Supplementary Materials for "Legislature Size and Welfare: Evidence from Brazil"

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A.1 A Model of Legislature Size and Service Provision

A.1.1 Model Primitives

Consider an strategic interaction between a mayor M and $N \geq 3$ city councilors indexed as $i \in \{1, 2, \cdots, N\}$. The mayor is the head of the local executive branch and submits policy proposals to the city councilors. Policy proposals comprise funds allocated to public goods provision (g), rents for the mayor (r), and transfers to the city councilors ($\mathbf{x}$).

The city council votes the mayor's proposal, which is implemented if they accept it. Otherwise, a reversal policy takes place, indicating that the mayor failed to secure the majority of the councilors' votes. In this case, the policy proposal either stops or is transferred to the council. The different types of reversal policies are crucial for our argument, as they change the bargaining position of the councilors relative to the mayor. We investigate three types of reversal policies: 1) a *non-partisan* reversal mechanism, in which city councilors have no partisan affiliation; 2) a *partisan* reversal mechanism, where the council is divided into supporters and non-supporters of the mayor; 3) and finally, a *hybrid* reversal mechanism, which combines partisan and non-partisan features. The main paper focuses on the hybrid model, as it is the more realistic scenario. However, comparing the partisan and non-partisan reversal mechanisms provides further evidence that the partisan mechanism drives our results.

The mayor needs to secure the support of at least half of the city councilors to implement his or her policy. Similar to Bueno De Mesquita et al. (2005), we assume that the selectorate is composed by the N city councilors. That is, these are the individuals who have a say in the mayor's policy proposals. The winning coalition, which is the minimum number of members required to implement the policy, equals half of the selectorate ($N/2$). City councilors are motivated by policy concerns p and transfers received either from the mayor or from a councilor $\mathbf{x}$ who proposes the policy. We leave the content of these transfers open, as this allows us to analyze how mayors combine transfers with other incentives to pressure city councilors. For instance, a mayor may grant councilors electoral favors, spend in areas where they have political or personal interests, offer portfolio or public sector jobs to associates, or even provide campaign contributions and bribes. These transfers affect the councilors' decisions and generate governing costs C_G. Governing costs vary according to the type of reversal mechanism and the size of the legislature.

Finally, after paying the aforementioned governing costs, the mayor proposes some level of public goods provision g and rents r. Public goods provision helps the mayor to get reelected. Rents are for the mayor's direct benefit and do not contribute to his or her electoral success. This makes the mayor's expected utility a sum of the gains from rents plus the benefits from reelection. Both the utilities from rents $u(.)$ and the probability of reelection $\pi(.)$ are concave functions, meaning that more rents or more public goods increase his or her utility at a decreasing rate.[1] The probability of reelection is multiplied by the benefit from holding office $B_M > 0$. This benefit captures the tangible and intangible gains the mayor receives from holding the public office. We assume these benefits are high enough to rule out an equilibrium with only rents and transfers, which is equivalent to saying that mayors strongly prefer to be reelected. If the mayor's policy proposal is approved, then the expected utility for the mayor is:

$$\mathbb{E}U(r, g) \;=\; u(r) + B_M \pi(g)$$

The mayor's policy choices are subject to municipal budget constraints. The municipality has $R > 0$ resources and cannot run deficits, that is, it must always balance its budget. We also assume that there are enough resources for the mayor to govern.

Let C_G be the mayor's governing costs. The budget balance constraints implies that mayors will only offer public services and rents that satisfy following inequality:

$$r + g + C_G \;\leq\; R$$

The expected utility for the city councilors depends on which reversal policy takes place. As mentioned above, we explore the implications of three different mechanisms. First, in the *non-partisan* reversal mechanism, when the council rejects the mayor's proposal, a reversal stage starts with resources diminishing by a factor $\delta \in (0, 1)$ and the random selection of one councilor. The randomly selected councilor becomes the new proposer. If her proposal is accepted, it is implemented. If rejected, the budget shrinks again by δ and another city councilor is chosen to propose the policy. The process continues until a proposal is finally accepted.

In the second reversal mode, the *partisan* reversal mechanism, we assume that each councilor has a party affiliation. Party affiliations are mutually exclusive, that is, one councilor cannot belong to two parties at once. If a city councilor is affiliated to a party aligned with the mayor, we say that she belongs to the government coalition $G \subset \{1, 2, \cdots, N\}$. Otherwise, the city councilor belongs to the opposition $O = \{1, 2, \cdots, N\} \setminus G$. The mayor-sponsored policy generates a political value of $p > 0$ for the councilors, and whether this adds or reduces the councilor's utility depends on his or her party affiliation. If the mayor's proposal is rejected, a city councilor aligned with the mayor receives zero instead of p. In contrast, a city councilor from the opposition receives zero if the proposal is rejected and $-p$ if is is enacted. Although these assumptions are rather strong, they capture the underlying political dynamics of political partisanship, in which councilors and mayors in the same coalition share similar policy preferences. Voting against the mayor's proposals defies the partisan logic.

Lastly, in the *hybrid* reversal mechanism, we combine partisanship with legislature bargaining costs. Here

[1]In technical terms, $u' > 0$ and $\pi' > 0$; and $u'' < 0$ and $\pi'' < 0$.

councilors receive a partisan utility from the mayor's policy, but if they reject the policy, a reversal policy similar to the non-partisan mechanism takes place. In the mayor's proposal stage, city councilors in the mayor's coalition receive a benefit of $p > 0$ when the mayor's policy is implemented. Opposition members receive $-p$ if the mayor's proposal is implemented. In case the mayor's proposal is rejected, as the city council does not control the executive when the two branches are separated, there is no provision of public goods ($p = 0$). Moreover, in equilibrium, we assume that city councilors prefer to receive transfers instead of providing public goods. This is in line with the empirical evidence from most developing economies (e.g., Ferraz and Finan 2011; Nichter 2010).

The timeline of the game is as follows:

1. The mayor learns how many government $|G|$ and opposition $|O|$ legislators have been elected.
2. The mayor proposes a policy vector $(r, g, x)_M$.
3. The city council votes the proposal.
   - If the council accepts the proposal, it is implemented and the game ends.
   - Otherwise, a reversal policy is implemented.
4. (Reversal Policy) We propose three reversal policies, namely *partisan*, *non-partisan*, and *hybrid*. We have introduced them above and will discuss them in further detail in the following sections.

The solution concept we use in this model is the subgame perfect Nash equilibrium. This game requires that the strategies follow a Nash equilibrium in each subgame. We find the solution by backward induction. In the model with infinitely repeated proposals, we extend the equilibrium concept and require that the equilibrium is stationary. This implies that if the politician accepts an offer at time $k + 1$, they should take the same offer at time k. This assumption holds at each point of the game. Stationarity provides a method to find a proposal that the politician accepts at any stage in the game. In our case, the optimal offer for the mayor is at $k = 0$, which indicates an immediate policy implementation.

Definition 1. *The game equilibrium consists of a sequence of strategic policy vectors $(g^*, r^*, x^*)_k$, indexed in $k \in \{0, 1, \cdots, \infty\}$, such that the mayor and the councilors have no profitable deviations from the equilibrium at any stage of the game.*

Moreover, we assume that players have no dominated strategies, even if the policy is not implemented due to insufficient support.

A.1.2 The Mayor's Decision Stage

Solving the game by backward induction requires us to know which strategies councilors may adopt. However, assume for now that we have solved the game for the councilors and found the equilibrium cost of governing $C_G(N)$ when there are N city councilors. In the next section, we define $C_G(N)$ for each mechanism using backward induction and show that the definitions are well-behaved. Here we start from this assumption just to simplify our exposition.

We derive the optimal rents (r) and public goods provision (g) a mayor should propose. Mayors benefit from public goods provision, as it increases their chances of reelection. However, they would rather provide the lowest necessary amount of public goods and extract the remaining resources as political rents. As we noted previously, their objective is to maximize their expected utility, subject to the municipal budget constraint.

$$\begin{aligned} \max_{r,g} \quad & u(r) + B_M \pi(g) \\ \text{s.t.} \quad & r + g + C_G(N) \leq R \end{aligned}$$

In equilibrium, the budget binds, and the provision of the public goods maximizes to:

$$\max_{g} \{u(R - g - C_G(N)) + B_M \pi(g)\}$$

The first-order condition for an optimal public goods provision makes the marginal benefits of increasing rents—in this case, the marginal costs of providing the public goods—equal to the marginal benefits of reelection:

$$u'(R - g - C_G(N)) = B_M \pi'(g)$$

This is sufficient for the equilibrium, as the second order condition reassures the concavity of the mayor's expected utility: $u''(R - g^* - C_G(N)) + B_M \pi''(g^*) < 0$.

Proposition 1. *Public goods provision increases with larger legislatures if governing costs decrease in larger legislatures.*

Proof. To prove this result, we need to show that the mayor's expected utility satisfies the increasing differences in g and N. This means that, when increasing the size of the council, the optimal solution g^* should also increase. However, as N increases discretely, we cannot take the cross-partial derivative on N or use the implicit function theorem. Instead, we use monotone comparative statics to derive these results (Milgrom and Shannon 1994).

The mayor's expected utility satifies the increasing differences in g and N when, for $g > g'$ and $N + 1 > N$,[2]

[2] The requirement that the decision and type space are a complete lattice is satisfied for $\mathbb{R} \times \mathbb{N}$.

we have:

$$\mathbb{E}\mathrm{U}(g, N+1) - \mathbb{E}\mathrm{U}(g', N+1) \geq \mathbb{E}\mathrm{U}(g, N) - \mathbb{E}\mathrm{U}(g', N)$$

After some substitutions, we have:

$$u(R-g-C_G(N+1))+B_M\pi(g)-u(R-g'-C_G(N+1))-B_M\pi(g') \geq u(R-g-C_G(N))+B_M\pi(g)-u(R-g'-C_G(N))-B_M\pi(g')$$

Which is equal to:

$$u(R-g-C_G(N+1)) - u(R-g'-C_G(N+1)) \geq u(R-g-C_G(N)) - u(R-g'-C_G(N))$$

By multiplying both sides by $\dfrac{1}{g-g'}$ and taking the limit when $g \rightarrow g'$, we have:

$$u'(R-g-C_G(N+1)) \geq u'(R-g-C_G(N))$$

It is now clear that the function satisfies the increasing differences in g and N when the governing costs of a $N+1$-sized city council are lower than the governing costs of a N-sized city council:

$$C_G(N+1) \leq C_G(N)$$

$\square$

This provides the first empirical hypothesis we test in our article: *public goods provision increases along with legislature size, but only if governing costs decrease when legislature size increases.*

At this stage, we need to solve for the existence of these governing costs. In the following sections we show that while this proposition is valid for the *partisan* and *hybrid* mechanisms, it is not applicable to the *non-partisan* mechanism.

A.1.3 Non-Partisan Reversal Mechanism

In the *non-partisan reversal* mechanism, we assume that if the council rejects the mayor's proposal, a reversal policy starts with the random selection of one councilor. To find the stationary subgame perfect Nash equilibrium, suppose that there were $k-1$ rejections and the game is at the k-th stage. A councilor accepts the proposer's offer if, and only if, getting the offer at k is better than waiting until the next stage $k+1$. If the offer is x_i, then:

$$x_i \geq \frac{1}{N}\left[\delta^{k+1}R - \frac{N}{2}x_i\right] + \left(1 - \frac{1}{N}\right)\left[\frac{1}{2}x_i\right]$$

We place the offer on the left-hand side. There are two components on the right-hand side. The first is the amount that councilor i receives when he/she is the proposer. The amount is equal to the chance that they are recognized as the proposer, times the budget in the next round, minus the offers they have to make to convince half of the councilors. The second part denotes the gains obtained by the councilor if he/she rejects the current offer but still receives an offer in the following round. This is equal to the chance that they are not recognized as the proposer, times the chance that they receive a transfer, times the transfer amount. Note that the councilor's offer as the proposer is the same as the offer they want to receive, as city councilors are exchangeable. The solution is symmetric for all councilors receiving an offer (this means that, without loss of generality, we could have dropped the i in the solution). After some calculations, the offer x_i has to be greater than or equal to:

$$x_i \geq \frac{2\delta^{k+1}R}{2N+1} \equiv \underline{x}(k, N)$$

The proposer always offers the minimum required to get the proposal approved. In this case, the offer at any given stage k is going to be equal to $\underline{x}(k, N)$.

Proceeding backwards, at the mayor's proposal stage $k = 0$, the mayor offers $\underline{x}(0, N) = \frac{2\delta R}{2N+1}$ to half of the councilors. In this context, the governing costs for the mayor are:

$$C_G(N) \; = \; \frac{N}{2}\left[\frac{2\delta R}{2N+1}\right] \; = \; \frac{\delta RN}{2N+1}$$

Proposition 2. *In the non-partisan reversal mechanism, governing costs always increase when legislature size increases.*

Proof. Comparing city councils of size N with those of size $N + 1$, we find that the difference is costs is:

$$\begin{aligned} C_G(N+1) - C_G(N) \; &= \frac{(N+1)\delta R}{2(N+1)+1} - \frac{N\delta R}{2N+1} \\ &= \frac{\delta R}{(2N+3)(2N+1)} \\ &> 0 \end{aligned}$$

Therefore, costs always increase when legislature size increases.

□

Corollary 1. *In the non-partisan reversal mechanism, public goods provision decreases as legislature size increases.*

This result is crucial for us to explain the role of politics in our model. If governing costs increase with legislature size, then any increase in public goods provision associated with legislature size comes from a different mechanism. In this case, we show that there is a *political* reason to increase the provision of public goods.

A.1.4 Partisan Reversal Mechanism

We now focus on the other extreme, which is a fully politicized legislature. In this case, when the mayor implements the policy, it generates a value of $p > 0$. A legislator aligned with the mayor receives a benefit p while an opposition legislator receives a cost of $-p$. Moreover, as in the non-partisan reversal, the mayor may choose to distribute x_i private goods for a legislator i. In this case, when the policy is implemented, the aligned legislator's utility equals $x_i + p$. When the legislator is not aligned with the mayor, their utility equals $x_i - p$. If the policy is not implemented, then we assume a reversal policy of zero in all choice vectors $g = x_i = p = 0$.

A legislator aligned with the mayor always supports the mayor's policy, regardless of receiving private goods. This is because $p > 0$, that is, the councilor always receives positive benefits from the policy.[3] However, politicians who not aligned with the mayor require compensation when their votes are needed. In this case, if the mayor's proposal requires the support of an opposition politician, then the mayor compensates the councilor for the policy costs. In such case:

$$x_i \geq p$$

Optimality dictates that the mayor offers $x_i = p$ to the opposition legislator. Let γ be the ex-ante probability of electing a politician aligned with the mayor. Then, the governing costs when the legislature size is N equals the expected number of opposition members the mayor has to compensate, minus the amount needed to implement the policy. In this case, it is half of the city council:

$$C_G(N) \; = \; p\left(\frac{N}{2} - \gamma N\right)$$

Proposition 3. *In the partisan reversal mechanism, if the chances of electing a mayor-aligned politician are greater than* $1/2$*, then governing costs decrease as legislature size increases.*

Proof. When we compare the difference in costs between N and $N + 1$ legislators, we find that:

[3]The mayor could even impose costs to aligned city councilors. Although this seems unrealistic, it is mostly the case when government-aligned legislators are called to draft legislation for the mayor's office or to take the fallout from a failed policy.

$$
\begin{aligned}
C_G(N+1) - C_G(N) &= p\left(\frac{N+1}{2} - \gamma(N+1)\right) - p\left(\frac{N}{2} - \gamma N\right) \\
&= p\left(\frac{1}{2} - \gamma\right)
\end{aligned}
$$

Therefore, when $\gamma < \frac{1}{2}$, governing costs increase. Otherwise, such costs decrease.

□

Corollary 2. *In the partisan reversal mechanism, if the chances of electing a mayor-aligned politician is greater than* $1/2$*, then public goods provision increase as legislature size increases.*

This result shows that, when the likelihood of electing an aligned politician is sufficiently high, governing costs tend to decrease. Consequently, the provision of public goods tends increases, as well as the rents. The marginal change in the utility from rents and the utility from reelection determines the allocation between these two vectors. In any case, the amount distributed to both increases.

A.1.5 Hybrid Partisan and Non-partisan Reversal Mechanism

The *hybrid reversal* mechanism combines both partisan and non-partisan motivations. Here, a city councilor aligned with the government favors the mayor's offer if:

$$x_i \geq \frac{2\delta R}{2N+1} - p$$

An opposition politician, in contrast, favors the mayor's offer if, and only if:

$$x_i \geq \frac{2\delta R}{2N+1} + p$$

We divide these costs into two components. First, the costs in terms of rents. Second, the costs (or benefits) from political alignment. In this context, governing costs depend on what the mayor offers to their supporters in the council versus what they provide to members of the opposition. The ex-ante chance of an opposition member being elected is equal to $1-\gamma$, therefore, after taking the weighted averages, these costs become:

$$C_G(N) = \frac{N}{2}\left(\frac{2\delta R}{2N+1} - p\right) + \left(\frac{N}{2} - \gamma N\right)p$$

Proposition 4. *In the hybrid reversal mechanism, if* $\gamma \leq \frac{1}{p}\left[\frac{1}{(2N+1)(2N+3)}\right]$*, then governing costs increase as legislature size increases. Otherwise, such costs decrease when legislature size increases.*

Proof. When we compare the costs of N versus $N+1$ legislators, we find that:

$$
\begin{aligned}
C_G(N+1) - C_G(N) &= \frac{N+1}{2}\left(\frac{2\delta R}{2(N+1)+1} - p\right) + \left(\frac{N+1}{2} - \gamma(N+1)\right)p \\
&\quad - \frac{N}{2}\left(\frac{2\delta R}{2N+1} - p\right) - \left(\frac{N}{2} - \gamma N\right)p \\
&= \frac{\delta R}{(2N+3)(2N+1)}\left[1 - \gamma(2N+1)(2N+3)p\right]
\end{aligned}
$$

The conditions for the difference in governing costs to decrease when legislature size increases are as follows:

$$
\gamma \geq \frac{1}{p}\left[\frac{1}{(2N+3)(2N+1)}\right] \equiv \underline{\gamma}
$$

□

Corollary 3. *In the hybrid reversal mechanism, when the chances of electing a mayor-aligned city councilor are sufficiently high, then increasing council size lowers the bargaining costs for mayors.*

The threshold $\underline{\gamma}$ for the probability of electing an aligned politician decreases according to the value of the mayor's policy p and the legislature size N. Higher political values and larger legislatures make it easier to satisfy the electoral threshold.

A.1.6 Main Hypotheses

Our model provides two empirically testable hypotheses. Consider a city council comprised of N legislators that increase its size to $N + 1$. Then:

- H1. Governing costs decrease with legislature size when the chances of electing a government-aligned legislator are sufficiently high.

- H2. Public goods provision increases if governing costs decrease with legislature size.

In the main paper, we show that larger legislatures improve the provision of public education and health care in Brazil. What drives this result is the 91% chance of electing a mayor-aligned city councilor to the local chamber.

A.2 Variable Sources and Descriptive Statistics

We use three data sources in our work, mainly from Brazilian governmental agencies. Table 1 presents the variables we use here and their respective URLs.

Table 1: Data Sources

Source Code	Source Name	Data Provided	URL
DataSUS	Brazilian Health Ministry Data Service	Health care data	http://www.datasus.gov.br
IBGE	Brazilian Institute of Geography and Statistics	Geographic, economic, and demographic data	http://www.ibge.gov.br
INEP	Ministry of Education Data Service	Education performance	http://www.inep.gov.br
InterLegis	Senate Legislative Data Service	Legislative data	http://www.interlegis.leg.br
IPEA	Brazilian Institute of Applied Economics	Economic data	http://www.ipeadata.gov.br
MDS	Social Security Ministry	Coverage of social programs	http://www.mds.gov.br
TSE	Supreme Electoral Court	Electoral data	http://www.tse.jus.br

A.2.1 Outcomes Aggregated at the Municipal Level

- **Number of Seats 2000**: Number of city councilors in 2000 (source: TSE).
- **Population 2000**: City population according to the 2000 Brazilian Census (source: IBGE).
- **Per Capita GDP 2000 (Millions)**: Municipal per capita GDP measured by the Brazilian Census (source: IPEA).
- **Proportion of Poverty 2000**: Percentage of citizens earning less than R$ 70.00 per month (source: Social Development Ministry [MDS]).
- **Number of Seats 2004**: Number of city councilors in 2004 according to the Electoral Court (source: TSE).
- **Infant Mortality 2005–2008**: Number of children who died before reaching one year of age, divided by the number of children born alive, multiplied by 1,000 (source: DataSUS)
- **Postneonatal Mortality 2005–2008**: Number of children alive for at least 28 days who died before reaching one year of age, divided by the total number of children who lived for 28 days, multiplied by 1,000 (source: DataSUS)
- **Enrollment Elementary School 2005–2008**: Number of children enrolled in elementary schools, averaged by classroom size (K–4) (source: INEP).

- **Quality of Elementary School 2005–2008**: Average municipal IDEB scores. IDEB scores are estimated as follows. The Ministry of Education takes the average of the students' grades in math and Portuguese, then multiply the those numbers by the student yearly approval rate. INEP reweights the estimators to avoid schools and classroom specific effects (source: INEP, years: 2005, 2007).
- **Size of Mayoral Pre-Electoral Coalition 2004**: Number of elected councilors in the mayoral pre-electoral coalition (source: TSE)
- **Number of Appointed Bureaucrats 2005–2008**: Number of bureaucrats of the direct administration who were appointed to jobs in the municipality (source: IBGE, years: 2005, 2006, and 2008)
- **Number of Females Elected 2004**: Number of females elected to city council (source: TSE)
- **Number of Non-Whites Elected 2004**: Number of non-whites elected to the city council. We collect this data for municipalities less than 10,000 inhabitants away from the cutoffs (source: own compilation based on the TSE candidate pictures).
- **Competition per Seat 2004**: Number of people running for city councilor divided by the city council size (source: TSE)
- **Proportion Approved Legislation 2005**: Number of approved legislation in 2005 divided by the number of proposed legislation (source: InterLegis)

A.2.2 Legislation Dataset

We code the legislation approved by the councilors of 63 municipalities around a ten thousand inhabitants buffer from the council size thresholds. We classify the legislation into four categories:

- **Public Goods**: Legislation that provides public goods or services.
- **Oversight**: Legislation that requests information to the mayor's office or the bureaucracy about the provision of services.
- **Education and Health Care**: Legislation about education or health care provision.
- **Others**: Legislation that is not classified as local public goods, public goods, or oversight. Usually honors or procedures.

A.2.3 Online 2016 Former City Councilors Survey

We ran an online survey asking 174 councilors about their representation duties and how mayors allocate public services to expand his or her government coalition. The services we include are:

- **Councilors Job Appointments**: Whether mayors appoint supporters of the city councilors to bureaucratic jobs (source: survey).
- **Councilors Demands**: Whether mayors satisfy the public service demands of an allied councilor (e.g., build a health clinic in a councilor's neighborhood) (source: survey).
- **Councilors Personal Requests**: Whether mayors satisfy the private requests of an allied councilor (e.g., hire an ally in the bureaucracy) (source: survey).
- **Councilors Legislation**: Whether mayors support the councilors' legislative agenda (source: survey).
- **Councilors Constructions**: Whether mayors support councilors' requests for more public works (e.g. fix potholes in the councilor's neighborhoods) (source: survey).

This Appendix contains other questions we asked in the survey. We collected them to improve our knowledge about the perceptions city councilors have about the roles the municipality and themselves play in the government. We omitted these questions in the main paper because they are not of general interest to our argument. The descriptive statistics of the variables used in the main article follow in Table 2.

Table 2: Summary Statistics

Statistic	N	Mean	St. Dev.	Min	Max
	Municipal Characteristics				
Number of Seats 2000	5,521	10.76	2.70	9	21
Population 2000	5,474	22,341.96	44,573.67	697	567,728
GDP Census 2000	5,474	0.13	0.46	0.00	13.57
Proportion of Poverty Census 2000	5,474	46.58	22.82	2.89	93.02
Number of Seats 2004	5,527	9.22	0.94	9	21
	Health Care Outcomes				
Infant Mortality 2005-2008	13,328	20.64	13.45	1.28	209.30
Postneonatal Mortality 2005-2008	6,113	9.29	8.64	0.59	200.00
	Education Outcomes				
Enrollment Elementary School 2005-2008	10,842	20.62	5.32	1.00	57.80
Quality of Elementary School 2005-2008	9,266	3.73	0.94	0.70	8.10
	Bargaining, Coalition, and Public Employment				
Mayoral Pre-electoral coalition Size 2004	5,522	4.86	1.71	0.00	17.00
Number of Appointed Bureaucrats 2005-2008	16,563	67.77	126.68	0	2,894
	Representation and Competition				
Number Female Elected 2004	5,526	1.12	1.20	0	8
Number Non-White Elected 2004	397	2.23	1.87	0	9
Competition per Seat 2004	5,527	6.27	3.82	1.00	25.83
Proportion Approved Legislation 2005	3,693	0.83	0.28	0.00	1.00
	Legislation Approved Data				
Legislation – Public Goods	346,553	0.76	0.43	0	1
Legislation – Oversight	346,553	0.03	0.18	0	1
Legislation – Education and Health	346,553	0.11	0.31	0	1
Legislation – Others	346,553	0.17	0.38	0	1
	Survey – Strategy to Consolidate Coalition Support				
Coalition Support – Councilors Job Appointments	174	0.64	0.48	0	1
Coalition Support – Councilors Demands	174	0.44	0.50	0	1
Coalition Support – Councilors Personal Requests	174	0.56	0.50	0	1
Coalition Support – Councilors Legislation	174	0.25	0.43	0	1
Coalition Support – Councilors Constructions	174	0.43	0.50	0	1

Notes: The legislation approved dataset contains information on 63 of the 202 municipalities 10 thousand inhabitants away from the council size thresholds. Survey summary statistics are unweighted. Numbers of cases vary due to missingness.

A.3 Threshold Manipulation, Sorting, and Pre-Treatment Consistency

The validity of our causal claim relies on three assumptions:

1. Municipalities cannot place themselves on the left- or the right-hand side of the cutoffs.

2. Regression models correctly compare cities in the adjacent cutoffs.

3. There are no pre-treatment differences in the sample.

Regarding the first assumption, McCrary (2008) proposes a measure of the distributional imbalance around the discontinuity, testing whether cases are more abundant on either side of the cutoff. In our sample, the McCrary statistic is 0.391 (SE = 0.299), showing no evidence of manipulation.

We run the Cattaneo et al. (2019) manipulation test, which is based on the density of the local polynomial estimator. We use local polynomials ranging from first to fourth order. As the null hypothesis implies that there is no manipulation, the p-values for each polynomial order are: local linear (p-value = 0.442); quadratic (p-value = 0.740); cubic (p-value = 0.998); and quartic (p-value = 0.620). Therefore, we also see no evidence of manipulation.

Lastly, we graph the McCrary (2008) test, pooling all the discontinuities together. The results follow in Figure 1 and show no signs of manipulation.

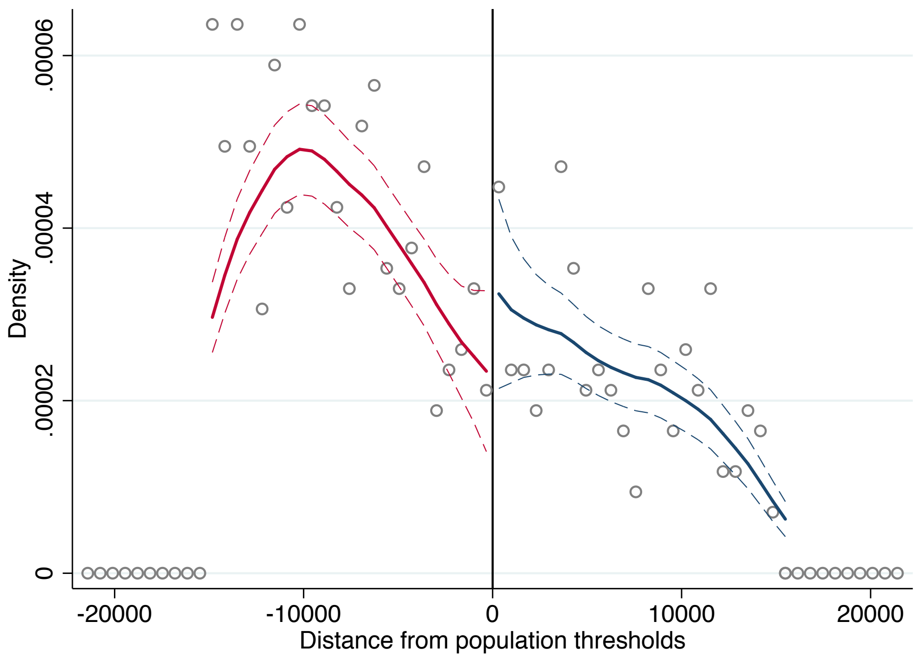


Figure 1: McCrary (2008) manipulation test

A.4 Population Thresholds in Brazil Before and After the 2003 Supreme Court Decision

The identification strategy requires exogenous changes in the city council size thresholds. Prior to the changes we exploit here, the 1988 Brazilian Constitution stated the following distribution of seats per population size, presented in Table 3.

Table 3: City council size from the 1988 Constitution

	Min. Leg.	Max. Leg.	Min. Pop.	Max. Pop.	Num. Mun. Bin (2001-2004)
1	9	21	0	1,000,000	5,537
2	33	41	1,000,001	5,000,000	11
3	42	55	5,000,001	∞	2

These cutoffs were in place until 2003, when the municipality of Mira Estrela decided to decrease its own council size from eleven to nine councilors. The two losing councilors contested the measure and took the proposal to the Supreme Federal Court (STF). The Justices ruled that council sizes should vary according to the city population, from a minimum of nine legislators to a maximum of 55. Following this decision, the Supreme Electoral Court (TSE) set the thresholds for the 2004 election (Resolution 21,702/2004). According to their decision, the legislature should increase as displayed in Table 4.

Table 4: City council size thresholds according to TSE resolution 21,702/2004

	Num. Leg.	Min. Pop.	Max. Pop.	Num. Mun. Bin (2003 pop. proj.)
1	9	0	47,619	5,029
2	10	47,620	95,238	317
3	11	95,239	142,857	89
4	12	142,858	190,476	43
5	13	190,477	238,095	30
6	14	238,096	285,714	21
7	15	285,715	333,333	13
8	16	333,334	380,952	13
9	17	380,953	428,571	6
10	18	428,572	476,190	6
11	19	476,191	523,809	4
12	20	523,810	571,428	5
13	21	571,429	1,000,000	13
14	33	1,000,001	1,121,952	1
15	34	1,121,953	1,243,903	2
16	35	1,243,904	1,365,854	1
17	36	1,365,855	1,487,805	2
18	37	1,487,806	1,609,756	1
19	38	1,609,757	1,731,707	1
20	39	1,731,708	1,853,658	0
21	40	1,853,659	1,975,609	0
22	41	1,975,610	4,999,999	4
23	42	5,000,000	5,119,047	0
24	43	5,119,048	5,238,094	0
25	44	5,238,095	5,357,141	0
26	45	5,357,142	5,476,188	0
27	46	5,476,189	5,595,235	0
28	47	5,595,236	5,714,282	0
29	48	5,714,283	5,833,329	0
30	49	5,833,330	5,952,376	0
31	50	5,952,377	6,071,423	1
32	51	6,071,424	6,190,470	0
33	52	6,190,471	6,309,517	0
34	53	6,309,518	6,428,564	0
35	54	6,428,565	6,547,611	1
36	55	6,547,612	∞	0

As Brazil has only a few municipalities with more than one million inhabitants, we focus on cities with less than $571,429 + 47,619 = 619,048$ inhabitants. Table 5 displays the number of municipalities by the thresholds we use in this paper.

Table 5: City council thresholds used in the paper

	Legislature Size	Min. Population	Max. Population	Num. Mun. Bin (2003 pop.)
1	9	0	47,619	5,029
2	10	47,620	95,238	317
3	11	95,239	142,857	89
4	12	142,858	190,476	43
5	13	190,477	238,095	30
6	14	238,096	285,714	21
7	15	285,715	333,333	13
8	16	333,334	380,952	13
9	17	380,953	428,571	6
10	18	428,572	476,190	6
11	19	476,191	523,809	4
12	20	523,810	571,428	5
13	21	571,429	1,000,000	13

The Supreme Court stated that local electoral courts should use the 2003 population projection to assign municipalities to cutoffs. In Brazil, the Brazilian Institute of Geography and Statistics (IBGE) makes the official population projections. We have strong reason to believe that sorting is not a threat to our identification strategy, as IBGE is notably insulated from local politics (see also the McCrary test above).

To provide an overview of the data dispersion, Figure 2 plots the municipalities by their proximity to the cutoffs. In the map, we give the contour of every Brazilian city, coloring it by the proximity to the council size thresholds. Darker colors represent municipalities closer to the population thresholds. In regression discontinuity models, the closer a city is to the cutoff, the more influential it is in the estimation. Figure 2 also shows that the municipalities around the cutoff are reasonably well distributed across the country.

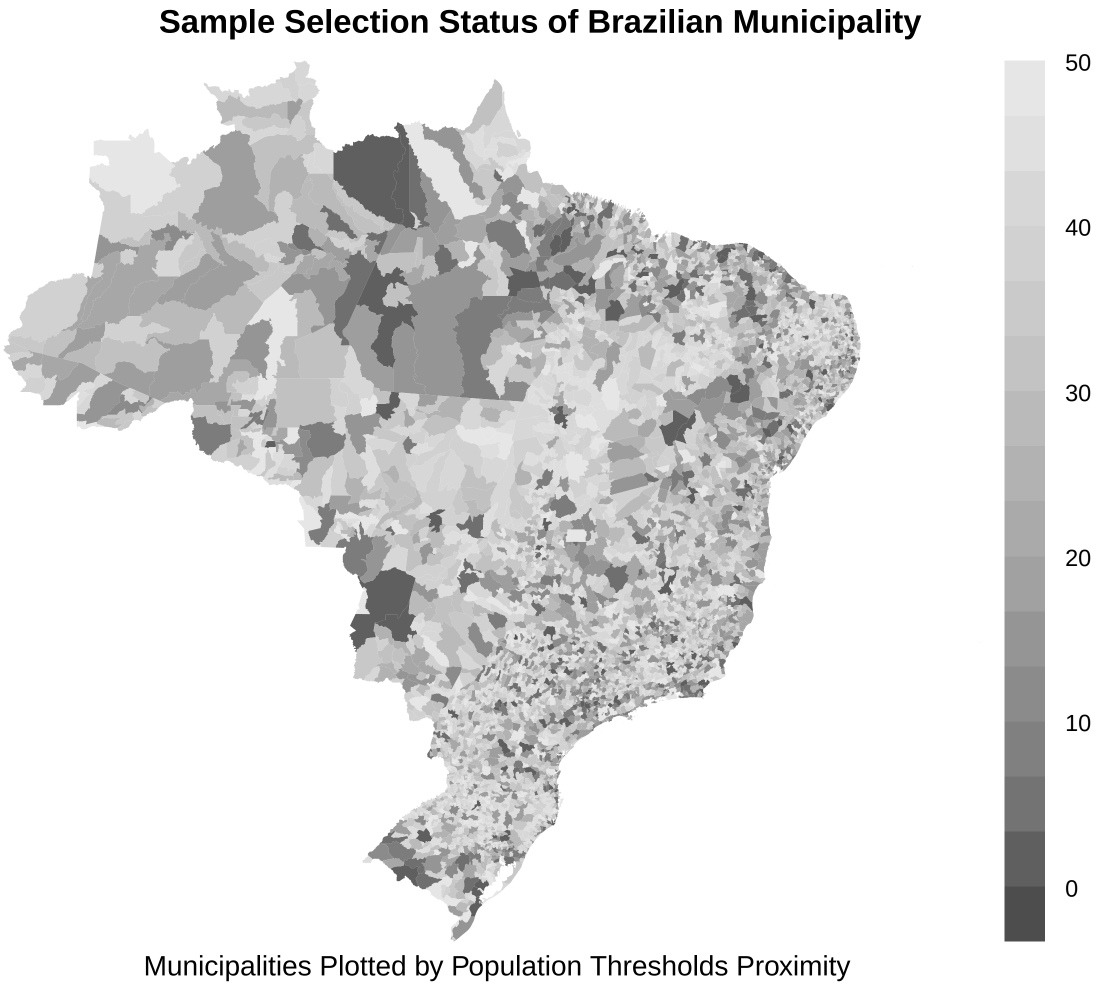


Figure 2: Municipalities and their Selection Status

A.5 Identification Strategy in Regression Discontinuity Designs with Multiple Thresholds

When estimating regression discontinuities with multiple cutoffs, authors usually pool all the discontinuities together to estimate the treatment effect on the outcomes of interest (Cattaneo et al. 2016a). Let $C = \{c_0, c_1, \cdots, c_n, c_{n+1}\}$ be the set of cutoffs thresholds associated with the running variable X. The outcome variable is assumed to be Y. In the pooled model, the Local Average Treatment Effect (LATE) is:

$$LATE_{no\_controls} \quad = \quad \mathbb{E}\left[\lim_{x \downarrow c_i} \mathbb{E}[Y_i|X_i] - \lim_{x \uparrow c_i} \mathbb{E}[Y_i|X_i] | \forall c_i \in C\right]$$

Nevertheless, this may be problematic in our case as municipal characteristics may vary between cutoffs. For instance, population imbalance is a known source of heterogeneity, as shown by Cattaneo et al. (2016b). To ensure that cases are comparable, we estimate the average LATE for all cutoffs. We add a set of controls Z_i to reduce heterogeneity. For instance, the population that determines the change from one threshold to another also determines all the cutoffs. As the population runs smoothly around each cutoff, it makes this variable an ideal control to add to our models. The new estimator is:

$$LATE_{controls} = \mathbb{E}\left[\lim_{x \downarrow c_i} \mathbb{E}[Y_i|X_i] - \lim_{x \uparrow c_i} \mathbb{E}[Y_i|X_i]|\forall c_i \in C, Z_i\right]$$

We control for population, GDP, whether the state is located in the Northeast region, seats before the 2003 decision, and year. All control variables are smooth around each cutoff but are significantly different across cutoffs, making them adequate controls for our purposes (Calonico et al. 2019). We use a triangular kernel in our estimations, which gives more weigh to municipalities closer to each cutoff. To compute the optimal bandwidth, we use the Calonico et al. (2014) method. We vary the bandwidth from 50% to 200% of the optimal bandwidth size to assess whether our results are robust to bandwidth choice. We also use cluster-robust standard errors at the municipal level.

However, as it is uncommon for regression discontinuity designs to include control variables, some readers may ask why we have added these covariates in the first place. To answer this question, we run a series of simulations to show that controlling for the variable that determines the assignment helps improve both the consistency and the efficiency of the estimates.

Consider data distributed according to one of the four forms depicted in Figure 3. We add nine thresholds, at 0.1, 0.2, and so on until 0.9, to create different outcomes. The first three are sharp changes. First, we vary from one to 10, moving one step at each shift. In the second case, we add 1 to the first discontinuity, zero to the second, and -1 to the third, repeating this pattern for the remaining cutoffs. The estimated change should be equal to zero. In the third model, we again add one to the first cutoff, but $1 + 0.9$ to the second, $1 + 0.9 + 0.8$ to the third, and repeat this process until the last cutoff. This simulates a diminishing effect from one cutoff to the other. The previous three outcomes are the same as depicted here, plus a Normal random disturbance with mean equal to zero and variance equal to 0.01. We then run a thousand Monte Carlo simulations for each combination, fitting regressions with and without the running variable as a covariate.

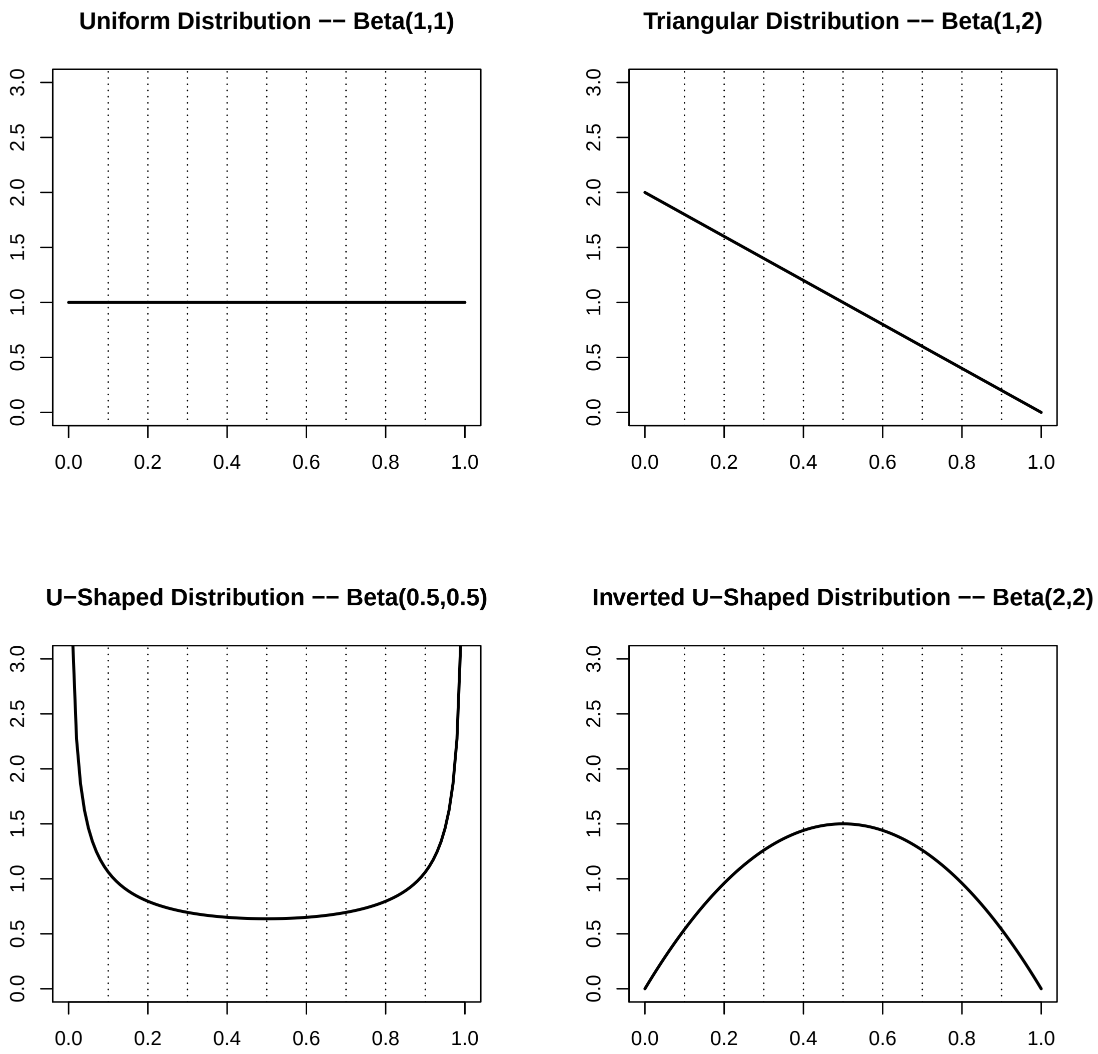


Figure 3: Simulation RD with Multiple Thresholds – Data Distribution

A consistent estimator should fit either the first or the fourth data distributions. In the second distribution, the change should be equal to $(1, 0, -1, 1, 0, -1, 1, 0, -1)$, and the average change here is equal to zero. In the third model, the change should be $(0.9, 0.8, 0.7, 0.6, 0.5, 0.4, 0.3, 0.2, 0.1)$ and the average change should be equal to 0.5. We display the results in Figure 4, showing that the models with control variables are more consistent and efficient.

A.6 Placebo Regressions for Political Mechanism

Here we present the placebo regressions for the mechanism-aggregated outcomes. In Panel A of the main paper, we run the regression on alternative explanations. Only the number of female councilors changed significantly, but that is to be expected in at least 10% of cases. We have not collected data on non-white

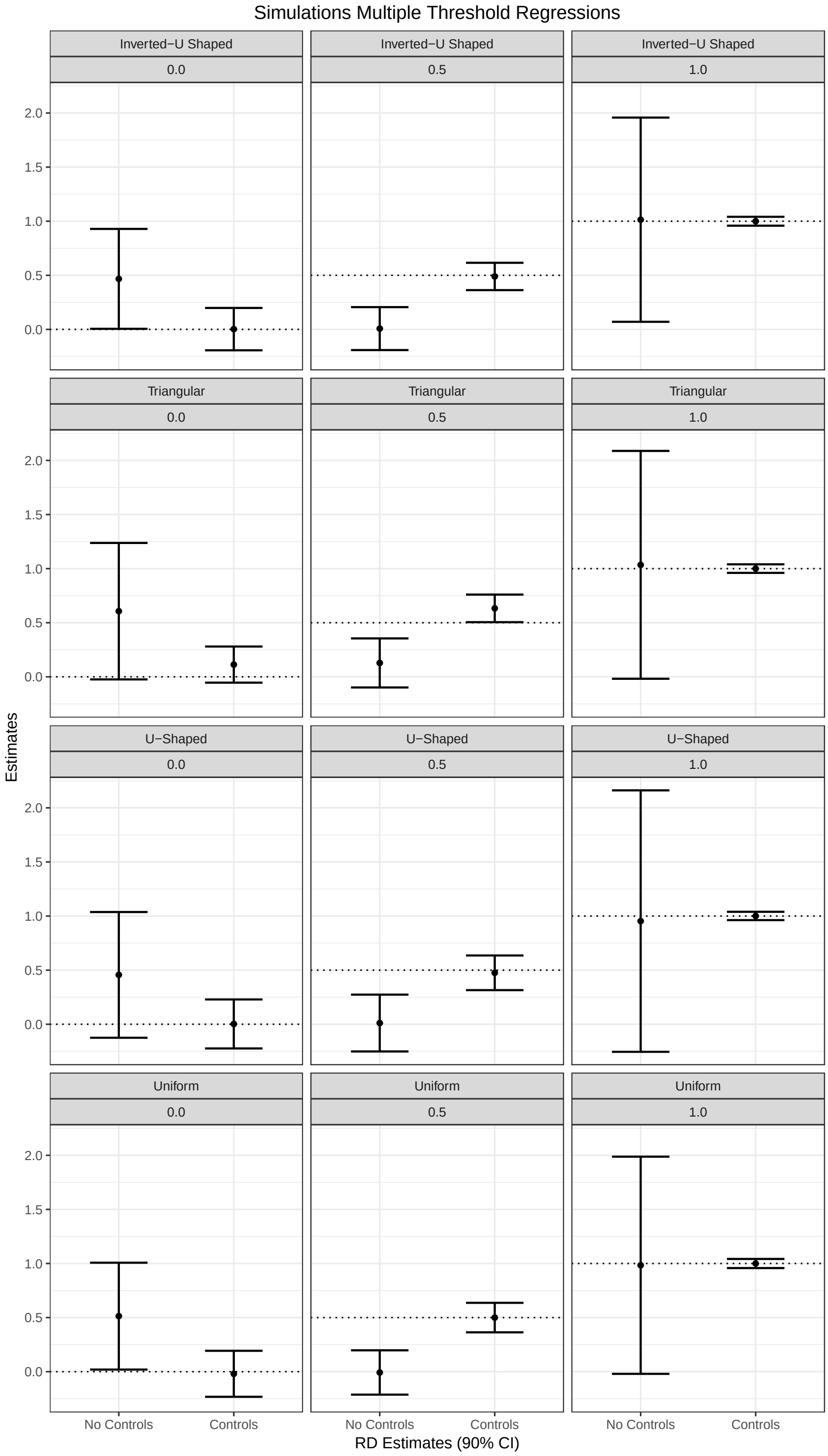


Figure 4: Estimations for the Different Data Generating Processes

legislators for the placebo cutoffs; therefore, we leave it blank. In Panel B, we have the placebo regressions for the primary mechanism, which concerns bargaining costs and public appointed employees. As expected, the placebo regressions are statistically insignificant.

Table 6: Political Effects of Legislature Size – Placebo Cutoffs

	Panel A: Representation and Elections			
	Representation		**Elections & Leg. Productivity**	
	Num. Female Councilors	Num. Non-white Councilors	Candidates Per Seat	Prop. Laws Approved Council
LATE	0.65^{**}		-0.72	-0.001
	(0.27)		(0.48)	(0.06)
N Left	4620		4621	2990
N Right	906		906	703
Eff N Left	414		567	356
Eff N Right	298		347	229
BW Loc Poly	4.874		6.104	5.583
BW Bias	8.789		10.312	8.89
	Panel B: Bargaining, Coalition, and Public Employment			
	Mayoral Coalition Size	Num. Politically Bureaucrats		
LATE	0.13	-0.58		
	(0.33)	(17.14)		
N Left	4618	13854		
N Right	904	2709		
Eff N Left	654	1345		
Eff N Right	394	915		
BW Loc Poly	6.813	5.127		
BW Bias	10.501	8.194		

Note: $^{***}p < .01$; $^{**}p < .05$; $^{*}p < .1$. RD estimates using Calonico et al. (2014) optimal bandwidth selection and triangular kernel. Robust standard errors, clustered at the municipal level, in parentheses. Controls: population, GDP per capita, number of seats in 2000, year, and dummy for Northeast region.

A.7 Sensitivity Analysis of Bandwidth Selection

In this section we present the sensitivity tests for bandwidth selection. Following the suggestion of Bueno and Tuñón (2015), we vary the bandwidth from 50% to 200% of the Calonico et al. (2014) estimate.

In Figure 6, we run the same bandwidth analysis for the placebo outcomes. The results, as expected, are mostly statistically insignificant.

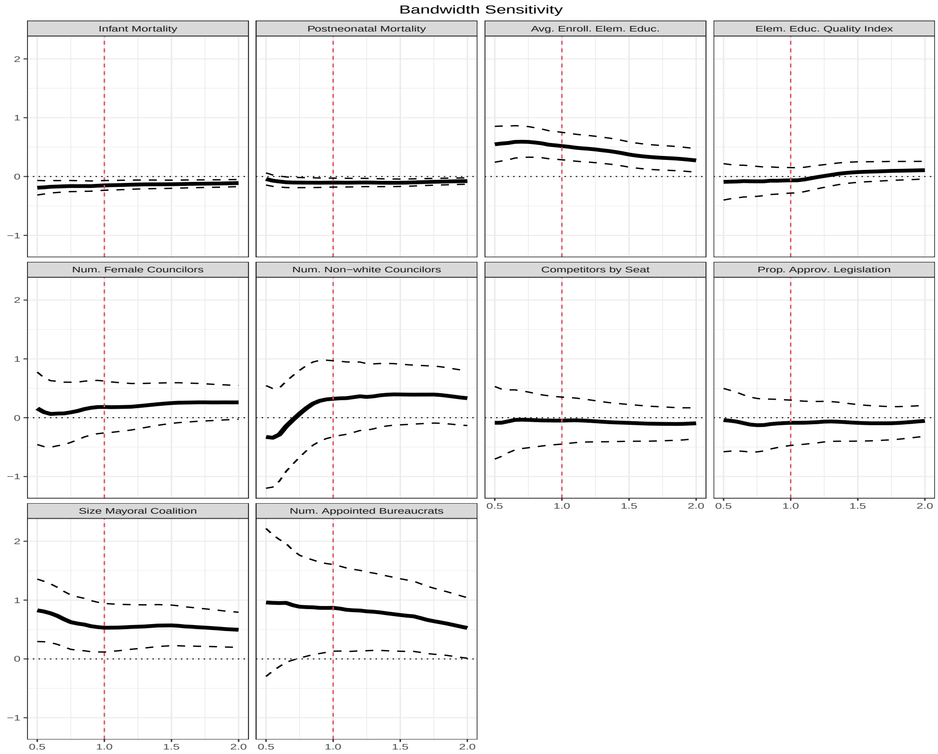


Figure 5: Bandwidth Sensitivity – Main Models

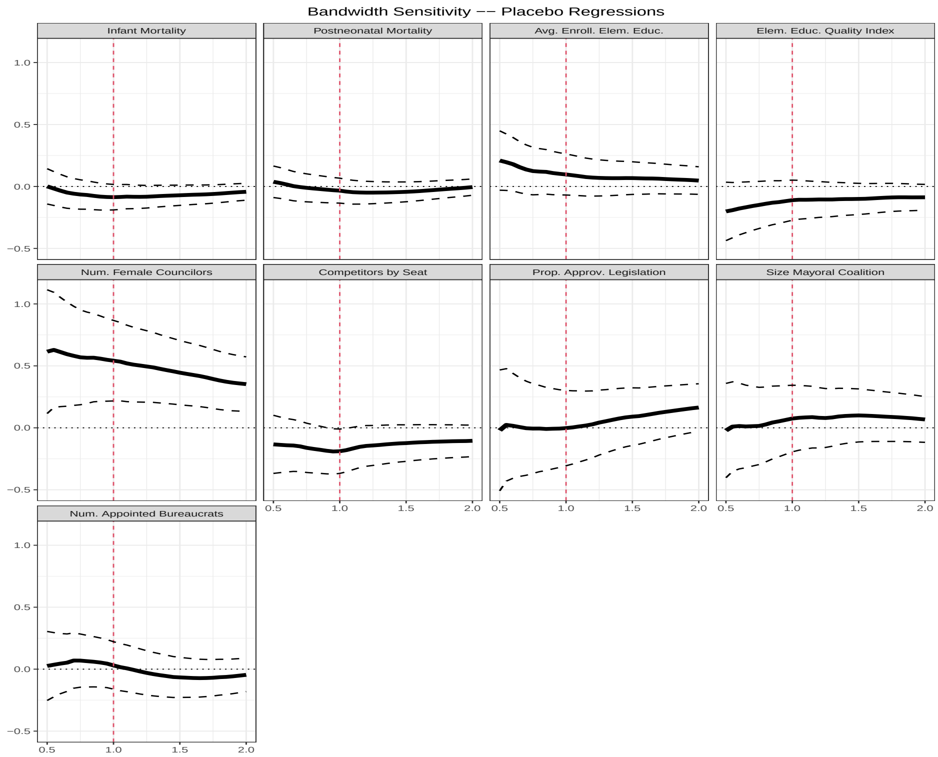


Figure 6: Bandwidth Sensitivity – Placebo Regressions

A.8 Sensitivity Analysis of State Characteristics

Given its massive size and large social inequalities, Brazil presents considerable geographic variation. In this respect, some states have such poor health care and education systems that they could be driving our results. We run the analysis dropping one state at a time to investigate this statewide heterogeneity. The results are in Figures 7, 8, 9, and 10.

First, note that for infant mortality and education enrollment, all coefficients remain significant even after removing some states from our sample. For postneonatal mortality, the coefficient loses significance when we remove the states of Bahia, Pernambuco, Rio Grande do Norte, and Rio Grande do Sul. The mayoral coalition size remains significant in most models, losing significance when we remove Rio Grande do Norte and São Paulo. The number of appointed employees loses significance after removing Espirito Santo and São Paulo. All the alternative mechanism models are insignificant, regardless of the state removed.

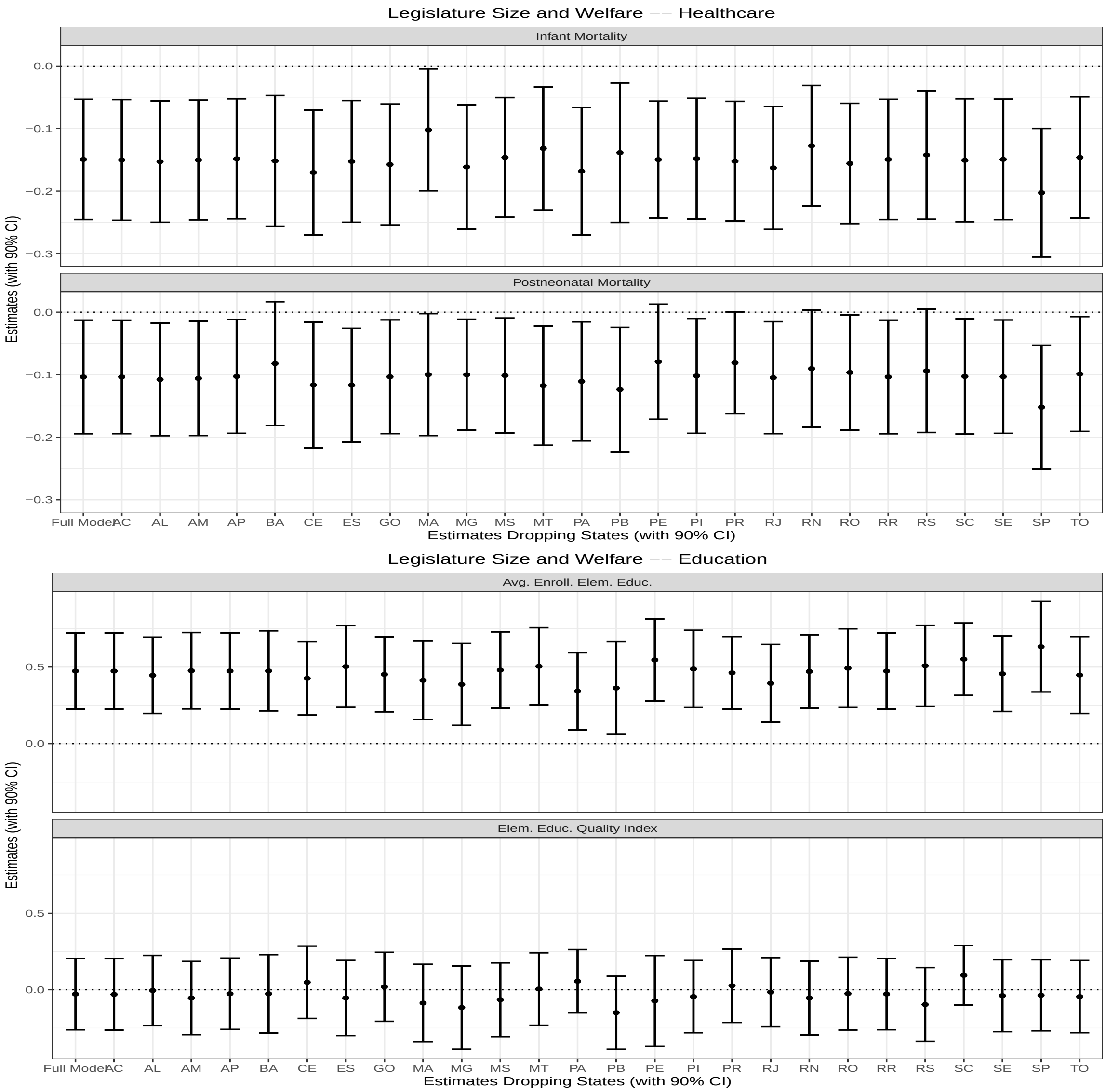


Figure 7: Sensitivity Analysis for the States in the Sample – Welfare Outcomes

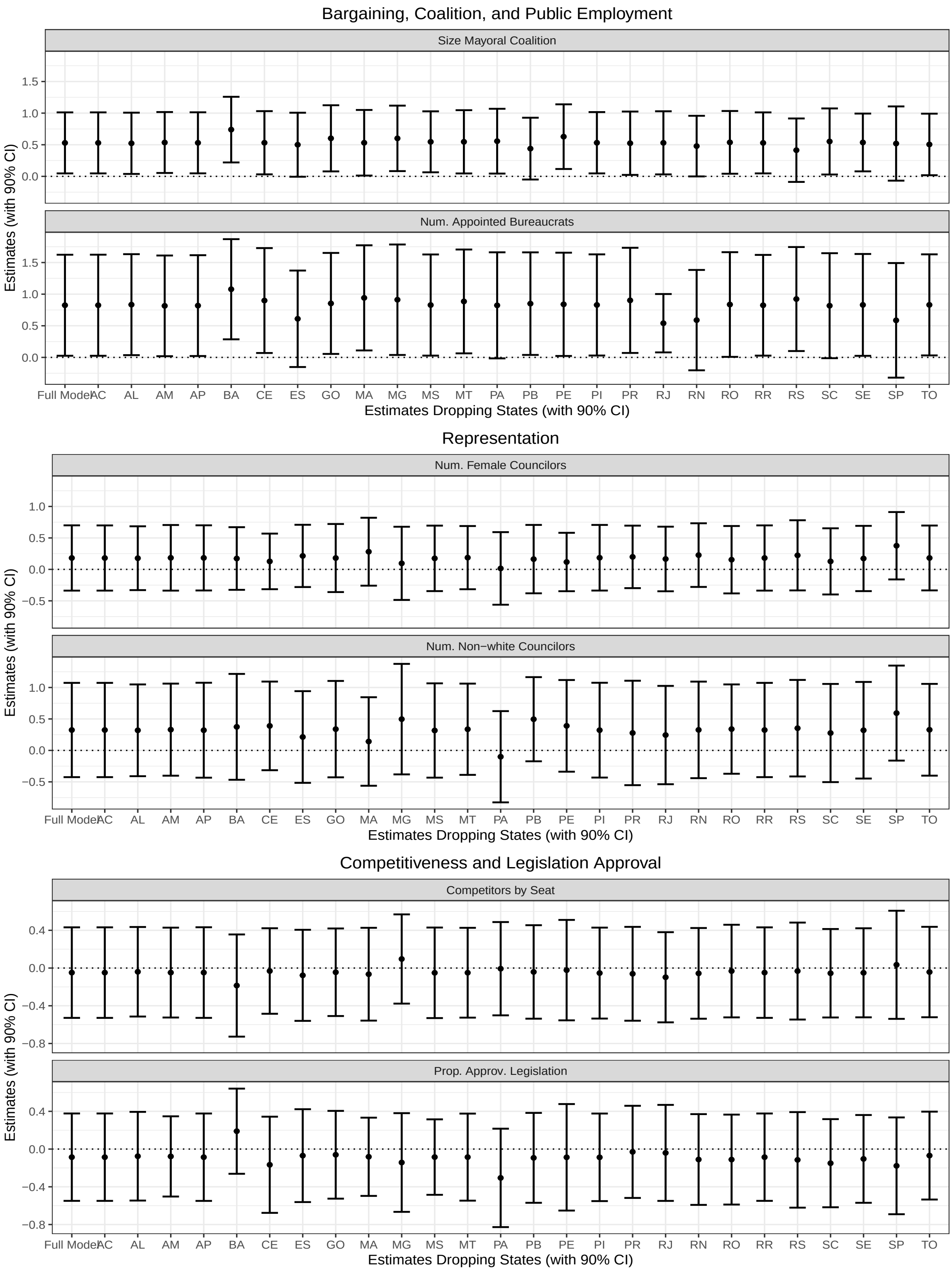
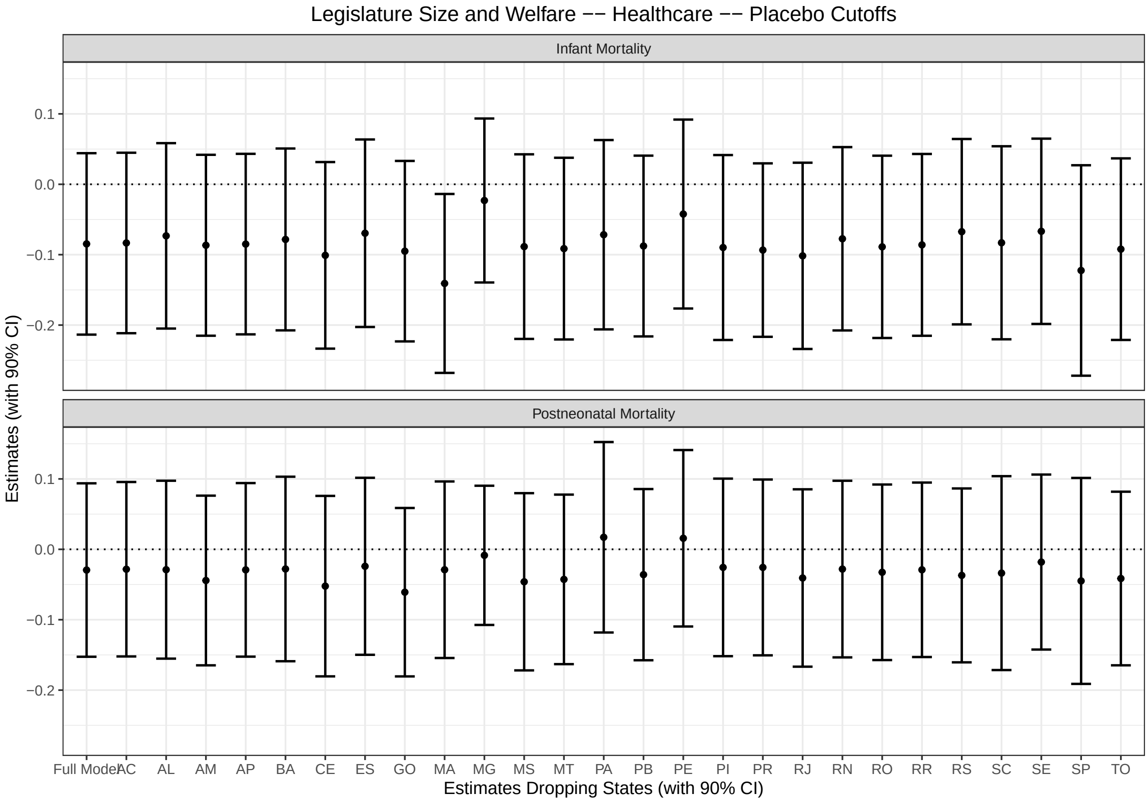


Figure 8: Sensitivity Analysis of State Characteristics – Mechanism Outcomes



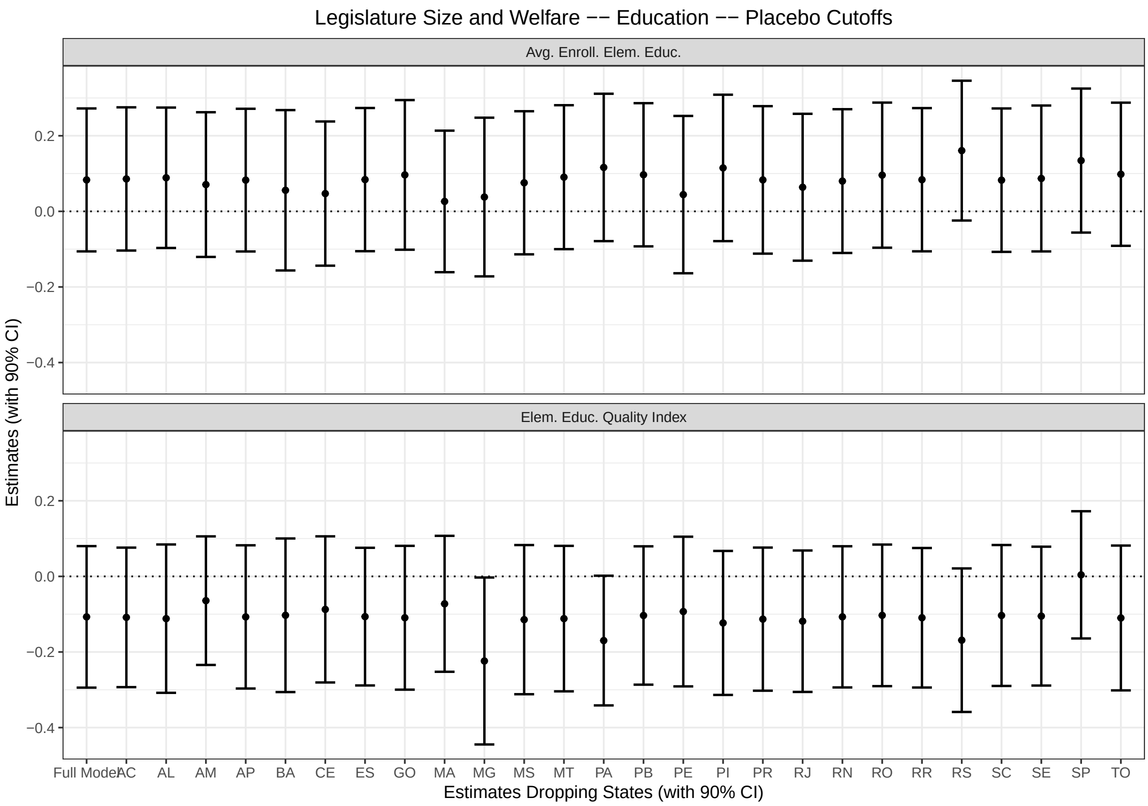


Figure 9: Sensitivity Analysis of State Characteristics with Placebo Cutoffs – Welfare Outcomes

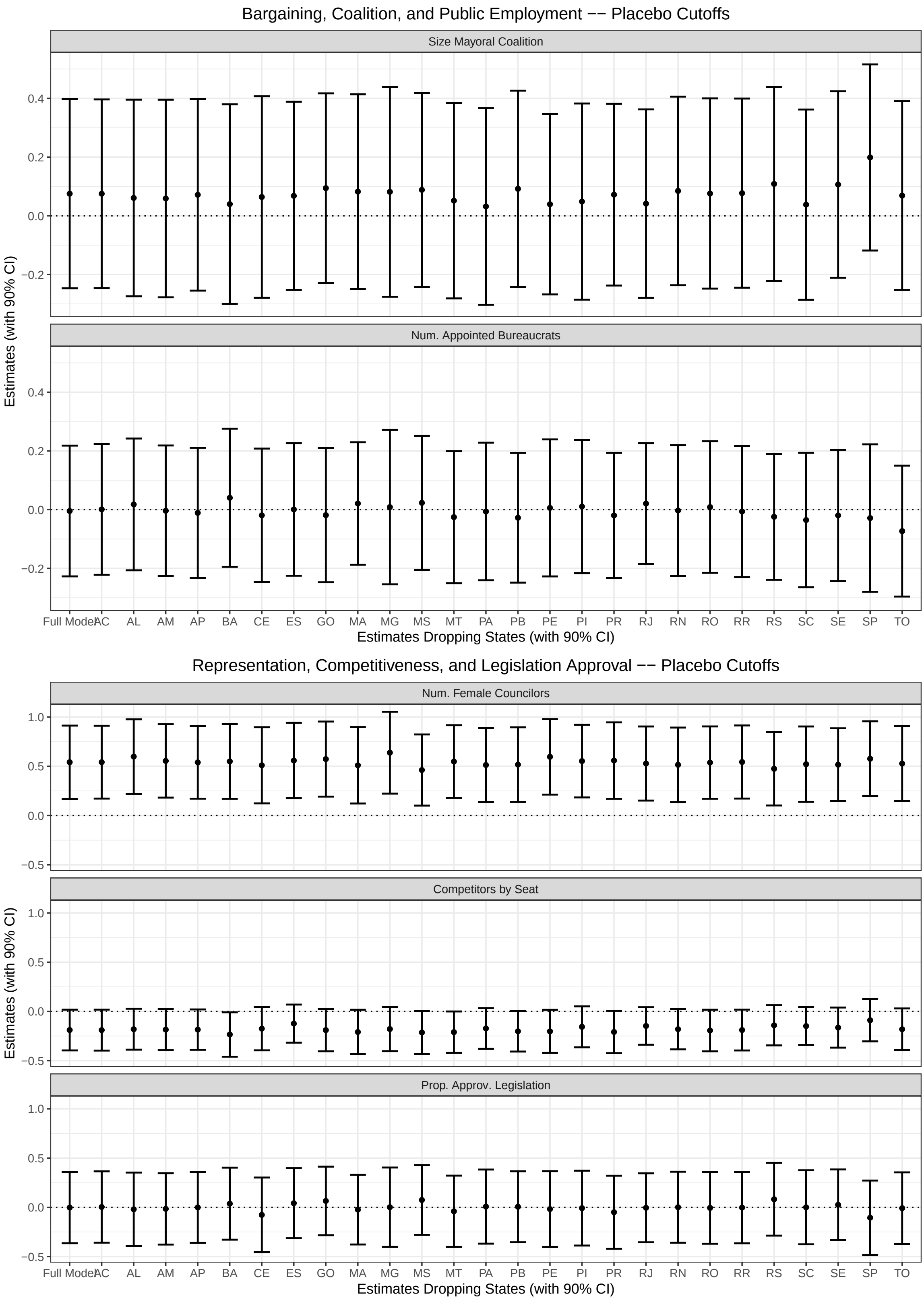


Figure 10: Sensitivity Analysis of State Characteristics with Placebo Cutoffs – Mechanism Outcomes

A.9 Sensitivity Analysis of Model Functional Form

In the paper, we run all the regressions using local linear polynomials. Gelman and Imbens (2014) show that local linear and quadratic polynomials are better than cubic and quartic models in terms of consistency.

However, to assess the robustness of our results, we also run every model using different polynomials, from local linear to a quartic, to show that our results are robust to different regression functional forms. The results are similar in all models, with significance changing only in the quartic polynomials. Figures 11 and 12 present the results for the real and the placebo cutoffs.

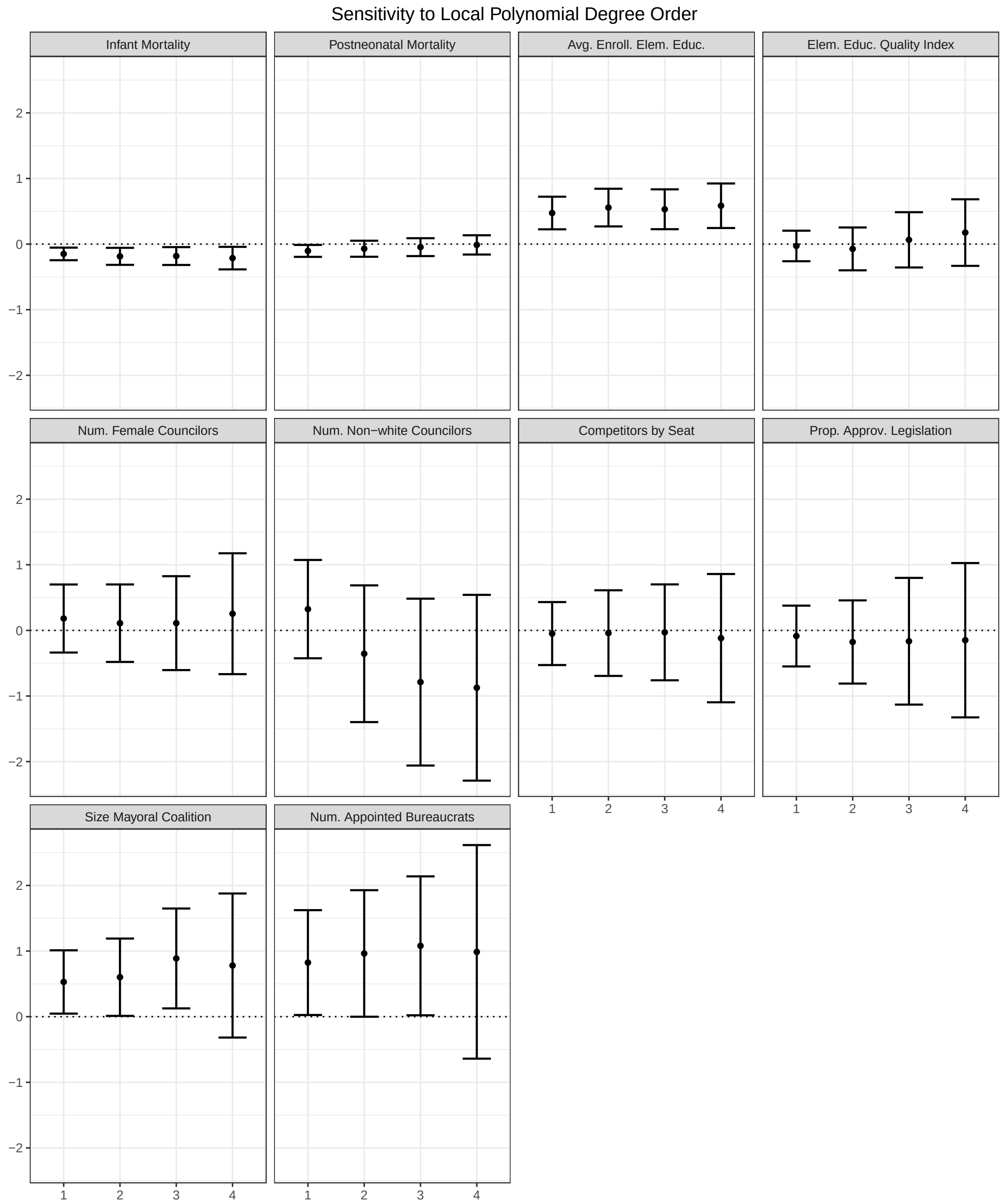


Figure 11: Sensitivity Analysis of Model Functional Form

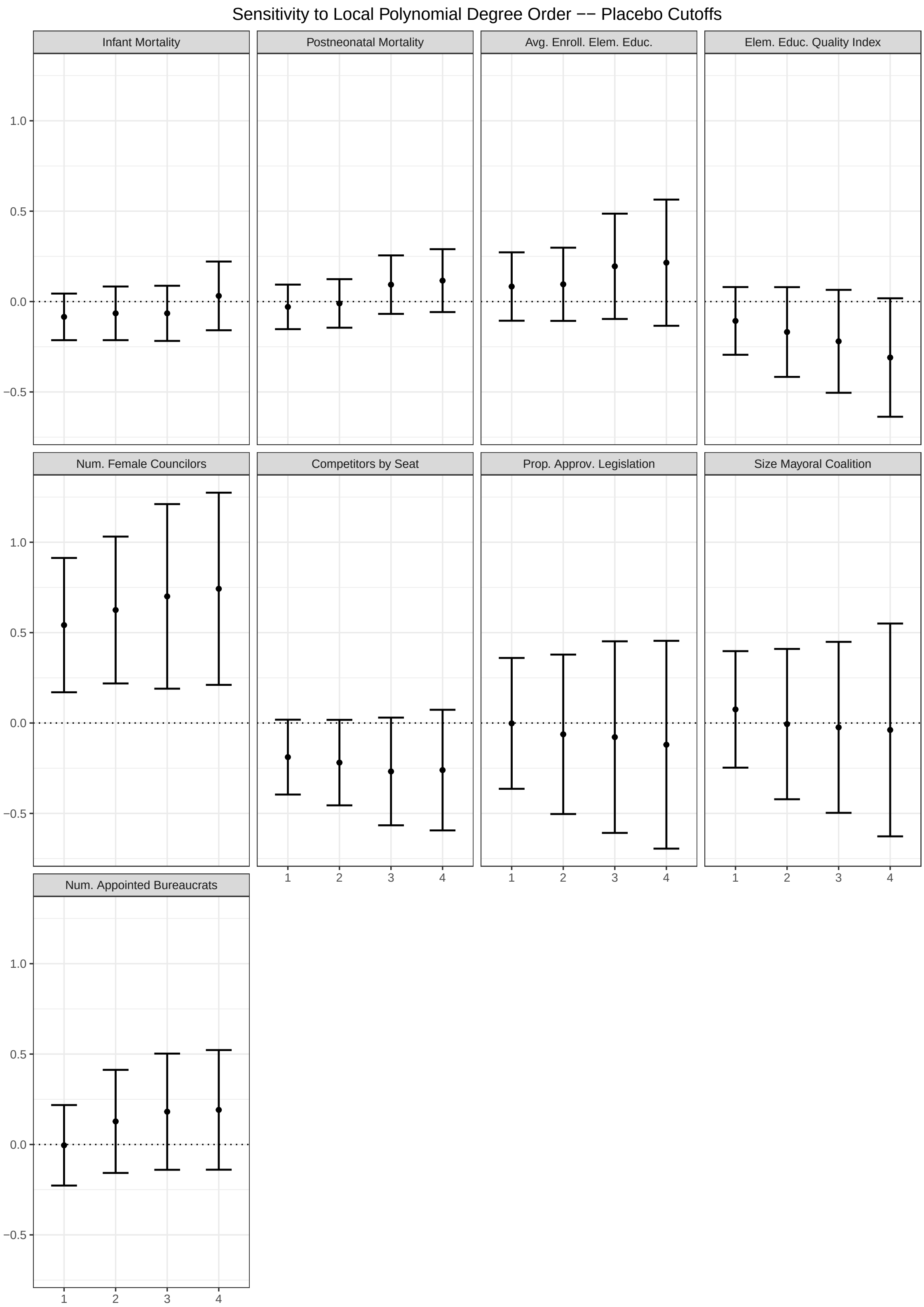


Figure 12: Sensitivity Analysis of Model Functional Form – Placebo Cutoffs

A.10 Sensitivity Analysis of Covariates

Control variables play a major role in our model. As we have argued above, our estimates may be inconsistent without the addition of control variables, as we may be capturing differences *between* cutoffs, instead of *within* cutoffs.

However, if the selection of control variables makes the models biased towards our main arguments, this would pose a significant credibility threat to our results. To study the sensitivity to controls, we run the same regressions for all possible control combinations. Figure 13 displays the results for this sensitivity test.[4]

[4] *NC* stands for No Controls. The controls used are *gdp*, the municipal GDP in a given year; *nseats2000*, the number of seats before the 2003 Supreme Court decision; *northeast*, a dummy variable for Northeast Brazil; *pop2003*, population in 2003; and *year*.

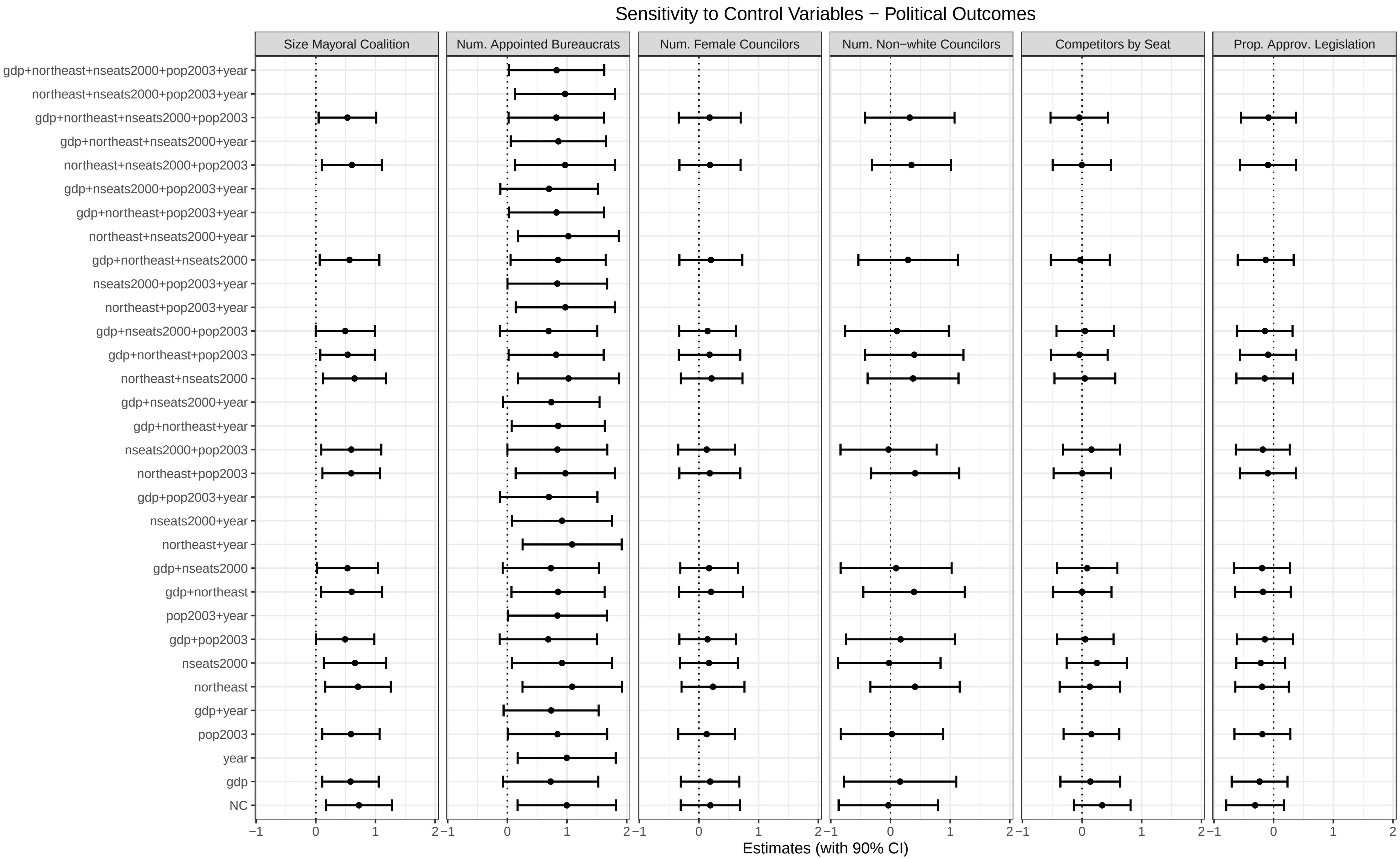


Figure 13: Sensitivity Analysis of Control Variables

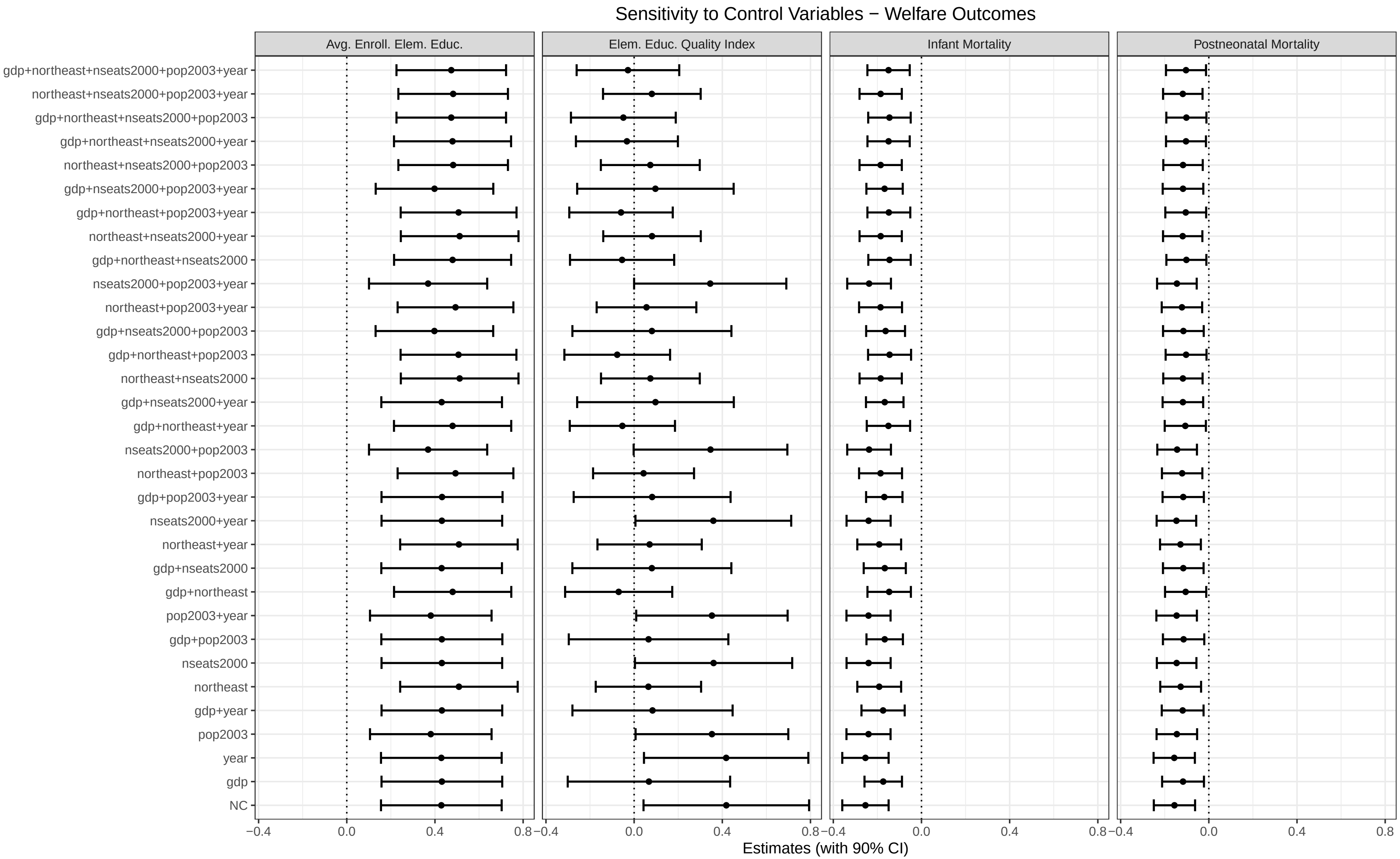


Figure 14: Sensitivity Analysis of Control Variables

For instance, changes in controls substantially affect the quality of elementary education, where some sets of control variables leading to a positive effect. However, most combinations of controls were insignificant.

We included the model with all controls to be conservative in our estimations. This is because the full model is significant only when most of the combinations also are significant. Regarding the point estimates, our variable choices tend to keep the models which have smaller coefficient sizes.

We also plot sensitivity tests to covariates in the placebo regressions. They are displayed in Figures 15 and 16. The theoretical expectations here are that most of these outcomes would fail, and the graphs indeed confirm our expectations.

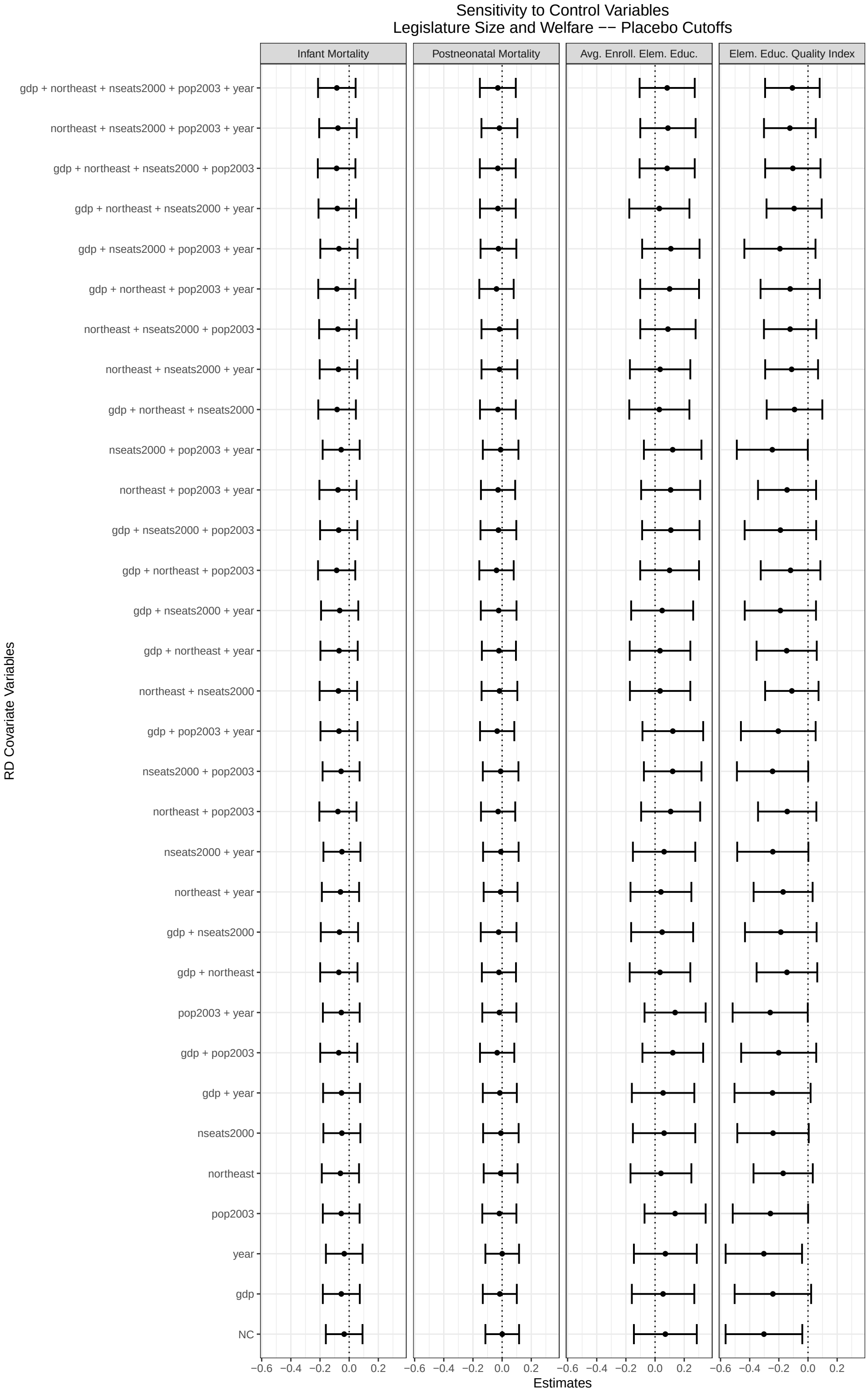


Figure 15: Placebo Regressions Outcomes – Sensitivity to Covariates

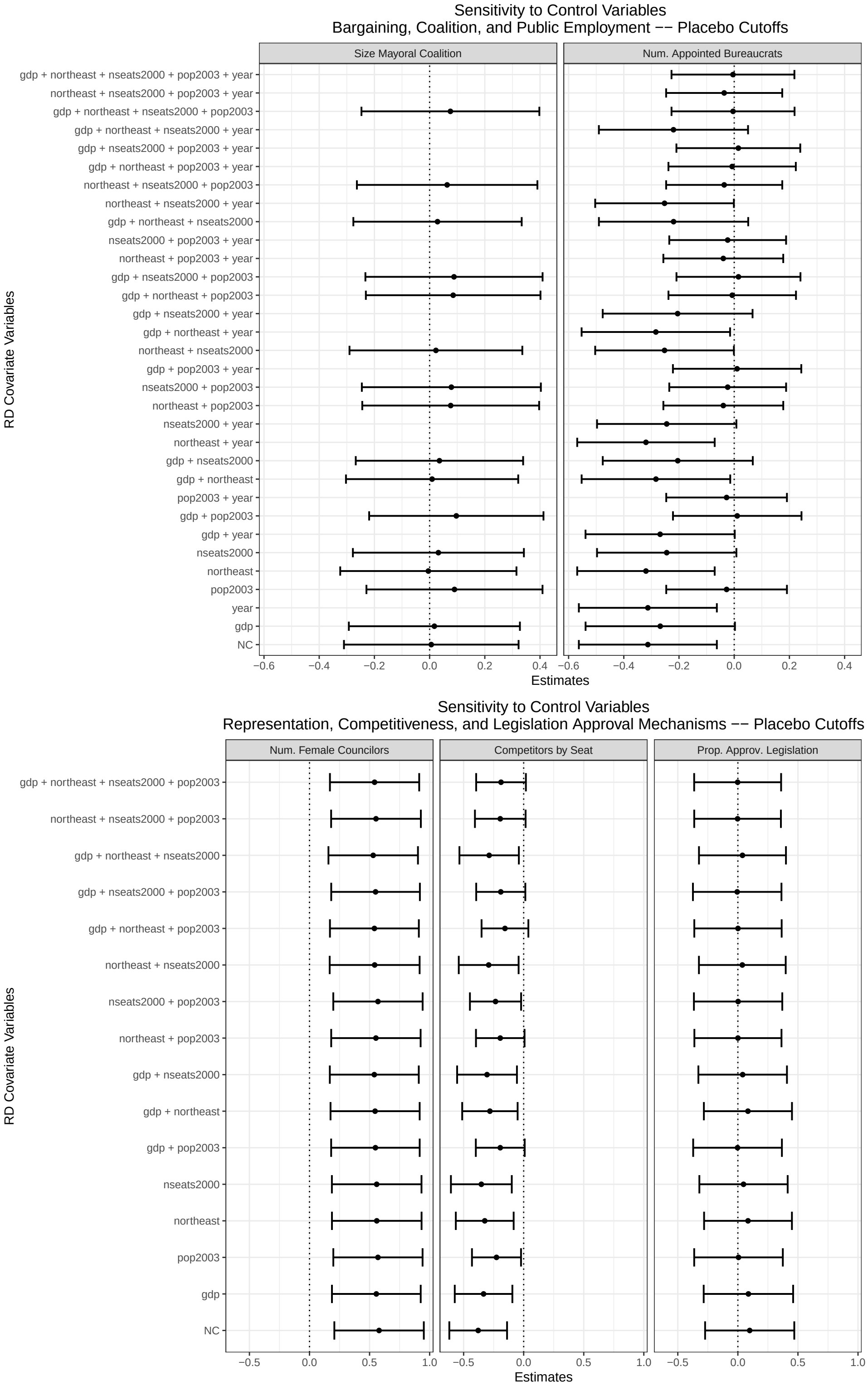


Figure 16: Placebo Regressions Mechanisms – Sensitivity to Covariates

A.11 Sensitivity Analysis of Additional Cutoffs

Here we evaluate the robustness of our results when we change the number of cutoffs. We run a series of regressions limiting the population sizes to half the cutoffs, starting from the second cutoff to the last. This strategy is similar to adding one cutoff at a time. The results are stable and do not change our main conclusions. Moreover, there are no clear increasing or decreasing patterns, which would indicate the existence of differential returns. Figures 17 and 18 display the results for the main cutoffs, while Figures 19 and 20 present the same results for the placebo cutoffs.

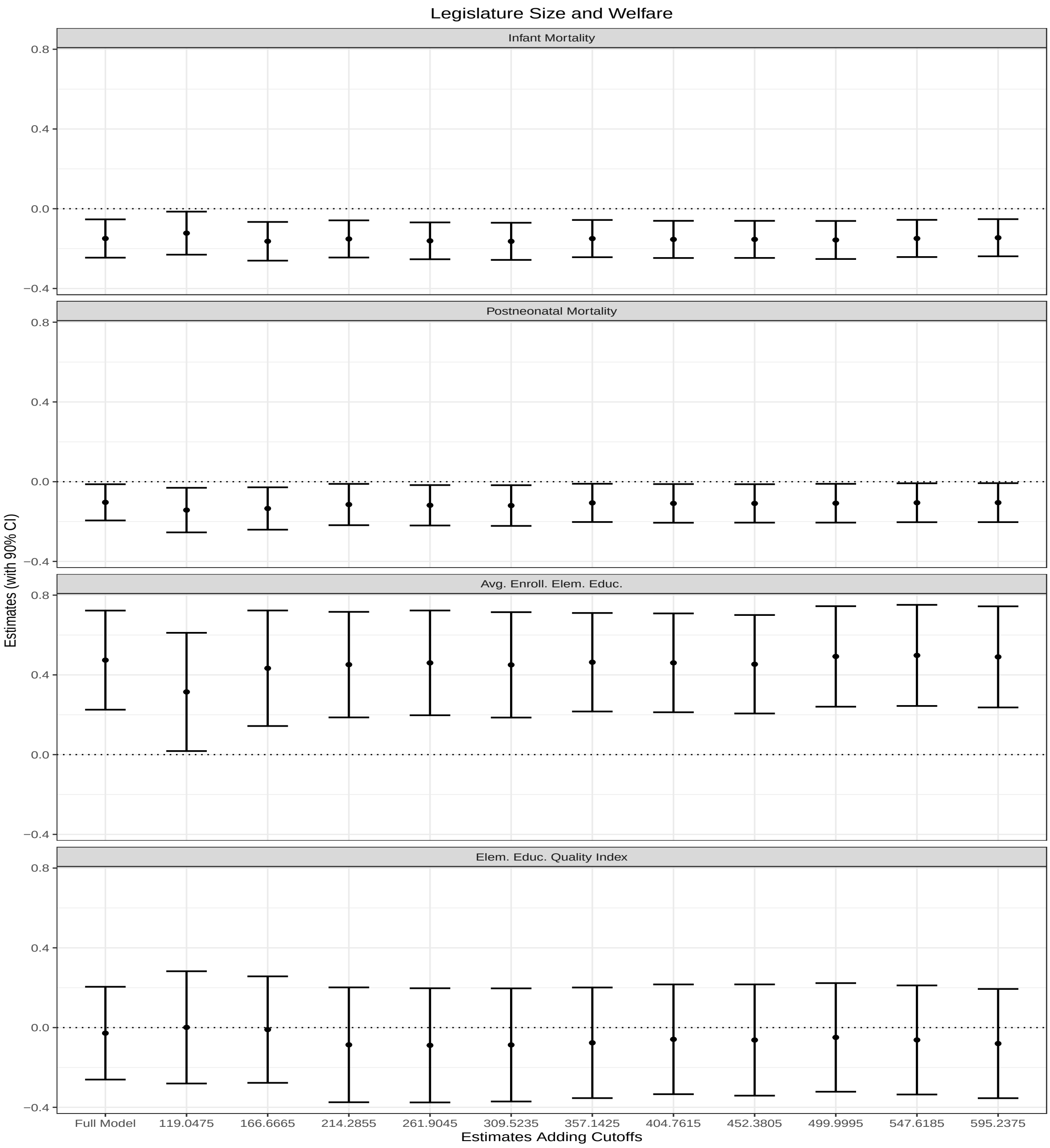


Figure 17: Sensitivity to Additional Cutoffs – Welfare Outcomes

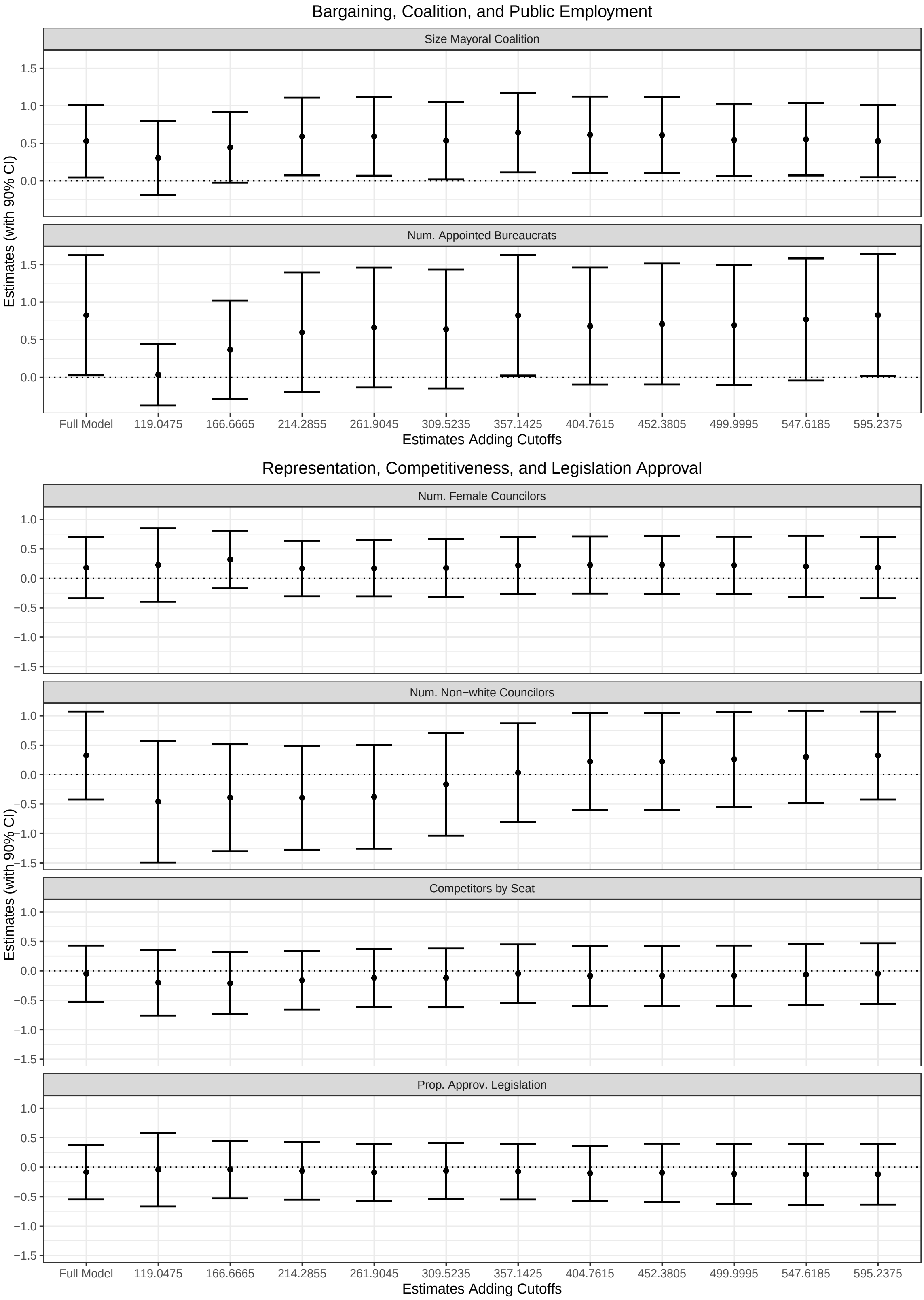


Figure 18: Sensitivity to Additional Cutoffs – Mechanism Outcomes

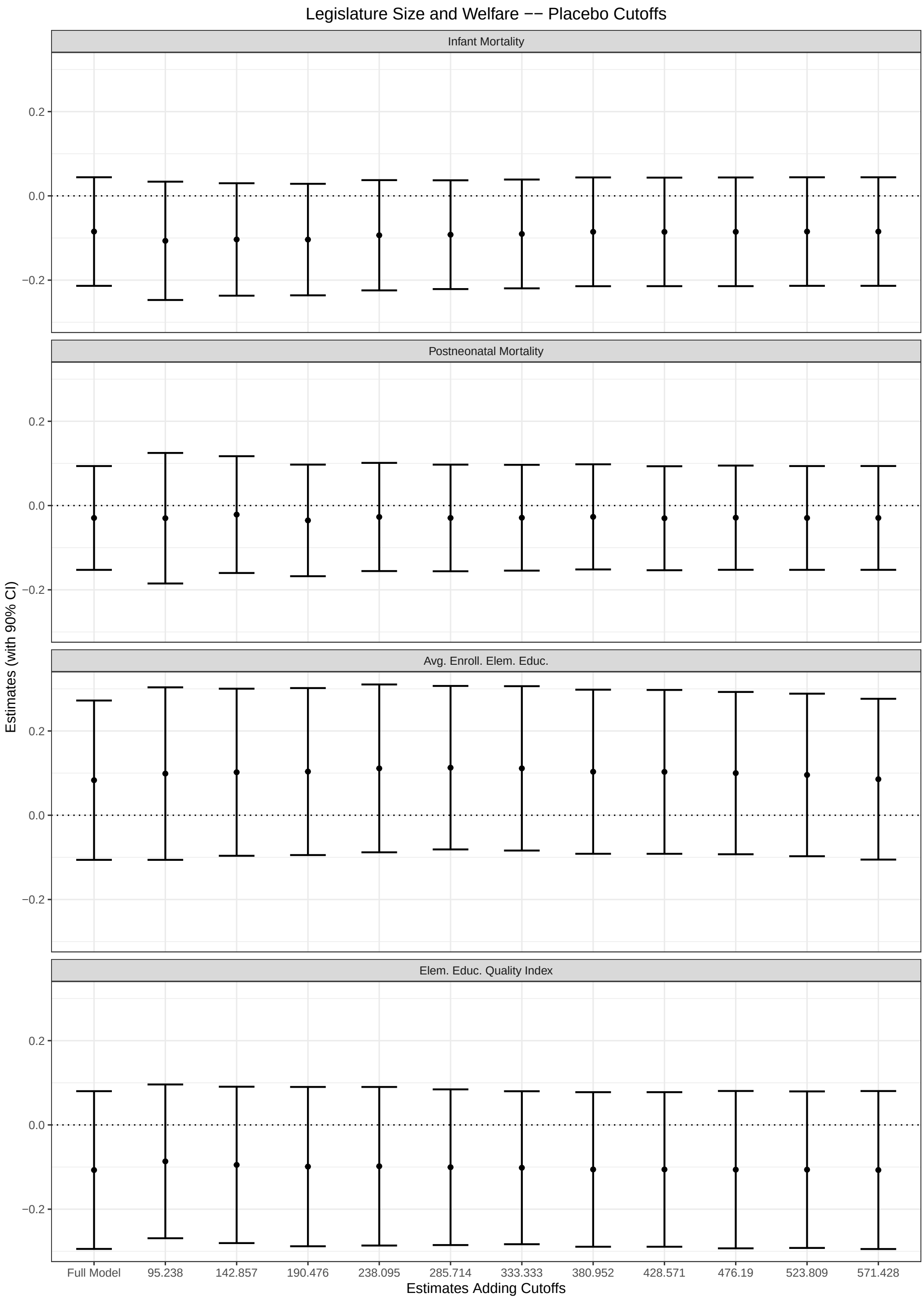


Figure 19: Sensitivity to Additional Cutoffs – Placebo Welfare Outcomes

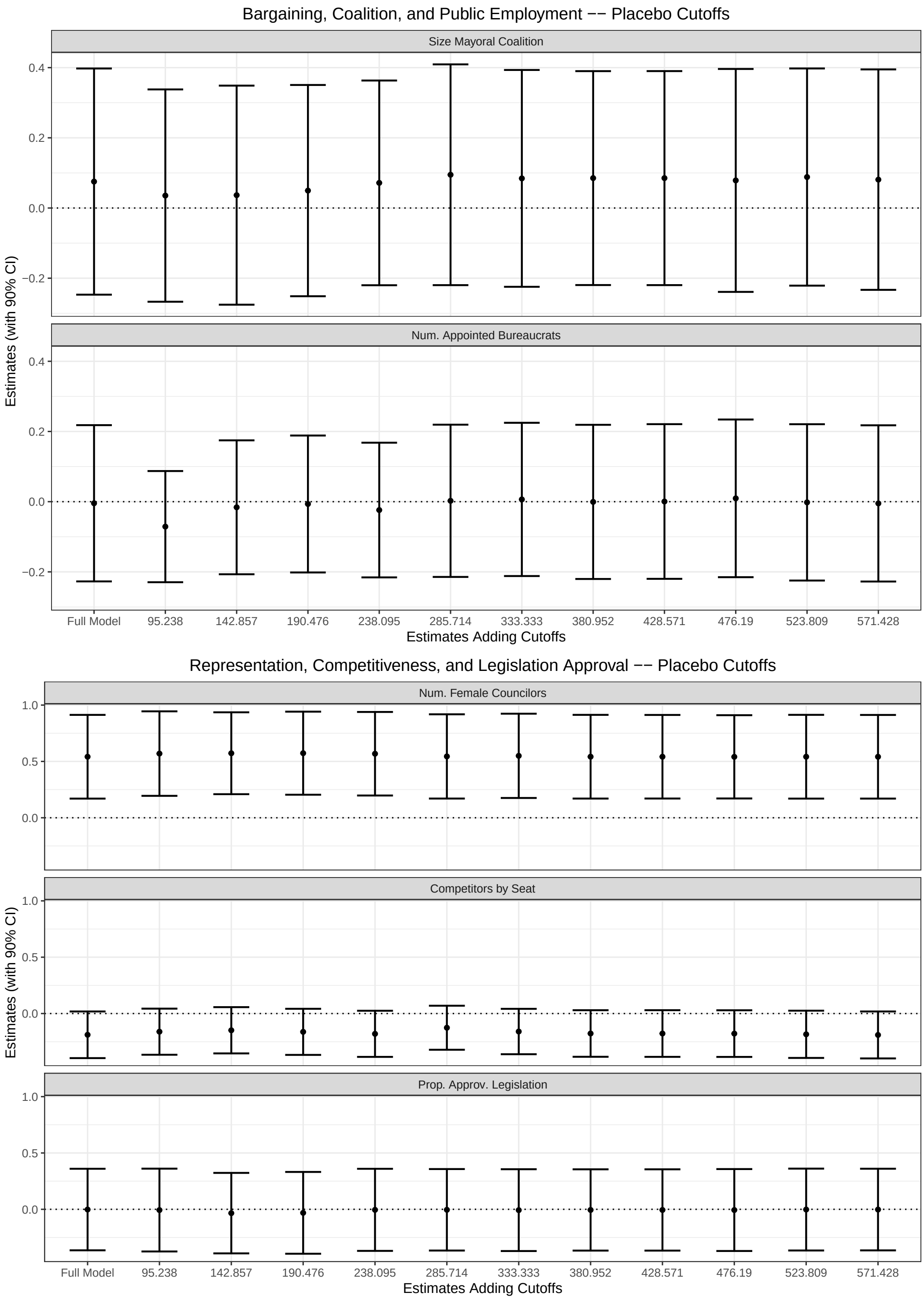


Figure 20: Sensitivity to Additional Cutoffs – Placebo Mechanism Outcomes

A.12 Mayor's Characteristics, Revenues, and Transfers from the Central Government

Two alternative explanations may confound our results. First, the mayor's selection could be affected by the size of the city council, thus public welfare improves due to the quality of the mayor and not because of the partisan mechanism we have described. Second, the partisan mechanism could be capturing a dynamic similar to Weingast et al. (1981) "law of 1/n", whereby welfare improvements are caused by higher available revenues. This section shows that none of these concerns are valid in our case.

A.12.1 Mayors' characteristics

We select four characteristics of the city mayors: gender, level of schooling, whether the mayor was reelected in 2004, and whether the mayor was reelected in 2008. The results show no variation in council size and mayoral characteristics.

Table 7: Mayor Characteristics

	Female Mayor	**Mayor w. College Degree**	**Reelected Mayor 2004**	**Reelected Mayor 2008**
LATE	0.07	-0.06	-0.09	0.06
	(0.08)	(0.13)	(0.10)	(0.14)
N Left	5069	5069	5184	5183
N Right	335	335	343	343
Eff N Left	299	226	192	231
Eff N Right	184	154	141	159
BW Loc Poly	11.738	9.655	8.508	9.596
BW Bias	17.104	15.762	13.338	14.741

$^{***}p < .01$; $^{**}p < .05$; $^{*}p < .1$

Local linear RD Estimates using CCT Optimal Bandwidth Selection and Triangular Kernel.

Quadratic Robust Standard Errors in Parentheses.

Controls: population, GDP per capita, number of seats in 2000, year, and dummy for northeast region.

Table 8: Mayor Characteristics – Placebo

	Female Mayor	**Mayor w. College Degree**	**Reelected Mayor 2004**	**Reelected Mayor 2008**
LATE	0.03	0.04	0.08	-0.07
	(0.05)	(0.08)	(0.07)	(0.08)
N Left	4526	4526	4621	4620
N Right	878	878	906	906
Eff N Left	567	707	683	759
Eff N Right	342	406	397	427
BW Loc Poly	6.197	7.413	7.006	7.71
BW Bias	10.241	12.64	13.536	12.648

$^{***}p < .01$; $^{**}p < .05$; $^{*}p < .1$

Local linear RD estimates using CCT optimal bandwidth selection and triangular kernel.

Quadratic robust standard errors in parentheses.

Controls: population, GDP per capita, number of seats in 2000, year, and dummy for Northeast region.

A.12.2 Revenues and Transfers

We run another series of models on federal transfers and revenue raised within the municipalities. There is only a negligible effect on education transfers, yet it is barely significant at 10%. The other indicators remain insignificant. Note that the placebo is significant, which reinforces the claim that the education effect may be spurious.

Table 9: Transfers and Revenue

	Total Transfers	**FPM Transfers**	**Education Transfers**	**Total Revenue**
LATE	0.03	-0.03	0.18^{*}	0.06
	(0.04)	(0.03)	(0.10)	(0.04)
N Left	15555	15555	15460	14668
N Right	1029	1029	1028	998
Eff N Left	804	258	349	626
Eff N Right	516	273	333	442
BW Loc Poly	10.617	4.568	6.005	9.253
BW Bias	16.447	8.243	11.412	15.092

$^{***}p < .01$; $^{**}p < .05$; $^{*}p < .1$

Local linear RD estimates using CCT optimal bandwidth selection and triangular kernel.

Quadratic robust standard errors in parentheses.

Controls: population, GDP per capita, number of seats in 2000, year, and dummy for northeast region.

Table 10: Transfers and Revenue – Placebo

	Total Transfers	**FPM Transfers**	**Education Transfers**	**Total Revenue**
LATE	0.07^{**}	0.04	0.03	0.07^{**}
	(0.03)	(0.03)	(0.06)	(0.03)
N Left	13865	13865	13776	13103
N Right	2719	2719	2712	2563
Eff N Left	807	636	1928	848
Eff N Right	619	544	1163	611
BW Loc Poly	3.418	3.028	6.738	3.67
BW Bias	6.021	5.36	10.871	6.222

$^{***}p < .01$; $^{**}p < .05$; $^{*}p < .1$

Local linear RD estimates using CCT optimal bandwidth selection and triangular kernel.

Quadratic robust standard errors in parentheses.

Controls: population, GDP per capita, number of seats in 2000, year, and dummy for northeast region.

A.13 Legislation Dataset

In the Fall of 2018, we collected data on the legislation approved by the city councils of 63 municipalities, all of which were 10 thousand inhabitants away from the thresholds we discussed above. There are 202 municipalities 10 thousand inhabitants away from the cutoff, but only 63 had relevant information about local legislation between 2005 to 2008.

We hand-coded 1% of the dataset (3,466 cases) and applied a Supporting Vector Machine (SVM) algorithm to the remaining 99% cases to classify the legislation. First, we trained and tested the accuracy of the SVM classifier on 80% of the dataset. Then, we ran the training algorithm on the complete hand-coded data and predicted the remaining cases.[5]

We hand-coded these data according to four characteristics:

1. **Local Public Goods**: Whether the bills provided a local public good or service to citizens. For instance, bills that aim to fix street potholes, staff a given health clinic, or purchase equipment to a given school.
2. **Oversight**: Legislation requesting information on the status of service provision.
3. **Health Care and Education**: Bills on education and health care, broadly defined.
4. **Others**: Legislation not categorized as any of the previous three, such as honors to notable citizens.

Table 11 shows the classification accuracy for each of the variables that we have hand-coded. In all models, we set cost to 10 to avoid overfitting.

Table 11: Accuracy of SVM Classifier (tested in 20% of the data)

Variable	**Accuracy**
Local Public Goods	93.8
Oversight	94.9
Education and Health Care	92.5
Others	93.5

After we classified all the bills, we added the frequency of each category to the main paper. We have also added the productivity per legislator, which consists of the ratio of the legislation approved in the municipality in the four-year term, divided by the council size. As expected, the results changed little when we used this alternative measure.

[5] We tested SVM, Naïve Bayes, Random Forests, and Neural Networks for this task. We have chosen SVM as it gives the highest prediction rate of all of the algorithms we have tried. We use a simple bag-of-words classifier provided by the ‘RTextTools‘ package for ‘R‘ (Collingwood et al. 2013).

A.14 City Councilors Survey

From November 21st to December 1st, 2016, we surveyed former city councilors elected for the 2005-2008 term. We asked them how mayors secure electoral support, which services are commonly discussed in the city council, and which services give them the highest electoral yield.

We sent 3,240 emails to politicians who had ran in the 2016 election and held public offices in 2005. On December 1st, we closed the pool and obtained 174 responses. Figure 21 displays the distribution of responses.

Figure 21: Geographical Distribution of Survey Responses

To weight the survey, we use the Legislative Census, conducted by *Interlegis* on the behalf of the Brazilian Senate. The company was hired to improve the quality of Brazilian government branches. We include the following categories in the weighting procedure: region of Brazil, legislature size (9 to 15 or more), gender, and age less than 39. We use the proportions in each bin to weight the graphs and statistics generated after the raking process.[6] Table 12 shows the sample, population, and weighted proportions.

Table 12: Proportions for each bin used in the weighting process

	Sample Proportions	Population Proportions	Weighted Proportions
Age less than 39	0.50	0.34	0.34
Female	0.18	0.12	0.12
Number of Seats = 9	0.83	0.90	0.90
Number of Seats = 10	0.10	0.06	0.06
Number of Seats = 11	0.01	0.02	0.01
Number of Seats = 12	0.01	0.01	0.01
Number of Seats = 13	0.006	0.005	0.005
Number of Seats = 14	0.01	0.004	0.005
Number of Seats = 15 or more	0.02	0.009	0.008
Region = CENTRO-OESTE	0.11	0.08	0.08
Region = NORDESTE	0.33	0.32	0.32
Region = NORTE	0.05	0.08	0.08
Region = SUDESTE	0.30	0.30	0.30
Region = SUL	0.20	0.21	0.21

Note that the algorithm performs very well, with minimal differences occurring only after the third decimal place.

The survey included the following questions of interest:

1. No Brasil é comum que o prefeito tenha de negociar para ter maioria na Câmara de Vereadores. Com que frequência, o(a) Sr(a) acha que o prefeito usa os seguintes dispositivos para conseguir apoio?

2. Quais dessas atividades o(a) Sr(a) acredita serem mais comuns no trabalho da maioria dos vereadores?

3. Quais dessas atividades o(a) Sr(a) acredita que ajudam mais um vereador durante a eleição?

English translation:

1. In Brazil, mayors commonly negotiate to establish a government majority in the city council. How often do you think mayors use the following goods in exchange for support?

2. Which of those activities do city councilors perform most often in their duties?

3. Which of the following activities do you believe helps city councilors the most in elections?

[6]The ‘survey‘ package for ‘R‘ describes the raking process in more detail (Lumley et al. 2004). In summary, it iterates the post-stratification procedure until the sample marginals match the population marginals for all variables.

The second question is particularly relevant to our argument, as it indicates whether councilors engage in activities that give them high electoral yields. Figure 22 shows the results for each of the activities we analyzed.

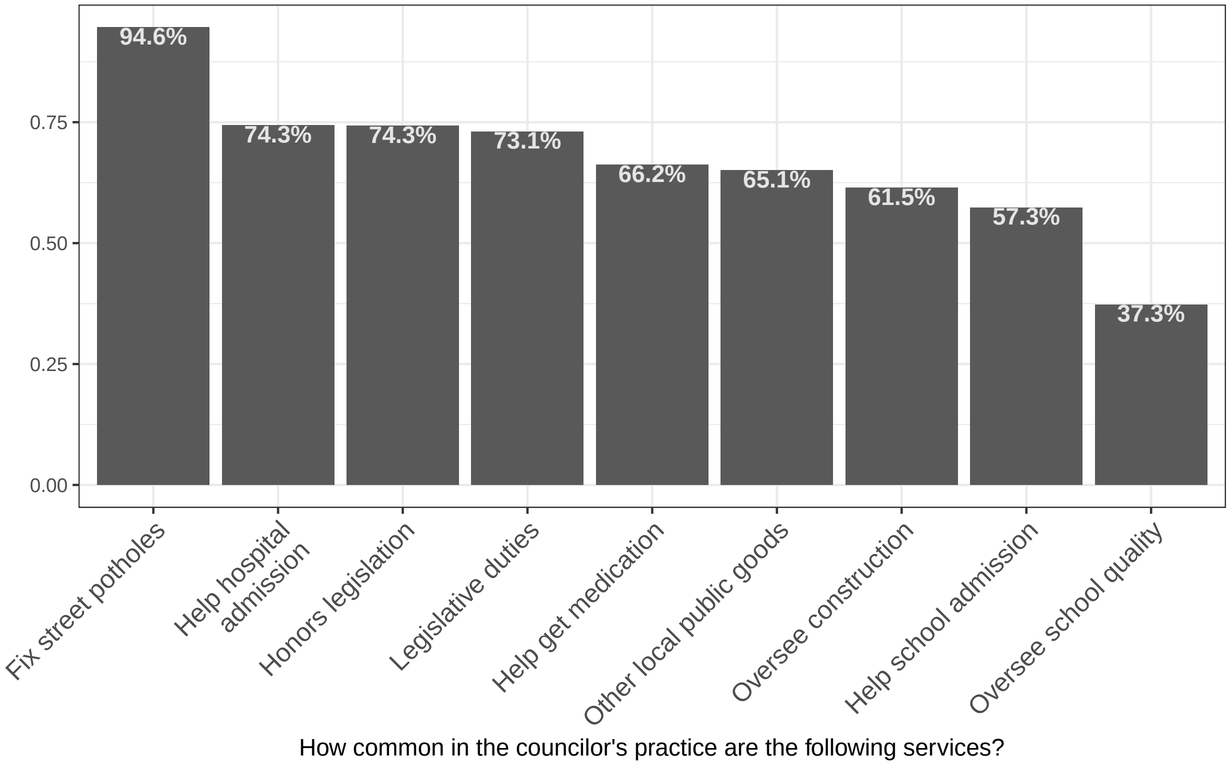


Figure 22: City Councilor's Common Activities

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