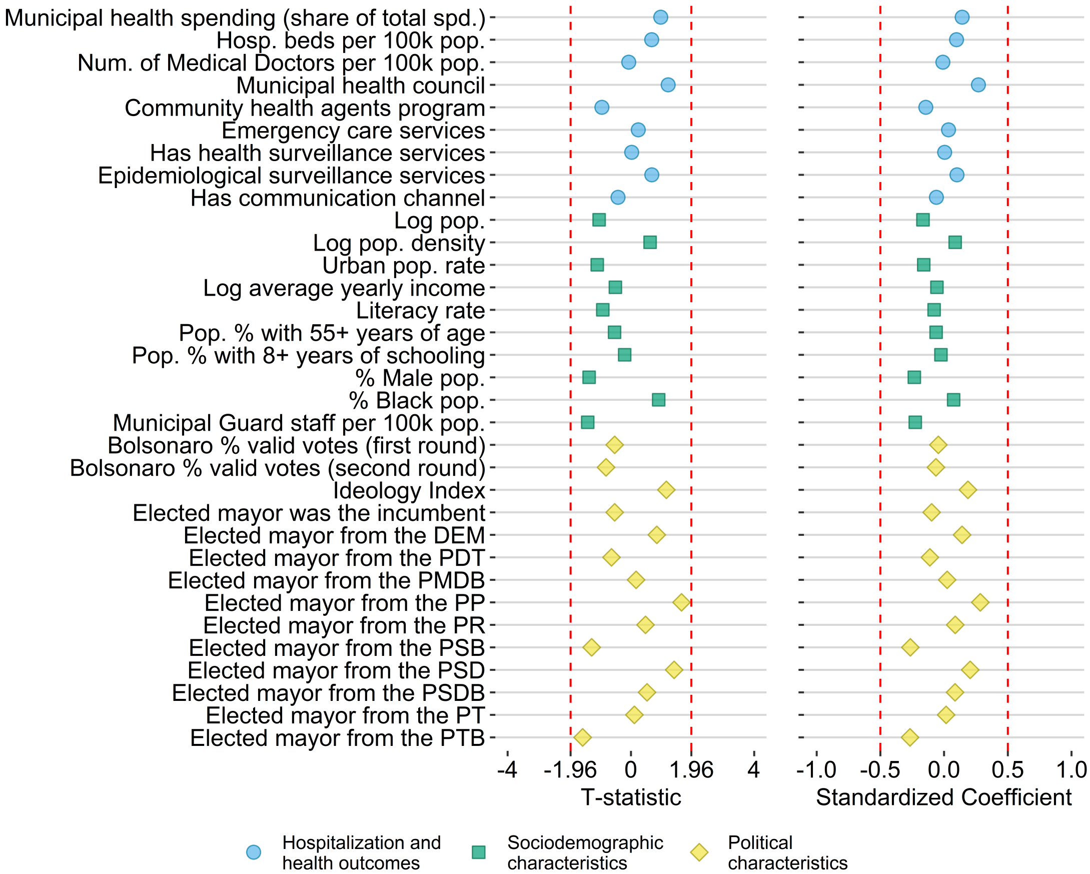
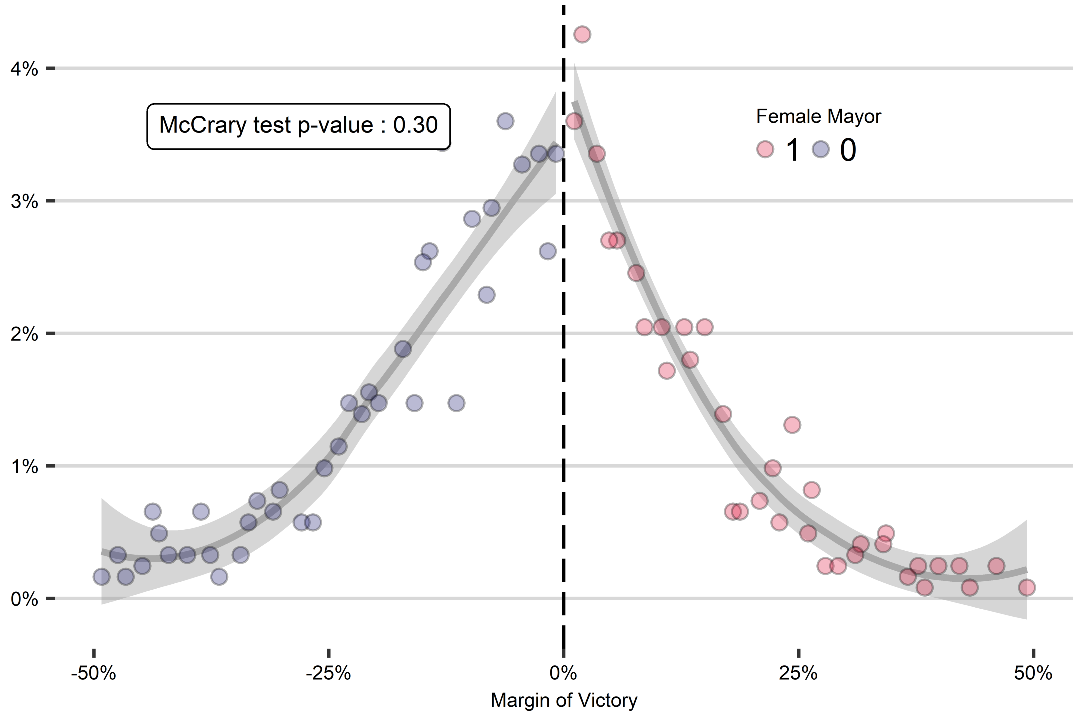
Appendix A. Figures

Figure A.1 – Baseline covariate balance around the threshold - Full 1222 mixed-gender electoral races sample



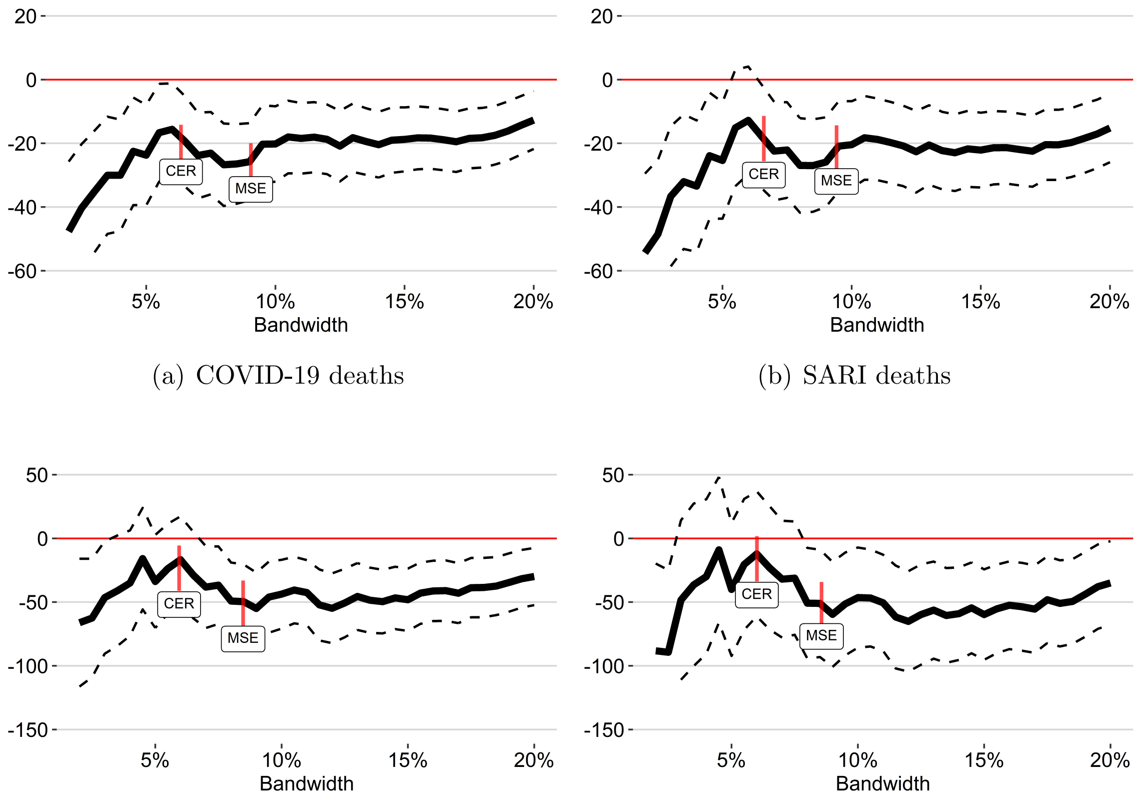
Notes: This figure displays the robust-bias corrected t-statistics and standardized coefficients from our baseline covariates' balance RD estimates. For each indicated variable we run a RD with linear polynomial and uniform kernel specification. Optimal bandwidths following Calonico et al. (2014) were chosen to minimize the mean squared error of the local polynomial RD point estimator. All estimates account for state fixed-effects following Equation 1. In the t-statistics graph we indicate the 5% significance level thresholds in red. For more details on these estimations see Tables B.3 and B.4. For variables' description see Table B.1.

Figure A.2 – McCrary Test - Full 1222 mixed-gender electoral races sample



Notes: This figures displays the McCrary density test for the running variable around the cutoff (McCrary (2008)).

Figure A.3 – Bandwidth robustness test - Full 1222 mixed-gender electoral races sample



(a) COVID-19 deaths

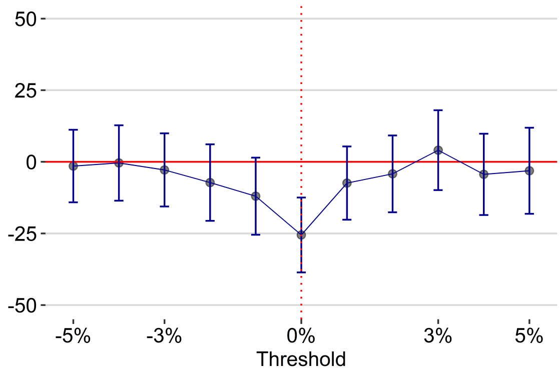
(b) SARI deaths

(c) COVID-19 hospitalizations

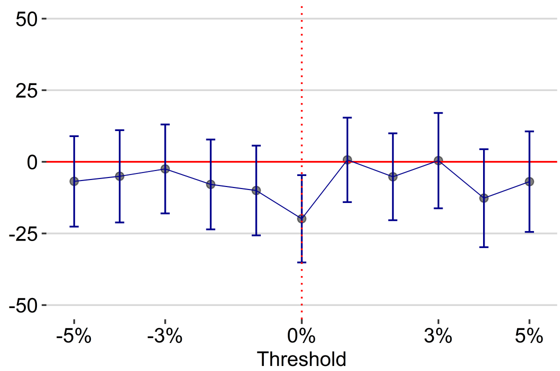
(d) SARI hospitalizations

Notes: This figure displays the bandwidth robustness tests for the effect of female mayors on the number of deaths and hospitalizations by COVID-19 and SARI. Variables are measured in numbers per hundred thousand inhabitants in 2020. Note that COVID-19 numbers are a subset of SARI numbers. Subfigure (a) presents estimates for COVID-19 deaths. Subfigure (b) presents the estimates for SARI deaths. Subfigure (c) presents the estimates for COVID-19 hospitalizations. Subfigure (d) presents the estimates for SARI hospitalizations. We use a linear polynomial and a uniform kernel RD specification. CER and MSE optimal bandwidths are indicated in the figures (Calonico et al. (2014)). Following this same work, 90% robust-bias corrected intervals are displayed. All estimates account for state fixed-effects following Equation 1.

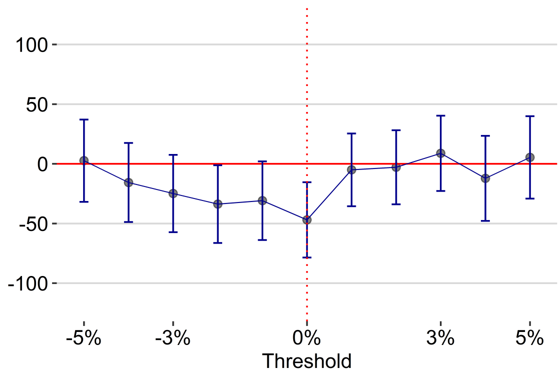
Figure A.4 – Placebo tests around the threshold - Full 1222 mixed-gender electoral races sample



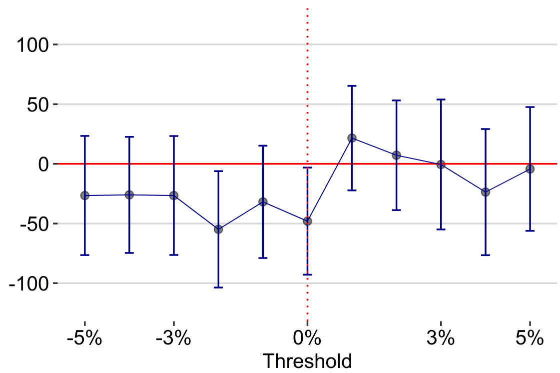
(a) COVID-19 deaths



(b) SARI deaths



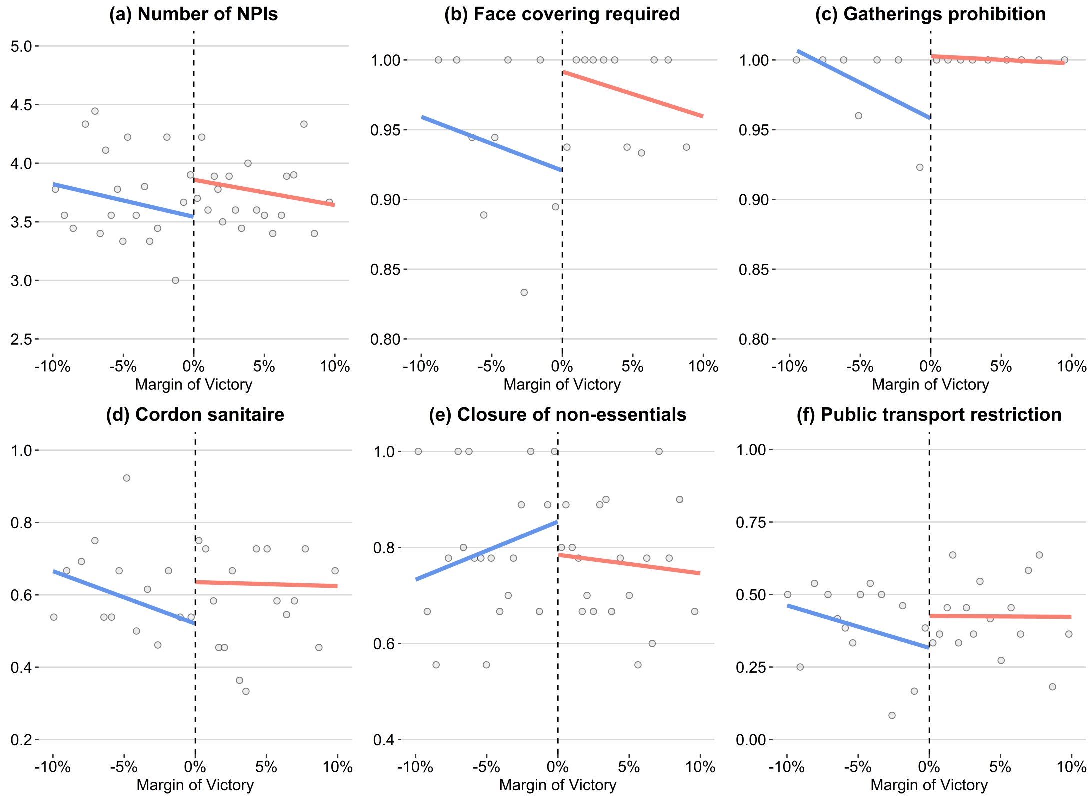
(c) COVID-19 hospitalizations



(d) SARI hospitalizations

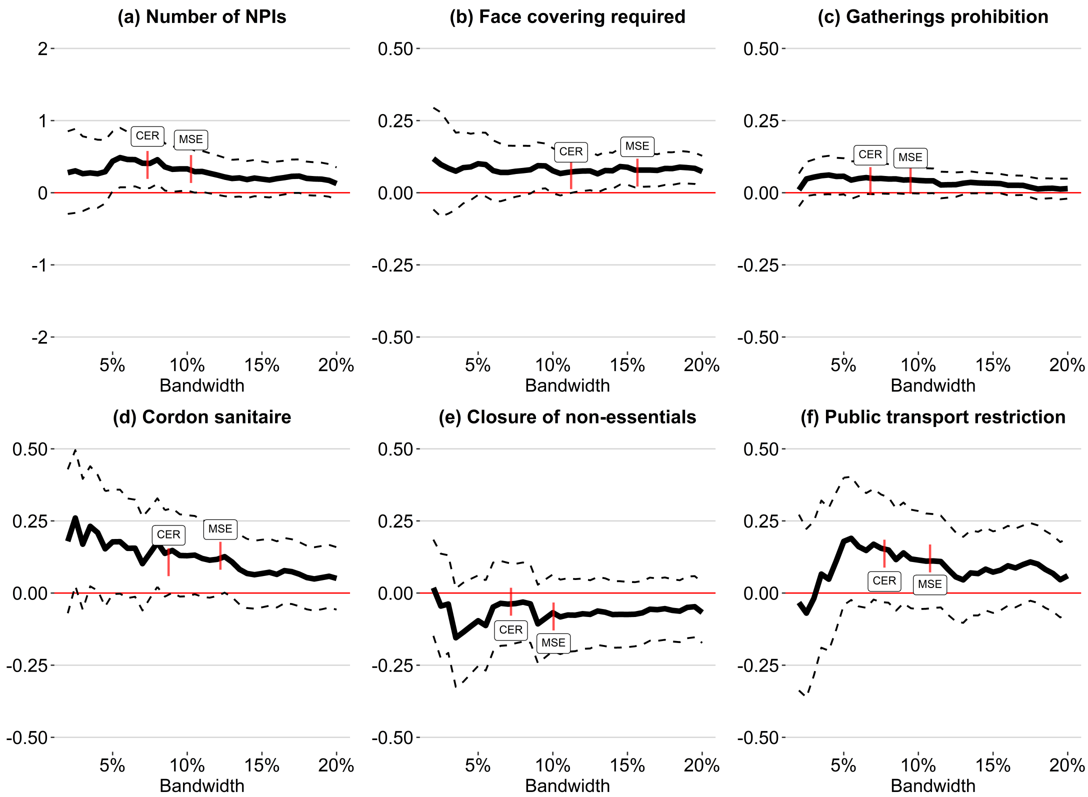
Notes: This figure displays the effect of female mayors on the number of deaths and hospitalizations by COVID-19 and SARI for different (and placebo) cutoffs. Variables are measured in numbers per hundred thousand inhabitants in 2020. Note that COVID-19 numbers are a subset of SARI numbers. Subfigure (a) presents estimates for COVID-19 deaths. Subfigure (b) presents the estimates for SARI deaths. Subfigure (c) presents the estimates for COVID-19 hospitalizations. Subfigure (d) presents the estimates for SARI hospitalizations. We use a linear polynomial and a uniform kernel RD specification. Optimal bandwidths following (CALONICO et al., 2014) were chosen to minimize the mean squared error of the local polynomial RD point estimator. Following that same work, 90% robust-bias corrected intervals are displayed. All estimates account for state fixed-effects following Equation 1.

Figure A.5 – NPIs RD Plots - Full 1222 mixed-gender electoral races sample



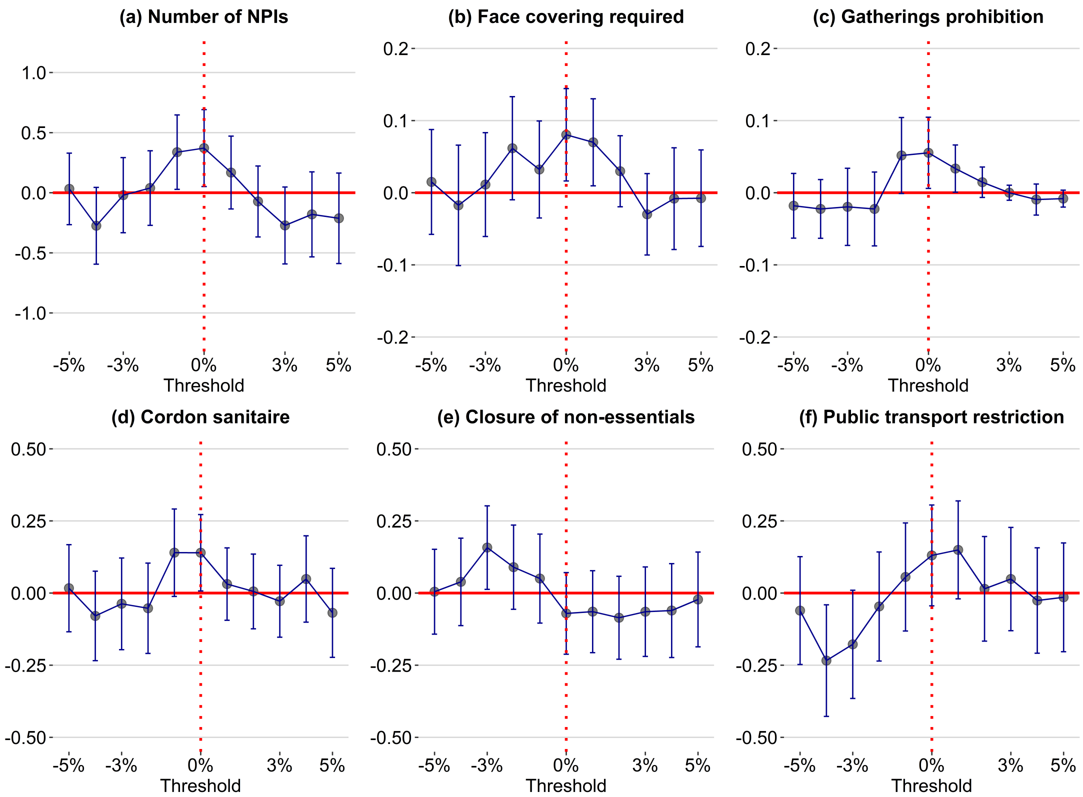
Notes: This figure displays the RD plots for the effect of female mayors in Brazilian municipalities on several non-pharmaceutical interventions outcomes. Figure (a) displays the results for the total number of NPIs adopted; (b) for the adoption of face covering requirement; (c) for the prohibition of gatherings; (d) for the adoption of a *cordon sanitaire*; (e) for the closure of non-essential business; and (f) for the restriction of public transportation. Plots were generated accordingly to Calonico et al. (2015). We use a linear specification and a uniform kernel. Following Calonico et al. (2014), the optimal bandwidths were chosen to minimize the mean squared error of the local polynomial RD point estimator. All estimates account for state fixed-effects following Equation 1. For more details on these estimates see 2 Panel B.

Figure A.6 – NPIs Bandwidth Robustness - Full 1222 mixed-gender electoral races sample



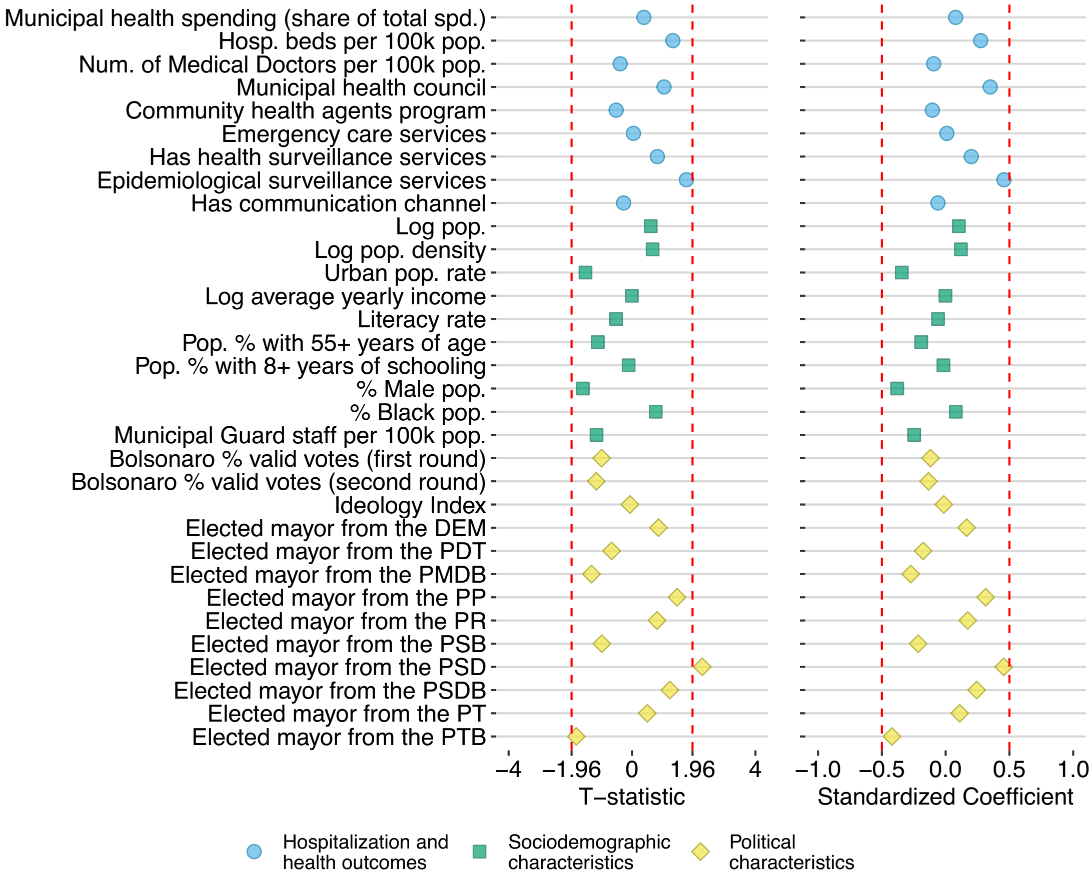
Notes: This figure displays the bandwidth robustness tests for the effect of female mayors in Brazilian municipalities on several non-pharmaceutical interventions outcomes. We use a linear polynomial and uniform kernel RD specification, while varying the bandwidth. Figure (a) displays the results for the total number of NPIs adopted; (b) for the adoption of face covering requirement; (c) for the prohibition of gatherings; (d) for the adoption of a *cordon sanitaire*; (e) for the closure of non-essential business; and (f) for the restriction of public transportation. CER and MSE optimal bandwidths are indicated in the figures Calonico et al. (2014). Following this same work, 90% robust-bias corrected confidence intervals are displayed. All estimates account for state fixed-effects following Equation 1.

Figure A.7 – NPIs Placebo Thresholds - Full 1222 mixed-gender electoral races sample



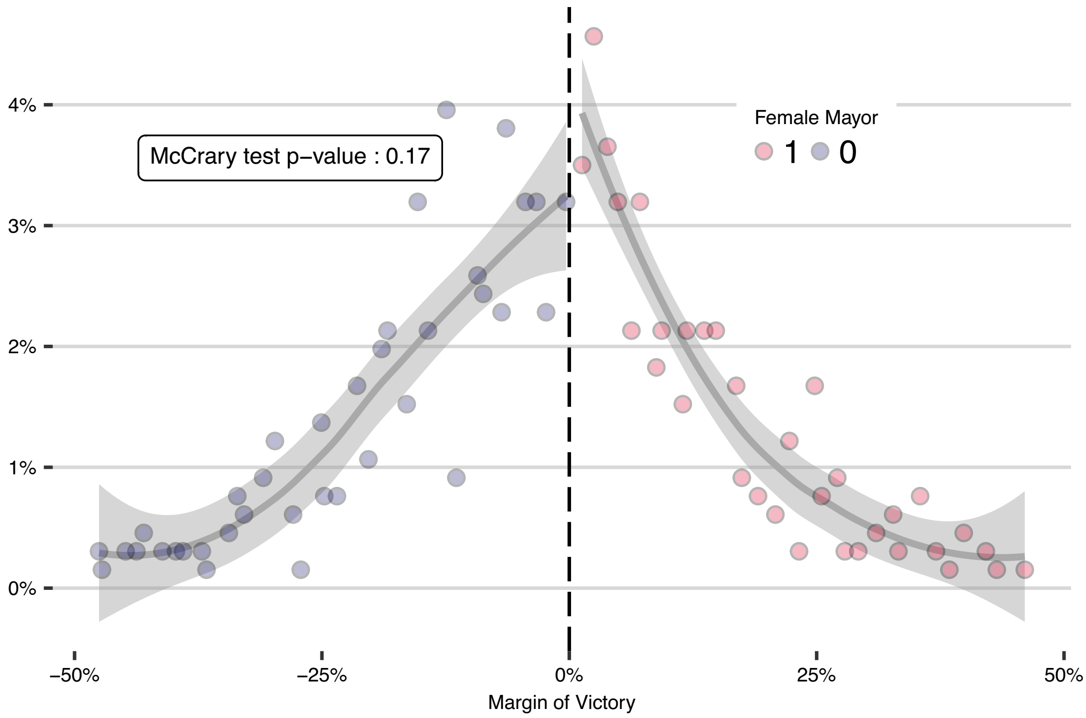
Notes: This figure displays the effect of female mayors in Brazilian municipalities on several non-pharmaceutical interventions outcomes for different (and placebo) cutoffs. Figure (a) displays the results for the total number of NPIs adopted; (b) for the adoption of face covering requirement; (c) for the prohibition of gatherings; (d) for the adoption of a *cordon sanitaire*; (e) for the closure of non-essential business; and (f) for the restriction of public transportation. We use a linear polynomial and uniform kernel RD specification. Optimal bandwidths following Calonico et al. (2014) were chosen to minimize the mean squared error of the local polynomial RD point estimator. Following that same work, 90% robust-bias corrected confidence intervals are displayed. All estimates account for state fixed-effects following Equation 1.

Figure A.8 – Baseline covariate balance around the threshold - Just localities where the incumbent **ran again** in 2020



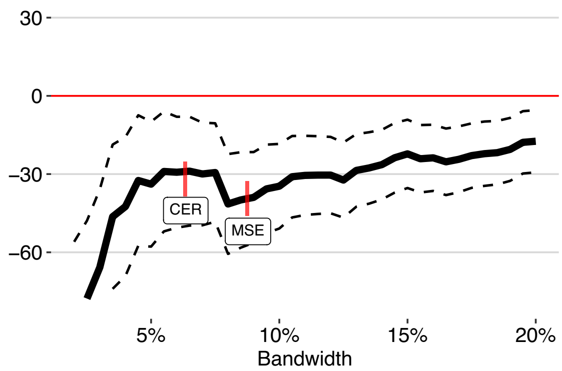
Notes: This figure displays the robust-bias corrected t-statistics and standardized coefficients from our baseline covariates' balance RD estimates. For each indicated variable we run a RD with linear polynomial and uniform kernel specification. Optimal bandwidths following Calonico et al. (2014) were chosen to minimize the mean squared error of the local polynomial RD point estimator. All estimates account for state fixed-effects following Equation 1. In the t-statistics graph we indicate the 5% significance level thresholds in red. For more details on these estimations see Tables B.11 and B.12. For variables' description see Table B.1.

Figure A.9 – McCrary Test - Just localities where the incumbent **ran again** in 2020

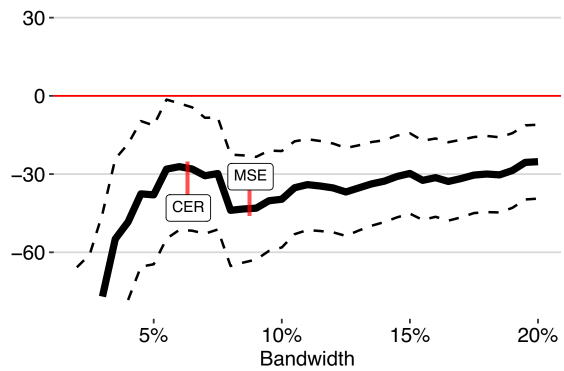


Notes: This figures displays the McCrary density test for the running variable around the cutoff (McCrary (2008)).

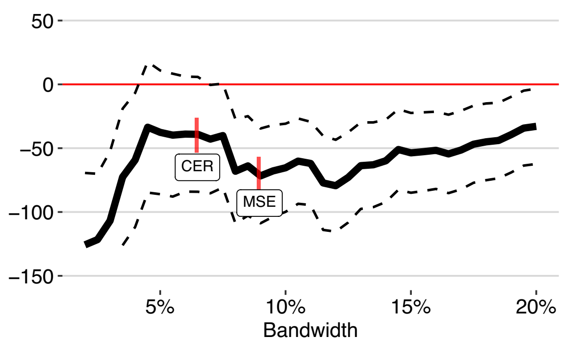
Figure A.10 – Bandwidth robustness test - Just localities where the incumbent **ran again** in 2020



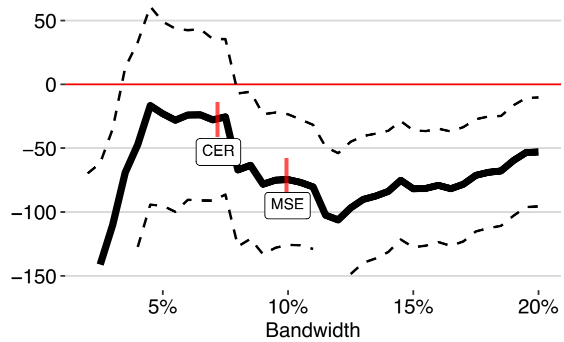
(a) COVID-19 deaths



(b) SARI deaths



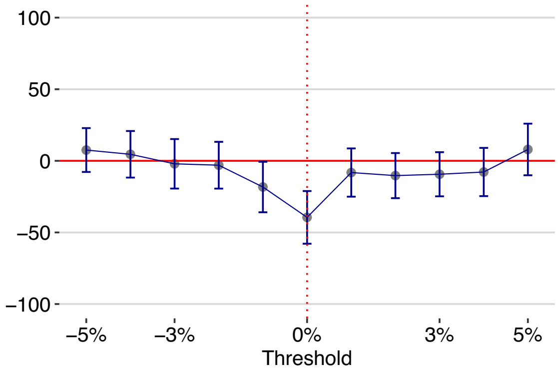
(c) COVID-19 hospitalizations



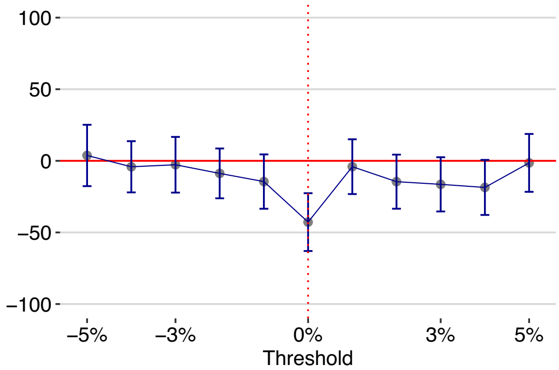
(d) SARI hospitalizations

Notes: This figure displays the bandwidth robustness tests for the effect of female mayors on the number of deaths and hospitalizations by COVID-19 and SARI. Variables are measured in numbers per hundred thousand inhabitants in 2020. Note that COVID-19 numbers are a subset of SARI numbers. Subfigure (a) presents estimates for COVID-19 deaths. Subfigure (b) presents the estimates for SARI deaths. Subfigure (c) presents the estimates for COVID-19 hospitalizations. Subfigure (d) presents the estimates for SARI hospitalizations. We use a linear polynomial and a uniform kernel RD specification. CER and MSE optimal bandwidths are indicated in the figures (Calonico et al. (2014)). Following this same work, 90% robust-bias corrected intervals are displayed. All estimates control for epidemiological surveillance services, party ideology, and dummies indicating affiliation to PTB and PSD parties. All estimates also account for state fixed-effects following Equation 1.

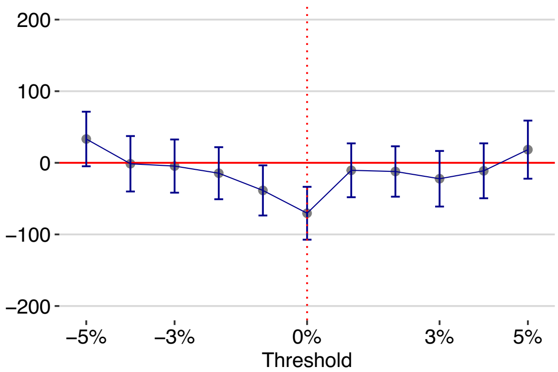
Figure A.11 – Placebo tests around the threshold - Just localities where the incumbent **ran again** in 2020



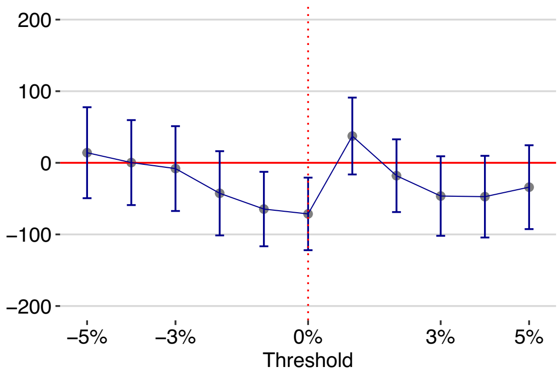
(a) COVID-19 deaths



(b) SARI deaths



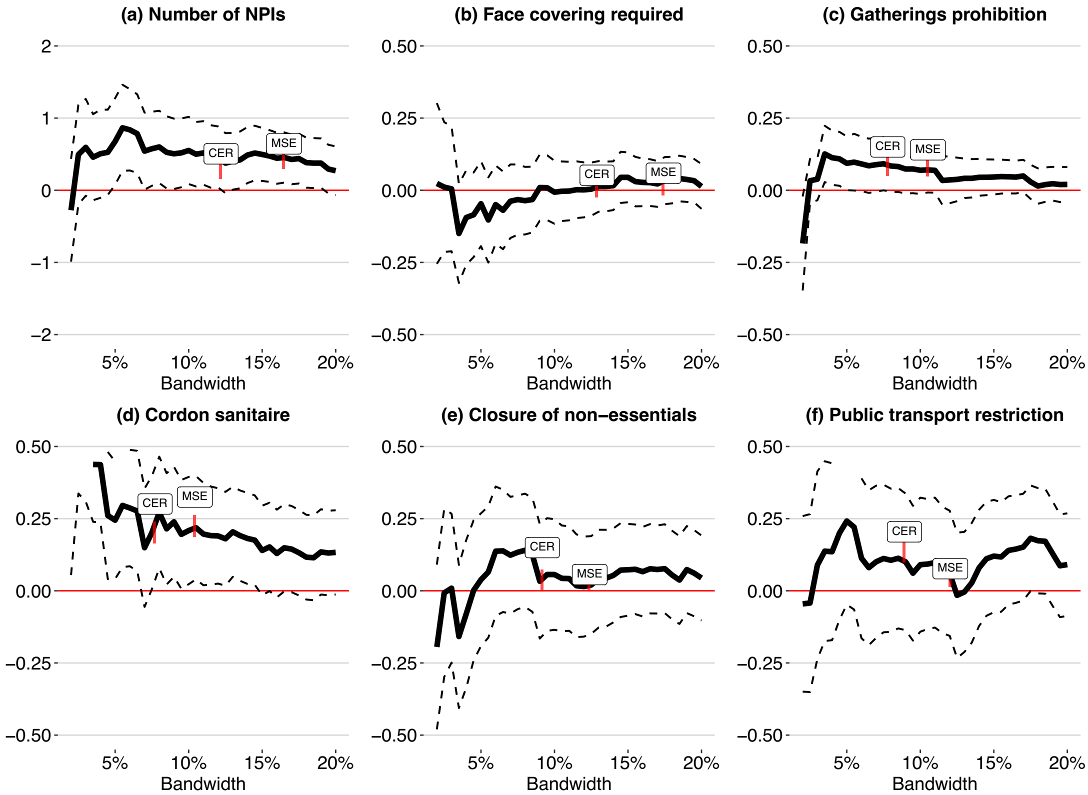
(c) COVID-19 hospitalizations



(d) SARI hospitalizations

Notes: This figure displays the effect of female mayors on the number of deaths and hospitalizations by COVID-19 and SARI for different (and placebo) cutoffs. Variables are measured in numbers per hundred thousand inhabitants in 2020. Note that COVID-19 numbers are a subset of SARI numbers. Subfigure (a) presents estimates for COVID-19 deaths. Subfigure (b) presents the estimates for SARI deaths. Subfigure (c) presents the estimates for COVID-19 hospitalizations. Subfigure (d) presents the estimates for SARI hospitalizations. We use a linear polynomial and a uniform kernel RD specification. Optimal bandwidths following (CALONICO et al., 2014) were chosen to minimize the mean squared error of the local polynomial RD point estimator. Following that same work, 90% robust-bias corrected intervals are displayed. All estimates control for epidemiological surveillance services, party ideology, and dummies indicating affiliation to PTB and PSD parties. All estimates also account for state fixed-effects following Equation 1.

Figure A.12 – NPIs Bandwidth Robustness - Just localities where the incumbent **ran again** in 2020



Notes: This figure displays the bandwidth robustness tests for the effect of female mayors in Brazilian municipalities on several non-pharmaceutical interventions outcomes. We use a linear polynomial and uniform kernel RD specification, while varying the bandwidth. Figure (a) displays the results for the total number of NPIs adopted; (b) for the adoption of face covering requirement; (c) for the prohibition of gatherings; (d) for the adoption of a *cordon sanitaire*; (e) for the closure of non-essential business; and (f) for the restriction of public transportation. CER and MSE optimal bandwidths are indicated in the figures Calonico et al. (2014). Following this same work, 90% robust-bias corrected confidence intervals are displayed. All estimates control for epidemiological surveillance services, party ideology, and dummies indicating affiliation to PTB and PSD parties. All estimates also account for state fixed-effects following Equation 1.

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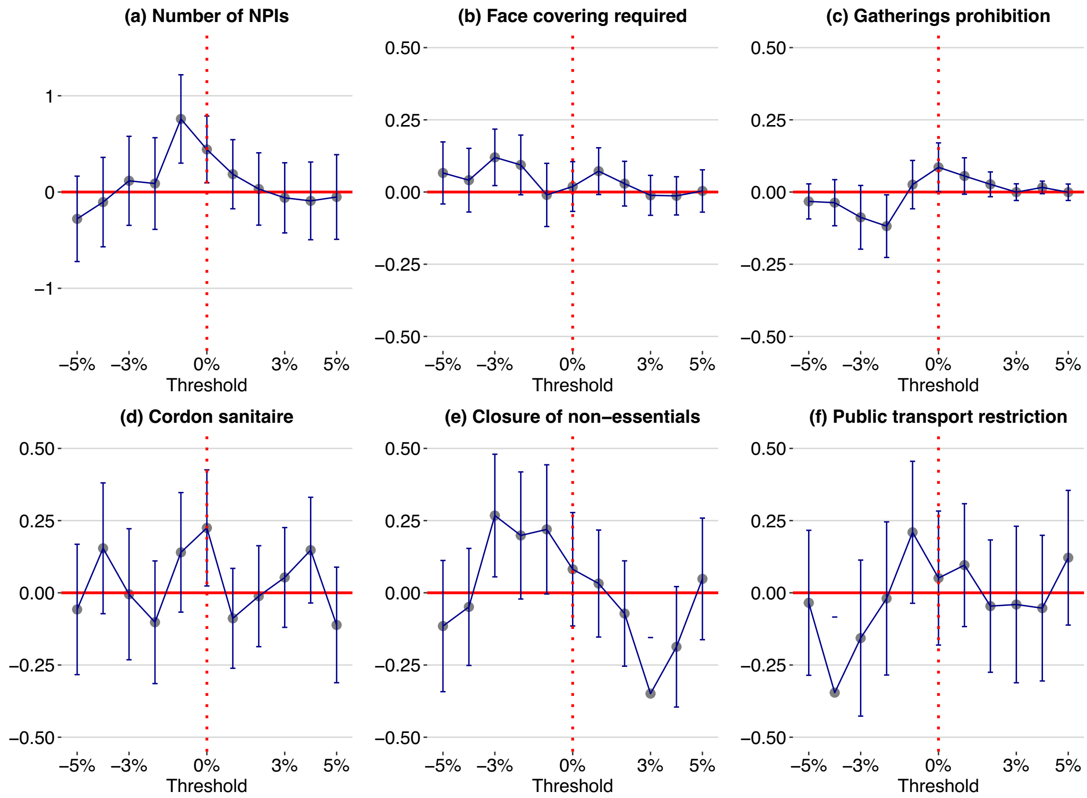
Figure A.13 – NPIs Placebo Thresholds - Just localities where the incumbent **ran again** in 2020



Notes: This figure displays the effect of female mayors in Brazilian municipalities on several non-pharmaceutical interventions outcomes for different (and placebo) cutoffs. Figure (a) displays the results for the total number of NPIs adopted; (b) for the adoption of face covering requirement; (c) for the prohibition of gatherings; (d) for the adoption of a *cordon sanitaire*; (e) for the closure of non-essential business; and (f) for the restriction of public transportation. We use a linear polynomial and uniform kernel RD specification. Optimal bandwidths following Calonico et al. (2014) were chosen to minimize the mean squared error of the local polynomial RD point estimator. Following that same work, 90% robust-bias corrected confidence intervals are displayed. All estimates control for epidemiological surveillance services, party ideology, and dummies indicating affiliation to PTB and PSD parties. All estimates also account for state fixed-effects following Equation 1.

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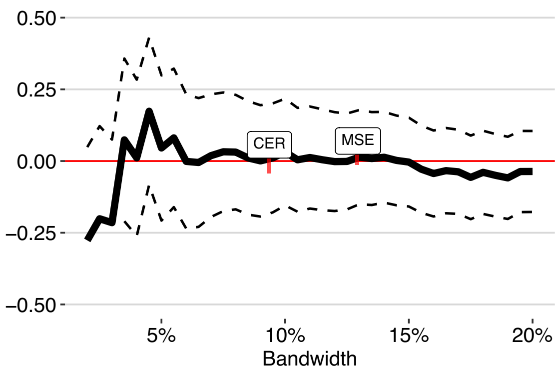
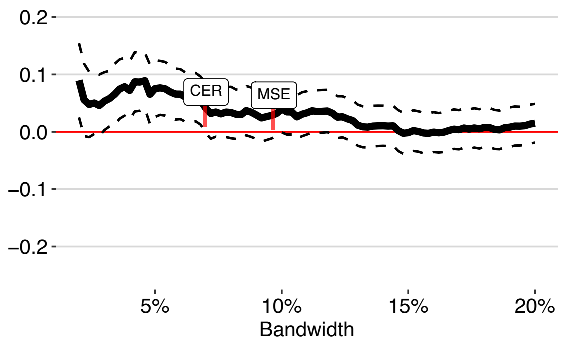
Figure A.14 – Electoral Outcomes - Bandwidth robustness test - Just localities where the incumbent **ran again** in 2020



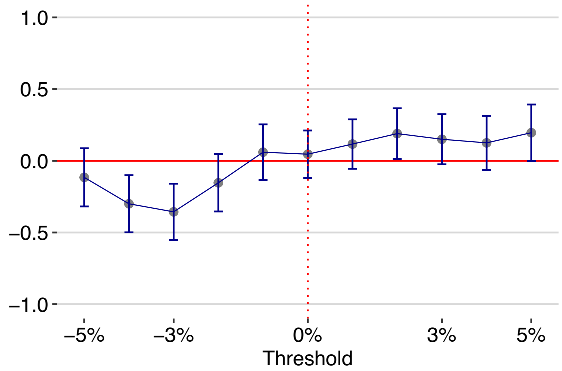
(a) Incumbent Was Reelected (2020)



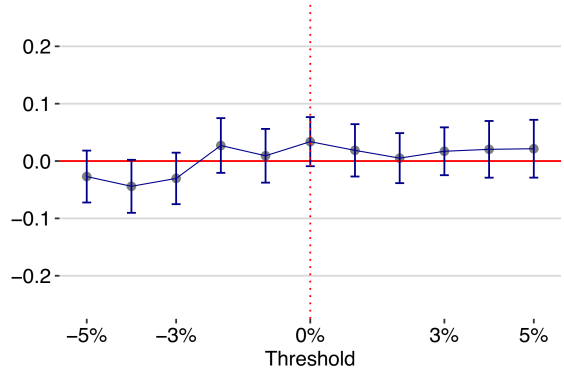
(b) Candidate's Valid-Votes Share (2020)

Notes: This figure displays the bandwidth robustness tests for the association between incumbent female mayors seeking re-election and electoral outcomes in Brazil's 2020 municipal elections. Subfigure (a) presents estimates for a dummy indicating if the incumbent got to be re-elected in 2020. Subfigure (b) presents the estimates for the share of valid-votes received in the same election. We use a linear polynomial and a uniform kernel RD specification. CER and MSE optimal bandwidths are indicated in the figures (Calonico et al. (2014)). Following this same work, 90% robust-bias corrected intervals are displayed. All estimates control for epidemiological surveillance services, party ideology, and dummies indicating affiliation to PTB and PSD parties. All estimates also account for state fixed-effects following Equation 1.

Figure A.15 – Electoral Outcomes - Placebo tests around the threshold - Just localities where the incumbent **ran again** in 2020



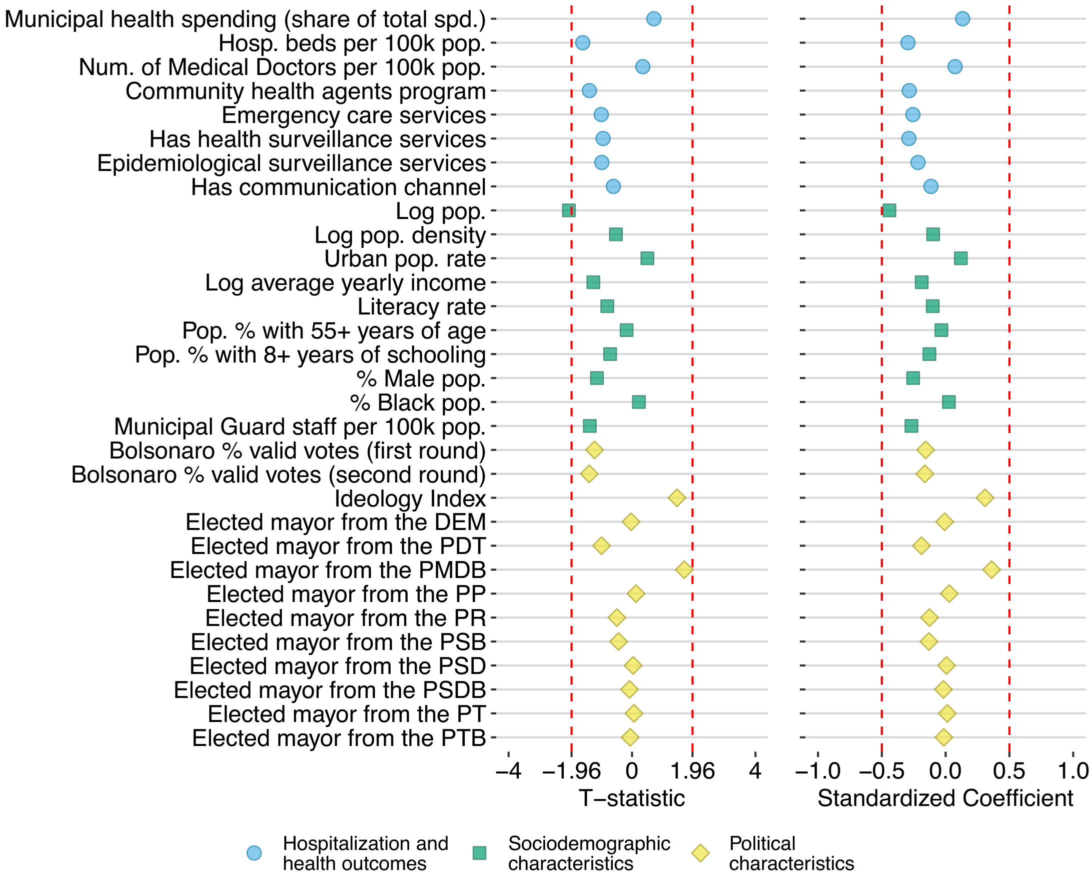
(a) Incumbent Was Reelected (2020)



(b) Candidate's Valid-Votes Share (2020)

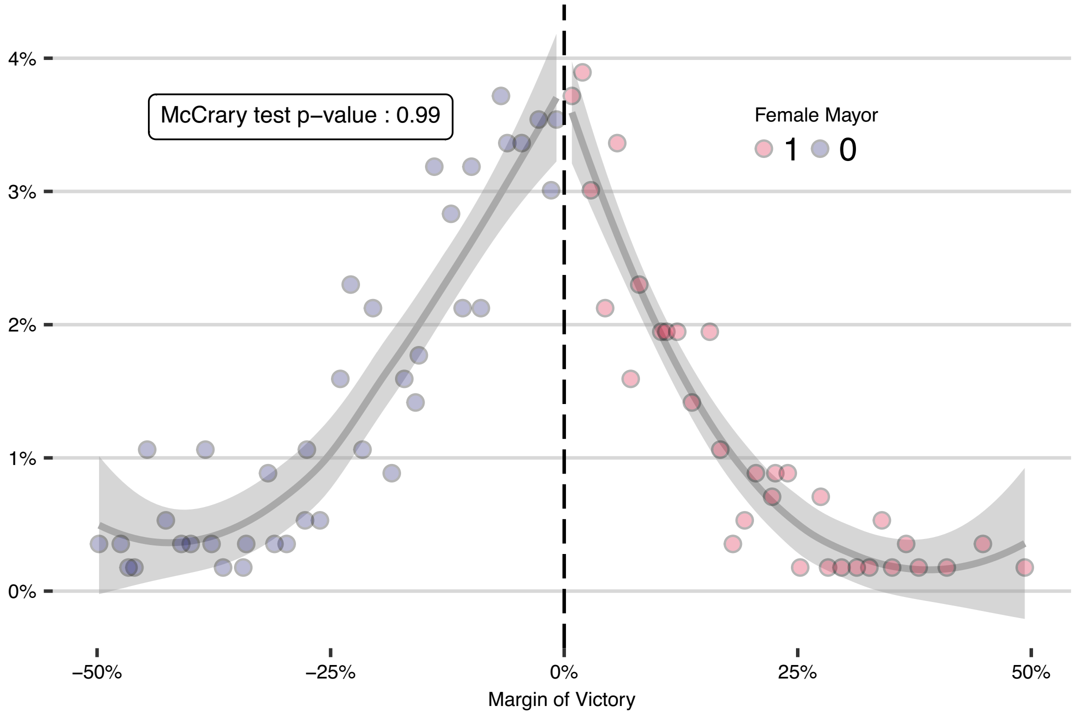
Notes: This figure displays the association between incumbent female mayors seeking re-election and electoral outcomes in Brazil's 2020 municipal elections for different (and placebo) cutoffs. Variables are measured in numbers per hundred thousand inhabitants in 2020. Note that COVID-19 numbers are a subset of SARI numbers. Subfigure (a) presents estimates for a dummy indicating if the incumbent got to be re-elected in 2020. Subfigure (b) presents the estimates for the share of valid-votes received in the same election. We use a linear polynomial and a uniform kernel RD specification. Optimal bandwidths following (CALONICO et al., 2014) were chosen to minimize the mean squared error of the local polynomial RD point estimator. Following that same work, 90% robust-bias corrected intervals are displayed. All estimates control for epidemiological surveillance services, party ideology, and dummies indicating affiliation to PTB and PSD parties. All estimates also account for state fixed-effects following Equation 1.

Figure A.16 – Baseline covariate balance around the threshold - Just localities where the incumbent **did not run** in 2020



Notes: This figure displays the robust-bias corrected t-statistics and standardized coefficients from our baseline covariates' balance RD estimates. For each indicated variable we run a RD with linear polynomial and uniform kernel specification. Optimal bandwidths following Calonico et al. (2014) were chosen to minimize the mean squared error of the local polynomial RD point estimator. All estimates account for state fixed-effects following Equation 1. In the t-statistics graph we indicate the 5% significance level thresholds in red. For more details on these estimations see Tables B.17 and B.18. For variables' description see Table B.1.

Figure A.17 – McCrary Test - Just localities where the incumbent **did not run** in 2020



Notes: This figures displays the McCrary density test for the running variable around the cutoff (McCrary (2008)).

Appendix B. Tables

Table B.1 – Data Description: Baseline Covariates

Variable	Description	Source
Panel A: Hospitalization and health outcomes		
Municipal health spending	Avg. share of municipal spending dedicated to health issues across 2013-16	SICONFI[1]
Hosp. beds per 100k pop.	Total hosp. beds in Jan 2017	CNES[2]
Num. of Medical Doctors per 100k pop.	Number of MDs in 2014	IBGE[3]
Municipal health council	Dummy indicating the existence in 2014	IBGE
Municipal health fund	Dummy indicating the existence in 2014	IBGE
Community health agents program	Dummy indicating the existence in 2014	IBGE
Emergency care services	Dummy indicating the existence in 2014	IBGE
Has health surveillance services	Dummy indicating the existence in 2014	IBGE
Epidemiological surveillance services	Dummy indicating the existence in 2014	IBGE
Has communication channel	Dummy indicating the existence in 2014	IBGE
Panel B: Sociodemographic characteristics		
Population	Estimated population in 2020	IBGE
Population density	Estimated population density in 2020	IBGE
Urban pop. rate	Fraction of municipal population regarded as urban in 2017	IBGE
Average yearly income	GDP per capita in 2018	IBGE
Literacy rate	% of literate pop. in 2010	IBGE 2010 Census[4]
Pop. % with 55+ years of age	% of pop. with 55+ years of age in 2010	IBGE 2010 Census
Pop. % with 8+ years of schooling	% of pop. with 8+ years of schooling in 2010	IBGE 2010 Census
% Male pop.	% of pop. that was male in 2010	IBGE 2010 Census
% Black pop.	% of black pop. in 2010	IBGE 2010 Census
Municipal guard staff per 100k pop.	Number of municipal guards in 2014	IBGE
Panel C: Political characteristics		
Bolsonaro % valid votes (first round)	Bolsonaro's vote-share in the 2018 Brazilian presidential first round election	TSE
Bolsonaro % valid votes (second round)	Bolsonaro's vote-share in the 2018 Brazilian presidential second round election	TSE[5]
Ideology Index*	Municipal ideological score in 2016. Varies from -1 (far-left) to 1 (far-right)	TSE/BLS[6]
Elected mayor was the incumbent	Dummy indicating if the elected candidated was the incumbent	TSE
Elected mayor was from some party**	Ten different dummies each indicating if the elected candidated was from a given party**	TSE

Notes: All variables are aggregated at the municipal level.

* This variable differs from the "Mayor's party ideology" shown in Table B.2. The former measures municipal ideology; the second measures the mayor's party ideology.

** DEM, PDT, PMDB, PP, PR, PSB, PSD, PSDB, PT or PTB.

[1] *Sistema de Informações Contábeis e Fiscais do Setor Público Brasileiro* (Brazilian Public Sector Accounting and Tax Information System) from the Brazilian National Treasure.

[2] *Cadastro Nacional de Estabelecimentos de Saúde* (National Register of Health Establishments) from the Brazilian Ministry of Health.

[3] *Instituto Brasileiro de Geografia e Estatística* (Brazil's National Bureau of Statistics).

[4] IBGE's demographic census in 2010. It is the most recent available country-covering census in Brazil.

[5] *Tribunal Superior Eleitoral* (Brazilian Electoral Court), the Brazilian electoral authority.

[6] The Brazilian legislative survey power2019.

Table B.2 – Data Description: Epidemiological and Policy outcomes

Variable	Description	Source
Incumbent Was Reelected (2020)	Dummy indicating mayor re-election in 2020	TSE
Candidate's Valid-Votes Share (2020)	Valid-votes share in 2020's election	TSE
COVID-19 deaths per 100k pop.	Number of COVID-19 deaths in 2020	SIVEP[1]
COVID-19 hospitalizations per 100k pop.	Number of COVID-19 hospitalizations in 2020	SIVEP
SARI deaths per 100k pop.	Number of SARI deaths in 2020	SIVEP
SARI hospitalizations per 100k pop.	Number of SARI hospitalizations in 2020	SIVEP
Number of NPIs	Total number of adopted NPIs until July 2020	CNM-Survey[2]
Face covering required	Dummy indicating adoption until July 2020	CNM-Survey
Gatherings prohibition	Dummy indicating adoption until July 2020	CNM-Survey
Cordon sanitaire	Dummy indicating adoption until July 2020	CNM-Survey
Closure of non-essentials	Dummy indicating adoption until July 2020	CNM-Survey
Public transport restriction	Dummy indicating adoption until July 2020	CNM-Survey
Mayor's years of schooling	Mayor's years of schooling when elected	TSE[5]
Mayor's Age	Mayor's years of age when elected	TSE
Healthcare professional	Dummy indicating if the mayor is a healthcare professional	TSE
Mayor's party ideology*	Mayor's party ideology index when elected. Varies from -1 (far-left) to 1 (far-right)	BLS[6]

Notes: All variables are aggregated at the municipal level.

* This variable differs from the Ideology Index shown in Table B.1 Panel C. The former measures the mayor's party ideology; the second is a measure of municipal ideology.

[1] *Sistema de Informação de Vigilância de Gripe* (Flu Surveillance Information System) from the Brazilian Ministry of Health.

[2] *Survey da Confederação Nacional dos Municípios* (Brazilian Confederation of Municipalities survey) npidata2021

[3] *Sistema de Informações Contábeis e Fiscais do Setor Público Brasileiro* (Brazilian Public Sector Accounting and Tax Information System) from the Brazilian National Treasury.

[4] *Cadastro Nacional de Estabelecimentos de Saúde* (National Register of Health Establishments) from the Brazilian Ministry of Health.

[5] *Tribunal Superior Eleitoral* (Brazilian Electoral Court), the Brazilian electoral authority.

[6] The Brazilian legislative survey power2019.

Table B.3 – Formal Continuity-Based Analysis for Covariates - Full 1222 mixed-gender electoral races sample

Variable	RD Estimator	Robust Inference p-value	Robust Inference Conf. Int.	CCT-Optimal Bandwidth	Eff. Number Observations
Panel A: Hospitalization and health outcomes					
Municipal health spending (share of total spd.)	0.006	0.333	[-0.0063, 0.0185]	10.685	577
Hosp. beds per 100k pop.	14.967	0.501	[-28.6405, 58.5744]	10.167	558
Num. of Medical Doctors per 100k pop.	-0.627	0.942	[-17.5521, 16.2974]	14.914	752
Municipal health council	0.011	0.227	[-0.0068, 0.0286]	13.580	702
Community health agents program	-0.064	0.346	[-0.197, 0.0691]	12.605	651
Emergency care services	0.012	0.813	[-0.0882, 0.1123]	12.843	667
Has health surveillance services	0.000	0.982	[-0.0315, 0.0322]	14.850	757
Epidemiological surveillance services	0.020	0.499	[-0.0385, 0.079]	13.793	701
Has communication channel	-0.011	0.675	[-0.0604, 0.0391]	14.818	755
Panel B: Sociodemographic characteristics					
Log pop.	-0.180	0.302	[-0.5215, 0.1617]	8.853	502
Log pop. density	0.126	0.535	[-0.2713, 0.523]	9.577	537
Urban pop. rate	-5.367	0.274	[-14.9861, 4.2524]	14.669	749
Log average yearly income	-0.040	0.614	[-0.1943, 0.1148]	10.510	580
Literacy rate	-0.008	0.360	[-0.0238, 0.0087]	11.537	612
Pop. % with 55+ years of age	-0.003	0.595	[-0.0117, 0.0067]	12.830	667
Pop. % with 8+ years of schooling	-0.002	0.840	[-0.0239, 0.0194]	10.686	584
% Male pop.	-0.004	0.175	[-0.0091, 0.0017]	9.837	548
% Black pop.	0.017	0.368	[-0.0194, 0.0524]	9.880	549
Municipal Guard staff per 100k pop.	-15.579	0.161	[-37.357, 6.199]	11.361	601
Panel C: Political characteristics					
Bolsonaro % valid votes (first round)	-0.009	0.599	[-0.0408, 0.0236]	10.899	591
Bolsonaro % valid votes (second round)	-0.014	0.420	[-0.0495, 0.0206]	10.750	586
Ideology Index	0.024	0.250	[-0.017, 0.0654]	10.765	586
Elected mayor was the incumbent	-0.042	0.599	[-0.1991, 0.115]	10.389	530

Notes: This table displays the RD balance test for our baseline covariates. For each indicated variable we run a RD with linear polynomial and uniform kernel specification. Optimal bandwidths following Calonico et al. (2014) were chosen to minimize the mean squared error of the local polynomial RD point estimator. Following that same work, we report robust-bias corrected p-values and 95% CIs. All estimates account for state fixed-effects following Equation 1. Variables' description are in Table B.1.

For the RD balance test for the parties' dummies see Table B.4.

Table B.4 – Parties Balance Table - Full 1222 mixed-gender electoral races sample

Party	RD Estimator	Robust Inference p-value	Robust Inference Conf. Int.	CCT-Optimal Bandwidth	Eff. Number Observations
DEM	0.031	0.400	[-0.0416, 0.1041]	9.911	549
PDT	-0.026	0.529	[-0.1051, 0.054]	12.325	636
PMDB	0.009	0.867	[-0.1011, 0.12]	12.107	629
PP	0.079	0.100	[-0.0153, 0.1742]	9.884	549
PR	0.022	0.635	[-0.0679, 0.1112]	8.136	474
PSB	-0.071	0.203	[-0.1793, 0.038]	10.040	554
PSD	0.062	0.161	[-0.0248, 0.1495]	14.414	737
PSDB	0.030	0.601	[-0.0828, 0.1431]	11.369	602
PT	0.003	0.910	[-0.0524, 0.0588]	14.512	742
PTB	-0.055	0.117	[-0.1248, 0.0139]	9.548	536

Notes: This table displays the RD balance test for the partie's dummies variables. Each party variable is a dummy indicating if the elected mayor in 2016 municipal election was from a given party. For each of these variables we run a RD with linear polynomial and uniform kernel specification. Optimal bandwidths following Calonico et al. (2014) were chosen to minimize the mean squared error of the local polynomial RD point estimator. Following that same work, we report robust-bias corrected p-values and 95% CIs. All estimates account for state fixed-effects following Equation 1. Variables' description are in Table B.1 Panel C.

Table B.5 – States Balance Table - Full 1222 mixed-gender electoral races sample

State	RD Estimator	Robust Inference p-value	Robust Inference Conf. Int.	CCT-Optimal Bandwidth	Eff. Number Observations
AC	-0.001	0.924	[-0.0248, 0.0225]	18.067	849
AL	0.018	0.489	[-0.0335, 0.0701]	14.048	722
AM	-0.015	0.387	[-0.0489, 0.019]	12.102	628
AP	0.010	0.467	[-0.0168, 0.0366]	16.398	814
BA	-0.068	0.135	[-0.1569, 0.0211]	14.130	724
CE	0.019	0.547	[-0.0431, 0.0814]	14.160	724
ES	-0.010	0.428	[-0.0356, 0.0151]	7.934	470
GO	0.044	0.168	[-0.0184, 0.1056]	10.775	586
MA	0.029	0.490	[-0.0534, 0.1115]	12.504	647
MG	0.045	0.355	[-0.0504, 0.1407]	12.862	668
MS	-0.009	0.601	[-0.0449, 0.026]	12.458	644
MT	-0.052	0.102	[-0.1146, 0.0104]	11.333	601
PA	-0.041	0.159	[-0.0981, 0.0161]	15.163	772
PB	-0.016	0.693	[-0.0975, 0.0649]	10.684	584
PE	-0.035	0.308	[-0.1031, 0.0325]	12.283	636
PI	-0.039	0.264	[-0.1074, 0.0294]	18.713	868
PR	0.037	0.206	[-0.0201, 0.0933]	11.240	600
RJ	0.020	0.255	[-0.0144, 0.0545]	10.185	561
RN	0.019	0.623	[-0.0573, 0.0956]	13.296	692
RO	-0.025	0.139	[-0.059, 0.0082]	13.618	702
RR	-0.016	0.277	[-0.0448, 0.0128]	8.086	473
RS	-0.009	0.816	[-0.0803, 0.0633]	12.992	679
SC	0.012	0.714	[-0.0529, 0.0773]	14.343	734
SE	0.036	0.165	[-0.0147, 0.0862]	11.130	599
SP	0.093	0.080*	[-0.0111, 0.198]	10.421	568
TO	0.011	0.622	[-0.0327, 0.0548]	11.208	599

Notes: This table displays the RD balance test for the state's dummies variables. Each state variable is a dummy indicating if the elected mayor in 2016 municipal election was from a given state. For each of these variables we run a RD with linear polynomial and uniform kernel specification. Optimal bandwidths following Calonico et al. (2014) were chosen to minimize the mean squared error of the local polynomial RD point estimator. Following that same work, we report robust-bias corrected p-values and 95% CIs. No controls are included.

Table B.6 – Summary Statistics: Baseline Covariates - Full 1222 mixed-gender electoral races sample

	Male			Female			Full Sample				
Variable	N	Mean	Sd	N	Mean	Sd	Mean	Sd	Min	Median	Max
Panel A: Hospitalization and health outcomes											
Municipal health spending (share of total spd.)	684	0.23	0.04	527	0.24	0.04	0.23	0.04	0.03	0.23	0.5
Hosp. beds per 100k pop.	688	127.6	156.26	532	127.19	150.83	127.42	153.86	0	100.98	1415.12
Num. of Medical Doctors per 100k pop.	684	81.28	64.67	529	85.27	62.04	83.02	63.54	0	67.91	715.91
Municipal health council	689	1	0.05	533	1	0	1	0.04	0	1	1
Municipal health fund	689	1	0	533	1	0	1	0	1	1	1
Community health agents program	689	0.73	0.45	533	0.72	0.45	0.73	0.45	0	1	1
Emergency care services	689	0.85	0.36	533	0.87	0.33	0.86	0.35	0	1	1
Has health surveillance services	689	0.99	0.09	533	0.99	0.1	0.99	0.09	0	1	1
Epidemiological surveillance services	683	0.95	0.21	528	0.97	0.18	0.96	0.2	0	1	1
Has communication channel	689	0.97	0.18	533	0.97	0.17	0.97	0.18	0	1	1
Panel B: Sociodemographic characteristics											
Population	689	30117.4	121440.7	533	23933.4	43106.7	27420.09	95546.05	1118	11320.5	2886698
Population density	689	96.9	540	533	90.7	306.3	94.17	453.01	0.04	24.69	11670.9
Urban pop. rate	689	46.33	33.73	533	46.93	33.34	46.59	33.55	0	52.54	98.6
Average yearly income	689	21748.9	24653.3	533	22080.9	33115	21893.7	28640.83	5062.94	14119.61	583171.85
Literacy rate	689	0.814	0.099	533	0.816	0.094	0.81	0.1	0.53	0.82	0.98
Pop. % with 55+ years of age	689	0.158	0.041	533	0.158	0.039	0.16	0.04	0.05	0.16	0.31
Pop. % with 8+ years of schooling	689	0.336	0.091	533	0.337	0.085	0.34	0.09	0.12	0.33	0.66
% Male pop.	689	0.507	0.016	533	0.506	0.015	0.51	0.02	0.46	0.51	0.59
% Black pop.	689	0.571	0.223	533	0.571	0.219	0.57	0.22	0.02	0.63	0.93
Municipal guard staff per 100k pop.	687	20.16	58.33	531	28.41	80.04	23.76	68.74	0	0	660.35
Panel C: Political characteristics											
Bolsonaro % valid votes (first round)	689	0.349	0.196	533	0.348	0.187	0.35	0.19	0.03	0.32	0.81
Bolsonaro % valid votes (second round)	689	0.418	0.231	533	0.417	0.22	0.42	0.23	0.04	0.38	0.88
Ideology Index	689	0.23	0.13	533	0.23	0.13	0.23	0.13	-0.32	0.24	0.64
Elected mayor was the incumbent	633	0.27	0.44	500	0.22	0.41	0.25	0.43	0	0	1

Notes: This table reports the summary statistics for our baseline covariates. For covariates variables description see Table B.1.

Table B.7 – Summary Statistics: Epidemiological and policy outcomes - Full 1222 mixed-gender electoral races sample

	Male			Female			Full Sample				
Variable	N	Mean	Sd	N	Mean	Sd	Mean	Sd	Min	Median	Max
COVID-19 deaths per 100k pop.	686	58.69	47.02	528	57.47	47.3	58.16	47.13	0	48.8	358.79
COVID-19 hospitalizations per 100k pop.	686	154.53	129.44	528	149.4	125.31	152.3	127.63	0	124.69	1299.44
SARI deaths per 100k pop.	686	80.73	59.36	528	79.05	56.12	58.16	47.13	0	48.8	358.79
SARI hospitalizations per 100k pop.	686	260.14	194.06	528	252.96	191.91	152.3	127.63	0	124.69	1299.44
Number of NPIs	454	3.72	0.93	339	3.76	0.89	3.74	0.91	0	4	5
Face covering required	452	0.96	0.18	337	0.97	0.17	0.97	0.18	0	1	1
Gatherings prohibition	452	0.97	0.17	338	1	0.05	0.98	0.13	0	1	1
Cordon Sanitaire	454	0.59	0.49	339	0.6	0.49	0.59	0.49	0	1	1
Closure of non-essentials	452	0.79	0.41	338	0.77	0.42	0.78	0.41	0	1	1
Public transport restriction	445	0.43	0.5	333	0.43	0.5	0.43	0.5	0	0	1
Mayor's years of schooling	689	13.24	3.39	533	14.78	2.26	13.91	3.05	0	16	16
Mayor's Age	689	48.63	10.96	533	47.84	10.3	48.29	10.68	21	48	88
Healthcare professional	689	0.08	0.27	533	0.1	0.3	0.09	0.29	0	0	1
Mayor's party ideology	689	0.28	0.37	533	0.29	0.36	0.28	0.37	-0.84	0.42	0.76

Notes: This table reports the summary statistics for our epidemiological and policy outcomes. Variables' description in Table B.2.

Table B.8 – Mayor's characteristics balance around the threshold - Full 1222 mixed-gender electoral races sample

	Mayor's years of schooling	Mayor's Age	Healthcare professional	Mayor's party ideology
Panel A: Linear specification				
RD Estimator	0.9535	-0.6532	-0.0207	0.1011
Robust p-value	0.044**	0.7	0.68	0.099*
Robust conf. int.	[0.0261, 1.881]	[-3.9316, 2.6253]	[-0.118, 0.0767]	[-0.0189, 0.2211]
CCT-Optimal BW	13.6258	13.0304	12.3187	10.7246
Eff. Number Obs.	703	681	636	585
Panel B: Quadratic specification				
RD Estimator	0.2496	-1.0919	0.0012	0.1183
Robust p-value	0.7	0.627	0.985	0.067*
Robust conf. int.	[-1.0024, 1.5016]	[-5.4941, 3.3102]	[-0.1259, 0.1283]	[-0.008, 0.2446]
CCT-Optimal BW	16.2465	15.3507	16.4033	20.5549
Eff. Number Obs.	811	780	814	905

Notes: This table reports our RD estimates of the association between female mayors and four outcomes. In the first column, the outcome variable is the mayor's years of schooling. In the second column, the outcome variable is the mayor's age. The third column show results for a dummy indicating if the mayor is a healthcare professional. In the fourth and last column, the outcome variable is a mayor's party ideology index that varies from -1 (far-left) to 1 (far-right). Panel A shows the results for a first-degree polynomial estimation. Panel B shows the results for a second-degree polynomial estimation. Every specification uses a uniform kernel. Optimal bandwidths following Calonico et al. (2014) were chosen to minimize the mean squared error of the local polynomial RD point estimator. Following that same work, we report robust-bias corrected p-values and 95% CIs. All estimates account for state fixed-effects following Equation 1. Coefficients significantly different from zero at 99% (***), 95% (**) and 90% (*) confidence level.

Table B.9 – Impact of female leadership on COVID-19 deaths and cases, RDD estimates - Robustness controlling for mayor's characteristics - Full 1222 mixed-gender electoral races sample

	COVID-19 deaths per 100k pop.	COVID-19 hospitalizations per 100k pop.	SARI deaths per 100k pop.	SARI hospitalizations per 100k pop.
Panel A: Linear specification				
RD Estimator	-26.2774	-46.1559	-20.6819	-50.4271
Robust p-value	0.0001***	0.015**	0.025**	0.063*
Robust conf. int.	[-41.8046, -10.7502]	[-83.4677, -8.8441]	[-38.7906, -2.5733]	[-103.5197, 2.6655]
CCT-Optimal BW	9.0783	8.5562	9.4467	8.7588
Eff. Number Obs.	510	486	525	492
Panel B: Quadratic specification				
RD Estimator	-23.4372	-51.5783	-21.6216	-61.5871
Robust p-value	0.009***	0.02**	0.03**	0.046**
Robust conf. int.	[-41.1054, -5.7691]	[-95.1134, -8.0433]	[-41.3816, -1.8615]	[-121.9694, -1.2049]
CCT-Optimal BW	15.5193	15.2278	15.97	16.4266
Eff. Number Obs.	779	769	799	808

Notes: This table reports our RD estimates of the effect of female mayors on the number of deaths and hospitalizations by COVID-19 and SARI per hundred thousand inhabitants in 2020 in Brazilian municipalities. Note that COVID-19 numbers are a subset of SARI numbers. Estimation proceeded over the 1222 municipalities in our mixed-gender elections sample. Panel A shows the results for a first-degree polynomial estimation. Panel B shows the results for a second-degree polynomial estimation. Optimal bandwidths following Calonico et al. (2014) were chosen to minimize the mean squared error of the local polynomial RD point estimator. Following that same work, we report robust-bias corrected p-values and 95% CIs. All estimates controls for mayor's party ideology and mayor's years of schooling. Following Equation 1, all estimates also account for state fixed-effects. Coefficients significantly different from zero at 99% (***), 95% (**) and 90% (*) confidence level.

Table B.10 – Impact of female leadership non-pharmaceutical interventions, RDD estimates - Robustness controlling for mayor's characteristics - Full 1222 mixed-gender electoral races sample

	Number of NPIs	Face covering required	Gatherings prohibition	*Cordon sanitaire*	Closure of non-essentials	Public transport restriction
Panel A: Linear specification						
RD Estimator	0.3766	0.0888	0.0616	0.1473	-0.0848	0.1209
Robust p-value	0.0528*	0.027**	0.0502*	0.066*	0.3302	0.2526
Robust conf. int.	[-0.0045, 0.7577]	[0.0101, 0.1675]	[-1e-04, 0.1232]	[-0.0098, 0.3044]	[-0.2554, 0.0859]	[-0.0862, 0.3281]
CCT-Optimal BW	10.2563	14.9542	8.6039	12.8605	9.8727	11.0247
Eff. Number Obs.	353	478	315	417	347	366
Panel B: Quadratic specification						
RD Estimator	0.2563	0.0862	0.0766	0.1539	-0.116	0.1323
Robust p-value	0.2518	0.0563*	0.0295**	0.1079	0.2153	0.2143
Robust conf. int.	[-0.182, 0.6946]	[-0.0023, 0.1748]	[0.0076, 0.1456]	[-0.0337, 0.3416]	[-0.2995, 0.0675]	[-0.0765, 0.3411]
CCT-Optimal BW	17.5323	27.3338	19.5285	20.4295	15.2302	22.4255
Eff. Number Obs.	535	661	559	575	489	597

Notes: Notes: This table reports our RD estimates of the association between female mayors and NPIs enforcement outcomes. Estimation proceeded over the 1222 municipalities in our mixed-gender elections sample, i.e., our full sample. The first column outcome is the total number of NPIs adopted. The remaining columns are dummies variables indicating whether a specific NPI was adopted. Panel A shows the results for a first-degree polynomial estimation. Panel B shows the results for a second-degree polynomial estimation. Optimal bandwidths following (CALONICO et al., 2014) were chosen to minimize the mean squared error of the local polynomial RD point estimator. Following that same work, we report robust-bias corrected p-values and 95% CIs. All estimates controls for mayor's party ideology and mayor's years of schooling. Following Equation 1, all estimates also account for state fixed-effects. Coefficients significantly different from zero at 99% (***), 95% (**) and 90% (*) confidence level.

Table B.11 – Formal Continuity-Based Analysis for Covariates - Just localities where the incumbent **ran again** in 2020

Variable	RD Estimator	Robust Inference p-value	Robust Inference Conf. Int.	CCT-Optimal Bandwidth	Eff. Number Observations
Panel A: Hospitalization and health outcomes					
Municipal health spending (share of total spd.)	0.00	0.73	[-0.0148, 0.0212]	10.86	258
Hosp. beds per 100k pop.	38.26	0.18	[-17.98, 94.5099]	12.36	336
Num. of Medical Doctors per 100k pop.	-5.17	0.73	[-34.5844, 24.2403]	9.53	286
Municipal health council	0.02	0.30	[-0.0172, 0.0557]	14.00	382
Community health agents program	-0.04	0.65	[-0.2175, 0.136]	12.95	359
Emergency care services	0.00	0.96	[-0.1281, 0.1351]	12.75	352
Has health surveillance services	0.02	0.41	[-0.0307, 0.0747]	13.77	376
Epidemiological surveillance services	0.09	0.08*	[-0.0096, 0.1823]	9.50	279
Has communication channel	-0.01	0.76	[-0.0895, 0.0658]	15.85	433.00
Panel B: Sociodemographic characteristics					
Log pop.	0.11	0.54	[-0.2402, 0.4605]	16.16	439
Log pop. density	0.22	0.39	[-0.2869, 0.7325]	11.95	328
Urban pop. rate	-11.52	0.12	[-26.1737, 3.1323]	12.63	347
Log average yearly income	0.01	0.91	[-0.2213, 0.2497]	8.73	267
Literacy rate	-0.01	0.59	[-0.0282, 0.0161]	11.58	325
Pop. % with 55+ years of age	-0.01	0.28	[-0.0205, 0.006]	11.32	319
Pop. % with 8+ years of schooling	-0.00	0.98	[-0.0256, 0.0249]	13.30	370
% Male pop.	-0.01	0.11	[-0.0135, 0.0014]	9.71	290
% Black pop.	0.02	0.43	[-0.0266, 0.0622]	12.44	340
Municipal Guard staff per 100k pop.	-18.24	0.25	[-49.0866, 12.614]	11.48	323
Panel C: Political characteristics					
Bolsonaro % valid votes (first round)	-0.02	0.30	[-0.0684, 0.0214]	9.34	284
Bolsonaro % valid votes (second round)	-0.03	0.25	[-0.081, 0.0207]	9.09	279
Ideology Index	-0.00	0.92	[-0.0517, 0.0464]	11.20	318

Notes: This table displays the RD balance test for our baseline covariates. For each indicated variable we run a RD with linear polynomial and uniform kernel specification. Optimal bandwidths following Calonico et al. (2014) were chosen to minimize the mean squared error of the local polynomial RD point estimator. Following that same work, we report robust-bias corrected p-values and 95% CIs. All estimates account for state fixed-effects following Equation 1. Variables' description are in Table B.1.
For the RD balance test for the parties' dummies see Table B.12.

Table B.12 – Parties Balance Table - Just localities where the incumbent **ran again** in 2020

	RD	Robust Inference		CCT-Optimal	Eff. Number
Party	Estimator	p-value	Conf. Int.	Bandwidth	Observations
DEM	0.037	0.391	[-0.0476, 0.1216]	14.033	381
PDT	-0.040	0.509	[-0.1571, 0.0779]	12.074	330
PMDB	-0.104	0.189	[-0.2591, 0.0512]	10.582	311
PP	0.090	0.145	[-0.0311, 0.2118]	12.961	360
PR	0.042	0.418	[-0.0603, 0.1451]	9.961	293
PSB	-0.058	0.329	[-0.1733, 0.058]	14.401	390
PSD	0.135	0.023**	[0.0188, 0.2513]	13.659	375
PSDB	0.082	0.220	[-0.0489, 0.2124]	14.445	394
PT	0.020	0.621	[-0.0601, 0.1006]	12.875	354
PTB	-0.089	0.071*	[-0.1861, 0.0075]	10.104	297

Notes: This table displays the RD balance test for the partie's dummies variables. Each party variable is a dummy indicating if the elected mayor in 2016 municipal election was from a given party. For each of these variables we run a RD with linear polynomial and uniform kernel specification. Optimal bandwidths following Calonico et al. (2014) were chosen to minimize the mean squared error of the local polynomial RD point estimator. Following that same work, we report robust-bias corrected p-values and 95% CIs. All estimates account for state fixed-effects following Equation 1. Variables' description are in Table B.1 Panel C.

Table B.13 – Mayor's characteristics balance around the threshold - Just localities where the incumbent **ran again** in 2020

	Mayor's years of schooling	Mayor's Age	Healthcare professional	Mayor's party ideology
Panel A: Linear specification				
RD Estimator	1.1018	-2.0628	0.0423	0.1712
Robust p-value	0.1209	0.4558	0.5982	0.0338**
Robust conf. int.	[-0.2907, 2.4943]	[-7.4842, 3.3585]	[-0.115, 0.1996]	[0.0131, 0.3293]
CCT-Optimal BW	12.7624	10.3697	11.1715	12.9151
Eff. Number Obs.	351	301	317	356
Panel B: Quadratic specification				
RD Estimator	0.4385	-1.6389	0.0735	0.1887
Robust p-value	0.6238	0.6171	0.4595	0.0472**
Robust conf. int.	[-1.314, 2.191]	[-8.0633, 4.7855]	[-0.1212, 0.2682]	[0.0024, 0.375]
CCT-Optimal BW	16.6242	15.7918	16.6064	19.1736
Eff. Number Obs.	444	429	444	483

Notes: This table reports our RD estimates of the association between female mayors and four outcomes. In the first column, the outcome variable is the mayor's years of schooling. In the second column, the outcome variable is the mayor's age. The third column show results for a dummy indicating if the mayor is a healthcare professional. In the fourth and last column, the outcome variable is a mayor's party ideology index that varies from -1 (far-left) to 1 (far-right). Panel A shows the results for a first-degree polynomial estimation. Panel B shows the results for a second-degree polynomial estimation. Every specification uses a uniform kernel. Optimal bandwidths following Calonico et al. (2014) were chosen to minimize the mean squared error of the local polynomial RD point estimator. Following that same work, we report robust-bias corrected p-values and 95% CIs. All estimates account for state fixed-effects following Equation 1. Coefficients significantly different from zero at 99% (***), 95% (**) and 90% (*) confidence level.

Table B.14 – States Balance Table - Just localities where the incumbent **ran again** in 2020

State	RD Estimator	Robust Inference p-value	Robust Inference Conf. Int.	CCT-Optimal Bandwidth	Eff. Number Observations
AC	-0.021	0.276	[-0.0595, 0.017]	19.436	487
AL	0.003	0.932	[-0.0609, 0.0664]	12.444	340
AM	-0.009	0.668	[-0.0508, 0.0326]	12.266	334
AP	0.017	0.494	[-0.0318, 0.0658]	16.416	441
BA	-0.003	0.969	[-0.1454, 0.1398]	13.043	363
CE	0.057	0.125	[-0.0157, 0.1294]	14.056	381
ES	-0.003	0.859	[-0.035, 0.0292]	20.177	492
GO	0.051	0.293	[-0.044, 0.1462]	12.405	337
MA	-0.037	0.533	[-0.1539, 0.0796]	14.288	388
MG	0.017	0.752	[-0.0911, 0.1261]	16.762	444
MS	0.004	0.893	[-0.0512, 0.0587]	18.336	469
MT	-0.076	0.064*	[-0.1572, 0.0046]	11.552	324
PA	0.005	0.886	[-0.0648, 0.075]	12.341	335
PB	-0.023	0.678	[-0.1333, 0.0867]	10.405	301
PE	-0.005	0.916	[-0.0955, 0.0858]	10.570	310
PI	-0.064	0.280	[-0.1799, 0.052]	14.864	406
PR	0.025	0.448	[-0.0402, 0.0908]	9.759	291
RJ	0.015	0.567	[-0.0359, 0.0656]	10.532	310
RN	0.027	0.589	[-0.0721, 0.1269]	15.416	421
RO	-0.065	0.048**	[-0.1296, -6e-04]	12.262	334
RS	0.022	0.720	[-0.0984, 0.1424]	10.984	315
SC	-0.032	0.573	[-0.1431, 0.0791]	13.915	379
SE	-0.020	0.347	[-0.0605, 0.0213]	13.085	365
SP	0.073	0.248	[-0.0504, 0.1955]	13.329	369
TO	0.021	0.442	[-0.0331, 0.0759]	14.068	382

Notes: This table displays the RD balance test for the state's dummies variables. Each state variable is a dummy indicating if the elected mayor in 2016 municipal election was from a given state. For each of these variables we run a RD with linear polynomial and uniform kernel specification. Optimal bandwidths following Calonico et al. (2014) were chosen to minimize the mean squared error of the local polynomial RD point estimator. Following that same work, we report robust-bias corrected p-values and 95% CIs. No controls are included.

Table B.15 – Summary Statistics: Baseline Covariates - Just localities where the incumbent **ran again** in 2020

	Female			Male			Full Sample				
Variable	N	Mean	Sd	N	Mean	Sd	Mean	Sd	Min	Median	Max
Panel A: Hospitalization and health outcomes											
Municipal health spending (share of total)	253	0.23	0.05	287	0.23	0.04	0.23	0.04	0.03	0.23	0.5
Hosp. beds per 100k pop.	307	115.91	139.51	351	113.68	135.08	114.72	137.07	0	80.45	952.18
Num. of Medical Doctors per 100k pop.	304	86.48	65.51	349	78.77	57.19	82.36	61.28	0	68.75	501.85
Municipal health council	307	1	0	351	0.99	0.08	1	0.06	0	1	1
Municipal health fund	307	1	0	351	1	0	1	0	1	1	1
Community health agents program	307	0.7	0.46	351	0.75	0.43	0.73	0.45	0	1	1
Emergency care services	307	0.9	0.3	351	0.86	0.35	0.88	0.33	0	1	1
Has health surveillance services	307	0.99	0.08	351	0.98	0.13	0.99	0.11	0	1	1
Epidemiological surveillance services	305	0.97	0.18	345	0.96	0.2	0.96	0.19	0	1	1
Has communication channel	307	0.96	0.19	351	0.97	0.17	0.97	0.18	0	1	1
Panel B: Sociodemographic characteristics											
Population	307	24469.89	39293.48	351	24868.64	42688.14	24682.6	41108.69	1410	11852	403183
Population density	307	93.9	345.73	351	102.13	669.17	98.29	542.43	0.04	24.44	11670.9
Urban pop. rate	307	46.89	33.01	351	47.08	32.8	46.99	32.87	0	53.36	98.6
Average yearly income	307	21064.9	23817.76	351	19640.42	17277.27	20305.03	20584.98	5351.2	13785.37	199339.81
Literacy rate	307	0.81	0.1	351	0.81	0.1	0.81	0.1	0.53	0.81	0.98
Pop. % with 55+ years of age	307	0.16	0.04	351	0.16	0.04	0.16	0.04	0.05	0.16	0.29
Pop. % with 8+ years of schooling	307	0.33	0.08	351	0.33	0.09	0.33	0.09	0.12	0.32	0.59
% Male pop.	307	0.51	0.02	351	0.51	0.02	0.51	0.02	0.47	0.51	0.58
% Black pop.	307	0.59	0.21	351	0.57	0.22	0.58	0.22	0.02	0.63	0.92
Municipal guard staff per 100k pop.	306	35.61	92.43	349	18.24	50	26.35	73.41	0	0	660.35
Panel C: Political characteristics											
Bolsonaro % valid votes (first round)	307	0.34	0.19	351	0.34	0.19	0.34	0.19	0.03	0.3	0.81
Bolsonaro % valid votes (second round)	307	0.41	0.22	351	0.41	0.23	0.41	0.22	0.04	0.35	0.88
Ideology Index	307	0.23	0.11	351	0.23	0.12	0.23	0.12	-0.29	0.23	0.64

Notes: This table reports the summary statistics for our baseline covariates.
For covariates variables description see Table B.1.

Table B.16 – Summary Statistics: Epidemiological and policy outcomes - Just localities where the incumbent **ran again** in 2020

	Female			Male			Full Sample				
Variable	N	Mean	Sd	N	Mean	Sd	Mean	Sd	Min	Median	Max
Incumbent Was Reelected (2020)	304	0.55	0.5	350	0.68	0.47	0.62	0.49	0	1	1
Candidates' Valid-Votes Share (2020)	304	0.55	0.14	350	0.57	0.15	0.56	0.14	0.25	0.54	1
COVID-19 deaths per 100k pop.	302	48.29	41.52	351	46.44	42.52	47.3	42.04	0	36.94	322.73
COVID-19 hospitalizations per 100k pop.	302	122.68	113.15	351	118.3	108.43	120.33	110.57	0	89.8	1039.2
SARI deaths per 100k pop.	302	67.81	49.8	351	66.25	54.26	66.97	52.21	0	56.34	322.73
SARI hospitalizations per 100k pop.	302	211.42	171.2	351	207.02	170.89	209.05	170.92	8.19	162.3	1347.38
Number of NPIs	189	3.8	0.95	225	3.75	0.93	3.78	0.94	0	4	5
Face covering required	187	0.96	0.19	224	0.96	0.2	0.96	0.19	0	1	1
Gatherings prohibition	188	1	0	224	0.96	0.2	0.98	0.15	0	1	1
Cordon Sanitaire	189	0.63	0.48	225	0.63	0.48	0.63	0.48	0	1	1
Closure of non-essentials	188	0.79	0.41	224	0.79	0.4	0.79	0.41	0	1	1
Public transport restriction	185	0.45	0.5	221	0.43	0.5	0.44	0.5	0	0	1
Mayor's years of schooling	306	14.85	2.23	351	13.25	3.4	14	3.02	0	16	16
Mayor's Age	306	46.59	10.38	351	47.8	10.91	47.24	10.67	22	47	77
Healthcare professional	306	0.12	0.33	351	0.11	0.31	0.12	0.32	0	0	1
Mayor's party ideology	306	0.3	0.35	351	0.26	0.38	0.28	0.37	-0.84	0.42	0.76

Notes: This table reports the summary statistics for our epidemiological and policy outcomes. Variables' description in Table B.2.

Table B.17 – Formal Continuity-Based Analysis for Covariates - Just localities where the incumbent **did not run** in 2020

Variable	RD Estimator	Robust Inference p-value	Robust Inference Conf. Int.	CCT-Optimal Bandwidth	Eff. Number Observations
Panel A: Hospitalization and health outcomes					
Municipal health spending (share of total spd.)	0.01	0.48	[-0.0097, 0.0207]	15.89	317
Hosp. beds per 100k pop.	-41.89	0.11	[-93.237, 9.4541]	8.26	226
Num. of Medical Doctors per 100k pop.	4.89	0.73	[-22.5198, 32.2929]	11.56	287
Municipal health council	0.00	0.02**	[0, 0]	6.02	170
Community health agents program	-0.13	0.17	[-0.3076, 0.0532]	12.55	304
Emergency care services	-0.10	0.32	[-0.2826, 0.0921]	9.39	243
Has health surveillance services	-0.02	0.35	[-0.0648, 0.0228]	11.45	286
Epidemiological surveillance services	-0.05	0.33	[-0.1389, 0.0463]	10.85	275
Has communication channel	-0.02	0.55	[-0.0809, 0.0428]	12.11	300
Panel B: Sociodemographic characteristics					
Log pop.	-0.50	0.04 **	[-0.9756, -0.0211]	8.22	224
Log pop. density	-0.14	0.60	[-0.6755, 0.3916]	9.50	247
Urban pop. rate	4.10	0.62	[-12.0644, 20.2569]	10.84	276
Log average yearly income	-0.14	0.21	[-0.35, 0.0769]	11.19	282
Literacy rate	-0.01	0.42	[-0.0331, 0.0139]	10.39	264
Pop. % with 55+ years of age	-0.00	0.86	[-0.0165, 0.0138]	9.07	238
Pop. % with 8+ years of schooling	-0.01	0.48	[-0.0429, 0.0201]	10.99	281
% Male pop.	-0.00	0.26	[-0.0109, 0.0029]	11.53	288
% Black pop.	0.01	0.82	[-0.0447, 0.0562]	9.99	258
Municipal Guard staff per 100k pop.	-16.83	0.17	[-40.9422, 7.2895]	13.45	325
Panel C: Political characteristics					
Bolsonaro % valid votes (first round)	-0.03	0.22	[-0.0797, 0.0187]	7.63	211
Bolsonaro % valid votes (second round)	-0.04	0.17	[-0.0895, 0.0153]	8.79	231
Ideology Index	0.04	0.14	[-0.0149, 0.1013]	12.31	302

Notes: This table displays the RD balance test for our baseline covariates. For each indicated variable we run a RD with linear polynomial and uniform kernel specification. Optimal bandwidths following Calonico et al. (2014) were chosen to minimize the mean squared error of the local polynomial RD point estimator. Following that same work, we report robust-bias corrected p-values and 95% CIs. All estimates account for state fixed-effects following Equation 1. Variables' description are in Table B.1.
For the RD balance test for the parties' dummies see Table B.18.

Table B.18 – Parties Balance Table - Just localities where the incumbent **did not run** in 2020

Party	RD Estimator	Robust Inference p-value	Robust Inference Conf. Int.	CCT-Optimal Bandwidth	Eff. Number Observations
DEM	-0.002	0.975	[-0.1061, 0.1028]	11.725	292
PDT	-0.044	0.324	[-0.1325, 0.0437]	14.772	351
PMDB	0.143	0.090*	[-0.0225, 0.3084]	12.223	302
PP	0.008	0.897	[-0.1077, 0.123]	14.297	344
PR	-0.032	0.624	[-0.1583, 0.095]	9.340	242
PSB	-0.035	0.664	[-0.1912, 0.1218]	8.661	229
PSD	0.002	0.972	[-0.1185, 0.1228]	15.395	362
PSDB	-0.006	0.936	[-0.1572, 0.1447]	12.531	304
PT	0.003	0.949	[-0.0841, 0.0898]	11.110	282
PTB	-0.003	0.952	[-0.093, 0.0875]	14.688	350

Notes: This table displays the RD balance test for the partie's dummies variables. Each party variable is a dummy indicating if the elected mayor in 2016 municipal election was from a given party. For each of these variables we run a RD with linear polynomial and uniform kernel specification. Optimal bandwidths following Calonico et al. (2014) were chosen to minimize the mean squared error of the local polynomial RD point estimator. Following that same work, we report robust-bias corrected p-values and 95% CIs. All estimates account for state fixed-effects following Equation 1. Variables' description are in Table B.1 Panel C.

Table B.19 – Mayor's characteristics balance around the threshold - Just localities where the incumbent **did not run** in 2020

	Mayor's years of schooling	Mayor's Age	Healthcare professional	Mayor's party ideology
Panel A: Linear specification				
RD Estimator	0.8738	2.0705	-0.0539	0.031
Robust p-value	0.1593	0.318	0.3113	0.6844
Robust conf. int.	[-0.343, 2.0907]	[-1.9932, 6.1342]	[-0.1582, 0.0504]	[-0.1184, 0.1803]
CCT-Optimal BW	13.4135	13.7072	14.0354	10.2453
Eff. Number Obs.	323	332	341	262
Panel B: Quadratic specification				
RD Estimator	0.0469	0.5144	-0.046	0.0696
Robust p-value	0.957	0.8555	0.4907	0.4474
Robust conf. int.	[-1.6553, 1.749]	[-5.0206, 6.0494]	[-0.1767, 0.0848]	[-0.1099, 0.249]
CCT-Optimal BW	16.0336	13.5715	17.7852	13.2752
Eff. Number Obs.	370	329	384	323

Notes: This table reports our RD estimates of the association between female mayors and four outcomes. In the first column, the outcome variable is the mayor's years of schooling. In the second column, the outcome variable is the mayor's age. The third column show results for a dummy indicating if the mayor is a healthcare professional. In the fourth and last column, the outcome variable is a mayor's party ideology index that varies from -1 (far-left) to 1 (far-right). Panel A shows the results for a first-degree polynomial estimation. Panel B shows the results for a second-degree polynomial estimation. Every specification uses a uniform kernel. Optimal bandwidths following Calonico et al. (2014) were chosen to minimize the mean squared error of the local polynomial RD point estimator. Following that same work, we report robust-bias corrected p-values and 95% CIs. All estimates account for state fixed-effects following Equation 1. Coefficients significantly different from zero at 99% (***), 95% (**) and 90% (*) confidence level.

Table B.20 – States Balance Table - Just localities where the incumbent **did not run** in 2020

State	RD Estimator	Robust Inference p-value	Robust Inference Conf. Int.	CCT-Optimal Bandwidth	Eff. Number Observations
AC	0.001	0.512	[-0.0025, 0.0049]	9.696	251
AL	0.008	0.842	[-0.0748, 0.0917]	15.761	366
AM	-0.013	0.450	[-0.0454, 0.0201]	29.816	480
BA	-0.141	0.021**	[-0.2612, -0.0214]	13.504	329
CE	0.009	0.834	[-0.0767, 0.0951]	22.625	431
ES	-0.009	0.395	[-0.0298, 0.0118]	10.260	262
GO	0.026	0.471	[-0.044, 0.0952]	11.178	282
MA	0.076	0.193	[-0.0386, 0.1914]	10.628	271
MG	0.029	0.722	[-0.1324, 0.1912]	11.911	294
MS	-0.002	0.941	[-0.0429, 0.0397]	9.489	247
MT	-0.042	0.389	[-0.1367, 0.0533]	11.766	292
PA	-0.113	0.021**	[-0.2085, -0.0167]	14.717	350
PB	-0.046	0.375	[-0.1491, 0.0562]	14.008	341
PE	-0.076	0.032**	[-0.1456, -0.0066]	26.750	464
PI	-0.037	0.497	[-0.142, 0.0689]	10.441	269
PR	0.040	0.414	[-0.0561, 0.1365]	15.271	359
RJ	0.022	0.276	[-0.0175, 0.0612]	14.416	346
RN	0.041	0.412	[-0.057, 0.139]	14.941	353
RO	0.029	0.200	[-0.0152, 0.0729]	6.552	186
RR	-0.026	0.314	[-0.0754, 0.0242]	11.222	282
RS	-0.003	0.953	[-0.1002, 0.0944]	14.549	346
SC	0.068	0.086*	[-0.0097, 0.1459]	13.295	323
SE	0.103	0.070*	[-0.0085, 0.2135]	8.910	234
SP	0.097	0.262	[-0.0722, 0.2653]	10.844	276
TO	-0.021	0.606	[-0.1011, 0.059]	9.722	252

Notes: This table displays the RD balance test for the state's dummies variables. Each state variable is a dummy indicating if the elected mayor in 2016 municipal election was from a given state. For each of these variables we run a RD with linear polynomial and uniform kernel specification. Optimal bandwidths following Calonico et al. (2014) were chosen to minimize the mean squared error of the local polynomial RD point estimator. Following that same work, we report robust-bias corrected p-values and 95% CIs. No controls are included.

Table B.21 – Summary Statistics: Baseline Covariates - Just localities where the incumbent**did not run** in 2020

	Female			Male			Full Sample				
Variable	N	Mean	Sd	N	Mean	Sd	Mean	Sd	Min	Median	Max
Panel A: Hospitalization and health outcomes											
Municipal health spending (share of total)	194	0.24	0.04	298	0.23	0.04	0.23	0.04	0.11	0.23	0.4
Hosp. beds per 100k pop.	226	104.67	136.6	337	104.47	145.58	104.55	141.92	0	63.94	1367.22
Num. of Medical Doctors per 100k pop.	226	83.44	57.08	335	83.89	71.62	83.71	66.09	0	66.45	715.91
Municipal health council	227	1	0	338	1	0	1	0	1	1	1
Municipal health fund	227	1	0	338	1	0	1	0	1	1	1
Community health agents program	227	0.76	0.43	338	0.7	0.46	0.73	0.45	0	1	1
Emergency care services	227	0.83	0.37	338	0.84	0.37	0.84	0.37	0	1	1
Has health surveillance services	227	0.99	0.11	338	1	0	0.99	0.07	0	1	1
Epidemiological surveillance services	224	0.96	0.19	338	0.94	0.23	0.95	0.21	0	1	1
Has communication channel	227	0.99	0.11	338	0.96	0.19	0.97	0.17	0	1	1
Panel B: Sociodemographic characteristics											
Population	227	23147.59	47785.24	338	35567.95	167801.38	30577.82	133329	1118	10463	2886698
Population density	227	86.07	242.79	338	91.5	360.95	89.32	318.55	0.31	25.05	4162.79
Urban pop. rate	227	46.79	33.93	338	45.55	34.7	46.05	34.37	0	51.95	98.6
Average yearly income	227	23386.92	42558.51	338	23938.51	30353.95	23716.9	35726.45	5062.94	14504.51	583171.85
Literacy rate	227	0.82	0.09	338	0.82	0.1	0.82	0.1	0.58	0.83	0.98
Pop. % with 55+ years of age	227	0.16	0.04	338	0.16	0.04	0.16	0.04	0.06	0.16	0.31
Pop. % with 8+ years of schooling	227	0.34	0.08	338	0.34	0.09	0.34	0.09	0.12	0.33	0.66
% Male pop.	227	0.5	0.01	338	0.51	0.02	0.51	0.02	0.46	0.51	0.59
% Black pop.	227	0.55	0.22	338	0.57	0.22	0.56	0.22	0.02	0.62	0.93
Municipal guard staff per 100k pop.	226	18.55	57.85	338	22.14	65.85	20.7	62.74	0	0	520.66
Panel C: Political characteristics											
Bolsonaro % valid votes (first round)	227	0.36	0.19	338	0.36	0.2	0.36	0.19	0.05	0.34	0.79
Bolsonaro % valid votes (second round)	227	0.43	0.22	338	0.43	0.23	0.43	0.23	0.06	0.41	0.88
Ideology Index	227	0.24	0.14	338	0.22	0.14	0.23	0.14	-0.32	0.25	0.63
Elected mayor was the incumbent	217	0.5	0.5	305	0.56	0.5	0.54	0.5	0	1	1

Notes: This table reports the summary statistics for our baseline covariates. For parties' variables summary statistics see Table **??**. For covariates variables description see Table B.1.

Table B.22 – Summary Statistics: Epidemiological and policy outcomes - Just localities where the incumbent **did not run** in 2020

	Female			Male			Full Sample				
Variable	N	Mean	Sd	N	Mean	Sd	Mean	Sd	Min	Median	Max
COVID-19 deaths per 100k pop.	332	47.65	39.76	224	42.19	37.44	45.45	38.9	0	37.62	210.44
COVID-19 hospitalizations per 100k pop.	332	123.13	106.5	224	109.57	88.27	117.67	99.7	0	97.84	836.16
SARI deaths per 100k pop.	332	67.48	50.58	224	62.12	45.35	65.32	48.57	0	55.09	267.03
SARI hospitalizations per 100k pop.	332	218.05	156.05	224	202.95	142.2	211.96	150.68	7.09	175.11	847.46
Number of NPIs	229	3.69	0.92	150	3.7	0.81	3.7	0.88	0	4	5
Face covering required	228	0.97	0.17	150	0.98	0.14	0.97	0.16	0	1	1
Gatherings prohibition	228	0.98	0.13	150	0.99	0.08	0.99	0.11	0	1	1
Cordon Sanitaire	229	0.54	0.5	150	0.57	0.5	0.55	0.5	0	1	1
Closure of non-essentials	228	0.79	0.41	150	0.75	0.43	0.77	0.42	0	1	1
Public transport restriction	224	0.44	0.5	148	0.41	0.49	0.43	0.5	0	0	1
Mayor's years of schooling	338	13.23	3.38	227	14.69	2.3	13.81	3.08	0	16	16
Mayor's Age	338	49.5	10.96	227	49.52	9.97	49.51	10.57	21	49	88
Healthcare professional	338	0.05	0.21	227	0.07	0.26	0.06	0.23	0	0	1
Mayor's party ideology	338	0.29	0.36	227	0.27	0.37	0.28	0.36	-0.84	0.42	0.76

Notes: This table reports the summary statistics for our epidemiological and policy outcomes. Variables' description in Table B.2.