Political Competition When Gangs Rule:
Effects of Removing Armed Groups' Territorial Control
in Brazil

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Abstract

Millions of citizens of democratic countries live in areas captured by non-state armed groups. In this paper, I study how territorial control by criminal organizations affects political competition and public service provision. I exploit the staggered implementation of a pacification policy in Rio de Janeiro that restored state control in shantytowns ruled by drug gangs using difference-in-differences. I show that removing criminal rule increased electoral competition in pacified slums. After pacification, votes became more dispersed across candidates for city council, the party in power lost vote share, and candidates running for the first time performed better. To study the effect of pacification on public service provision, I constructed a novel dataset of public services that city councilors propose. I show that city councilors request more public services to pacified territories, but only those where they have a political base.

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1 Introduction

Criminal groups control territory in many developing countries and restrain state presence to protect their illegal activities from state repression (Lessing, 2021; Blattman et al., 2021; Melnikov et al., 2022). In many Latin American cities, for example, politicians cannot enter gang-dominated neighborhoods without their consent (Arias, 2006a, 2017; Cordova, 2019). Consequently, millions of people live in areas where citizen-state interactions are mediated by criminal organizations, which may affect how politicians interact with these communities.

When armed groups restrict access to voters, they reduce the opportunities for politicians to interact with their constituents, seek their support during elections, gather information about their preferences, and inform them about policies they promote while in office. Therefore, in addition to directly straining the government's capacity to deliver public services in these areas, criminal groups can undermine political accountability to voters in their territories by limiting electoral competition and the information that voters have about politicians (Besley and Case, 1995; Besley, 2006; Ashworth, 2012). As a result, elected officials may underserve citizens living under criminal dominance, which tend to be the urban poor.

How does territorial control by criminal groups affect the distribution of public services to the urban poor? I examine this question in the context of Rio de Janeiro, Brazil, where drug gangs have territorial control over low-income squatter settlements and shantytowns called *favelas* (Arias, 2006b; Perlman, 2010; Zaluar and Barcellos, 2013; Monteiro et al., 2022). Drug traffickers shape political interactions in favelas by selling access to voters in their territory to some politicians, while denying access to others (Gay, 1994; Arias, 2006b,a, 2017; Albarracin, 2018; Trudeau, 2022). I approach this question in two parts. First, I examine on whether gangs' territorial control affects electoral competition in favelas, which is a key mechanism to incentivize politicians to provide public services to these areas, in municipal elections for city council. Second, I focus on whether elected city councilors promote fewer public services in favelas because of gangs' territorial control.

To identify the effect of gang dominance, I exploit the gradual implementation of a pacifica-

tion policy that restored state control over some of the city's favelas while leaving others under gang rule, using difference-in-differences. From 2008 to 2014, the Pacification Police Unit (UPP) program occupied 198 favelas, affecting approximately 700 thousand residents, using more than 9,000 police officers to establish permanent police presence in these areas where law enforcement had been absent for decades.

The Brazilian judiciary assigns voters to specific voting booths near their residences. Therefore, I georeferenced voting locations and used voting booths near favelas to capture residents' voting behavior. To estimate the effects of removing gang rule, I compare electoral outcomes in voting booths near pacified favelas to outcomes in voting booths near favelas that remained under gang control.

Because gangs restrict politicians' access to favelas and often sell exclusive rights to campaign in their territory to a small set of candidates, we expect votes to be more concentrated on fewer candidates in favelas governed by drug gangs. Consistent with that, I find that restoring state control substantially increased both the dispersion of votes across candidates and the number of candidates that get votes in pacified favelas. After pacification, the effective number of candidates increased by 23 percent in pacified favelas relative to favelas that remained under gang dominance. I interpret this result as evidence that removing territorial control facilitates politicians' access to voters and substantially increase electoral competition in favelas.

One way gangs could affect the elections in their territory is through voter participation. Gangs could, for example, use their local influence to mobilize citizens to support a candidate and ensure they turn out to vote (Larreguy et al., 2016; Arias, 2017; Trudeau, 2022). However, removing gang dominance did not cause any meaningful change in voter turnout. Therefore, voter participation does not drive the increase in vote dispersion and the number of candidates that get votes in favelas.

Who benefits from more electoral competition? Although I cannot observe deals between candidates and criminal groups, some politicians are better positioned to strike deals with drug gangs to secure their support than others. For example, politicians in power with access to state resources can offer better deals to criminal groups to buy their support. I show that political newcomers benefit from removing gang dominance at the expense of well-established politicians.

For example, the vote share of incumbent councilors running for reelection decreased by 15 percent in pacified favelas, while the vote share of newcomers running for office for the first time increased by 18 percent. This result not only corroborates that removing gang dominance facilitates the entry of new politicians in favelas but also reveals a potential conflict of interest between voters and politicians. Because incumbents benefit electorally from armed groups' territorial control, they may be reluctant to support policies to remove criminal governance and extend the state's protection to their constituents (Acemoglu et al., 2013; De Feo and De Luca, 2017).

Elections for the city council follow a single-district, multi-member proportional representation system. As candidates compete in the whole city, performing better in favelas does not imply that newcomers will get more seats on the city council. Because experienced politicians are likelier to win when they run, redistributing votes towards newcomers at the expense of more established politicians resulted in more favela votes going to weaker candidates who failed to get elected. I show that the vote share of the successful candidates who get elected falls by 18 percent in pacified favelas relative to favelas under gang rule. If elected councilors target public services to regions where their core voters are, this effect implies that pacification may lower public service provision in pacified favelas.

How do local politicians respond when the state removes territorial control from drug gangs? Do the elected councilors promote more public services in response to pacification to keep up with increased competition? Or do they reduce their attention to pacified favelas when they deliver fewer votes? To answer these questions, I constructed a novel dataset with the location of public service requests made by elected legislators during their term. I collected official documents that councilors write requesting specific actions from the executive branch of the municipal government to address demands from their constituents. These requests are published daily in the official records of the City Council's proceedings and made publicly available. I extracted the requests from all daily proceedings from 2001 to 2020. To study the geographic distribution of legislators' requests, I used text analysis to identify information about the locations mentioned. The dataset includes 60,623 requests from 155 city councilors, spanning two decades of legislative activity. I was able to match 84% of this total to a specific location. In those cases, my data allows me to

observe the location within the city where councilors target public service.

I document new facts about how legislators allocate efforts to promote public services within the city. First, I show that city councilors' votes are geographically concentrated, and that councilors target public service requests to their political base. On average, 35 percent of a councilor's votes come from a single neighborhood. I show a strong correlation between requests and votes at the candidate-neighborhood level: a 10 percent increase in the share of votes is associated with a 6 percent increase in the share of requests targeting that neighborhood. Therefore, councilors do not serve their constituents homogeneously. Instead, they use requests to reward their voters. Second, I show that councilors substantially underserve favelas. From 2001 to 2020, favelas received 35 percent fewer requests per capita than the rest of the city.

Favelas have a history of policy neglect before drug gangs took control over them (Gay, 1994; Perlman, 2010), as is common in squatter settlements across developing contries (Marx et al., 2013). The limited state presence is also a cause, and not only consequence, of criminal dominance (Tilly, 1985; Gambetta, 1996; Acemoglu et al., 2019; Sanchez De La Sierra, 2020). To estimate whether territorial control by criminal groups contributes to deepening the governance gap that exists between low-income favelas and other parts of the city, I compare the distribution of requests directed at pacified favelas and favelas that remained under gang rule, exploiting the variation caused by the UPP program.

I find evidence that politicians' response, when the state retakes control of a favela, varies with its electoral importance. After pacification, councilors substantially increase public service requests targeting pacified favelas. However, this effect is only present in favelas where the councilors already had a political base before pacification. Councilors double the amount of requests targeting favelas in the top 20% in terms of the candidates' vote share. For the remaining favelas, the bottom 80%, pacification had no significant impact on councilors' behavior.

This paper is related to several strands of the existing literature. First, it contributes to the literature studying how organized crime and other non-state armed actors affect the electoral process (Acemoglu et al., 2013; Daniele and Geys, 2015; Daniele and Dipoppa, 2017; Buonanno et al., 2016; De Feo and De Luca, 2017; Alesina et al., 2018; Daniele, 2019; Trudeau, 2022). Most of

this literature has focused on violence targeting political opponents as the channel behind the effects of organized crime on politics. I complement the literature by presenting evidence on the role of territorial control by criminal groups, an increasingly prevalent issue in developing countries. A notable exception is Acemoglu et al. (2013), which examines how the presence of non-state armed groups affects electoral outcomes in Colombia in favor of particular political parties, highlighting how elected politicians benefit from territorial control by armed groups. My paper complements their analysis by showing causal evidence that criminal groups use territorial control to reduce electoral competition, benefiting incumbents and affecting politicians' efforts to provide public services that appeal to voters in dominated areas.

Second, this paper is related to the literature on how organized crime and criminal governance affect local economic development and public goods provision (Acemoglu et al., 2019; Blattman et al., 2021; Melnikov et al., 2022; Fenizia and Saggio, 2022). Melnikov et al. (2022) highlights the importance of territorial control by criminal groups in an urban setting, showing that restrictions to labor mobility are an important channel through which drug gangs reduce local economic development. By examining how elected politicians distribute public service requests across city regions, I complement their study showing that territorial control by criminal groups also affects public service provision in their territory.

Third, this paper contributes to the literature on distributive politics in developing countries (Golden and Min, 2013; Banerjee et al., 2024). I show the importance of removing territorial control from criminal groups to increase political responsiveness to the urban poor. To the best of my knowledge, this is the first paper to examine how criminal organizations affect the distributive allocation of public services across constituents within a city.

The rest of the paper proceeds as follows. Section 2 describes the institutional background. Section 3 presents the data. Section 4 explains the empirical strategy and presents the effects of territorial control by criminal groups on electoral competition and politician behavior. Section 5 concludes.

2 Background

2.1 Drug Gangs in Favelas

Favela is the term used to refer to low-income squatter settlements and shantytowns in Rio de Janeiro. In 2010, the city had a population of six million people, of which approximately 23 percent (1.4 million) lived in favelas (Cavallieri and Vial, 2012). The typical favela in Rio is settlement with brick-and-mortar dwellings and high population density, many built on hillsides. In Figure 1, we can see that they are distributed throughout Rio de Janeiro and are present in every administrative region of the city.

These communities have a history of being stigmatized and neglected by the state (Perlman, 2010), a common thread for squatter settlements worldwide (Marx et al., 2013). Favela residents were often ignored or repressed by the government. During the 1960s and 1970s, for example, the military dictatorship intensified efforts to forcibly remove many of these settlements, and police harassment in favelas was common (Gay, 1994). Consequently, state presence and law enforcement was limited in favelas since their origin. When drug trafficking organizations started to emerge in Rio de Janeiro in the 1980s, they found in favelas an ideal place to operate. The absence of law enforcement and the topography of the favelas made it easier to defend their illegal activities against state repression.

By the 2000s, most favelas in Rio de Janeiro were ruled by drug gangs and militias (Zaluar, 2004; Perlman, 2010). In this paper, I use favelas' boundaries to proxy for the territories controlled by criminal groups. There are studies of criminal governance in Rio de Janeiro's favelas that validate this approximation. Zaluar and Barcellos (2013) interviewed residents across 965 favelas, and in almost all of them residents can name a criminal group that controls the area. Trudeau (2022) finds mentions of a criminal leader in 64% of the city's favelas, which account for 85% of the favela population, using blog posts from the website *Crime News RJ*. Although gang presence can extend beyond favelas, they predominantly operate with a high degree of territorial control inside these areas (Monteiro et al., 2022).

Drug gangs are the primary providers of order inside their territory. They keep law enforce-

ment away through a mix of bribes and violent confrontations. The police is absent from the favelas under gang rule, except during sporadic incursions to repress drug trafficking that are extremely violent (Misse et al., 2010; Lessing, 2018). To protect their activities from state repression and rival gangs effectively, drug gangs maintain strict control over their territory – gangs bear military grade firearms in public, create surveillance networks to monitor the movement of people, and place roadblocks to restrict mobility into their territory (Arias, 2006a; Monteiro et al., 2022).

2.2 Politicians' Access to Favelas

The state is not entirely absent from the favelas and their surroundings. The government operates public schools and health facilities in favelas, for example, and provides basic urban infrastructure like piped water, electricity, and paved streets to some extent. However, state presence inside gang territory is always under scrutiny. While allowing state resources to reach the favela helps improve welfare and maintain residents' support, giving unrestricted access to state agents would threaten their territorial control.

Politicians are no exception to this premise. Drug traffickers strengthen their operations through relations with politicians who have access to state resources (Leeds, 1996; Arias, 2006b). For instance, politicians can bring public services that help improve the gang's legitimacy within the community or provide illicit advantages such as protection from law enforcement. However, gangs also benefit from prohibiting politicians from entering favelas. In addition to undermining the influence of politicians that they distrust inside the community, drug traffickers profit from selling exclusive access to voters. During the elections, political candidates often strike deals with criminal groups to get exclusive rights to campaign in their territory. Only candidates who buy access to the favela can enter and distribute campaign materials, such as pamphlets and posters, host events, etc. This practice has been documented across many favelas (Gay, 1994; Arias, 2006b,a, 2017; Albarracin, 2018; Trudeau, 2022).

Therefore, drug gangs mediate the interactions between voters and politicians to their benefit, leveraging their territorial control. They create obstacles for some politicians to work in favelas while selling preferential access and political support to others. To study the consequences of these

practices, I exploit variation in territorial control caused by the UPP program, one of the largest attempts to reestablish state control over urban areas ruled by criminal groups in the developing world.

2.3   The UPP Program

The pacification program, called *Unidade de Polícia Pacificadora* (UPP), started in December 2008, when Governor Sergio Cabral ordered the police to occupy a favela called Santa Marta to establish a permanent pacification police unit (UPP). To address rampant violence in Rio de Janeiro in preparation for the upcoming 2014 World Cup and the 2016 Olympics, he announced that he would replicate this strategy in other communities.

The policy's objective was to retake ungoverned territories controlled by drug gangs, reduce the presence of armed gang members in the communities, and establish permanent police units (UPPs) specialized in community-oriented policing. The pacification had two phases. First, a special police operations battalion (BOPE) occupied the favela in a heavily armed operation. The government announced them in advance to allow gang members to leave and reduce confrontation. BOPE swept the area in search of drugs, guns, and gang members to weaken the presence of drug traffickers and solidify state control. Second, the police established a permanent police unit and gradually transitioned to a community-policing strategy.

Figure A.1 plots the program's rollout from 2008 to 2015. By May 2014, the police had established 38 UPPs employing more than 9,000 police officers across 196 favelas, reaching around 700,000 individuals (Provenza and Coelho, 2016). Figure 1 displays the geographical distribution of favelas with UPPs in Rio de Janeiro (in purple).

The UPP program reduced violence in the favelas (Cano et al., 2012; Ferraz et al., 2019; Bellego and Drouard, 2023). There was a sharp decrease in police killings, shootings between gangs, and lethal violence in general. Drug seizures and arrests increase following occupations, which reflects police presence but also indicates that drug trafficking did not cease entirely. Gun seizures do not follow this pattern, suggesting that UPPs managed to reduce the presence of armed criminals with territorial control in the community.

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Importantly, in favelas where UPPs restored state control over the territory, drug gangs lost the power to restrict mobility in the favelas and block politicians from reaching the voters in these communities. I use this variation to identify the effect of removing territorial control from drug gangs on electoral competition and politicians' activities in favelas, focusing on city councilors.

2.4 Elections for City Council and Public Service Provision

The *Câmera Municipal do Rio de Janeiro* (henceforth the city council) is the municipal government's legislative branch, composed of 51 city councilors (*vereadores*). Elections for the city council take place every four years in an open-list proportional representation system at-large. Therefore, every voter in Rio de Janeiro faces the same pool of candidates who may seek votes anywhere in the city.

The city council is often the first step into a political career. On average, 1,200 candidates compete for the 51 seats in each election, half of them running for office for the first time. The majority of voters do not know most candidates, but they must choose one using the limited information they can acquire. To gain name recognition and earn voters' support, these candidates heavily rely on physical interactions with voters. Paid ads are not allowed in political campaigns in Brazil, and besides a few exceptions, candidates for city council have minimal exposure on radio and television. While social media have recently gained importance as a way to reach voters (Bessone et al., 2019), the typical ways that candidates for city council campaign are placing posters in public spaces, distributing pamphlets, attending events, running rallies, and interacting with voters face-to-face.

Because of these features, city councilors are particularly affected by gangs' territorial control. First, the informational environment and the campaign technologies they have at their disposal restrict their ability to have broad appeal across voters. While candidates can get votes anywhere in the city, they tend to limit their activities geographically and develop a reputation in specific neighborhoods (Hoyler et al., 2021). Second, because they rely on face-to-face interactions, losing access to favelas makes voters in these communities hard to access.

Therefore, gangs can be a substantial barrier for city councilors without their protection to rep-

resent voters in favelas effectively. Not surprisingly, case studies describing illegal deals where a drug gang sells preferential access to voters in their territory commonly feature politicians running for city council (Arias, 2006a, 2017; Trudeau, 2022).

3 Data

3.1 Favelas and UPPs

I use data on favela boundaries from the *Instituto Municipal de Urbanismo Pereira Passos* (IPP), a branch of the municipal government of Rio de Janeiro that produces data on low-income settlements in the city to inform policy. I obtain baseline socio-economic information at the favela level by aggregating census tracts of the 2000 Census, from the Brazilian census bureau – *Instituto Brasileiro de Geografia e Estatística* (IBGE). Data on the area covered by each UPP unit and the day of occupations are from *Instituto de Segurança Pública* (ISP), the institute responsible for producing official crime statistics for the state of Rio de Janeiro. I overlap favela and UPP boundaries to obtain the pacification status for each favela. Figure 1 displays census tracts overlapping favela boundaries in purple (favelas with UPP) and orange (favelas without UPP).

Table 1 compares the socio-economic characteristics in favelas without UPP, favelas with UPP, and the rest of the city (outside favelas) using information aggregated at the census tract level. Households living in favelas are considerably poorer and have less schooling. Favelas with UPPs have better infrastructure, reflecting that they are in wealthier neighborhoods.

3.2 Municipal Elections

Voting is mandatory, and voters are not allowed to choose the location where they vote. The state's electoral court, *Tribunal Regional Eleitoral* (TRE-RJ), assigns voters to a specific electronic voting machine, which I will refer to as a voting booth, in location near their residence. This assignment is permanent – voters use the same voting booth in different elections unless they have a reason to request reassignment (e.g. if their residence changes to another city region). Therefore, electoral

outcomes in voting booths near a favela will reflect the choices of its residents, and tracking each voting booth across elections allows me to observe the preferences of a similar pool of voters over time.

Data on electoral outcomes, candidates, and voter characteristics are from the federal electoral court, *Tribunal Superior Eleitoral* (TSE). Election outcomes in each voting booth are available for all municipal elections in Rio de Janeiro since 2000, including turnout and the number of votes for each candidate. Voter demographics in each voting booth (number of registered voters, age, gender, schooling, and civil status) are available starting in 2008. I use a panel of voting booths spanning five municipal elections (2000, 2004, 2008, 2012, and 2016) to study the effects of the UPP program, which started in December 2008, right after the 2008 Municipal Elections held in October.

To measure the effect of UPPs on electoral competition, I calculate the *effective number of candidates* (ENC) in each voting booth. The ENC is a standard measure of political competition, and it is the inverse of the Hirschman-Herfindahl index (HHI) used to measure market concentration. The effective number of candidates in voting booth *i* is:

$$\text{ENC}_i = \frac{1}{\sum_p \text{vote share}_{p,i}^2} \tag{1}$$

where *vote share*$_{p,i}^2$ is the square of the vote share of politician *p* in voting booth *i*. The ENC is equal to one when all the votes of a voting booth are concentrated in one single candidate and increases with vote dispersion. Similar to the HHI, it is more sensitive to changes in the vote share of politicians with a high vote share.

Matching favelas to voting booths

I georeferenced all voting locations used in the 2008 Municipal Elections, the last one before the start of the UPP program, using the addresses obtained from TRE-RJ and calculate the distance from voting booths and favelas. While I do not observe the proportion of voters that actually live inside a favela, Table A.1 shows that the share of voters with high school degree and college

degree in a voting booth increases with distance to the nearest favela, supporting the premise that the closest to a favela, the more a voting booth concentrates votes from its residents.

To measure favela residents' voting behavior, I use voting booths within 300 meters of a favela in the main specifications throughout the paper. Since this threshold is arbitrary, I show in the appendix that my results are robust to changing this definition. In Figure 1, I show a map with all the voting locations used in the 2008 Municipal Elections within 300 of favelas. I categorize voting booths into treatment groups as follows. Voting booths are in the control group (never-treated) if they are within 300 meters of a favela that did not receive a UPP unit and are at least 500 meters away from a favela that received a UPP. voting booths are in the treated group if they are within 300 meters of a favela that received a UPP.

Table 2 shows voter characteristics at the voting booth-level. There are, on average, 430 registered voters in each voting booth. Turnout is similar and just above 80% across treatment groups. Although schooling is, on average, very similar in favelas with and without UPPs (Table 1), voters in voting booths near treated favelas are significantly more educated than those near favelas without UPPs. The reason is that polling locations near favelas also include residents from outside, and they are more educated in the wealthier neighborhoods around treated favelas. My identification strategy, which I detail in Section 4, relies on comparing voting booths in columns (2) and (3) before and after pacification.

3.3 City Councilors's Behavior

Data on city councilor' public service requests are from the official records of the *Câmara Municipal do Rio de Janeiro* (CMRJ) proceedings. CMRJ is the municipal government's legislative branch, which I call the city council. The proceedings are published daily in the *Diário Oficial* when the city council is in session. All publications are digitized and made publicly available[1].

I collected the daily records for every session from 2001 to 2020 to measure the behavior of city councilors elected from 2000 to 2016 during their term, a total of 4,301 publications of the DCMRJ spanning two decades of legislative activity. I created an automated routine to extract the

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[1] https://dcmdigital.camara.rj.gov.br/

text of every request (*Indicação*) in each document, identify the city councilor who authored it, and record its date (see Figure A.2). The dataset includes a total of 60,623 requests from 155 city councilors. From the request's text, I extract information about who it addresses (e.g., Department of Transportation) as a proxy for its theme and the location it refers to (neighborhood and street name, if any). Figure 2 presents an example of a request and describes the information I extract from its text.

Matching requests to locations

I compiled a list of possible street names from the universe of addresses (*logradouros*) in Rio de Janeiro provided by Brazil's statistics office (IBGE). Then, I matched each street name to requests' text using a string alignment procedure that allows for edits (i.e., substitutions, insertions, and deletions of characters) (Sosic and Sikic, 2017) to identify street names mentioned in the requests. Allowing for edits is crucial to account for errors introduced when the documents are digitized. I was able to find at least one mention of a street name in 84% of the requests. Using spatial vector data of streets from IBGE, I overlapped streets, neighborhoods, and favela boundaries to obtain a list of street names inside each neighborhood and each favela in Rio de Janeiro. Therefore, my data allows me to observe the location where city councilors target public service requests at the neighborhood and favela level.

Table 3 reports summary statistics at the councilor-legislature level. Most councilors (90%) write at least one request. On average, councilors write 195 requests during a four-year term, but it varies significantly across legislature. Overall, 16.5% of all requests target a favela (20% of requests specifying a street). Note that the number of councilors changes across legislatures because it includes the 51 elected councilors plus their alternates (*suplentes*) that replace councilors that need to be substituted (e.g., city councilors often step away from city council temporarily to accept a job in the executive branch). The alternate is the candidate from the same party or coalition as the replaced councilor who got the most votes and was not elected.

4 Results

4.1 Motivating Facts

In this section, I document four facts about the geography of votes and political responsiveness that motivate and complement my empirical analysis of the impact of removing territorial control from criminal groups. First, I establish that city councilors focus their activities on a few city regions where their political base is concentrated. To do that, I calculate the proportion of requests from each councilor c that targets neighborhood n (R_{cn}), as well as the proportion of votes for councilor c that comes from neighborhood n (V_{cn}), where neighborhoods are the 33 administrative regions of Rio de Janeiro pictured in Figure 1.

FACT 1: *City councilor's votes are geographically concentrated.* While city councilors get elected in a single-district proportional representation system, where candidates can seek votes anywhere in the city to get elected, councilors' political base are geographically concentrated in a few regions. On average, 35% of a councilor's votes come from a single neighborhood, and 55% come from only three neighborhoods, as shown in Figure 3 (F1). Figure A.3 displays the distribution of councilors' vote concentration (red line) using the share of votes in each neighborhood (V_{cn}) to measure the HHI for each candidate. Although candidates can receive votes anywhere in the city, they usually restrict their activities geographically. Their constituency emerges endogenously through building bonds with voters in specific neighborhoods of the city (Hoyler et al., 2021). In Fact 2, I show that the geography of votes predicts the spatial distribution of councilors' public service requests across neighborhoods.

FACT 2: *City councilors target requests to their political base.* City councilors do not serve the city at large homogeneously. They focus on the neighborhoods where their votes came from. The percentage of requests that a councilor target to a neighborhood (R_{cn}) correlates strongly with the share of votes obtained there in the previous elections (V_{cn}). Figure 3 (F2) shows this correlation without any controls. To document Fact 2 controlling for neighborhood characteristics,

I run the following regression:

$$\ln(\mathrm{R}_{cnl} + 1) = \alpha_{cl} + \alpha_{nl} + \beta \ln(\mathrm{V}_{cnl} + 1) + \epsilon_{crl} \tag{2}$$

where α_{cl} and α_{nl} are councilor-legislature and neighborhood-legislature fixed effects, respectively. The neighborhood-legislature fixed effect controls for characteristics such as population density that could make some neighborhoods more attractive than others to all councilors. I restrict the sample to councilors who wrote at least five requests during one term.

The results are shown in Table 4, column (1). I estimate that the elasticity of R_{cn} with respect to V_{cn} is positive and noteworthy. A 10 percent increase in the share of votes leads to a 6 percent increase in the share of requests. Therefore, councilors propose public services in areas where they have a political base.

In column (2), I estimate the same regression at the level of favelas instead of neighborhoods. The elasticity of R_{cn} with respect to V_{cn} is still positive and significant, but smaller. A 10 percent increase in the candidate's share of votes in voting booths within 300 meters of a favela leads to a 2.4 percent increase in the share of requests targeting that favela. One way to interpret this result is that councilors respond less to votes in favelas by requesting more public services.[2]

Facts 1 and 2 help us understand how territorial control by criminal groups may affect how attuned local politicians are to the demands of favela residents and how well they serve this electorate. City councilors act territorially, and criminal groups create barriers for politicians to reach voters inside their territory to gain their favor, learn their demands, and serve them if elected. Therefore, gang rule should reduce electoral competition because it might discourage politicians from seeking votes inside favelas unless they can gain the gang's support, even though favelas represent a large electorate.

As a thought exercise, assume that elections for city council used single-member districts, such that each favela elects a councilor. In this case, by discouraging candidates from running in their districts, criminal rule reduces electoral competition, which has adverse effects on political

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[2]However, measurement error may also explain why the coefficient is smaller since voting booths within 300 meters of a favela also include an unobserved number of voters who are not favela residents.

selection and accountability (Dal Bó et al. (2006); Dal Bó and Finan (2018)). In this case, favelas would elect the same number of councilors regardless of criminal governance. Criminal groups would impact *who* gets elected, but not on whether favelas get any representation at all.

There is an additional effect in a proportional representation system at-large, in which candidates can get elected with votes from any part of the city: criminal rule affects the probability of electing city councilors that have a political base in favelas in the first place. In this case, reducing electoral competition in favelas might have a *positive* impact on public service provision. For example, if gangs succeed in channeling enough favela votes to their preferred candidate, their candidate has a better chance of getting elected. While the adverse effects of reducing electoral competition are still present (e.g., political selection and accountability), having an extra councilor that relies on votes from favelas might compensate them.

In the two facts that follow, I document that favelas indeed have lower electoral competition and are underserved by city councilors.

FACT 3: *Favelas have lower electoral competition.* Votes are concentrated on fewer candidates in voting booths closer to favelas. To establish Fact 3, I estimate the relationship between the effective number of candidates (ENC) in voting booth *i*, election year *t*, and distance to the nearest favela. I start estimating the following equation:

$$\text{ENC}_{it} = \alpha + \alpha_{s(i)t} + \beta \ln(\text{distance}_i) + \theta X_{it} + \epsilon_{it} \tag{3}$$

where $\alpha_{s(i)t}$ is a favela-election year fixed effect, where *s(i)* denotes the nearest favela to voting booth *i*. X_{it} includes voter demographics (schooling, age, gender) and average income for the census tract where the voting booth is located to control for observables that are known to affect political preferences. The coefficient β shows the increase in ENC as distance from the nearest favela increases using within-favela variation.

The results are shown in Table 4, column (3). I estimate that the the effective number of candidates increase by 0.3 percent when distance increases by 10 percent, which corresponds to a 9 percent increase when distance goes from 100 meters to 400 meters from a given favela.

The relationship is not linear in distance. I show that using 100-meters distance bins to estimate the following specification:

$$\text{ENC}_{it} = \alpha_t + \alpha_{s(i)} + \sum_{d=100}^{500} \beta_d \, \mathbb{1}\{\text{distance}_i \in \text{bin}_{d-100}^d\} + \theta X_{it} + \epsilon_{it} \qquad (4)$$

where $\mathbb{1}\{\text{distance}_i \in \text{bin}_{d-100}^d\}$ is a dummy equal to 1 if the distance between voting booth i and the nearest favela $s(i)$ is between $d - 100$ and d meters. I omit the bin going from 0 to 100m.

Figure 3 (F4) shows the estimates for the coefficients on the distance bins, β_d. Table A.2 shows the results using different sets of controls. The preferred specification, in column (4), controls for voter characteristics in 2008 (share of voters with a college degree, share of male voters, and age), the number of registered voters and turnout at the voting booth level, and average income in 2000 in the census tract where the voting booth is located. On average, the effective number of candidates is 14 percent higher in voting booths that are further than 300 meters from a favela than in voting booths within 200 meters of the same favela.

Similar to Trudeau (2022) finding that votes are concentrated in fewer candidates in voting booths with a higher share of favela residents, this significant decrease in the effective number of candidates in voting booths near favelas is compatible with anecdotal evidence that drug gangs restrict access of political candidates to their territory during the campaign period, limiting the pool of candidates that reach favela residents.

There are other features of favelas other than criminal governance that may explain why favela voters choose fewer candidates, even after controlling for observed socioeconomic characteristics. For example, favela voters might have more homogeneous preferences and campaigning in favelas might be more costly due to their geography. The following section mitigates concerns about confounding factors by using variation in criminal governance caused by the pacification policy.

FACT 4: *City councilors underserve favelas.* Lastly, I document that favelas received 35% fewer requests per capita than other parts of the city. This striking gap is depicted in Figure 3 (F4). Councilors targeted to favelas a total of 600 requests per 100,000 people from 2001 to 2020, compared to 1,000 requests to areas outside favelas.

In Table 4, column (4), I show that there is a negative correlation between the number of favela residents and the number of requests at the neighborhood level controling for average income and years of schooling, which may affect the demand for public services, and the total number of votes that city councilors received in the neighborhood.

The data reveals a substantial gap in local politicians' actions to promote public services inside favelas versus outside. This finding speaks to the economics literature studying the reasons why slums persist as a widespread phenomenon across cities in developing countries (see Marx et al. (2013)). Poor citizens often remain underrepresented in democratic governments despite being a large fraction of the electorate. Does removing territorial control from criminal groups remediate that? My paper contributes to this literature in two ways. First, by offering quantitative evidence of such gap using novel data on the spatial distribution of local politicians' efforts to promote public services within a city. Second, by exploiting the rollout of the UPP program to examine the role of criminal rule in explaining why politicians fail to address the needs of favela residents.

4.2 Electoral Effects of Removing Gang Rule

In this section, I use a difference-in-difference design to exploit variation in criminal governance caused by the roll-out of the pacification program starting in 2008. I compare electoral outcomes in voting booths near favelas that received UPP units to voting booths near favelas that never received a UPP unit, in elections before and after pacification. I estimate the following event study using the interaction-weighted estimator proposed by Sun and Abraham (2021):

$$y_{it} = \alpha_i + \lambda_t + \sum_{k=-2}^{-3} \mu_k \, \text{UPP}_{i,t+k} + \sum_{k=0}^{1} \beta_k \, \text{UPP}_{i,t+k} + \delta X_{it} + \varepsilon_{it} \tag{5}$$

where y_{it} is an electoral outcome in voting booth i and election year t. The treatment indicator $\text{UPP}_{i,t+k}$ is equal to one if voting booth i is near a favela that has a UPP unit in election year $t+k$, and zero if it is near a favela without one: $\text{UPP}_{i,t+k} = \mathbb{1}\{\text{Near UPP}\}_i \times \mathbb{1}\{t - E_i = k\}$, where E_i denotes the first election where the favela is pacified. Voting booths near favelas are those within

300 meters from a favela in all main specifications, and I verify that results are robust to changing this threshold. All estimates include voting booth and election year fixed effects, α_i and λ_t. X_{it} controls for the number of registered voters in each voting booth and includes linear time trends to account for long-term trajectories in place prior to the UPP program. I cluster the standard errors at the level of voting locations, which contain multiple voting booths.

Electoral competition. First, I examine the effect of removing territorial control from gangs on the intensity of electoral competition in pacified favelas. To measure electoral competition, I use the effective number of candidates (ENC), which measures vote concentration (see equation 1), and the number of candidates that received a vote in a voting booth. Gangs restrict mobility in their territory to protect their illegal activities from law enforcement and rival criminal groups, restricting the interaction between voters and politicians. Additionally, gangs often sell exclusive rights to campaign in their territory with their support to a small set of candidates. Therefore, removing gang control should increase ENC (decrease vote concentration) and the number of candidates who receive votes in favelas.

Figure 4 shows that UPPs significantly increase electoral competition in pacified favelas. Over the two elections after occupation, the effective number of candidates increased by 5.5, a substantial increase of 23 percent, in pacified favelas relative to the control group. This effect size is large enough to close the gap in ENC between voting booths within 100 meters of favelas and those more than 300 meters away (see Figure 3). The UPPs also increased the number of voted candidates by 4.8 (5 percent) in the first election and 8.5 (9 percent) in the second election after pacification. Interestingly, the effect grows with time. This may happen because voters learn about new candidates that started campaigning in favelas over time. Together, these results suggest that when the state removes gang control, voters consider a broader set of candidates and shift away from the most-voted ones.

Table A.3 reports the results pictured in Figure 4 (in columns 2 and 6) as well as estimates using different distance thresholds to select the voting booths near favelas. The increase in electoral competition is robust to doubling the maximum distance from 200 meters to 400 meters. Compatible with the premise that votes by favela residents drive the increase in electoral competition, the

effect size drops significantly when I estimate equation 5 using only voting booths more than 400 meters from the nearest favela in columns (4) and (8).

Voter participation and other mechanisms. One way gangs could affect the election results in their territory is through voter participation. Gangs could, for example, use their local influence to mobilize voters and ensure they turn out to vote for their candidate (Larreguy et al., 2016; Arias, 2017; Trudeau, 2022). Alternatively, gang-related violence in favelas might discourage voters from showing up (Ley, 2018; Trelles and Carreras, 2012). However, Figure 5 shows that pacification did not cause any meaningful change in voter turnout, which is high across the city, fluctuating around 80%. While voters are equally likely to show up on election day, the voters who show up are less likely to spoil their ballots. I find a small increase in valid votes (as a share of turnout) in the second election after pacification. Although this is only a 2 percentage point increase (2.5 percent), this could be because voters are more informed about candidates running for city council or more likely to find a candidate that they want to support.

We can rule out the possibility that the increase in vote dispersion and the number of voted candidates is driven by voter participation. We can also conclude that the effects that UPPs have on political responsiveness cannot be attributed to changes in the size of the electorate caused by differential voter participation on election day. This is in line with accounts from interviews with favela residents that voters did not express marked fear that their votes would be monitored in any way.

One alternative explanation for the increase in vote dispersion and the number of voted candidates in pacified favelas is that voters' priorities become more diversified once gangs lose territorial control: voters start basing their choices on a wider variety of issues, so they pick a wider array of candidates. The bottom graphs in Figure 5 provide evidence against this hypothesis. First, I show that vote dispersion did not change significantly in the race for mayor. Mayors do not face the same constraints as city councilors to reach voters in favelas because they do not rely on face-to-face interactions as much in their campaigns. For example, they have more media coverage and participate in televised debates. While they are not affected by territorial control as much, we still expect voter dispersion to increase if what is driving the results is pacification's effect on

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the diversity of voter preferences. Second, using a measure of party ideology (Power and Zucco, 2009; Zucco and Power, 2023), I find no effect of pacification on the average party ideology of the candidates for city council that favela voters choose.

Who benefits from more electoral competition? Although I cannot observe deals between candidates and criminal groups, some politicians are also better positioned to strike deals with drug gangs to secure their support than others. For example, politicians in power with access to state resources can offer better deals to criminal groups to buy their support. Similarly, candidates with a high chance of getting elected are more attractive partners. Therefore, I examine if removing territorial control from gangs disproportionately benefits political newcomers at the expense of well-established politicians.

First, I look at the vote share of first-time candidates – people who are running for public office for the first time. Second, I focus on two groups of candidates with political power and advantages in accessing state resources: incumbents and candidates affiliated with MDB. Candidates running for MDB might have more access to state resources because MDB is the most powerful political party in Rio during this period: both the mayor and the governor are from MDB at the start of the UPP program, and MDB holds the most seats in the city council.

Using the universe of all candidates that ran for any office in the state of Rio de Janeiro since the 1998 General Elections, I define the dummies $FirstCandidacy_{it}$, equal to one in the first election year that the candidate shows up and zero otherwise, and $Incumbent_{it}$, equal to one if candidate i served as city councilor won an election before t. Because I do not observe candidates' history before 1998, I exclude the 2000 Municipal Elections from the analysis to avoid misclassifying experienced politicians as newcomers.

Figure 6 shows that political newcomers perform significantly better in pacified favelas. By the second election after pacification, the vote share of candidates running for office for the first time increased by six percentage points (an 18 percent increase). We also see a 25 percent increase in the number of newcomers receiving votes in pacified favelas relative to favelas under gang rule. This boost to newcomers comes at the expense of well-established politicians. The vote share of incumbent city councilors running for reelection decreased by ten percentage points (a 15 percent

decrease), and the vote share of MDB candidates fell by 3 percentage points by the second election after pacification (a 20 percent decrease).

The most established politicians are the ones who incur political losses from pacification, while newcomers seem to grab more of the favela voters' support. This finding underlines a potential conflict of interest between voters and politicians. Incumbent politicians benefit electorally from armed groups' territorial control. Therefore, they may be reluctant to support policies to remove criminal control and extend the state's protection to areas that vote for them (Acemoglu et al., 2013; De Feo and De Luca, 2017).

Accountability of elected councilors to favela voters. Note that candidates compete for votes in the entire city, and votes from favelas are only a fraction of the total votes. Performing better in favelas does not automatically imply that newcomers will get more seats on the city council. Instead, the implication may be that a higher share of favela votes end up going to candidates that fail to get elected. Table A.5 shows that candidates who have previously held political office win half of the seats, even though they only account for five percent of the candidate pool. And while half of the candidates for city council are running for office for the first time, they win only 14 percent of the seats.

Because experienced politicians are more likely to win when they run, a consequence of redistributing votes towards newcomers at the expense of more established politicians is that a higher share of votes in pacified favelas go to weaker candidates who fail to get elected. To test that, I calculate the vote share the newly elected councilors received in each polling station. First, I define the dummy $Elected_{ct}$ that is equal to one if candidate c got elected in election year t and zero otherwise. Then, I compute the vote share of elected councilors in polling station i and election t (*Vsh. Elected$_{it}$*) as the sum of votes that went to elected candidates divided by the total votes in the polling station:

$$\text{Vsh Elected}_{it} = \frac{\sum_c \text{Votes}_{cit} \times \text{Elected}_{ct}}{\sum_c \text{Votes}_{cit}}$$

Figure 7 and Table A.4 summarize the effects of pacification on the vote share of newly elected councilors. In Figure 7 (a), we see that the elected councilors performed relatively worse in paci-

fied favelas after pacification. Their vote share dropped by eight percentage points, a substantial decrease of 18 percent. In Figure 7 (b) and (c), I split elected councilors into two categories: (i) incumbents who got reelected and (ii) councilors who got elected for the first time. We can see that the decrease in the vote share of elected councilors is driven entirely by the reelected incumbents and not councilors who got elected for the first time.

We have seen that councilors serve areas of the city proportionally to the amount of votes that they yield. Therefore, this decrease in the vote share of elected councilors implies that removing drug gangs could have an adverse effect on the provision of public services in pacified favelas.

4.3   Effects of Removing Gang Rule on Political Responsiveness

How do local politicians respond when the state removes territorial control from drug gangs? Do the elected councilors promote more public services in response to pacification, in order to keep up with increased competition? Or do they reduce their attention to pacified favelas when they deliver less votes? In this section, I address these questions using novel data on the spatial distribution of public services that city councilors propose

I start by looking at the effects of the UPP program on requests for public services at the favela level. The goal is to test (1) whether more councilors target pacified favelas once access to voters is unrestricted and (2) if pacified favelas receive more public service requests in total as a result. I use outcomes aggregated to six-month periods. Using the interaction-weighted estimator proposed by Sun and Abraham (2021), I estimate an event study comparing favelas that received UPPs to favelas that were not pacified:

$$y_{st} = \alpha_s + \lambda_t + \sum_{k \leq -2} \mu_k \, \mathrm{UPP}_{s,t+k} + \sum_{k \geq 0} \beta_k \, \mathrm{UPP}_{s,t+k} + \beta \sum_{k > 3} \mathrm{UPP}_{s,t+k} + \varepsilon_{st} \tag{6}$$

where y_{st} is an outcome in favela s and period (half-year) t. The treatment indicator $\mathrm{UPP}_{s,t+k}$ is equal to 1 if favela s has a UPP unit in period $t+k$ and zero otherwise: $\mathrm{UPP}_{s,t+k} = \mathbb{1}\{\text{Receive UPP}\}_s \times \mathbb{1}\{t - E_s = k\}$, where E_s denotes the period when which occupation occurred. I bin distant relative periods $k < -3$ and $k > 3$. α_s and λ_t are favela and time fixed effects, respectively. The main

outcomes are (1) the number of councilors that targeted at least one request to favela s and (2) the number of requests that targeted favela s in period t.

Although the estimates are noisy, Figure 8 provides initial evidence that removing drug gangs led to a temporary increase in public service requests targeting the pacified favelas and more councilors promoting public services in those areas. I report these results and the effect aggregated over the periods following pacification in Table 5, columns (1) and (3).

As the number of requests has a large number of zeros, I focus on the extensive margin – the probability that a favela gets a request during a six-month period – in Table 5, column (2). Only 17 percent of the favelas are targeted by a request. Following the UPP occupations, the probability of receiving a request increases by 30 percent (significant at the 5% level). Columns (2) and (3) shows that political competition, measured by the number of councilors and the effective number of councilors, also increases by 30 percent.

These results allow us to see the overall effect of removing gang rule on political representation combining shifts in politicians' individual behaviors and changes in the composition of councilors. To address concerns that compositional changes in the city council may correlate with the timing of occupations, I estimate equation 6 using favela-legislature fixed effects, α_{sl}. This should control for changes in political priorities that may occur when a new set of councilors gets elected. Table A.6 shows the results using within-legislature variation, where the pool of legislators is unchanged. Overall, the effects are qualitatively similar. I find a smaller increase of 20 percent in the probability of receiving a request and the number of councilors significant at the 10% level. The effective number of councilors also increases by 20 percent, but this is no longer statistically significant at conventional levels.

Exploiting the variation across politicians and favelas. In this section, I focus on how local politicians' response to removing gang rule differs across favelas. Of particular interest is the heterogeneity of the effect that UPPs had on legislators' activities based on whether they already had a political base in pacified favelas. We have seen that politicians promote public services in areas where they have a political base. With this in mind, I test if they respond more to pacification when they have more votes in the area before the UPP occupation.

I exploit variation in politicians' vote share across different favelas to compare the outcomes of councilor c before and after the UPP occupation and across favelas where they had different levels of electoral support in the previous elections. For each councilor, I compute the proportion of votes coming from each favela. To measure the number of votes from a favela, I use voting booths within 300 meters of its borders. I verify that the results are robust to varying this threshold. For councilors who serve in more than one legislature, I use only the votes from the first time they are elected to office. Therefore, the proportion of votes for councilor c coming from favela s is:

$$\%\text{Votes}_{cs} = \frac{\sum_i \text{Votes}_{ci} \times \mathbb{1}\{\text{dist}_{si} \leq 300m\}}{\text{Total Votes}_c} \times 100$$

Then, I define $VoteShareQuintile_{cs}$, a categorical variable equal to τ if the proportion of votes for councilor c coming from favela s is in the τ-th quintile of the distribution of $\%Votes_{cs}$ for councilor c across all favelas. Table A.7 provides summary statistics of favela vote shares (ranging from 0 to 100) by decile. On average, across all 148 councilors and 127 favelas, a favela accounts for 0.3% of councilors' total votes.

To examine how politicians respond when the state retakes control of a favela varies with its electoral importance, first I estimate the following static specification at the councilor-favela level for each quintile using the interaction-weighted estimator (Sun and Abraham, 2021):

$$y_{cst} = \alpha_{cs} + \lambda_t + \beta \, \text{UPP}_{st} + \varepsilon_{cst} \quad \text{if } VoteShareQuintile_{cs} = \tau \tag{7}$$

where y_{cst} is the number of requests by councilor c that target favela s in period (half-year) t; α_{cs} are councilor-favela fixed effects, and the treatment indicator UPP_{st} is equal to 1 if favela s has a UPP unit in period t. I drop councilors that never wrote any request during their time in office from this analysis.

Importantly, once we control for councilor fixed effects and focus on areas where they have a stronger political base, we find a substantial and long-lived increase in public service requests that councilors target to favelas after pacification. Table 6 summarizes the estimates by quintile. It reveals a substantial increase in public service requests targeting pacified favelas when they are

more electorally relevant to the candidate. Relative to favelas in the top 20% that remain under gang rule, councilors substantially increase public service requests targeting pacified favelas in the top 20% by 100 percent. However, there is an important non-linearity in this effect. In all favelas in the bottom 80%, pacification had no significant impact on councilors' behavior.

To show the dynamic effects of pacification, I estimate the event study at the councilor-favela level separately for the favelas in the top 20% and favelas at the bottom 80% using the interaction-weighted estimator (Sun and Abraham, 2021):

$$y_{cst} = \alpha_{cs} + \lambda_t + \sum_{k=-2}^{-3} \mu_l \, \text{UPP}_{s,t+k} + \sum_{k=0}^{6} \beta_k \, \text{UPP}_{s,t+k} + \varepsilon_{cst} \qquad (8)$$

where y_{cst} is the number of requests by councilor c that target favela s in period (half-year) t; α_{cs} are councilor-favela fixed effects. The other terms are defined as in equation 6. Again, I drop councilors that never wrote any request during their time in office from this analysis.

Figure 9 shows the contrast between politicians' response to pacification in favelas in the top 20% to their response in favelas in the bottom 80%. Consistent with our previous results at the favela level, removing territorial control from drug gangs leads to more requests targeting the territory. Here, we show evidence that the effect is driven by councilors promoting public services in favelas where they already had a sizable political base. Focusing on councilors' response in favelas at the top 20%, we see a larger increase in legislators' activities to promote public services in pacified favelas that persists over the three and a half years after the occupation that I can estimate using variation within councilors. In favelas in the bottom 80%, pacification had no significant impact.

Table 7 reports the dynamic effects pictured in Figure 9, in columns 3 and 4, as well as estimates using alternative distance thresholds to measure votes in favelas. The effects are robust to varying the threshold from 200 to 400 meters, although the point estimates get smaller once I include voting booths further from favelas. The point estimates get smaller when I add voting booths farther from favelas, likely due to measurement error in the favela vote share coming from the higher proportion of non-favela residents in distant voting booths.

5   Conclusion

In this paper, I examine how territorial control by criminal groups affects governments' distribution of public services to the urban poor. To do that, I study the gradual implementation of a pacification policy that restored state control over some of the city's favelas while leaving others under gang dominance using a difference-in-difference framework.

To examine how local politicians respond when the state removes territorial control from drug gangs, I constructed a novel dataset with the location of public service requests made by elected legislators during their term, spanning two decades of legislative activity. This allows me to document new facts about how local legislators allocate efforts to promote public services within the city. First, I show that city councilors' votes are geographically concentrated and that councilors target public service requests to their political base. Second, I show that councilors substantially underserve favelas.

I shed light on an important channel through which criminal groups affect local public service provision: electoral competition. I show that restoring state control facilitates politicians' access to voters and substantially increases electoral competition in favelas. Notably, political newcomers benefit electorally from removing gang dominance at the expense of well-established politicians. This result reveals a potential conflict of interest between voters and politicians. Because incumbents benefit electorally from armed groups' territorial control, they may be reluctant to support policies to remove criminal governance and extend the state's protection to their constituents.

Politicians' response to pacification varies with the favelas' electoral importance. After pacification, councilors substantially increased public service requests targeting pacified favelas, showing the importance of removing territorial control by criminal groups in improving governance in low-income neighborhoods. However, this effect is only present in favelas where the councilors already had a political base before pacification.

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Figure 1: Favelas and Voting Locations in the City of Rio de Janeiro
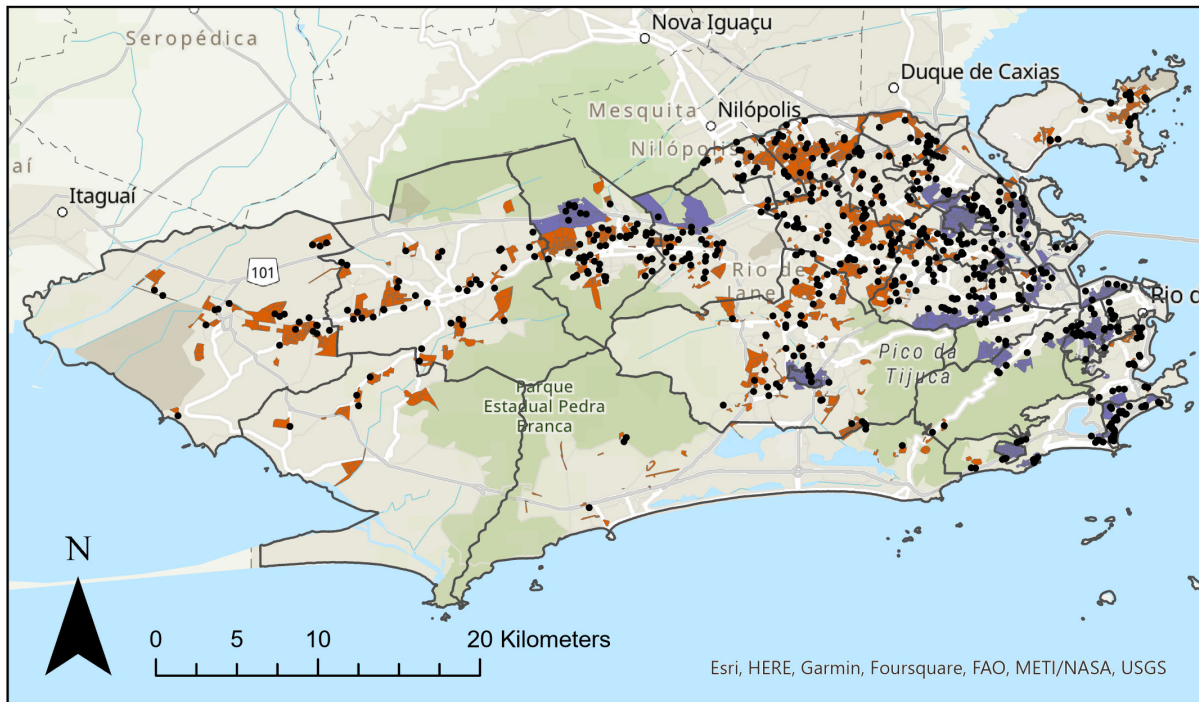
- Voting locations within 300m of favelas
- Administrative regions
- Favelas without UPP
- Favelas with UPP

Notes: The map shows census tracts from the 2000 Census that overlap with favela boundaries in purple (favelas with UPP) and orange (favelas without UPP). The black dots show all voting locations in the 2008 Municipal Elections within 300 meters of these census tracts. To identify the effects of removing criminal governance on election results, I compare outcomes in voting booths within 300 meters of favelas with UPPs to voting booths within 300 meters of never-treated favelas before and after pacification using difference-in-differences.

Figure 2: Example of City Councilors' Requests

(1) Vereadora **NEREIDE PEDREGAL**

DESPACHO: A imprimir as Indicações n°s 6.814 a 6.837.
Encaminhe-se.
Em 5.5.2010
JORGE FELIPPE - PRESIDENTE

(2) N° 6.814, de 5.5.2010 – INDICO à Mesa Diretora, na forma regimental (artigos 201 e 202, RICMRJ), seja oficiado o Exmo. Sr. Prefeito do Município do Rio de Janeiro, carecendo providências junto a Secretarias Municipais de Obras – SMO no **(3)** sentido de providenciar o saneamento e a drenagem do Canal do Carapiá, situado na Estrada Carapiá, na Ilha de Guaratiba. **(4)**

Tal pedido visa proporcionar maior segurança aos moradores, que ficam bastante apreensivos com a possibilidade de transbordamento do canal nas épocas de chuva e maré alta, bem como com o acúmulo de lama que acarreta diversos transtornos no local.

Vale lembrar que, ultimamente as inundações têm sido frequentes e estão sendo intensificadas pela falta de drenagem e limpeza do rios e canais da região.

Ressalte-se que o presente pedido se funda no pleito dos próprios moradores do bairro, que ficam sujeitos à própria sorte de não se tornarem vítimas dos efeitos das fortes chuvas que tem assolado o nosso Município.

Notes: This figure shows an example of a city councilor's request and highlights the following pieces of information that I extract from the text: **(1) Author** (councilor Nereide Pedregal), **(2) Request ID and date** (May 5th, 2010), **(3) Addressee**, the department to which the councilor is sending the request (Secretaria Municipal de Obras), and **(4) Street and neighborhood** (Estrada Carapiá, Guaratiba). The councilor is requesting the city's Department of Construction to build drainage around a canal that overflows frequently. She also stresses that the request originated from demands made by the neighborhood residents.

Figure 3: Motivating Facts

(F1) Votes are spatially concentrated

(F2) Cllrs. target political base

(F3) Slums have lower electoral competition

(F4) Slums are underserved
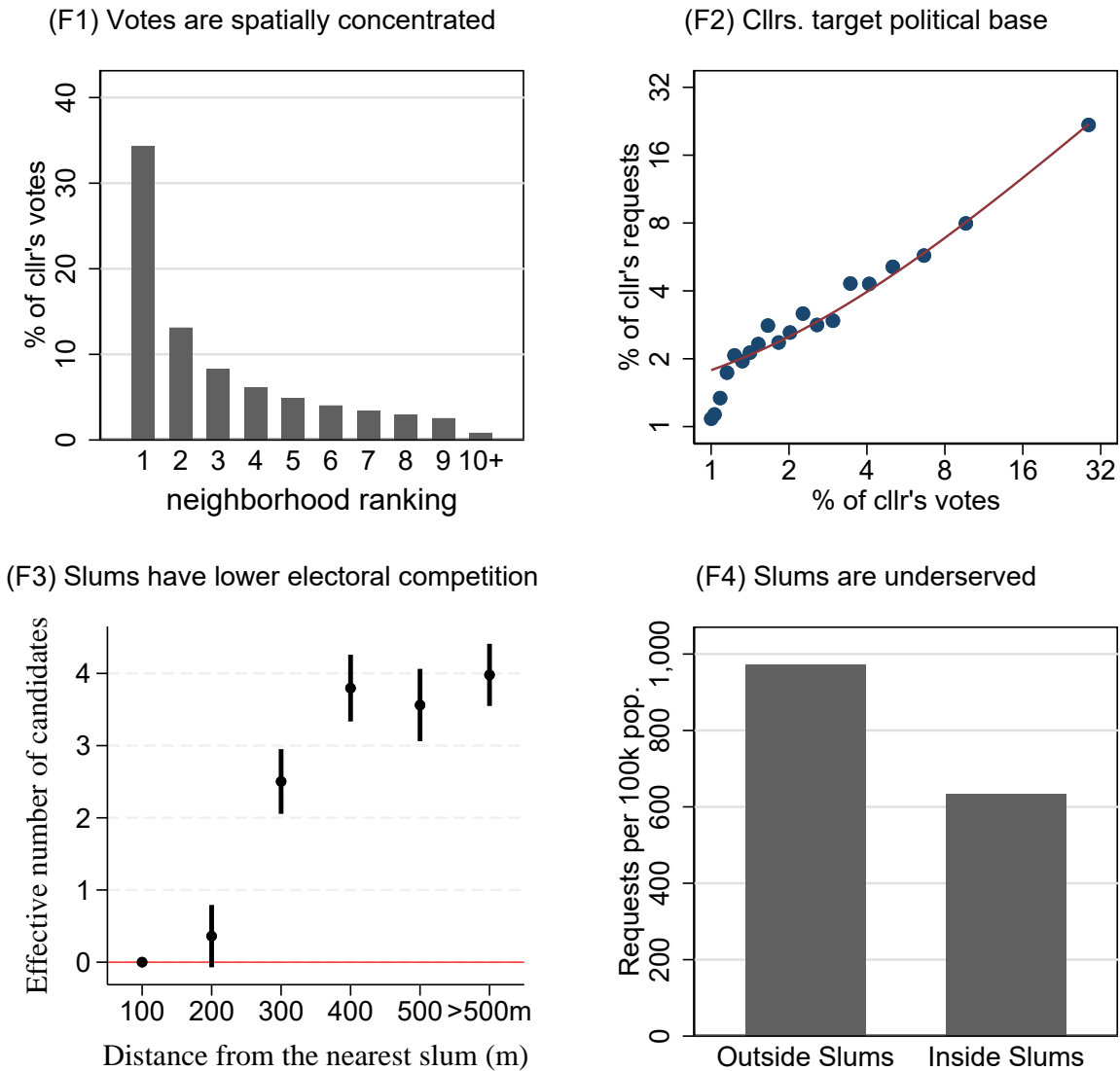
Notes: **(F1)** The plot shows the share of councilors' votes that come from the neighborhoods where they received most votes. The x-axis is the councilor-specific neighborhood ranking, where 1 represents the neighborhood where the candidate received the most votes. **(F2)** Binscatter using 20 equal-sized bins. Each observation corresponds to a councilor, term, and administrative region. The plot shows the correlation between councilors' share of votes coming from a region (x-axis) and the share of requests that councilors target to that region. Axes are shown using a log scale. **(F3)**. This figure plots the coefficients β_d from equation 4. In the vertical axis are the 100-meter distance bins, labeled with its upper bound. The point estimates show the increase in ENC compared to voting booths within 100 meters of a favela. **(F4)** Total requests per 100,000 residents throughout five legislatures, from 2001 to 2020.

Figure 4: The Effect of UPPs on Electoral Competition
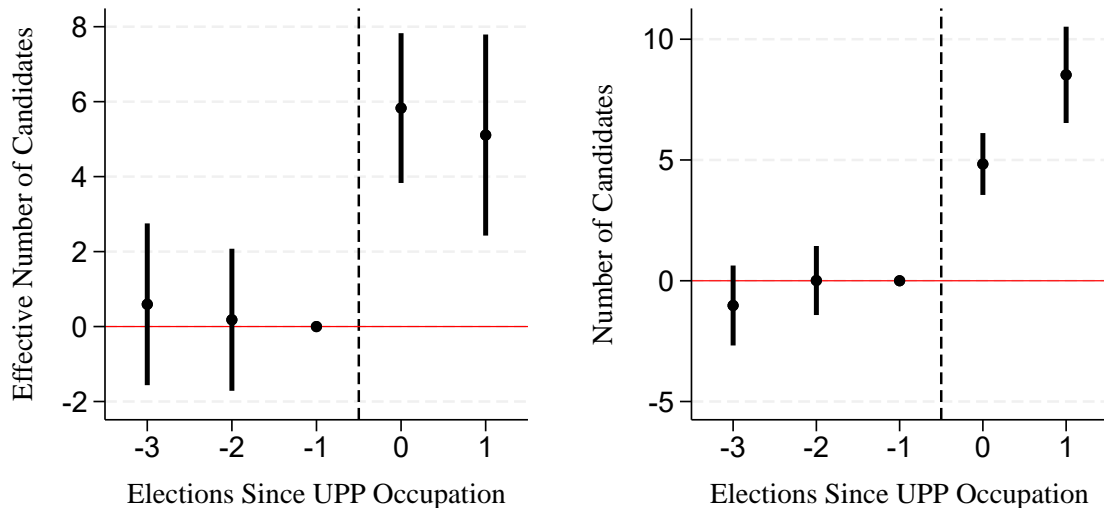
Notes: The dots represent the coefficients on the lags (μ_k) and leads (β_k) from equation 5 using the effective number of candidates (left) and the number of candidates that receive any vote (right) at the voting booth level as outcomes. The bars represent 95% confidence intervals. Table A.3 reports these results in columns (2) and (6).

Figure 5: The Effect of UPPs on Voter Participation and Preferences
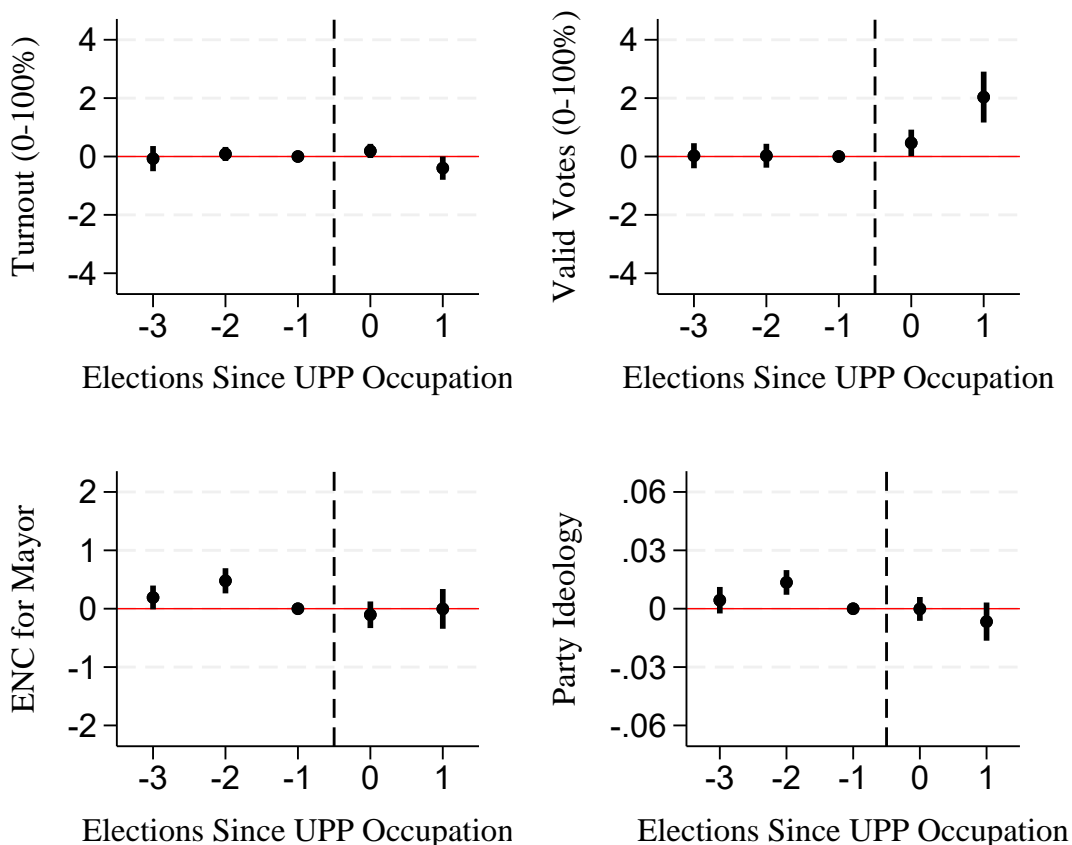
Notes: The dots represent the coefficients on the lags (μ_k) and leads (β_k) from equation 5. The graphs at the top show the effect of UPPs on voter participation using turnout (0-100%) (left) and the share of valid votes (0-100%), measured as a share of the voters who showed up to vote (right) at the voting booth level as outcomes. The graphs at the bottom show the effects of UPPs on overall political preferences using the effective number of candidates for mayor (left) and the party ideology index from Power and Zucco (2009); Zucco and Power (2023) (right). The bars represent 95% confidence intervals.

Figure 6: Who Benefits From More Electoral Competition: Newcomers vs. Political Establishment
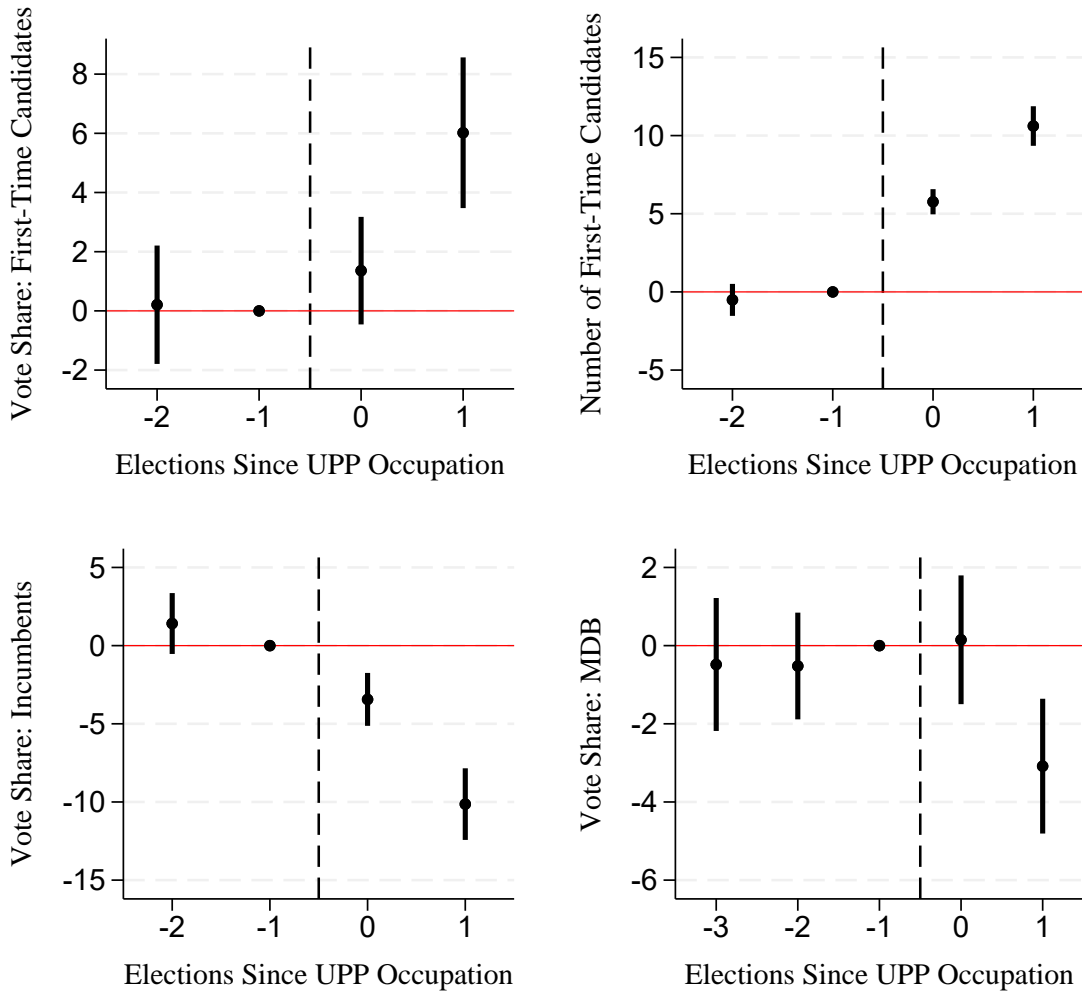
Notes: The dots represent the coefficients on the lags (μ_k) and leads (β_k) from equation 5 using as outcomes the vote share of candidates who have never been elected (left) the vote share of candidates running for office for the first. The bars represent 95% confidence intervals. The graphs at the top show the effect of UPPs on the vote share of candidates running for office for the first (0-100%) (left) and number of newcomers. The graphs at the bottom show the effects of UPPs the incumbents' vote share (left) and MDB candidates' vote share (right). The bars represent 95% confidence intervals.

Figure 7: Effect of UPPs on the Vote Share of Newly Elected Councilors
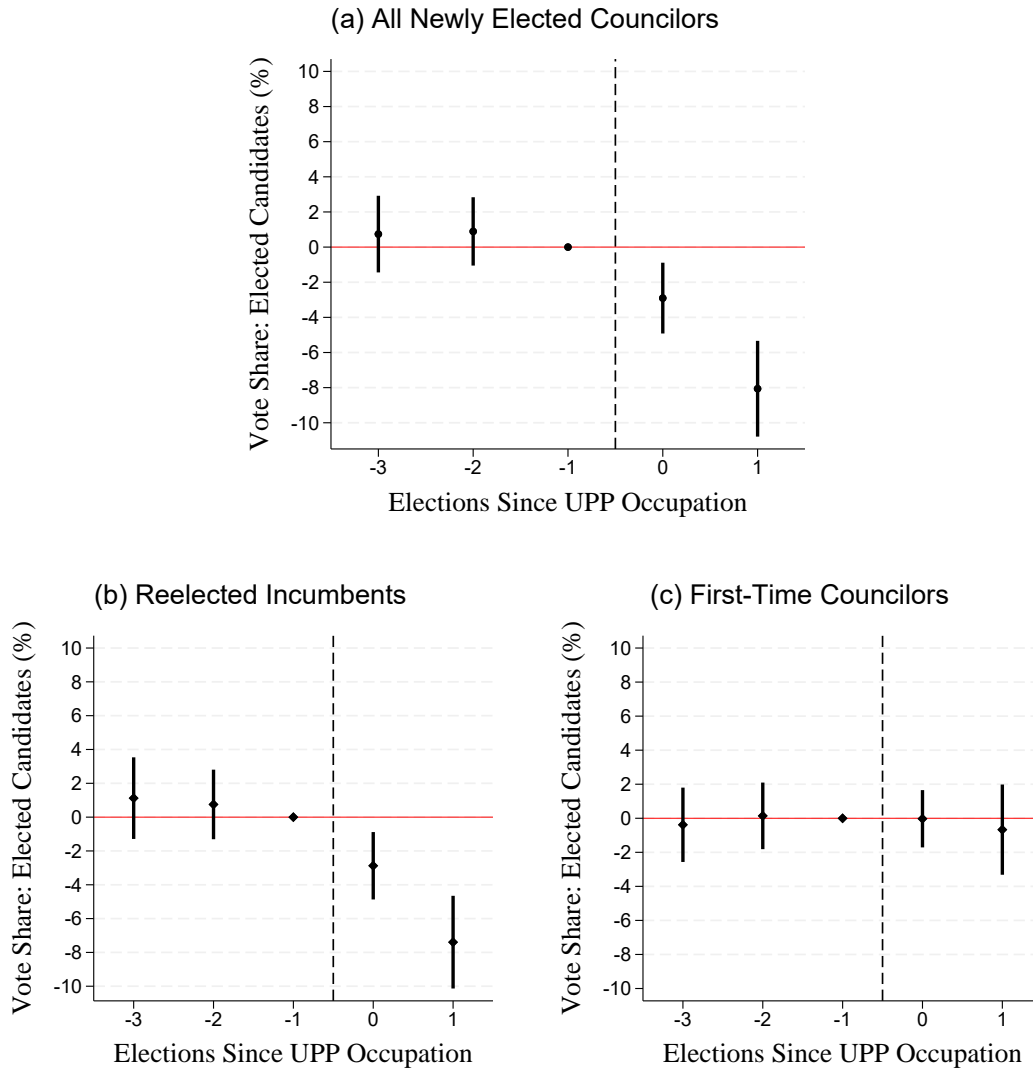
(a) All Newly Elected Councilors

(b) Reelected Incumbents

(c) First-Time Councilors

Notes: The dots represent the coefficients on the lags (μ_k) and leads (β_k) from equation 5 using as outcomes the vote share of candidates who have never been elected (left) the vote share of candidates running for office for the first. The bars represent 95% confidence intervals.

Figure 8: Effect of UPP on Requests at the favela Level
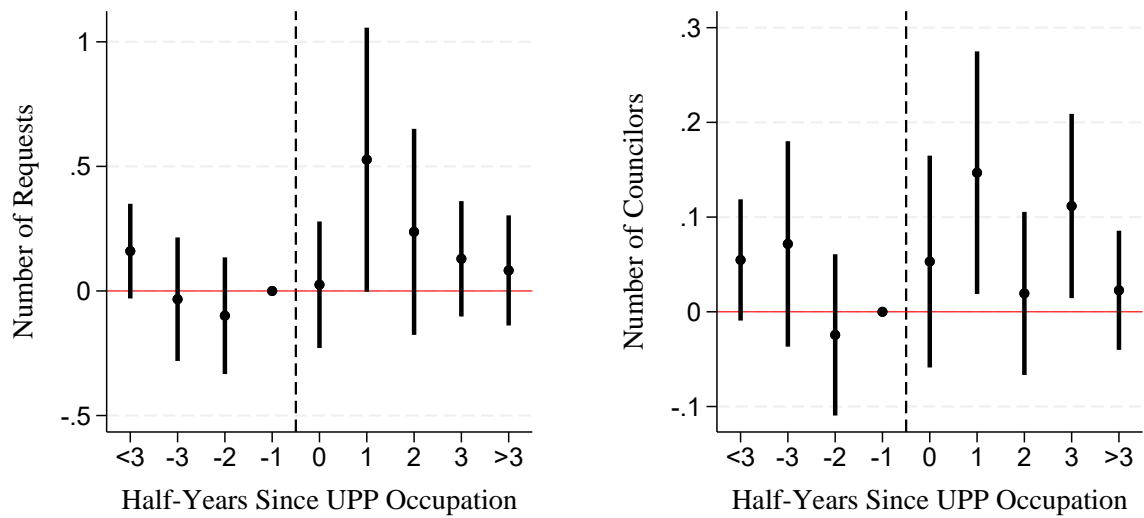
Notes: The dots represent the coefficients on the lags (μ_k) and leads (β_k) from equation 6 binning distant relative periods $k < -3$ and $k > 3$. The bars represent 95% confidence intervals. Table 5 reports these results in columns (1) and (3).

Figure 9: Dynamic Effects of UPPs on Requests at Councilor-Favela Level

Heterogeneity by %Votes$_{cs}$

(a) Top 20%   (d) Bottom 80%
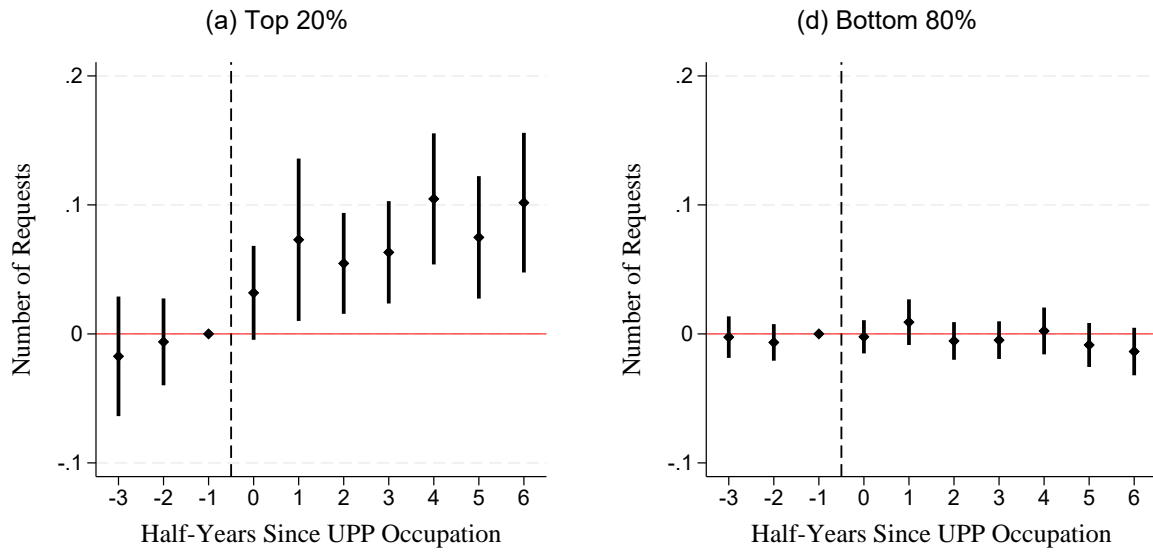
Notes: The dots represent the coefficients on the lags (μ_k) and leads (β_k) from equation 8. The bars represent 95% confidence intervals. Table 7 reports these results in columns (3) and (4).

Table 1: Socio-economic Characteristics in Favelas Using 2000 Census Tracts

	(1) Outside Favelas	(2) Favelas W/o UPP	(3) Favelas With UPP
Men (%)	46.0	49.0	48.5
	(2.65)	(1.95)	(1.93)
Years of schooling (avg.)	9.4	5.1	4.9
	(2.36)	(0.76)	(0.74)
Monthly income (R$, avg.)	1521.9	355.4	351.5
	(1320.16)	(91.21)	(135.67)
% Households with piped water	98.7	93.6	96.7
	(7.22)	(18.00)	(10.29)
% Households connected to sewage system	81.3	65.2	84.9
	(30.89)	(36.94)	(26.14)

Notes: Data from the 2000 Census (IBGE) at the census tract level. Table shows socio-economic characteristics in census tracts (1) outside favelas, (2) inside favelas that are never pacified, and (3) inside favelas that receive UPPs.

Table 2: Voter Demographics in voting booths, 2008 Elections

	(1) Outside Favelas	(2) Favelas W/o UPP	(3) Favelas With UPP
Distance to nearest favela (m)	827.4	131.7	123.6
	(700.33)	(94.74)	(98.73)
Registered voters	428.7	444.9	437.9
	(52.47)	(45.98)	(45.01)
Turnout (%)	81.1	83.4	81.0
	(5.65)	(4.40)	(5.37)
Age	46.1	43.7	44.8
	(7.39)	(7.14)	(7.17)
Men (%)	45.4	45.6	44.7
	(9.01)	(8.87)	(8.53)
College degree (%)	11.8	3.2	7.8
	(11.45)	(3.77)	(9.53)
High school degree (%)	37.9	22.3	27.6
	(17.71)	(9.91)	(17.79)
Observations	5191	2090	1474

Notes: The table shows voter demographics in the 2008 Municipal Elections at the voting booth level. (1) *Outside favelas* includes voting booths more than 300 meters from any favela, (2) *favelas W/o UPP* includes voting booths within 300 meters of a favela that never received a UPP unit (and more than 300 meters away from any favela that got pacified), and (3) *favelas With UPP* includes voting booths within 300 meters from favelas that received UPP units.

Table 3: Descriptive Statistics of Councilors' Usage of Requests Per Term

	(1) 2000-2004	(2) 2005-2008	(3) 2009-2012	(4) 2013-2016	(5) 2017-2020
% author any request	88.5	90.9	93.9	88.7	92.3
	(32.26)	(28.97)	(24.04)	(31.91)	(26.85)
Requests	302.7	234.4	188.8	124.2	142.2
	(683.14)	(628.03)	(342.26)	(192.94)	(315.48)
Requests specifying street	250.8	194.3	160.5	100.2	123.1
	(580.62)	(517.18)	(300.72)	(156.11)	(296.16)
Requests targeting slum	49.4	34.4	34.3	23.0	22.4
	(94.58)	(75.31)	(62.26)	(39.39)	(51.12)
Observations	52	66	66	62	65

Notes: The table shows the usage of public service requests per councilor in each four-year term from 2000 to 2020. *Observations* (councilors) includes every politician who served as a councilor per term, including the 51 elected councilors and their alternates (*suplentes*) that take office when councilors need to be substituted.

Table 4: Summary of Motivating Facts

VARIABLES	(1) $\log (R_{cn} + 1)$	(2) $\log (R_{cn} + 1)$	(3) log ENC	(4) Requests
$\log (V_{cn} + 1)$	0.61***	0.24***		
	(0.01)	(0.00)		
Log distance			0.03***	
			(0.00)	
Log favela population				-9.42**
				(4.22)
Log population				38.50*
				(19.92)
Log total votes for city councilors.				81.36***
				(17.02)
Observations	8,646	32,766	38,588	289
Adjusted R-squared	0.43	0.12	0.76	0.34
Mean of dep. var.	3.966	0.135	29.96	114.5

Notes: R_{cn} is the proportion of requests from each councilor c targeting neighborhood n. V_{cn} is the proportion of votes for councilor c that comes from neighborhood n. *ENC* is the effective number of candidates, a measure of political competition explained in equation 1. *Requests* is the number of requests.

Column (1) shows the estimate for the elasticity of R_{cn} with respect to V_{cn} using councilor-neighborhood level data, following equation 2. Neighborhoods are the 33 administrative regions in Rio, shown in Figure 1. Column (2) estimates equation 2 using candidate-favela level observations. Column (3) shows the relationship between *ENC* distance to the nearest favela using voting booth-level data, following equation 3. Column (4) shows the negative correlation between the number of favela residents and the number of requests using neighborhood-level analysis.

Table 5: Effects of UPPs on Public Service Requests at the Favela Level

	Requests	$\mathbb{1}\{\text{Request} > 0\}$	Number Cllrs.	E.N.Cllrs.
	(1)	(2)	(3)	(4)
Static DID Specification				
UPP	0.200*	0.049**	0.071**	0.060*
	(0.114)	(0.025)	(0.035)	(0.034)
Dynamic Effects				
Lag >3	0.160*	0.040*	0.055*	0.041
	(0.097)	(0.022)	(0.033)	(0.035)
Lag 3	-0.033	0.028	0.072	0.062
	(0.126)	(0.037)	(0.055)	(0.052)
Lag 2	-0.099	-0.011	-0.024	-0.031
	(0.119)	(0.032)	(0.043)	(0.043)
Lead 0	0.025	0.030	0.053	0.050
	(0.130)	(0.036)	(0.057)	(0.054)
Lead 1	0.527*	0.071*	0.147**	0.098*
	(0.270)	(0.037)	(0.065)	(0.053)
Lead 2	0.237	0.036	0.019	0.012
	(0.211)	(0.036)	(0.044)	(0.045)
Lead 3	0.129	0.080**	0.112**	0.110**
	(0.118)	(0.035)	(0.050)	(0.049)
Lead >3	0.082	0.026	0.023	0.028
	(0.113)	(0.025)	(0.032)	(0.032)
Observations	22360	22360	22360	22360
Adjusted R-squared	.18	.26	.32	.3
Favela & Time FE				
Mean of Dep. Var (Control)	.446	.17	.227	.214

Table 6: Effect of UPPs on the Number of Requests. Heterogeneity by Vote Share Quintiles

	Favela Vote Share Quintile				
	(1)	(2)	(3)	(4)	(5)
UPP	0.007	-0.004	0.006	0.009	0.072***
	(0.005)	(0.007)	(0.011)	(0.007)	(0.007)
Observations	37105	29012	27694	25126	25095
Adjusted R-squared	.02	.02	-.02	.01	.12
Favela & Time FE	Yes	Yes	Yes	Yes	Yes
Mean of dependent variable	.005	.007	.016	.033	.072

Notes: This table shows the effect of pacification on the number of requests using candidate-favela level analysis, following equation 7. UPP is the treatment indicator, equal to one if favela s has a UPP unit in period t. Each column shows the estimate using favelas in different Vote Share Quintile. $VoteShareQuintile_{cs}$ is a categorical variable equal to τ if the proportion of votes for councilor c coming from favela s is in the τ-th quintile of the distribution of $\%Votes_{cs}$ for councilor c across all favelas.

Table 7: Effects of UPPs on Requests

Heterogeneity By Favela's Relevance as Political Base

	Dist ≤ 200		Dist ≤ 300		Dist ≤ 400	
	(1)	(2)	(3)	(4)	(5)	(6)
	Top 20%	Bottom 80%	Top 20%	Bottom 80%	Top 20%	Bottom 80%
Static DID Specification						
UPP	0.074***	-0.002	0.072***	-0.003	0.046***	-0.003
	(0.019)	(0.008)	(0.018)	(0.007)	(0.013)	(0.007)
Dynamic Effects						
Lag 3	-0.018	0.001	-0.017	-0.003	-0.004	-0.003
	(0.025)	(0.009)	(0.024)	(0.008)	(0.018)	(0.008)
Lag 2	-0.005	-0.004	-0.006	-0.007	0.000	-0.007
	(0.018)	(0.008)	(0.017)	(0.007)	(0.015)	(0.007)
Lead 0	0.032*	-0.002	0.032*	-0.002	0.022	-0.002
	(0.019)	(0.007)	(0.019)	(0.007)	(0.016)	(0.007)
Lead 1	0.073**	0.011	0.073**	0.009	0.053*	0.009
	(0.033)	(0.010)	(0.032)	(0.009)	(0.029)	(0.009)
Lead 2	0.057***	-0.006	0.055***	-0.005	0.034**	-0.005
	(0.021)	(0.008)	(0.020)	(0.007)	(0.015)	(0.007)
Lead 3	0.064***	-0.005	0.063***	-0.005	0.039***	-0.005
	(0.021)	(0.008)	(0.020)	(0.007)	(0.015)	(0.007)
Lead 4	0.108***	0.005	0.105***	0.002	0.073***	0.002
	(0.027)	(0.011)	(0.026)	(0.009)	(0.020)	(0.009)
Lead 5	0.077***	-0.006	0.075***	-0.009	0.038**	-0.009
	(0.025)	(0.010)	(0.024)	(0.009)	(0.018)	(0.009)
Lead 6	0.107***	-0.012	0.102***	-0.014	0.061***	-0.014
	(0.029)	(0.010)	(0.028)	(0.009)	(0.020)	(0.009)
Observations	23971	104725	25095	118937	36515	118937
Adjusted R-squared	.12	0	.12	0	.12	0
Favela & Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Mean of Dep. Var (Control)	.072	.011	.072	.01	.058	.01

A   Appendix

Figure A.1: The Expansion of the UPP Program
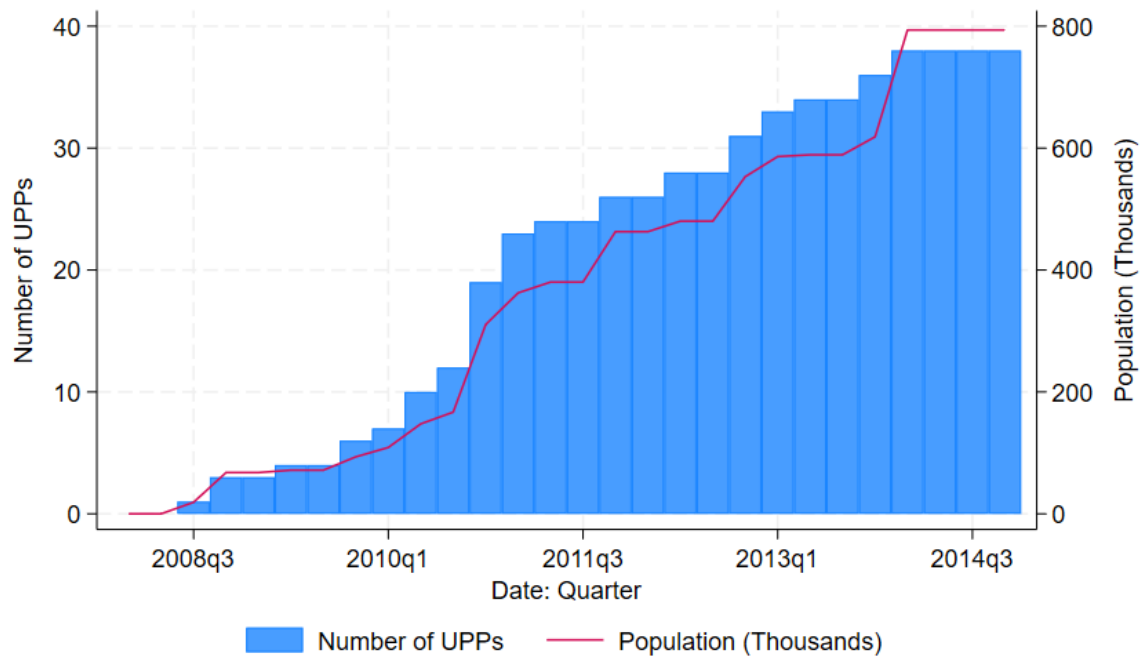
Figure A.2: Extracting Requests (*Indicações*) From DCMRJ

Notes: This figure shows a page of the DCMRJ from May 19, 2010. The automated procedure uses the publication's structure to find the section containing the Requests (*Indicaçoes*), identify each request (red boxes), and extract their text.

Figure A.3: Dispersion of Councilors' Votes and Requests Across Neighborhoods
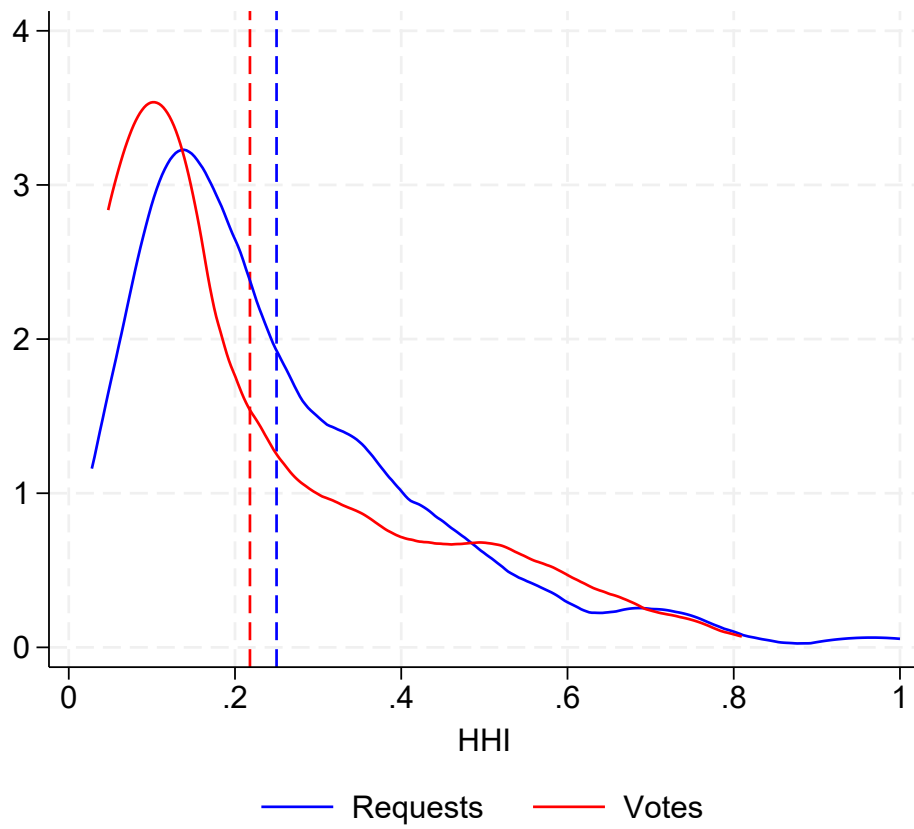
Table A.1: Voter Schooling by Distance from Voting Booth to Favelas

	Distance to nearest favela (meters)					
	d≤100	d∈(100,200)	d∈(200,300)	d∈(300,400)	d∈(400,500)	d>500
Age	43.6	44.2	45.1	45.5	45.9	46.6
	(7.38)	(7.02)	(6.94)	(7.20)	(7.54)	(7.33)
High school degree (%)	20.8	25.0	29.5	32.8	33.7	41.5
	(12.55)	(13.19)	(15.13)	(15.06)	(17.16)	(17.47)
College degree (%)	3.8	5.2	6.8	8.3	9.5	13.9
	(6.33)	(6.60)	(8.37)	(9.34)	(10.76)	(11.53)
Observations	1471	1126	967	950	1025	2909

Notes: The table shows the correlation between voter education in the 2008 Municipal Elections and the distance between voting booths and the nearest favela. *College degree (%)* and *High school degree (%)* are the average (and standard deviation) across voting booths in each distance bin weighted by the number of registered voters.

Table A.2: Effective Number of Candidates in Polling Stations and Distance to Slums

VARIABLES	(1) ENC	(2) ENC	(3) ENC
100-200	0.325	0.246	0.237
	(0.218)	(0.224)	(0.224)
200-300	2.797***	2.272***	2.263***
	(0.222)	(0.232)	(0.233)
300-400	4.193***	3.500***	3.508***
	(0.234)	(0.242)	(0.242)
400-500	3.911***	3.142***	3.178***
	(0.250)	(0.259)	(0.260)
>500m	4.487***	3.489***	3.508***
	(0.216)	(0.228)	(0.228)
log(income)		0.047***	0.047***
		(0.009)	(0.009)
% voters with college degree		14.516***	14.451***
		(1.122)	(1.129)
% men		7.063***	7.053***
		(0.544)	(0.546)
age		0.009	0.001
		(0.008)	(0.013)
registered voters			0.003**
			(0.001)
turnout			-2.184
			(1.857)
Observations	40,939	38,540	38,540
Adjusted R-squared	0.581	0.587	0.587
Election & Slum FE	Yes	Yes	Yes
Mean ENC for dist<100	25.06	25.63	25.63

Table A.3: The Effect of UPPs on Electoral Competition: Robustness to Different Thresholds

	Effective Number of Candidates (ENC)				Number of Candidates			
	(1) Dist≤200	(2) Dist≤300	(3) Dist≤400	(4) Dist>400	(5) Dist≤200	(6) Dist≤300	(7) Dist≤400	(8) Dist>400
Lag 3	1.036	0.594	0.200	1.380	-0.806	-1.024	-1.376*	2.017**
	(1.317)	(1.101)	(0.994)	(1.315)	(1.008)	(0.845)	(0.744)	(0.890)
Lag 2	0.944	0.181	-0.237	0.104	0.772	0.009	-0.200	1.180*
	(1.143)	(0.967)	(0.883)	(1.069)	(0.883)	(0.729)	(0.650)	(0.665)
Lead 0	6.363***	5.829***	6.232***	3.241***	5.236***	4.833***	5.070***	1.588**
	(1.177)	(1.020)	(0.944)	(1.058)	(0.781)	(0.653)	(0.584)	(0.654)
Lead 1	4.342***	5.109***	5.263***	-1.797	8.156***	8.525***	9.150***	4.801***
	(1.593)	(1.369)	(1.241)	(1.395)	(1.233)	(1.017)	(0.880)	(0.862)
Observations	11830	16092	20216	13447	11830	16092	20216	13447
Adjusted R-squared	.63	.65	.66	.63	.72	.72	.73	.73
Election Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Polling Station FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mean of Dep. Var	22.6	23.5	23.7	28.2	95.2	96.8	98	101.5

Table A.4: Effect of UPPs on the Vote Share of Elected Councilors

	All Elected Councilors	Reelected Incumbents	First-Time Councilors
	(1)	(2)	(3)
Lag 3	0.740	1.122	-0.383
	(1.113)	(1.231)	(1.114)
Lag 2	0.892	0.751	0.142
	(0.992)	(1.049)	(0.998)
Lead 0	-2.904***	-2.875***	-0.028
	(1.028)	(1.017)	(0.858)
Lead 1	-8.062***	-7.394***	-0.668
	(1.391)	(1.398)	(1.352)
Observations	16092	16092	16092
Adjusted R-squared	.34	.19	.13
Election & Polling Station FE	Yes	Yes	Yes
Mean of Dep. Var (Control)	46.896	31.434	15.462

Table A.5: Characteristics of Candidates Running for City Council, 2000-2016

	All Candidates	Elected Councilors
Age	47.9	47.5
Men (%)	73.5	82.8
White (%)*	52.0	72.3
High school degree (%)	81.4	92.2
College degree (%)	38.5	61.7
Never Held Office (%)*	95.4	45.6
First Candidacy (%)*	46.2	14.0
Votes	1165	20882
Votes Within 300m of Favelas (%)	39.4	38.1
Observations	6031	308

Notes: This table compares all candidates running for City Council to candidates who successfully became a city councilor. *Information on race (*White*) is only available in 2016 and data on previous candidacy (*First Candidacy*) is not available for 2000.

Table A.6: Effects of UPPs on Requests at the Favela Level Using Within-Legislature Variation

	Requests	$\mathbb{1}\{\text{Request} > 0\}$	Number Cllrs.	E.N.Cllrs.
	(1)	(2)	(3)	(4)
Static DID Specification				
UPP	0.192**	0.036*	0.055*	0.040
	(0.096)	(0.021)	(0.032)	(0.031)
Dynamic Effects				
Lag >3	0.019	-0.001	-0.041	-0.028
	(0.100)	(0.023)	(0.039)	(0.032)
Lag 3	0.004	0.006	0.024	0.031
	(0.106)	(0.034)	(0.047)	(0.046)
Lag 2	-0.048	-0.022	-0.048	-0.053
	(0.102)	(0.027)	(0.041)	(0.039)
Lead 0	0.032	0.027	0.052	0.048
	(0.119)	(0.036)	(0.057)	(0.054)
Lead 1	0.504**	0.050	0.115*	0.063
	(0.239)	(0.035)	(0.062)	(0.051)
Lead 2	0.247	0.033	0.009	-0.002
	(0.185)	(0.031)	(0.042)	(0.042)
Lead 3	0.127	0.073**	0.096**	0.091**
	(0.115)	(0.033)	(0.047)	(0.045)
Lead >3	0.049	-0.005	0.002	-0.000
	(0.094)	(0.024)	(0.034)	(0.034)
Observations	22360	22360	22360	22360
Adjusted R-squared	.26	.3	.36	.35
Slum & Time FE				
Mean of Dep. Var (Control)	.446	.17	.227	.214

Table A.7: Descriptive Statistics of Slum Vote Shares by Decile

Vote Share Deciles	Observations	Mean	Std. Dev.	Min	Max
1	2678	0.005	0.009	0.000	0.065
2	1773	0.027	0.020	0.003	0.114
3	1878	0.042	0.029	0.006	0.135
4	1645	0.064	0.040	0.011	0.192
5	1794	0.089	0.053	0.015	0.254
6	1874	0.122	0.071	0.019	0.327
7	1670	0.169	0.095	0.030	0.485
8	1858	0.247	0.133	0.033	0.689
9	1875	0.420	0.212	0.063	1.649
10	1751	1.916	3.168	0.155	48.404
Total	18796	0.294	1.108	0.000	48.404

Notes: Descriptive statistics of the deciles of % Votes_{cs} using data from the 2008 Municipal Elections.

% Votes_{cs} is the number of votes that councilor c obtained in slum s divided by the councilor's total votes and multiplied by 100. To measure the number of votes from a slum, I use polling stations within 300 meters of its borders. Using the distribution of % Votes_{cs} for each councilor, I group slums into vote share deciles.