Criminal Revenue, Civic Returns: How Illicit Taxation Boosts Electoral Participation

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Abstract

How does criminal group taxation affect participation in elections? I argue that criminal groups that tax public service provision use it as a *technology of governance*, which gives them a comparative advantage in voter mobilization. I predict that higher levels of criminal taxes on services ultimately lead to higher levels of voter participation, and contrast the service provision mechanism with other mechanisms related to coercive taxation and bottom-up reactions to being taxed. I test this argument in Rio de Janeiro, Brazil, where there is significant variation in taxation by drug trafficking gangs and by vigilante groups across the city's *favelas* (informal settlements). To measure criminal taxation, I machine-coded text summaries of 1.45 million anonymous calls for help, and construct favela-year-level indices of criminal a) protection taxes and b) taxes on services. My empirical strategy leverages exogenous variation in favela resident presence at the ballot box to estimate the effect of exposure to criminal taxation on voting. I find that criminal taxes on services are strongly associated with higher levels of voter participation, but taxes on protection have the opposite effect. Consistent with my proposed mechanism, I find that taxes on service provision enable criminal groups to be more effective brokers, increasing participation.

1 Introduction

A wave of influential studies emphasizes that armed groups collect administrative rents and taxes for motives that are not purely profit-driven. Path-breaking anthropological studies show that the range of rents Italian mafia groups collect, across agricultural, commercial, or household settings, contributes to the groups' durability (Blok 1975; Gambetta 1996). Recently, political scientists and political economists have started to investigate this phenomenon more closely. Mampilly and Thakur (2025), Sánchez de la Sierra (2020), and Revkin (2020) analyze why rebel groups build the administrative state and collect taxes in India, the Eastern Congo, and Syria, highlighting the legitimacy, governance, or ideological returns to tax collection. In a review article, Bandula-Irwin et al. (2024) further explore the strategic and political returns to armed group taxation.

In contrast to these insights, I shift the focus to a largely overlooked but important consequence of armed group taxation: its effect on the how the population interacts with the formal state, specifically, with electoral politics in the formal state. Combining insights from rebel and criminal governance, and the service provision literature, I argue that collecting taxes helps criminal groups develop *technologies of governance*, facilitating voter mobilization, which leads to higher voter participation. This is particularly true in communities where services are taxed.

Empirically, I focus on criminal taxation in Rio de Janeiro to explore the effect of criminal tax collection on electoral participation in local elections. The fragmentation of criminal governance across the city's 1,075 *favelas* (informal settlements) and the variation in criminal industries and level of sophistication make this case well-suited for this analysis, as certain criminal leaders have elaborate taxation schemes while others have none. To measure criminal taxation, I geocoded and classified the text of 1.45

million *Disque Denúncia* anonymous tips, which contain text summaries of resident complaints in the city of Rio de Janeiro. I construct indices measuring the extent of criminal taxation by favela-year. To causally identify the effect of criminal taxation on voting, I leverage exogenous variation in the share of criminally governed residents present at the ballot box (versus residents not living under criminal control). For my main analysis, I combine the criminal taxation data with the voting-booth-level data to measure the effect of criminal taxation on two measures of participation: 1) youth registration, and 2) margin of victory for the leading candidate.

I find that criminal groups who tax services mobilize voters at higher rates. Voters with higher exposure to criminal groups who tax services are more likely to register and more likely to vote in bloc. However, in areas where criminal groups collect protection taxes, participation is lower; youth register at lower levels and voters are more diffuse. To trace the mechanisms, I investigate the efficacy of voter mobilization, extracting the election-related words from the *Disque Denúncia* corpus and estimating the relationship between service taxes and the local favored candidate winning. The results align with my argument: in voting booths with higher exposure to criminal taxes on services, there are higher levels of criminal voter mobilization activity during campaign periods and the candidate has a higher chance of winning, demonstrating that voter mobilization efforts are effective.

This project makes three important contributions. The first is to articulate a theory of how criminal groups' governing tools map onto their involvement in electoral politics. Using the same case of Rio de Janeiro, Arias (2006, 2017), Albarracín (2018), Barnes (2025), and Magaloni, Franco-Vivanco, et al. (2020) have created particularly useful typologies that lay out different types of criminal groups and how their revenue streams matter for political engagement, making the observation that these groups will engage with the state, residents, and electoral politics in different ways. I add nuance to these explanations by focusing on an underexplored source of revenue that can double as a governing tool, taxes.

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The second is a contribution to the literature of how criminal organizations interact with voters before and during elections. I argue that criminal groups more likely to engage voters do so through their capacity to provide services for voters, which gives them a comparative advantage in voter mobilization. This suggested mechanism fills a gap not yet studied in existing works about how criminal organizations are able to mobilize voters to the polls around the world (Tajima 2018; Gambetta 1996; Acemoglu et al. 2013; Trudeau 2024).

The third contribution is related to measuring criminal groups' governing activity. Despite journalistic evidence that drug trafficking gangs also provide services, or protection rackets also sell drugs, much of the research on criminal governance makes assumptions about the activities of an organization, based on its name alone. Using granular data, I construct indices of criminality for Rio de Janeiro's 1,075 favelas that reveal more about a criminal group's revenue streams than their group label alone, and am able to observe the various ways they mix taxes as well as the level of taxation. The granularity of this measure allows for analysis based not just on a faction's "brand" and reputation, but on their observable actions within different industries.

2   Armed Group Revenue Extraction

A large body of literature has investigated the extent and logic of revenue extraction by armed groups. One of the most basic forms of revenue extraction, extortion, is the use or threat of physical violence to extract payments from one actor to another (Tilly 1975). Extortion has been widely documented across a range of armed group types (Brown et al. 2025; Freeman 2016; Magaloni, Robles, et al. 2020; Skarbek 2011; Walsh et al. 2018). A related body of evidence argues that armed group revenue extraction is more complex and more closely resembles taxation (Bandula-Irwin et al. 2024; D'Souza and Mampilly 2024; Hoffmann et al. 2016; Mampilly and Thakur 2025; Revkin 2020; Sánchez de la Sierra 2020). These accounts differentiate the two

concepts by emphasizing that the only rule is "pay" under extortion, whereas armed group taxation suggests quasi-voluntary compliance due to the joint use of coercion, social pressure, and the delivery of services, much like taxation by the state (Lessing 2020; Levi 2008; Mampilly and Thakur 2025).

This paper builds on this logic by theorizing how different armed group taxation regimes can generate different patterns in political behavior. First, there is tremendous variation in armed group taxation regimes (Bandula-Irwin et al. 2024). First, armed groups collect many types of taxes, including "household" or "commercial" property taxes (Hoffmann et al. 2016; Mampilly and Thakur 2025), taxes on services they provide, including water, garbage collection, transportation, or other utilities (Arias 2017), and even taxes on contraband or illegal activity (Lessing et al. 2019). Second, there is a wide range in levels of coercion used to enforce compliance, from relatively mild social pressure (Arias 2006; Revkin 2020; Sánchez de la Sierra 2020) to outright violence (Brown et al. 2025; Skarbek 2011).

Third, and most importantly, armed groups differ in their motives for taxation. On one extreme, the singular goal might be to maximize revenue, but such a tax regime is unlikely to last (Olson 1993). More likely, armed groups collect taxes for two complementary reasons: as a revenue stream, but also as a *technology of governance*, used to build and reinforce governing power (Rose 1999). Mampilly and Thakur argue that taxation can be a tool that shapes "the conduct of another, specifically civilians and commercial actors, thereby reducing [the armed group's] reliance on coercion and with little regard for the revenue it may or may not generate" (2025, 474). A growing body of evidence substantiates the claims that armed groups collect taxes not just for financial gain, but to build local legitimacy and institutions (Arjona 2016; Mampilly 2012; Sánchez de la Sierra 2020; Stewart and Liou 2017).

The concept of taxation as a technology of governance raises important questions about how armed group taxation shapes residents' engagement with the formal state. Most of this literature focuses on rebel governance, where any gains in legitimacy

are zero-sum with those of the state. These theories predict that, as rebel group taxes fund public goods and strengthen rebel institutions, residents disengage with the formal state, (Arjona 2016; Mampilly 2012), pay fewer taxes to the state (D'Souza and Mampilly 2024; Sánchez de la Sierra 2020), or even abstain from participating in state politics (Steele 2011).

Yet many residents exist in an environment of layered governance or "co-governance," where they are simultaneously governed by the state and an armed group, and interact with both authorities to varying degrees (Arias 2006, 2017; Barnes 2025; Blattman et al. 2021; Lessing 2017; Magaloni, Franco-Vivanco, et al. 2020). This literature emphasizes that, especially when the state and criminal groups are cooperative or semi-cooperative, criminal groups actually encourage or facilitate residents to interact with the state.

The rest of this paper focuses on these environments where the state and criminal groups co-govern.[1] The theoretical predictions of disengagement from the rebel taxation literature don't account for the fact that criminal groups often operate in direct cooperation with state actors or, at a minimum, coexist with them. This paper brings the literature on criminal and state co-governance and the literature on armed group taxation closer together to explain how exposure to certain criminal tax regimes can affect residents' engagement with the state in one particular arena: elections.

# 3 How Criminal Service Delivery Shapes Electoral Participation

My main hypothesis is that exposure to criminal service delivery increases civilian participation in elections. This paper introduces *criminal service delivery* as an un-

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1. Criminal groups, which include mafias, drug cartels, street gangs, and more, are hierarchical groups that aim to control illegal markets, and have the ability to use violence to obtain such control (Schelling 1971).

derexplored mechanism through which criminal taxation affects electoral participation. Figure 1 illustrates this argument, explained sequentially below.

Figure 1: The Mechanisms Linking Criminal Taxation to Electoral Participation
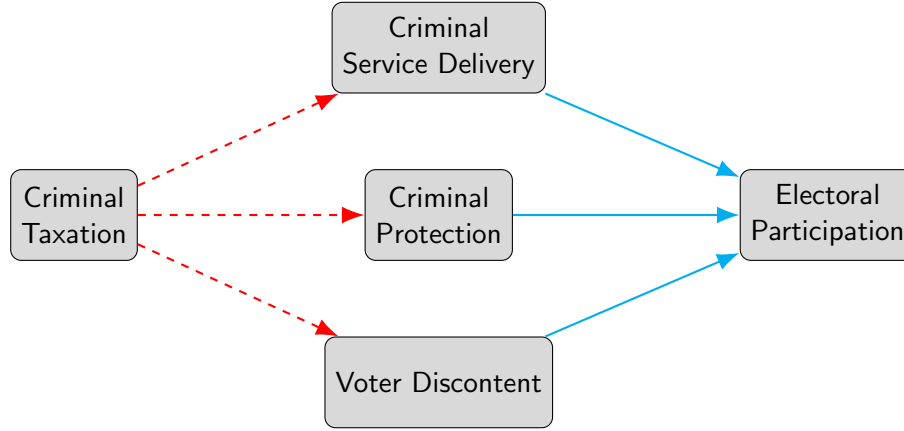
My theory begins by establishing that criminal taxation is one element of criminal governance. Criminal governance is the imposition of rules or restrictions on behavior by a criminal organization (Lessing 2020). Though there is a rich literature about the relationship between criminal governance and elections (Alesina et al. 2019; Arias 2006, 2017; Barnes 2017; Daniele and Dipoppa 2017; Dell 2015; Hidalgo and Lessing 2019; Trejo and Ley 2020; Uribe 2025), this paper focuses on how criminal governance affects voter participation. This study directly builds on existing work that shows how other technologies of governance (namely, coercion) can be used by criminal groups to influence participation (Acemoglu et al. 2013; Albarracín 2018; Gutiérrez Sanín 2015; Gallego 2018; Steele 2011).

The first link in the mechanism articulates criminal service delivery as one variety of criminal taxation.[2] I define *criminal service delivery* as the provision of public or club goods by the criminal group to individuals or businesses in the territory they govern. I consider *services* as those that go beyond the basic provision of public order and property rights. Across a range of contexts, criminal groups have been

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2. The mechanisms and their visual depiction in Figure 1 should be understood as different components of criminal taxation, rather than as a strict causal chain.

documented delivering services related to tree-trimming, public illumination, parking, and public utilities (Arias 2006, 2017; Blattman et al. 2021). Often, the criminal groups also regulate their community's market for these services, creating forced monopolies (Lessing 2020). In an interview, a criminal group member in Rio de Janeiro enumerated the services his group provides:

> The agreement is that no one can refuel outside of this community's gasoline station... We are the ones who pay for it, do you understand? What else? Cooking gas, internet, cable TV. In some places we also have strong partnerships with transportation. These are places where there is no public transportation, no buses, you know? And we reach agreements with transportation cooperatives to partner with us.[3]

Criminal service delivery is wholly or partially funded by criminal taxation, and the two are connected as technologies of governance. Mampilly and Thakur (2025) find that menial service taxes by armed groups encourage buy-in from the community and strengthen communal identity. Despite not being a major source of revenue, the governing benefits alone from taxing services seemed to justify the effort for these armed groups. This suggests that criminal service delivery can be understood as a particular form of *social extraction* - the provision of resources to non-state actors who supply public goods (Lust and Rakner 2018). How much the criminal groups charge, what they provide, and other rules related to enforcement, sanctions, and rewards will vary depending on the local criminal group's norms and rules. Across all types of criminal service provision and tax regimes, though, these two technologies of governance will make residents and businesses more legible to criminal groups as they go door-to-door collecting revenue or delivering services (Lee and Zhang 2017; Scott 1998). Together, the provision of services and the taxes that fund them can be used by a criminal group to reinforce their governing power over the residents and businesses in their community.

The second link in the mechanism connects criminal service delivery to the predicted

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3. Author's interview, Criminal group member 1, August 20, 2020. Interviews translated and lightly edited for clarity.

outcomes. I argue that higher levels of criminal service delivery will influence how and how much voters participate in elections, all else equal. I argue that this primarily operates through a top-down channel, driven by criminal group behavior. Criminal groups can leverage their role as service provider for electoral gain. As deliverers of services, criminal groups likely have information about community members' demographics, addresses, daily habits, and the services they use the most (and why). Such information is an essential part of voter mobilization for parties and candidates (Gottlieb and Larreguy 2020; Muñoz 2014; Stokes 2005) and can be used by brokers to solve information asymmetries between parties and voters (Gans-Morse et al. 2014; Zarazaga 2014, 2015). When criminal groups want to influence the outcome of elections, those that deliver services already have this privileged information at their disposal and can more effectively mobilize voters than groups without such knowledge.[4]

Through both of these channels, I expect voters living in territories with a high level of criminal service delivery to have higher levels of electoral participation.

3.1 Alternative Explanations

Aside from the *service delivery* mechanism, the existing literature identifies two alternative mechanisms: criminal protection and voter discontent. First, a long-standing literature explores criminal taxes on "protection" (Blok 1975; Gambetta 1996; Moncada 2022; Skarbek 2011; Tilly 1985). Similar to the delivery of public goods, the provision of protection is typically granted to residents or businesses in exchange for a monetary tax or in exchange for in-kind favors, such as favorable attitudes towards the gang around law enforcement.[5] However, given that protection is more about the guar-

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4. Another reason why criminal service providers might be effective mobilizers is because of their ability to tie the quality, availability, or price of services to electoral outcomes. Making service delivery contingent on electoral outcomes has been observed in several electoral contexts (Kitschelt and Wilkinson 2007), yet is less relevant here. Withholding services as an electoral punishment would likely decrease a criminal group's tax revenue and erode their legitimacy, which would not be credible.

5. Importantly, taxes on protection are not simply extortion, though it can be a slippery slope if residents perceive protection taxes as too punishing. (Gambetta 1996; Mampilly and Thakur 2025)

antee of safety than public good delivery, I consider taxes on protection as theoretically distinct from taxes on services.

A rich literature on criminal politics emphasizes that criminal groups leverage their provision of protection to coerce voters. While some criminal groups use violence or the threat of it to boost turnout and sway vote choice (Acemoglu et al. 2013; Albarracín 2018; Arias 2006, 2017; Barnes 2017; Trudeau 2024), others – most notably in Colombia – use it to suppress or silence opposition voters, reducing participation (Gutiérrez Sanín 2015; Gallego 2018; Steele 2011). Across these examples, the implication is that criminal groups can, and often do, use their coercive power in areas they govern to influence voter participate in elections.

To parse the effects of criminal taxes on services from those on protection, I construct original measures of criminal *service delivery taxes* and criminal *protection taxes*. Though different services are rendered, criminal groups commonly use muscle to enforce both types of taxes. If coercion alone is responsible for increasing electoral participation, we should observe no difference between the two tax types. However, if the delivery of services also compels voters to participate, we should observe differential effects for the two types of taxes. This exercise allows me to determine the extent to which criminal coercive power drives the main results.

Second, paying taxes to a criminal organization can provoke strong feelings of discontent, which often surface at the ballot box. These feelings of discontent can have countervailing effects on electoral participation. Studies show that living under criminal governance can reduce voter turnout by fostering mistrust in state institutions (Córdova 2019; López García and Maydom 2021). In contrast, when civilians form community organizations and collectively resist criminal governance, this can lead to increases in civic participation (Chriswell and Huberts 2024; Moncada 2022; Parkinson and Zaks 2018). In a case like Brazil where the ballot is secret, an observable implication of voter discontent is individual vote choice. All else constant, discontented voters are more likely to cancel their ballot in protest than to vote for the criminal group's

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preferred candidate.

I propose criminal service delivery as a critical alternative mechanism that links criminal taxation to electoral participation. The service delivery mechanism operates through a top-down channel, which is derived from social extraction rules and norms that are strengthened through the provision and taxation of public goods. To clarify, I test for the possibility and coexistence of all of these mechanisms, and the argument does not intend to downplay the effects of criminal coercion as "protection" or voter discontent. Rather, I argue that service delivery has a distinct effect on electoral participation that does not run through another mechanism.

4   Criminal Taxation in Rio de Janeiro

A burgeoning literature has documented criminal groups' involvement in politics in Rio de Janeiro (Arias 2006, 2017; Albarracín 2018; Barnes 2017, 2025; Gay 1999; Hidalgo and Lessing 2019; Lessing 2017; Trudeau 2024). Like these studies, I draw from the significant variation in criminal governance within Rio de Janeiro to test my theory within one city while holding other institutional factors constant.

Criminal governance in Rio de Janeiro is fragmented in two important ways. First, it is geographically fragmented: it is primarily constrained to Rio de Janeiro's *favelas*, or informal settlements. Favelas are scattered throughout the city and the two million favela residents comprise approximately one-third of the city's population (Satriano 2020). There are 1,075 favelas in urban Rio de Janeiro, and they range in size from very large (Rocinha, the largest favela, has an estimated 68,000 residents[6]) to very small (fewer than 1,000 residents).

Second, criminal governance is fragmented by faction. Nearly every favela is associated with at least one major faction, but is governed autonomously as if it were a franchise. The local, neighborhood-level leaders call the shots about the favela's

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6. This is current as of the 2022 IBGE Census.

day-to-day operations while the faction kingpins – often behind bars – make higher-level organizational decisions. There are two major categories of factions in Rio de Janeiro: 1) prison gangs, recognized for their involvement in the drug trafficking industry,[7] and 2) *milícias*, vigilante-style extortion gangs with ties to law enforcement. The many *milícia* groups across the city proliferated in the 1950s to counteract the perceived disorder caused by the prison gangs, and began selling protection from the prison gangs.

While the *milícias* might have been the first to collect criminal taxes in Rio de Janeiro, they are not the only group to do so. Reports of the *milícias*' involvement in clandestine utilities and local transport stretch back to the early 2000s (Paes Manso 2020), but there is substantial variation in how many services the *milícias* provide from *favela* to *favela* (Cano and Duarte 2012). Further, criminal service provision is not unique to *milícia*-governed communities. Recent reports show that Rio de Janeiro's prison gangs also collect service taxes from residents and are a monopoly provider of club goods (Soares 2022). An investigation in the Rocinha favela found that the governing prison gang routinely taxes residents and businesses for protection, gasoline, transit, and clandestine cable TV (Ventura et al. 2024). There remains considerable variation in criminal tax regimes across the city today.

4.1 Variation in Criminal Tax Regimes

I documented the wide range of criminal tax regimes in Rio de Janeiro. Throughout this paper, I analyze criminal taxation complaints from Rio de Janeiro residents to *Disque Denúncia*, an anonymous tip line operated by a non-profit organization. *Disque Denúncia*, unlike state-sponsored helplines, permits callers to be anonymous, which offers residents who live under criminal control additional cover when filing a complaint.[8]

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7. The major factions are ADA (*Amigos dos Amigos*), CV (*Comando Vermelho*), and TCP *Terciro Comando Puro.*

8. Further details about *Disque Denúncia* as a data source are in Section 5.2.

Figure 2: Frequency of Criminal Taxation, by Type
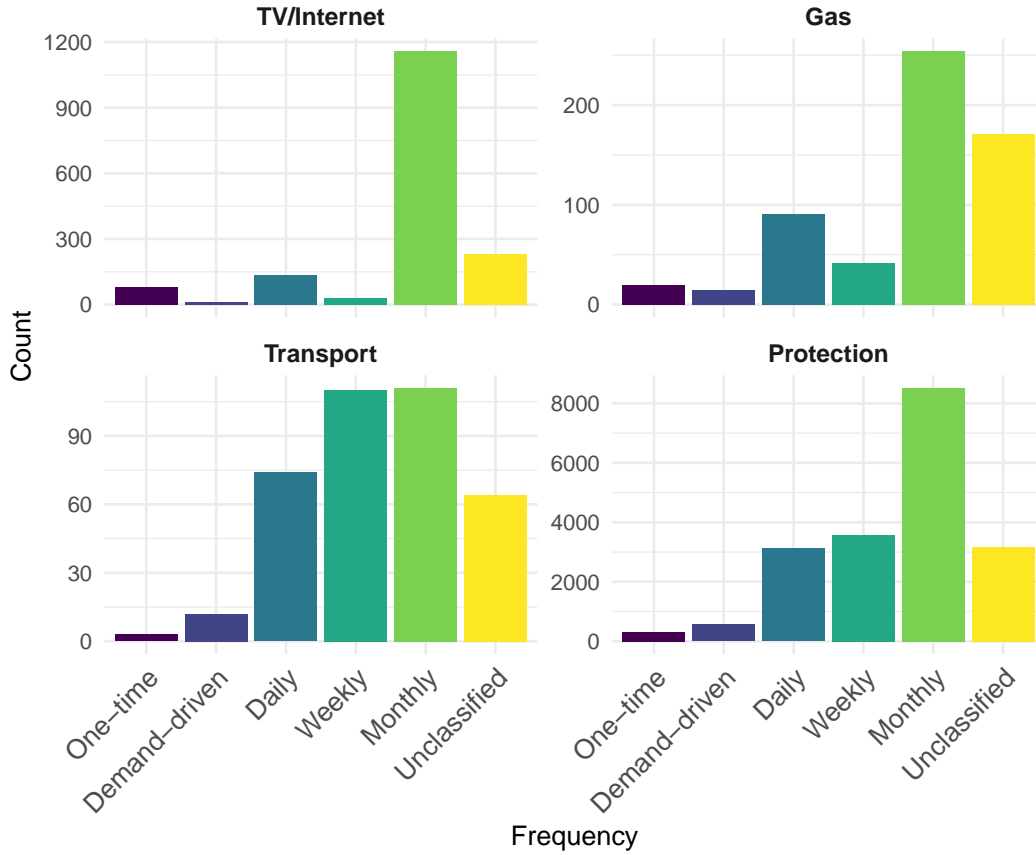
The breadth of the *Disque Denúncia* data allows for a focuses on three major types of criminal taxes on services: 1) gas, 2) transportation, and 3) TV/Internet, which I contrast with taxes on 4) protection.

As in the licit sector, criminal groups extract revenue at different frequencies. Figure 2 shows that, for all types of taxes, the modal frequency is monthly: they may charge a monthly fee to provide Cable TV and Internet, as a licit provider does, or monthly clandestine transport or protection taxes that leverage their other criminal resources. Certain types of taxes are also collected at more frequent intervals: all tax types are collected on a weekly or even a daily basis, and certain taxes are collected at irregular frequencies, such as a one-time "installation" tax to set up Cable TV in a new home, or demand-driven taxes for drivers to park their cars in a certain area during an event.

Figure 3: Proportion of Criminal Taxation, by Target Type and Payment Frequency
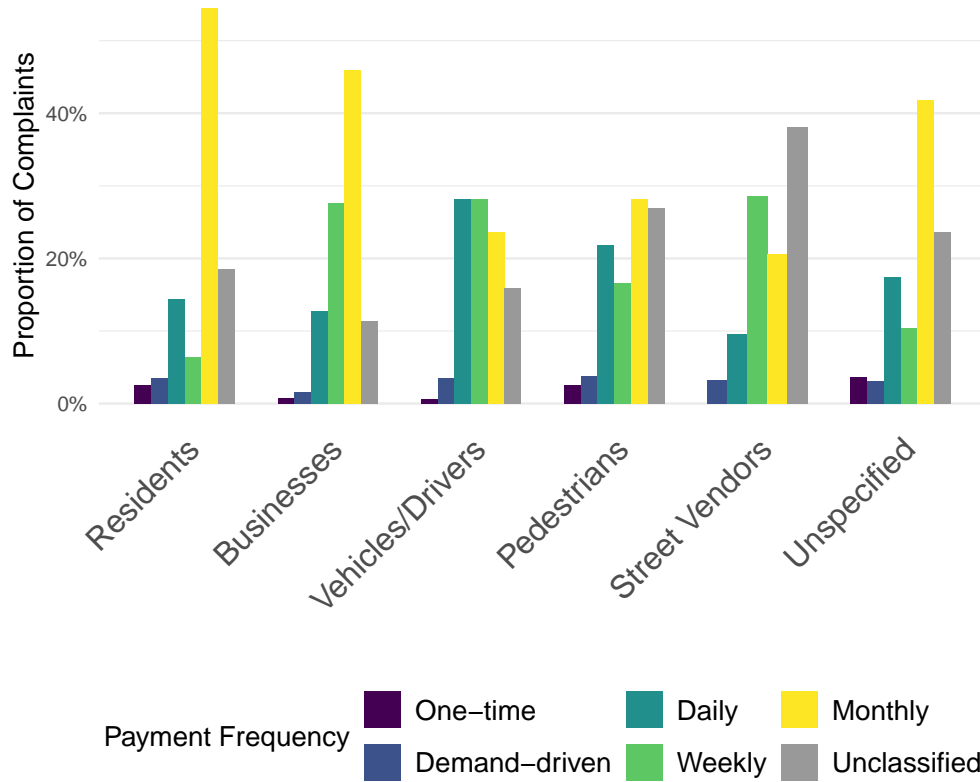
Figure 3 further shows that the frequency of criminal tax collection covaries with *who* pays the tax. A majority (55%) of complaints about residential taxes indicate monthly collection cycles, whereas complaints about business taxes indicate both monthly (45%) and weekly (28%) collection cycles. Complaints about street vendor taxes highlighted the weekly cycles (29%), which maps onto the frequency of street fairs or markets, while pedestrian and vehicle/driver taxes occur at high daily, weekly, or monthly levels, from daily R\$2 charges to cross a pedestrian bridge to weekly R\$50 parking permits to monthly R\$100 protection taxes to enter and exit a neighborhood.

I also document the existence of price discrimination by the type of tax and the target. Table 1 compares the tax rates by target and type of tax, holding frequency constant at the monthly level. I find that criminal groups generally set higher taxes for businesses than for residents (e.g., an average R\$96.91 cooking gas tax vis-a-vis

Table 1: Average Monthly Tax Prices by Target (in R$)

Target	Gas	Transport	TV/Internet	Protection
Resident	63.28	60.66	101.50	91.00
Business	96.91	88.06	-	107.36
Pedestrian	-	51.00	-	118.91
Street Vendor	-	-	5.00	39.68
Driver/Vehicle	20.00	40.00	141.59	161.98
Unspecified	118.93	70.84	147.39	163.82

a R\$63.28 one), which supports the theory that criminal taxation is not just about maximizing revenue extraction, but is also a "technology of governance" (Mampilly and Thakur 2025). My interviews confirm that some criminal groups balance profit with questions of fairness or ability to pay when setting rates; when asked about tax rates, a *milícia* member responds, "When we tax residents, they are charged from thirty to fifty reais, per resident, depending on the community. For a business, it depends on the type. For the small businesses, it is one price, sixty to eighty per week, it depends on the size. For the bigger ones, a bit more, you know?"[9]

Finally, there is evidence that criminal groups mix service taxes and protection taxes at different levels. There is extreme spatial variation between favelas in Rio de Janeiro. Panel (a) of Figure 4 shows the bivariate distribution of criminal taxation by type, comparing the prevalence of all kinds of service taxes with that of protection taxes. In both maps in Figure 4, areas with high levels of service taxes are dark blue, areas with high levels of protection taxes are dark red, and areas with high levels of both are dark brown. In the map on the left, I aggregate the average tax levels by police precinct polygon, and on the right, I show that there is significant variation across favelas. There are no empty cells: there are favelas that fall in every category. While many favelas that have a high incidence of service taxes *also* have a high incidence of protection taxes, there are many that clearly favor one type or the other. Panel (b) provides a zoomed-in representation of the individual *Disque Denúncia* calls around

9. Author's interview, Criminal group member, August 20, 2020.

a large favela notorious for collecting taxes, Rio das Pedras. This variation not only shows that there are different intensities of criminal tax collection, but that criminal groups may favor different types of taxes within Rio de Janeiro's favelas.

5 Data and Empirical Strategy

## 5.1 Outcomes: Electoral Participation

I use voting-booth-level returns from the Supreme Electoral Court (TSE) for municipal races in the city of Rio de Janeiro, across three municipal election-years: 2012, 2016, and 2020. The unit of analysis, the voting booth, is the smallest level that electoral return are reported. Voting booths usually comprise 300-500 people.

I use two main measures of electoral participation. First, I calculate youth voter registration. Voting is optional for youth ages 16-17. I interpret registering to vote before the obligatory age as a strong signal of electoral participation.[10] If criminal taxes on services increase electoral participation, I expect to see higher youth registration in the areas where service taxes are high.

Second, I calculate the share of votes received by the winning candidate within the ballot box to measure *how* voters participate in elections. A larger vote share, if my theory is correct, could indicate that the criminal service providers were more effective vote mobilizers for *their* candidate. I focus on city council races because criminal groups can more easily influence their outcomes, and there is a long history of criminal involvement in such races (Arias 2017; Gay 1993; Hidalgo and Lessing 2019; Trudeau 2024). It may be easier for criminal groups to tip the playing field in such races where there is less press coverage relative to higher-profile races, and where a criminally-governed favela could unilaterally elect a councillor, due to the large number

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10. For adults over 18, voting is mandatory, and compliance is high (approximately 80%). Voting becomes optional again over the age of 70, but I do not count these individuals because it requires less effort to remain on the list than to register prematurely.
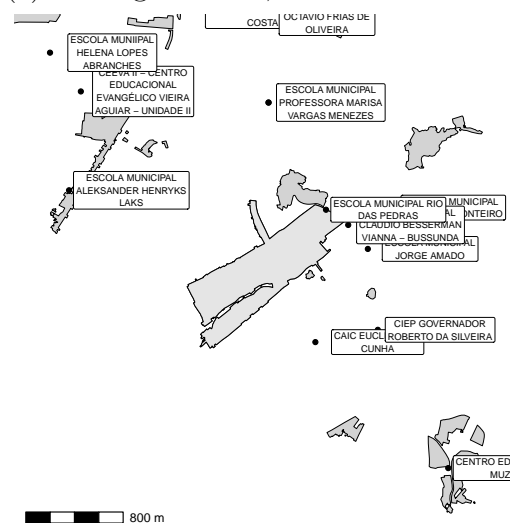
Figure 4: Spatial distribution of criminal taxation and voting, Rio de Janeiro

(a) Bivariate map of service provision and protection criminal taxes, aggregated by police precinct (left) and favelas (right)
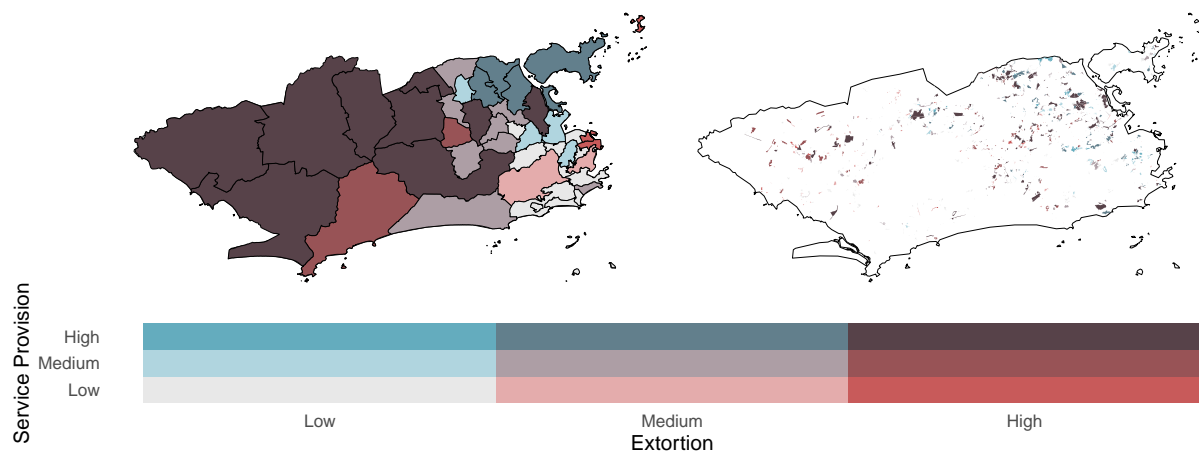
(b) Criminal taxes, Rio das Pedras
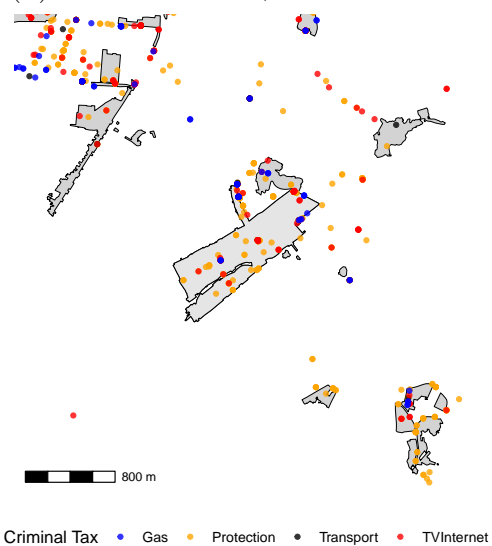
(c) Polling stations, Rio das Pedras

of candidates that run and, therefore, relatively small amount of votes needed to get "over the line."

5.2 Treatment: Criminal Taxation in Favelas

To measure criminal taxation within favelas, I construct a voting-booth-level dataset estimating the average exposure to criminal taxation for each booth. I construct this by combining two data sources: 1) *Disque Denúncia* complaints about criminal taxation within favelas with 2) plausibly exogenous data about favela representation at the voting booth. I summarize the first here and the second in Section 5.3.

First, as alluded to in Section 4, I use the *Disque Denúncia* database of anonymous tips to gain granular insights about the distribution of criminal taxation in favelas. *Disque Denúncia* is a non-governmental organization, independent from the police and other public services. They operate a 24-hour call center to receive and classify anonymous calls for help, passing along time-sensitive life-threatening calls to the police while protecting the caller's anonymity. These data contain summaries and the reported location of each call, for approximately 1.45 million calls from 2008 – 2020 within the city of Rio de Janeiro. I geocode all 1.45 million calls and classify calls pertaining to the favela if their geocoded address falls within a narrow 100-meter buffer of the favela perimeter.[11]

Based on the location of the call, I create favela-year-level variables of criminal taxation. I aggregate the reports at the favela-level because favelas are largely where criminal governance is constrained. I measure the prevalence of four major types of criminal taxes from the *Disque Denúncia* calls: the service taxes comprising (1) transportation, (2) gas, and (3) TV/Internet, and consider separately (4) taxes on protection.[12] For each favela, I calculate an average annual count of service or protection

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11. I use the *Instituto Pereira Passos* shapefile to measure favela boundaries.

12. In addition to summarizing the caller's complaint, each call center worker classifies the call's topic as at least one of several pre-determined categories. The tax categories I define map onto the existing categories "Irregular Alternative Transportation," "Clandestine Gas," or "Clandestine Radio/TV/Telephone",

tax calls in the three years prior to an election cycle. The *service tax* variable counts reports of transportation, gas, and TV/Internet taxes, and the *protection tax* variable counts reports of protection taxes. For each election period, I sum the number of calls that occur immediately after the inauguration of the prior regime and before the beginning of the current campaign period, standardizing all time periods to be an annual average for interpretability.[13]

Most of the complaints about criminal taxation were located inside or in the immediate vicinity of favelas. While the upper panel of Figure 4 shows that favelas have varying tax regimes, the lower left panel shows the individual coordinate points of *Disque Denúncia* calls around the large, criminally-governed favela, Rio das Pedras, which consistently has the highest amount of protection and service tax calls. Though my measure of criminal taxation drops the calls outside of favelas, this panel demonstrates that these are a minority of calls.

Measuring criminal taxation is difficult, but the *Disque Denúncia* data is an improvement on existing measures for a few reasons. First, as documented in Section 4, criminal taxation cannot be inferred by criminal group type alone. Both prison gangs collect protection and service provision taxes. Citywide maps documenting faction-level territorial control, such as that used in (Bruce et al. 2020), are of limited use when variation in taxation doesn't map onto variation in group type. Second, anonymous calls from civil society add more nuance to measures of criminality than law-enforcement driven measures of organized crime. These proxies are often biased by overly focusing on extremely violent displays of criminality or that which involves the police. The anonymous reports from members of civil society can measure criminal taxation even in the absence of an arrest or a homicide. Third, the micro-level geographic data from

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or " "Extortion." For the calls related to extortion, I filter the data for those calls specifically mentioning terms related to taxes, so as not to include false positives related to kidnapping, extortion scams, or other topics.

13. For example, for the 2012 municipal election, I aggregate all calls between January 2009 (when the 2008 elected leaders were inaugurated) and August 2012, before the campaign starts.

the *Disque Denúncia* calls facilitates analysis at the favela-level. Crime statistics are reported at the police-precinct level (upper left panel of Figure 4), which obscures favela-to-favela differences, and in doing so, aggregates above the level at which criminal governance occurs. On the contrary, the geolocated *Disque Denúncia* calls precisely identify which favelas have high reported level of various types of criminal taxation.

5.3   Treatment Exogeneity

In order to link criminal taxation to voting in favelas, I leverage exogenous variation in assignment to the voting booth. This allows me to precisely estimate the share of favela voters at the ballot box as if it were a natural experiment.

Voters are assigned to a booth in a 2-step process. First, when voters register, they can choose the polling station where they want to vote, as long as it is in their electoral district.[14] Most choose polling stations close to their homes.[15] Second, once assigned to their polling station, voters are randomly assigned to one of several available voting booths *within* the station. This assignment procedure is conducted electronically at the federal level by the national electoral office (TSE). The software aims to reach an equal number of voters across voting booths in a polling station, and randomly assigns new registrants accordingly.[16] At times, this leads to the creation of a new voting booth if existing ones are at capacity or if there is a surge in new registrations.

I use new data to look *within* the voting booth and measure the share of voters who live in a *favela*. I filed an information request with the ombudsman's office of the Regional Electoral Tribunal of Rio de Janeiro (TRE-RJ) for data indicating the proportion of voters per voting booth that lived in postal codes located inside *favelas*.[17]

I provided the ombudsman's office with a list of geocoded postal codes inside *favelas*,

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14. The electoral districts, *zonas eleitorais*, are federal reporting units encompassing many polling stations.

15. There is a small but nonzero amount of voters who do not change their registration after moving, and travel to their former polling station on Election Day to cast a ballot.

16. Resolution N. 23.544 of the *Tribunal Supremo Eleitoral* (TSE), Articles. 41, 44, and 66.

17. Brazil uses nine-digits postal codes, which are often as small as a city block in urban areas. Each *favela* contains many postal codes.

and obtained a number between 0 and 1, indicating the percentage of voters who live in zip codes inside each *favela*.

The implications of this assignment process are that voters who live in the same *favela* vote at many nearby locations, and intermingle with voters who live in the surrounding middle class, colloquially, "the asphalt." Generally, polling stations are not located inside *favelas* due to accessibility and building code standards, so *favela* residents must leave their communities to vote. The polling stations near Rio das Pedras, shown in Panel (c) of Figure 4 illustrate this. In the *Escola Municipal Rio das Pedras* polling station, located on the perimeter of the favela, the five voting booths inside the polling station range from 27% to 37% Rio das Pedras residents. In the *Escola Municipal Jorge Amado* polling station located 298 meters from the favela's boundary, the voting booths include anywhere from 25% to 58% Rio das Pedras residents. I leverage this exogenous within-polling-station variation in favela residency to measure the relationship between criminal taxation and voting. Taken together, I interpret these empirical patterns and the spatial variation shown in Figure 4 as evidence of exogenous variation in voter exposure to criminal taxation at the voting booths.

5.4 Estimation

To investigate the relationship between exposure to criminal taxation and voter participation, I estimate a series of OLS models of the following form:

$$Y_{it} = \gamma(ShareFavela \times CriminalTaxation)_{it} + \theta\mathbf{X} + \rho_t + \tau_p + \epsilon_{itp} \qquad (1)$$

where i denotes the voting booth, t the election, and p the polling station. The dependent variable, y_{it}, is one of the voting-booth level electoral outcomes in election year t, measuring either voting-booth-level a) youth registration, b) local margin of victory, or c) if the locally favored candidate won. *CriminalTaxation* is the annual frequency of either service taxes or protection taxes in the favela most represented at the voting

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booth, prior to the campaign cycle, and *ShareFavela* is the logged share in percentage points of voters at the voting booth who reside in the most-represented favela. The coefficient of interest, γ, allows us to assess whether voters living in favelas with high levels of criminal taxation are more likely to participate or likely to participate in certain ways.

I include a vector of time-varying control variables ($\theta\mathbf{X}$) containing demographic information about voters at each voting booth, including age, gender, education level, and civil status, also obtained from the TSE. I also include favela-level controls, including the logged distance to the favela whose voters are most represented at any one voting booth and the logged population. Polling-station-level intercepts (τ_p) account for unobserved time-invariant, polling-place-level characteristics that could both determine electoral behavior and criminal taxation. Election-level fixed effects (ρ_t) control for any simultaneous shocks affecting electoral behavior and criminal involvement in any given election. Finally, I cluster standard errors at the level of randomization, at the polling-station-year level.

6 Results

I present the main results in Table 2, demonstrating a strong and positive relationship between exposure to criminal taxes on services and electoral participation. For all outcomes, the odd-numbered models leave *ShareFavela* as a continuous variable, while the even-numbered ones dichotomize it, assigning a value of 1 to any value above the median and 0 to all others.

First, I find a positive, statistically significant relationship between exposure to taxes on services and youth registration. On average, one additional complaint about service taxes in a favela predicts an additional 0.14 - 0.43 young people registering to vote per ballot box, holding *ShareFavela* constant. Though this is a modest change, it is substantively meaningful: it corresponds to an increase of 35-66% relative to the

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Table 2: Criminal Service Taxation and Voter Participation

	DV: Youth Registration		DV: Most Voted's Share	
	(1)	(2)	(3)	(4)
$\gamma_{Service\_Tax}$	0.010**	0.039***	0.001**	0.002*
	(0.004)	(0.011)	(0.000)	(0.001)
Service Tax	0.041***	0.004	0.002+	−0.001
	(0.012)	(0.007)	(0.001)	(0.001)
ShareFavela	−0.009	0.017	0.000	0.003+
	(0.014)	(0.024)	(0.001)	(0.002)
Num.Obs.	23 126	23 126	23 126	23 126
R2	0.365	0.365	0.731	0.731
ShareFavela	Decimal	Binary	Decimal	Binary
FE: Local	X	X	X	X
FE: Year	X	X	X	X

mean of the dependent variable. Greater exposure to criminal taxes on services appear to be strongly associated with youth participation in elections.[18]

Second, I find a positive and significant relationship between exposure to service taxes and the local winner's vote share at the ballot box. Holding *ShareFavela* constant, an additional complaint about service taxes in a favela predicts the leading candidate increases their lead by a further 1-2 votes within the ballot box. Though this sounds small, several legislative seats on the margin are decided by fewer than 1,000 votes each year, and such small margins of difference can be decisive. In all, these results suggest that taxes on services predict a slightly less competitive environment at the ballot box, where local winners win by a slightly larger margin.

6.1   Alternative Explanations

I argue that criminal service delivery, and the companion taxes levied on them, are responsible for these patterns in voter participation. Rather than the delivery of services, could these patterns be the result of criminal coercion used to extract revenue

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18. Results are null when considering an alternative measures of participation, turnout, as the dependent variable. This is unsurprising, given that voting is mandatory, there is already very high baseline turnout level across Brazil (greater than 80%), and theoretical predictions about little variation in turnout when voting is mandatory (Gans-Morse et al. 2014).

from the population? Table 3 considers the same model but focuses on the alternate explanation connecting protection taxes and electoral participation. Unlike taxes on services, exposure to taxes on protection are correlated with lower levels of youth voter registration, in line with certain findings about how criminal governance has a depressive effect on turnout (López García and Maydom 2021). Models (3) - (4) include two interaction terms, one for exposure to service taxes and one for exposure to protection taxes. When controlling for exposure to protection taxes, there is still a positive and significant relationship between exposure to service taxes and youth registration.

Similarly, models (5) - (6) of Table 3 document a highly significant relationship between protection and the local winner's vote share. Unlike exposure to service taxes, exposure to protection taxes is correlated with a more competitive local electoral environment, and the local winner's margin decreases as exposure to protection increases. This holds true when including two interaction terms, shown in Models (7) - (8). For the favelas, shown in Figure 4, that have high levels of both types of criminal taxes, these results reveal that even when controlling for a high level of protection taxes, exposure to service taxes predicts more coordination at the ballot box. These findings suggest that protection taxes, if perceived to be coercive, might contribute to reductions in participation.

Another important alternative explanation linking criminal taxation to electoral participation is voter discontent. Exposure to criminal taxes that leads to voter discontent could manifest at the ballot box as spoiled ballots, especially in a context like Brazil with a high degree of ballot secrecy. Table 4 considers the share of spoiled ballots as an outcome. I find that a one-unit increase in exposure to service taxes is associated with a statistically significant decrease in spoiled ballots, representing a 1-1.6 percentage point decrease in the share of invalid votes cast per ballot box. In contrast, exposure to protection taxes are significantly and positively associated with spoiled ballots, though the effect size is half the magnitude of the (already small) service tax effect. The magnitude and direction for exposure to both tax types holds when

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Table 3: Criminal Protection Taxation and Voter Participation

	DV: Youth Registration				DV: Most Voted's Share			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\gamma_{Protection\_Tax}$	−0.003*	−0.005	−0.002	−0.003	0.000**	−0.001*	0.000***	−0.001*
	(0.001)	(0.005)	(0.002)	(0.005)	(0.000)	(0.000)	(0.000)	(0.000)
Protection Tax	−0.014**	−0.006	−0.012**	−0.006	0.000**	0.000	0.000**	0.001+
	(0.004)	(0.004)	(0.004)	(0.005)	(0.000)	(0.000)	(0.000)	(0.000)
$\gamma_{Service\_Tax}$			0.008*	0.033**			0.001**	0.002*
			(0.003)	(0.011)			(0.000)	(0.001)
Service Tax			0.037**	0.006			0.002+	−0.001
			(0.011)	(0.007)			(0.001)	(0.001)
ShareFavela	−0.001	0.054*	−0.006	0.024	0.001	0.006**	0.000	0.004+
	(0.014)	(0.022)	(0.014)	(0.024)	(0.001)	(0.002)	(0.001)	(0.002)
Num.Obs.	23 126	23 126	23 126	23 126	23 126	23 126	23 126	23 126
R2	0.364	0.365	0.365	0.366	0.731	0.731	0.731	0.731
ShareFavela	Decimal	Binary	Decimal	Binary	Decimal	Binary	Decimal	Binary
FE: Local	X	X	X	X	X	X	X	X
FE: Year	X	X	X	X	X	X	X	X

accounting for them both, shown in Columns (5) - (6).

These findings suggest that the voter discontent alternative explanation might have more predictive power for criminal *protection* taxes than for criminal service taxes. If voters perceive that protection taxes are little more than extortion, and they don't get something in return, this could spark discontent and prompt them to disengage at the ballot box or to abstain in protest. There is evidence of the contrary in settings with high service taxes, and in settings where both protection and service taxes are high, the diverging impulses seem to counteract each other.

6.2   Mechanisms

My theoretical argument (1) links exposure to criminal taxation to electoral participation through the service delivery channel: criminal groups that leverage service delivery as a technology of governance will be more effective at mobilizing voters, increasing electoral participation. In addition, I expect that (2) this effect will be more salient for taxes related to service provision instead of protection, which can more easily be

Table 4: Voter Discontent Mechanism

	(1)	(2)	(3)	(4)	(5)	(6)
	DV: Share of Spoiled Ballots					
$\gamma_{Service\_Tax}$	−0.002***	−0.003***			−0.002***	−0.004***
	(0.000)	(0.001)			(0.000)	(0.001)
Service Tax	−0.003***	0.002*			−0.003***	0.002**
	(0.001)	(0.001)			(0.001)	(0.001)
$\gamma_{Protection\_Tax}$			0.000***	0.001***	0.001***	0.001***
			(0.000)	(0.000)	(0.000)	(0.000)
Protection			0.000	−0.001***	0.000	−0.002***
			(0.000)	(0.000)	(0.000)	(0.000)
ShareFavela	0.004***	0.007***	0.002***	0.003**	0.004***	0.007***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Num.Obs.	23 126	23 126	23 126	23 126	23 126	23 126
R2	0.546	0.544	0.545	0.545	0.550	0.547
ShareFavela	Decimal	Binary	Decimal	Binary	Decimal	Binary
FE: Local	X	X	X	X	X	X
FE: Year	X	X	X	X	X	X

perceived as extortion.

This section tests the observable implications of the main mechanism, which argues that criminal groups that collect service taxes and provide public goods have the technologies of governance that facilitate mobilizing voters. In the main results, the interaction term $\gamma_{Service\_Tax}$ captures the effect of residency in a favela with criminal service tax collection on voting. However, in contrast to my interpretation, my main results do not differentiate between electoral participation due to voter mobilization or electoral participation due to other reasons. This section incorporates other variables to provide further supporting evidence of my proposed mechanism.

Table 5 provides further evidence of my proposed mechanism, considering criminal voter mobilization as the dependent variable. I construct the dependent variable using the *Disque Denúncia* data, filtering complaints for the joint presence of organized crime-related words and voter mobilization-related words.[19] If my theory is true, then criminal service taxes will be associated with higher levels of corralling (voter mobi-

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19. This data is used more extensively and described in detail in Trudeau (**trudeau˙how˙2022**) to estimate the incidence of *criminal corralling*.

Table 5: Criminal Taxation and Voter Mobilization

	DV: Voter Mobilization					
	(1)	(2)	(3)	(4)	(5)	(6)
$\gamma_{Service\_Tax}$	0.007**	−0.003			0.005*	−0.009
	(0.002)	(0.007)			(0.002)	(0.008)
Service Tax	0.066***	0.113***			0.062***	0.107***
	(0.008)	(0.020)			(0.007)	(0.020)
$\gamma_{Protection\_Tax}$			−0.002***	−0.001	0.000	0.007**
			(0.000)	(0.001)	(0.001)	(0.002)
Protection Tax			−0.010***	−0.011***	−0.006***	−0.002
			(0.001)	(0.001)	(0.001)	(0.003)
ShareFavela	−0.006**	−0.004	−0.001	−0.008+	−0.005**	−0.005
	(0.002)	(0.006)	(0.002)	(0.004)	(0.002)	(0.006)
Num.Obs.	23 126	23 126	23 126	23 126	23 126	23 126
R2	0.604	0.517	0.493	0.432	0.618	0.526
ShareFavela	Decimal	Binary	Decimal	Binary	Decimal	Binary
FE: Local	X	X	X	X	X	X
FE: Year	X	X	X	X	X	X

lization) during the campaign period, because criminal groups that tax services have a comparative advantage in voter mobilization.

I find support for the claim that criminal groups that tax services are more likely to mobilize voters during the electoral campaign period. Columns 1-2 suggest that one more complaint about service taxes inside a favela corresponds to a 0.07 - 0.11 increase in complaints about criminal voter mobilization. These results are more sensitive to the way *ShareFavela* is operationalized, and the interaction term is statistically indistinguishable from zero when *ShareFavela* is dichotomized. This suggests that the relationship between criminal service taxes and voter mobilization is better understood on the intensive margin, and may be particularly relevant for those favelas with extremely high levels of criminal service provision.

When turning to Columns 3-4, the relationship between voter mobilization and protection taxes is again significant and negative, meaning that higher exposure to protection taxes in the pre-period is correlated with fewer reports of criminal voter mobilization during the election cycle. Substantively, this supports my argument:

high levels of coervice taxation alone are not as strongly associated with governing and should be less likely to be paired with other governing activities, such as voter mobilization.

Further, when controlling for the level of protection taxes in Columns (5) - (6), the magnitude and significance of the results for service taxes holds. Even when allowing for a high level of protection taxes, I find that the level of criminal service taxes is the stronger predictor of where we are likely to observe criminal voter mobilization.

Not only do these findings provide supporting evidence for the service delivery mechanism linking criminal taxation to voter participation, but they raise doubts about the efficacy of "protection taxes" or coercion alone as a technology of governance for criminal governors. Together, these findings suggest that service provision is associated with a higher incidence of voter mobilization, higher youth registration, and the local winner winning by a larger amount, and fewer spoiled ballots, even when controlling for level of coercive taxation. The findings for protection taxes demonstrate the opposite, adding more nuanced results to the chorus of findings about the relationship between armed or criminal violence and electoral disengagement (Córdova 2019; López García and Maydom 2021; Steele 2011).

6.3 Robustness

I consider several additional factors that are not shown in Figure 1 because they do not link taxation explicitly to electoral participation, but are features of the broader criminal context in Rio de Janeiro. An important alternative explanation is that the criminal groups that tax services have clearer ties to the state, and have clearer pathways into politics. Many of these arguments hinge on the implicit association between *milícia* groups and criminal taxation, such as Hidalgo and Lessing (2019), who argue that *milícias* may be viewed as more legitimate partners by politicians, and the cost of affiliation is not as high for the politicians as that of being linked to a prison gang.

For some of these criminal groups, their state partners may even help them obtain illicit connections to utilities or facilitate their clandestine transport business (Arias and Barnes 2017; Cano and Duarte 2012).

To test whether these results are due to criminal service provision or due to latent, underlying connections between politicians and certain criminal groups, I classify the favelas for the entire 2008 - 2020 time series according to their dominant faction, using the *Disque Denúncia* calls. Using test processing tools, described further in Appendix A (TBD), I generate a time series for each favela-month, where I classify the favela-month periods in one of six dominance categories: 1) - 4) the major factions, ADA, CV, *Milícia*, or TCP, 5) In dispute, or 5) no data. I code dominance in each faction as an individual dummy variable, which means that, if there is evidence in the *Disque Denúncia* call logs, two factions can be present in the community at the same time, as is the case with notable TCP-*Milícia* alliances or other temporary alliances.

Panel A of Table 6 presents the results of Equation 1, conditioned on the subset of communities dominated by *milicia* groups. I use the *Disque Denúncia* call transcripts to filter for the communities where *milícia* groups are mentioned, and restrict the sample to those groups. I present the two main dependent variables in this table, as well as the voter mobilization outcome. These models reveal that even when restricting the sample to governing criminal factions *most likely* to engage with politics, there is still significant variation in a) their exposure to criminal taxation and b) exposure to voter mobilization, which leads to variation in c) electoral participation.

The models in Panel A behave as expected, and demonstrate that exposure to criminal service taxes and electoral participation cannot be explained by *milícia* ties alone. Table 6 shows that even within *milícia*-dominated communities, voting behavior depends on whether *milicias* collect taxes from protection or from services, and the extent of such taxation. The trends for youth registration, vote share, and voter mobilization reflect the broader trends across the city, but the coefficients are larger in scope, which reveal the underlying tendency of *milícia* groups to partake in either

Table 6: Criminal Taxation and Voter Participation, by Faction

	Youth Registration			Most Voted's Share			Voter Mobilization		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A: Milicia Only									
$\gamma_{ServiceTax}$	0.016*		0.015**	0.001		0.001**	0.015***		0.014***
	(0.006)		(0.005)	(0.000)		(0.000)	(0.004)		(0.004)
Service Tax	0.054***		0.046**	0.002		0.002+	0.074***		0.069***
	(0.016)		(0.015)	(0.001)		(0.001)	(0.011)		(0.010)
$\gamma_{Protection}$		−0.004*	−0.004*		0.000***	0.000***		−0.003***	−0.001*
		(0.002)	(0.002)		(0.000)	(0.000)		(0.000)	(0.000)
Protection		−0.015**	−0.012**		0.000	0.000		−0.011***	−0.006***
		(0.004)	(0.005)		(0.000)	(0.000)		(0.001)	(0.001)
ShareFavela	−0.030	−0.010	−0.022	0.001	0.002	0.001	−0.012***	0.005*	−0.009**
	(0.019)	(0.019)	(0.019)	(0.001)	(0.001)	(0.001)	(0.004)	(0.002)	(0.003)
Num.Obs.	9172	9172	9172	9172	9172	9172	9172	9172	9172
R2	0.402	0.402	0.404	0.769	0.770	0.770	0.692	0.419	0.718
Panel B: Prison Gang Only									
$\gamma_{ServiceTax}$	0.002		0.005	0.000		0.000	0.001		0.006
	(0.006)		(0.006)	(0.001)		(0.001)	(0.005)		(0.004)
Service Tax	0.023		0.038+	0.001		0.001	0.068***		0.094***
	(0.019)		(0.019)	(0.002)		(0.003)	(0.016)		(0.016)
$\gamma_{Protection}$		−0.008	−0.013		0.000	0.000		−0.012	−0.020*
		(0.012)	(0.012)		(0.001)	(0.001)		(0.007)	(0.008)
Protection		−0.041	−0.060		0.000	−0.001		−0.056**	−0.102***
		(0.039)	(0.038)		(0.003)	(0.003)		(0.020)	(0.024)
ShareFavela	0.037+	0.039*	0.038+	0.004*	0.003+	0.003*	0.002	0.000	0.004
	(0.020)	(0.020)	(0.020)	(0.002)	(0.002)	(0.002)	(0.004)	(0.004)	(0.004)
Num.Obs.	10 633	10 633	10 633	10 633	10 633	10 633	10 633	10 633	10 633
R2	0.391	0.391	0.392	0.779	0.778	0.779	0.648	0.558	0.689

Note: all models presented report the interaction term with the logged *ShareFavela*.

of these behaviors. My mechanism is compatible with existing theories about how connections with politicians drive criminal electoral behavior. These findings should be interpreted as suggesting that even *among* criminal groups with political ties, those whose revenue stems from service taxes rather than purely coercive taxes will be more likely to mobilize voters and affect participation.

Panel B of Table 6 presents two important findings. First, it supports existing scholarship on Rio de Janeiro that intervening in elections, in general, is more common amongst *milícia* groups than prison gangs. Relative to the main findings, the coeffi-

cients are attenuated and many are statistically distinguishable from zero, although they retain the same sign. Second, one exception to these null results is the findings related to voter mobilization. For all three models - those that test the relationship between service taxes, protection taxes, or both, there is a strong and significant relationship between drug gang tax regimes that is consistent with the main finding. Models 7 and 9 validates the documented relationship in the main findings, showing that even for criminal groups who have lower incentives or opportunities to engage with politics, when they collect high levels of service taxes, they are also likely to engage in voter mobilization. Protection taxes, on the other hand, have a moderate negative association with voter mobilization, further suggesting the incompatibility of coercive taxation with governance-related activities like voter mobilization.

Table 7: Criminal Taxation and Winning, by group type

	DV: Local Candidate Winning Election					
	(1)	(2)	(3)	(4)	(5)	(6)
$\gamma_{Service\_Tax}$	0.010*		0.008+	−0.002		−0.004
	(0.004)		(0.004)	(0.004)		(0.005)
Service Tax	0.044***		0.029***	−0.029+		−0.041*
	(0.010)		(0.009)	(0.016)		(0.019)
$\gamma_{Protection\_Tax}$		−0.008***	−0.007***		−0.005	−0.001
		(0.001)	(0.001)		(0.009)	(0.009)
Protection Tax		−0.025***	−0.023***		0.017	0.038
		(0.003)	(0.003)		(0.028)	(0.029)
ShareFavela	−0.001	0.019+	0.012	−0.001	0.001	0.001
	(0.012)	(0.011)	(0.011)	(0.016)	(0.016)	(0.016)
Group Type	Milícia	Milícia	Milícia	DTO	DTO	DTO
Num.Obs.	9157	9157	9157	10 613	10 613	10 613
R2	0.463	0.475	0.477	0.542	0.542	0.544
FE: Local	X	X	X	X	X	X
FE: Year	X	X	X	X	X	X

Next, I calculate a binary variable indicating whether the leading candidate at the ballot box actually won the election. If criminal taxes on services facilitate voter mobilization, then this outcome helps to quantify the downstream impact of criminal service provision on the composition of the legislative assembly.

Columns (1) - (3) of Table 7 show that exposure to service taxes in *milícia*-dominated areas is also strongly associated with the local candidate winning the election and entering city council. An increase in exposure to service taxes by one complaint is associated with a 10% increase in the probability of getting elected. This represents an increase of 16% relative to the mean of the dependent variable. Substantively, as voters are exposed to more criminal taxes on services in *milícia*-dominated communities, the candidates favored by their neighborhoods are much more likely to win. The same is not true for *milícia*-dominated communities who rely on extortive taxation but do not provide services or provide scant services, as evidenced by the results in Models 2 and 3. Candidates who do well in communities governed by purely coercive *milícias* are less likely to win the general election than candidates who do well in communities governed by *milícias* that also provide services.

Are taxes on services in *milícia* dominated communities associated with meaningful changes in the composition of the legislature? These models show that the candidates supported by *milícia* communities with high service taxes are between 4-5 percentage points more likely to win the election than a leading candidate in *milícia*-dominated favela with low service tax collection. This trend is reversed in favela voting booths where criminal protection taxes are high: such taxes are correlated with a lower chance of victory; and high taxes of both kinds have the potential to neutralize the effect of each other.

When considering communities governed by drug trafficking organizations, the results in Columns (4) - (6) support the findings from Table 5. There is no documented relationship between criminal taxation and candidate success for favela ballot boxes dominated by drug trafficking gangs. While this does not suggest that drug trafficking gangs are absent from politics, it suggests that the types of criminal electoral behaviors related to service provision and taxation – monitoring and information gathering – are less likely to be the strategies pursued by Rio de Janeiro's drug gangs when entering politics.

7   Conclusion

In this paper, I offer a fiscal explanation for the link between organized crime and electoral participation. There is mounting evidence that coercive power can influence elections, that voters express their satisfaction with criminal governance at the ballot box, and that certain types of criminal groups get more involved in politics than others. My theory adds nuance to these existing explanations by theorizing an underexplored channel: criminal service provision and taxation.

Criminal service provision and tax collection is a core element of criminal governance (Lessing 2020) and has been documented worldwide and across history, from proto-mafia groups (Blok 1975; Gambetta 1996) to contemporary armed groups (Arias 2017; Bandula-Irwin et al. 2024; D'Souza and Mampilly 2024). These groups often leverage their coercive power to collect taxes on "protection," but also tax and provide a range of services for residents, including utilities, transport, and even health or other social services.

In present-day democracies, such as Brazil, criminal groups that collect taxes from the residents they govern engage in *co-governance* with the state, often governing certain elements of the residents' lives while the state governs others. Unlike theories of taxation under armed groups, which predict that residents largely interact and grant legitimacy to one authority or the other, I argue that taxation can be used by criminal groups to inspire participation with the state – so long as residents participate in a certain way. This paper builds a theory linking criminal taxation to electoral participation, arguing that criminal taxes on services are used by criminal groups as a technology of governance to both make the residents more legible to them and increase their legitimacy. This, in turn, facilitates voter mobilization, as criminal groups have privileged information and influence over the voters they tax and provide services to. I contrast my theory with existing theories about criminal coercive power and voter discontent.

To assess this theory, I use sub-municipal data from Rio de Janeiro, Brazil, focusing on favelas as the unit of criminal control. First, I generate original data from the *Disque Denúncia* calls for help to measure the prevalence and extent of criminal taxation in Rio de Janeiro prior to three election-years, from 2008 - 2020. Second, I leverage exogenous voter assignment to the ballot box to estimate the effect of criminal taxation on electoral outcomes. I find that in criminally-controlled favelas where service taxes are high, youth voters are more likely to register, the local winning candidate is more likely to win by a larger margin, and there is more evidence of criminal voter mobilization. I rule out the alternative explanations related to criminal coercion and voter discontent in this case, but acknowledge that they could be important drivers of voting outcomes under different conditions. While I document that this effect is driven by communities dominated by *milícia* groups, these results also demonstrate substantial *within-milícia* variation. My findings advance the field by showing that not only are there differences across criminal group types in how they engage in electoral politics, but also within depending on their resources and revenue streams. Finally, my results show that, for the *milícia*-dominated communities that tax services, these candidates are 4-5% more likely to win the general election. This suggests that not only is service provision a strong predictor of effective voter mobilization, but it has the potential to alter downstream electoral outcomes.

These findings can inform research on how criminal groups use and maintain their power. By considering taxation as a technology of governance, I join the chorus of a number of scholars who argue that criminal revenue collection is not a financial tool alone (D'Souza and Mampilly 2024; Mampilly and Thakur 2025; Revkin 2020; Skarbek 2011). Further, by differentiating taxes on services from those on protection, I link the criminal governance literature to new insights in comparative politics that explore how non-state actors and their institutions generate norms and rules when providing services and collecting revenue (Lust and Rakner 2018; Post et al. 2017). Future research should further investigate the varieties of criminal taxation and how it maps onto other types

of engagement with the population and the state. As this paper has shown, criminal service provision is associated with higher levels of participation in elections, which I argue is due to the voter mobilization channel. Yet the criminal provision of services may have differential effects on resident engagement with other arms of the state, or it may interact with the level of criminal coercion in the territory. Only by understanding these dynamics can we begin to formulate proper policy solutions to curtail criminal groups' power and influence.

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