Essays on the Political Economy of Supply-Side Counternarcotics

Julian E. Gerez

Submitted in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy
under the Executive Committee
of the Graduate School of Arts and Sciences

COLUMBIA UNIVERSITY

2025

Abstract

Essays on the Political Economy of Supply-Side Counternarcotics

Julian E. Gerez

When, how, and why does the state choose to crack down on some forms of crime or threats to its authority but not others? What are the downstream effects of these choices? This dissertation investigates these questions through a study of the political economy of counternarcotics enforcement in Latin America, focusing on the uneven territorial application of drug laws and the consequences of this selective enforcement for state-building, political behavior, and socioeconomic development. The first paper examines the political incentives behind the geographic distribution of coca eradication via aerial fumigation in Colombia. It shows that enforcement patterns reflect the influence of non-state armed groups. Municipalities with greater historical paramilitary activity—actors often aligned with the central government—were relatively protected from aerial eradication after the election of a hardline president. In contrast, areas with a history of guerrilla violence—groups in opposition to the state—were disproportionately targeted. These patterns suggest that state coercion is shaped by partisan incentives, complicating narratives of impartial state-building in conflict-affected democracies. The second paper explores how exposure to aerial fumigation shapes electoral behavior in rural Colombia. It finds that this coercive form of enforcement generates political backlash. Citizens affected by fumigation interpret the state's actions as punitive and unjust, rather than legitimate or neutral. Despite these reactions, the influence of illegal armed actors over enforcement decisions inhibits democratic accountability. In this way, coercive governance can deepen political

alienation and erode trust in democratic institutions. The third paper, co-authored with Elena Barham, expands the analysis to Colombia and Peru, investigating how counternarcotics strategies reshape the industrial organization of illicit economies. Using highly fine-grained spatial and remotely sensed data as well as qualitative interviews, it shows how state pressure in one area can generate unintended consequences in others, transforming the criminal landscape. In Peru, manual eradication displaces criminal activity rather than eliminating when groups can adapt to new territories or other illicit industries. In Colombia, forced eradication and even voluntary crop substitution programs encourage diversification into other illicit sectors like illegal mining and logging.

Table of Contents

List of Figures

List of Tables

Acknowledgements

When I was young, my parents emigrated from Colombia to the United States, seeking better opportunities and stability amid the challenges facing my country of birth. In making that decision, they gave up so much to ensure I had the chance to succeed. Working on this dissertation, which explores issues of crime, security, politics, and law enforcement in Latin America—issues inextricably intertwined with the reasons for our move—is but a miniscule part of my attempt to repay an unrepayable debt. *Gracias por todo*.

Still, this effort would have been for naught without the advice, care, time, belief, and grace afforded to me by first and foremost the members of my dissertation committee: Sarah Daly, John Marshall, Eduardo Moncada, and Vicky Murillo. Each, in their own way, has left an unambiguously positive imprint on my work and, more importantly, on the person I am today. Their insight, generosity, and commitment sharpened my thinking, anchored me at moments of doubt, and offered a model of the kind of academic I hope to become. Gemma Dipoppa joined Columbia University's faculty and my committee toward the very end of this process, and her support was also very meaningful.

Many friends have been with me nearly every step of the way: thanks to Elena Barham, with whom I was lucky enough to co-author a chapter of this dissertation, and to Arnaud Maurel, who I was lucky enough to live with, and also to Ella Bayi, Carolina Bernal, Stephanie Char, Merlin Heidemanns, Jorge Mangonnet, Rebecca Marwege, Beatrice Montano, Simone Paci, Nicole Peisajovich, Oscar Pocasangre, Zara Riaz, Ece Tekbulut, Andres Uribe, and Heewon Yoon. Other friends and colleagues have served as inspirations for me and provided me additional support, especially Michael Miller—who was like an extra advisor to me—and Iván Ramírez, but also Pablo Argote, Michael Auslen, Hannah Baron, Hayley Cohen, Martin Devaux, Naoki Egami, Nathan Feldman, George Georgarakis, Don Green, Shigeo Hirano, Danny Hirschel-Burns, Salif Jaiteh, Junyan Jiang, Isabel Laterzo-Tingley, Lionel Ong, Paul Platzman, Carlo Prato, Chiara Superti, Georgiy Syunyaev, María Alejandra Vélez, and David Vilalta. Thanks to Betty Howe, Holly Martis, Kay Achar, and Sonnie Kirschbaum for keeping the department running.

This dissertation is supported by the American Political Science Association Doctoral Dissertation Research Improvement Grant and a United States Institute of Peace-Minerva Peace and Security Scholar Award. These programs—just two of many funded, at least in part, by the United States government—contribute to the pursuit of effective policy and scientific knowledge. However, programs like these and many others are under threat or have already been eliminated. The United States Institute of Peace-Minerva Peace and Security Scholar Award I received was abruptly terminated without explanation in March 2025, days before the initial distribution of my dissertation. The award provides stipendiary support for doctoral candidates conducting policy-relevant research on peacebuilding and international security. Because the award is disbursed in three tranches over the course of the academic year, I received two-thirds of the total amount, but the final payment—intended to support me during the period between graduation, when Columbia University no longer provides financial support, and the start of my academic appointment—was withheld at the time of writing. This disruption not only undermined my personal financial stability, but also reflects a troubling shift away from supporting the kind of academic inquiry that institutions like the United States Institute of Peace are congressionally mandated to foster. Meanwhile, the American Political Science Association Doctoral Dissertation Research Improvement Grant is supported by the National Science Foundation, which has also faced significant threats. Scientific research not only drives innovation and practical solutions, but also sustains foundational knowledge that may not yield immediate results, yet deepens our understanding of society and the natural world, laying the groundwork for long-term progress. To this end, government support of research is not charity, it is infrastructure. These institutions helps build the foundation of one of the greatest strengths of the United States, and a crucial reason for my family's emigration: its commitment to education. Sadly, we are witnessing an undermining of this foundation in this troubling shift away from public investment in knowledge. As they are imperiled, I remain hopeful that we will continue to invest in future scholarship.

Thanks to my parents, whose sacrifice laid the foundation on which everything I have ever done stands. You gave me the world. And to Sarah Wright, for always believing in me and loving me unconditionally. You became my world. I love you.

Para mi padre, Enrique Gerez, y para mi madre, Marta Amador.

Introduction

Violence is a fundamental part of the natural order. In nature, violence is used to obtain food, protect others, and claim territory. Modern human society, however, has carefully woven a social fabric designed to resolve disputes in a peaceful manner. In this context, violence represents an aberration or breakdown of this social fabric. Industrialized agriculture and livestock cultivation allow humans to obtain food in exchange for money earned from specialized separate jobs as opposed to hunting. Humans submit to the state—which holds a monopoly on the legitimate use of violence—as a specialist in protection and the claimant of territories.

Though violence is less common among humans today than in the "state of nature," it nevertheless persists, with deleterious consequences for economic growth (Collier 1999), social development (Blattman and Miguel 2010), the provision of public goods (Daly 2022a; Nieto-Matiz 2023), and democracy (Lessing 2017; Trejo and Ley 2020). While historical violence has been primarily a result of interstate and intrastate conflict, criminal violence is an increasingly large portion of contemporary violence faced by states, especially in Latin America, which is the most violent region in the world as measured by homicides, assaults, and armed robberies (Arjona 2021).

Much criminal violence is linked to illicit economies such as the drug trade. In legal economies, disputes can be settled by the state and courts. By contrast, participants in illegal economies inherently cannot access these channels to resolve disputes. As a result, violence becomes the primary—and sometimes the only—mechanism of dispute resolution (Reuter 2009). In such contexts, non-state armed groups and other criminal actors develop and thrive in these contexts as specialists in extralegal violence, exploiting both illicit markets and the protection systems that emerge from them as lucrative business opportunities (Felbab-Brown 2005; Reno 2009; Yashar 2018). Accordingly, states have invested heavily in supply-side law enforcement to combat the drug trade. The United States has spent more than US$20 billion on counternarcotics enforcement in Latin America and the Carribbean since 2000. Source countries have also spent extensively on these efforts, which include drug seizures (Castillo and Kronick 2020; Dell 2015), the targeting of criminal group leaders (Calderón et al. 2015; Phillips 2015), forced crop eradication (Mejía, Restrepo, and Rozo 2017; Moreno-Sanchez, Kraybill, and Thompson 2003; Reyes 2014) or combinations of these strategies.

Yet while the bulk of the existing research on counternarcotics policies has examined the consequences of these efforts on violence (Durán-Martínez 2018) and state capacity (Flores-Macías 2018), there is less systematic evidence on what explains variation in the implementation of law enforcement and the political consequences of enforcement.

This dissertation argues that political factors play a crucial role in driving law enforcement policies that can serve as tools to aid politicians in power. In particular, the state's uneven implementation of counternarcotics policies can be conceptualized as a form non-material redistribution shaped by electoral politics. Incumbent politicians use counternarcotics efforts strategically in terms of geographic targeting and timing to reap the benefits of such policies while eschewing their costs. In turn, patterns of uneven enforcement shape citizens' perceptions of the state—protection of the rule of law through law enforcement is arguably the essential function of the state.

To understand what drives variation in enforcement, it is useful to first posit that the implicit goal of law enforcement is to improve security. Social contract theory contends that individuals implicitly or explicitly consent to give up some freedom to gain the benefits of political order created by the state, and security is one of the foundational aspects of this contract. Politicians, therefore, try and link intensified enforcement to improvements in security.

However, the establishment of laws and their enforcement are socially constructed and endogenous to individual preferences. This is most obvious in full democracies, but even in cases of less democratic governments, leaders face constraints via threats from the masses and elites (Svolik

2012). Put differently, what is and is not permissible by the state can shift over time and varies across cultures. Of course, there are large overlaps across states in which activities are not permitted, for example, murder and theft. Beyond the more clear-cut cases, the legal standards for society are constantly evolving.

Consider a set of violations of social norms and their relationship to both the letter and the implementation of the law. Certain violations of social norms are unlikely to ever universally generate explicit laws barring their practice, such as skipping queues or listening to music on a loud speaker on public transportation. If they do represent violations of the letter of the law, then they are, in turn, unlikely to be excessively enforced. By contrast, the aforementioned infringements to life and property like murder and theft are likely to be barred legally and enforced strongly. Between these two zones lies a gray zone of violations which may not have a strong relationship between their severity and their enforcement: these are most likely to vary across time and space, and are the types of violations that can most be shaped by agency in enforcement—for example, the prohibition of alcohol and subsequent repeal in the United States (García-Jimeno 2016). A government can react to shifting norms by making changes to the letter of the law, but it is even easier to change the de facto implementation or enforcement of the law (Holland 2017), especially in cases where it is less obvious that public opinion about a law is aligned with the letter of the law. The evolving stance on marijuana is another example. In the United States, marijuana was initially criminalized with its possession and distribution rigorously policed since the early 20th century. Over time, the stance against marijuana has softened, leading to its legalization in 24 states as of 2023, even as it remains federally illegal. Changes in the formal legal status of marijuana were often preceded by the deprioritization of its enforcement. While norm change in this sense can be unidirectional in the long term, forbearance can shift in the short term with the election of politicians who intensify or reduce enforcement patterns. It is no coincidence that these two examples are both related to the use of illicit substances. These types of violations—those that involve contested moral or social norms and whose harms are not universally agreed upon—are especially susceptible to politicization in their enforcement. Unlike universally condemned acts like murder, the criminalization and enforcement of behaviors such as drug use or distribution often reflect political choices more than normative consensus. As a result, they offer fertile ground for selective enforcement, where the state can use its discretion to reward allies or punish opponents, both subtly and overtly.

As discussed, crime and the drug trade are the current major drivers of violence in Latin America, with global political and socioeconomic consequences. This dissertation examines the political economy of counternarcotics enforcement, the primary approach to combating the issue of illicit drugs. While ideally, the state should enforce equally against threats to its monopoly on violence—including drug-producing and trafficking criminal actors—in practice, said enforcement is rarely uniform. Despite the normative ideal of equal protection under the law, elites manipulate its practical application in response to political pressure. These uneven enforcement patterns have meaningful implications for criminal justice, criminal behavior, the state, economic and political inequality and development, and more.

This project advances the notion that public security and law enforcement as endogenous to political incentives. In doing so, I focus on how and why states enforce the law unevenly across territories and the implications of this uneven enforcement for state power, political behavior, and illicit markets. Through three standalone but thematically interlinked papers, this project investigates the logics driving enforcement decisions and the broader consequences for governance, citizen-state relations, and the structure of criminal economies.

The first paper addresses a central question: why do governments enforce the law more in some areas than others, particularly when managing illicit markets involving non-state armed groups? It argues that electoral incentives drive politically motivated patterns of selective enforcement. Using a difference-in-differences approach and detailed data on coca eradication via aerial fumigation in Colombia, the paper finds that municipalities with a history of paramilitary presence—groups politically aligned with the government—were differentially shielded from eradication after the election of a hardline president, especially at times and in places where these groups were most electorally influential. This pattern of forbearance holds even with United States' pressure to intensify eradication broadly and resulting widespread increases in overall levels of eradication. Conversely, areas with historical guerrilla violence, associated with opposition to the state, were disproportionately targeted. These findings challenge conventional accounts of enforcement as driven by need or capacity, instead revealing a pattern of retributive enforcement aligned with short-term electoral advantage at the expense of long-term state-building. By showing how political alignment with the government conditions the use of state coercion, the paper speaks to broader debates about state impartiality and the strategic use of violence in weak institutional environments. Uneven enforcement can damage democracy and citizen-politician linkages by allowing armed actors to become criminally involved in elections.

Building on this, the second paper investigates how these enforcement patterns affect citizens' political behavior. Specifically, it examines how rural communities in Colombia respond electorally to the experience of forced coca eradication via aerial fumigation. Building off my fieldwork interviews of coca growers, government officials, and former members of criminal groups, I theorize that affected citizens view state enforcement as part of a broader pattern of targeting poor, rural subsistence communities. This paper contends that this form of indiscriminate and coercive law enforcement fosters feelings of group-based threat and alienation, leading to patterns of political backlash. However, this backlash might not necessarily translate to results at the ballot box as a result of the electoral influence of the non-state armed groups discussed in the first paper. Using administrative elections data that leverages variation in eradication and the timing of elections, the analysis shows that citizens can successfully attribute blame for eradication to the national government rather than local authorities who are not responsible for eradication. Exposure to forced eradication depresses support for right-wing presidential candidates associated with punitive drug enforcement, even as these tough-on-crime presidential candidates in Colombia excelled during the time period of study. Taken together, these findings complicate benign models of democratic responsiveness and suggest that enforcement policies can deepen political cleavages. In contrast to views of the state as a neutral enforcer of law, the findings highlight how enforcement can be perceived as politically motivated repression, reinforcing narratives of marginalization among affected communities. This paper also surfaces important normative questions about the costs of using coercive tools in the name of public security, particularly in democracies.

The third paper, co-authored with Elena Barham expands the inquiry to the consequences of enforcement for illicit economies, exploring how state pressure on one criminal activity—coca cultivation—affects broader patterns of criminal diversification. Focusing on Peru and Colombia, the paper theorizes that forced eradication encourages actors to shift into other extractive illicit sectors, such as illegal logging and gold mining, particularly in areas with limited legal alternatives and the presence of adaptive criminal actors. In Peru, we use novel spatial and remotely sensed data to document both direct and spillover effects of eradication, highlighting how enforcement policies can reshape the structure of illicit economies in unintended ways. The analysis reveals that rather than eliminating illegal activity, enforcement can displace it, pushing criminal groups to diversify in response to state pressure.

This dissertation contributes to a broader theoretical conversation about the nature of state authority in contexts of weak institutional capacity and contested sovereignty. Rather than viewing the state as moving linearly toward the Weberian ideal of holding the monopoly of violence, the findings suggest a more fragmented and strategic application of coercion, shaped by political, organizational, and international pressures. This dissertation builds on and challenges classic theories of the state by showing how law enforcement is not only a function of state capacity, but also a politically calculated choice. The state may possess the capacity to enforce but chooses not to in areas where enforcement could harm electoral prospects or provoke backlash from politically influential armed actors. At the same time, international dynamics—particularly U.S. counternarcotics funding and certification regimes—introduce external incentives that further complicate enforcement decisions.

These insights also open avenues for future research. Comparative analysis across other major drug-producing contexts, such as Mexico and Afghanistan, can help test the generalizability of these arguments. In federal systems like Mexico, subnational variation in enforcement may reflect a different set of political calculations based on local and national-level electoral incentives.

In places like Afghanistan, wartime dynamics and the role of foreign actors alter the strategic logic of enforcement. Additionally, future work should explore other types of enforcement beyond crop eradication—such as drug seizures, the destruction of drug refinement laboratories, and targeted raids on criminal actors—and investigate the role of international actors, especially the U.S., in shaping the enforcement incentives of recipient states. Understanding how the U.S. exerts influence over domestic enforcement in source countries, despite potential inefficiencies or counterproductive outcomes, is key to explaining the persistence of supply-side strategies.

Ultimately, this dissertation seeks to illuminate how the politics of enforcement shape the exercise of state power, the evolution of criminal markets, and the lived experiences of citizens at the margins of legality and governance. In doing so, it contributes to a growing body of work at the intersection of political science, economics, and criminology, advancing our understanding of public security and state-building. I offer insights into the origins and implications of criminal justice and public security through an in-depth analysis of supply-side counternarcotics policies. By foregrounding the political incentives behind law enforcement and tracing their consequences across the electoral, economic, and international domains, the project reorients debates about drug policy, governance, and the rule of law.

CHAPTER 1

Unequal Before the Law: Political Incentives and Selective Drug Enforcement in Colombia*

*Thanks to Elena Barham, Ella Bayi, Carolina Bernal, Stephanie Char, Sarah Daly, John Marshall, Arnaud Maurel, Eduardo Moncada, Beatrice Montano, Vicky Murillo, Oscar Pocasangre, Iván Ramírez, Zara Riaz, Yining Sun, Carolina Torreblanca, Jessie Trudeau, Andres Uribe, and attendees of the 2024 Political Economy of Latin America Conference and the Studies of Organized Crime and Politics Mini-Conference at the 2024 Midwest Political Science Association meeting for helpful comments and suggestions.

Abstract

Although equal law enforcement is a desirable normative ideal, enforcement is rarely uniform in practice. Why does the state choose to crack down in some places but not others? Governments face electoral pressures to enforce unequally, especially when managing illicit markets involving non-state armed groups, because politically influential armed actors create differential enforcement incentives. Using a difference-in-differences design, I demonstrate patterns of restraint and intensification of forced coca crop eradication by aerial fumigation in Colombia for political reasons. Despite widespread increases in eradication during the 2000s, municipalities with more historical violence by groups that shared political alignment with the government—paramilitary groups—experienced less eradication after the election of hardline President Álvaro Uribe. Conversely, areas with more historical violence by groups opposed to the government—guerrilla groups—experienced disproportionately more eradication. The state decreased enforcement in paramilitary municipalities where Uribe outperformed electoral expectations and in areas with recent electoral violence, suggesting that electoral influence drives the distribution of eradication. This type of selective enforcement privileges short-term political gain, but at the cost of jeopardizing long-term state consolidation.

> "For my friends, everything; for my enemies, the law."
>
> – attributed to Óscar R. Benavides (former President of Peru)

> "Voices are being raised asking us to put an end to illicit crops. We asked ourselves and want to share these questions with the Congress of the Republic: are these crops exclusively the responsibility of the paramilitaries? Could it be that Colombia is unaware that the fumigations are carried out only in areas under the influence of the paramilitaries?"
>
> – Salvatore Mancuso, paramilitary leader, address to Colombian Congress, 2004

1.1 Introduction

Law enforcement is the essential and defining function of the state. Citizens submit to the state to gain the benefits of a peaceful sociopolitical order (Hobbes 1994; Olson 1993) because the state is the holder of the monopoly on the legitimate use of violence in its territory (Weber 2004).[1] Ideally, states would enforce violations of their laws uniformly, creating additional predictability and stability. Indeed, equal protection under the law is a recognized desirable normative principle enshrined in many countries' constitutions as a fundamental human right. Nevertheless, unequal enforcement of the law is the empirical norm in cases as varied as property rights (Holland 2017), labor statutes (Ronconi 2010), taxes (Bergman 2009), and environmental regulations (Bonilla-Mejía and Higuera-Mendieta 2019).

Why does the state crack down on violations of its laws more harshly in some places and at some times over others? In part, enforcement gaps can result from structural factors or institutional

[1] Of course, states can also provide additional public goods such as education, healthcare, and infrastructure, but the provision of these goods is difficult, if not impossible, in the absence of security.

weakness (Brinks, Levitsky, and Murillo 2019), the inability of the state to enforce where it wants to and when it wants to. However, enforcement efficacy is not only a function of structural constraints or weak state capacity: it can also result from strategic decisions by state actors (Kleinfeld and Barham 2018; Wilkinson 2004), which themselves shape state capacity (Suryanarayan 2024).

Charles Tilly influentially argued that war makes states, but also pointed out that policing and other forms of violence belong "on the same continuum" as war-making (Tilly 1985, p. 170). This suggests that policing is not merely a reflection of state strength or weakness, but a site where state capacity is actively constructed and contested. Focusing on policing through counternarcotics enforcement, I argue that when non-state armed groups immersed in illegal economies influence elections, variation in their characteristics and presence will, in turn, affect the geographic targeting of enforcement. I expect the state to use restraint in enforcement as a tool for reprieve to areas under the influence of non-state armed groups with which it is politically aligned, even as these groups threaten the state's monopoly on violence (Acemoglu, Robinson, and Santos 2013).[2] Conversely, I expect the state will intensify enforcement to repress areas under the influence of unaligned non-state armed groups. Incumbent governments can thus use counternarcotics efforts like crop eradication selectively to maximize the benefits of their implementation while externalizing the negative consequences of such policies. This paper uses forced coca crop eradication in Colombia via aerial fumigation, a significant component of counternarcotics strategy (Mejia and Restrepo 2016), as a case study of these dynamics.

Since 2000, the United States government has spent billions on counternarcotics programs in Latin America, the region with the highest levels of criminal violence globally (Arjona 2021). Despite this substantial investment, our understanding of the factors that drive variation in the incidence or intensity of drug enforcement efforts remains limited. Puzzlingly, research on supply-side policies aimed at reducing the amount of illicit drugs in the market via punishing producers or traffickers finds that such an approach to counternarcotics is generally ineffective and results in extensive negative externalities. These nominal inefficiencies reflect more than weak state capacity: they

[2]This tension can manifest even without collusion between the state and armed groups or state capture by armed groups, although overt cooperation or cooptation will exacerbate it.

are endogenous to political factors. At a national, aggregated level, crackdowns on illicit drugs can benefit incumbent governments by improving their standing with the international community—especially their standing vis-a-vis the US—and crime-sensitive voters. But, like other policies with diffuse benefits but specific costs, such as environmental regulations, healthcare reforms, and public infrastructure projects, it can be beneficial to strategically target the de facto implementation of antidrug policies at the local level. Even if repressive enforcement practices create a concentrated backlash among affected citizens, non-state armed groups generate differential incentives for enforcement because they can directly influence electoral behavior or governance (Acemoglu, Robinson, and Santos 2013; Barnes 2017; Daniele and Dipoppa 2017; Trudeau 2024).

To examine this, I investigate a pivotal period in the expansion of Colombian counternarcotics policies: the late 1990s and the decade of the 2000s. In 2000, the U.S. signed into law Plan Colombia, a bilateral aid initiative that allocated billions of U.S. dollars to military training and equipment, specifically focusing on new Colombian counternarcotics battalions. This initiative greatly expanded the capacity of the state to implement counternarcotics enforcement. At this time, President Andrés Pastrana (1998-2002) faced low approval ratings because of his handling of the country's security issues. Further, Pastrana could not run for a second term due to the country's constitutional ban on reelection. This set the stage for the election and inauguration of his successor, President Álvaro Uribe (2002-2010), which I leverage as a critical juncture during which the government would have been motivated to eradicate differently based on the historical influence of competing armed groups. Paramilitary groups favored Uribe, who ran a staunchly militaristic anti-guerrilla campaign and effectively lobbied the Colombian Congress to amend the 1991 constitution, enabling himself to seek a second term.[3] The quantitative analysis is motivated by this historical context, as well as exploratory fieldwork I conducted in Bogotá and four coca-growing municipalities with variation in historical violence by different non-state armed groups, where I interviewed former members of armed groups, coca growers, social leaders, politicians, and military, police, and government officials.

[3] Uribe also sought a third term in office but the Colombian Constitutional Court stopped a law seeking a referendum to change the constitution to permit a second consecutive reelection for Uribe.

Using monthly municipal-level data on aerial eradication obtained through an information request to the Colombian Ministry of Justice (*Ministerio de Justicia*) and a difference-in-differences design, I show that during Uribe's government, less eradication relative to Pastrana's government was conducted in municipalities with historically high levels of paramilitary violence. These results hold when controlling for coca cultivation and across various measurement strategies. Substantively, for a given municipality, a standard deviation increase in historical paramilitary violence is associated with 10 fewer hectares of aerial eradication per month on average, about a 5.82% decrease. This translates to around 500 hectares over a 4-year term.[4] I interpret this relationship as resulting from retrospective restraint toward the paramilitaries—the non-state armed groups more politically aligned with the government—after Uribe's election. Conversely, during this same period, there was more eradication in municipalities with historically high levels of guerrilla violence. The standardized effect for guerrilla violence is similar in magnitude but positive: an increase in average monthly hectares fumigated of about 7.03%.

I argue that armed group electoral influence drives the results that show restraint in enforcement. While paramilitary organizations in Colombia were always ostensibly aligned with the state in its conflict against guerrilla groups, their direct political influence on the Colombian government crescendoed in the 2000s. In 2001, dozens of paramilitary leaders connected under the banner of the United Self-Defense Forces of Colombia (*Autodefensas Unidas de Colombia*, AUC) signed a secret pact with prominent politicians including department governors, senators, and more, that called for a "refounding" of the country in support of Uribe's third-party candidacy for president and his nascent political movement.

Consequently, in the 2002 national elections, there was extensive coercion and vote-rigging in paramilitary areas. Uribe won a large presidential electoral victory in these same elections. In 2004, the legislature, pushed by Uribe, passed a law undoing precedent which amended the constitution to allow Uribe to run for a second term as president. For years, Colombian presidents were restricted to a single four-year term and prohibited from any form of reelection, including noncon-

[4] The average size of a coca plot during this time is approximately 1.25 hectares, and about 63% of all total hectares of coca crops detected were cultivated in plots smaller than 3 hectares.

secutive terms. Late into the first term of Uribe's presidency (2002-2006), the AUC—the largest paramilitary umbrella organization—negotiated its demobilization with the administration (Daly 2016) under highly favorable conditions including limited sentences that could be served on private property, restrictions on the seizure of profits from criminal activities by the state, and more.[5] After, it was revealed that many members of the Colombian Senate and Chamber of Representatives—including those who voted in favor of the term limit removal—among other prominent politicians, had illegal ties to paramilitary groups, with dozens investigated and convicted (Acemoglu, Robinson, and Santos 2013; Daly 2022a).

Testing mechanisms, I use two indirect measures of paramilitary electoral influence on elections to provide evidence of electorally motivated restraint in enforcement particularly during Uribe's first term from 2002 to 2006. I contrast Uribe's first and second terms because of paramilitary demobilization during Uribe's first term. First, I evaluate the interactive relationship between historical paramilitary violence and electoral overperformance by Uribe on patterns of enforcement. I argue that electoral overperformance proxies for electoral influence by paramilitaries. I find that forbearance is concentrated in municipalities with historically high paramilitary violent presence where Uribe overperformed electoral expectations in 2002. After demobilization, when paramilitaries had less direct electoral influence, this relationship between overperformance, historical paramilitary violence, and eradication is muted. Put differently, while there is a significant difference between municipalities with differing levels of historical paramilitary violence and electoral overperformance on eradication from 2002-2006, there is no statistically detectable difference between municipalities with differing levels of historical paramilitary violence and electoral overperformance on eradication from 2006-2010. Second, I use a measure of electoral violence—primarily undertaken by paramilitaries—to proxy for paramilitary electoral influence. Similarly, from 2002-2006, less eradication was undertaken in municipalities with electoral violence in 2002. This relationship is attenuated when using electoral violence in 2006 to predict eradication in 2006-2010. These tests suggest that when criminal actors successfully deliver votes—as measured in-

[5] Much of these favorable conditions would be later retracted by the Colombian Constitutional Court, which stayed relatively independent during this time.

directly by assessing where their preferred candidate overperformed or by places where violence was used to influence elections—they receive relief from repression as a reward.

Existing studies of counternarcotics have focused on the consequences of these policies and their enforcement on violence (Calderón et al. 2015; Campos, Nieto-Matiz, and Schenoni 2025; Dell 2015; Durán-Martínez 2018; García-Jimeno 2016; Lessing 2017; Phillips 2015; Trejo and Ley 2020; Snyder and Duran-Martinez 2009), state capacity (Flores-Macías 2018; Yashar 2018), and the drug market itself (Becker, Murphy, and Grossman 2006). Relatively less attention, however, has been given to the reasons why the same government can differ in its implementation of these strategies across time and space in the first place: enforcement is treated as absent (Mesquita 2020) or exogenous (Lessing 2017; Castillo and Kronick 2020). Considering political factors surrounding drug enforcement is the first step toward addressing this gap in the literature. Torreblanca (2024) studies the electoral consequences of forced eradication of poppy fields in Mexico, showing that eradication engenders decreases in government trust and electoral participation. I build on this contribution by theorizing and testing variation in the political expediency of enforcement to explore the causes of variation in eradication. In doing so, I link together the literature on counternarcotics with that of tough-on-crime or "mano dura" policies and electoral incentives (Downs 1957; Holland 2013; Krause 2014a; Laterzo 2024; Przeworski, Stokes, and Manin 1999; Ventura, Ley, and Cantú 2024; Visconti 2020) and expand work on restraint by non-state armed groups (Stanton 2016) to state actors. Crop eradication is an example of a repressive approach to crime that may sometimes be ineffective at its stated goals (Blair and Weintraub 2023) but nevertheless can be implemented strategically for electoral gains (Chevigny 2003; Holland 2013; Romero, Magaloni, and Díaz-Cayeros 2016).

I also build on the literature on how organized crime groups influence politics (Barnes 2017). This study makes a novel contribution in characterizing the circumstances by which the state is more or less likely to leverage or sideline the influence of these groups using legal enforcement strategies as a tool (Siddiqui 2022). This, in turn, bridges the political economy framework of law enforcement (Dewey, Woll, and Ronconi 2021; Holland 2017) to cases where the state is not the only actor who can control violence.

Further, the uneven implementation of law enforcement through counternarcotics can be considered to be a form of non-material redistribution. In doing so, I contribute to research studying intergovernmental transfers (Bonilla-Mejía and Higuera-Mendieta 2017; Dixit and Londregan 1998), acknowledging the role armed brokers play in changing central government strategy.

Most broadly, my approach addresses core questions of state-building by separating the state from its constituent governments or regimes: a particular *government* can benefit from the selective enforcement of its monopoly on violence even as extralegal armed actors threaten the *state's* monopoly on violence.

1.2 The politics of supply-side counternarcotics

I conceptualize supply-side counternarcotics efforts (e.g., crop eradication, interdiction, or law enforcement operations like the targeting of high-level dealers) as a resource allocation problem that can be affected by political considerations. Crucially, the enforcement of counternarcotics policies typically falls under the jurisdiction of national-level actors but assigns costs and benefits differentially across space. In short, national-level actors reap the national and international benefits sown by enforcing such policies. By contrast, local-level actors bear the burden—the direct and indirect costs created by enforcement. Spatial variation in enforcement will reflect this asymmetry.[6]

National-level actors—who earn utility from achieving their policy preferences and reelection where applicable—accrue benefits for supply-side counternarcotics through (1) the international politics of the global drug prohibition regime, especially U.S. bilateral aid, which is typically conditional on cooperation in anti-narcotics enforcement, and (2) broad domestic electoral benefits among the majority of crime-sensitive voters who are not harmed by supply-side policies. The for-

[6]In this sense, counternarcotics is similar to other policies with asymmetrical costs and benefits studied by the "fiscal federalism" literature (Dixit and Londregan 1998). For example, central government transfers to local governments (Bonilla-Mejía and Higuera-Mendieta 2017; Brollo and Nannicini 2012) or environmental policies like designating protected areas (Mangonnet, Kopas, and Urpelainen 2022).

mer allows for greater resources to be spent in counternarcotics (if the politician is intrinsically motivated by enforcement) or for other issue areas. For example, U.S. aid allowed Uribe to strengthen the military broadly, a key aspect of his appeal as a hardline candidate who took tough, uncompromising stances on security issues, including counternarcotics. The latter increases reelection probability when security issues are important to the majority of voters in a national constituency who see repressive approaches as the most viable solution to drug-related-issues, a reasonable assumption during the period of study, though this is changing over time (Bewley-Taylor 2012). Politicians can curry favor with crime-sensitive voters because supply-side efforts against illicit drugs are quite visible and concrete—in the case of crop eradication or interdiction, it is easy to quantify the number of illicit crops eradicated.[7] That said, while international and national electoral incentives encourage the implementation of counternarcotics actions as a whole, they do not necessarily shape their geographic implementation because their benefits are diffuse.[8]

Thus, subnational variation in enforcement reflects benefits and costs to the central government that are realized at the local level. Local-level actors generally bear the net costs of counternarcotics enforcement and can attribute these costs to the central government given the high clarity of responsibility surrounding the issue.[9] Neither local citizens nor politicians are particularly concerned with the international considerations that national-level actors have to keep in mind—these are simply too far removed from their day-to-day lives. Furthermore, the direct costs of enforcement policies are geographically concentrated at the point of the intervention. Aerial eradication has localized environmental (Rincón-Ruiz et al. 2016), health (Camacho and Mejía 2017), human

[7]This is also why the U.S. uses these as evaluative metrics of effort put into counternarcotics enforcement. Note that demand-side counternarcotics policies do not share this same characteristic, so they are excluded from the scope of the theory.

[8]While the U.S. may also have preferences to target particular armed groups such as left-leaning guerrilla groups (Tate 2015), I assume that these preferences are constant over the post-Cold War period of study. To my knowledge, no public information substantiates the idea that the distribution of eradication efforts influenced U.S. evaluation of cooperation. Available evidence suggests that the U.S. used absolute metrics of hectares of crops eradicated and tons of drugs seized to assess cooperation (Grover 2018) and did not consider subnational variation. Still, since my empirical strategy leverages changes in the Colombian government, the results cannot be entirely explained through a U.S.-centric lens.

[9]This will be particularly the case in more centralized systems like Colombia. By contrast, Ley (2017) provides evidence from Mexico that suggests that voters are most likely to hold politicians accountable for criminal violence when local and federal governments are politically aligned. However, counternarcotics enforcement is more likely to be associated with central governments given its international dimension.

capital, economic (Rozo 2014), and political (Ramírez 2011) costs.[10] Drug seizures can spark violent backlash among drug traffickers (Castillo and Kronick 2020; Dell 2015) and citizens could blame politicians for the resulting violence (Marshall 2024; Pocasangre 2022). A similar dynamic occurs with other law enforcement operations, such as missions that attempt to "behead" criminal organizations by arresting or killing leaders of their networks (Calderón et al. 2015; Phillips 2015), which also create violence and instability. Disruptions to trafficking activities from intensified enforcement from the national government can jeopardize fragile non-violent equilibria between criminal groups at the local level (Lucas, Marshall, and Riaz 2020; Trejo and Ley 2020).

Therefore, it is unlikely that those who bear the brunt of the enforcement arm of the state will react positively to said enforcement. Affected citizens may respond with formal backlash through anti-incumbent voting or protests, or they may react by disengaging with the state and electoral process. As Figure 1.1a stylizes, when repressive enforcement creates a backlash, this incentivizes the government to refrain from enforcing to swing voters (Holland 2017). When repressive enforcement reduces turnout among affected populations, the government has incentives to target swing voters (Robinson and Torvik 2009) or core opposition voters with intensified enforcement. Violent, repressive law enforcement that removes voters from the electorate—directly by killing or displacing them or indirectly by causing them to become disengaged with the electoral process—makes it fruitful to enforce intensely to swing voters. In sum, the incentives to practice forbearance *on voters* are conditional on the electoral consequences of enforcement.

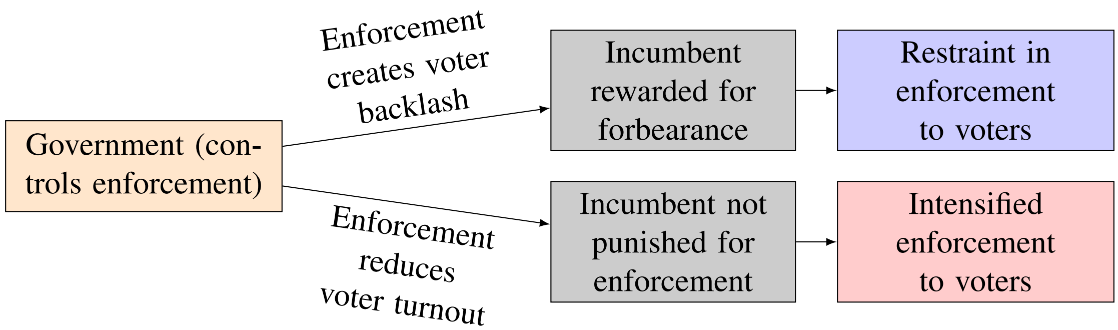
In either case, however, the presence of electoral brokers—here, non-state armed groups who influence elections—severs this link by making the broker the crucial actor in the process (Mares and Young 2016), as shown in Figure 1.1b. Now, the government is incentivized to forbear or intensify enforcement based on the preferences of the broker (the armed actor), not the voters (Acemoglu, Robinson, and Santos 2013).[11] Existing research shows that armed groups can in-

[10] Political costs could become nationalized if opposition to eradication becomes a movement with national prominence. However, this generally has not been the case in Colombia relative to Bolivia or Peru.

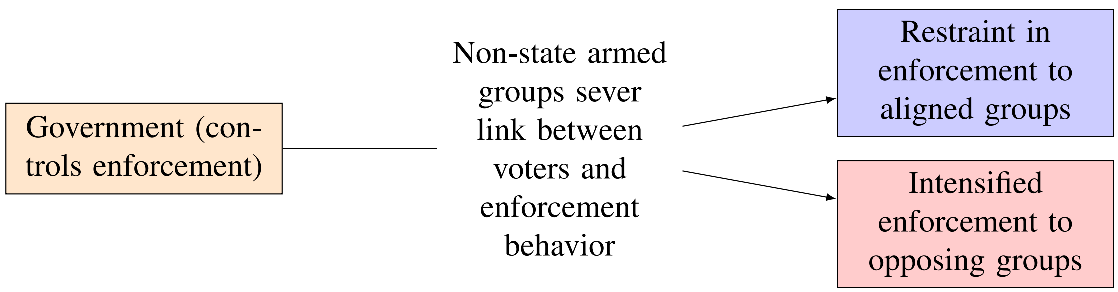
[11] Illicit markets are particularly susceptible to attracting non-state armed groups because, by definition, illegal markets cannot use the state to secure their property rights. Violence is the contract enforcement mechanism in illegal markets (Reuter 2009), and non-state armed groups have a comparative advantage in using extralegal force.

Figure 1.1: Diverging incentives for intensification or restraint of enforcement.

(a) Enforcement incentives absent non-state armed actors.



(b) Enforcement incentives with non-state armed actors.



fluence electoral behavior and outcomes, molding election results to align with their preferences (Hidalgo and Lessing 2019; Staniland 2015), including in Colombia (Ch et al. 2018; Uribe 2023).

Under these circumstances, the presence and influence of these groups over their territory create locally differential costs and benefits in the enforcement of supply-side drug policies. When an armed group's preferences align with those of the incumbent government, it may be in the best interests of a government that wants to maximize its probability of reelection and pursue its policy goals to allow the armed group to persist even if the armed group challenges its rule (Acemoglu, Robinson, and Santos 2013). This persistence can be attributed to restraint in enforcement against aligned armed groups. By contrast, opposition armed groups incentivize the intensification of enforcement for parallel reasons. These insights lead to the first hypothesis:

Hypothesis 1 (H1)**.** *Governments will be less (more) likely to enforce or reduce (intensify) counternarcotics enforcement in areas influenced by non-state armed groups that share aligned (opposing) political preferences.*

If electoral pressures drive these incentives, then one should expect these differential enforcement patterns to be especially salient in areas where armed groups have most influenced electoral behavior, which I will operationalize by testing the interaction between electoral overperformance and historical armed group presence to predict eradication under Uribe's terms, and by testing the relationship between municipalities that experienced recent electoral violence and restraint in eradication. In each case, I expect electoral overperformance and electoral violence to be associated with more forbearance in enforcement. This logic motivates the second hypothesis:

Hypothesis 2 (H2)**.** *Political forbearance and intensification of counternarcotics enforcement will be greater in areas where the central government gained the most from non-state armed group electoral influence.*

1.3 Context: Aerial coca crop eradication in Colombia

From 1998-2010, more than 1,700,000 hectares of coca crops were eradicated in Colombia, an area almost the size of the U.S. state of New Jersey or the Colombian department of Huila (each measuring approximately 1,900,000 hectares). Figure 1.2 shows the number of coca hectares cultivated and eradicated each year during this time.[12] This nationwide intensification of eradication came in large part due to the passing of Plan Colombia, the bilateral U.S. aid initiative designed to end the armed conflict in Colombia and create a robust counternarcotics strategy, with Colombia becoming the second-largest receiver of U.S. military aid after Israel during these years.

Forced crop eradication can occur in two forms: aerial and manual. Aerial eradication is undertaken by planes or helicopters spraying herbicides, most commonly glyphosate, to destroy coca crops.[13] Manual eradication, meanwhile, involves teams directly on the ground pulling out or fumigating the crop at the root, typically with police or military escorts. Forced eradication in all forms is a paradigmatic case of the dynamics described in Section 1.2: it is controlled by the

[12]The number of hectares eradicated can be greater than the number of hectares cultivated because cultivation is measured net of eradication at the end of each year. See Section 1.4 for more details.

[13]Aerial eradication has been halted in Colombia since 2015 because of evidence of its harmful health consequences.

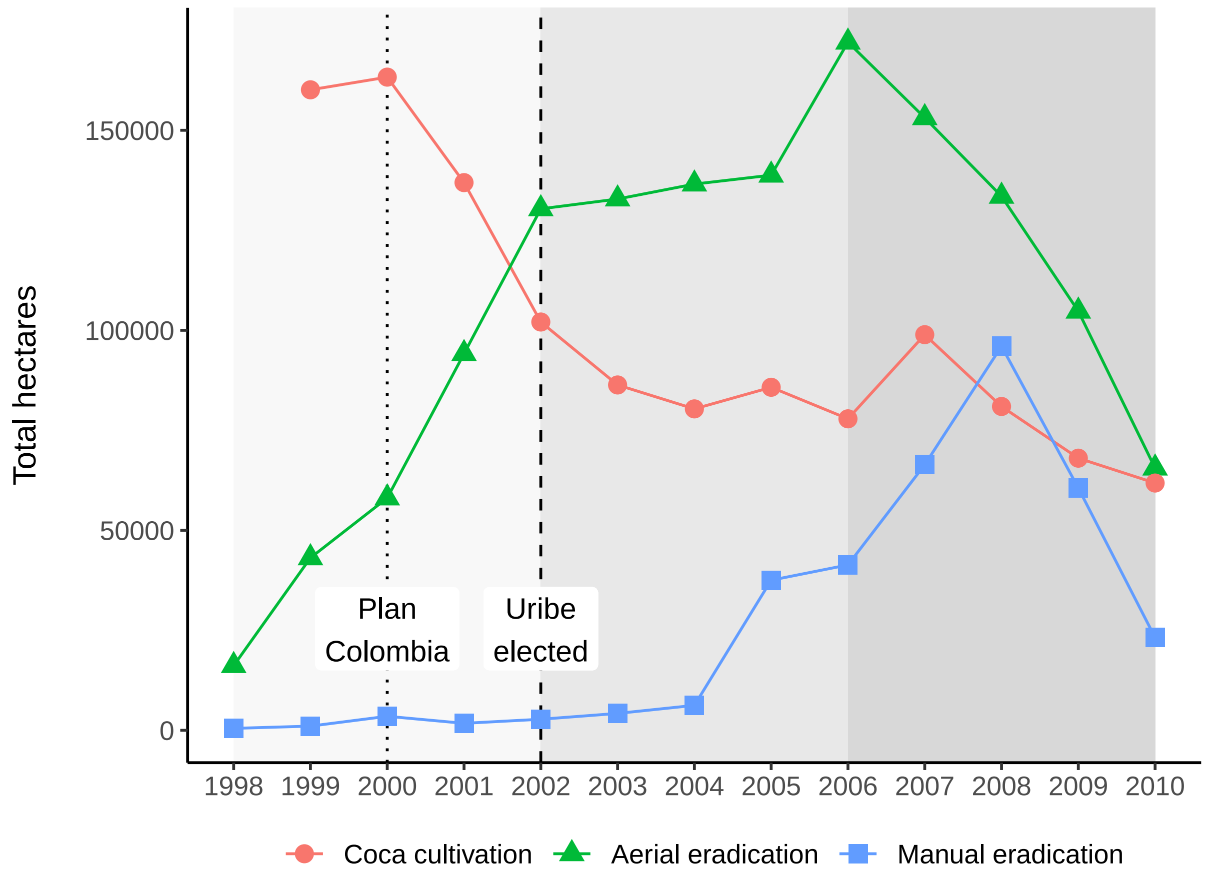
central government in Colombia, overseen by the executive branch, and executed by the national police or the military. However, this paper focuses on aerial eradication, which has characteristics that make the study of its variation more credible. Considering aerial eradication alone reduces any disparities in implementation between the national police and military, as it is a more indiscriminate form of enforcement than manual eradication and involves a greater distance between enforcers and those affected by enforcement.[14] Second, aerial eradication is less likely to be affected by other time-varying factors that influence variation in manual eradication, such as organized peasant resistance[15] and safety considerations. Manual eradication is more limited by safety and contemporary military control. In contrast, aerial eradication is more affected by exogenous factors such as the weather (Reyes 2014), although armed actors present some danger to both forms of eradication. Finally, the effects of aerial eradication on local populations are much stronger than the effects of manual eradication. The indiscriminate nature of aerial eradication makes it particularly undesirable for those affected: I interviewed social leaders and coca growers who described how herbicides spilled over onto licit crops, affected water sources, and generated other health and economic consequences. Even though the presence of armed forces that accompany manual eradication teams could cause abuses of power, coca-growing communities particularly despise aerial fumigation (Ramírez 2011). Despite these negative consequences, Figure 1.2 shows that eradication was an essential part of the the Colombian counternarcotics strategy from 1998-2010. Foreign aid and electoral benefits that accrue to national-level politicians generate incentives to implement eradication in general.

International benefits include the U.S. aid initiative known as Plan Colombia, which began in 2000 and provided over US$1.2 billion in foreign assistance (Dube and Naidu 2015) with the expectation of extensive coca crop eradication. The looming threat of reduction of aid also played a role in incentivizing cooperation in counternarcotics among central government officials: a previ-

[14]I conducted interviews with politicians and military, police, and government officials that suggest the two bodies operate similarly, but the data I use does not disaggregate between implementing actor (see Section 1.4 for more details).

[15]I conducted interviews with social leaders that suggest that sufficiently organized coca growers can sometimes prevent manual eradication but not necessarily aerial eradication.

Figure 1.2: Number of coca hectares cultivated and eradicated, 1998-2010.



ous official U.S. decertification of Colombia's noncompliance with counternarcotics efforts in 1996 resulted in the cancellation or delay of US$35 million in assistance to Colombia (Crandall 2002), the suspension of trade preferences for Colombian exports, and vetoes from the U.S. of Colombian requests for funding from international financial institutions, among other consequences (Ramírez 2011). Decertification's stakes were even higher during the period of Plan Colombia.

Electorally, in Colombia, drug-related issues are particularly salient to voters given the long history of violence in the country and the involvement of armed groups in the drug trade. Appendix Figure A.1 uses AmericasBarometer data to show that in most years from 2004-2021, a plurality of respondents considered issues that could be classified as related to drugs, crime, and security as the most crucial issue facing the country, with some exceptions like the years after the Great Financial Crisis, the years after the successful peace negotiations with the FARC in

2016, and the COVID-19 pandemic. Further, I conducted an original online survey of around 1,100 respondents—which oversampled coca-growing municipalities—between the first and second round of the 2022 Colombian presidential election. The results, presented in Appendix Table A.1, show that right-wing respondents are much more likely to support aerial eradication—though not manual eradication—approve of the right-wing incumbent Duque of Uribe's Democratic Center (*Centro Demócratico*) party, while being more likely to report that they voted for or intend to vote for right-wing presidential candidates, including Federico "Fico" Guttierez of the same Democratic Center party of Duque and Uribe, as well as the right-wing populist who made it to the second round, Rodolfo Hernández. This suggests that politicians can use eradication as a political issue to cultivate a constituency among crime-sensitive voters.[16]

Although these data do not cover the period of the early 2000s, qualitatively, Uribe's 2002 presidential campaign focused on security issues. The election came in the wake of failed peace negotiations with guerrillas by former president Pastrana (1998-2002), so Uribe's campaign focused on a robust military strategy against insurgent groups with heavy use of force. This strategy proved successful as Uribe became the first-ever Colombian president elected to office without needing a second round: Uribe won 53% of the vote in 2002, a 21-percentage point margin over his closest challenger. On the day of his inauguration, mortar attacks on the presidential palace—which left about a dozen civilians wounded—helped Uribe further justify his approach: in the subsequent years, Uribe expanded the power of the military. Counternarcotics played an essential role in these counterinsurgency operations, given the blurred lines between these two objectives (Dube and Naidu 2015). Moreover, crop eradication was explicitly part of Uribe's "democratic security" policy, so results in this area were necessary to keep campaign promises. This approach was generally successful: the level of violence throughout the country decreased, and the government earned vital victories in its battles against the guerrilla groups. Midway through his term, the legislature passed a change in the reelection law, supported by Uribe. He ran for president

[16]Despite being banned by the Colombian Supreme Court in 2015, aerial fumigation was a salient issue in the 2022 election because of an increase in coca cultivation after the ban. Incumbent president Iván Duque flirted with attempting to reinstate aerial fumigation unsuccessfully.

again in 2006 and won again in the first round: his 62% of the vote made for the largest victory for a presidential candidate in Colombian history. Uribe's electoral successes came not despite but rather because of his intense militarized approach to the conflict and counternarcotics. These observations echo research on the electoral success of violent victors (Daly 2022b).

Meanwhile, the costs—both practical and political—of implementing eradication are low for the central government. Estimates suggest that the cost of spraying one hectare of coca crops with glyphosate is approximately US$2,400 (Mejía 2016).[17] The ecological (Rincón-Ruiz et al. 2016), public health (Camacho and Mejía 2017), and economic consequences (Rozo 2014) of crop eradication are geographically concentrated. Moreover, coca crops, especially extensive plantations, are relatively easy to identify using satellite imagery (Reyes 2014).

As a result of Colombia's centralized process for eradication, the blame for eradication is easily attributable to the national government for the rural farmers, *campesinos*, who are the primary individuals engaged in coca cultivation in Colombia. Interviews with *campesinos* and social leaders reveal that those affected by eradication attribute blame enforcement and its consequences entirely on national-level governments (and the U.S.).[18] Thus, these peripheral communities and the weak state presence in the areas they live in are particularly susceptible to capture, influence, or coercion by non-state armed groups, which function at the more lucrative refinement and transport stages of the cocaine supply chain (Bergman 2018) or by taxing growers directly.

In particular, the Colombian context carries the dynamic of various non-state armed groups with varying political preferences. The conflict originates with the formation of several guerrilla groups in the aftermath of *La Violencia*, a civil war fought between the historically dominant Conservative and Liberal Parties. The 1958 arrangement that brought an official end to *La Violencia* did not end the violence in the countryside. In 1964, the left-wing Revolutionary Armed Forces of Colombia (*Fuerzas Armadas Revolucionarias de Colombia*, FARC) formed as a guerrilla group

[17]Manual eradication is more expensive since it requires higher levels of capacity and effort, as do voluntary substitution efforts (Ladino, Saavedra, and Wiesner 2021).

[18]These communities have few interactions with the state otherwise. Because of this, national politicians cannot necessarily influence voters' perceptions of local politicians with counternarcotics enforcement. The fieldwork interviews also suggest that affected populations see local politicians like mayors and department governors as impotent to the imposition of the central state.

to contest the state. Additional left-wing insurgent groups, such as the National Liberation Army (*Ejército Nacional de Liberación*, ELN), soon followed (Arjona 2016). Paramilitary groups such as the AUC emerged to combat these insurgencies (Daly 2016). During the period of the study—from the late 1990s through the 2000s—all of these different groups experienced periods of ascendancy and decline (Ch et al. 2018), and each of these groups became involved with the drug trade and influenced politics.

Paramilitary groups such as the AUC explicitly favored Uribe. The AUC's greatest strength coincided with the period just before the election of Uribe in 2002, and there was extensive coercion and vote rigging in this election in areas with paramilitary presence (Nieto-Matiz 2019). Moreover, politicians who supported Uribe's term limit removal were more likely to be arrested for ties to paramilitaries and more likely to support laws that favored paramilitary groups (Acemoglu, Robinson, and Santos 2013). Afterward, Uribe's government negotiated a favorable paramilitary demobilization, providing amnesty to most members and limited sentences that could be served on private property, among other conditions including the ability for demobilized members to keep profits from criminal activities.

On the other hand, guerrilla groups opposed Uribe's government and socialized the populations in their influence into their ideology (Hirschel-Burns 2021). Fergusson et al. (2021) show that paramilitary violence increases in response to the election of a left-wing mayor as a function of traditional elite backlash to threats to de facto political power. Eradication can function as a form of legitimized violence for crackdowns on guerrillas.

In the context of Colombia, H1 implies that after the election of Uribe—who faced reelection incentives and had strong policy preferences for intensified enforcement—one should expect restraint in or forbearance of eradication efforts in municipalities with historically high levels of paramilitary violence. Conversely, H1 also implies that one should expect greater incidence and intensity of eradication from 2002-2010 in municipalities with historical guerrilla violence. H2 implies that these dynamics for paramilitaries should be exacerbated in areas where Uribe gained the most from non-state armed group electoral influence, measured as municipalities where Uribe overperformed electoral expectations and municipalities that experienced recent electoral violence likely undertaken by paramilitaries in favor of Uribe.

1.4 Data

To test H1 and H2, I constructed a monthly panel from August 1998 to July 2010, covering the Pastrana and Uribe administrations, Plan Colombia's incidence, paramilitary groups' demobilization, and two presidential elections.

1.4.1 Outcome variable: crop eradication

I sourced data on the outcome measure of interest, crop eradication, via an information request to the Colombian Ministry of Justice (*Ministerio de Justicia*) from the Colombian Ministry of National Defense (*Ministerio de Defensa Nacional*). Their reports of aerial eradication aggregate the monthly number of hectares fumigated in each municipality. The starting point of data collection, March 1994, is before the beginning of the period of study, which corresponds to the inauguration of Pastrana in August 1998. I choose to use metrics of eradication that are reported by the Colombian government not only because it is standard in the literature (Mejia and Restrepo 2016; Prem, Vargas, and Mejía 2023) but also because any reporting biases that favor a lack of a relationship between political factors and eradication will drive the estimates downward.

1.4.2 Predictor variables: previous armed group violence

The key predictor variables of interest are measures of guerrilla and paramilitary presence across municipalities as proxied by aggregating violence over time, which follows the empirical literature on the Colombian conflict (Acemoglu, Robinson, and Santos 2013; Ch et al. 2018). Aggregating violence over many years ensures idiosyncratic year-to-year fluctuations in the conflict do not drive the results and that the results are not entirely a function of the mechanical or contemporary effects of armed group presence on eradication based on safety considerations. While violence-based measures may not necessarily capture territorial control by armed groups in general (Arjona and Otálora 2011; Kalyvas 2006), recent research on Colombia finds by contrast that areas controlled by a sole armed actor—as measured qualitatively—experience high levels of violence (Aponte González, Hirschel-Burns, and Uribe 2024). Further, I argue that historical violence is a prerequisite for presence and influence, in line with the existing literature (Ch et al. 2018).

The primary source of the violence data comes from Restrepo, Spagat, and Vargas (2003), a database[19] which counts paramilitary and guerrilla violence from the Center for Research and Popular Education or *Centro de Investigacion y Educacion Popular* (CINEP)'s *Noche y Niebla* records. CINEP is a Colombian NGO that uses validated media reports, victim testimony, and other sources to construct detailed violence records. Each record is manually classified based on the perpetrating armed group. The raw number of violence in each municipality over several years is summed together, divided by the total number of months of the time window used, which is then divided by the average of the municipality's population from the National Administrative Department of Statistics of Colombia throughout the time period, and multiplied by 100,000 to create the variable used in the regression models. Thus, the attacks refer to the average number of monthly violence by each type of armed group in each municipality per 100,000 population. Appendix Figure A.2 maps the variation in violence by plotting the logged values for each armed group.[20] I also construct a binary measure by taking the municipalities in the top quartile of violence for each armed group for the specified time period.

I group historical violence conducted by paramilitary organizations, primarily the AUC, into a single category of paramilitary violence. Similarly, I group historical violence by different guerrilla groups, such as the FARC or ELN, into a single measure of guerrilla violence. Municipalities in the sample vary cross-sectionally along these two dimensions. Historical violence by one group of armed actors is not exclusive to historical violence by another. On the contrary, many paramilitaries formed primarily to contest the gains of guerrilla groups in the earlier days of the conflict. That

[19] The dataset has been extended by the Universidad del Rosario through 2014.

[20] I use the logged values in the map to facilitate visual interpretation and the raw values per 100,000 population in the main specifications to facilitate written interpretation, but the results are robust to the use of either.

said, there are also municipalities where only a single group of armed actors committed violence in the period I used to generate the predictors. Further, a paramilitary group may have dominated one area of a municipality, while a guerrilla group may dominate another. To account for potential threats to inference generated by this dynamic, in each model, I include measures of the intensity of historical violence by each type of group, assuming that both can affect eradication behavior instead of estimating each relationship separately. In the appendix, I probe the robustness of the results to various other measurement strategies. Section 1.5 details these additional specifications.

1.4.3 Additional variables

In certain specifications, I control for the yearly net hectares cultivated of coca crops in a particular municipality. The source of these data is the Integrated Monitoring System of Illicit Crops (*Sistema Integrado de Monitoreo de Cultivos Ilícitos*, SIMCI) of the United Nations Office on Drugs and Crime (UNODC). On an annual basis since 1999, SIMCI detects areas of coca cultivation using satellite imagery. Helicopter flights take high-definition photographs to confirm the detection. Usefully, since these data come from the UNODC, they are generally independent of the Colombian political system. Appendix Section A.2 describes these data in further detail. The coca cultivation and eradication data are combined to construct the sample of municipalities used in the study. I use as an estimation sample the 318 (out of 1,122) municipalities in Colombia with *any* aerial eradication or cultivation from 1998-2010. Appendix Figure A.3 uses a map to highlight the variation in cultivation and aerial eradication: any municipalities with positive values for either of these variables are included in the sample, covering a wide swath of the Colombian territory.

To test mechanisms, I add electoral data from Pachón, Sánchez Torres, et al. (2014) to the panel. For each municipality, I use each presidential candidate's first-round vote share in the 1994, 1998, 2002, and 2006 elections.[21] I additionally include data on electoral violence from the Electoral Observation Mission (*Misión de Observación Electoral*, MOE), an NGO (Nieto-Matiz 2019).

[21] Colombia uses a two-round system for its presidential elections. If a candidate receives a majority (more than 50%) of the national vote in the first round, they are elected outright. Otherwise, the top two candidates proceed to the second round, where the candidate who receives the most votes in the second round wins the election.

1.5 Forbearance and intensification of eradication

1.5.1 Empirical strategy

I adopt a difference-in-differences design to test H1, leveraging cross-sectional variation in historical armed group presence alongside temporal variation in the incentives for the government to forbear or intensify enforcement against certain armed groups over others.

The design relies on the changes in incentives for the government of Uribe to use eradication against one group of armed actors over the others. The baseline category is eradication behavior during Pastrana's term (1998-2002). I opt for Pastrana's term as the baseline since Plan Colombia was enacted within this period, substantially enhancing the Colombian government's eradication capabilities. Simultaneously, the passing of Plan Colombia coincided with Pastrana's constitutional ineligibility for seeking reelection. After his presidency, Pastrana did not hold any further political office except for a brief tenure as Ambassador to the U.S. in 2005. Therefore, Pastrana's government would have been less incentivized to leverage or sideline the influence of armed actors through the strategic use of eradication.

After the election of Uribe, however, these incentives were much more potent. Uribe successfully lobbied the Colombian Congress to allow him to run for a second term, so he faced reelection incentives. Uribe even attempted to lobby for a change so that he could run for a third term, though this effort was thwarted by the Constitutional Court of Colombia in the waning months of his second term. As Section 1.3 describes, senators elected by votes in high paramilitary areas disproportionately voted in favor of removing his term limit, and paramilitaries delivered votes via coercion to politicians with preferences relatively close to theirs in executive and legislative elections, favoring Uribe and his allies (Acemoglu, Robinson, and Santos 2013). As for guerrilla groups, incentives to enforce also changed after the election of Uribe. Though these groups have historically opposed the Colombian government, Pastrana was involved in peace negotiations with the FARC. The collapse of those negotiations partly led to Uribe's successful hardline campaign. So, I expect enforcement to intensify in areas of guerrilla influence during Uribe's term relative

Table 1.1: Summary of design.

	Pastrana, 1998-2002 ($T=0$)	Uribe, 2002-2010 ($T=1$)
High paramilitary violence ($P_i=1$)	$\mathbb{E}[Y_{i0}(0)\|P_i=1]$	$\mathbb{E}[Y_{i1}(1)\|P_i=1]$
Low paramilitary violence ($P_i=0$)	$\mathbb{E}[Y_{i0}(0)\|P_i=0]$	$\mathbb{E}[Y_{i1}(0)\|P_i=0]$
High guerrilla violence ($G_i=1$)	$\mathbb{E}[Y_{i0}(0)\|G_i=1]$	$\mathbb{E}[Y_{i1}(1)\|G_i=1]$
Low guerrilla violence ($G_i=0$)	$\mathbb{E}[Y_{i0}(0)\|G_i=0]$	$\mathbb{E}[Y_{i1}(0)\|G_i=0]$

to Pastrana. The design can thus be conceptualized as two separate difference-in-differences, stylized using the potential outcomes framework with binary predictors in Table 1.1, where i indexes municipalities and Y_t represents eradication outcomes in time t. Municipalities are grouped cross-sectionally by their levels of historical armed group knowledge, while temporal variation results from the election of Uribe. While this stylized table treats the violence measures as binary for exposition, in Section 1.5, I present results using continuous and binary measures of historical armed group violence.

For estimation, I use the following specification to predict the intensity and incidence of aerial coca eradication across Colombian municipalities where coca could plausibly be grown and aerially eradicated:

$$\begin{aligned} Eradication_{i,t} = \beta_1 P_i \times \mathbb{1}[2002\text{-}2006] + \beta_2 P_i \times \mathbb{1}[2006\text{-}2010] + \\ \beta_3 G_i \times \mathbb{1}[2002\text{-}2006] + \beta_4 G_i \times \mathbb{1}[2006\text{-}2010] + \\ \gamma_i + \delta_t + \varepsilon_{i,t}, \end{aligned} \tag{1.1}$$

where $Eradication_{i,t}$ is a measure of eradication in municipality i in year-month t. P_i is a time-invariant metric of paramilitary violence in municipality i, with G_i being the analogous metric for guerrilla attacks. These two variables are interacted with indicators for the months of Uribe's first presidential term (2002-2006) and Uribe's second presidential term (2006-2010), such that Pastrana's term (1998-2002) is the omitted category.[22] Municipality fixed effects γ_i account for any time-invariant confounding municipality characteristics—notably, agroclimatic suitability for

[22] Presidential terms begin in August and end in July.

the cultivation of coca crops and the size of each municipality—while year-month δ_t fixed effects guard against long-term and seasonal national-level trends. I report robust standard errors clustered at the municipality level. The key coefficients of interest are the interaction between measures of different armed groups' historical violence and presidential term indicators. Here, β_1, β_2, β_3, and β_4 represent differential growth or decline in eradication behavior across municipalities with variation in guerrilla and paramilitary presence during the 2002-2006 and 2006-2010 presidential terms relative to baseline—Pastrana's term. Based on H1, I expect β_1 and β_2 to be negative, representing less eradication in areas of historical paramilitary violence during Uribe's two terms relative to Pastrana. Conversely, I expect β_3 and β_4 to be positive, representing more eradication in areas of historical paramilitary violence during Uribe's two terms relative to Pastrana.[23]

1.5.2 Results

The results from estimating Equation 1.1 using continuous measures of historical armed group violence are reported in Table 1.2, while Table 1.3 uses binary measures. Within these tables, I use three different outcome measures across columns to show that the results are not sensitive to the distribution of the raw outcome variable, which is particularly right-skewed. Column 1 uses hectares of coca crops eradicated. Next, Column 2 takes the natural log of crop eradication, adding a value of 1 to account for the municipalities with no eradication.[24] Finally, Column 3 evaluates the extensive margin, as the outcome is a binary measure of crop eradication in a municipality. Panel A of each table reports results from the baseline specification described in Equation 1.1. In contrast, Panel B reports results from a specification that also controls for the sum of coca hectares detected during Pastrana's term (1999-2001) interacted with the indicators for Uribe's two administrations. This approach exploits variation across municipalities with similar levels of fixed baseline cultivation.

[23]The constituent terms of the interactions are not present in Equation 1.1 because the municipality fixed effects absorb the time-invariant variables for paramilitary and guerrilla violence; the year-month fixed effects absorb the indicators for presidential terms.

[24]Interpret the results from this column as percentage effects with caution, since Chen and Roth (2024) show how these transformations depend arbitrarily on the units of the outcome when the treatment affects the extensive margin.

Table 1.2: Temporal and geographic variation in the intensity and extent of aerial eradication using continuous measures of historical armed group violence (1988-2001).

Outcome:	Hectares (1)	Hectares (ln+1) (2)	Hectares (> 0) (3)
Panel A: Aerial eradication			
Paramilitary violence × 2002-2006	-22.799	-0.111	-0.016
	(7.502)	(0.044)	(0.007)
Paramilitary violence × 2006-2010	-18.603	-0.169	-0.031
	(7.218)	(0.056)	(0.010)
Guerrilla violence × 2002-2006	5.702	0.057	0.009
	(4.281)	(0.020)	(0.003)
Guerrilla violence × 2006-2010	0.032	0.042	0.009
	(2.575)	(0.022)	(0.004)
R^2	0.12	0.22	0.21
Panel B: Aerial eradication, controlling for baseline coca cultivation			
Paramilitary violence × 2002-2006	-18.678	-0.091	-0.014
	(7.586)	(0.043)	(0.007)
Paramilitary violence × 2006-2010	-20.305	-0.159	-0.029
	(7.908)	(0.055)	(0.010)
Guerrilla violence × 2002-2006	3.690	0.047	0.008
	(4.069)	(0.019)	(0.003)
Guerrilla violence × 2006-2010	0.863	0.037	0.008
	(2.278)	(0.022)	(0.004)
R^2	0.12	0.23	0.21
Observations	45,792	45,792	45,792
Municipalities	318	318	318
Outcome range	[0-17,101]	[0-9.75]	{0,1}
Outcome mean	30.11	0.29	0.05
Outcome std. dev.	258.83	1.27	0.22
Paramilitary violence range	[0-2.95]	[0-2.95]	[0-2.95]
Paramilitary violence mean	0.50	0.50	0.50
Paramilitary violence std. dev.	0.55	0.55	0.55
Guerrilla violence range	[0-8.39]	[0-8.39]	[0-8.39]
Guerrilla violence mean	1.15	1.15	1.15
Guerrilla violence std. dev.	1.36	1.36	1.36

Notes: All specifications are estimated using OLS and include municipality and year × month fixed effects. Baseline category is Pastrana's term from 1998-2002. Robust standard errors clustered by municipality are in parentheses.

Table 1.3: Temporal and geographic variation in the intensity and extent of aerial eradication using binary measures of historical armed group violence (1988-2001).

Outcome:	Hectares (1)	Hectares (ln+1) (2)	Hectares (> 0) (3)
Panel A: Aerial eradication			
Paramilitary violence × 2002-2006	-21.194	-0.123	-0.020
	(10.084)	(0.050)	(0.008)
Paramilitary violence × 2006-2010	-13.776	-0.145	-0.027
	(8.499)	(0.072)	(0.013)
Guerrilla violence × 2002-2006	10.710	0.127	0.021
	(11.413)	(0.053)	(0.009)
Guerrilla violence × 2006-2010	-1.345	0.114	0.024
	(8.997)	(0.076)	(0.013)
R^2	0.12	0.22	0.21
Panel B: Aerial eradication, controlling for baseline coca cultivation			
Paramilitary violence × 2002-2006	-13.419	-0.088	-0.016
	(8.162)	(0.044)	(0.008)
Paramilitary violence × 2006-2010	-17.170	-0.130	-0.024
	(9.686)	(0.072)	(0.013)
Guerrilla violence × 2002-2006	1.206	0.084	0.016
	(8.977)	(0.048)	(0.008)
Guerrilla violence × 2006-2010	2.805	0.095	0.020
	(8.671)	(0.077)	(0.014)
R^2	0.12	0.22	0.21
Observations	45,792	45,792	45,792
Municipalities	318	318	318
Outcome range	[0-17,101]	[0-9.75]	{0,1}
Outcome mean	30.11	0.29	0.05
Outcome std. dev.	258.83	1.27	0.22
Paramilitary violence range	{0,1}	{0,1}	{0,1}
Paramilitary violence mean	0.35	0.35	0.35
Paramilitary violence std. dev.	0.48	0.48	0.48
Guerrilla violence range	{0,1}	{0,1}	{0,1}
Guerrilla violence mean	0.40	0.40	0.40
Guerrilla violence std. dev.	0.49	0.49	0.49

Notes: All specifications are estimated using OLS and include municipality and year × month fixed effects. Baseline category is Pastrana's term from 1998-2002. Robust standard errors clustered by municipality are in parentheses.

Supporting H1, the results show that relative to Pastrana's term, there was a decrease in aerial eradication in municipalities with high levels of historical paramilitary activity and an increase in eradication in municipalities with high levels of historical guerrilla activity during Uribe's presidential terms, even conditional on time-invariant factors that may explain eradication. For a given municipality, a standard deviation increase in historical paramilitary attacks per 100,000 population is associated with about 10 fewer hectares of aerial eradication per month, translating to approximately 500 fewer hectares fumigated over a 4-year term. Considering the extensive margin, a standard deviation increase in historical paramilitary attacks per 100,000 population is associated with a 1.3 percentage point decrease in the probability of any aerial eradication. For any given month of Uribe's first or second term, a standard deviation increase in historical guerrilla attacks per 100,000 population is associated with about a 1.2 percentage point increase in the probability of any aerial eradication. The results are of comparable magnitude when using a binary—top quartile) measure of historical armed group violence by each group type.

1.5.3 Validation tests and robustness checks

The validity of the difference-in-differences design rests on whether the untreated units of each group are appropriate counterfactuals for treated units, which could be threatened as a result of divergence from parallel trends, or the presence of unobserved time-varying confounders.[25]

To test the plausibility of the parallel trends assumption, I first test for divergence in pre-trends by dropping the two Uribe administrations from the sample and leading the treatment structure by 1 and 2 years. This probes whether differences in eradication behavior begin not with Uribe's administration but rather an earlier event—the implementation of Plan Colombia. The results, presented in Appendix Table A.2, show that during Pastrana's term, there are few differences in eradication behavior across areas of historically high paramilitary and guerrilla violence after July 2000 or July 2001: the coefficients are imprecisely estimated and substantively small. Second, I

[25]Since all units are treated simultaneously, there is no threat to inference from heterogeneous treatment effects over time (Callaway and Sant'Anna 2021; De Chaisemartin and d'Haultfoeuille 2020; Goodman-Bacon 2021; Sun and Abraham 2021).

estimate event-study models that regress coca eradication on historical paramilitary and guerrilla violence measures interacted with indicators for each year between 1999 and 2010, using 2002 as the reference category. I present the results in Appendix Figures A.4 and A.5. Across each of the different outcomes, there is a weak relationship between paramilitary and guerrilla violence until after 2002, providing support for the identifying assumptions of the design and H1.

Given concerns of potential time-varying unmeasured confounding, I flexibly interact the year-month fixed effects with department fixed effects, municipality area, coca suitability, altitude, and distance to Bogotá, as well as measures of the pre-violence right/left lean of the municipality as proxied by the 1986 vote share of Álvaro Gómez Hurtado—a conservative presidential candidate later assassinated by the FARC in 1995—and Jaime Pardo Leal—the candidate of the unofficial political wing of the FARC in this election in Appendix Tables A.3 and A.4. Though the inclusion of the latter vote share variables reduces the sample size, the results are similar to the main results.

One possible alternative explanation for the results is that municipalities that experienced differential armed group violence by paramilitaries or guerrillas have different coca cultivation habits, and variation in coca cultivation explains variation in eradication. However, the results are robust to conditioning on differential coca cultivation across municipalities that vary in their experiences of historical armed group violence. Panel B of Tables 1.2 and 1.3 control for baseline coca cultivation interacted by Uribe's presidential terms, but I also estimate two additional specifications that account for coca cultivation in different ways. Instead of controlling for baseline levels of coca cultivation, I control for yearly lags of coca cultivation in Appendix Table A.5. The results here are larger than the main results, though they should be treated with caution since levels of cultivation each year are endogenous to eradication. In Appendix Table A.6, I define the outcome as the proportion of coca hectares cultivated in year $t-1$ that were eradicated in year t. In this case, construct a yearly panel instead of year-month panel. These results are similar to the main results.

Alternatively, forbearance and intensification of aerial eradication may result from the alignment or misalignment of local politicians with the executive (Bonilla-Mejía and Higuera-Mendieta

2017). To assess whether the observed variation in eradication reflects direct responses to armed group presence rather than local political alignment per se, I conduct a robustness check using the regression discontinuity design from Fergusson et al. (2021). This approach compares eradication outcomes across municipalities where left- or right-wing mayoral candidates narrowly won or lost elections.[26] I find no significant differences in eradication intensity following close victories by either partisan alignment, as reported in Appendix Table A.7. These results suggest that the central government does not systematically adjust eradication policy solely in response to the partisan identity of local mayors in close elections, supporting the interpretation that enforcement decisions are shaped by the strategic importance of armed groups themselves—even if those groups influence local political outcomes—rather than by the partisanship of local officials.

An important challenge for my research design is the difficulty of accurately measuring armed group violence. To address this, I demonstrate that the results are consistent across various measurement strategies. First, I assess the sensitivity of the binary results to the use of the other cutoffs of top quartiles with historical armed group violence. Figure A.6 shows the results using the top tercile or quintile as indicators. Second, violence may be related to influence in complex, nonlinear ways. To ensure the results are not driven by the imposition of a linear functional form when using continuous predictors, I also fit models that transform these predictor variables by $\ln + 1$. Appendix Table A.8 accounts for the right skewness of the historical violence data (Ch et al. 2018) by applying this natural log transformation. This set of results is comparable to the main results. Similarly, squaring the continuous violence measures suggests the relationship is reasonably monotonic, as Appendix Table A.9 shows. Tables A.10 and A.11 interact the violence by both armed groups. Though the triple differences are noisily estimated, the estimates of the constituent terms are consistent with the theory. I also generate the predictor variables based on aggregated attacks from the 1988-1997 period instead of the 1988-2001 period. I use the 1988-2001 period in the baseline specification because this range of years includes both eras of paramilitary and guerrilla ascendancy. In particular, the 1998-2001 years include the leadup to the Santa Fe de Ralito

[26]By contrast, Fergusson et al. (2021) use this design to examine the effect of narrowly elected left-wing mayors on future violence, finding that such victories increase paramilitary violence.

pact, where the paramilitary umbrella organization, the AUC, met with nearly 1,000 politicians to strategize a concerted effort to support Uribe's candidacy for presidency in 2002 (Ch et al. 2018). However, while this 1988-2001 range is still measured before the point where Uribe enters office, it is also measured during Pastrana's term. Nevertheless, the results, in Appendix Tables A.12 and A.13, are robust to these changes.

Finally, while Equation 1.1 leverages *changes* in eradication behavior across presidential terms, I also assess the cross-sectional relationship between historical armed group violence and eradication in Appendix Tables A.14 and A.15. The former table reports results from Pastrana's term, finding limited to no evidence of a relationship between violence and eradication during his administration. The latter table shows that absolute levels of eradication from 2002-2010 also show patterns of forbearance and intensification in enforcement based on armed group violence.

1.6 Mechanisms

The theory described in Section 1.2 posits that when armed groups act as electoral brokers, government enforcement patterns will depend on the alignment between the government and the armed groups, not necessarily on voters. The results in Section 1.5 provide evidence governments hold back on enforcement to favorable armed groups. H2 posits that this forbearance should result from electoral incentives. To test H2, I hone in on the 2002-2010 years and assess variation in paramilitary electoral influence. I focus on paramilitary influence since paramilitaries affected national elections most directly (Acemoglu, Robinson, and Santos 2013).

1.6.1 Electoral overperformance

If the logic of restraint to paramilitary areas during Uribe's terms is correct, then H2 suggests that these results should be driven by municipalities where Uribe overperformed expectations, especially those with high paramilitary presence. In other words, paramilitaries deliver votes the incumbent would not have otherwise received they receive relief from repression as a reward. To test this implication of the theory, I define Δ_i^{2002} as the difference between Pastrana's 1998 vote share and Uribe's 2002 vote share in municipality i. Pastrana was the conservative presidential candidate in the 1998 presidential election; therefore, his vote share is a relevant proxy for Uribe's anticipated vote share in 2002. Similarly, I define Δ_i^{2006} as the difference between Uribe's 2006 vote share and Uribe's 2002 vote share in municipality i. Higher levels of Δ_i correspond to municipalities where Uribe overperformed relative to expectations, likely because of paramilitary influence. I predict eradication based on Δ_i and armed group presence, as well as their interaction, using the following specification:

$$Eradication_{i,t} = \beta_1 P_i \times \Delta_i + \mathbf{X}_i + \zeta_d + \delta_t + \varepsilon_{i,t}. \tag{1.2}$$

Here, $\mathbf{X}$ is a vector of controls to account for the cross-sectional nature of the model: coca suitability, municipality area, and population (measured each year) in an attempt to account for the lack of municipality fixed effects—the inclusion of coca suitability drops some municipalities from the analysis. The guerrilla attacks variable G_i is also included in $\mathbf{X}$. Instead of municipality fixed effects, ζ_d represents department fixed effects. As in Equation 1.1, δ_t represents year $\times$ month fixed effects.

The results are presented in Table 1.4; estimated separately for the 2002-2006 presidential term (Panels A and B) and the 2006-2010 presidential term (Panels C and D). These results suggest that from 2002-2006, the differential decrease in aerial eradication in areas with high levels of historical paramilitary violence was concentrated in municipalities where Uribe overperformed expectations in the 2002 election. Absent historical paramilitary violence, the relationship between Uribe's electoral overperformance in 2002 and subsequent eradication from 2002-2006 is positive, perhaps suggesting leeway to eradicate more strongly in areas where Uribe overperformed. However, as historical paramilitary violence increases, this relationship reverses: municipalities where Uribe overperformed relative to Pastrana experienced *less* subsequent eradication. From 2006-2010, after paramilitary demobilization, there are no large or statistically detectable differences between Uribe's overperformance in 2006, historical paramilitary violence, and subsequent eradication.

Table 1.4: Cross-sectional geographic variation in the intensity and extent of aerial eradication based on historical paramilitary violence (1988-2001) and Uribe's electoral overperformance.

Outcome:	Hectares (1)	Hectares (ln+1) (2)	Hectares (> 0) (3)
Panel A: Aerial eradication (2002-2006)			
Δ^{2002}	101.357	0.379	0.053
	(51.862)	(0.219)	(0.035)
Paramilitary violence	2.046	-0.081	-0.014
	(9.854)	(0.058)	(0.010)
Δ^{2002} × Paramilitary violence	-100.955	-0.419	-0.066
	(58.727)	(0.233)	(0.037)
R^2	0.04	0.11	0.10
Panel B: Aerial eradication, controlling for baseline coca cultivation (2002-2006)			
Δ^{2002}	109.153	0.413	0.058
	(50.491)	(0.208)	(0.033)
Paramilitary violence	4.861	-0.069	-0.013
	(8.854)	(0.052)	(0.009)
Δ^{2002} × Paramilitary violence	-107.950	-0.450	-0.071
	(57.550)	(0.219)	(0.034)
R^2	0.06	0.13	0.12
Panel C: Aerial eradication (2006-2010)			
Δ^{2006}	-59.226	-0.470	-0.087
	(43.030)	(0.336)	(0.058)
Paramilitary violence	-12.783	-0.184	-0.036
	(10.127)	(0.095)	(0.017)
Δ^{2006} × Paramilitary violence	-1.333	-0.113	-0.018
	(38.009)	(0.428)	(0.079)
R^2	0.05	0.10	0.10
Panel D: Aerial eradication, controlling for baseline coca cultivation (2006-2010)			
Δ^{2006}	-58.188	-0.464	-0.086
	(41.164)	(0.327)	(0.057)
Paramilitary violence	-15.619	-0.199	-0.038
	(9.487)	(0.087)	(0.016)
Δ^{2006} × Paramilitary violence	33.891	0.072	0.009
	(32.446)	(0.391)	(0.074)
R^2	0.07	0.11	0.10
Observations	13,680	13,680	13,680
Municipalities	285	285	285
Outcome (2002-2006) range	[0-17,101]	[0-9.75]	{0,1}
Outcome (2002-2006) mean	36.35	0.29	0.05
Outcome (2002-2006) std. dev.	329.54	1.28	0.22
Outcome (2006-2010) range	[0-7,131]	[0-8.87]	{0,1}
Outcome (2006-2010) mean	34.40	0.40	0.07
Outcome (2006-2010) std. dev.	219.95	1.46	0.26

Notes: All specifications are estimated using OLS and include department and year × month fixed effects. Δ^{2002} ranges from -0.79 to 0.74 with a mean of -0.01 and a std. dev. of 0.24. Δ^{2006} ranges from -0.37 to 0.86 with a mean of 0.16 and a std. dev. of 0.19. Robust standard errors clustered by municipality are in parentheses.

1.6.2 Electoral violence

I next use electoral violence—reports of threats to use armed violence against voters, as a way to assess the relationship between paramilitary influence on elections and subsequent eradication behavior by the central government. Electoral violence data is sourced from the Electoral Observation Mission (*Misión de Observación Electoral*, MOE), a Colombian NGO (Nieto-Matiz 2019).

If a government is incentivized to hold back on eradication to favorable armed groups because aligned groups help the incumbent in elections, then electoral violence by favorable groups should also be associated with forbearance. Unfortunately, the electoral violence data is not disaggregated by the armed actor who committed the electoral violence. However, prior to the 2002 election, paramilitaries were at their highest strength, having signed a pact to support Uribe's candidacy with the goal of the government taking a hardline stance against the guerrillas, and paramilitaries committed most of the instances of electoral violence in this election (Acemoglu, Robinson, and Santos 2013). To assess the relationship between electoral violence and eradication, I fit:

$$Eradication_{i,t} = \beta_1 \text{Electoral Violence}_i + \mathbf{X}_i + \zeta_d + \delta_t + \varepsilon_{i,t}, \tag{1.3}$$

where historical paramilitary and guerrilla violence is included in the vector of controls $\mathbf{X}_i$ described in Equation 1.2, with results presented in Table 1.5. I do not interact electoral violence with the historical time-invariant measures of paramilitary presence because, as a measure of short-term violence, electoral violence is unlikely to reflect consolidated influence (Kalyvas 2006). Municipalities with strong paramilitary influence could experience electoral violence, but strong paramilitary influence could lead to tampering with election results in other, less violent ways, such as ballot stuffing.

Similarly to Table 1.4, Table 1.5 shows a negative relationship between electoral violence in 2002 and eradication in the 2002-2006 term—before the demobilization of the paramilitaries. This relationship is attenuated when using electoral violence in 2006—after paramilitary demobilization—to predict eradication from 2006-2010.

Table 1.5: Cross-sectional geographic variation in the intensity and extent of aerial eradication based on electoral violence.

Outcome:	Hectares (1)	Hectares (ln+1) (2)	Hectares (> 0) (3)
Panel A: Aerial eradication (2002-2006)			
Electoral violence (2002)	-42.044	-0.233	-0.036
	(30.487)	(0.092)	(0.014)
R^2	0.05	0.12	0.12
Panel B: Aerial eradication, controlling for baseline coca cultivation (2002-2006)			
Electoral violence (2002)	-38.423	-0.218	-0.034
	(29.394)	(0.088)	(0.013)
R^2	0.06	0.14	0.13
Panel C: Aerial eradication (2006-2010)			
Electoral violence (2006)	-5.241	0.008	0.007
	(4.610)	(0.051)	(0.010)
R^2	0.05	0.10	0.11
Panel D: Aerial eradication, controlling for baseline coca cultivation (2006-2010)			
Electoral violence (2006)	-5.052	0.009	0.007
	(4.399)	(0.050)	(0.010)
R^2	0.07	0.11	0.11
Observations	14,208	14,208	14,208
Municipalities	296	296	296
Outcome (2002-2006) range	[0-17,101]	[0-9.75]	{0,1}
Outcome (2002-2006) mean	40.37	0.31	0.05
Outcome (2002-2006) std. dev.	339.22	1.34	0.23
Outcome (2006-2010) range	[0-7,131]	[0-8.87]	{0,1}
Outcome (2006-2010) mean	36.39	0.42	0.08
Outcome (2006-2010) std. dev.	223.87	1.50	0.27

Notes: All specifications are estimated using OLS and include department and year × month fixed effects. Electoral violence (2002) ranges from {0-3} with a mean of 0.03 and a std. dev. of 0.24. Electoral violence (2006) ranges from {0-4} with a mean of 0.07 and a std. dev. of 0.37. Robust standard errors clustered by municipality are in parentheses.

1.7 Conclusion

This paper shows that political incentives influenced the spatial allocation of law enforcement in Colombia. In the wake of extensive foreign aid investments motivated by a desire to reduce coca cultivation, aerial eradication was not implemented apolitically. Using historical violence by armed groups to measure variation in political incentives to enforce, I show that areas with historically high paramilitary violence experienced differential decreases in eradication after 2002. By contrast, areas with historically high guerrilla violence experienced increases in eradication after 2002. Differences in political alignment explain this differential treatment because Uribe benefited from paramilitary help and built his political image around fighting the guerrillas. The national government used counternarcotics policies to reward aligned armed groups and punish opposition armed groups because the presence of non-state armed actors as electoral brokers reduces the need for the government to cater to voters.

Retrospective vote share considerations partially drive this relationship: during Uribe's first term, there was less eradication in areas with high paramilitary presence where he overperformed relative to expectations; after the official demobilization of the paramilitaries, these relationships are attenuated. Likewise, the relationship between electoral violence in the previous election and subsequent eradication is negative in 2002—prior to paramilitary demobilization—and small in 2006—after paramilitary demobilization. These results suggest that the preferential treatment of paramilitaries was partly motivated by their capacity to influence electoral outcomes. The findings help shape our understanding of state-building, development, electoral accountability, peacebuilding, and the rule of law. State consolidation reflects not only capacity constraints but also willingness: the persistence of armed groups that challenge the monopoly over the use of force can be electorally beneficial.

Indeed, when the Colombian government and the AUC signed an agreement for the latter's demobilization, the very first line of the document reads: "the purpose of this process is achieving national peace through the strengthening of democratic governance and the restoration of the monopoly on violence to the State." Despite these goals, weakened enforcement against electorally beneficial non-state armed groups damages prospects for peace, democratic accountability, and outsources violence to groups outside of the state. Building on the contribution of Acemoglu, Robinson, and Santos (2013), who show that paramilitaries themselves were allowed to persist in areas where they were electorally beneficial, this paper measures how persistence plays out by providing evidence of differential law enforcement practices.

In terms of policy, this paper shows that the agency of elected leaders matters for understanding drug enforcement: de facto enforcement can shift significantly across governments even as the letter of the law remains unchanged. Further, expanding capacity is insufficient for achieving particular policy outcomes: leaders' incentives must also be taken into consideration.

Considering external validity, it is true that Colombia is a particular case in many ways given its powerful armed groups with programmatic platforms and ties to national politicians. Despite this, the broader theory should also apply across counternarcotics—and other nationally-driven forms of law enforcement—in different countries. For example, Mexico is an interesting contrasting case: enforcement strategies are decentralized across varying levels of government, making accountability for counternarcotics difficult. At the same time, its criminal actors are strong but more focused on state capture than programmatic platforms. National-level enforcement strategies should reflect strategic demobilization, with the additional complications implied by local-federal dynamics (Trejo and Ley 2020).

Future research should also study demand-side approaches. In building the theory, I chose to focus on supply-side approaches because these approaches have historically been dominant in producer countries in the context of the global drug prohibition regime. Demand-side approaches focus on the root causes of drug abuse and addiction in consumer countries through prevention, treatment, and education.[27] Because of this, demand-side policies display neither the asymmetrical costs and benefits across jurisdictions nor the more apparent clarity of responsibility characteristic of supply-side policies that are necessary conditions for the theory. A different supply-side approach I scope out of the theory is crop substitution. Interviews with National Integrated Illicit

[27] Over time, as the use of drugs becomes less stigmatized, the incentives that push governments to conduct harsh enforcement strategies may also lessen, but this falls beyond the scope of this paper.

Crop Substitution Program (*Programa Nacional Integral de Sustitucion de Cultivos Ilicitos*) officials confirmed that there is little coordination across forced eradication and substitution since they are implemented by different agencies with very different membership and mandates. Nevertheless, the politics of alternative approaches—and the reasons why they have historically been eschewed—are worthy of future study.

The Colombian constitution enshrines equal protection under the law as a human right. As with many other countries, the lofty ideals of this document fail to live up to practice. Beyond the normative desirability of equal protection, differential enforcement creates variation with significant short-term and long-term consequences (Trudeau 2022). In the short run, aerial crop fumigation causes serious health, environmental, and economic damage. Counternarcotics enforcement can also decrease government trust (Torreblanca 2024). In the long run, this lack of confidence in institutions and the persistence of non-state armed groups that influence elections can break typical citizen-politician linkages (Kitschelt 2000; Stokes, Dunning, and Nazareno 2013), and the state might find itself unable to eliminate these threats to its monopoly of violence once the armed groups are no longer electorally useful (Hidalgo and Lessing 2019). Politicians influenced by armed groups may spend less on public goods and social programs in favor of security (Daly 2022a; Nieto-Matiz 2023). For a region that already experiences the most criminal violence in the world, forbearance in enforcement can propagate conflict, violence, and development traps that will further lag social, political, and economic progress in Latin America.

CHAPTER 2

The Political Consequences of Law Enforcement: Evidence from Forced Coca Eradication in Colombia*

*Thanks to Hannah Baron, Elena Barham, Ella Bayi, Carolina Bernal, Sarah Daly, Danny Hirschel-Burns, Isabel Laterzo-Tingley, John Marshall, Eduardo Moncada, Beatrice Montano, Vicky Murillo, Oscar Pocasangre, Zara Riaz, and Andres Uribe for helpful comments and suggestions.

Abstract

How does law enforcement affect political behavior? The essential function of the state is to enforce its legal order via punishing offenders of its formal rules. Citizens' interactions with law enforcement, particularly in cases of intensified enforcement, should shape their opinions toward the state and its agents. I argue that forced eradication of drug crops via aerial fumigation, a policy with indiscriminate characteristics targeting the least lucrative parts of the drug supply chain, activates feelings of group threat among rural populations affected by eradication. These communities interpret eradication as a signal that the government views them as expendable. Using the case of Colombia, I leverage variation in eradication timing across municipalities relative to election dates and over time to show that forced eradication engenders patterns of electoral accountability.

2.1 Introduction

A state defines social order through its laws. But laws alone are insufficient to create social order. Enforcement—the threat of coercion or the possibility of punishment for violations (Weber 2004)—are necessary to uphold the written rules that make up the law. Without enforcement, laws are merely superficial. Although equal protection under the law is a foundational principle of most legal systems, de facto patterns of enforcement rarely reflect this ideal of equality. Instead, enforcement is often applied unevenly (Dewey, Woll, and Ronconi 2021; Gerez 2025; Holland 2015; Wilkinson 2004), creating distinct experiences of the state across different communities.

These experiences with law enforcement are likely to shape how citizens perceive and respond to the state. According to Hobbesian social contract theory, citizens submit to the state to gain the benefits of social order (Hobbes 1994), therefore, citizens' opinions of the state and its agents are likely to reflect its laws and especially their enforcement. Actual enforcement practices are some of the most tangible and consequential aspects of state power, shaping everyday lived realities within the state (Lipsky 2010; Soifer 2015). In consequence, interactions with law enforcement can fundamentally alter views of the state, and by extension, how citizens evaluate government performance. How does law enforcement—an inherently coercive act—shape political behavior?

Law enforcement that disproportionately affects particular groups defined by race, class, geography, or their intersection (González 2017; Soss and Weaver 2017) can activate feelings of group threat, enforcement actions are perceived as a form of state repression. In response, targeted communities, whose social cleavages are reinforced by state enforcement, engage in collective backlash against politicians or parties associated with intensified enforcement (Walker 2020).

Using forced coca eradication by way of aerial fumigation in Colombia as a case of law enforcement that is largely indiscriminate, I test whether eradication leads to voting against candidates in favor of tough-on-drugs policies and in favor of opposition parties that espouse alternative approaches to drugs. Colombia is a unitary state, meaning that subnational governments have limited autonomy over security policies. Responsibility attribution for eradication may be clearer than in federal systems, where citizens must navigate overlapping authorities (Carlin, Love, and Martinez-

Gallardo 2015). If citizens understand that local governments have little control over security, then we should expect national-level politicians—rather than local ones—to bear the electoral costs of controversial enforcement policies. Indeed, I find that forced eradication before elections decreased the vote share of the militaristic president Álvaro Uribe, suggesting electoral accountability for counternarcotics strategies at the national level. By contrast, aerial fumigation is not associated with differences in voting results in local mayoral elections. Similarly, manual eradication of coca, which is much more discriminate, does not have meaningful electoral effects.

In the long term, I use a municipality-election panel to document increases in vote share for left-wing presidential candidates as a result of the implementation of eradication over time. This finding raises important questions about whether this shift reflects ideological realignment or is instead driven by opposition to specific enforcement policies. Conventional wisdom suggests that left-wing voters prefer preventative approaches to crime while right-wing voters favor punitive measures. However, recent research challenges this dichotomy, showing that ideology is a weaker predictor of law enforcement preferences than previously thought (Albarracín and Tiscornia 2024; Laterzo 2024; Laterzo-Tingley and Christiani 2024). My findings contribute to this debate by showing how localized experiences with a specific form of enforcement—coca eradication—can shape political alignments. Opposition to aerial fumigation has led to increased support for leftist candidates, not necessarily because of a broad ideological shift, but because left-wing parties are more likely to oppose eradication policies. This suggests that enforcement policies can generate distinct voting blocs based on policy-specific grievances when these are highly salient. Generally, the left in Colombia supports non-repressive actions for counternarcotics such as voluntary substitution programs as opposed to forced eradication. Taken together, these analyses suggest that citizens successfully attribute blame for repressive enforcement to the national government and shift their voting patterns accordingly.

Existing research has examined the relationship between crime and electoral behavior. Looking at the individual level, in Latin America, Bateson (2012) and Visconti (2020) find that crime victimization leads to greater electoral participation and support for strong-arm measures to reduce crime, respectively. These findings concord with research on other forms of direct victimization such as in the context of civil wars around the world (Bauer et al. 2016; Bellows and Miguel 2009; "From Violence to Voting: War and Political Participation in Uganda" 2009). Turning to aggregated experiences of crime, the available evidence suggests that excessively high crime can have demobilizing effects (Ley 2018; Trelles and Carreras 2012). However, this relationship may be conditional on the timing of violence. Marshall (2024) finds that municipal homicides before elections in Mexico lead to electoral sanctioning. Citizens are particularly likely to consume news closer to elections and update their beliefs about politicians' capacity to mitigate crime based on reporting of homicides that happen during these news consumption cycles. This paper instead studies state responses to criminal behavior and their consequences on electoral mobilization and outcomes. Relatedly, this paper builds on research studying electoral behavior in response to violence in Colombia and beyond (Arjona, Chacón, and García-Montoya 2025; Daly 2022a; Gallego 2018; Vargas et al. 2024; Weintraub, Vargas, and Flores 2015) with this paper instead focusing on law enforcement.

A burgeoning literature shows that organized criminal actors and non-state armed groups influence electoral behavior in a wide variety of contexts (e.g., Acemoglu, Robinson, and Santos 2013; Barnes 2017; Daniele and Dipoppa 2017; Durán-Martínez 2018; Gallego 2018; Trejo and Ley 2020; Trudeau 2024). By contrast, this paper studies the relationship between the state's actions of enforcement and citizen rather than armed group political behavior, contributing to a broader understanding of the interactions between government policy, law enforcement actions, criminal actors, and the citizens they affect.

Focusing more directly on the question of the relationship between policing and citizens, this paper also contributes to a related literature focused on the relationship between policing and state-building, which finds mixed results on the effects of policing—specifically community policing—on trust in state institutions (Blair, Karim, and Morse 2019; Blair et al. 2021). Evidence from Colombia specifically also reports mixed findings that vary by context, intervention, and outcome (Abril et al. 2023; Blair et al. 2022). Many of these studies focus on community-based policing initiatives and police reform, not necessarily variation in the implementation of policing. Instead, another strand of recent research has investigated "status-quo"-type interactions between citizens and law enforcement. For example, in the United States, Ben-Menachem and Morris (2023) suggest that low-level enforcement activities such as police stops can depress mobilization. By contrast, high-salience events like police killings can increase mobilization (Morris and Shoub 2024).[1] Forced crop eradication is highly salient for those affected. Further evidence from the United States finds that policing practices can create mobilization when those affected and those proximal to those affected attribute enforcement patterns to a system that targets people like them (Walker 2020). Extending this logic and González (2017)'s argument about policing, which holds that law enforcement's exercise of the state's coercive authority is likely to reflect politicized state power and unequal distribution along pre-existing cleavages such as race and ethnicity, class, and geography, I posit that because aerial fumigation disproportionately targets people based on their group affiliation—rural, agricultural *campesino* (peasant farmer) communities—expect eradication to lead to similar mobilizing effects.

In doing so, this study extends the literature on mobilization in response to repression (Carey 2009; Di Lonardo, Sun, and Tyson 2025; Lichbach 1987; Loveman 1998; Lupu and Peisakhin 2017), which has mostly focused on autocracies. The coercive nature of autocracies has created the assumption that there are unassailable differences between the logic of electoral accountability across regimes (Davenport 2007). However, repressive law enforcement can function as a form of legitimized "repression" in democracies—indeed, in the case of counternarcotics, one that is even encouraged by the international community through the global drug prohibition regime—though not without potential electoral consequences. Curtice and Behlendorf (2021) highlight the inherent tension between the dual roles of law enforcement: to protect public safety, but also as an instrument of state repression. This tension fuels the relationship between police and civilians, in turn, shaping civilian opinions of police and the state more broadly. Similarly, González (2020) points out that security policy reflects contestation in the distribution of protection and repression. This

[1] This research and other research on policing is typically concentrated in urban areas, leaving understudied the question of state enforcement in rural peripheries where the state is ex ante weaker and less present.

paper highlights the potential electoral consequences that harsh security implementation create, while recognizing that those affected may nevertheless not enjoy enough political power to change this distribution, at least in the short term. Studying counternarcotics as a specific form of law enforcement situates this paper in a literature that studies the consequences of counternarcotics policies (Calderón et al. 2015; Dell 2015; Durán-Martínez 2018; Gelvez 2025; Lessing 2017; Torreblanca 2024).

2.2 Political responses to law enforcement

Social contract theory contends that individuals implicitly or explicitly consent to give up some of their freedom to gain the benefits of political order created by the state. Security is one of the foundational aspects of this contract. As a result, one of the most important functions of the state is to maintain security and enforce its laws (Levi 1988). A state which fails to provide security for its citizens will likely be seen as ineffective. This dynamic is so salient that in post-conflict elections, victimized citizens are willing to vote for the winning side—even one that previously committed mass atrocities—because they can most credibly maintain peace and security (Daly 2022a). Therefore, citizens should update their beliefs about the state and its representatives, for example, incumbent governments, the armed forces, and the police, based on their experiences of security and with law enforcement designed to maintain security. These individual and collective experiences can drive attitudes toward law and policymaking because law enforcement is a visible and tangible manifestation of the state. In the case of rural coca-growing municipalities with low state presence, it is sometimes citizens' only interaction with the state.

Notably, there is often a gap between security and perceptions of security. Stories of crime and violence, for example, generate disproportionate attention by the media. These patterns can create asymmetric perceptions of security, where people's beliefs about the amount of crime in their neighborhood or city are greater than the actual amount of crime (Ardanaz et al. 2013; Krause 2014b; Velásquez et al. 2020), though it should be noted that completely "objective" measurement of crime statistics is extremely difficult if not impossible. Even if perceptions of security were perfectly aligned with security outcomes, citizens can hold heterogeneous beliefs about what security outcomes are acceptable. Further still, it is arguably even more difficult to attribute the precise relationship between government policy decisions or law enforcement practices to security outcomes. Policy initiatives, especially those that are not directly related to security, may take a long time to bear fruit or security may shift due to factors outside of the control of politicians. As a result, politicians have incentives to claim credit for reductions in violence or other violations of social norms or abdicate responsibility for their increases (Pocasangre 2022).

At their core, counternarcotics interventions are intended to crack down on the drug supply chain with the intention of disrupting the production and transport of illicit narcotics. The presumption is that as a result, criminal groups and other violent non-state armed groups will see their revenue channels disrupted, weakening these groups and lessening their threat to the state. However, existing research shows that counternarcotics interventions are ineffective at their stated goal, or at least very cost-ineffective (Mejia and Restrepo 2016; Mejía, Restrepo, and Rozo 2017). These interventions thus persist as a combination of international pressure resulting from the drug prohibition regime, from strategic enforcement on criminal actors (Gerez 2025), or as a signal to unaffected populations that the government is "doing something" on the issue.

This paper instead focuses on the political responses to enforcement from communities most directly affected by enforcement interventions. These communities are caught in a dilemma: while they theoretically benefit most from law enforcement efforts, they also suffer the most from the associated consequences.

Drawing from fieldwork conducted in four coca-growing municipalities, I conceptualize forced crop eradication as a case of intense law enforcement that is likely to create negative feelings about the state and its agents among those affected given that its consequences on these communities outweigh potential benefits.

First, while forced eradication is intended to hamper the operations of organized criminal actors, its implementation at the lowest part of the illicit drug supply chain—value is added at each point in the supply chain via costs and risks associated with refinement and transport (Bergman 2018)—makes it less cost effective than seizures of refined products (Mejia and Restrepo 2016), making it such that communities where eradication occurs are unlikely to reap significant security benefits from forced eradication.[2] Quite the contrary, the available evidence suggests that eradication may even create further violence by causing conflict within and between organized criminal actors (Campos, Nieto-Matiz, and Schenoni 2025).

Second, the same dynamic of eradication targeting the lowest part of the supply chain makes regular citizens bear the brunt of the burden from eradication compared to other counternarcotics interventions, since citizens themselves grow coca leaves which is then sold to or taxed by criminal groups who will process and transport the drug. Forced crop eradication creates ecological (Rincón-Ruiz et al. 2016) consequences in the form of pesticide runoff or deforestation, public health consequences with dermatological and respiratory illnesses and increased miscarriages resulting from the use of the chemicals designed to destroy the crops (Camacho and Mejía 2017), as well as human capital consequences in the form of reduced schooling and increases in poverty rates resulting from the destruction of an economic alternative (Rozo 2014).

Third, forced eradication, especially when implemented through aerial fumigation, is fairly indiscriminate, often affecting legal crops and entire communities rather than selectively targeting illicit cultivation. This indiscriminate nature can heighten perceptions of unfairness and further alienate communities from the state.

One outcome of oppressive enforcement creating these negative perceptions of the state and its agents is a withdrawal from formal participation in state channels, as reflected by lower turnout. Another possibility is that of a backlash effect. Oppressive enforcement may motivate individuals and groups to increase their political engagement such that discontent becomes constructive political action. If change in the letter or enforcement of the law is viable, then it is possible for those affected by enforcement to attempt to shift or pressure the state into de facto or de jure changes

[2]Coca harvesters known as scrapers (*raspachines*) are paid up to US$0.84 for harvesting 25 pounds of unprocessed coca leaves (Ramírez 2011, pp. 67–70), which can produce around a dozen grams of pure cocaine sold in consumer markets at values of several hundreds of U.S. dollars.

in enforcement, though efforts are unlikely to be successful unless aggregate public opinion reflects the opinion of those directly affected by eradication. Given that these rural communities are marginalized and have low de facto political power, this is unlikely to be the case.

I argue that affected communities attribute eradication behavior as a signal that the government disproportionately targets a particular demographic group which helps to resolve a collective action problem by fostering a shared sense of grievance and identity. This shared experience creates a basis for solidarity and coordinated action, as individuals recognize that they are not alone in being targeted, thereby lowering the barriers to collective mobilization (Ramírez 2011), at least through voting. The collective experience of forced eradication activates group threat, where communities targeted by eradication perceive the state as an adversarial force rather than a protector. This perception can undermine the social contract, as citizens no longer view the state as fulfilling its obligation to provide security and economic stability. Instead, the state is seen as exacerbating insecurity and economic hardship. Such perceptions are likely to lead to political mobilization against incumbents, particularly in the long term and in contexts where alternative political actors offer a platform that opposes repressive counternarcotics policies and supports voluntary crop substitution or other non-coercive approaches.

This theoretical framework helps explain why forced coca eradication, particularly through aerial fumigation, leads to electoral backlash against national incumbents who are perceived as responsible for these policies. To understand why responsibility is attributed to national-level politicians, I draw from Fearon (1999), who writes in Przeworski, Stokes, and Manin (1999) that key requirements for electoral accountability broadly are as follows: voters must be able to observe the behavior of their politicians, correctly attribute responsibility for that behavior, and have the ability to punish—or reward in a positive case—behavior accordingly. Each of these elements play an important role in creating the opportunity for electoral punishment for oppressive enforcement. Crop eradication in Colombia meets each of these requirements. It is highly observable, easily attributable to the central government, and there are several avenues for electoral backlash, as Section 2.3 will show. Therefore, one should expect citizen responses to eradication to result in changes in electoral behavior. This discussion suggests the following empirical implications, beginning with the relationship between eradication and electoral accountability at the presidential level:

Hypothesis 3 (H3)**.** *Forced crop eradication will provoke presidential-level electoral backlash.*

The backlash is less pronounced at the local level, as voters attribute the policy to national actors rather than local politicians.

Hypothesis 4 (H4)**.** *Forced crop eradication will not provoke electoral backlash to local-level politicians.*

Over time, repeated exposure to such repressive state actions may contribute to a broader shift in political preferences, favoring parties that advocate for less repressive and more community-oriented approaches to counternarcotics. This dynamic could help explain the rise of left-wing political movements in Colombia, culminating in the election of Gustavo Petro, who has explicitly criticized forced eradication and promoted alternative approaches.

Hypothesis 5 (H5)**.** *In the long run, forced crop eradication will be associated with increases in left-wing vote share for presidential candidates.*

Since manual eradication is a less indiscriminate form of forced eradication, its effects should be muted compared to aerial fumigation:

Hypothesis 6 (H6)**.** *The relationship between eradication and political outcomes will be attenuated for manual eradication relative to aerial fumigation.*

2.3 Forced coca eradication in Colombia

Colombia serves as a paradigmatic case for understanding the political dynamics surrounding eradication: it is one of the largest producers of coca in the world, and crop eradication has been part of the government's counternarcotics toolkit since before the coca boom, when marijuana was the primary illicit export of the country (Britto 2020).

To justify the expectation from Section 2.2 that the experience of coca eradication in Colombia will result in formal backlash, one must first determine that those who experience eradication will perceive it to be a form of oppressive enforcement that activates group threat.

For coca growers and communities that rely on coca cultivation, the crop represents a rare opportunity for a stable income and a strong local economy. The municipalities where coca is grown in Colombia are often ones with weak state presence, both in terms of personnel and infrastructure. Table 2.1 shows that the municipalities where coca was detected in at any point between the years 1999 and 2019 are, on average, further away from their department capitals, further away from Bogotá, and further away from the nearest primary wholesale food market. The populations of these municipalities are more rural, and the municipalities themselves spend less per capita, have greater inequality, are poorer across a variety of metrics, have higher levels of infant mortality and lower levels of coverage for essential services. Further, they experienced greater levels of historical armed group violence.

All these circumstances and others not measured here make the growing and commercialization of licit crops—which are heavier and accrue less revenue per weight than coca—substantially difficult. A farmer may have to travel several hours over unpaved roads, or may even need to traverse water, to get from their land to the nearest municipal center. On the other hand, coca is bought door-to-door by armed groups or other criminal actors who eventually refine coca into cocaine and traffic the finished product. Further still, there is systematic evidence to suggest that within this group of municipalities, the strength of the coca economy leads to significant positive economic spillovers. Marín-Llanes et al. (2024) show that coca booms lead to economic and social growth.

To validate this discussion, I draw from qualitative evidence from fieldwork conducted in coca-growing municipalities in 2023 and 2024. Appendix Section B.1 discusses details on fieldwork locations, interview selection, and ethical considerations.

Table 2.1: Differences between municipalities with and without coca cultivation from 1999-2019.

	Coca (N=331)		No coca (N=791)			
	Mean	Std. Dev.	Mean	Std. Dev.	Diff.	Std. Err.
Coca suitability index	0.3	0.9	-0.1	1.0	-0.4	0.1
Distance to department capital, km	112.7	76.4	68.3	46.6	-44.4	4.5
Distance to Bogotá, km	376.3	143.8	298.5	208.2	-77.7	10.8
Distance to wholesale food market, km	174.8	121.9	111.0	101.0	-63.8	7.6
Altitude, meters above sea level	774.6	779.2	1282.0	933.3	507.5	54.2
Proportion rural population (2019)	61.9	22.7	53.5	24.1	-8.4	1.5
Per capita municipal expenditures (2005)	230.4	53.6	265.6	63.6	35.2	3.9
Gini index (2005)	47.9	3.7	44.5	2.8	-3.4	0.2
Poverty index (2005)	57.0	9.3	49.1	10.3	-7.9	0.7
Multidimensional poverty index (2005)	78.2	13.1	65.9	16.3	-12.3	0.9
Unsatisfied basic needs index (2005)	56.9	22.0	40.6	18.8	-16.3	1.4
Gross domestic product per capita (2005)	5.1	3.6	6.8	5.5	1.8	0.3
Infant morality rate (2015)	23.4	11.3	17.8	6.1	-5.6	0.7
Aqueduct coverage (2015)	55.6	29.6	61.6	29.9	5.9	2.0
Sanitation coverage (2015)	47.5	29.4	46.2	29.8	-1.3	2.0
Sewerage coverage (2015)	40.8	29.9	40.9	29.3	0.1	2.0
Electricity coverage (2015)	85.0	22.4	94.7	11.7	9.7	1.3
Paramilitary attacks per 100,000 (1988-2001)	0.5	0.5	0.4	0.6	-0.1	0.04
Guerrilla attacks per 100,000 (1988-2001)	1.2	1.3	0.6	1.0	-0.6	0.1
Left-wing presidential vote share (1986)	11.1	18.8	2.8	5.4	-8.3	1.2
Right-wing presidential vote share (1986)	36.4	27.3	44.4	27.2	8.0	1.9

Notes: Estimated using OLS.

Interviews with former and current participants in the coca economy confirmed that growing coca or working in the coca economy is one of the only ways for them to make a viable living, despite its risks. Several participants acknowledged that without growing coca, they would have found it difficult to sustain a livelihood.[3] One former grower said that "[coca] was what we had to live on, to survive, we worked to survive."[4] Community leaders echoed these concerns, and explicitly linked eradication with a sense of threat to subsistence.[5] Similarly, local politicians and former members of armed groups who were peace signers—people with significant local influence—discussed that those in affected communities viewed their relationship with the cen-

[3]Author interviews.
[4]Author interviews.
[5]Author interviews.

tral government as one of state abandonment. State presence, if it ever manifested itself, would manifest in the form of oppressive enforcement.[6] Another former grower said "we always fight with the state. They want to leave us with nothing. I had nothing else to live on but my *palitos* [little coca plants]. What they want to take from us is our food."[7] Interviewees also discussed the knowledge gap between the government who they viewed as elite and urban and their lifestyle as rural farmers, with several mentioning that these traditional powers do not "dignify" the life of *campesinos*.[8] Respondents also consistently emphasized that blame for eradication was to be placed on the central government, particularly the president, and that local actors like mayors were powerless to affect eadication policy.[9] Respondents also perceived eradication to be an ineffective approach to coca because it does not attack the root problem of demand for drugs. Some explicitly said they felt victimized by their state, especially because of the uneven enforcement of eradication (Gerez 2025).[10] A few former growers felt guilty about the social and health consequences of drug use but again highlighted participation in the economy as a necessity for survival. At the same time, they linked eradication with the state treating them as "delinquents" even as they were not the most salient or profit-receiving actors in the overall illicit economy.[11] In particular, those affected viewed aerial fumigation as a particularly pernicious form of state enforcement, because of its indiscriminate targeting leading to inefficiency and affecting the environment and other legal crops used for food.[12] In coca-growing municipalities, even non-coca growers are dependent on coca by virtue of the relationship between coca and the local economy as a whole (Marín-Llanes et al. 2024). Local politicians and community leaders described how when coca boomed the town centers themselves also boomed, and business was better even for whose who did not participate in the coca economy.[13] Naturally, then, forced eradication is looked upon quite unfavorably by growers and the broader community. Coca growers have a perception that when the government

[6] Author interviews.
[7] Author interviews.
[8] Author interviews.
[9] Author interviews.
[10] Author interviews.
[11] Author interviews.
[12] Author interviews.
[13] Author interviews.

implements forced eradication the are not targeting drugs at the right level. Forced eradication targets drugs at the lowest point of the supply chain, which is also the point where they are least valuable. Coca increases dramatically in value as it moves up the supply chain. The majority of coca grown in Colombia is grown by small landholders, not necessarily "industrial"-style operations run by criminal groups. Non-state armed groups prefer to buy coca cheaply from *campesinos* and process the value-added steps themselves. Figure 2.1 shows that from the years 2001 to 2008 when the Ministry of Defense collected the data, approximately 50-75% of the coca cultivated in Colombia was grown on plots smaller than 3 hectares.[14] Figure 2.2 shows that the average coca plot size was less than a hectare by 2014. Forced eradication is thus likely to activate group threat as discussed in Section 2.2.

Forced eradication can proceed in two forms: aerial and manual. Aerial eradication consists of planes or helicopters spraying herbicides from afar in an effort to destroy the coca crops. Manual eradication involves military or police escorted teams on the ground either spraying the crops or pulling out the crops by the roots. It is reasonable to expect that these two forms of eradication could produce heterogeneous political responses. The distant nature of aerial eradication makes it difficult for the aircraft spraying the herbicides to successfully target only coca plots. Instead, the runoff of herbicides can affect other crops and water supplies. One interviewee said that "Fumigation does not affect coca, it affects the natural environment and the food."[15] Another described how fumigation killed bees, natural pollinators.[16] This makes aerial eradication more likely to create backlash among a larger portion of the population of coca-growing municipalities. Indeed, aerial eradication has been halted in Colombia since 2015 because of evidence of its deleterious health consequences (Camacho and Mejía 2017). That said, this is not to say that manual eradication can have negative political consequences, simply that manual eradication is less likely to engender group threat. At the same time, assessing the consequences of manual eradication presents an analytical challenge because its direct nature makes it more likely to be endogenous to immediate

[14]Indeed, this cutoff is used by the government to separate small farmers from large coca growing operations.
[15]Author interviews.
[16]Author interviews.

Figure 2.1: Yearly hectares of coca cultivation disaggregated by plot size, 2001-2008.

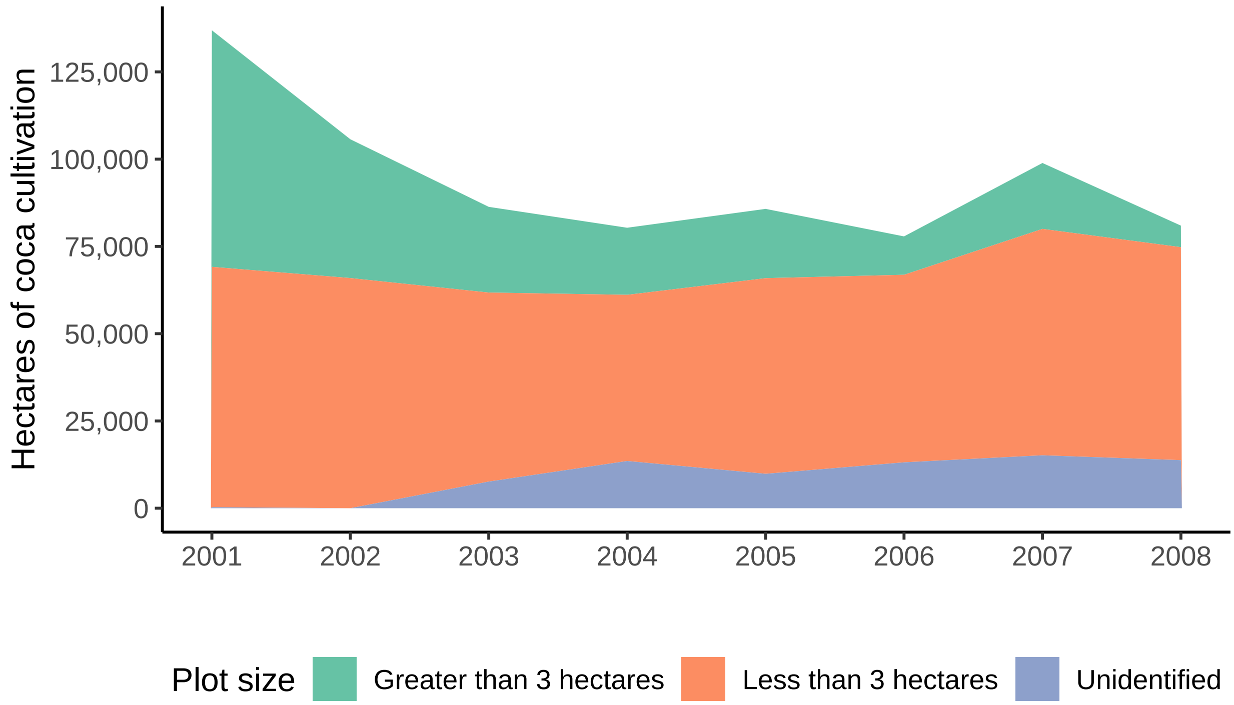
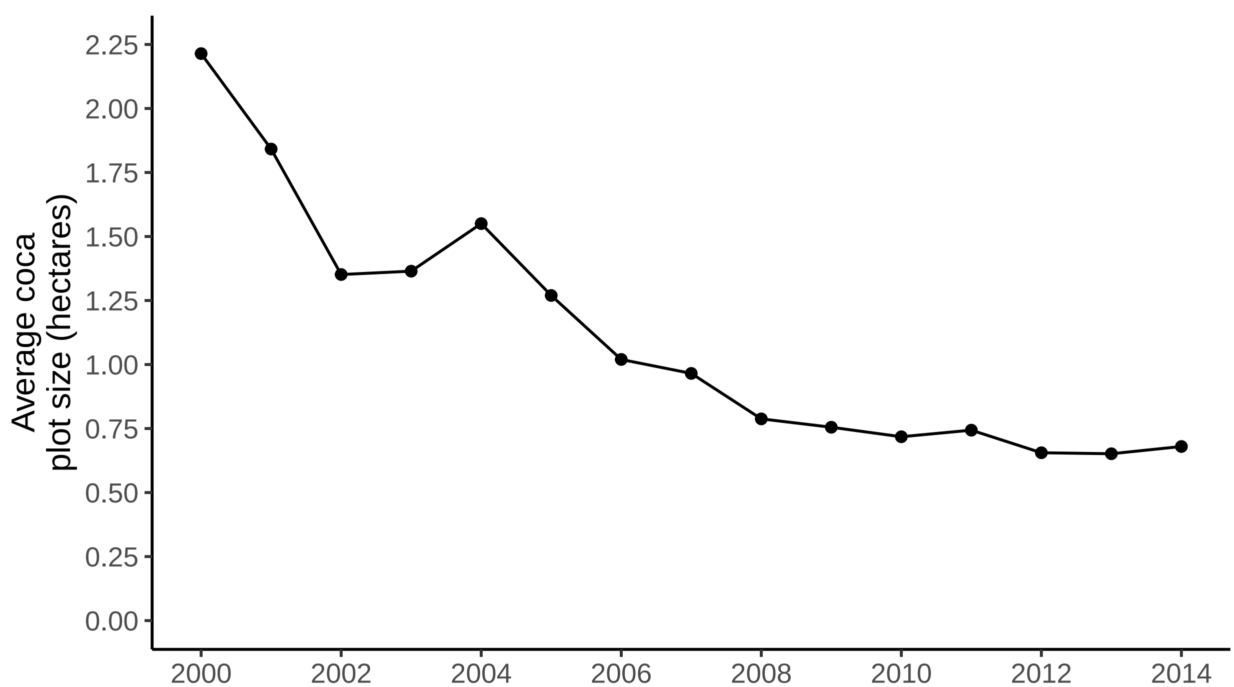


Figure 2.2: Total yearly hectares of coca cultivation divided by the number of plots, 2000-2014.



short-term local dynamics, such as organized resistance or security concerns linked to the short-term presence of non-state armed groups. As a result, its implementation may be more sensitive to electoral considerations. Regardless, I present results across both forms of eradication to contrast community experiences between these two different forms of eradication.

2.4 Eradication and electoral accountability

Does this resentment translate into changes in political behavior? Do citizens in municipalities that experience eradication simply become disillusioned with the political and electoral process? Or do they try and effect change by increasing their political participation? This section leverages the timing of eradication around elections to assess the short-term electoral consequences of eradication, as well as the implementation of eradication across different municipalities over different ports in time to assess the long-term electoral consequences of eradication.

2.4.1 Temporal bandwidth around elections

To test H3, I leverage timing of eradication to compare electoral results across municipalities that experienced eradication just before an election to those that experienced eradication just after an election. To implement this strategy, I first construct a panel of elections data for all 1,122 Colombian municipalities starting from the 1986 presidential election. Electoral data is sourced from the National Civil Status Registry (*Registraduría Nacional del Estado Civil*), the official government agency of Colombia in charge of administering and recording the electoral process. Then, I acquired forced crop eradication data through an information request to the Colombian Ministry of Justice (*Ministerio de Justicia*) from the Colombian Ministry of National Defense (*Ministerio de Defensa Nacional*). These data aggregate coca crop eradication at the monthly level for each municipality, and begin in March 1994 for aerial eradication, and January 1998 for manual eradication. Figure 2.3 shows the distribution of the electoral calendar in Colombia since the 1994

Figure 2.3: Timeline of election years in Colombia for national and local elections.

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
National	✓				✓				✓				✓				✓				✓
Local				✓			✓			✓				✓				✓			

Notes: Legislative elections are held in March of national election years. Presidential elections are held in May of national election years, with a second round in June if necessary since the passing of the 1991 Constitution. Regional/local elections are held in October of respective election years.

regional/local elections, the point at which complete eradication data is available.[17] Regional/local elections are held to elect governors of departments, departmental assemblies, municipal mayors, and municipal councils. The first regional/local elections in Colombia were held in 1988, elected officials served a 6-year term. From 1994 onward they served 3-year terms, with elections in 1997, 2000, and 2003, at which point local and regional officials were elected for 4-year terms like national-level politicians. National elections occur every four years.[18]

I aggregate the amount of eradication in each municipality in the months before and after an election for a given bandwidth in months, inclusive of the month of the election. Then I compare the election outcomes of the municipalities that experienced eradication before but not after the election to municipalities that experienced eradication after but not before the election.[19] Appendix Figures B.1 and B.2 show the number of municipalities that fall into each group for a given bandwidth and election type. To perform this comparison, I fit the following specification:

$$Y_{i,t} = \beta \text{Pre-election eradication} + \mathbf{X}_i^{\top}\zeta + \gamma_t + \varepsilon_{i,t}, \tag{2.1}$$

where $Y_{i,t}$ refers to an electoral outcome in municipality i for election date t. The main coefficient of interest is β, which captures the relationship between a measure of eradication experienced

[17]Note, however, that only limited aerial eradication data is available from before the 1994 national elections, and no aerial eradication data is available for the 2018 election, which is after aerial eradication was stopped by the Constitutional Court. No manual eradication data is available for the 1994 national or 1997 local elections.

[18]Legislative elections precede presidential elections by approximately two months, the former are held in March of election years while the latter are held in May of election years, with a second round in June if necessary.

[19]I exclude municipality-election date pairs that did not experience eradication at any point before or after the given bandwidth in months and the municipality-election date pairs that experienced eradication before *and* after an election.

prior to the election, and the outcome. The model includes γ_t, election-date fixed effects, and a vector of time-invariant municipality covariates $\mathbf{X}_i$. Robust standard errors are clustered by municipality. Specifically, the covariates included are coca suitability, distance of the municipality to Bogotá, distance of the municipality to the department capital, distance of the municipality to the nearest main wholesale food market, average department altitude, historical paramilitary violence, historical guerrilla violence, and vote share for the left and right wing presidential candidates in the 1986 presidential election.

The identifying assumption is that whether eradication happens before or after the election is independent of time-invariant confounders—conditional on the vector of covariates included—and time-varying confounders. The inclusion of historical armed group violence as a covariate helps account for differential targeting based on guerrilla or paramilitary activity (Gerez 2025). The results of a balance test using a modified version of Equation 2.1 which $\mathbf{X}_i^\top \zeta$, and compares municipalities that experienced eradication before elections to those who experienced eradication after—in some cases interacted with a measure of the amount of pre and post-election eradication—to predict these time-invariant characteristics are reported in appendix Tables B.1-B.2, and suggest imbalances, though crucially there are few differences based on historical armed group violence at least with this short term analysis. However, while the inclusion of municipality fixed effects would absorb all differences in these and unobserved time-invariant confounders, Appendix Table B.3 shows that their inclusion limits the effective sample size for smaller bandwidth sizes. Because of this, and because using a 1-month bandwidth covers the period between legislative and presidential elections, as described in the notes of Figure 2.3, I use the narrow bandwidth with municipal controls as my preferred specification, though I relax this preference and probe the robustness of results to alternative specifications in the appendix.

To assess electoral responses to eradication, I use various metrics. First, I estimate the relationship between eradication prior to elections and turnout, which is a proxy for engagement with the electoral process broadly. To measure turnout, I use the total number of votes divided by the total population of each municipality that is of voting age (greater than or equal to 18 years of age) as a proxy, since official turnout data at the municipal level is not available for elections before 2006.[20] I also measure vote share for the incumbent president, the incumbent president's party, or the closest candidate.[21] Finally, I estimate effects for presidents Uribe and Santos, who each won re-election and served two terms separately. All outcomes are measured during the first round of the presidential elections, which is the most relevant level of government for blame attribution, and the two-round system means the results from the first round are likely to reflect honest preferences instead of strategic voting.[22]

Table 2.2 reports results for presidential elections for various measures of pre-election aerial eradication. Each panel uses a different measure, with Panel A using raw hectares, Panel B using raw hectares transformed by the natural log,[23] Panel C using hectares as a percentage of municipality area, and Panel D performing a simple comparison between municipalities that experienced any eradication before the election to those that experienced eradication after. Each column reports a different outcome. Column 1 reports the relationship between pre-election aerial eradication and turnout. Then, Columns 2-3 use as outcomes the electoral results for the incumbent president or the incumbent president's party; Columns 4-5 use as outcomes the electoral results for Uribe and Columns 6-7 use as outcomes the electoral results for Santos. Even column use the relevant candidates' votes divided by the number of valid votes; odd columns use votes by eligible votes.

[20]This procedure is common in the literature on Colombian electoral politics (Arjona, Chacón, and García-Montoya 2025). Appendix Figure B.3 shows the relationship between our turnout proxy and official turnout data from the 2006, 2010, 2014, and 2018 Congressional election. The correlation coefficient between our proxy for turnout and official turnout data across all these elections is 0.79.

[21]Prior to the presidency of Álvaro Uribe and a constitutional change which he instituted while in office, Colombian presidents were restricted to one presidential term. Uribe and his successor, Juan Manuel Santos, both served two presidential terms. For the 1998 election, after the presidency of Ernesto Samper—a member of the Colombian Liberal Party—I use Horacio Serpa's—also a Liberal—vote share to measure electoral accountability. For the 2002 election, after the presidency of Andrés Pastrana, I use Uribe's vote share. While Uribe ran as an independent member of the Colombia First party, the Conservative Party clearly backed him and did not run a candidate in this election. Uribe ran a staunchly militaristic campaign in terms of the "War on Drugs" (Gerez 2025). For the 2006 election, I use Uribe's re-election vote share. For the 2010 election I use Santos's vote share. Santos' was Uribe's defense minister and chosen successor, though he departed from Uribe's approach later in his term. For the 2014 election I use Santos' vote share.

[22]Starting from the 1994 presidential election, Colombia uses a two-round electoral system for electing the president. If no candidate wins a majority of the popular vote in the first round, the top two vote-getters proceed to the second round which necessarily determines a winner. Note that the 2002 and 2006 elections, won by Uribe, were decided in the first round. Other than those two elections, each election since 1994 required two rounds of voting.

[23]To account for the large number of zeroes in the data, 1 is added to the outcome transformed using the natural log in Panel B.

Table 2.2: Relationship between pre-election aerial eradication and presidential voting behavior.

Outcomes:	Turnout	Accountability		Uribe (2002, 2006)		Santos (2010, 2014)	
		Vote share	Turnout share	Vote share	Turnout share	Vote share	Turnout share
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: Aerial eradication (hectares), 1-month pre/post-election bandwidth							
Eradication	-0.004	-0.008	-0.003	-0.012	-0.004	0.032	0.004
	(0.003)	(0.008)	(0.003)	(0.006)	(0.004)	(0.019)	(0.006)
R^2	0.47	0.36	0.47	0.76	0.64	0.34	0.28
Eradication range	[0-1,825]	[0-1,825]	[0-1,825]	[0-1,825]	[0-1,825]	[0-924]	[0-924]
Eradication mean	55.60	56.05	55.60	103.27	100.81	35.07	35.07
Eradication std. dev.	215.63	216.44	215.63	333.37	329.67	125.06	125.06
Panel B: Aerial eradication (ln + 1), 1-month pre/post-election bandwidth							
Eradication	-1.232	2.165	0.249	-2.763	-1.713	5.115	1.189
	(0.418)	(1.175)	(0.437)	(1.227)	(0.958)	(1.205)	(0.531)
R^2	0.49	0.39	0.47	0.77	0.67	0.48	0.34
Eradication range	[0-7.51]	[0-7.51]	[0-7.51]	[0-7.51]	[0-7.51]	[0-6.83]	[0-6.83]
Eradication mean	0.93	0.94	0.93	1.20	1.17	0.83	0.83
Eradication std. dev.	2.01	2.01	2.01	2.36	2.34	1.86	1.86
Panel C: Aerial eradication (% area), 1-month pre/post-election bandwidth							
Eradication	-0.847	-9.828	-2.567	-14.467	-7.785	19.066	6.910
	(2.516)	(16.217)	(6.051)	(7.989)	(5.735)	(14.149)	(3.515)
R^2	0.47	0.36	0.47	0.75	0.65	0.33	0.30
Eradication range	[0-1.44]	[0-1.44]	[0-1.44]	[0-1.44]	[0-1.44]	[0-1.29]	[0-1.29]
Eradication mean	0.03	0.03	0.03	0.05	0.05	0.03	0.03
Eradication std. dev.	0.18	0.18	0.18	0.23	0.22	0.15	0.15
Panel D: Aerial eradication (> 0), 1-month pre/post-election bandwidth							
Eradication	-5.734	14.606	2.478	-15.439	-11.495	25.817	6.879
	(2.236)	(5.348)	(2.407)	(8.401)	(6.004)	(5.473)	(2.639)
R^2	0.49	0.41	0.47	0.77	0.68	0.51	0.37
Eradication range	{0,1}	{0,1}	{0,1}	{0,1}	{0,1}	{0,1}	{0,1}
Eradication mean	0.19	0.19	0.19	0.22	0.21	0.18	0.18
Eradication std. dev.	0.40	0.40	0.40	0.42	0.42	0.39	0.39
Observations	125	124	125	41	42	76	76
Municipalities	94	94	94	40	41	66	66
Outcome range	[0-78.26]	[0-87.97]	[0-60.4]	[6.15-87.97]	[0-60.4]	[3.38-86.22]	[1.94-44.25]
Outcome mean	33.97	42.28	14.79	49.83	18.34	40.36	14.00
Outcome std. dev.	13.98	22.82	11.25	24.54	14.85	20.66	8.09

Notes: All specifications are estimated using OLS and include election-year fixed effects. Robust standard errors clustered by municipality are in parentheses.

Relative to municipalities that experienced eradication just after presidential elections, municipalities that experienced eradication just before presidential elections exhibited lower turnout, although the coefficients vary based on the operationalization of eradication. Similarly, there is little evidence of any relationship between the accountability vote, that is, aggregating over all of the elections, including presidential candidates who could not run for re-election. However, these overall mixed findings are underlying variation by presidential administration. When considering the elections of Uribe and Santos, there is a negative relationship between pre-election eradication and vote share for Uribe, whereas there is a positive relationship between pre-election eradication and vote share for Santos. Municipalities that experienced pre-election eradication in 2002 and 2006 when Uribe was on the ballot exhibited lower vote share for Uribe in that election by approximately 0.012 percentage points for each hectare of pre-election eradication. While this seems small, consider that the mean hectares eradicated for municipalities in the "eradication before election" group—for the 1-month bandwidth—experiences 100 hectares of eradication. This translates to a 1.2 p.p. decrease in vote share, while a standard deviation increase in pre-election eradication is associated with a 4.0 p.p. decrease in vote share. By constrast, municipalities that experienced eradication before the election during Santos's elections voted *more* for Santos, by a larger margin. Though Santos ran as Uribe's successor, having previously served as Uribe's Minister of National Defence, Santos quickly broke with Uribe's hardline approach to drugs and the Colombian armed conflict. Under Santos' presidency, the government implemented the largest voluntary crop substitution program, and Santos' negotiated a peace agreement between the FARC, the longest running guerrilla group of the conflict, and the central government.

These initial results are suggestive of a conditional electoral backlash to Uribe only but not disengagement. To tease out these patterns, I engage in several exercises. First, as described above, I redefine the non-turnout outcomes in Columns 3, 5, and 7 of Table 2.2. Instead of using the total number of votes for a particular candidate or set of candidates divided by the total number of valid votes for each election, I divide by the total number of eligible voters for each election. This metric attempts to capture compositional changes in the electorate to guard against the possibility that pre-election eradication leads people to move municipalities—even though this is unlikely especially when only comparing to municipalities that experienced post-election eradication and in a narrow bandwidth. These results are similar in direction to the main results but are not estimated as precisely, and are uniformly smaller than the main results.

Next, I turn to local election results instead, arguing that these results can serve as a falsification test. If eradication uniformly discourages citizens from engaging with the political process or alternatively has a mechanical effect that reduces turnout, then the relationship between pre-election eradication and electoral results should not vary by type of election. On the other hand, if there is no relationship between pre-election eradication and electoral accountability, then this suggests that voters attribute blame for enforcement to the executive only. Using the same estimating Equation 2.1, these results are presented in Table 2.3.

Given the differences between local and presidential elections in Colombia, the outcomes are different from those used in Table 2.2 with the exception of turnout. Mayors cannot be re-elected in Colombia, so a measure analogous to the "acountability" measure from Table 2.2 is not necessarily appropriate. Instead, I report results for the relationship between pre-election eradication and vote share and turnout share for right-wing and left-wing mayors. Because the election years covered are 1997, 2000, 2003, 2007, and 2011 under the presidencies of Pastrana, Pastrana, Uribe, Uribe, and Santos respectively—all conservative presidents, though see the above discussion of Santos—detecting decreases in right-wing mayoral electoral results and conversely increase in left-wing mayoral electoral results are reasonable proxies for blame attribution to mayors closest to the president's party.

In support of H4, the differences between municipalities that experienced eradication just after local elections to municipalities that experienced eradication just before these elections are small and not precisely estimated. This provides suggestive evidence that voters attribute blame for eradication to national politicians, not local politicians, even if they experience eradication in close proximity to a local election—which is off-cycle from national elections, and under the purview of national-level politicians.

Table 2.3: Relationship between pre-election eradication and local voting behavior.

Outcomes:	Turnout	Right-wing candidates		Left-wing candidates	
		Vote share	Turnout share	Vote share	Turnout share
	(1)	(2)	(3)	(4)	(5)
Panel A: Aerial eradication (hectares), 1-month pre/post-election bandwidth					
Eradication	-0.002	-0.003	-0.004	-0.002	-0.006
	(0.006)	(0.005)	(0.007)	(0.001)	(0.004)
R^2	0.57	0.44	0.42	0.11	0.13
Eradication range	[0-2,410]	[0-2,410]	[0-2,410]	[0-2,410]	[0-2,410]
Eradication mean	141.76	141.76	141.76	141.76	141.76
Eradication std. dev.	346.77	346.77	346.77	346.77	346.77
Panel B: Aerial eradication (ln + 1), 1-month pre/post-election bandwidth					
Eradication	-0.026	-0.432	-0.558	-0.051	-0.133
	(0.832)	(0.646)	(0.996)	(0.263)	(0.684)
R^2	0.57	0.44	0.42	0.10	0.12
Eradication range	[0-7.79]	[0-7.79]	[0-7.79]	[0-7.79]	[0-7.79]
Eradication mean	2.13	2.13	2.13	2.13	2.13
Eradication std. dev.	2.64	2.64	2.64	2.64	2.64
Panel C: Aerial eradication (% area), 1-month pre/post-election bandwidth					
Eradication	7.873	-2.910	-7.063	-2.607	-7.379
	(11.995)	(7.580)	(11.485)	(2.015)	(5.519)
R^2	0.57	0.44	0.42	0.10	0.13
Eradication range	[0-0.93]	[0-0.93]	[0-0.93]	[0-0.93]	[0-0.93]
Eradication mean	0.09	0.09	0.09	0.09	0.09
Eradication std. dev.	0.2	0.2	0.2	0.2	0.2
Panel D: Aerial eradication (> 0), 1-month pre/post-election bandwidth					
Eradication	-0.615	-3.774	-5.171	0.555	1.331
	(4.164)	(3.250)	(5.353)	(1.647)	(4.010)
R^2	0.57	0.45	0.42	0.10	0.12
Eradication range	{0,1}	{0,1}	{0,1}	{0,1}	{0,1}
Eradication mean	0.42	0.42	0.42	0.42	0.42
Eradication std. dev.	0.5	0.5	0.5	0.5	0.5
Observations	104	104	104	104	104
Municipalities	73	73	73	73	73
Outcome range	[1.3-100]	[0-86.73]	[0-97.99]	[0-23]	[0-66.61]
Outcome mean	56.02	20.94	34.39	2.45	5.75
Outcome std. dev.	20.25	18.94	27.90	5.68	13.89

Notes: All specifications are estimated using OLS and include election-year fixed effects. Robust standard errors clustered by municipality are in parentheses.

Appendix Tables B.4 and B.5 report results analogous to those in Tables 2.2 and 2.3 but for manual eradication. The evidence for H6 is mixed. For presidential elections, the coefficients on pre-election manual eradication are not precisely estimated and not statistically different from zero, though not necessarily distinguishable from the coefficients on pre-election aerial eradication. For mayoral elections, while some of the coefficients for the relationship between manual eradication and electoral behavior are larger than those associated with aerial eradication, some are also smaller and in general, the differences are not statistically distinguishable.

To probe the sensitivity of the results to the selection of a particular bandwidth or the inclusion of particular covariates or fixed effects, Appendix Figures B.4-B.7 summarize results for varying bandwidths and model specifications.

2.4.2 Staggered implementation of eradication

The previous subsection provided evidence that eradication just before an election engenders a conditional electoral backlash. In this subsection, I go beyond assessing a local effect and instead aggregate the number of hectares of coca eradicated in each municipality starting from June of the year of the previous presidential election through May of the year of the current presidential election, which is when presidential elections are held. In other words, an outcome measured for the May 1998 presidential election is linked with aggregate crop eradication from June 1994-May 1998. The aggregate crop eradication measure is divided by the number of months in the interval, so the main predictor should be interpreted as the average monthly number of hectares forcibly eradicated over that term.

The outcomes used are the same as the outcomes in the previous subsection, expect the "accountability" vote is replaced by electoral results for left-wing presidential candidates. A relationship between eradication and votes for left-wing candidates for president would suggest that voters update their candidate choices in response to eradication, and therefore, eradication engenders electoral backlash. In Colombia, left-wing candidates are against militaristic responses to coca cultivation and favor alternative development strategies such as voluntary substitution. Appendix

Table B.6 lists the presidential candidates I classify as left-wing along with their first round vote share. Also, this is a relatively stable metric of support backlash to eradication in terms of estimating longer term effects. Finally, the weakness of left-wing parties in Colombia during the period of study makes using left-wing presidential vote share as an outcome a harder test of the theory. I use the following two-way fixed effects estimator to predict each voting outcome:

$$Y_{i,t} = \beta Eradication_{i,t-1} + \gamma_i + \delta_t + \varepsilon_{i,t}, \tag{2.2}$$

where $Y_{i,t}$ is an electoral outcome measure in municipality i and election t. $Eradication_{i,t-1}$ refers to a measure of cumulative eradication undertaken over the course of the 48 months prior to election t, and its associated coefficient β is the main coefficient of interest. Municipality fixed effects γ_i guard against any time-invariant confounding municipality characteristics, while election fixed effects δ_t account for national level shocks in vote share. Standard errors are clustered at the municipality level.

The results are presented in Table 2.4. As with the bandwidth results, in this table, panels specify alternative measures of the predictors—cumulative eradication is measured in raw hectares in Panel A, log-transformed in Panel B, average monthly eradication as a percentage of municipality area in panel C and a dummy measure is used in Panel D. Columns specify each of the separate outcomes, with even columns using vote share as a denomintor, while odd columns use eligible voters as a denominator. This estimation strategy leverages cross-sectional and temporal variation in eradication to estimate the relationship between eradication and electoral outcomes. Appendix Figure B.8 shows the number of municipalities in each presidential term which first experienced recorded eradication. The sample of municipalities are those that ever experienced aerial eradication. The 1994 election is excluded—though municipalities that experienced aerial eradication before the 1994 election are included in the sample as "always treated" municipalities, due to data limitation issues.

The results show no strong evidence of a decrease in turnout resulting from the experience of aerial fumigation. Turning to vote choice, I find positive coefficients that are precisely estimated

Table 2.4: Relationship between aerial eradication and presidential election voting behavior.

Outcomes:	Turnout	Left-wing candidates		Uribe (2002, 2006)		Santos (2010, 2014)	
		Vote share	Turnout share	Vote share	Turnout share	Vote share	Turnout share
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: Aerial eradication (hectares)							
Eradication	-0.0004	0.017	0.005	-0.025	-0.008	-0.068	-0.032
	(0.003)	(0.006)	(0.002)	(0.008)	(0.002)	(0.031)	(0.012)
R^2	0.77	0.77	0.79	0.84	0.89	0.36	0.52
Eradication range	[0-1,518]	[0-1,518]	[0-1,518]	[0-1,518]	[0-1,518]	[0-698]	[0-698]
Eradication mean	30.25	29.93	30.25	36.64	37.53	38.11	38.11
Eradication std. dev.	93.01	92.39	93.01	118.79	119.91	90.95	90.95
Panel B: Aerial eradication (ln + 1)							
Eradication	-0.289	1.711	0.400	-2.172	-0.851	0.945	0.464
	(0.206)	(0.284)	(0.117)	(0.753)	(0.282)	(1.613)	(0.682)
R^2	0.77	0.78	0.79	0.84	0.89	0.35	0.51
Eradication range	[0-7.33]	[0-7.33]	[0-7.33]	[0-7.33]	[0-7.33]	[0-6.55]	[0-6.55]
Eradication mean	1.34	1.34	1.34	1.32	1.33	1.77	1.77
Eradication std. dev.	1.85	1.84	1.85	1.90	1.92	1.94	1.94
Panel C: Aerial eradication (% area)							
Eradication	5.788	31.591	11.735	-23.810	-12.837	-181.854	-72.864
	(4.724)	(10.195)	(4.698)	(23.348)	(6.449)	(33.480)	(14.748)
R^2	0.77	0.77	0.79	0.84	0.89	0.39	0.54
Eradication range	[0-0.7]	[0-0.7]	[0-0.7]	[0-0.7]	[0-0.7]	[0-0.53]	[0-0.53]
Eradication mean	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Eradication std. dev.	0.06	0.06	0.06	0.07	0.07	0.05	0.05
Panel D: Aerial eradication (> 0)							
Eradication	-0.723	2.902	0.666	-2.112	-1.603	7.686	4.607
	(0.614)	(0.636)	(0.268)	(2.257)	(1.069)	(3.227)	(1.523)
R^2	0.77	0.77	0.79	0.84	0.88	0.36	0.52
Eradication range	{0,1}	{0,1}	{0,1}	{0,1}	{0,1}	{0,1}	{0,1}
Eradication mean	0.46	0.46	0.46	0.43	0.43	0.62	0.62
Eradication std. dev.	0.50	0.50	0.50	0.50	0.50	0.48	0.48
Observations	1,384	1,379	1,384	458	463	469	469
Municipalities	235	235	235	233	233	235	235
Outcome range	[0-100]	[0-91.78]	[0-56.46]	[3.62-89.9]	[0-63.33]	[3.38-91.99]	[1.25-61.28]
Outcome mean	37.02	19.16	7.39	45.07	15.53	45.41	17.61
Outcome std. dev.	14.77	20.43	8.77	21.80	11.96	20.63	10.83

Notes: All specifications are estimated using OLS and include municipality and election-year fixed effects. Robust standard errors clustered by municipality are in parentheses.

the models that use left-wing vote share as an outcome. This suggests that voters also adjust their voting patterns accordingly to reflect their discontent with law enforcement experiences. A one standard deviation increase in average monthly eradication over the course of the previous term is associated with a 1.57 p.p. increase in vote share for left-wing presidential candidates. The results for left-wing presidential votes as a percentage of eligible voters are smaller in magnitude.

The results for Columns 4-5 which use electoral results for Uribe as outcomes reflect the idea that the incidence or intensity of eradication is associated with a reduction in vote share for Uribe, since using Uribe's vote share as an outcome measures blame for eradication to the central government during his term. A one standard deviation increase in average monthly eradication is associated with a 2.97 p.p. decrease in vote share for Uribe. Separating out Uribe and Santos reveals that "Uribista" candidates should not be treated homogenously, as the results for Santos are mixed. While not uniformly positive as in the estimation strategy using a temporal bandwidth around elections, the estimated coefficients for the relationship between eradication and Santos' vote share oscillate between signs. Potentially this is a result of Santos's turn away from a militaristic approach to enforcement resulting from his peace negotiations with the left-wing Revolutionary Armed Forces of Colombia (*Fuerzas Armadas Revolucionarias de Colombia*, FARC).

As before, I next report results from a separate set of specifications related to local elections. Here, I link presidential-term eradication behavior to the outcomes of the following mayoral election in each municipality. Presidential elections are held every four years in Colombia, in the case of our data, from 1994. Elected presidents take office in August of their election year. Regional and local elections, where municipality mayors are elected, were held every three years from 1997 and every four years since 2003. Figure 2.3 shows the timeline of elections over the time period of eradication data availability. Taking former president Ernesto Samper as an example, Samper was elected in 1994 and assumed office in August of that year. The nearest local elections were held in October of 1997, so if local politicians were to be held accountable for the eradication behavior of Samper's administration, one would expect it to be reflected in these 1997 elections. Therefore, I construct a panel that uses the average amount of eradication in hectares each month corresponding to these terms (August 1994-October 1997, August 1998-October 2000, August 2002-October 2003, August 2006-October 2007, August 2010-October 2011, August 2014-October 2015, and August 2018-October 2019 for manual eradication after the aerial fumigation ban) to account for different term lengths.[24]

Using the same outcomes from the mayoral election results from the previous subsection, I assess the relationship between eradication and turnout, as well as votes for left-wing and right-wing mayoral candidates in local elections. The results are reported in Table 2.5. Curiously, these results show some evidence of a positive relationship between eradication and turnout in local elections, though the estimates vary in precision based on measurement of aerial eradication. There is similarly limited evidence of a negative relationship between eradication and the vote share of right-wing mayoral candidates, and no evidence of any relationship between eradication and voting for left-wing mayoral candidates.

Concerning manual eradication, I report analogous results in appendix Tables B.7-B.8. Again, I do not find much support for H6. The coefficients for manual eradication are fairly similar to those for aerial eradication using this estimation strategy. However, it is worth noting that manual eradication is more likely to be susceptible to time-varying endogenous characteristics such as collective resistance to eradication or the emergence of non-state armed group threats to eradication, as discussed at the end of Section 2.3.

This design relies on the parallel trends assumption so that treated units are appropriate counterfactuals for control units. To test this assumption and to account for the use of continuous treatments and possibility of treatment effect heterogeneity over time, I fit a dynamic specification based on De Chaisemartin and d'Haultfoeuille (2024). The results are presented in appendix Figure B.9 for both presidential and mayoral elections. To link elections between Uribe and Santos to a longer time series, combine their vote share together (Gelvez 2025). The placebo tests from the dynamic specification suggests that parallel trends generally hold, with the exception of a decrease prior to the relative first implementation of aerial eradication for left-wing vote share in

[24]The last reported aerial fumigations ocurred in September 2015, so the August 2014-October 2015 period is truncated to end in September 2015 for aerial fumigation

Table 2.5: Relationship between eradication and local voting behavior.

Outcomes:	Turnout	Right-wing candidates		Left-wing candidates	
		Vote share	Turnout share	Vote share	Turnout share
	(1)	(2)	(3)	(4)	(5)
Panel A: Aerial eradication (hectares)					
Eradication	0.010	-0.008	-0.009	0.0004	0.00005
	(0.003)	(0.005)	(0.008)	(0.002)	(0.005)
R^2	0.78	0.63	0.55	0.36	0.40
Eradication range	[0-1,376]	[0-1,376]	[0-1,376]	[0-1,376]	[0-1,376]
Eradication mean	28.69	28.69	28.73	28.69	28.73
Eradication std. dev.	95.79	95.79	95.86	95.79	95.86
Panel B: Aerial eradication (ln + 1)					
Eradication	0.538	-1.037	-1.062	0.012	-0.351
	(0.323)	(0.420)	(0.662)	(0.202)	(0.390)
R^2	0.78	0.63	0.55	0.36	0.40
Eradication range	[0-7.23]	[0-7.23]	[0-7.23]	[0-7.23]	[0-7.23]
Eradication mean	1.12	1.12	1.12	1.12	1.12
Eradication std. dev.	1.82	1.82	1.82	1.82	1.82
Panel C: Aerial eradication (% area)					
Eradication	16.073	-11.374	-17.425	-0.356	-5.466
	(2.463)	(8.015)	(12.736)	(2.178)	(6.183)
R^2	0.78	0.63	0.55	0.36	0.40
Eradication range	[0-1.58]	[0-1.58]	[0-1.58]	[0-1.58]	[0-1.58]
Eradication mean	0.02	0.02	0.02	0.02	0.02
Eradication std. dev.	0.08	0.08	0.08	0.08	0.08
Panel D: Aerial eradication (> 0)					
Eradication	0.394	-3.030	-3.016	-0.128	-0.852
	(1.080)	(1.590)	(2.201)	(0.640)	(1.092)
R^2	0.78	0.63	0.55	0.36	0.40
Eradication range	{0,1}	{0,1}	{0,1}	{0,1}	{0,1}
Eradication mean	0.34	0.34	0.34	0.34	0.34
Eradication std. dev.	0.47	0.47	0.47	0.47	0.47
Observations	1,228	1,228	1,226	1,228	1,226
Municipalities	235	235	235	235	235
Outcome range	[0-100]	[0-112.39]	[0-99.02]	[0-64.4]	[0-97.82]
Outcome mean	59.23	24.69	38.32	2.74	5.01
Outcome std. dev.	19.89	23.58	32.00	7.78	13.51

Notes: All specifications are estimated using OLS and include municipality and election-year fixed effects. Robust standard errors clustered by municipality are in parentheses.

presidential elections, possibly suggestive of differential targeting. The dynamic specification also suggests that both results for left-wing presidential vote share results—potential parallel trends violation notwithstanding—last at least a few election cycles before dissipating, while the turnout results are not consistent with the main results, at least for presidential elections, pointing to the differences between Uribe and Santos. I also plot parallel trends descriptively for each outcome in appendix Figures B.10-B.11. Taken together, the results in this section support the idea that voters successfully attribute eradication to the central government.

2.5 Conclusion

This paper studies the political consequences of law enforcement through the lens of electoral accountability. Are those who face the costs of enforcement able to attribute blame to politicians who implement such policies or do voters disengage from the electoral system entirely? Building on a literature that studies the relationship between crime and politics—whether through the behavior of criminal actors themselves (Daniele and Dipoppa 2017; Trejo and Ley 2020; Trudeau 2024) or through voters' reactions to criminal behavior (Marshall 2024; Ley 2018)—I instead focus on state responses to crime. Using the case of forced eradication in Colombia, I argue that voters are likely to perceive state enforcement behavior as part of a broader pattern targeting a particular demographic profile—poor, rural communities. Overall, I show that voters do attribute blame to politicians who implement eradication by virtue of changes in their voting behavior for executive elections and not local elections. At the same time, there is limited, if any, evidence that forced eradication seems to have a depressive effect of turnout. Forced eradication leads voters to be less likely to vote for right-wing presidential candidates and more likely to vote for left-wing presidential candidates but does not change turnout, although the endogenous targeting of eradication cannot be completely ruled out as an explanation for these patterns (Gerez 2025).

By contrast, Torreblanca (2024) finds that forced eradication in Mexico decreases turnout and lowers trust in law enforcement, but does not document resulting electoral consequences. This work is in line with additional research that suggests that citizens often struggle to assign political responsibility for security outcomes—rather than policy—particularly in multi-level governance structures (Carlin, Love, and Martinez-Gallardo 2015). Given this, it is not necessarily expected that voters in Colombia would attribute responsibility for aerial fumigation to national politicians. Yet, as I show, they do—suggesting that in contexts where enforcement is highly salient and clearly associated with central government policy, responsibility attribution may be more straightforward. Speculatively, I posit that clarity of responsibility plays an important role in explaining why enforcement may lead to disengagement with the state in Mexico but an electoral backlash in Colombia. The disparate set of law enforcement organizations in Mexico at different levels of government make formal backlash difficult. By contrast, Colombian forced eradication policy is highly centralized, and interviews of residents of coca-growing municipalities reveal that citizens successfully understand that forced eradication is a policy of the national government, creating a path for blame attribution.

While this paper demonstrates an electoral backlash to law enforcement via a study of forced crop eradication in Colombia, oppressive enforcement and its political consequences may vary by type of enforcement and regime type. For example, secret police in autocracies, who conduct covert operations to suppress dissent or target specific groups deemed as threats to the regime. While others may learn about forced disappearances, the nature of enforcement makes it less obvious than cases of indiscriminate repression (Blaydes 2018). Though it may be easy to attribute blame to the central authority, the lack of transparency in these types of systems may obscure blame, and the capacity for backlash is limited by nature: citizens face severe consequences for any type of opposition, any elections are likely to be tightly controlled or manipulated. Movements for accountability for this kind of enforcement are likely to come only after the regime has been toppled in the context of transitional justice (Gonzalez-Ocantos 2020).

CHAPTER 3

Enforcement and Diversification in Illicit Markets: Evidence from the Rural Andes[*]

with Elena Barham[†]

[*]Thanks to Hannah Baron, Gemma Dipoppa, Danny Hirschel-Burns, Isabel Laterzo-Tingley, John Marshall, and Andres Uribe for helpful comments and suggestions.
[†]Postdoctoral Fellow, University of Mannheim.

Abstract

How do state policies impact the development of illicit economies? We study how counternarcotics enforcement policy impacts illicit production and diversification in the context of rural Peru and Colombia. We theorize that shocks to coca cultivation resulting from forced eradication incentivize criminal diversification. In regions with poor infrastructure and limited state presence, opportunities to commercialize legal economic activities are scarce. Like with coca cultivation itself, criminal actors exploit these conditions. When faced with enforcement pressure from the state, groups diversify their economic options by engaging in other extractive activities, such as illegal logging and gold mining. Using novel geo-referenced data on the exact locations of coca eradication in Peru, high-resolution remotely sensed satellite data on coca cultivation and deforestation, and novel administrative data on the presence of organized criminal actors, we document direct and spillover effects of forced eradication for illicit production that varies across different illicit market structures. We complement the quantitative analysis with qualitative evidence from Colombia.

3.1 Introduction

Organized crime and the drug trade are current major drivers of violence and instability. In response, domestic governments—with international support—spend billions annually on drug control measures, focusing primarily on supply-side strategies like forced crop eradication, voluntary substitution programs, the destruction of processing laboratories, and drug seizures. Despite this enormous expenditure, worldwide illicit drug cultivation has continued to grow over time. Figure 3.1 plots global cultivation of coca and poppy plants, which are used to produce cocaine and heroin, respectively, as reported by the United Nations Office on Drugs and Crime (UNODC). Since 2010, coca cultivation has more than doubled, while poppy cultivation has risen by 50%, suggesting limited effectiveness of supply-side drug control measures in curbing illicit cultivation.

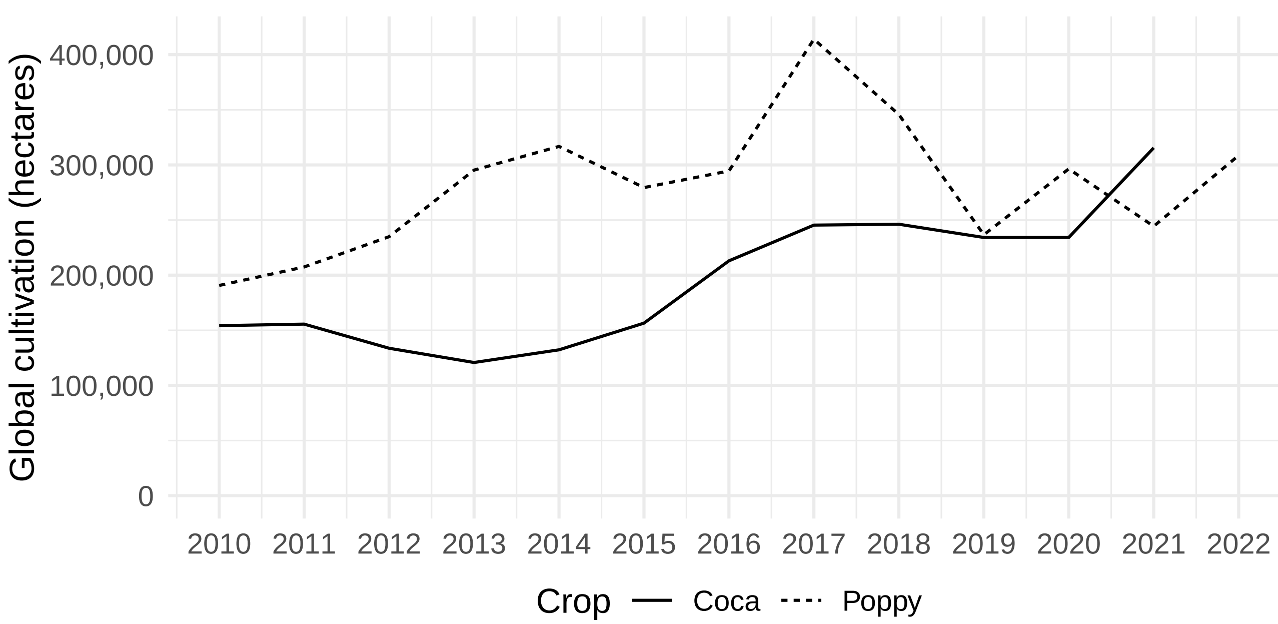


Figure 3.1: Global cultivation of coca and poppy plants since 2010, UNODC.

Existing studies of counternarcotics enforcement against input crops emphasize the broad inefficacy of these policies for reducing cultivation (Mejia and Restrepo 2016; Reyes 2014) as well as their negative externalities for the health of humans and ecological systems (Camacho and Mejía 2017), educational attainment and human capital (Horta-Sáenz and Tami-Patiño 2024; Mejia and

Restrepo 2016), and security in cultivating regions (Campos, Nieto-Matiz, and Schenoni 2025). When armed groups operate in cultivating regions, enforcement may make local populations more reliant on the protection of these actors (Felbab-Brown 2009), and the application of enforcement can become politicized to reflect armed groups' influence on politics (Gerez 2025). Nonetheless, the continued presence of illicit economies themselves create harmful impacts, such as the involvement of young people in criminal careers that make them more likely to become incarcerated in the future (Sviatschi 2022), harming social capital and growth.

While the existing literature documents the ineffectiveness of enforcement as well as the host of negative externalities resulting from enforcement, spillovers in illicit production resulting from enforcement patterns may be another reason for the poor performance of supply-side enforcement strategies in curbing the influence and strength of organized criminal actors. Indeed, knowledge of the the equilibrium effects of enforcement across illicit and licit economic sectors that criminal groups participate in will provide a broader, more complete picture of the consequences of enforcement on illicit economies. Further, we lack a clear understanding of the role of illicit market structure in shaping the consequences of enforcement. Data limitations, meanwhile, have precluded the possibility of understanding the dynamics of the fine-grained local territorial spread of illicit production. The "balloon" effect, the colloquial term for the way in which drug enforcement creates displacement in production, is well documented across countries (Gootenberg 2009; Sviatschi 2022) but less understood locally. These lacunae in the literature conceal potentially significant and policy-relevant variation. The territorial presence of organized criminal groups varies considerably across drug production territories, generating varied potential for the application of criminal capital in shaping post-enforcement illicit diversification. Moreover, studying largely the net, local effects of enforcement policies—which is broadly the approach in the existing literature—masks both the strategic role that criminal organizations play in shaping endogenous diversification in response to enforcement shocks, as well as the nuanced spatial dynamics of the spread of illicit industry. Drawing on fine-grained, novel data on Peru's cocaine economy, we take up both of these questions in this paper.

Our core theoretical contribution is to distinguish between primary producers and organized criminal groups in their access to capital and thus their available diversification strategies following enforcement shocks. We suggest that criminal organizations involved in drug production hold criminal capital—including financial capital, physical capital, human capital, and political capital—and often use this capital to operate as firms with diversified illicit economic portfolios (Alcocer 2024). Unlike primary producers, who generally cultivate for lack of economic alternatives, criminal groups may choose from a broader "menu" of illicit economies, and have organizational incentives shaped not only by profit but also by the competitive dynamics they face from criminal rivals (Daly and Barham 2024). The presence of organized criminal groups, therefore, introduces flexible capital which can facilitate both territorial and industrial illicit diversification following enforcement shocks.

We marshal novel, fine-grained spatial data on coca cultivation and eradication, deforestation, and criminal group presence in the context of Peru to shed light on these questions. Using high-resolution spatial data on coca eradication in Peru, we document local and spillover effects of coca eradication on coca cultivation and deforestation, and assess the variation in post-enforcement diversification associated with the territorial presence of organized crime.

Results suggest that organized criminal presence is essential for sustaining local coca production as well as territorially spreading coca production in the wake of enforcement shocks to coca cultivation. Where organized criminal groups operate, they increase coca cultivation in previously areas of coca cultivation as well as expanding this cultivation to new areas following enforcement shocks. Absent criminal organization presence, coca eradication is modestly effective in the short run, producing local reductions in coca cultivation in the following year. This heterogeneity suggests that criminal capital is indeed shaping the consequences of coca eradication for the spatial spread of coca production. Studying deforestation—our operationalization of industrial diversification—we find limited evidence of the role of criminal groups in shaping this diversification across all cultivating regions. Future iterations of this work will examine this industrial diversification mechanism more precisely in areas with profitable logging potential and outside of existing forest concessions, as well as examining mining spillovers in regions with profitable mining potential, in order to assess whether industrial diversification is happening specifically where we would expect it to occur even if our aggregate estimates do not reveal industrial diversification across all coca-cultivating regions. Qualitative evidence from Colombia complements the quantitative results from Peru.

We make theoretical and empirical contributions in this paper. We innovate theoretically by unpacking the industrial organization of economies for illicit production, positing this as a relevant variable shaping the consequences of enforcement policies. We posit that criminal organizations—and particularly their access to criminal capital—create the potential for endogenous diversification of criminal markets in response to enforcement shocks, which are overlooked when studies only examine the primary production stage of illicit production. The case of coca cultivation and cocaine traffickers highlights how the actors targeted by an enforcement policy are not necessarily the only actor whose incentives are shaped by enforcement. In focusing on how state policies aimed at eliminating drug cultivation might foster shifts to other illicit economies, this research highlights the broader impacts of current drug control efforts and the interconnected nature of illicit economies, bringing in a political economy framework to build on research across a variety of fields including geographic information sciences, anthropology, and agricultural economics, and more (Dávalos, Sanchez, and Armenteras 2016; Davalos et al. 2021; Grillo et al. 2021; Magliocca et al. 2019; Marín-Llanes et al. 2024; Negret et al. 2019; Paredes and Pastor 2024; Ramírez 2011).

Our research continues the conversation on how illicit diversification—including particularly environmentally consequential illicit deforestation—should be considered an important outcome in a literature on the consequences of drug control policy which in political science and economics has been dominated by studies of their effects on violence (Barham 2024; Calderón et al. 2015; Dell 2015; Durán-Martínez 2018; Lessing 2017; Phillips 2015; Trejo and Ley 2020; Snyder and Duran-Martinez 2009). Understanding criminal diversification to this sector is particularly important due to the significant ecological harm produced by these activities, with consequences beyond the regions of illicit production themselves. Deforestation leads to habitat destruction, loss of biodiversity, increased carbon emissions, decreased carbon storage, and more, undermining global climate goals (Baccini et al. 2012; Baragwanath and Bayi 2020; Laurance, Sayer, and Cassman 2014; Walker et al. 2020). By understanding how enforcement efforts might shift rather than eliminate illicit activities, we highlight additional potential consequences of these policies, complicating efforts to incorporate rural economies into the legal sphere. We also contribute to work on governance by non-state armed groups and organized criminal actors (Arjona 2016; Lessing 2017), studying their adaptation to different sources of funding with implications for shifts in governance models (Prem, Saavedra, and Vargas 2020; Sánchez De La Sierra 2020; Weinstein 2006).

Second, we use a novel approach to studying the spatial dynamics of the spread of illicit industry. Our data—particularly on enforcement—are uniquely fine grained in a literature which generally relies on municipal averages in order to characterize enforcement (Gerez 2025; Moreno-Sanchez, Kraybill, and Thompson 2003). We develop a design based around studying the immediate buffer zones of existing areas illicit production—in the form of coca plots—which thus enables us to document territorial diversification and industrial diversification linked at to enforcement shocks at a highly localized level.

3.2 Theory: Criminal capital and illicit diversification

Illicit economies, like their legal counterparts, involve production chains including producers of primary inputs, criminal "firms" which create the final project, and criminal "firms" which commercialize the product. In the cocaine economy, small-scale cultivators cultivate the coca plant from which cocaine is refined. While growers may also implement the the first step in the cocaine refining process, criminal groups possess the capital necessary to fully refine cocaine for trafficking and consumption. In some cases, these same groups traffic the finished product, and in others they sell the cocaine to organizations which specialize in international trafficking.

We study enforcement shocks to coca production as a way to understand the role of criminal capital in shaping illicit diversification. We consider two types of illicit diversification: territorial and industrial diversification. Territorial diversification occurs when illicit industry spreads into new territories, creating illicit production in areas in which this production did not previously occur. Industrial diversification refers to the development or growth of new illicit industries in order to compensate for losses or increased risk in one illicit industry.

We study the role of criminal capital in shaping endogenous diversification in illicit markets in the context of the cocaine economy. In this section, we sketch the production chain of the cocaine economy in order to give a clear example of the difference between small-scale producers and professionalized criminal organizations. We suggest that small-scale producers lack the access to capital which organized crime enjoys, creating different diversification dynamics in the wake of enforcement shocks.

3.2.1 Coca cultivators and criminal organizations

We focus on the two main sets of actors in the cocaine production economy: small-scale farmers who cultivate coca, and criminal organizations which refine and traffic cocaine. The industrial organization we document with differentiation between cultivators and criminal organizations is present across coca cultivating economies, which spread across the lowland and middle-altitude forest biomes of Bolivia, Colombia, and Peru.

Coca cultivators

Across cocaine economies, coca is cultivated by small-scale cultivators who hold small plots of marginal land, often lacking formal title (Muñoz-Mora, Tobón, and d'Anjou 2018). Coca cultivators are typically poor subsistence farmers who hold small amounts of land, and make limited profits off of their coca cultivation, but coca represents an improvement over licit alternatives (Tozzi 2024; Horta-Sáenz and Tami-Patiño 2024). Participants in the coca economy tend to have limited economic options and struggle to earn sufficient income to meet basic needs. In these regions, characterized by low state capacity and rugged geographies, engaging in licit economies becomes especially challenging. Farmers attempting to cultivate legal crops such as yuca, yam, or bananas must not only grow large amounts of these crops to earn a living but also find a way to bring their goods to market.[1] In marginal, underdeveloped areas with very limited infrastructure these costs are often prohibitive for small landholders, making participation in licit economies non-viable. In contrast, participating in the coca economy drastically reduces these costs and hurdles. Coca farmers benefit from an established network of buyers who operate on a "door-to-door" basis, purchasing harvests directly from each cultivator (Crisis Group 2021). This system resolves the transportation and commercialization problems that plague licit goods, providing farmers with a reliable and efficient way to convert their labor into income. Coca thus becomes an attractive economic option, in part because it offers some returns, but mostly because it addresses the primary logistical barriers that prevent engagement in licit agricultural markets.

Importantly for our theory, independent coca cultivators generally lack access to capital. Cultivators have limited access to the state both intrinsically due to the marginality of the spaces in which they cultivate as well as strategically due to the incentive to limit their own legibility due to their illicit production (Muñoz-Mora, Tobón, and d'Anjou 2018). As a result, coca cultivators are not generally able to take out loans, or borrow against their land—typical ways in which farmers access capital. In many contexts, these same growers are politically marginalized, weakening their ability to leverage political connections in order to access capital.[2]

Organized criminal groups

Criminal groups take up the following steps of the cocaine production chain: they purchase either *pasta básica de cocaina*, which is a macerated version of coca leaf, or the dried coca leaves directly door-to-door from producers (Crisis Group 2021). In both cases, criminal organizations

[1]This can involve traveling long distances over treacherous terrain—crossing mountains and rivers, navigating unpaved roads—with no proper transport infrastructure. Even in cases where the distance to the nearest market or municipality center is short as the crow flies, actually reaching said market can be an odyssey, making the journey logistically complex, time-consuming, and costly. These factors increase the direct and opportunity costs of growing licit agricultural products. The heavy weight and bulk of these agricultural products exacerbates these challenges, making it exceedingly difficult for farmers to earn a living from legal crops.

[2]Bolivia presents an exception to this, in which coca growers form a key political base for the MAS political party, and have been able to extract greater benefits from the state. In Peru and Colombia, this has not been the case for coca growers, who have been largely politically excluded.

undertake the remaining refinement, made possible by their capital holdings, which enable them to finance processing laboratories and access chemical inputs. The processed cocaine is then sold into global trafficking networks. Whereas coca growers farm for survival and turn limited profits, criminal groups who refine and traffic possess significant capital in order to facilitate both refinement and trafficking, and earn substantial profits from this business (Mejia and Restrepo 2016).

The increased professionalization and profitability of organized criminal groups in this sector imbues them with access to capital. This capital includes financial capital as well as human capital which is specific to the criminal sector but not necessarily only to cocaine trafficking. This capital enables criminal groups to develop diverse portfolios of illicit activities—for example, engaging in extortion, theft, illegal logging, or illegal mining, all alongside cocaine trafficking. We suggest that, following enforcement shocks, the capital brought by the presence of organized criminal groups shapes the trajectory of illicit markets.

3.2.2 Shocks and adaptation in the coca economy

We adopt a political economy approach to theorize how the presence of organized criminal groups—and their access to criminal capital—shapes the consequences of enforcement shocks for illicit diversification. Our core argument is that criminal capital creates endogenous diversification in response to enforcement: while enforcement may under some circumstances weaken small scale producers, the presence of organized criminal groups creates infusions of capital which enable both territorial and industrial diversification following enforcement shocks.

First, we consider a case in which criminal capital is absent, or in which coca cultivators have suffered an enforcement shock. Coca cultivators are extremely capital constrained, and thus make allocation decisions over their labor towards different types of production. Although they hold small amounts of land, this land is often non-alienable due to lack of a formal title and of limited market value due to weak market access. As a response to coca eradication, they could cultivate other crops to reduce exposure to future enforcement, increase coca cultivation to build in insurance against future enforcement shocks, or move in to wage labor in another sector. However, they are limited in their capacity to respond meaningfully to enforcement shocks due to their lack of access to capital. As a result, they are not able to significantly expand production or significantly alter their productive activities in response to enforcement shocks, particularly in the short run.

Organized criminal groups introduce criminal capital into illicit markets in the forms of physical and financial capital, market power, and organizational capacity. We characterize access to criminal capital as the territorial presence of criminal groups, which provide a necessary condition for organized criminal actors to respond strategically following enforcement shocks. When organized criminal actors are present in a territory, they may be able to form economic linkages with the population and exploit shocks to shift and develop illicit production. Specifically, when organized criminal groups are territorially present and can link their capital with the labor of primary producers in the illicit sector, diversification following enforcement shocks becomes much more viable.

Indeed, criminal groups also make responsive decisions over both their capital and labor allocations. Criminal groups can relocate production territorially—in order to distance themselves from enforcement—or diversify into new criminal industries, creating a portfolio of activities with less concentrated risk (Alcocer 2024). We theorize the role of criminal capital in shaping both territorial and industrial diversification following enforcement shocks.

Criminal organizations have incentives to diversify territorially following enforcement shocks in order to guard their profits against future enforcement. Differently from small-scale producers, criminal organizations also possess the capital to facilitate more widespread territorial diversification for existing illicit industry. Organized criminal groups possess the human capital necessary to facilitate political linkages in new cultivation areas and the financial capital needed to invest in production in new areas. In the context of the coca economy, criminal groups can pay to clear new areas for coca production, finance seeds and productive inputs in new areas, repress, coopt, or displace existing populations which may object to coca cultivation in their territory, and form political linkages in order to protect these new productive zones. We suggest that the consequences of enforcement shocks will therefore differ in terms of the resulting territorial diversification of illicit production when criminal groups are present and able to facilitate this territorial expansion of illicit production. We therefore advance the following hypothesis:

Hypothesis 7 (H7)**.** *When criminal groups are locally present, enforcement shocks to coca cultivation will cause territorial diversification of coca cultivation.*

In addition to territorial diversification, much criminal capital is fungible to other illicit industries. The political linkages used to facilitate drug trafficking can be leveraged to extract protection and forbearance in the cases of other types of illicit production. The financing which they use to sustain cocaine refining laboratories can be repurposed to purchase inputs for other illicit production, such as machinery for logging or mining. Violence specialists who protect their organization can be turned to protect other organizations. Criminal organizations specialize in illicit production, and can leverage their organizational capacity to various forms of illicit production and rent extraction.

In the case of coca cultivation, the role of criminal organizations in facilitating industrial diversification is particularly acute due to the capital constraints of coca cultivators and the capital intensity of the main viable substitutes: illicit logging and illicit mining. Coca cultivators cannot reallocate their labor towards other industries absent the wage labor opportunities and capital inputs offered by criminal groups. Where criminal groups operate, they facilitate industry change for coca cultivators and other rural laborers, offering employment in illegal mining or logging operations, and purchasing machinery in order to facilitate mining and logging production. Unlike the licit agricultural sector, these criminal enterprises provide a stable source of income without requiring the farmers to overcome structural barriers to productivity. Illegal mining, for instance, is often overseen by armed groups that pay workers a fixed wage or a wage tied to production.

Criminal group presence, and their more flexible capital allocation, thus shift the potential to adapt to enforcement shocks through endogenous diversification into new illicit industries. In the case of coca production, coca eradication generates incentives for criminal groups to diversify into illicit logging and illicit mining. We capture these incentives to diversify in Hypothesis 2:

Hypothesis 8 (H8). *When criminal groups are locally present, enforcement shocks to coca cultivation will cause industrial diversification into other illicit industries.*

Our theoretical framework emphasizes the role of economic vulnerability and structural barriers in driving initial participation in illicit economies. In this context, enforcement efforts or other shocks that affect one illicit activity, such as coca cultivation, do not eliminate the incentives for illegal behavior but rather shift them, for both small-scale participants and larger organized actors. Participants adapt, expanding into new illicit markets that exploit the same structural weaknesses that enabled coca cultivation in the first place. Criminal capital plays a pivotal role in shaping the consequences of enforcement, facilitating both the territorial diversification of existing illicit production and industrial diversification to new modes of illicit production.

3.3 Coca eradication and illicit production in Peru

We study role of criminal capital in shaping the consequences of coca eradication in the context of Peru from 2016 to 2022. This represents an ideal empirical context for our study due to our access to novel, highly disaggregated coca cultivation and eradication data as well as granular spatial data on deforestation. These unique data enable us to precisely characterize local spatial spillovers in illicit production, both within and across illicit industries.

Coca production and eradication both have a longstanding history in the Peruvian context. Coca cultivation is traditional and indigenous to several regions of Peru, but began to form a significant share of production for the global cocaine trade in the latter half of the 20th century. Historically, Peru has alternated with Colombia as the first and second largest producers of coca for international cocaine markets. This production was traditionally relatively geographically concentrated in a few politically sensitive regions of Peru, especially the Valley of the Apurimac and Ene rivers. However, over the past twenty years, coca cultivation in Peru has spread to other regions of the country. Increasingly, this cultivation is linked with illegal deforestation, particularly in the Peruvian Amazon, and illicit mining, particularly in the Peruvian department of Madre de Díos.

The Peruvian government has undertaken coca eradication since 1982, with varying financial and logistical support from the United States over this time period. Implemented by the Special Project on Coca Eradication in the Upper Huallaga (CORAH, by the Spanish acronym), coca eradication in Peru is implemented manually, with teams of eradicators conducting on-the-ground eradication operations throughout Peruvian coca growing regions. In our period of study, eradication ranged from very limited operations during the COVID-19 pandemic to more standard operational levels of 25,000 to 35,000 hectares across most years.

Peru offers an ideal empirical setting to study how criminal capital impacts diversification as a response to enforcement. Coca production in Peru is insulated from major external shocks over this time period, and refined Peruvian cocaine is largely trafficked through Brazil and bound for European markets. Most coca in Peru is grown by small landholders who operate in marginal and poor regions of the country, with coca plots generally ranging between 0.25 and 1 hectares in size (Young 2004). Moreover, Peru's outdated eradication bureaucracy and fractious political party system attenuates political bias in the application of eradication programs, which has been shown in contexts with more clear political divisions involving coca growing regions (Gerez 2025). Rather than being politically motivated, coca eradication in Peru is largely dictated by total eradication targets, CORAH budgets, and the ease of reaching areas of cultivation from existing base camps for teams of manual eradicators.

Criminal groups in Peru during this period largely operate on a local territorial basis, working as small clans who sometimes compete for territory but do not occupy territory with the strength of Mexican drug trafficking organizations or the political linkages of Colombian armed groups (Dammert and Sarmiento 2018). Criminal organizations facilitate criminal markets through co-opting political leaders, infiltrating key bureaucracies, and financing illicit production (Dammert and Sarmiento 2018; Vizcarra and Zevallos 2014). Criminal competition in Peru more closely approximates a market set-up, with varying levels of local market competition but relatively little militarization relative to more well-studied cases. In the cocaine trade, Peruvian criminal groups purchase coca leaf and *pasta básica de cocaina* from coca cultivators, conduct refinement, and then traffic the refined cocaine out of the country to other criminal organizations which handle consumer markets. Peruvian criminal groups do not systematically control international distribution markets, making them less vulnerable to turf wars both at home and abroad. Criminal competition in the Peruvian case is thus less violent relative to their Mexican and Colombian peers. While there are cases in which Peruvian criminal groups associated with drug trafficking have displaced communities from their land or perpetrated violence against local communities, Peruvian criminal organizations do not escalate conflicts for territorial control in rural areas to the types of widespread violence seen in the Colombian and Mexican cases. While explaining this less violent equilibrium is outside of the scope of this paper, it provides important context in understanding the allocation of criminal effort following shocks to enforcement, which have not prompted the type of violent lobbying in Peru as they have in Mexico or Colombia, perhaps reflecting both the relative weakness of Peruvian enforcement for impacting criminal groups as well as these groups' weaker capacity to carry out violent lobbying.

Coca production and illicit deforestation are two of the most important illicit industries in Peru over this time period. Over 80% of logging in Peru is conducted illegally, and Peru is losing forest cover in the Amazon more quickly than any other country with Amazonian territory (Centro Internacional de la Papa 2023). While agriculture is a very significant driver of deforestation over this time period, much deforestation also occurs for illicit exports of old-growth wood (Samaniego, Ponce, and Hinostroza 2023), and other deforestation occurs nearby to places where coca is grown (Young 2004), sometimes in response to positive price shocks in the coca economy (Tozzi 2024).

3.4 Empirical strategy

3.4.1 Data

We leverage geographic and temporal variation in eradication to study the impacts of coca eradication for subsequent coca cultivation and deforestation, drawing on several administrative datasets to measure our key variables of interest. Our independent variable is coca eradication, which we use to operationalize enforcement against an existing form of illicit production, coca cultivation. Although coca has a mixed legal status in Peru with some legal growers, only illegal cultivation is eradicated as eradication teams do not eradicate the coca of landholders who possess documentation of their permit to cultivate coca. This paper draws on novel data which georeferences the exact areas of coca eradication in Peru. These data are collected by Peru's coca eradication teams while undertaking eradication operations by walking the perimeter of eradicated coca fields with geo-location devices following clearing the coca field in the eradication operation. These data precisely reflect the exact locations of coca eradication, improving on previous measures which generally are aggregated at the municipality level. These data are compiled by the Peruvian Comisión Nacional para el Desarrollo de una Vida Sin Drogas (DEVIDA). These data provide a highly disaggregated portrait of coca eradication, enabling us to characterize which coca plots experienced eradication. We visualize an example plot from our data in Figure 3.2. The green represents a plot of coca cultivation in 2014 while the red polygons overlay eradication data in 2015.

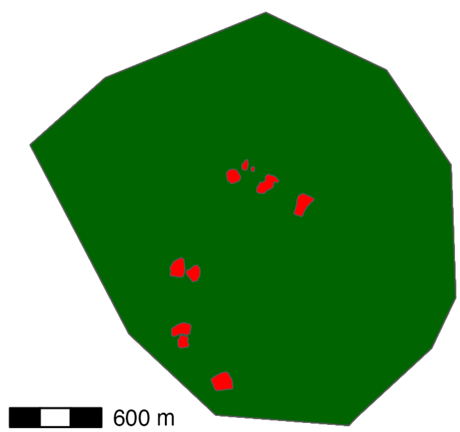


Figure 3.2: Sample coca and eradication plot.

We study two main dependent variables: coca cultivation in the following year and deforestation. Coca cultivation represents the continuation of prior modes of illicit production, while deforestation—most of which is conducted illegally in Peru—represents illicit diversification.[3]

[3]While deforestation captures all forms of deforestation including but not limited to illegal logging, deforestation

Coca cultivation data is remotely sensed by satellites and provided by DEVIDA and UNODC, providing spatial heat-maps of coca cultivation across Peru for our period of analysis. Deforestation data is sourced from the latest version of Hansen et al. (2013), which provides 30m $\times$ 30m pixel-level data on land cover change in Peru for our full sample period. The high degree of spatial precision in these data similarly enable us to detect deforestation which occurs immediately around areas of coca cultivation and eradication.

Finally, we leverage unique administrative data on criminal organizations from the Peruvian National Police's Anti-Drugs Unit (DIRANDRO, in their Spanish acronym). DIRANDRO collects data on criminal organizations against which they have undertaken any enforcement action, including any arrests or contraband seizures. These data are collected separately from coca eradication operations: while DIRANDRO provides operational support for the safety of coca eradicators, the enforcement actions which result in representation in these data are the separate result of DIRANDRO's independent operations. We use these data to measure the local presence of criminal groups. These data do have the bias that if no enforcement whatsoever was undertaken against a group in a given district-year, then they will not be recorded in these data. However, these law enforcement data provide the best available option to measure this presence, and represent a step forward on measuring criminal group presence in Peru, which has so far been minimal. These data are recorded at the district-year level.[4] Our data represent 731 unique groups across 245 Peruvian districts which came in contact with DIRANDRO between 2017 and 2023.

Putting all these sources of data together, we construct a panel based on these variables based on cultivation data from 2014 through 2021. For each cultivation year t in this set, we link eradication in year $t+1$ as the main treatment, since eradication is based on detected cultivation from the previous year.[5] Outcomes are cultivation and deforestation in year $t+1$. Table 3.1 summarizes this linkage.

---

in the coca-producing areas we subset our sample to is likely to be related to illegal logging. Still, our specification, which controls for other legal economic alternatives ensures our results are robust to the consideration of these possible explanations.

[4]Districts in Peru are about equivalent to a municipality elsewhere or to a U.S. county.

[5]Cultivation in a particular year represents cultivation in December of that year, while eradication is typically conducted from February to May.

Table 3.1: Temporal structure of the panel.

Cultivation	Eradication	Deforestation	Cultivation (Outcome)
2014	2015	2015	2015
⋮	⋮	⋮	⋮
2021	2022	2022	2022

3.4.2 Approach to Spatial Analysis

We design our panel around coca plot geometries in order to harness the precision of our data and enable identification of the local effects of eradication on subsequent coca cultivation and deforestation. We start by analyzing individual coca plots—joining together contiguous cultivation geometries—to study the replanting of eradicated coca, which captures the continuation of existing modes of illicit production in territory previously dedicated to that type of production. To examine spillovers of eradication, both spatially and across illicit modes of production, we define a buffer of 5000m across around our coca plots. In this buffer, we examine our two additional outcomes of interest as discussed: new coca planting in the buffer in the year following eradication, and new deforestation in the buffer in the year following eradication.

While these data offer high degrees of spatial accuracy, linking plots across years is not straightforward due to the continuing evolution of land use in rural Peru. In order to create stable units across years, we draw 5000m by 5000m grid cells over the area of Peru. A grid cell can contain multiple separate plots, or similarly, a plot can span multiple grid cells. In each case, the plot-grid cell combination will appear multiple times as a row in the data. We define our our sample as all grid cells which have contained a coca plot or the 5000m buffer of a coca plot at any time during our study period. We visualize the same coca plot from Figure 3.2 (in dark green) and its surrounding 5000m buffer area (in light green) contained within grid cells in Figure 3.3. As you can see from the example, the top-right most grid cell is not linked to the plot because it does not contain any area from the plot or its buffer.

With the unit of analysis as the 5km $\times$ 5km plot-grid cell-year, we study the sub-sample of grid

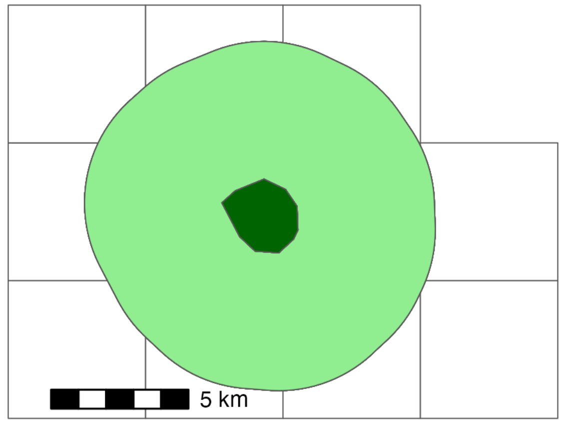


Figure 3.3: Sample coca plot and its corresponding buffer within grid cells.

cells which are eligible for treatment (coca eradication) due to having had coca cultivation in that grid cell at any time during our sampling period. Conducting analysis among eradication-eligible areas is in-line with approaches in the literature examining impacts of coca cultivation (Sviatschi 2022). This yields a sample of 3,432 grid cells annually which contain coca plots at any time in the sample, and 5,727 grid cells which contain the buffer of a coca plot at any time in the sample period.[6] Figure 3.4 presents the geographic variation in coca cultivation, coca eradication, and deforestation at the grid cell level.

3.4.3 Spatial measures

Coca eradication is our core treatment variable. We define Share Coca Eradication$_{i,t}$ as the share of the area of the coca plot i which is eradicated in year t. We obtain this by calculating the total area of eradication falling within plot i in a given year t, and dividing it by the total area of plot i in that same year prior to eradication. This measure ranges from 0 to 0.13, with 0 indicating that a coca plot is undisturbed by eradication in a given year, whereas the most treated coca plots lose 13% of their cultivation to eradication in that year.

Our core outcome variables are coca cultivation and deforestation following eradication. We

[6]This is roughly 6% and 10% respectively of all grid cells in Peru, reflecting that coca cultivation in Peru is relatively geographically concentrated and not spread across the country.

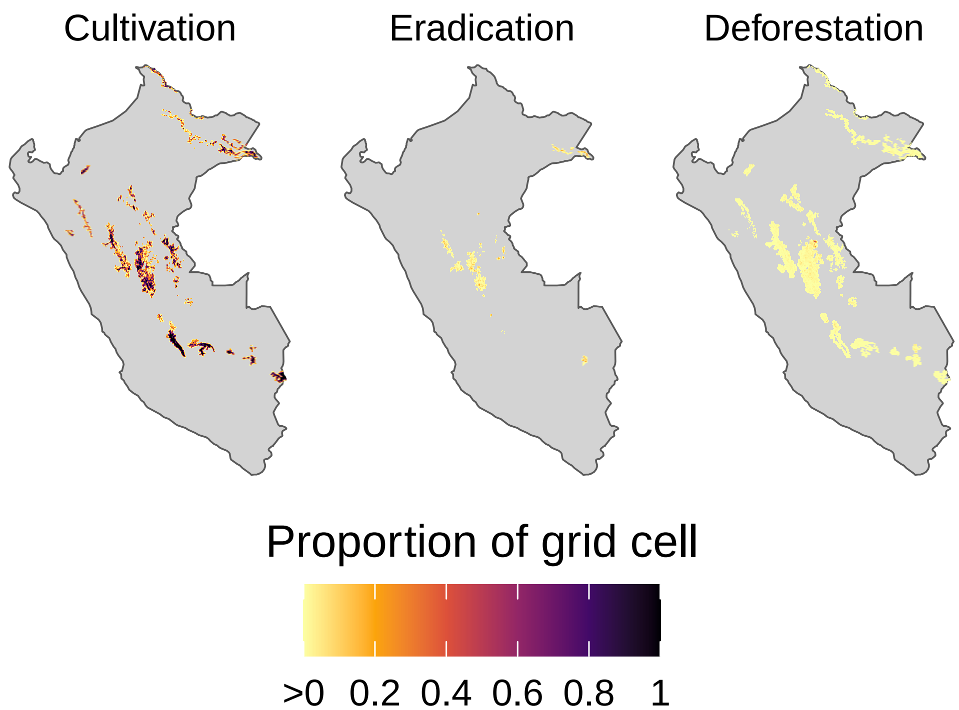


Figure 3.4: Geographic variation in coca cultivation, eradication, and deforestation.

study two spatial outcomes for coca cultivation: replanting, cultivation in the area of the initial coca plot in the following year, and novel plantings in the buffer zone of the coca plot. We calculate these also as shares, similar to our measure of coca eradication.

For replanting, we study the share of a coca plot from year t which still contains coca in year $t+1$. A value of '1' here indicates that coca is still being grown in year $t+1$ over the full area of the plot in year t, while a value of 0 would indicate that the area of the plot from year t has no coca cultivated in it whatsoever in year $t+1$. We can assess replanting following eradication as the difference between observed coca cultivation in year $t+1$ and the share of the coca plot lost to eradication in year t. If $\text{Coca}_{i,t+1} > \text{Coca}_{i,t} - \text{Eradicated Coca}_{i,t}$, then we can infer that replanting of eradicated coca has occurred. If $\text{Coca}_{i,t+1} < \text{Coca}_{i,t} - \text{Eradicated Coca}_{i,t}$, then we can infer that eradication has functioned as a deterrent to planting coca elsewhere in the previous coca plot.

For new coca cultivation, we study the share of the coca plot buffer from year t which contains new coca cultivation in year $t+1$. In year t, the buffer does not contain coca plantings, since that would result in this area being calculated as part of the plot rather than as part of the buffer. Thus, examining coca planting in year $t+1$ in the buffer around the coca plot from year t enables us to measure the local spatial spread of coca cultivation around existing plots.

For deforestation, we study the share of the coca plot buffer from year t which experiences land cover change in years $t+1$. This measure enables us to proxy for the spatial spread of different illicit industries around existing areas of illicit production.

3.4.4 Estimation

To conduct our main analyses, we place our measures into grid cells and employ a panel of plot-grid cell-year observations to estimate the relationship between coca eradication in plot i in year t and outcomes of interest (coca cultivation and forest loss) in year $t+1$ and grid cell g. We use the following main estimating equation:

$$\text{Outcome}_{g,t+1} = \beta_1 \text{Coca Eradication (\% of Plot)}_{i,t} + \delta_g + \lambda_{t+1} + \varepsilon_{g,t+1} \tag{3.1}$$

Here, the measure Coca Eradication (% of Plot)$_{i,t}$ is the share of plot i which is eradicated in year t, which is populated into all grid cells $g \in G$ that plot i or the buffer of plot i intersect with. The outcome is then localized in grid cell g, and is scaled to the portion of the coca plot or buffer which falls within that grid cell. Our three outcome variables, with their respective measurement strategies and estimation samples, are summarized in Table 3.2. This estimation strategy models the effects of eradication in time t on outcomes in time $t+1$. We employ fixed effects for the grid cell (δ_g) and outcome measurement year (λ_{t+1}). The grid cell fixed effects account for time-invariant traits of the grid cells, while outcome-year fixed effects account for location-invariant temporal common shocks which impact all grid cells. Across all specifications, we cluster our standard errors at the grid cell level.

Table 3.2: Outcomes for main analyses.

Outcome	Outcome Measure	Estimation Sample
Coca Replanting	% of Coca Plot in Grid Cell g with Coca in $t+1$	Coca-Cultivating Grid Cells
New Coca Cultivation	% of Buffer in Grid Cell g with Coca in $t+1$	Buffer Grid Cells
New Deforestation	% Land Cover Change in Buffer in Grid Cell g	Buffer Grid Cells

3.5 Results

We start by examining the effects of eradication for our two key outcomes of interest: subsequent coca cultivation, and subsequent deforestation. This enables us to link eradication local to the grid cell, as well as eradication in neighboring grid cells, to different types of criminal political economies.

3.5.1 Net effects of coca eradication for coca cultivation and deforestation

Table 3.3 reports the results pooled across all types of criminal economies. Columns 1 and 2 report the relationship between eradication and subsequent coca cultivation, with Column 1 representing cultivation in the same plot area in the year following eradicaiton, and Column 1 representing new coca cultivation in the year following eradication in the 5km buffer surrounding the plot.

Subsequent cultivation is responsive to eradication. Interpreting point estimates in Column 1 suggests that for every additional 10% of the grid cell which is eradicated in the previous year, we should expect a 42.8 percentage point decrease in the share of the plot devoted to coca cultivation in the following year. Coca is a reslient crop and replanting is possible, but eradication clearly limits cultivation opportunities in the local area surrounding eradication. There is also a precisely estimated, albeit small, negative relationship between eradication and coca cultivation in the area

Table 3.3: Net effects of coca eradication.

Outcomes:	Coca replanting (1)	New coca cultivation (2)	New deforestation (3)
Eradication	-42.811	-3.610	0.090
	(4.544)	(1.513)	(0.154)
R^2	0.37	0.44	0.36
Observations	27,193	78,876	78,876
Number of grid cells	3,432	5,727	5,727
Outcome range	[0-1]	[0-1]	[0-1]
Outcome mean	0.76	0.22	0.01
Outcome std. dev.	0.35	0.29	0.02
Eradication range	[0-0.006]	[0-0.006]	[0-0.006]
Eradication mean	0	0	0
Eradication std. dev.	0.001	0.001	0.001

Notes: All specifications are estimated using OLS and include grid-cell and year fixed effects. Robust standard errors clustered by grid cell are in parentheses.

surrounding the plot that experienced eradication: for every additional 10% of the grid cell which is eradicated in the previous year, we should expect a 3.6 percentage point decrease in the share of the grid cell devoted to coca cultivation in the following year, suggesting that the balloon effect may not be present, at least in the local 5km buffer range.

Finally, Column 3 uses the same specifications to estimate effects of coca eradication on deforestation. Here, we find that local eradication is not related to subsequent changes in deforestation in the buffer area of coca cultivation representing the illicit production frontier.

3.5.2 Criminal capital and consequences of coca eradication

Next, we parse the net effects presented in Table 3.3 by the presence of organized criminal actors. Variation based on criminal capital underlies the negative main effects of eradication on cultivation. To do so, we interact our main eradication variable by an indicator measure of organized criminal presence, presenting the results in Table 3.4. Patterns of coca cultivation following eradication differ across municipalities with the presence of organized criminal actors and those without, as presented in Columns 1-2 of Table 3.4. The results from this table suggest that criminal groups facilitate coca replanting after eradication in places where they are present. By contrast, in areas without organized crime, where cultivators are likely more traditional, coca replanting is less prevalent after eradication. The same holds for expansion of coca to areas within the buffer of previous plots, albeit the relationship is smaller in magnitude.

Turning to deforestation, Column 3 probes the effect of eradication on deforestation. Estimates from this column show that eradication is not associated with changes in deforestation for places with or without organized criminal presence. This challenges our theoretical claim that criminal capital significantly shapes capacity to diversify following shocks, rendering small-scale cultivators less likely to shift into high-capital industries following shocks to existing modes of illicit production, although our measure of deforestation does not distinguish between licit and illicit deforestation.

Taken together, these results suggest that coca eradication is associated with decreased local allocation of effort into coca cultivation in general, but that this varies based on the presence of criminal capital. Places with criminal group presence facilitate the resurgence and expansion of coca cultivation after eradication.

3.6 Qualitative evidence: Illegal mining in Colombia

Although our deforestation data is fine-grained, it does not distinguish between legal or illegal deforestation or the capacity for other illicit industries in the coca buffer areas. In this section, we draw on qualitative evidence from fieldwork conducted in four coca-growing municipalities in Colombia in 2023 and 2024 to understand how communities have responded to shocks in the coca economy and the subsequent shift toward illegal mining as an alternative livelihood. While the fine-grained eradication and deforestation data in Peru allows for study of broad dynamics related to shocks to the coca economy and deforestation, the testimonies in Colombia illustrate the lived experiences of farmers and community leaders, validating the difficult economic incentives

Table 3.4: Effects of coca eradication by presence of criminal groups.

Outcomes:	Coca replanting (1)	New coca cultivation (2)	New deforestation (3)
Eradication	-49.462	-6.974	0.141
	(5.047)	(1.672)	(0.177)
Criminal presence	-0.019	-0.010	0.000
	(0.011)	(0.006)	(0.000)
Eradication × criminal presence	37.092	18.390	-0.293
	(11.467)	(3.941)	(0.324)
R^2	0.37	0.44	0.36
Observations	27,193	78,876	78,876
Number of grid cells	3,432	5,727	5,727
Outcome range	[0-1]	[0-1]	[0-1]
Outcome mean	0.76	0.22	0.01
Outcome std. dev.	0.35	0.29	0.02
Eradication range	[0-0.006]	[0-0.006]	[0-0.006]
Eradication mean	0	0	0
Eradication std. dev.	0.001	0.001	0.001
Criminal orgs. range	{0,1}	{0,1}	{0,1}
Criminal orgs. mean	0.222	0.214	0.214
Criminal orgs. std. dev.	0.416	0.410	0.410

Notes: All specifications are estimated using OLS and include grid-cell and year fixed effects. Robust standard errors clustered by grid cell are in parentheses.

discussed in Section 3.2 and contextualizing the quantitative findings in a new setting.

In this case, evidence comes not from a harsh forced eradication enforcement approach but a voluntary substitution program designed to less punitively decrease coca cultivation. Illicit crop substitution programs aim to voluntarily move growers and laborers away from illegal economies and into the legal sphere. Crop substitution programs use positive incentives to encourage voluntary removal of crops with illicit uses, in contrast to more punitive approaches such as forced crop eradication via aerial fumigation. Nevertheless, the underlying structural problems may complicate the commercialization of agricultural goods for legal use, thereby rendering the transition into legal economies nonviable. The crop substitution program in Colombia came about as a result of peace negotiations between the government and the FARC (*Fuerzas Armadas Revolucionarias de*

Colombia), the country's historically largest and most powerful left-wing guerrilla group. Part of the agreement included the creation of a national crop substitution program known as PNIS after a shortened version of its Spanish name, *Programa Nacional Integral de Sustitución de Cultivos Illícitos*. Before the launch of this program, Colombia had experimented with smaller-scale crop substitution programs with mixed success. Unlike these earlier attempts, the new program represented a significant expansion in both scope and scale. It was implemented across a greater number of municipalities and offered more comprehensive incentives to a larger number of individuals formerly involved in coca.

Despite its ambition, PNIS faced a number of problems with its implementation. Interviews with several program participants described the delayed or uneven distribution of direct subsidies. Further, part of the funds designated for the program would ensure that participants could receive materials necessary for proposed projects, for example, the construction of a fence for livestock or a few livestock animals themselves. However, participants did not have control over the spending of these funds. Instead, intermediaries would purchase the products needed. Participants decried this process, saying they far fewer products than expected for the money they were supposed to be able to spend or receiving low quality products such as sick animals. All these factors hindered the ability of participants to transition smoothly from coca cultivation to alternative livelihoods. Even in cases where immediate program implementation was successful, the broader context of rural coca-growing communities compounds these difficulties. Low quality or inexistent commercial and transportation infrastructure, pervasive poverty, and weak state presence are persistent issues in these communities, exacerbating the program participants' struggle to establish sustainable legal livelihoods.

Interviewees repeatedly emphasized that coca was not cultivated out of preference but rather necessity, as it provided the only means of subsistence in a structural context that lacked viable alternatives. One participant explained, "Coca is survival. The *campesino* [peasant farmer] does not like coca itself. They cultivate it because they need to live; there is no other option."[7] Another

[7] Author interviews.

similarly said, "the *campesino* does not plant [licit goods] because he does not want to but because it does not yield. A *campesino* wants food and to take care of his family."[8] A former armed group leader and peace signer said that "the only reality of coca is that we need to survive."[9]

Indeed, lack of adequate infrastructure, such as roads, made it nearly impossible for farmers to commercialize licit crops, even for those willing to make the transition. One social leader noted exactly this: "there are no adequate roads, I have projects, but how do I commercialize them?"[10] A former coca grower and substitution program participant said that even if the infrastructure were adequate, legal commercial products are harder to sell: "there is no guarantee [for legal products], one arrives [to market] and cannot sell."[11] A separate former armed group leader and peace signer furthered this logic, saying that "a campesino [peasant] chicken can't compete with a chicken from large companies" and that it's "hard to commercialize yuca, plantain, corn, and rice," other primary commercial crops.[12]

As a result, in these municipalities where mining was an alternative option, the transition into mining was portrayed as a rational response to declining coca revenues. This reflects the pragmatic approach of rural, marginalized communities in their search for a decent, basic livelihood. Several interviewees described how mining became an attractive alternative when coca faltered. A substitution program participant shared "since I didn't have coca, I turned to mining."[13] Another participant similarly recounted, "many of us have moved to mining because of the demand for gold."[14] These testimonies demonstrate that without adequate support from the state, people in these regions gravitate toward other forms of illicit work as a matter of survival. Still another said that they "decided to substitute [join the substitution program] for the benefits" but that now they "needs to stay in the mine until he has enough to live."[15] A social leader complemented their testimonies, saying that "one of the things that impulses mining is failures in coca. The majority of

[8] Author interviews.
[9] Author interviews.
[10] Author interviews.
[11] Author interviews.
[12] Author interviews.
[13] Author interviews.
[14] Author interviews.
[15] Author interviews.

miners today were previously coca growers or workers [on coca plots]. When coca decreases they go to mining. When coca takes off, they return to coca."[16] Another social leader said that "mining expands by obligation, if not then what will our people live from?"[17] Finally, a citizen, who was never involved in coca cultivation but has historically been an artisanal miner said that "the shift [to mining] is very easy because we [peasants] are very adaptable."[18]

The fieldwork also reveals the pivotal role of armed groups in the shift from coca cultivation to illegal mining. In many areas, armed groups oversee mining operations and control access to resources, providing the capital needed for extraction such as heavy machinery including dredges for alluvial extraction and backhoes. By contrast, capital for coca cultivation is easily accessible for members of these communities who have historically been farmers. Armed groups act as facilitators of mining, filling the gap left by the absence of formal state support and profiting through taxation and control over mining territories. One interviewee noted that "the groups that [manage] the zone are also the ones who control the mines."[19] A former coca grower who transitioned into mining said that they paid extortion taxes, a "*vacuna*" to several armed groups as a result of mining output.[20] A candidate for municipal council said that "the territorial disputes [among armed groups] today are over mining."

Mining activities, especially alluvial extraction, not only shift economic activities but also carry significant environmental costs, including deforestation. In areas where informal and illegal mining dominate, interviewees noted the clearing of land via deforestation to facilitate extraction, compounding the economic and ecological challenges faced by these communities. Further, wood is used to "secure" the mine with wood struts and build tracks for in-ground mines, and to construct processing centers or shelters for alluvial mines, providing suggestive evidence for how in a similar context to rural Peru, the depression of the coca economy can lead to new extractive activities like mining and deforestation.

[16] Author interviews.
[17] Author interviews.
[18] Author interviews.
[19] Author interviews.
[20] Author interviews.

3.7 Conclusion

Subsistence farmers prioritize minimizing the risk of total ruin in view of safety instead of maximizing profits (Scott 1977), a logic that is directly applicable to coca cultivators who operate under conditions of vulnerability. Eradication policies which violate expectations of stability or reciprocity from the state as compensatory support for difficult livelihoods end up being unnecessarily disruptive and forcing producers into illicit economies as peasants cannot freely reallocate their resources in response to external shocks, understandably resulting in negative sociopolitical reactions to eradication (Ramírez 2011), and increasing vulnerability of these populations to influence by non-state armed groups and organized crimal actors. Economically, eradication exacerbates precarity and encourages adaptive strategies regardless of their legality in the presence of accessible criminal capital. Indeed, participants themselves may also become involved in criminal groups, harming education and human capital (Sviatschi 2022).

Primary production markets—which in our context amount to subsistence farming—are characterized by economic choices that fit in with the broader concepts of commodification and labor market stability as conceptualized by Esping-Andersen (1990) in highly developed states. Workers who lack the ability to withhold their labor due to an absence of alternative means of subsistence face instability and cannot exercise genuine economic choice—"labor is unable to withhold itself for long without recourse to alternative means of subsistence." This will especially be the case for workers in precarious labor markets that do not require formal credentials or training and lack formal or even informal safety nets—they may have no choice but to accept exploitative conditions.

Across these illicit markets that these rural populations face, enforcement policies are a key determinant of market dynamics: these policies shape both how illicit markets operates, and the consequences of illicit markets for communities which exist around them. Given the ubiquity of these policies, understanding their expected consequences for illicit production and diversification is an important question. We attempt to answer this question, probing the role of criminal capital as a potentially important determinant of the impacts of enforcement policies. Using novel extremely fine-grained data on coca eradication from Peru, we find that eradication is associated with decreased subsequent cultivation in affected plots and in 5km buffers surrounding those plots. However, the presence of organized criminal actors changes this relationship: in places with organized criminal groups, these actors facilitate coca replanting and expansion after eradication. This variation from the presence of armed actors suggests that enforcement policies should account for the adaptive strategies of organized criminal groups. Policymakers should integrate strategies that not only disrupt coca production but also address the broader structural conditions that enable organized crime to sustain and expand into existing and other markets. Effective policy should balance enforcement with complementary measures, such as rural development initiatives and alternative livelihoods, to reduce dependence on illicit economies and mitigate unintended consequences.

References

Abril, Verónica et al. (2023). "Building Trust in State Actors: A Multi-site Experiment with the Colombian National Police". In.

Acemoglu, Daron, James A Robinson, and Rafael J Santos (2013). "The Monopoly of Violence: Evidence from Colombia". In: *Journal of the European Economic Association* 11, pp. 5–44.

Albarracín, Juan and Lucía Tiscornia (2024). "Mall Cop or Robocop? The Political Determinants of Police Militarization in Brazil". In: *Political Research Quarterly* 77.4, pp. 1381–1396.

Alcocer, Marco (2024). "Drug Wars, Organized Crime Expansion, and State Capture: Evidence from mexico". Working paper.

Aponte González, Andrés F, Daniel Hirschel-Burns, and Andres D Uribe (2024). "Contestation, Governance, and the Production of Violence Against Civilians: Coercive Political Order in Rural Colombia". In: *Journal of Conflict Resolution* 68.4, pp. 616–641.

Ardanaz, Martin et al. (2013). "Mind the Gap: Bridging Perception and Reality With Crime Information". In.

Arjona, Ana (2016). *Rebelocracy*. Cambridge University Press.

— (2021). *The Effects of Violence on Inequality in Latin America and the Caribbean: A Research Agenda*. Tech. rep. UNDP LAC Working Paper Series, March.

Arjona, Ana, Mario Chacón, and Laura García-Montoya (2025). "The Impact of Political Assassinations on Turnout: Evidence From Colombia". In: *Proceedings of the National Academy of Sciences* 122.11, e2414767122.

Arjona, Ana M and Laura Otálora (2011). "Presencia vs. violencia: problemas de medición de la presencia de actores armados en Colombia". In: *Foco Económico* 20.

Baccini, AGSJ et al. (2012). "Estimated Carbon Dioxide Emissions from Tropical Deforestation Improved by Carbon-density Maps". In: *Nature Climate Change* 2.3, pp. 182–185.

Baragwanath, Kathryn and Ella Bayi (2020). "Collective Property Rights Reduce Deforestation in the Brazilian Amazon". In: *Proceedings of the National Academy of Sciences* 117.34, pp. 20495–20502.

Barham, Elena (2024). "Patriarchal Norms and Violence Against Women in Conflict Processes". Working paper.

Barnes, Nicholas (2017). "Criminal Politics: An Integrated Approach to the Study of Organized Crime, Politics, and Violence". In: *Perspectives on Politics* 15.4, pp. 967–987.

Bateson, Regina (2012). "Crime Victimization and Political Participation". In: *American Political Science Review* 106.3, pp. 570–587.

Bauer, Michal et al. (2016). "Can War Foster Cooperation?" In: *Journal of Economic Perspectives* 30.3, pp. 249–274.

Becker, Gary S, Kevin M Murphy, and Michael Grossman (2006). "The market for illegal goods: the case of drugs". In: *Journal of Political Economy* 114.1, pp. 38–60.

Bellows, John and Edward Miguel (2009). "War and Local Collective Action in Sierra Leone". In: *Journal of Public Economics* 93.11-12, pp. 1144–1157.

Ben-Menachem, Jonathan and Kevin T Morris (2023). "Ticketing and Turnout: The Participatory Consequences of Low-level Police Contact". In: *American political science review* 117.3, pp. 822–834.

Bergman, Marcelo (2009). *Tax Evasion and the Rule of Law in Latin America: The Political Culture of Cheating and Compliance in Argentina and Chile*. Penn State University Press.

— (2018). "Illegal Drugs, Drug Trafficking and Violence in Latin America". In.

Bewley-Taylor, David R (2012). *International Drug Control: Consensus Fractured*. Cambridge University Press.

Blair, Graeme et al. (2021). "Community Policing Does Not Build Citizen Trust in Police or Reduce Crime in the Global South". In: *Science* 374.6571.

Blair, Robert A, Sabrina M Karim, and Benjamin S Morse (2019). "Establishing the Rule of Law in Weak and War-Torn States: Evidence From a Field Experiment With the Liberian National Police". In: *American Political Science Review* 113.3, pp. 641–657.

Blair, Robert A and Michael Weintraub (2023). "Little Evidence that Military Policing Reduces Crime or Improves Human Security". In: *Nature Human Behaviour* 7.6, pp. 861–873.

Blair, Robert A et al. (2022). "Preventing Rebel Resurgence After Civil War: A Field Experiment in Security and Justice Provision in Rural Colombia". In: *American Political Science Review* 116.4, pp. 1258–1277.

Blattman, Christopher and Edward Miguel (2010). "Civil War". In: *Journal of Economic literature* 48.1, pp. 3–57.

Blaydes, Lisa (2018). *State of Repression: Iraq Under Saddam Hussein*. Princeton University Press.

Bonilla-Mejía, Leonardo and Iván Higuera-Mendieta (2017). "Political Alignment in the Time of Weak Parties: Electoral Advantages and Subnational Transfers in Colombia". In: *Documentos de Trabajo Sobre Economía Regional y Urbana; No. 260*.

— (2019). "Protected Areas Under Weak Institutions: Evidence from Colombia". In: *World Development* 122, pp. 585–596.

Brinks, Daniel M, Steven Levitsky, and Maria Victoria Murillo (2019). *Understanding Institutional Weakness: Power and Design in Latin American Institutions*. Cambridge University Press.

Britto, Lina (2020). *Marijuana Boom: The Rise and Fall of Colombia's First Drug Paradise*. University of California Press.

Brollo, Fernanda and Tommaso Nannicini (2012). "Tying Your Enemy's Hands in Close Races: The Politics of Federal Transfers in Brazil". In: *American Political Science Review* 106.4, pp. 742–761.

Calderón, Gabriela et al. (2015). "The Beheading of Criminal Organizations and the Dynamics of Violence in Mexico". In: *Journal of Conflict Resolution* 59.8, pp. 1455–1485.

Callaway, Brantly and Pedro HC Sant'Anna (2021). "Difference-in-differences with Multiple Time Periods". In: *Journal of Econometrics* 225.2, pp. 200–230.

Camacho, Adriana and Daniel Mejía (2017). "The Health Consequences of Aerial Spraying Illicit Crops: The Case of Colombia". In: *Journal of Health Economics* 54, pp. 147–160.

Campos, Juan Felipe, Camilo Nieto-Matiz, and Luis L. Schenoni (2025). "Spraying Conflict: Aerial Drug Eradication and Armed Violence in Colombia". In: *British Journal of Political Science*. Forthcoming.

Carey, Sabine C (2009). *Protest, Repression and Political Regimes: An Empirical Analysis of Latin America and Sub-Saharan Africa*. Routledge.

Carlin, Ryan E, Gregory J Love, and Cecilia Martinez-Gallardo (2015). "Security, Clarity of Responsibility, and Presidential Approval". In: *Comparative Political Studies* 48.4, pp. 438–463.

Castillo, Juan Camilo and Dorothy Kronick (2020). "The Logic of Violence in Drug War". In: *American Political Science Review* 114.3, pp. 874–887.

Centro Internacional de la Papa (2023). *Deforestación en la Amazonía Peruana: Modelamiento de Productores*. Tech. rep. Centro Internacional de la Papa.

Ch, Rafael et al. (2018). “Endogenous Taxation in Ongoing Internal Conflict: The Case of Colombia”. In: *American Political Science Review* 112.4, pp. 996–1015.

Chen, Jiafeng and Jonathan Roth (2024). “Logs with Zeros? Some Problems and Solutions”. In: *The Quarterly Journal of Economics* 139.2, pp. 891–936.

Chevigny, Paul (2003). “The Populism of Fear: Politics of Crime in the Americas”. In: *Punishment & Society* 5.1, pp. 77–96.

Collier, Paul (1999). “On the Economic Consequences of Civil War”. In: *Oxford economic papers* 51.1, pp. 168–183.

Crandall, Russell (2002). *Driven by Drugs: US Policy toward Colombia*. Lynne Rienner Publishers.

Crisis Group (2021). *Deeply Rooted: Coca Eradication and Violence in Colombia.* Tech. rep. Crisis Group.

Curtice, Travis B and Brandon Behlendorf (2021). “Street-level Repression: Protest, Policing, and Dissent in Uganda”. In: *Journal of Conflict Resolution* 65.1, pp. 166–194.

Daly, Sarah Z. and Elena Barham (2024). “A Bargaining Theory of Criminal War”. In: *International Studies Quarterly* 68.3, sqae083.

Daly, Sarah Zukerman (2016). *Organized Violence After Civil War: The Geography of Recruitment in Latin America*. Cambridge University Press.

— (2022a). “How Do Violent Politicians Govern? The Case of Paramilitary-Tied Mayors in Colombia”. In: *British Journal of Political Science* 52.4, pp. 1852–1875.

— (2022b). *Violent Victors: Why Bloodstained Parties Win Postwar Elections*. Vol. 196. Princeton University Press.

Dammert, Lucia and Katherine Sarmiento (2018). “Corruption, Organized Crime, and Regional Governments in Peru”. In: *Corruption in Latin America: How Politicians and Corporations Steal from Citizens*. Ed. by Robert Rotberg. Springer Nature Link.

Daniele, Gianmarco and Gemma Dipoppa (2017). “Mafia, Elections and Violence Against Politicians”. In: *Journal of Public Economics* 154, pp. 10–33.

Dávalos, Liliana M, Karina M Sanchez, and Dolors Armenteras (2016). “Deforestation and Coca Cultivation Rooted in Twentieth-century Development Projects”. In: *BioScience* 66.11, pp. 974–982.

Davalos, Liliana M et al. (2021). “Forests, Coca, and Conflict: Grass Frontier Dynamics and Deforestation in the Amazon-Andes”. In: *Journal of Illicit Economies and Development* 3.1.

Davenport, Christian (2007). *State Repression and the Domestic Democratic Peace*. Cambridge University Press.

De Chaisemartin, Clément and Xavier d’Haultfoeuille (2024). “Difference-in-differences Estimators of Intertemporal Treatment Effects”. In: *Review of Economics and Statistics*, pp. 1–45.

De Chaisemartin, Clément and Xavier d’Haultfoeuille (2020). “Two-way Fixed Effects Estimators with Heterogeneous Treatment Effects”. In: *American Economic Review* 110.9, pp. 2964–2996.

Dell, Melissa (2015). “Trafficking Networks and the Mexican Drug War”. In: *American Economic Review* 105.6, pp. 1738–1779.

Dewey, Matías, Cornelia Woll, and Lucas Ronconi (2021). *The Political Economy of Law Enforcement*. Tech. rep. MaxPo Discussion Paper.

Di Lonardo, Livio, Jessica Sun, and Scott Tyson (2025). “Repression and Autocratic Consolidation”. Working paper.

Dixit, Avinash and John Londregan (1998). “Fiscal Federalism and Redistributive Politics”. In: *Journal of Public Economics* 68.2, pp. 153–180.

Downs, Anthony (1957). *An Economic Theory of Democracy*. New York: Harper Collins. ISBN: 978-0-06-041750-5.

Dube, Oeindrila and Suresh Naidu (2015). “Bases, Bullets, and Ballots: The Effect of US Military Aid on Political Conflict in Colombia”. In: *The Journal of Politics* 77.1, pp. 249–267.

Durán-Martínez, Angélica (2018). *The Politics of Drug Violence: Criminals, Cops, and Politicians in Colombia and Mexico*. Oxford University Press.

Esping-Andersen, Gøsta (1990). “The Three Worlds of Welfare Capitalism”. In: *Polity*.

Fearon, James D (1999). “Electoral Accountability and the Control of Politicians: Selecting Good Types Versus Sanctioning Poor Performance”. In: *Democracy, Accountability, and Representation*, pp. 55–97.

Felbab-Brown, Vanda (2005). “The Coca Connection: Conflict and Drugs in Colombia and Peru”. In: *Journal of Conflict Studies* 25.2, pp. 104–128.

— (2009). *Shooting Up: Counterinsurgency and the War on Drugs*. Rowman & Littlefield.

Fergusson, Leopoldo et al. (2021). “The Real Winner’s Curse”. In: *American Journal of Political Science* 65.1, pp. 52–68.

Flores-Macías, Gustavo (2018). “The Consequences of Militarizing Anti-Drug Efforts for State Capacity in Latin America: Evidence from Mexico”. In: *Comparative Politics* 51.1, pp. 1–20.

“From Violence to Voting: War and Political Participation in Uganda” (2009). In: *American Political Science Review* 103.2, pp. 231–247.

Gallego, Jorge (2018). “Civil Conflict and Voting Behavior: Evidence from Colombia”. In: *Conflict Management and Peace Science* 35.6, pp. 601–621.

García-Jimeno, Camilo (2016). “The Political Economy of Moral Conflict: An Empirical Study of Learning and Law Enforcement Under Prohibition”. In: *Econometrica* 84.2, pp. 511–570.

Gelvez, Juan David (2025). “Coca Politics: Electoral Accountability and Tough-on-Crime Policies in Colombia”. Working paper.

Gerez, Julian E. (2025). “Unequal Before the Law: Political Incentives and Selective Drug Enforcement in Colombia”. Working paper.

González, Yanilda María (2017). “What Citizens Can See of the State: Police and the Construction of Democratic Citizenship in Latin America”. In: *Theoretical Criminology* 21.4, pp. 494–511.

— (2020). *Authoritarian Police in Democracy: Contested Security in Latin America*. Cambridge University Press.

Gonzalez-Ocantos, Ezequiel A (2020). *The Politics of Transitional Justice in Latin America: Power, Norms, and Capacity Building*. Cambridge University Press.

Goodman-Bacon, Andrew (2021). “Difference-in-differences with Variation in Treatment Timing”. In: *Journal of Econometrics* 225.2, pp. 254–277.

Gootenberg, Paul (2009). *Andean Cocaine: The Making of a Global Drug*. University of North Carolina Press.

Grillo, Luciana et al. (2021). “Addressing Socio-Environmental Challenges and Unintended Consequences of Peruvian Drug Policy: An Analysis in Two Former Cocalero Valleys”. In: *Journal of Illicit Economies and Development* 3.1, pp. 97–117.

Grover, Jennifer A (2018). *U.S. Counternarcotics Assistance Achieved Some Positive Results, but State Needs to Review the Overall U.S. Approach*. GAO-19-106. U.S. Government Accountability Office.

Hansen, Matthew C et al. (2013). “High-Resolution Global Maps of 21st-Century Forest Cover Change”. In: *Science* 342.6160, pp. 850–853.

Hidalgo, F Daniel and Benjamin Lessing (2019). “Endogenous State Weakness: Paramilitaries and Electoral Politics in Rio de Janeiro”. Working paper.

Hirschel-Burns, Danny (2021). “Sowing the Seeds: Why do Some Armed Groups Socialize Civilians More than Others During Civil War?” In: *Civil Wars* 23.4, pp. 545–569.

Hobbes, Thomas (1994). *Leviathan*. Trans. by C. H. T. Indianapolis: Hackett Publishing.

Holland, Alisha C (2013). “Right on Crime?: Conservative Party Politics and *Mano Dura* Policies in El Salvador”. In: *Latin American Research Review* 48.1, pp. 44–67.

— (2015). “The Distributive Politics of Enforcement”. In: *American Journal of Political Science* 59.2, pp. 357–371.

— (2017). *Forbearance as Redistribution: The Politics of Informal Welfare in Latin America*. Cambridge University Press.

Horta-Sáenz, Daniela and Anderson Tami-Patiño (2024). “Collateral Damage: The Impact of Forced Eradication of Illicit Crops on Human Capital”. Working paper.

Kalyvas, Stathis N (2006). *The Logic of Violence in Civil War*. Cambridge University Press.

Kitschelt, Herbert (2000). “Linkages between Citizens and Politicians in Democratic Polities”. In: *Comparative Political Studies* 33.6-7, pp. 845–879.

Kleinfeld, Rachel and Elena Barham (2018). “Complicit States and the Governing Strategy of Privilege Violence: When Weakness is Not the Problem”. In: *Annual Review of Political Science* 21, pp. 215–238.

Krause, Krystin (2014a). “Supporting the Iron Fist: Crime News, Public Opinion, and Authoritarian Crime Control in Guatemala”. In: *Latin American Politics and Society* 56.1, pp. 98–119.

— (2014b). “Supporting the Iron Fist: Crime News, Public Opinion, and Authoritarian Crime Control in Guatemala”. In: *Latin American Politics and Society* 56.1, pp. 98–119.

Ladino, Juan Felipe, Santiago Saavedra, and Daniel Wiesner (2021). “One Step Ahead of the Law: The Net Effect of Anticipation and Implementation of Colombia’s Illegal Crops Substitution Program”. In: *Journal of Public Economics* 202, p. 104498.

Laterzo, Isabel G (2024). “Progressive Ideology and Support for Punitive Crime Policy: Evidence from Argentina and Brazil”. In: *Comparative Political Studies* 57.6, pp. 999–1034.

Laterzo-Tingley, Isabel and Leah Christiani (2024). "The "Tough-on-Crime" Left: Race, Gender, and Elections of Law-and-Order Democrats". In: *Research & Politics* 11.3, p. 20531680241261765.

Laurance, William F, Jeffrey Sayer, and Kenneth G Cassman (2014). "Agricultural Expansion and its Impacts on Tropical Nature". In: *Trends in Ecology & Evolution* 29.2, pp. 107–116.

Lessing, Benjamin (2017). *Making Peace in Drug Wars: Crackdowns and Cartels in Latin America*. Cambridge University Press.

Levi, Margaret (1988). *Of Rule and Revenue*. University of California Press.

Ley, Sandra (2017). "Electoral Accountability in the Midst of Criminal Violence: Evidence from Mexico". In: *Latin American Politics and Society* 59.1, pp. 3–27.

— (2018). "To Vote or Not to Vote: How Criminal Violence Shapes Electoral Participation". In: *Journal of Conflict Resolution* 62.9, pp. 1963–1990.

Lichbach, Mark Irving (1987). "Deterrence or Escalation? The Puzzle of Aggregate Studies of Repression and Dissent". In: *Journal of Conflict Resolution* 31.2, pp. 266–297.

Lipsky, Michael (2010). *Street-level Bureaucracy: Dilemmas of the Individual in Public Service*. Russell sage foundation.

Loveman, Mara (1998). "High-risk Collective Action: Defending Human Rights in Chile, Uruguay, and Argentina". In: *American Journal of Sociology* 104.2, pp. 477–525.

Lucas, Christopher, John Marshall, and Zara Riaz (2020). "Don't Read All About It: Drug Trafficking Organizations and Media Reporting of Violence in Mexico". Working paper.

Lupu, Noam and Leonid Peisakhin (2017). "The Legacy of Political Violence Across Generations". In: *American Journal of Political Science* 61.4, pp. 836–851.

Magliocca, Nicholas R et al. (2019). "Modeling Cocaine Traffickers and Counterdrug Interdiction Forces as a Complex Adaptive System". In: *Proceedings of the National Academy of Sciences* 116.16, pp. 7784–7792.

Mangonnet, Jorge, Jacob Kopas, and Johannes Urpelainen (2022). "Playing Politics with Environmental Protection: The Political Economy of Designating Protected Areas". In: *The Journal of Politics* 84.3, pp. 1453–1468.

Mares, Isabela and Lauren Young (2016). "Buying, Expropriating, and Stealing Votes". In: *Annual Review of Political Science* 19, pp. 267–288.

Marín-Llanes, Lucas et al. (2024). "Coca-Based Local Growth and Its Socio-Economic Impact in Colombia". Working paper.

Marshall, John (2024). “Tuning in, voting out: news consumption cycles, homicides, and electoral accountability in Mexico”. Working paper.

Mejía, Daniel (2016). “Plan Colombia: An Analysis of Effectiveness and Costs”. In: *Foreign Policy at Brookings* 17.

Mejia, Daniel and Pascual Restrepo (2016). “The Economics of the War on Illegal Drug Production and Trafficking”. In: *Journal of Economic Behavior & Organization* 126, pp. 255–275.

Mejía, Daniel, Pascual Restrepo, and Sandra V Rozo (2017). “On the Effects of Enforcement on Illegal Markets: Evidence from a Quasi-experiment in Colombia”. In: *The World Bank Economic Review* 31.2, pp. 570–594.

Mesquita, Ethan Bueno de (2020). “Territorial Conflict Over Endogenous Rents”. In: *The Journal of Politics* 82.1, pp. 162–181.

Moreno-Sanchez, Rocio, David S Kraybill, and Stanley R Thompson (2003). “An econometric analysis of coca eradication policy in Colombia”. In: *World Development* 31.2, pp. 375–383.

Morris, Kevin T and Kelsey Shoub (2024). “Contested Killings: The Mobilizing Effects of Community Contact with Police Violence”. In: *American Political Science Review* 118.1, pp. 458–474.

Muñoz-Mora, Juan Carlos, Santiago Tobón, and Jesse Willem d’Anjou (2018). “The Role of Land Rights in the War on Illicit Crops: Evidence from Colombia”. In: *World Development* 103, pp. 268–283.

Negret, Pablo Jose et al. (2019). “Emerging Evidence that Armed Conflict and Coca Cultivation Influence Deforestation Patterns”. In: *Biological Conservation* 239, p. 108176.

Nieto-Matiz, Camilo (2019). “Democracy in the Countryside: The Rural Sources of Violence Against Voters in Colombia”. In: *Journal of Peace Research* 56.2, pp. 264–278.

— (2023). “When the State Becomes Complicit: Mayors, Criminal Actors, and the Deliberate Weakening of the Local State in Colombia”. In: *Comparative Political Studies* 56.9, pp. 1295–1327.

Olson, Mancur (1993). “Dictatorship, Democracy, and Development”. In: *American Political Science Review* 87.3, pp. 567–576.

Pachón, Mónica, Fabio José Sánchez Torres, et al. (2014). “Base de Datos Sobre Resultados Electorales CEDE, 1958-2011”. In.

Paredes, Maritza and Alvaro Pastor (2024). "Illicit Crops in the Frontier Margins: Amazonian Indigenous Livelihoods and the Expansion of Coca in Peru". In: *The Journal of Peasant Studies* 51.4, pp. 960–981.

Phillips, Brian J (2015). "How Does Leadership Decapitation Affect Violence? The Case of Drug Trafficking Organizations in Mexico". In: *The Journal of Politics* 77.2, pp. 324–336.

Pocasangre, Oscar (2022). "The Political Consequences of Long-Term Violence in Mexico". PhD thesis.

Prem, Mounu, Santiago Saavedra, and Juan F Vargas (2020). "End-of-conflict Deforestation: Evidence from Colombia's Peace Agreement". In: *World Development* 129, p. 104852.

Prem, Mounu, Juan F Vargas, and Daniel Mejía (2023). "The Rise and Persistence of Illegal Crops: Evidence from a Naive Policy Announcement". In: *The Review of Economics and Statistics* 105.2, pp. 344–358.

Przeworski, Adam, Susan C Stokes, and Bernard Manin (1999). *Democracy, Accountability, and Representation*. Cambridge University Press.

Ramírez, María Clemencia (2011). *Between the Guerrillas and the State: The Cocalero Movement, Citizenship, and Identity in the Colombian Amazon*. Duke University Press.

Reno, William (2009). "Illicit Markets, Violence, Warlords, and Governance: West African Cases". In: *Crime, Law and Social Change* 52, pp. 313–322.

Restrepo, Jorge A, Michael Spagat, and Juan F Vargas (2003). "The Dynamics of the Colombian Civil Conflict: A New Data Set". In: *Available at SSRN 480247*.

Reuter, Peter (2009). "Systemic Violence in Drug Markets". In: *Crime, Law and Social Change* 52.3, pp. 275–284.

Reyes, Luis Carlos (2014). "Estimating the Causal Effect of Forced Eradication on Coca Cultivation in Colombian Municipalities". In: *World Development* 61, pp. 70–84.

Rincón-Ruiz, Alexander et al. (2016). "Coca Cultivation and Crop Eradication in Colombia: The Challenges of Integrating Rural Reality into Effective Anti-Drug Policy". In: *International Journal of Drug Policy* 33, pp. 56–65.

Robinson, James A and Ragnar Torvik (2009). "The Real Swing Voter's Curse". In: *American Economic Review* 99.2, pp. 310–315.

Romero, Vidal, Beatriz Magaloni, and Alberto Díaz-Cayeros (2016). "Presidential Approval and Public Security in Mexico's War on Crime". In: *Latin American Politics and Society* 58.2, pp. 100–123.

Ronconi, Lucas (2010). “Enforcement and Compliance with Labor Regulations in Argentina”. In: *ILR Review* 63.4, pp. 719–736.

Rozo, Sandra V (2014). “On the Unintended Consequences of Enforcement on Illegal Drug Producing Countries”. In: *UCLA CCPR Population Working Papers*.

Samaniego, A.C., M.G.A. Ponce, and S.D.C. Hinostroza (2023). “Analysis of the Deforestation Process of Amazon from During 2001 to 2020 in Peru”. In: *Proceedings of the 2022 12th International Conference on Environment Science and Engineering (ICESE 2022)*. Environmental Science and Engineering - Springer.

Sánchez De La Sierra, Raúl (2020). “On the Origins of the State: Stationary Bandits and Taxation in Eastern Congo”. In: *Journal of Political Economy* 128.1, pp. 000–000.

Scott, James C (1977). *The Moral Economy of the Peasant: Rebellion and Subsistence in Southeast Asia*. Yale University Press.

Siddiqui, Niloufer A (2022). *Under the Gun: Political Parties and Violence in Pakistan*. Cambridge University Press.

Snyder, Richard and Angelica Duran-Martinez (2009). “Does Illegality Breed Violence? Drug Trafficking and State-Sponsored Protection Rackets”. In: *Crime, Law and Social Change* 52, pp. 253–273.

Soifer, Hillel David (2015). *State Building in Latin America*. Cambridge University Press.

Soss, Joe and Vesla Weaver (2017). “Police Are Our Government: Politics, Political Science, and the Policing of Race–Class Subjugated Communities”. In: *Annual Review of Political Science* 20.1, pp. 565–591.

Staniland, Paul (2015). “Militias, Ideology, and the State”. In: *Journal of Conflict Resolution* 59.5, pp. 770–793.

Stanton, Jessica A (2016). *Violence and Restraint in Civil War: Civilian Targeting in the Shadow of International Law*. Cambridge University Press.

Stokes, Susan C, Thad Dunning, and Marcelo Nazareno (2013). *Brokers, Voters, and Clientelism: The Puzzle of Distributive Politics*. Cambridge University Press.

Sun, Liyang and Sarah Abraham (2021). “Estimating Dynamic Treatment Effects in Event Studies with Heterogeneous Treatment Effects”. In: *Journal of Econometrics* 225.2, pp. 175–199.

Suryanarayan, Pavithra (2024). “Endogenous State Capacity”. In: *Annual Review of Political Science* 27.

Sviatschi, Maria Micaela (2022). “Making a Narco: Childhood Exposure to Illegal Labor Markets and Criminal Life Paths”. In: *Econometrica* 90.4, pp. 1835–1878.

Svolik, Milan W (2012). *The Politics of Authoritarian Rule*. Cambridge University Press.

Tate, Winifred (2015). *Drugs, Thugs, and Diplomats: US Policymaking in Colombia*. Stanford University Press.

Tilly, Charles (1985). “War Making and State Making as Organized Crime”. In: *Bringing the State Back In*. Ed. by Peter B. Evans, Dietrich Rueschemeyer, and Theda Skocpol. Cambridge: Cambridge University Press, pp. 169–191.

Torreblanca, Carolina (2024). “The Political Consequences of “Source Country” Operations: Evidence from Crop Eradication in Mexico”. Working paper.

Tozzi, Guilia (2024). “Narco-Deforestation: The Environmental Effects of Coca Cultivation”. Working paper.

Trejo, Guillermo and Sandra Ley (2020). *Votes, Drugs, and Violence: The Political Logic of Criminal Wars in Mexico*. Cambridge University Press.

Trelles, Alejandro and Miguel Carreras (2012). “Bullets and Votes: Violence and Electoral Participation in Mexico”. In: *Journal of Politics in Latin America* 4.2, pp. 89–123.

Trudeau, Jessie (2022). “Limiting Aggressive Policing Can Reduce Police and Civilian Violence”. In: *World Development* 160, p. 105961.

— (2024). “How Criminal Governance Undermines Elections”. Working paper.

Uribe, Andres D (2023). “Coercion, Governance, and Political Behavior in Civil War”. In: *Journal of Peace Research*, p. 00223433221147939.

Vargas, Juan et al. (2024). “Fear to Vote: Explosions, Salience, and Elections”. Working paper.

Velásquez, Daniel et al. (2020). “I Read the News Today, Oh Boy: The Effect of Crime News Coverage on Crime Perception”. In: *World Development* 136, p. 105111.

Ventura, Tiago, Sandra Ley, and Francisco Cantú (2024). “Voting for Law and Order: Evidence from a Survey Experiment in Mexico”. In: *Comparative Political Studies* 57.4, pp. 551–583.

Visconti, Giancarlo (2020). “Policy Preferences After Crime Victimization: Panel and Survey Evidence from Latin America”. In: *British Journal of Political Science* 50.4, pp. 1481–1495.

Vizcarra, Sofía and Nicolás Zevallos (2014). “Roles en el ejercicio de la política intereses de los mercados ilegales: una aproximación exploratoria a partir del caso peruano”. Departamento de Ciencias Sociales: Pontifica Católica de Peru (PUC).

Walker, Hannah L (2020). *Mobilized by Injustice: Criminal Justice Contact, Political Participation, and Race*. Oxford University Press.

Walker, Wayne S et al. (2020). “The Role of Forest Conversion, Degradation, and Disturbance in the Carbon Dynamics of Amazon Indigenous Territories and Protected Areas”. In: *Proceedings of the National Academy of Sciences* 117.6, pp. 3015–3025.

Weber, Max (2004). “Politics as a Vocation”. In: *The Vocation Lectures*. Ed. by David Owen and Tracy B. Strong. Trans. by Rodney Livingstone. Indianapolis: Hackett Publishing, pp. 32–94.

Weinstein, Jeremy M (2006). *Inside Rebellion: The Politics of Insurgent Violence*. Cambridge University Press.

Weintraub, Michael, Juan F Vargas, and Thomas E Flores (2015). “Vote Choice and Legacies of Violence: Evidence from the 2014 Colombian Presidential Elections”. In: *Research & Politics* 2.2, p. 2053168015573348.

Wilkinson, Steven (2004). *Votes and Violence: Electoral Competition and Ethnic Riots in India*. Cambridge University Press.

Yashar, Deborah J (2018). *Homicidal Ecologies: Illicit Economies and Complicit States in Latin America*. Cambridge University Press.

Young, K.R. (2004). “Environmental and Social Consequences of Coca/Cocaine in Peru: Policy Alternatives and a Research Agenda”. In: *Dangerous Harvest: Drug Plants and the Transformation of Indigenous Landscapes*. Ed. by M.K. Steinberg, J.J. Hobbs, and K. Mathewson. Oxford University Press.

Appendix A: Supplementary Material for Chapter 1

A.1 Public opinion toward security and drugs

The AmericasBarometer question asks respondents what they perceive to be the country's most important problem. Survey enumerators classify their open-ended responses into one of many categories. I group these issues into four categories, and Figure A.1 records the proportion of respondents who listed one of the issues within these four categories as the top issue facing the country. I classify problems such as inflation, unemployment, and poverty as economic issues; protests, corruption, and problems with service provision as political issues; and issues related to drug trafficking, the armed conflict, and crime are security-related. While the armed conflict might appear to be more all-encompassing than issues of drugs themselves, it is impossible to disentangle the armed conflict from drug trafficking given the involvement of armed groups in the drug trade in Colombia.

Table A.1 reports results from an original survey of the relationship between ideology and support for eradication policies as well as praticular candidates in the 2022 Colombian presidential election.

Figure A.1: Proportion of respondents who indicated an issue falling into the issue grouping as the most important problem facing the country, 2004-2021.

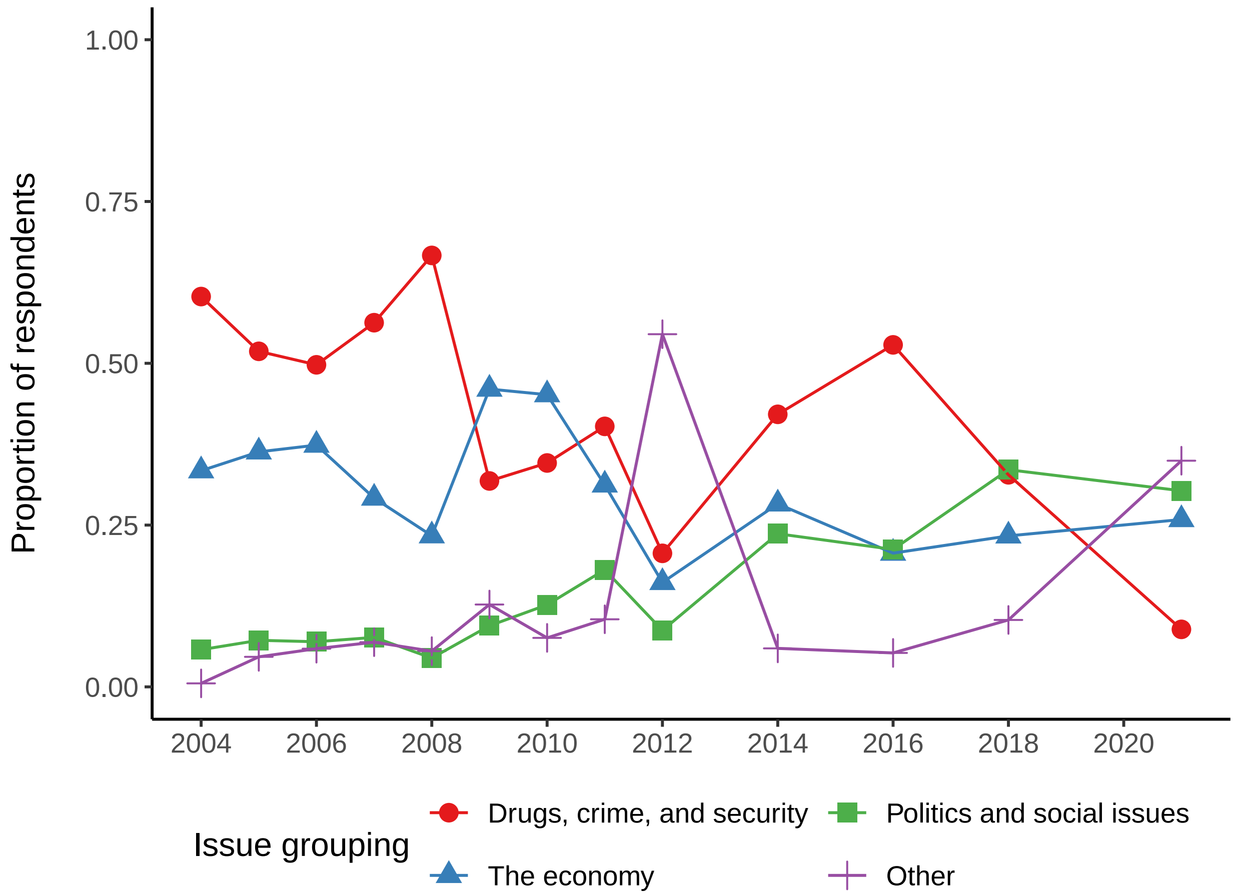


Table A.1: Relationship between left-right ideology and opinions on eradication and voting behavior.

Outcome:	Supports eradication			Approval	Self-reported vote: Round 1			Vote intention: Round 2	
	Aerial	Manual	Any	Duque *Right* *(Incumbent)*	Petro *Left*	Fico *Right*	Hernández *Right*	Petro *Left*	Hernández *Right*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Ideology is respondent self-reported left-right scale placement, range: {0,1,2,3,4,5,6,7,8,9,10}									
Ideology	0.036	0.004	0.036	0.219	-0.104	0.055	0.030	-0.106	0.086
	(0.005)	(0.005)	(0.006)	(0.016)	(0.006)	(0.005)	(0.005)	(0.005)	(0.005)
R^2	0.05	0.001	0.03	0.17	0.22	0.13	0.03	0.23	0.19
Observations	1,124	1,124	1,124	1,132	966	966	966	1,128	1,128
Outcome range	{0,1}	{0,1}	{0,1}	{0,1,2,3,4}	{0,1}	{0,1}	{0,1}	{0,1}	{0,1}
Outcome mean	0.17	0.20	0.33	1.22	0.50	0.14	0.17	0.53	0.27
Outcome std. dev.	0.37	0.40	0.47	1.19	0.34	0.50	0.38	0.50	0.44
Ideology mean	4.46	4.46	4.46	4.45	4.42	4.42	4.42	4.45	4.45
Ideology std. dev.	2.24	2.24	2.24	2.24	2.24	2.24	2.24	2.24	2.24

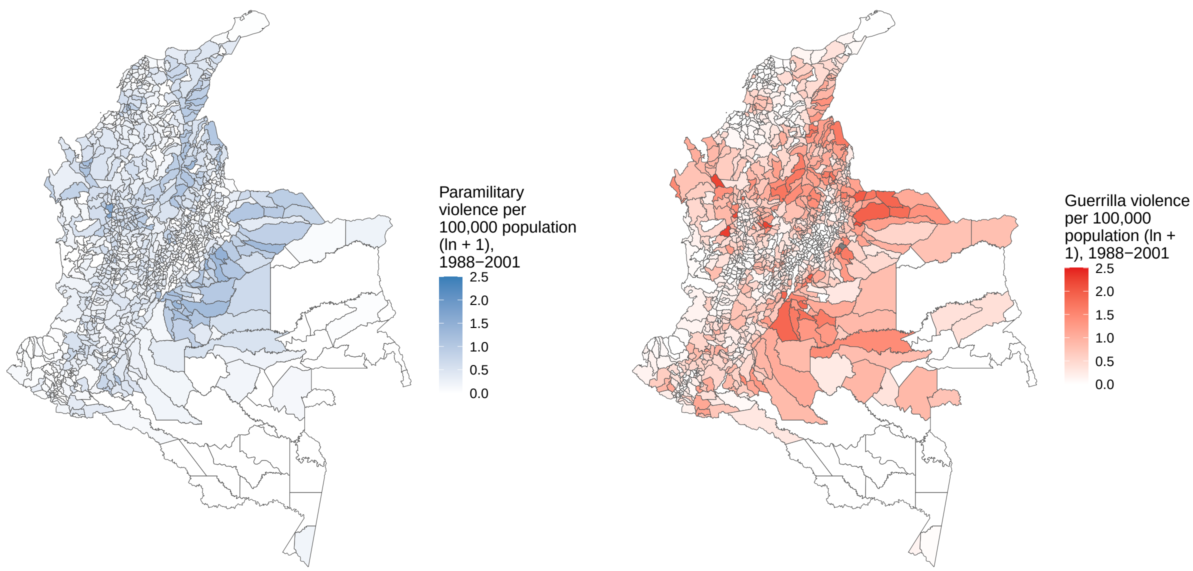
Notes: All specifications are estimated using OLS. Heteroskedasticity-robust standard errors in parentheses.

A.2 Detailed description of coca cultivation data

SIMCI's estimations correspond to the nominal date of December 31st—however, the inputs are collected several months around this date, usually between November and February. The measures across years correspond to *net* changes in coca cultivation. Consider, for example, a report of 1,000 hectares of coca crops detected in a particular municipality in year t. In the following year, $t+1$, 500 hectares could be eradicated, but another 1,000 hectares of coca may be planted. The estimated coca cultivation for that municipality in year $t+1$ is thus 1,500 hectares, even though there may have been as many as 2,000 hectares of crops in that municipality at one point. Similarly, it is possible for, say, 1,000 hectares to have been detected in year t and *more than* 1,000 hectares to have been eradicated during year $t+1$, since new cultivation areas can appear during the year. Coca takes approximately 6 months to go from initial planting to initial harvest. Subsequent harvests can occur around every 3 months after the initial harvest. Coca is a crop resilient to eradication; even after fumigation, coca cultivation areas can regrow the crop in a time frame ranging from 6 to 12 months.

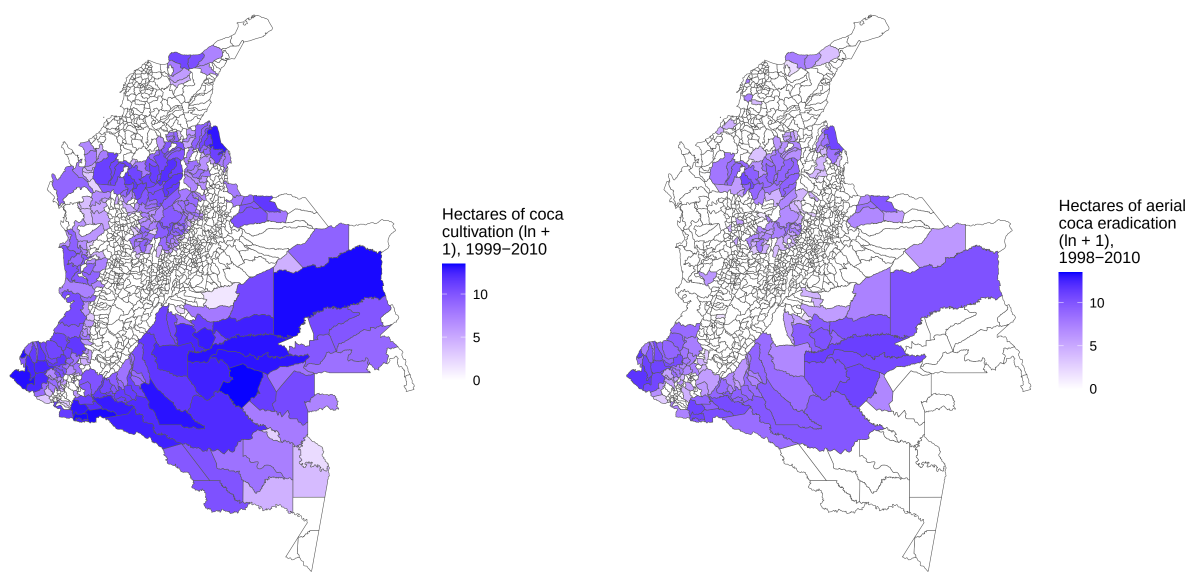
A.3 Variation in historical armed group presence

Figure A.2: Paramilitary and guerrilla violence per 100,000 population from 1988-2001.



A.4 Variation in coca cultivation and eradication

Figure A.3: Coca cultivation and eradication.



A.5 Difference-in-differences validation checks

A.5.1 Testing parallel trends

To test parallel trends, I fit a model similar to the one described by Equation 1.1, except I replace the indicators for Uribe's two presidential terms with placebo "Plan Colombia" treatment indicators for July 2001-July 2002 (Panels A and C) and July 2000-July 2002 (Panels B and D) and subset the sample to the year-months of Pastrana's term.

Table A.2: Testing whether eradication during Pastrana's term changed with Plan Colombia.

Outcome:	Hectares (1)	Hectares (ln+1) (2)	Hectares (> 0) (3)
Panel A: Aerial eradication, July 2001 placebo, continuous violence measure			
Paramilitary violence × 2001-2002	-7.338	-0.009	0.001
	(6.032)	(0.036)	(0.007)
Guerrilla violence × 2001-2002	3.021	0.007	0.000
	(2.545)	(0.013)	(0.003)
R^2	0.10	0.28	0.29
Panel B: Aerial eradication, July 2000 placebo, continuous violence measure			
Paramilitary violence × 2000-2002	-4.924	0.017	0.004
	(7.258)	(0.038)	(0.007)
Guerrilla violence × 2000-2002	6.046	0.013	0.001
	(3.564)	(0.017)	(0.003)
R^2	0.10	0.28	0.29
Panel C: Aerial eradication, July 2001 placebo, binary violence measure			
Paramilitary violence × 2001-2002	-11.016	-0.062	-0.009
	(8.266)	(0.054)	(0.010)
Guerrilla violence × 2001-2002	11.620	0.049	0.006
	(9.549)	(0.061)	(0.011)
R^2	0.10	0.28	0.29
Panel D: Aerial eradication, July 2000 placebo, binary violence measure			
Paramilitary violence × 2000-2002	-16.232	-0.038	-0.006
	(13.359)	(0.063)	(0.012)
Guerrilla violence × 2000-2002	23.066	0.047	0.005
	(15.523)	(0.070)	(0.012)
R^2	0.10	0.28	0.29
Observations	15,264	15,264	15,264
Municipalities	318	318	318
Outcome range	[0-9,650]	[0-9.17]	{0,1}
Outcome mean	17.90	0.16	0.03
Outcome std. dev.	215.45	0.95	0.17

Notes: All specifications are estimated using OLS and include municipality and year × month fixed effects. Continuous measure of paramilitary violence ranges from 0 to 2.95 with a mean of 0.50 and a std. dev. of 0.55. Continuous measure of guerrilla violence ranges from 0 to 8.39 with a mean of 1.15 and a std. dev. of 1.36. Binary measure of paramilitary attacks has a mean of 0.35 and a std. dev. of 0.48. Binary measure of guerrilla attacks has a mean of 0.40 and a std. dev. of 0.49. Robust standard errors clustered by municipality are in parentheses.

A.5.2 Event study specification

To generate the event study plots I fit regressions of the following form:

$$Eradication_{i,t} = \sum_{j \neq 2002} \beta_j P_i \times \mathbb{1}[y = j] + \sum_{j \neq 2002} \zeta_j G_i \times \mathbb{1}[y = j] + \gamma_i + \delta_t + \varepsilon_{i,t}, \tag{A.1}$$

where $Eradication_{i,t}$ represents eradication in municipality i in year-month t, and P_i and G_i are variables for historical paramilitary and guerrilla violence. I interact the variables for historical paramilitary and guerrilla violence P_i and G_i with indicators for each year $y \in 1998, 1999, \ldots, 2010$ except for 2002, which is the reference category and corresponds to Uribe's election. I also include municipality fixed effects γ_i and year $\times$ month fixed effects δ_t. Figures A.4 and A.5 present the results of these regressions separately for aerial eradication outcomes measured in hectares, $\ln + 1$ hectares, and as a binary indicator, plotting estimates of β_j and ζ_j and 95% confidence intervals. I expect β_j—the coefficients associated with the interaction of the year indicators and historical paramilitary violence—to be negative after 2002, reflecting forbearance in eradication, and ζ_j—the coefficients associated with the interaction of the year indicators and historical guerrilla violence—to be positive after 2002.

Figure A.4: Event study plots, using continuous measures of historical armed group violence.

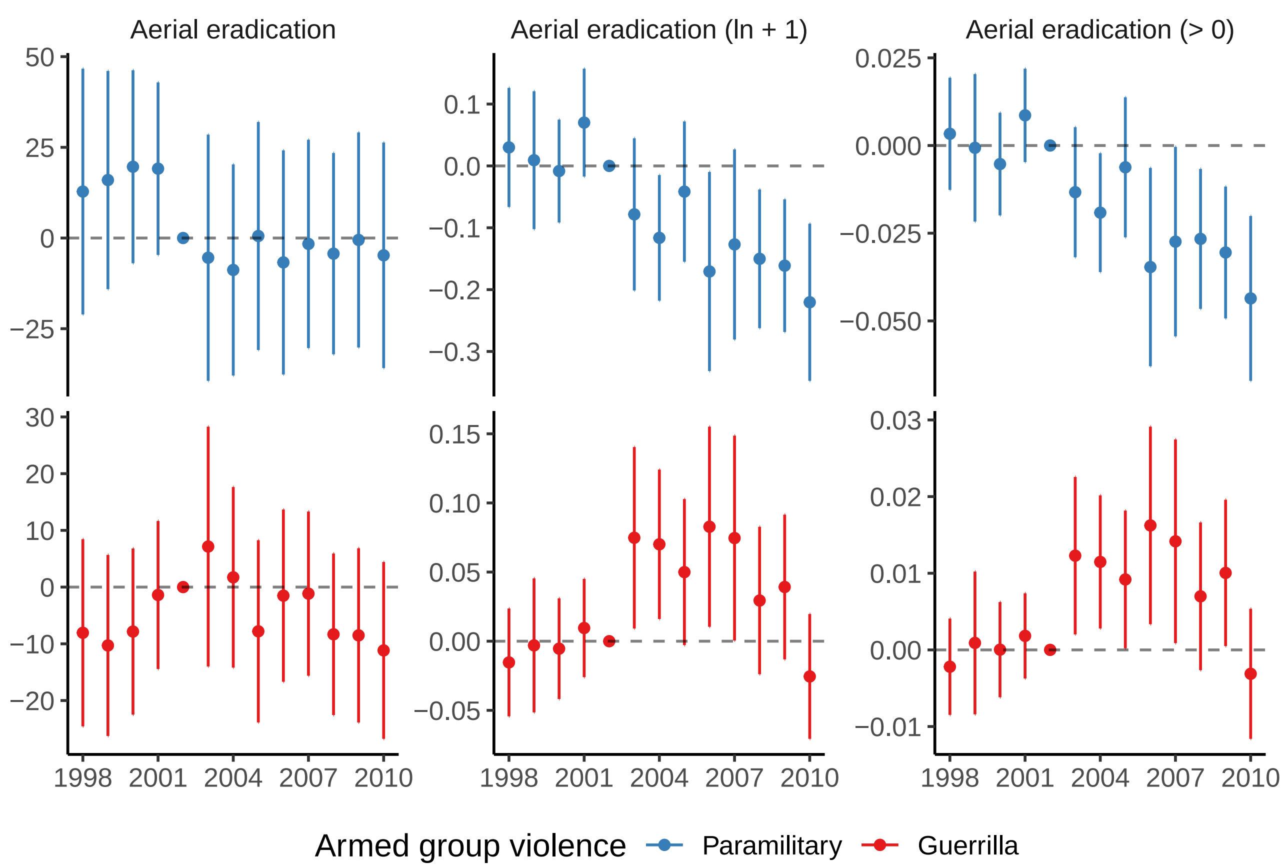
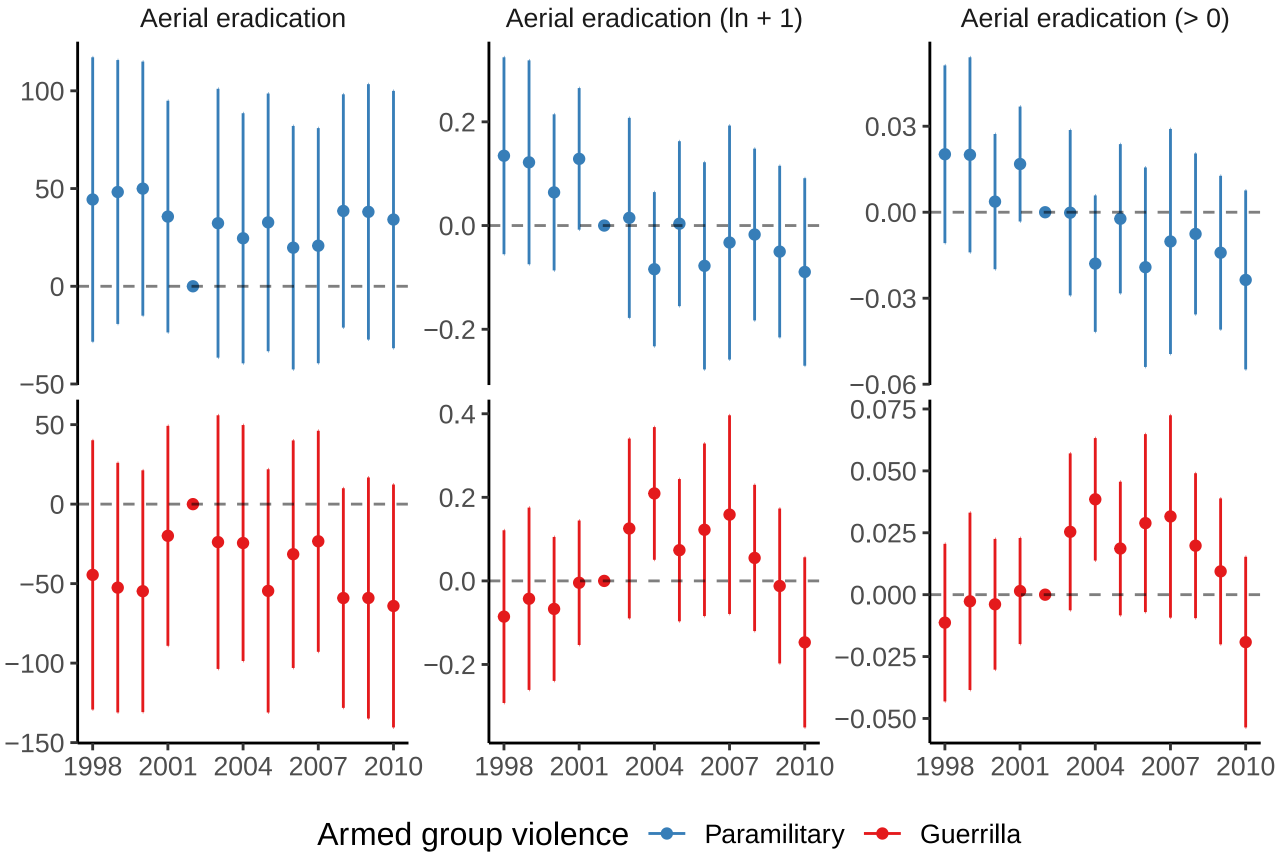


Figure A.5: Event study plots, using binary measures of historical armed group violence.



A.6 Robustness checks and alternative explanations

The following set of tables present the results of the robustness tests and alternative explanations described in Section 1.5.

Tables A.3 and A.4 flexibly interact the year-month fixed effects with department fixed effects, municipality area, coca suitability, altitude, and distance to Bogotá, as well as measures of the latent right/left lean of the municipality.

Table A.5 uses coca cultivation values from $t-1$ as controls. Table A.6 uses as an outcome the proportion of yearly coca cultivated that was aerially eradicated.

In Table A.7, I use a regression discontinuity design around close mayoral elections in Colombia to predict average eradication undertaken by the central government in a particular municipality over the course of the mayor's term depending on the close election of a left-wing or right-wing mayor. Only the 2003 and 2007 mayoral elections are included. This extends Fergusson et al. (2021), who compare municipalities which were barely won by a left-wing (right-wing) mayor to those where the left-wing (right-wing) mayor barely lost to understand the relationship between local elections and armed group violence in response to shifts in local power.

Figure A.6 probes the sensitivity of the main binary results based on the cutoff for municipalities with high levels of historical paramilitary or guerrilla violence. Table A.8 uses the natural log of attacks to account for the right-skewness of this variable's distribution, adding a value of one such that violence values in municipalities that did not experience violence are well-defined. Table A.9 squares the violence results to further assess sensitivity to linearity. Tables A.10 and A.11 interact each group's violence measures with each other.

Tables A.12 and A.13 use violence data that is always prior to the beginning of Pastrana's term even though it excludes the crucial 1997-2001 period of paramilitary ascendancy (Ch et al. 2018).

Finally, Tables A.14 and A.15 estimate cross-sectional results.

A.6.1 Flexibly interacting time-invariant characteristics with time

Table A.3: Temporal and geographic variation in the intensity and extent of aerial eradication using additional covariates interacted with time, using continuous measures of historical armed group violence (1988-2001).

Outcome:	Hectares (1)	Hectares (ln+1) (2)	Hectares (> 0) (3)
Panel A: Aerial eradication			
Paramilitary violence × 2002-2006	-23.606	-0.135	-0.021
	(8.867)	(0.043)	(0.007)
Paramilitary violence × 2006-2010	-36.155	-0.310	-0.055
	(12.078)	(0.080)	(0.014)
Guerrilla violence × 2002-2006	3.231	0.041	0.007
	(3.053)	(0.020)	(0.003)
Guerrilla violence × 2006-2010	3.452	0.071	0.014
	(3.489)	(0.032)	(0.006)
R^2	0.30	0.45	0.43
Panel B: Aerial eradication, controlling for baseline coca cultivation			
Paramilitary violence × 2002-2006	-21.005	-0.124	-0.019
	(11.039)	(0.043)	(0.007)
Paramilitary violence × 2006-2010	-38.132	-0.309	-0.055
	(12.402)	(0.080)	(0.014)
Guerrilla violence × 2002-2006	3.326	0.041	0.007
	(3.207)	(0.019)	(0.003)
Guerrilla violence × 2006-2010	3.380	0.071	0.014
	(3.322)	(0.031)	(0.006)
R^2	0.30	0.45	0.44
Observations	37,584	37,584	37,584
Municipalities	261	261	261
Outcome range	[0-17,101]	[0-9.75]	{0,1}
Outcome mean	27.17	0.25	0.05
Outcome std. dev.	253.83	1.19	0.21
Paramilitary violence range	[0-2.95]	[0-2.95]	[0-2.95]
Paramilitary violence mean	0.56	0.56	0.56
Paramilitary violence std. dev.	0.57	0.57	0.57
Guerrilla violence range	[0-8.39]	[0-8.39]	[0-8.39]
Guerrilla violence mean	1.23	1.23	1.23
Guerrilla violence std. dev.	1.36	1.36	1.36

Notes: All specifications are estimated using OLS and include municipality fixed effects and year × month fixed effects interacted with department fixed effects, latent right and left-wing municipality electoral preferences, municipality area, altitude, coca suitability, and distance from Bogotá. Baseline category is Pastrana's term from 1998-2002. Robust standard errors clustered by municipality are in parentheses.

Table A.4: Temporal and geographic variation in the intensity and extent of aerial eradication using additional covariates interacted with time, using binary measures of historical armed group violence (1988-2001).

Outcome:	Hectares (1)	Hectares (ln+1) (2)	Hectares (> 0) (3)
Panel A: Aerial eradication			
Paramilitary violence × 2002-2006	-24.157	-0.153	-0.026
	(9.733)	(0.050)	(0.009)
Paramilitary violence × 2006-2010	-24.124	-0.226	-0.040
	(10.898)	(0.086)	(0.015)
Guerrilla violence × 2002-2006	13.725	0.135	0.025
	(10.164)	(0.061)	(0.011)
Guerrilla violence × 2006-2010	16.384	0.232	0.045
	(7.756)	(0.080)	(0.014)
R^2	0.30	0.45	0.43
Panel B: Aerial eradication, controlling for baseline coca cultivation			
Paramilitary violence × 2002-2006	-17.145	-0.125	-0.022
	(11.111)	(0.049)	(0.009)
Paramilitary violence × 2006-2010	-30.413	-0.229	-0.040
	(13.086)	(0.086)	(0.015)
Guerrilla violence × 2002-2006	10.343	0.122	0.023
	(9.213)	(0.058)	(0.010)
Guerrilla violence × 2006-2010	19.416	0.233	0.045
	(8.487)	(0.080)	(0.014)
R^2	0.30	0.45	0.43
Observations	37,584	37,584	37,584
Municipalities	261	261	261
Outcome range	[0-17,101]	[0-9.75]	{0,1}
Outcome mean	27.17	0.25	0.05
Outcome std. dev.	253.83	1.19	0.21
Paramilitary violence range	{0,1}	{0,1}	{0,1}
Paramilitary violence mean	0.39	0.39	0.39
Paramilitary violence std. dev.	0.49	0.49	0.49
Guerrilla violence range	{0,1}	{0,1}	{0,1}
Guerrilla violence mean	0.44	0.44	0.44
Guerrilla violence std. dev.	0.50	0.50	0.50

Notes: All specifications are estimated using OLS and include municipality fixed effects and year × month fixed effects interacted with department fixed effects, latent right and left-wing municipality electoral preferences, municipality area, altitude, coca suitability, and distance from Bogotá. Baseline category is Pastrana's term from 1998-2002. Robust standard errors clustered by municipality are in parentheses.

A.6.2 Accounting for lagged coca cultivation

Table A.5: Temporal and geographic variation in the intensity and extent of aerial eradication controlling for lagged coca cultivation.

Outcome:	Hectares (1)	Hectares (ln+1) (2)	Hectares (> 0) (3)
Panel A: Aerial eradication, continuous violence measure			
Paramilitary violence × 2002-2006	-32.397	-0.137	-0.020
	(8.928)	(0.043)	(0.007)
Paramilitary violence × 2006-2010	-28.949	-0.197	-0.034
	(7.989)	(0.054)	(0.010)
Guerrilla violence × 2002-2006	8.448	0.066	0.011
	(4.438)	(0.020)	(0.003)
Guerrilla violence × 2006-2010	4.734	0.057	0.011
	(2.819)	(0.024)	(0.004)
R^2	0.14	0.23	0.22
Paramilitary violence range	[0-2.95]	[0-2.95]	[0-2.95]
Paramilitary violence mean	0.50	0.50	0.50
Paramilitary violence std. dev.	0.55	0.55	0.55
Guerrilla violence range	[0-8.39]	[0-8.39]	[0-8.39]
Guerrilla violence mean	1.15	1.15	1.15
Guerrilla violence std. dev.	1.36	1.36	1.36
Panel B: Aerial eradication, binary violence measure			
Paramilitary violence × 2002-2006	-43.105	-0.174	-0.025
	(14.630)	(0.052)	(0.008)
Paramilitary violence × 2006-2010	-37.845	-0.203	-0.033
	(11.173)	(0.071)	(0.012)
Guerrilla violence × 2002-2006	35.197	0.200	0.031
	(15.653)	(0.056)	(0.009)
Guerrilla violence × 2006-2010	30.189	0.207	0.036
	(10.888)	(0.076)	(0.013)
R^2	0.14	0.23	0.22
Paramilitary violence range	{0,1}	{0,1}	{0,1}
Paramilitary violence mean	0.35	0.35	0.35
Paramilitary violence std. dev.	0.48	0.48	0.48
Guerrilla violence range	{0,1}	{0,1}	{0,1}
Guerrilla violence mean	0.40	0.40	0.40
Guerrilla violence std. dev.	0.49	0.49	0.49
Observations	40,386	40,386	40,386
Municipalities	318	318	318
Outcome range	[0-17,101]	[0-9.75]	{0,1}
Outcome mean	32.68	0.30	0.06
Outcome std. dev.	272.57	1.30	0.23

Notes: All specifications are estimated using OLS and include municipality and year × month fixed effects, and control for coca cultivation in the previous year. Baseline category is Pastrana's term from 1998-2002. Robust standard errors clustered by municipality are in parentheses.

A.6.3 Accounting for proportion of detected coca eradicated

Table A.6: Temporal and geographic variation in the proportion of yearly hectares aerially eradicated.

Outcome: proportion of cultivated coca hectares aerially eradicated				
	Continuous violence measure		Binary violence measure	
	(1)	(2)	(3)	(4)
Paramilitary violence × 2003-2006	-0.066		-0.032	
	(0.026)		(0.031)	
Paramilitary violence × 2007-2010	-0.070		-0.044	
	(0.026)		(0.033)	
Guerrilla violence × 2003-2006	0.044		0.091	
	(0.015)		(0.031)	
Guerrilla violence × 2007-2010	0.027		0.072	
	(0.012)		(0.034)	
Paramilitary violence × 2002-2005		-0.053		-0.038
		(0.023)		(0.029)
Paramilitary violence × 2006-2009		-0.087		-0.057
		(0.032)		(0.038)
Guerrilla violence × 2002-2005		0.033		0.079
		(0.013)		(0.030)
Guerrilla violence × 2006-2009		0.042		0.097
		(0.015)		(0.038)
R^2	0.55	0.56	0.55	0.56
Observations	3,498	3,180	3,498	3,180
Municipalities	318	318	318	318
Outcome range	{0,1}	{0,1}	{0,1}	{0,1}
Outcome mean	0.19	0.19	0.19	0.19
Outcome std. dev.	0.37	0.37	0.37	0.37
Paramilitary violence range	[0-2.95]	[0-2.95]	{0,1}	{0,1}
Paramilitary violence mean	0.50	0.50	0.35	0.35
Paramilitary violence std. dev.	0.55	0.55	0.48	0.48
Guerrilla violence range	[0-8.39]	[0-8.39]	{0,1}	{0,1}
Guerrilla violence mean	1.15	1.15	0.40	0.40
Guerrilla violence std. dev.	1.36	1.36	0.49	0.49

Notes: All specifications are estimated using OLS and include municipality and year fixed effects. Baseline category is Pastrana's term from 1998-2002. Robust standard errors clustered by municipality are in parentheses.

A.6.4 Fergusson et al. (2021) extension with eradication as outcome

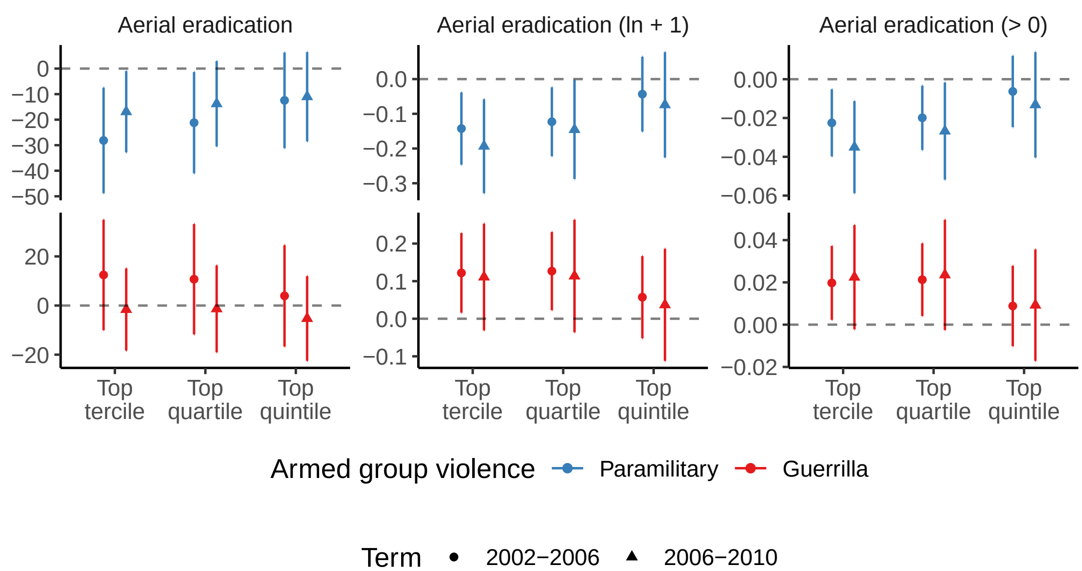
Table A.7: Regression discontinuity design: election of right-wing and left-wing mayors on eradication.

Outcome:	Avg. yearly aerial eradication hectares (1)	Avg. yearly aerial eradication hectares (ln +1) (2)	Avg. yearly aerial eradication hectares (> 0) (3)
Panel A: Right-wing mayor			
Mayor elected	2.952	0.188	0.049
	(18.430)	(0.406)	(0.087)
Observations	187, 172	187, 172	187, 172
Effective Observations	93, 86	102, 93	95, 88
Bandwidth	0.067, 0.067	0.076, 0.076	0.07, 0.07
Panel B: Left-wing mayor			
Mayor elected	414.558	-0.532	-0.175
	(577.374)	(1.062)	(0.141)
Observations	41, 44	41, 44	41, 44
Effective Observations	13, 21	12, 20	10, 20
Bandwidth	0.06, 0.06	0.055, 0.055	0.049, 0.049

Notes: Standard errors are in parentheses.

A.6.5 Using alternative cutoffs for binary measures of historical violence

Figure A.6: Sensitivity of the binary main results to different cutoffs for high historical paramilitary and guerrilla violence.



A.6.6 Log-transformed violence data

Table A.8: Temporal and geographic variation in the intensity and extent of aerial eradication using ln +1 measures of historical armed group violence.

Outcome:	Hectares (1)	Hectares (ln +1) (2)	Hectares (> 0) (3)
Panel A: Aerial eradication			
Paramilitary violence × 2002-2006	-43.377	-0.233	-0.035
	(13.969)	(0.086)	(0.014)
Paramilitary violence × 2006-2010	-33.269	-0.354	-0.066
	(13.498)	(0.112)	(0.020)
Guerrilla violence × 2002-2006	16.915	0.175	0.028
	(11.820)	(0.054)	(0.009)
Guerrilla violence × 2006-2010	0.030	0.152	0.032
	(8.079)	(0.070)	(0.013)
R^2	0.12	0.22	0.21
Panel B: Aerial eradication, controlling for baseline coca cultivation			
Paramilitary violence × 2002-2006	-33.357	-0.186	-0.029
	(14.027)	(0.083)	(0.014)
Paramilitary violence × 2006-2010	-37.474	-0.332	-0.062
	(15.104)	(0.110)	(0.020)
Guerrilla violence × 2002-2006	9.191	0.139	0.024
	(11.054)	(0.054)	(0.009)
Guerrilla violence × 2006-2010	3.271	0.136	0.030
	(7.679)	(0.071)	(0.013)
R^2	0.12	0.23	0.21
Observations	45,792	45,792	45,792
Municipalities	318	318	318
Outcome range	[0-17,101]	[0-9.75]	{0,1}
Outcome mean	30.11	0.29	0.05
Outcome std. dev.	258.83	1.27	0.22
Paramilitary violence range	[0-1.37]	[0-1.37]	[0-1.37]
Paramilitary violence mean	0.35	0.35	0.35
Paramilitary violence std. dev.	0.32	0.32	0.32
Guerrilla violence range	[0-2.24]	[0-2.24]	[0-2.24]
Guerrilla violence mean	0.62	0.62	0.62
Guerrilla violence std. dev.	0.51	0.51	0.51

Notes: All specifications are estimated using OLS and include municipality and year × month fixed effects. Violence measures are transformed by ln +1. Baseline category is Pastrana's term from 1998-2002. Robust standard errors clustered by municipality are in parentheses.

A.6.7 Squaring continuous violence measures

Table A.9: Temporal and geographic variation in the intensity and extent of aerial eradication using continuous measures of historical armed group violence and violence squared.

Outcome:	Hectares (1)	Hectares (ln+1) (2)	Hectares (> 0) (3)
Panel A: Aerial eradication			
Paramilitary violence × 2002-2006	-39.628	-0.227	-0.033
	(17.874)	(0.123)	(0.021)
Paramilitary violence^2 × 2002-2006	7.634	0.049	0.007
	(6.825)	(0.046)	(0.008)
Paramilitary violence × 2006-2010	-30.790	-0.351	-0.065
	(17.423)	(0.169)	(0.030)
Paramilitary violence^2 × 2006-2010	5.924	0.076	0.014
	(6.837)	(0.063)	(0.011)
Guerrilla violence × 2002-2006	10.238	0.115	0.019
	(8.610)	(0.041)	(0.007)
Guerrilla violence^2 × 2002-2006	-0.697	-0.010	-0.002
	(1.169)	(0.006)	(0.001)
Guerrilla violence × 2006-2010	0.759	0.131	0.028
	(6.609)	(0.058)	(0.010)
Guerrilla violence^2 × 2006-2010	-0.045	-0.015	-0.003
	(0.816)	(0.008)	(0.001)
R^2	0.12	0.22	0.21
Panel B: Aerial eradication, controlling for baseline coca cultivation			
Paramilitary violence × 2002-2006	-29.748	-0.181	-0.027
	(17.958)	(0.123)	(0.021)
Paramilitary violence^2 × 2002-2006	5.526	0.039	0.006
	(6.915)	(0.045)	(0.008)
Paramilitary violence × 2006-2010	-35.017	-0.332	-0.062
	(17.023)	(0.168)	(0.029)
Paramilitary violence^2 × 2006-2010	6.826	0.072	0.013
	(6.437)	(0.062)	(0.011)
Guerrilla violence × 2002-2006	3.423	0.083	0.015
	(7.644)	(0.041)	(0.007)
Guerrilla violence^2 × 2002-2006	0.125	-0.006	-0.001
	(1.066)	(0.006)	(0.001)
Guerrilla violence × 2006-2010	3.675	0.118	0.026
	(6.390)	(0.059)	(0.011)
Guerrilla violence^2 × 2006-2010	-0.397	-0.013	-0.003
	(0.854)	(0.008)	(0.001)
R^2	0.12	0.23	0.21
Observations	45,792	45,792	45,792
Municipalities	318	318	318
Outcome range	[0-17,101]	[0-9.75]	{0,1}
Outcome mean	30.11	0.29	0.05
Outcome std. dev.	258.83	1.27	0.22
Paramilitary violence range	[0-2.95]	[0-2.95]	[0-2.95]
Paramilitary violence mean	0.50	0.50	0.50
Paramilitary violence std. dev.	0.55	0.55	0.55
Guerrilla violence range	[0-8.39]	[0-8.39]	[0-8.39]
Guerrilla violence mean	1.15	1.15	1.15
Guerrilla violence std. dev.	1.36	1.36	1.36

Notes: All specifications are estimated using OLS and include municipality and year × month fixed effects. Baseline category is Pastrana's term from 1998-2002. Robust standard errors clustered by municipality are in parentheses.

A.6.8 Interacting violence measures

Table A.10: Temporal and geographic variation in the intensity and extent of aerial eradication using continuous measures of historical armed group violence interacted with each other.

Outcome:	Hectares (1)	Hectares (ln+1) (2)	Hectares (> 0) (3)
Panel A: Aerial eradication			
Paramilitary violence × 2002-2006	-23.064	-0.115	-0.016
	(10.456)	(0.062)	(0.010)
Paramilitary violence × 2006-2010	-19.332	-0.191	-0.034
	(9.403)	(0.083)	(0.014)
Guerrilla violence × 2002-2006	5.557	0.054	0.009
	(7.305)	(0.034)	(0.005)
Guerrilla violence × 2006-2010	-0.368	0.030	0.007
	(5.069)	(0.045)	(0.008)
Paramilitary violence × guerrilla violence × 2002-2006	0.165	0.003	0.000
	(4.798)	(0.025)	(0.004)
Paramilitary violence × guerrilla violence × 2006-2010	0.454	0.013	0.002
	(5.330)	(0.035)	(0.006)
R^2	0.12	0.22	0.21
Panel B: Aerial eradication, controlling for baseline coca cultivation			
Paramilitary violence × 2002-2006	-20.365	-0.102	-0.015
	(10.359)	(0.062)	(0.010)
Paramilitary violence × 2006-2010	-20.444	-0.184	-0.033
	(9.147)	(0.083)	(0.014)
Guerrilla violence × 2002-2006	2.754	0.041	0.008
	(7.044)	(0.033)	(0.005)
Guerrilla violence × 2006-2010	0.786	0.023	0.006
	(5.680)	(0.044)	(0.008)
Paramilitary violence × guerrilla violence × 2002-2006	1.056	0.007	0.000
	(4.924)	(0.024)	(0.004)
Paramilitary violence × guerrilla violence × 2006-2010	0.087	0.016	0.002
	(5.464)	(0.035)	(0.006)
R^2	0.12	0.23	0.21
Observations	45,792	45,792	45,792
Municipalities	318	318	318
Outcome range	[0-17,101]	[0-9.75]	{0,1}
Outcome mean	30.11	0.29	0.05
Outcome std. dev.	258.83	1.27	0.22
Paramilitary violence range	[0-2.95]	[0-2.95]	[0-2.95]
Paramilitary violence mean	0.50	0.50	0.50
Paramilitary violence std. dev.	0.55	0.55	0.55
Guerrilla violence range	[0-8.39]	[0-8.39]	[0-8.39]
Guerrilla violence mean	1.15	1.15	1.15
Guerrilla violence std. dev.	1.36	1.36	1.36

Notes: All specifications are estimated using OLS and include municipality and year × month fixed effects. Baseline category is Pastrana's term from 1998-2002. Robust standard errors clustered by municipality are in parentheses.

Table A.11: Temporal and geographic variation in the intensity and extent of aerial eradication using binary measures of historical armed group violence interacted with each other.

Outcome:	Hectares (1)	Hectares (ln+1) (2)	Hectares (> 0) (3)
Panel A: Aerial eradication			
Paramilitary violence × 2002-2006	-21.722	-0.096	-0.014
	(9.091)	(0.045)	(0.008)
Paramilitary violence × 2006-2010	-15.636	-0.169	-0.033
	(8.523)	(0.086)	(0.015)
Guerrilla violence × 2002-2006	10.341	0.146	0.026
	(17.549)	(0.077)	(0.013)
Guerrilla violence × 2006-2010	-2.648	0.097	0.019
	(13.074)	(0.109)	(0.019)
Paramilitary violence × guerrilla violence × 2002-2006	0.988	-0.051	-0.012
	(19.403)	(0.097)	(0.016)
Paramilitary violence × guerrilla violence × 2006-2010	3.484	0.044	0.011
	(16.451)	(0.142)	(0.025)
R^2	0.12	0.22	0.21
Panel B: Aerial eradication, controlling for baseline coca cultivation			
Paramilitary violence × 2002-2006	-19.627	-0.086	-0.012
	(8.846)	(0.044)	(0.008)
Paramilitary violence × 2006-2010	-16.534	-0.164	-0.032
	(8.486)	(0.085)	(0.015)
Guerrilla violence × 2002-2006	-3.485	0.085	0.019
	(14.689)	(0.072)	(0.012)
Guerrilla violence × 2006-2010	3.286	0.069	0.015
	(14.405)	(0.114)	(0.020)
Paramilitary violence × guerrilla violence × 2002-2006	11.962	-0.003	-0.006
	(17.935)	(0.095)	(0.016)
Paramilitary violence × guerrilla violence × 2006-2010	-1.226	0.066	0.015
	(18.671)	(0.146)	(0.026)
R^2	0.12	0.22	0.21
Observations	45,792	45,792	45,792
Municipalities	318	318	318
Outcome range	[0-17,101]	[0-9.75]	{0,1}
Outcome mean	30.11	0.29	0.05
Outcome std. dev.	258.83	1.27	0.22
Paramilitary violence range	{0,1}	{0,1}	{0,1}
Paramilitary violence mean	0.35	0.35	0.35
Paramilitary violence std. dev.	0.48	0.48	0.48
Guerrilla violence range	{0,1}	{0,1}	{0,1}
Guerrilla violence mean	0.40	0.40	0.40
Guerrilla violence std. dev.	0.49	0.49	0.49

Notes: All specifications are estimated using OLS and include municipality and year × month fixed effects. Baseline category is Pastrana's term from 1998-2002. Robust standard errors clustered by municipality are in parentheses.

A.6.9 Pre-baseline violence data (1988-1997)

Table A.12: Temporal and geographic variation in the intensity and extent of aerial eradication using pre-baseline violence data (1988-1997), using continuous measures of historical armed group violence.

Outcome:	Hectares (1)	Hectares (ln +1) (2)	Hectares (> 0) (3)
Panel A: Aerial eradication			
Paramilitary violence × 2002-2006	-13.389	-0.100	-0.016
	(5.472)	(0.045)	(0.008)
Paramilitary violence × 2006-2010	-9.315	-0.131	-0.025
	(5.364)	(0.050)	(0.009)
Guerrilla violence × 2002-2006	3.198	0.040	0.007
	(3.909)	(0.019)	(0.003)
Guerrilla violence × 2006-2010	-1.079	0.029	0.006
	(3.389)	(0.024)	(0.004)
R^2	0.12	0.22	0.21
Panel B: Aerial eradication, controlling for baseline coca cultivation			
Paramilitary violence × 2002-2006	-9.536	-0.082	-0.014
	(5.205)	(0.046)	(0.008)
Paramilitary violence × 2006-2010	-10.853	-0.122	-0.023
	(4.953)	(0.050)	(0.009)
Guerrilla violence × 2002-2006	1.659	0.033	0.006
	(3.768)	(0.019)	(0.003)
Guerrilla violence × 2006-2010	-0.464	0.025	0.006
	(2.970)	(0.023)	(0.004)
R^2	0.12	0.22	0.21
Observations	45,792	45,792	45,792
Municipalities	318	318	318
Outcome range	[0-17,101]	[0-9.75]	{0,1}
Outcome mean	30.11	0.29	0.05
Outcome std. dev.	258.83	1.27	0.22
Paramilitary violence range	[0-3.41]	[0-3.41]	[0-3.41]
Paramilitary violence mean	0.45	0.45	0.45
Paramilitary violence std. dev.	0.61	0.61	0.61
Guerrilla violence range	[0-7.60]	[0-7.60]	[0-7.60]
Guerrilla violence mean	1.06	1.06	1.06
Guerrilla violence std. dev.	1.39	1.39	1.39

Notes: All specifications are estimated using OLS and include municipality and year × month fixed effects. Violence measures from 1988-1997. Baseline category is Pastrana's term from 1998-2002. Robust standard errors clustered by municipality are in parentheses.

Table A.13: Temporal and geographic variation in the intensity and extent of aerial eradication using pre-baseline violence data (1988-1997), using binary measures of historical armed group violence.

Outcome:	Hectares (1)	Hectares (ln+1) (2)	Hectares (> 0) (3)
Panel A: Aerial eradication			
Paramilitary violence × 2002-2006	-22.646	-0.110	-0.017
	(10.248)	(0.053)	(0.009)
Paramilitary violence × 2006-2010	-17.451	-0.172	-0.031
	(8.161)	(0.067)	(0.012)
Guerrilla violence × 2002-2006	11.146	0.081	0.013
	(11.610)	(0.058)	(0.010)
Guerrilla violence × 2006-2010	2.345	0.106	0.022
	(8.857)	(0.073)	(0.013)
R^2	0.12	0.22	0.21
Panel B: Aerial eradication, controlling for baseline coca cultivation			
Paramilitary violence × 2002-2006	-14.986	-0.073	-0.012
	(8.152)	(0.046)	(0.008)
Paramilitary violence × 2006-2010	-21.044	-0.156	-0.029
	(9.365)	(0.065)	(0.012)
Guerrilla violence × 2002-2006	3.081	0.041	0.008
	(9.008)	(0.052)	(0.009)
Guerrilla violence × 2006-2010	6.128	0.090	0.019
	(8.415)	(0.073)	(0.013)
R^2	0.12	0.22	0.21
Observations	45,792	45,792	45,792
Municipalities	318	318	318
Outcome range	[0-17,101]	[0-9.75]	{0,1}
Outcome mean	30.11	0.29	0.05
Outcome std. dev.	258.83	1.27	0.22
Paramilitary violence range	{0,1}	{0,1}	{0,1}
Paramilitary violence mean	0.34	0.34	0.34
Paramilitary violence std. dev.	0.47	0.47	0.47
Guerrilla violence range	{0,1}	{0,1}	{0,1}
Guerrilla violence mean	0.39	0.39	0.39
Guerrilla violence std. dev.	0.49	0.49	0.49

Notes: All specifications are estimated using OLS and include municipality and year × month fixed effects. Violence measures from 1988-1997. Baseline category is Pastrana's term from 1998-2002. Robust standard errors clustered by municipality are in parentheses.

A.6.10 Cross-sectional results

Table A.14: Cross-sectional geographic variation in the intensity and extent of aerial eradication, 1998-2002.

	Hectares	Hectares (ln+1)	Hectares (> 0)
	(1)	(2)	(3)
Panel A: Aerial eradication, continuous violence measure			
Paramilitary violence	8.198	-0.017	-0.005
	(10.150)	(0.047)	(0.008)
Guerrilla violence	4.503	0.005	0.000
	(3.162)	(0.013)	(0.002)
R^2	0.04	0.16	0.18
Panel B: Aerial eradication, continuous violence measure (controlling for baseline coca cultivation)			
Paramilitary violence	10.327	-0.011	-0.004
	(7.164)	(0.043)	(0.008)
Guerrilla violence	0.978	-0.005	-0.001
	(1.585)	(0.012)	(0.002)
R^2	0.06	0.17	0.18
Panel C: Aerial eradication, binary violence measure			
Paramilitary violence	-4.265	-0.012	-0.001
	(7.947)	(0.050)	(0.009)
Guerrilla violence	12.651	0.007	-0.002
	(6.675)	(0.047)	(0.008)
R^2	0.04	0.16	0.18
Panel D: Aerial eradication, binary violence measure (controlling for baseline coca cultivation)			
Paramilitary violence	10.664	0.031	0.005
	(7.171)	(0.045)	(0.008)
Guerrilla violence	-3.841	-0.041	-0.009
	(4.613)	(0.045)	(0.008)
Observations	14,208	14,208	14,208
Municipalities	296	296	296
Outcome range	[0-9,650]	[0-9.17]	{0,1}
Outcome mean	18.39	0.16	0.03
Outcome std. dev.	222.22	0.95	0.16

Notes: All specifications are estimated using OLS and include department and year × month fixed effects as well as the municipality-level controls described in Equations 1.2 and 1.3. Continuous measure of paramilitary violence ranges from 0 to 2.95 with a mean of 0.53 and a std. dev. of 0.56. Continuous measure of guerrilla violence ranges from 0 to 8.39 with a mean of 1.21 and a std. dev. of 1.37. Binary measure of paramilitary attacks has a mean of 0.37 and a std. dev. of 0.48. Binary measure of guerrilla attacks has a mean of 0.43 and a std. dev. of 0.49. Robust standard errors clustered by municipality are in parentheses.

Table A.15: Cross-sectional geographic variation in the intensity and extent of aerial eradication, 2002-2010.

	Hectares (1)	Hectares (ln+1) (2)	Hectares (> 0) (3)
Panel A: Aerial eradication, continuous violence measure			
Paramilitary violence	-7.419	-0.142	-0.027
	(7.537)	(0.069)	(0.012)
Guerrilla violence	5.202	0.034	0.005
	(3.169)	(0.026)	(0.005)
R^2	0.04	0.11	0.11
Panel B: Aerial eradication, continuous violence measure (controlling for baseline coca cultivation)			
Paramilitary violence	-5.344	-0.133	-0.026
	(6.352)	(0.064)	(0.012)
Guerrilla violence	1.770	0.019	0.003
	(2.510)	(0.024)	(0.004)
R^2	0.06	0.12	0.12
Panel C: Aerial eradication, binary violence measure			
Paramilitary violence	-16.023	-0.132	-0.023
	(10.522)	(0.073)	(0.013)
Guerrilla violence	19.604	0.133	0.021
	(9.552)	(0.063)	(0.011)
R^2	0.04	0.11	0.11
Panel D: Aerial eradication, binary violence measure (controlling for baseline coca cultivation)			
Paramilitary violence	-1.907	-0.073	-0.014
	(9.319)	(0.068)	(0.012)
Guerrilla violence	4.008	0.068	0.012
	(8.069)	(0.060)	(0.011)
Observations	28,416	28,416	28,416
Municipalities	296	296	296
Outcome range	[0-9,650]	[0-9.17]	{0,1}
Outcome mean	18.39	0.16	0.03
Outcome std. dev.	222.22	0.95	0.16

Notes: All specifications are estimated using OLS and include department and year × month fixed effects as well as the municipality-level controls described in Equations 1.2 and 1.3. Continuous measure of paramilitary violence ranges from 0 to 2.95 with a mean of 0.53 and a std. dev. of 0.56. Continuous measure of guerrilla violence ranges from 0 to 8.39 with a mean of 1.21 and a std. dev. of 1.37. Binary measure of paramilitary attacks has a mean of 0.37 and a std. dev. of 0.48. Binary measure of guerrilla attacks has a mean of 0.43 and a std. dev. of 0.49. Robust standard errors clustered by municipality are in parentheses.

Appendix B: Supplementary Material for Chapter 2

B.1 Fieldwork implementation and ethics

Fieldwork for this project took place in Antioquia, Colombia, in July 2023 and July and August 2024. The researcher leveraged relationships with local academics and government officials, particularly those engaged with the PNIS (National Substitution Program), a major voluntary coca eradication initiative.

Field sites were selected in collaboration with local academics, focusing on municipalities with histories of coca cultivation and eradication, as well as variations in these patterns due to the historical presence of non-state armed groups. Safety for the researcher and interviewees was prioritized. The region was chosen for its research feasibility, given the researcher's familiarity with the local context. Open-ended interviews were conducted with coca growers, substitution program participants, former leaders of armed groups, and individuals who signed the peace agreement. The researcher also attended meetings of local collective organizations, such as agricultural cooperatives, political campaigns, and other community gatherings. To protect participants' identities, all identifying details of municipalities and individuals are anonymized. Given the close-knit nature of these communities, disclosing respondents' municipalities could risk compromising their anonymity.

To maintain safety for both the researcher and informants, direct questions about organized crime or non-state armed groups were avoided. Instead, the researcher followed participants' cues regarding their comfort level with such topics. When interviewees voluntarily addressed organized crime in their community, the researcher pursued follow-up questions without initiating these discussions.

Initial contact with interview participants in each municipality was facilitated through local researchers and government officials. Further interviews were arranged with local authorities, while non-elite interviewees were referred by initial contacts, local authorities, or through networks of local researchers with deep ties to the community.

Participants were not compensated for their interviews. In line with local customs, the researcher often contributed to a shared meal during the interview.

B.2 Variation in eradication timing

Figure B.1: Number of municipalities that experienced different patterns of aerial eradication around elections.

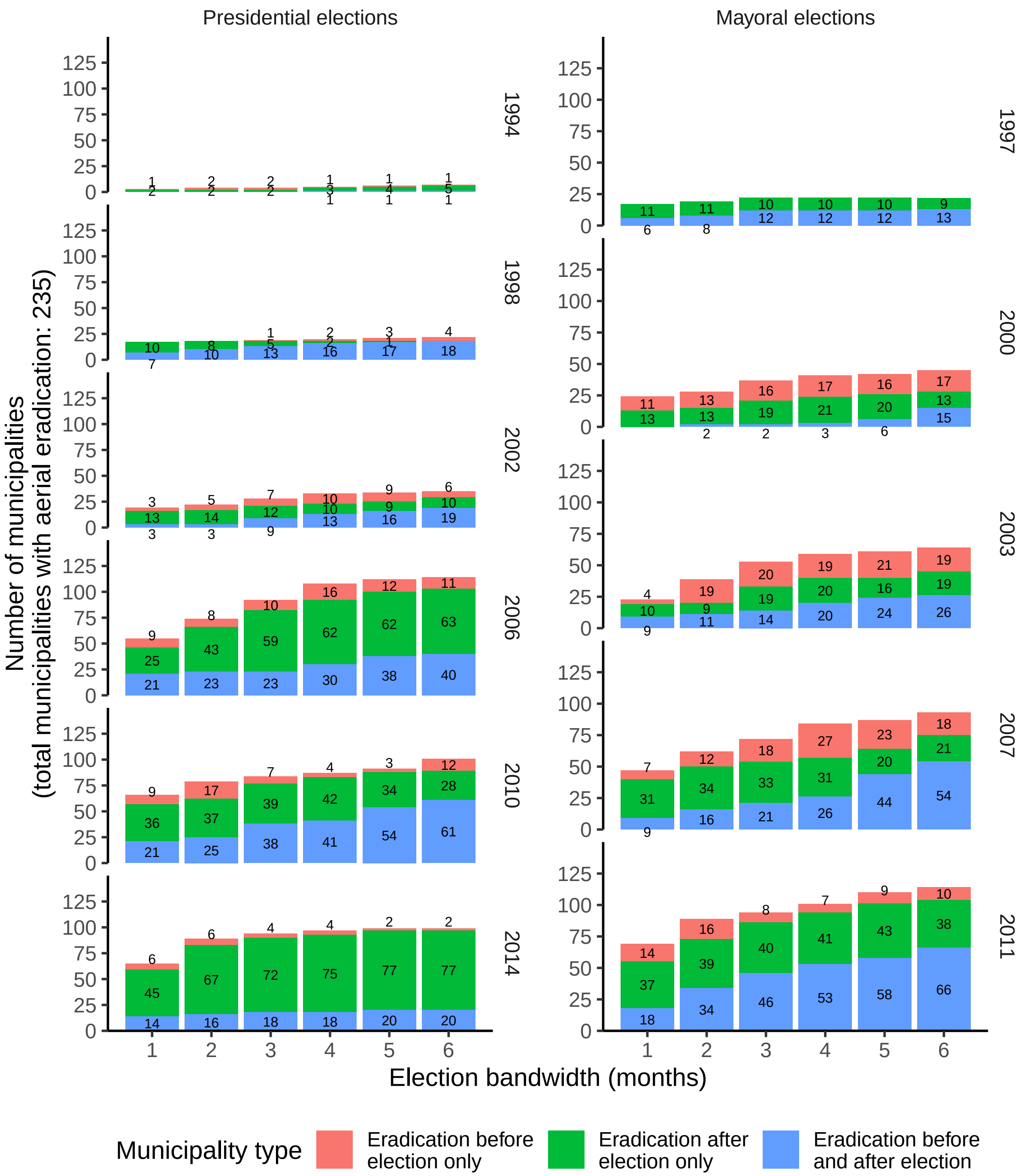
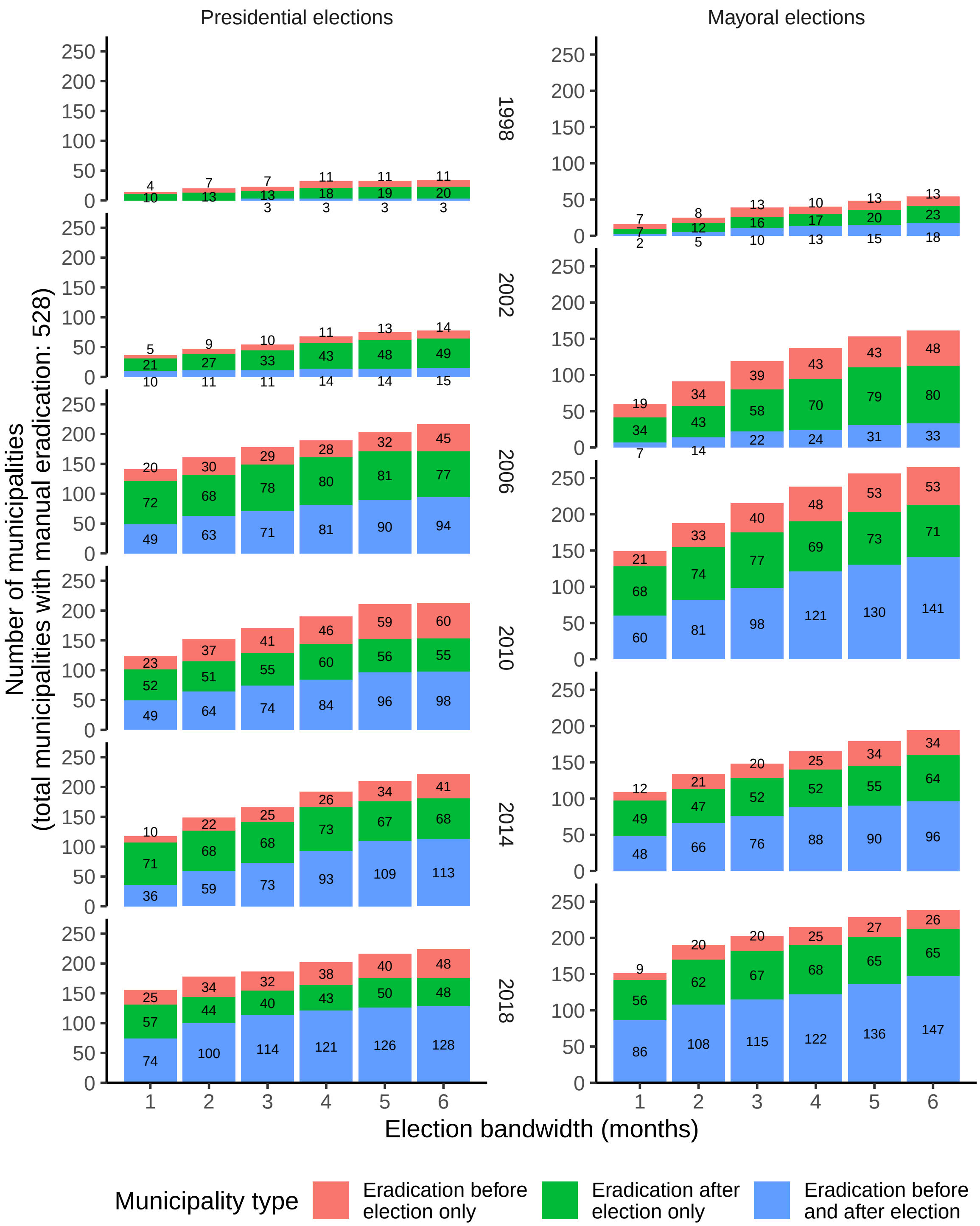


Figure B.2: Number of municipalities that experienced different patterns of manual eradication around elections.



B.3 Bandwidth balance tests

Table B.1: Relationship between aerial eradication and municipality characteristics.

Outcomes:	Coca suitability (1)	Distance: Local capital (2)	Distance: Bogotá (3)	Distance: market (4)	Average altitude (5)	Paramilitary violence (6)	Guerrilla violence (7)	Left-wing vote (1986) (8)	Right-wing vote (1986) (9)
Panel A: Pre-election aerial eradication, 1-month pre/post-election bandwidth									
Eradication (> 0)	-0.196	-4.327	53.791	37.620	-53.500	-0.124	-0.344	-0.763	-5.013
	(0.086)	(9.382)	(15.204)	(8.788)	(67.112)	(0.071)	(0.157)	(3.699)	(3.074)
R^2	0.04	0.07	0.16	0.14	0.08	0.04	0.08	0.11	0.06
Eradication (> 0) range	{0,1}	{0,1}	{0,1}	{0,1}	{0,1}	{0,1}	{0,1}	{0,1}	{0,1}
Eradication (> 0) mean	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27
Eradication (> 0) std. dev.	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45
Panel B: Pre-election aerial eradication × aerial eradication hectares eradicated before or after election, 1-month pre/post-election bandwidth									
Eradication (> 0)	-0.099	-14.448	45.581	31.300	0.138	-0.054	-0.194	-0.517	-3.192
	(0.098)	(10.308)	(16.422)	(10.821)	(87.695)	(0.095)	(0.183)	(3.410)	(3.696)
Hectares eradicated	0.000	-0.003	0.024	-0.002	-0.111	0.000	0.000	-0.001	-0.001
	(0.000)	(0.004)	(0.008)	(0.008)	(0.044)	(0.000)	(0.000)	(0.002)	(0.002)
Eradication (> 0) × hectares eradicated	0.000	0.031	0.037	0.020	-0.224	0.000	0.000	-0.001	-0.006
	(0.000)	(0.011)	(0.024)	(0.016)	(0.110)	(0.000)	(0.000)	(0.007)	(0.005)
R^2	0.05	0.07	0.19	0.14	0.11	0.05	0.08	0.12	0.06
Hectares eradicated range	[2-9,186]	[1-9,186]	[1-9,186]	[1-9,186]	[1-9,186]	[1-9,186]	[1-9,186]	[2-9,186]	[2-9,186]
Hectares eradicated mean	380.15	372.33	372.33	372.33	372.33	372.33	372.33	371.16	371.16
Hectares eradicated std. dev.	678.67	661.84	661.84	661.84	661.84	661.84	661.84	701.97	701.97
Panel C: Pre-election aerial eradication × aerial eradication hectares (ln + 1) eradicated before or after election, 1-month pre/post-election bandwidth									
Eradication (> 0)	0.315	-41.678	41.512	36.047	-51.979	-0.129	-0.124	1.381	-7.414
	(0.323)	(26.588)	(45.288)	(34.303)	(259.036)	(0.311)	(0.450)	(10.749)	(12.444)
Hectares eradicated (ln + 1)	-0.062	1.060	16.151	8.455	-69.954	-0.077	-0.017	-0.691	-2.001
	(0.044)	(3.328)	(4.977)	(3.816)	(27.168)	(0.030)	(0.058)	(0.998)	(1.500)
Eradication (> 0) × hectares eradicated (ln + 1)	-0.101	7.382	2.569	0.387	-0.930	0.000	-0.043	-0.415	0.496
	(0.060)	(4.914)	(8.636)	(6.445)	(45.656)	(0.052)	(0.085)	(2.104)	(2.252)
R^2	0.06	0.07	0.21	0.16	0.11	0.08	0.08	0.12	0.07
Hectares eradicated (ln + 1) range	[1.25-9.13]	[0.89-9.13]	[0.89-9.13]	[0.89-9.13]	[0.89-9.13]	[0.89-9.13]	[0.89-9.13]	[1.25-9.13]	[1.25-9.13]
Hectares eradicated (ln + 1) mean	5.05	5.02	5.02	5.02	5.02	5.02	5.02	4.98	4.98
Hectares eradicated (ln + 1) std. dev.	1.42	1.43	1.43	1.43	1.43	1.43	1.43	1.44	1.44
Panel D: Pre-election aerial eradication × aerial eradication % area eradicated before or after election									
Eradication (> 0)	-0.003	-10.645	41.602	36.608	-65.197	-0.040	-0.091	2.593	-4.666
	(0.098)	(10.995)	(16.491)	(11.353)	(86.176)	(0.095)	(0.185)	(4.282)	(3.868)
Pct. area eradicated	0.059	-8.321	22.178	-8.717	-49.278	-0.002	0.062	-9.674	2.978
	(0.109)	(5.972)	(11.731)	(10.385)	(50.651)	(0.068)	(0.153)	(4.132)	(3.024)
Eradication (> 0) × % area eradicated	-0.884	25.832	68.918	0.457	30.922	-0.399	-1.167	-19.953	-0.662
	(0.208)	(24.800)	(43.553)	(30.125)	(308.678)	(0.163)	(0.316)	(7.572)	(11.274)
R^2	0.06	0.07	0.19	0.14	0.09	0.05	0.09	0.16	0.06
Pct. area eradicated range	[0-4.57]	[0-4.57]	[0-4.57]	[0-4.57]	[0-4.57]	[0-4.57]	[0-4.57]	[0-3.47]	[0-3.47]
Pct. area eradicated mean	0.26	0.27	0.27	0.27	0.27	0.27	0.27	0.24	0.24
Pct. area eradicated std. dev.	0.48	0.50	0.50	0.50	0.50	0.50	0.50	0.44	0.44
Observations	409	455	455	455	455	455	455	347	347
Municipalities	139	155	155	155	155	155	155	122	122
Outcome range	[-1.55-2.79]	[0-376]	[137-593]	[27-519]	[1-2,897]	[0-2.51]	[0-8.39]	[0-87.54]	[0.55-98.26]
Outcome mean	0.32	121.54	370.55	188.92	419.49	0.44	1.19	18.87	27.96
Outcome std. dev.	0.75	72.64	104.18	77.87	580.88	0.48	1.22	24.06	24.27

Notes: All specifications are estimated using OLS and include election-year fixed effects. Robust standard errors clustered by municipality are in parentheses.

Table B.2: Relationship between manual eradication and municipality characteristics.

Outcomes:	Coca suitability (1)	Distance: Local capital (2)	Distance: Bogotá (3)	Distance: market (4)	Average altitude (5)	Paramilitary violence (6)	Guerrilla violence (7)	Left-wing vote (1986) (8)	Right-wing vote (1986) (9)
Panel A: Pre-election manual eradication, 1-month pre/post-election bandwidth									
Eradication (> 0)	-0.051	1.770	-4.197	-3.013	-118.903	-0.004	0.023	1.721	-2.520
	(0.083)	(4.976)	(12.449)	(10.127)	(61.170)	(0.045)	(0.097)	(2.079)	(2.652)
R^2	0.03	0.02	0.03	0.02	0.03	0.01	0.02	0.03	0.02
Eradication range	{0,1}	{0,1}	{0,1}	{0,1}	{0,1}	{0,1}	{0,1}	{0,1}	{0,1}
Eradication (> 0) mean	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.25	0.25
Eradication (> 0) std. dev.	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43
Panel B: Pre-election manual eradication × manual eradication hectares eradicated before or after election, 1-month pre/post-election bandwidth									
Eradication (> 0)	-0.039	1.790	-1.234	-0.455	-128.249	-0.011	0.040	1.178	-2.268
	(0.084)	(4.965)	(12.669)	(10.243)	(63.553)	(0.047)	(0.101)	(1.861)	(2.660)
Hectares eradicated	0.000	0.047	0.217	0.228	-1.054	0.000	0.001	0.017	-0.015
	(0.001)	(0.040)	(0.076)	(0.078)	(0.554)	(0.000)	(0.001)	(0.016)	(0.017)
Eradication (> 0) × hectares eradicated	-0.001	0.026	-0.067	-0.034	-0.005	0.000	0.000	0.041	-0.022
	(0.001)	(0.064)	(0.102)	(0.102)	(0.663)	(0.000)	(0.001)	(0.029)	(0.022)
R^2	0.03	0.02	0.03	0.03	0.03	0.02	0.02	0.04	0.03
Hectares eradicated range	[0.08-870]	[0.08-870]	[0.08-870]	[0.08-870]	[0.08-870]	[0.08-870]	[0.08-870]	[0.08-870]	[0.08-870]
Hectares eradicated mean	22.04	21.29	21.29	21.29	21.29	21.28	21.28	21.09	21.09
Hectares eradicated std. dev.	63.55	61.53	61.53	61.53	61.53	61.49	61.49	64.72	64.72
Panel C: Pre-election manual eradication × manual eradication hectares (ln + 1) eradicated before or after election, 1-month pre/post-election bandwidth									
Eradication (> 0)	0.085	5.256	-9.070	2.105	-9.062	0.011	-0.031	-3.026	1.613
	(0.136)	(8.044)	(20.780)	(13.555)	(109.912)	(0.076)	(0.178)	(2.754)	(4.392)
Hectares eradicated (ln + 1)	0.019	4.502	13.121	16.361	-95.413	-0.016	0.057	1.308	-0.853
	(0.033)	(2.037)	(5.408)	(4.323)	(27.208)	(0.021)	(0.064)	(0.850)	(1.068)
Eradication (> 0) × hectares eradicated (ln + 1)	-0.075	-0.826	6.447	1.445	-90.710	-0.013	0.047	3.191	-2.704
	(0.054)	(4.152)	(9.563)	(7.634)	(45.587)	(0.029)	(0.073)	(1.784)	(1.949)
R^2	0.03	0.03	0.04	0.05	0.06	0.02	0.02	0.05	0.03
Hectares eradicated (ln + 1) range	[0.08-6.77]	[0.08-6.77]	[0.08-6.77]	[0.08-6.77]	[0.08-6.77]	[0.08-6.77]	[0.08-6.77]	[0.08-6.77]	[0.08-6.77]
Hectares eradicated (ln + 1) mean	2.03	2.02	2.02	2.02	2.02	2.02	2.02	1.97	1.97
Hectares eradicated (ln + 1) std. dev.	1.26	1.24	1.24	1.24	1.24	1.24	1.24	1.25	1.25
Panel D: Pre-election manual eradication × manual eradication % area eradicated before or after election									
Eradication (> 0)	-0.045	2.878	-6.662	-1.406	-104.996	0.001	0.033	2.004	-2.751
	(0.085)	(5.218)	(13.423)	(10.883)	(64.409)	(0.047)	(0.102)	(2.132)	(2.741)
Pct. area eradicated	0.062	-15.009	25.120	13.252	389.373	-0.240	-0.383	-6.782	8.823
	(0.154)	(8.142)	(19.486)	(13.412)	(125.545)	(0.044)	(0.167)	(2.623)	(5.683)
Eradication (> 0) × pct. area eradicated	-0.255	-106.243	218.491	-78.478	-86.514	-0.891	-1.494	-36.865	37.510
	(1.263)	(64.273)	(342.514)	(134.671)	(1451.268)	(0.461)	(1.179)	(13.280)	(51.761)
R^2	0.03	0.02	0.03	0.02	0.04	0.02	0.02	0.03	0.03
Pct. area eradicated range	[0-3.64]	[0-3.64]	[0-3.64]	[0-3.64]	[0-3.64]	[0-3.64]	[0-3.64]	[0-3.64]	[0-3.64]
Pct. area eradicated mean	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Pct. area eradicated std. dev.	0.19	0.18	0.18	0.18	0.18	0.18	0.18	0.16	0.16
Observations	813	879	879	879	879	880	880	743	743
Municipalities	311	336	336	336	336	337	337	287	287
Outcome range	[-1.57-3.01]	[0-493.08]	[62.79-997.99]	[0-926.47]	[1-3087]	[0-2.99]	[0-8.39]	[0-94.73]	[0.2-98.26]
Outcome mean	0.38	100.46	362.97	157.69	814.87	0.54	1.17	11.68	37.40
Outcome std. dev.	0.91	62.26	151.52	107.88	747.86	0.56	1.31	19.02	27.78

Notes: All specifications are estimated using OLS and include election-year fixed effects. Robust standard errors clustered by municipality are in parentheses.

B.4 Two-way fixed effects limits effective sample in bandwidth estimation

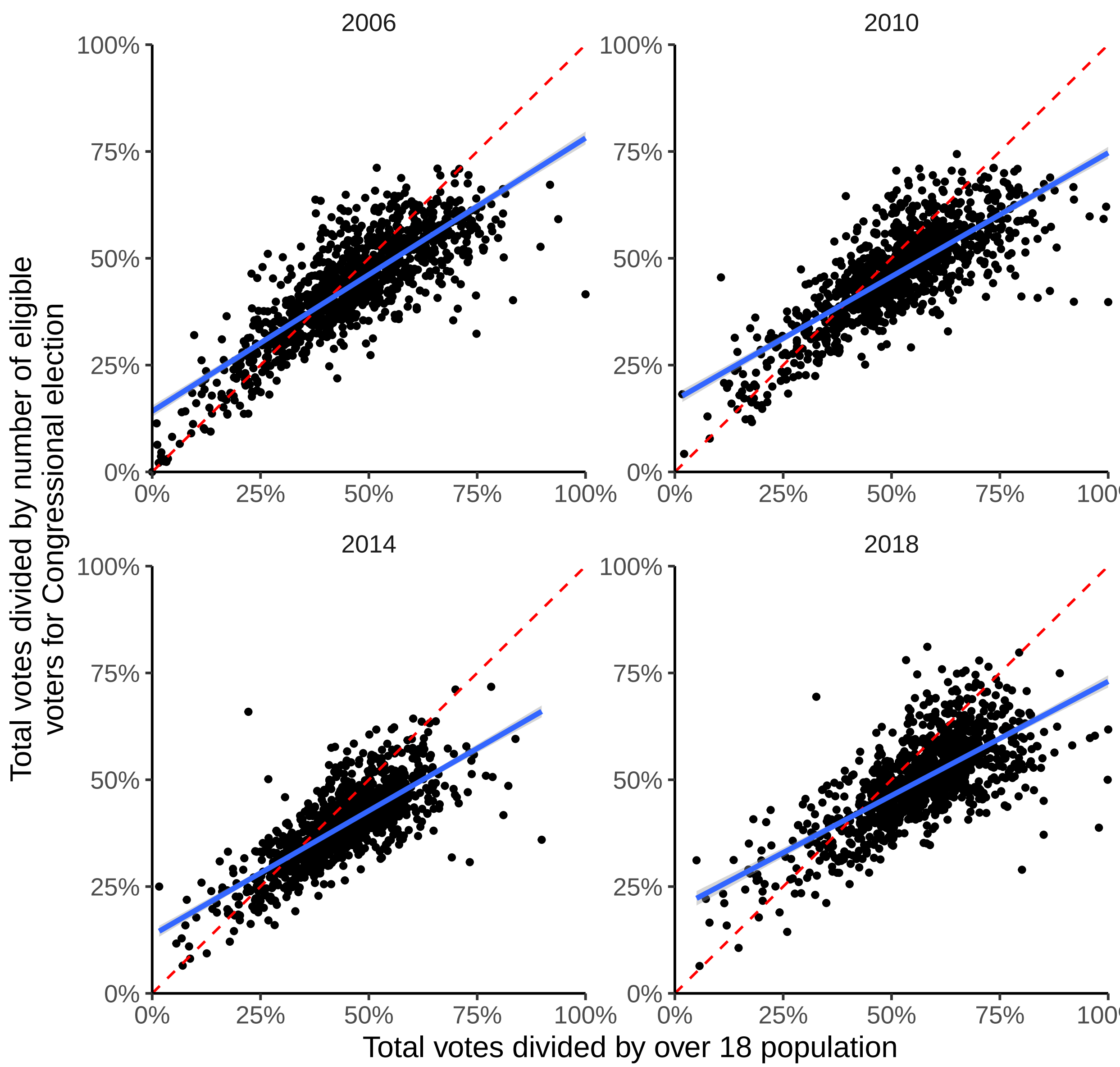
Table B.3: Effective observations for different bandwidths when using muncipality and election date fixed effects.

Eradication type	Bandwidth (months)	Number of effective observations			
		Presidential elections			*Mayoral elections*
		All (1994-2018)	Uribe (2002, 2006)	Santos (2010, 2014)	All (1997-2015)
Aerial eradication	1	16	0	9	18
	2	21	0	9	27
	3	13	2	4	36
	4	17	4	4	37
	5	17	5	1	39
	6	18	4	1	43
Manual eradication	1	32	3	5	23
	2	52	2	11	34
	3	56	2	7	41
	4	67	1	14	47
	5	80	3	13	55
	6	91	5	14	57

Notes: All presidential elections refers to 1994, 1998, 2002, 2006, 2010, and 2014 for aerial eradication but 1998, 2002, 2006, 2010, 2014, and 2018 for manual eradication. All mayoral elections refers to 1997, 2000, 2003, 2007, and 2011 for aerial eradication and 2000, 2003, 2007, 2011, and 2015 for manual eradication.

B.5 Validating turnout proxy

Figure B.3: Turnout proxy. Red dashed line indicates $y = x$, blue line is OLS line.



B.6 Manual eradication results, bandwidth

Table B.4: Relationship between pre-election manual eradication and presidential voting behavior.

Outcomes:	Turnout	Accountability		Uribe (2002, 2006)		Santos (2010, 2014)	
		Vote share	Turnout share	Vote share	Turnout share	Vote share	Turnout share
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: Manual eradication (hectares), 1-month pre/post-election bandwidth							
Eradication	-0.018	-0.022	-0.004	-0.103	-0.029	-0.053	-0.061
	(0.009)	(0.012)	(0.006)	(0.064)	(0.048)	(0.090)	(0.046)
R^2	0.43	0.22	0.37	0.40	0.49	0.21	0.33
Eradication range	[0-870]	[0-870]	[0-870]	[0-97]	[0-97]	[0-111.53]	[0-111.53]
Eradication mean	5.55	6.36	6.36	2.40	2.40	1.99	1.99
Eradication std. dev.	51.75	57.73	57.73	11.21	11.21	10.16	10.16
Panel B: Manual eradication (ln + 1), 1-month pre/post-election bandwidth							
Eradication	-1.054	-0.158	-0.086	-1.350	-0.547	0.920	0.075
	(0.609)	(1.204)	(0.682)	(1.810)	(1.161)	(2.054)	(1.252)
R^2	0.43	0.21	0.37	0.40	0.49	0.21	0.33
Eradication range	[0-6.77]	[0-6.77]	[0-6.77]	[0-4.58]	[0-4.58]	[0-4.72]	[0-4.72]
Eradication mean	0.43	0.43	0.43	0.39	0.39	0.38	0.38
Eradication std. dev.	0.96	0.98	0.98	0.86	0.86	0.82	0.82
Panel C: Manual eradication (% area), 1-month pre/post-election bandwidth							
Eradication	-62.632	1.657	26.307	-63.383	30.343	230.693	105.684
	(54.174)	(91.444)	(59.631)	(108.178)	(65.475)	(354.230)	(223.053)
R^2	0.43	0.21	0.37	0.40	0.49	0.21	0.33
Eradication range	[0-0.1]	[0-0.08]	[0-0.08]	[0-0.08]	[0-0.08]	[0-0.06]	[0-0.06]
Eradication mean	0	0	0	0	0	0	0
Eradication std. dev.	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Panel D: Manual eradication (> 0), 1-month pre/post-election bandwidth							
Eradication	-1.102	1.510	0.449	0.178	-0.867	2.999	0.973
	(1.463)	(3.166)	(1.761)	(4.597)	(2.457)	(4.251)	(2.615)
R^2	0.43	0.21	0.37	0.40	0.49	0.21	0.33
Eradication range	{0,1}	{0,1}	{0,1}	{0,1}	{0,1}	{0,1}	{0,1}
Eradication mean	0.24	0.23	0.23	0.23	0.23	0.23	0.23
Eradication std. dev.	0.43	0.42	0.42	0.42	0.42	0.42	0.42
Observations	300	240	240	96	96	132	132
Municipalities	220	189	189	93	93	119	119
Outcome range	[1.87-79.33]	[4.07-88.39]	[0.8-62.41]	[6.62-88.39]	[1.53-59.68]	[10.49-86.93]	[3.45-62.41]
Outcome mean	41.48	48.11	20.05	51.79	21.47	46.37	19.83
Outcome std. dev.	13.82	21.41	13.28	22.98	14.39	19.67	12.36

Notes: All specifications are estimated using OLS and include election-year fixed effects. Robust standard errors clustered by municipality are in parentheses.

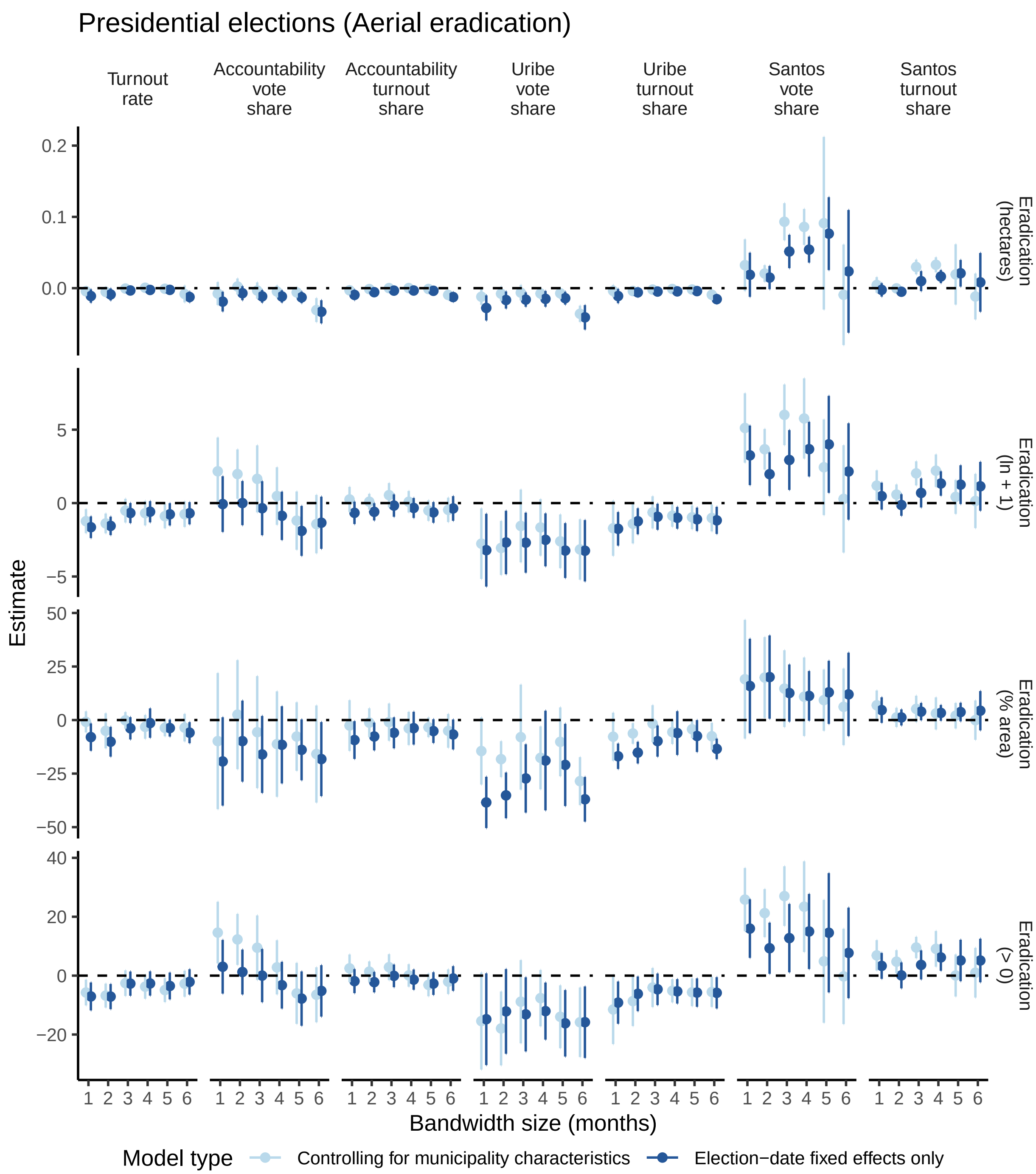
Table B.5: Relationship between pre-election manual eradication and local voting behavior.

Outcomes:	Turnout	Right-wing candidates		Left-wing candidates	
		Vote share	Turnout share	Vote share	Turnout share
	(1)	(2)	(3)	(4)	(5)
Panel A: Manual eradication (hectares), 1-month bandwidth					
Eradication	-0.290	-0.025	0.252	-0.076	-0.110
	(0.082)	(0.120)	(0.189)	(0.025)	(0.039)
R^2	0.26	0.31	0.28	0.17	0.17
Eradication range	[0-67.24]	[0-67.24]	[0-67.24]	[0-67.24]	[0-67.24]
Eradication mean	2.17	2.17	2.17	2.17	2.17
Eradication std. dev.	7.82	7.82	7.82	7.82	7.82
Panel B: Manual eradication (ln + 1), 1-month bandwidth					
Eradication	-1.983	-0.394	1.374	-0.440	-0.662
	(0.945)	(1.235)	(1.925)	(0.275)	(0.468)
R^2	0.26	0.31	0.27	0.17	0.17
Eradication range	[0-4.22]	[0-4.22]	[0-4.22]	[0-4.22]	[0-4.22]
Eradication mean	0.41	0.41	0.41	0.41	0.41
Eradication std. dev.	0.88	0.88	0.88	0.88	0.88
Panel C: Manual eradication (% area), 1-month bandwidth					
Eradication	-59.016	27.336	154.147	-16.897	-29.686
	(35.764)	(41.960)	(49.799)	(7.556)	(12.374)
R^2	0.25	0.31	0.28	0.17	0.17
Eradication range	[0-0.21]	[0-0.21]	[0-0.21]	[0-0.21]	[0-0.21]
Eradication mean	0	0	0	0	0
Eradication std. dev.	0.02	0.02	0.02	0.02	0.02
Panel D: Manual eradication (> 0), 1-month bandwidth					
Eradication	0.038	-0.407	0.214	0.414	0.205
	(2.107)	(2.708)	(3.887)	(1.043)	(1.424)
R^2	0.24	0.31	0.27	0.17	0.17
Eradication range	{0,1}	{0,1}	{0,1}	{0,1}	{0,1}
Eradication mean	0.24	0.24	0.24	0.24	0.24
Eradication std. dev.	0.43	0.43	0.43	0.43	0.43
Observations	231	231	231	231	231
Municipalities	174	174	174	174	174
Outcome range	[21.64-100]	[0-105.97]	[0-99.02]	[0-41.92]	[0-58.6]
Outcome mean	64.13	30.33	44.99	2.43	3.84
Outcome std. dev.	15.93	23.63	29.69	6.96	10.33

Notes: All specifications are estimated using OLS and include election-year fixed effects. Robust standard errors clustered by municipality are in parentheses.

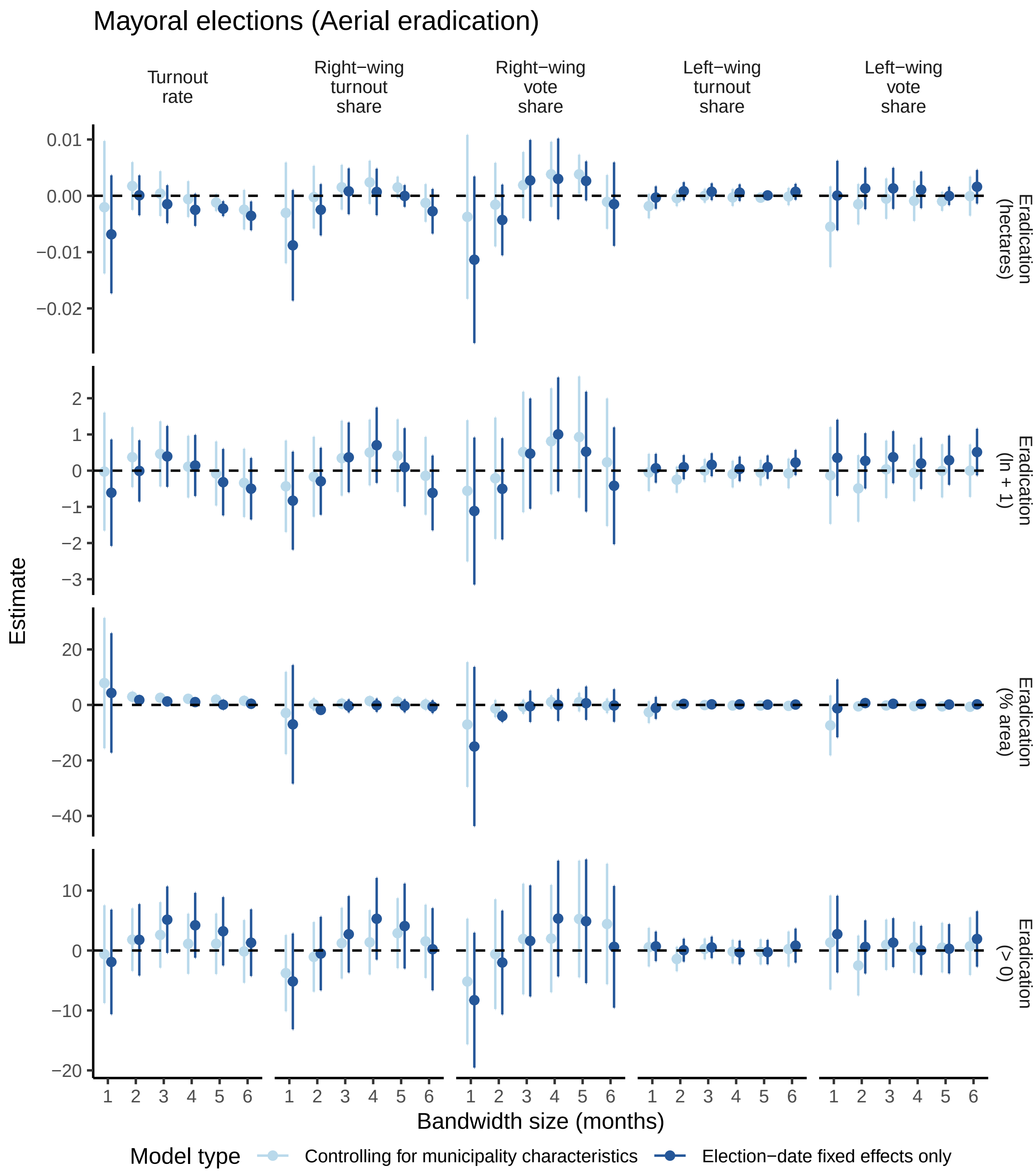
B.7 Sensitivity of bandwidth results to varying specifications

Figure B.4: Sensitivity of aerial eradication bandwidth results to varying specifications, presidential elections.



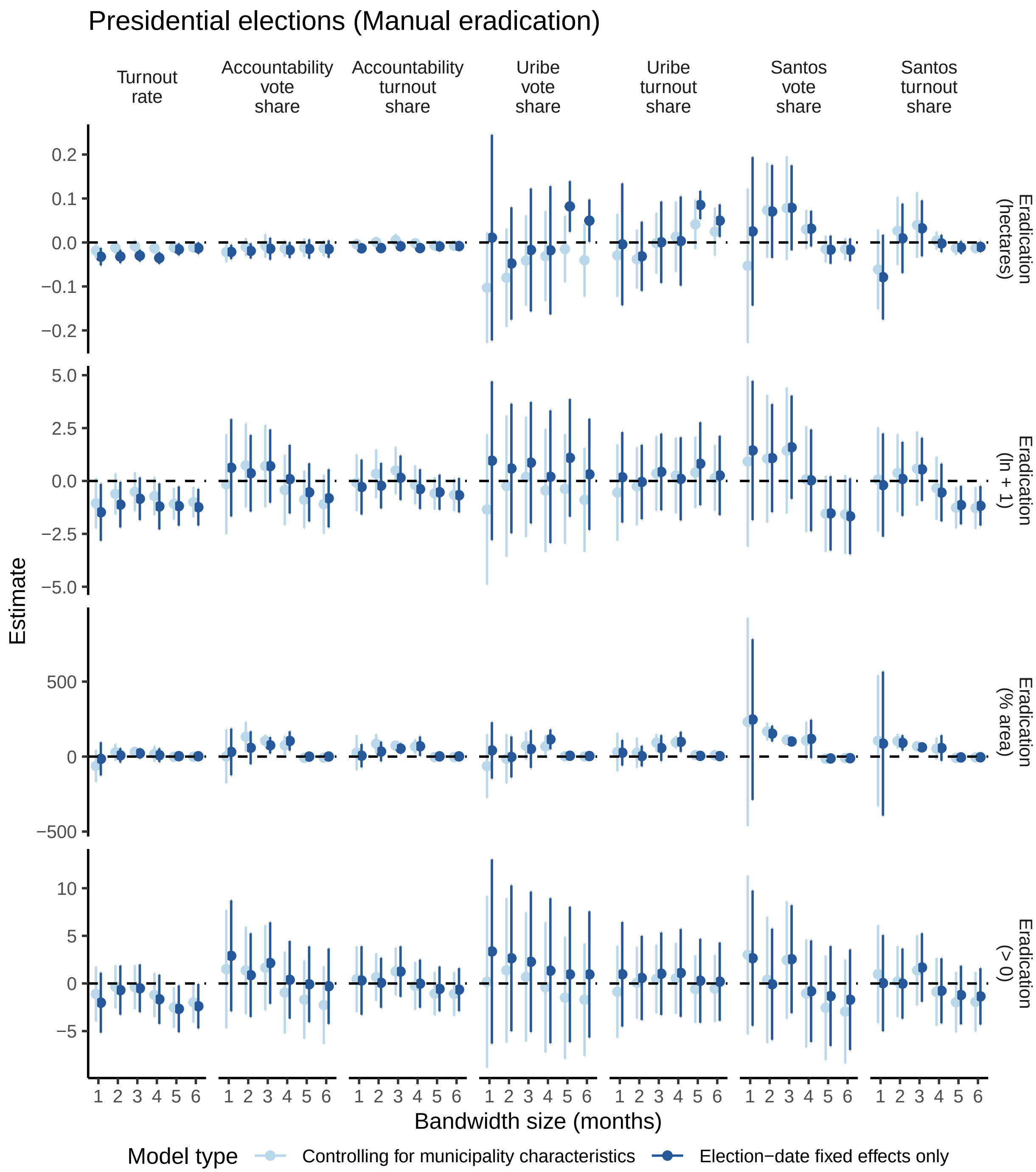
Notes: All specifications are estimated using OLS. Robust standard errors clustered by municipality to construct 95% confidence intervals.

Figure B.5: Sensitivity of aerial eradication bandwidth results to varying specifications, presidential elections.



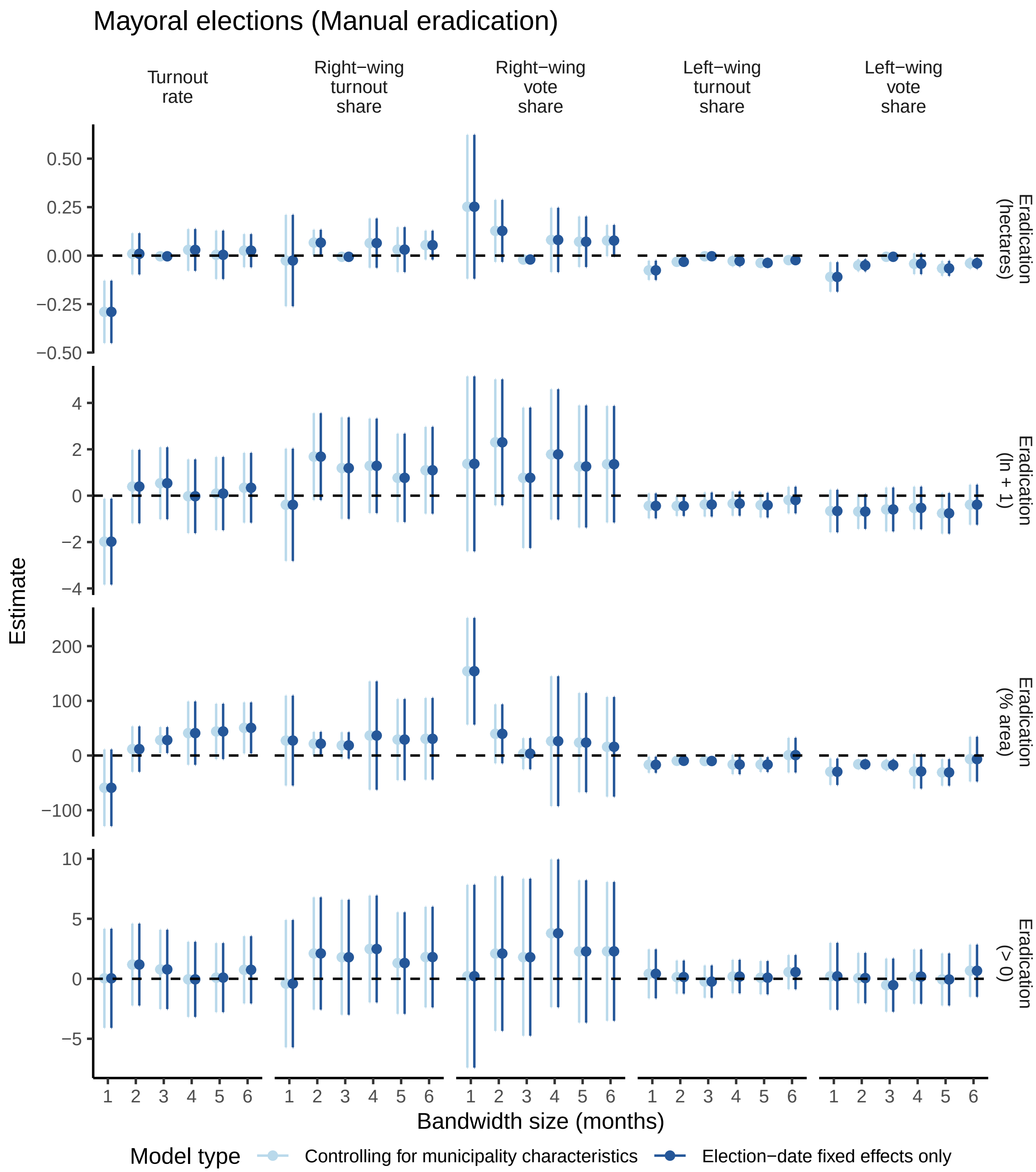
Notes: All specifications are estimated using OLS. Robust standard errors clustered by municipality to construct 95% confidence intervals.

Figure B.6: Sensitivity of manual eradication bandwidth results to varying specifications, presidential elections.



Notes: All specifications are estimated using OLS. Robust standard errors clustered by municipality to construct 95% confidence intervals.

Figure B.7: Sensitivity of manual eradication bandwidth results to varying specifications, presidential elections.



Notes: All specifications are estimated using OLS. Robust standard errors clustered by municipality to construct 95% confidence intervals.

B.8 Presidential classifications

Table B.6: Presidential candidate classifications and vote shares. Winners listed in bold.

Election Year	Candidate Name	Vote Share		Left
		1st Round	2nd Round	
1986	**Virgilio Barco Vargas**	58.36%		0
	Álvaro Gómez Hurtado	35.84%		0
	Jaime Pardo Leal	4.55%		1
	Regina Betancur	4.65%		0
	Juan David Pérez Gaviria	<0.00%		
1990	**César Gaviria***	48.18%		0
	Álvaro Gómez Hurtado	23.89%		1
	Antonio Navarro Wolff	12.57%		1
	Rodrigo Lloreda	12.25%		0
	Regina Betancur	0.63%		0
	Claudia Rodríguez	0.56%		0
	Oscar Loaiza	0.16%		
	José Agustín Linares	0.15%		
	Luis Carlos Valencia	0.14%		1
	Guillermo Alemán	0.12%		
	Jesús García	0.04%		
	Jairo Rodríguez	0.02%		
1994	**Ernesto Samper**	45.30%	50.57%	0
	Andrés Pastrana	44.97%	48.45%	0
	Antonio Navarro Wolff	3.79%		1
	Regina Betancur	1.11%		0
	Miguel Maza	0.95%		
	Alberto Mendoza	0.60%		
	Enrique Parejo González	0.50%		
	Guillermo Alemán	0.40%		
	Gloria Gaitán	0.30%		
	José Antonio Cortes	0.20%		
	Jose Galat	0.16%		
	Miguel Zamora	0.16%		
	Doris de Castro	0.10%		
	Luis Rodríguez Orjuela	0.10%		
	Oscar Rojas Masso	0.08%		
	José Guillermo Barnosa	0.07%		
	Mario Diazgranados	0.06%		

Table B.6, continued from previous page.

Election Year	Candidate Name	Vote Share		Left
		1st Round	2nd Round	
	Efraín Torres	0.05%		
1998	Horacio Serpa	34.79%	46.58%	0
	Andrés Pastrana	34.37%	50.34%	0
	Noemí Sanín	26.78%		0
	Harold Bedoya	1.80%		0
	Beatriz Cuellar	0.29%		0
	Germán Rojas	0.15%		1
	Jorge Hernán Betancur	0.13%		1
	Jesús Antonio Lozano	0.11%		1
	Jorge Pulecio	0.11%		1
	Guillermo Alemán	0.09%		1
	Efraín Díaz	0.09%		0
	Guillermo Nannetti	0.08%		1
	Francisco Córdoba	0.06%		0
2002	**Álvaro Uribe**	53.05%		0
	Horacio Serpa	31.80%		0
	Luis Eduardo Garzón	6.16%		0
	Noemí Sanín	5.81%		0
	Ingrid Betancourt	0.49%		0
	Harold Bedoya	0.46%		0
	Francisco Antonio Tovar	0.15%		0
	Augusto Guillermo Lora	0.10%		1
	Álvaro Cristancho	0.09%		0
	Guilleromo Antonio Cardona	0.07%		0
	Rodolfo Rincón	0.06%		0
2006	**Álvaro Uribe**	62.35%		0
	Carlos Gaviria	22.03%		1
	Horacio Serpa	11.84%		0
	Antanas Mockus	1.24%		1
	Enrique Parejo	0.36%		
	Álvaro Leyva	0.15%		
	Carlos Arturo Rincón	0.13%		
2010	**Juan Manuel Santos**	46.68%	69.13%	0
	Antanas Mockus	21.51%	27.47%	1
	Germán Vargas Lleras	10.11%		0
	Gustavo Petro	9.14%		1
	Noemí Sanín	6.13%		0
	Rafael Pardo	4.38%		0
	Róbinson Devia	0.22%		

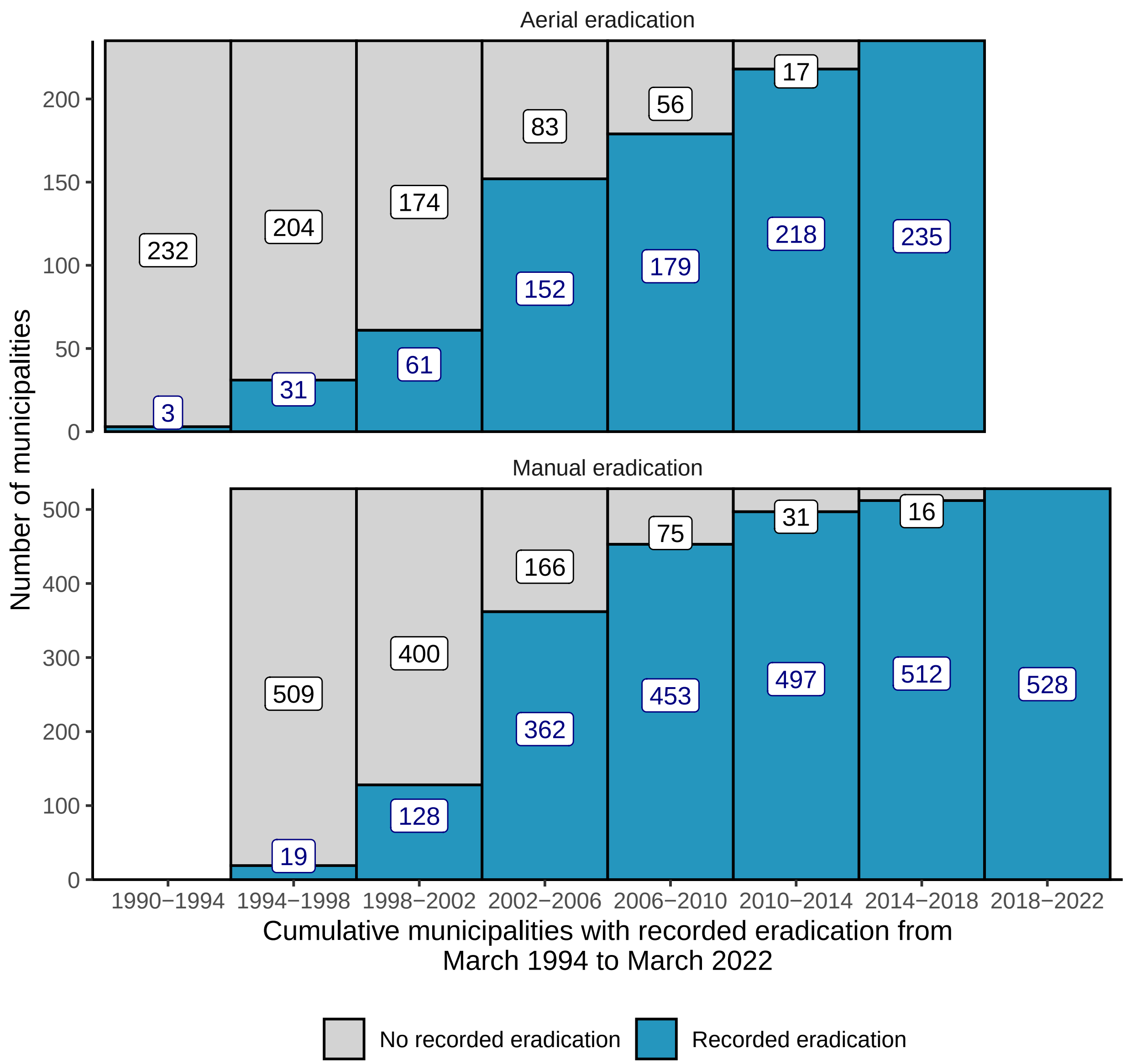
Table B.6, continued from previous page.

Election Year	Candidate Name	Vote Share		Left
		1st Round	2nd Round	
	Jairo Calderón	0.20%		
	Jaime Araújo	0.10%		1
2014	**Juan Manuel Santos**	29.28%	50.99%	0
	Óscar Zuluaga	25.72%	44.99%	0
	Martha Lucía Ramírez	15.52%		0
	Clara López Obregón	15.22%		1
	Enrique Peñalosa	8.27%		0
2018	**Iván Duque**	39.36%	54.03%	0
	Gustavo Petro	25.08%	41.77%	1
	Sergio Fajardo	23.78%		1
	Germán Vargas Lleras	7.30%		0
	Humberto De La Calle	2.05%		1
	Jorge Trujillo	0.34%		0
	Viviane Morales	0.19%		0

Notes: Colombia implemented a two-round presidential system in its 1991 Constitution, so César Gaviria was elected president with a plurality of votes in 1990.

B.9 Visualizing variation in eradication

Figure B.8: Cumulative number of municipalities that experienced eradication from March 1994 to March 2022.



B.10 Manual eradication results, staggered implementation

Table B.7: Relationship between manual eradication and presidential election voting behavior.

Outcomes:	Turnout	Left-wing candidates		Uribe (2002, 2006)		Santos (2010, 2014)	
		Vote share	Turnout share	Vote share	Turnout share	Vote share	Turnout share
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: Manual eradication (hectares)							
Eradication	0.015	0.045	0.014	-0.228	-0.132	-0.227	-0.107
	(0.009)	(0.020)	(0.009)	(0.074)	(0.042)	(0.054)	(0.021)
R^2	0.81	0.77	0.79	0.85	0.89	0.43	0.58
Eradication range	[0-644]	[0-644]	[0-644]	[0-160]	[0-160]	[0-644]	[0-644]
Eradication mean	3.79	3.80	3.79	1.34	1.33	7.72	7.72
Eradication std. dev.	24.09	24.12	24.09	7.19	7.17	37.03	37.03
Panel B: Manual eradication (ln + 1)							
Eradication	1.004	1.761	0.399	-3.619	-2.082	-3.293	-1.679
	(0.279)	(0.329)	(0.152)	(0.912)	(0.461)	(1.909)	(0.869)
R^2	0.81	0.77	0.79	0.85	0.89	0.41	0.57
Eradication range	[0-6.47]	[0-6.47]	[0-6.47]	[0-5.08]	[0-5.08]	[0-6.47]	[0-6.47]
Eradication mean	0.47	0.47	0.47	0.30	0.30	0.77	0.77
Eradication std. dev.	0.96	0.96	0.96	0.69	0.68	1.22	1.22
Panel C: Manual eradication (% area)							
Eradication	23.799	47.211	21.879	-146.350	-71.329	-158.463	-62.939
	(6.597)	(10.100)	(4.716)	(39.692)	(23.392)	(43.592)	(21.141)
R^2	0.81	0.77	0.79	0.85	0.89	0.43	0.58
Eradication range	[0-0.7]	[0-0.7]	[0-0.7]	[0-0.25]	[0-0.25]	[0-0.7]	[0-0.7]
Eradication mean	0.00	0.00	0.00	0.00	0.00	0.01	0.01
Eradication std. dev.	0.02	0.02	0.02	0.01	0.01	0.04	0.04
Panel D: Manual eradication (> 0)							
Eradication	1.326	1.158	0.310	0.333	0.642	3.612	1.688
	(0.393)	(0.469)	(0.216)	(1.367)	(0.713)	(2.705)	(1.465)
R^2	0.81	0.77	0.79	0.84	0.88	0.41	0.57
Eradication range	{0,1}	{0,1}	{0,1}	{0,1}	{0,1}	{0,1}	{0,1}
Eradication mean	0.48	0.48	0.48	0.45	0.45	0.64	0.64
Eradication std. dev.	0.50	0.50	0.50	0.50	0.50	0.48	0.48
Observations	3,136	3,127	3,136	1,040	1,047	1,055	1,055
Municipalities	528	528	528	525	525	528	528
Outcome range	[0-100]	[0-91.78]	[0-56.46]	[3.4-92.74]	[0-63.33]	[3.13-91.99]	[1.25-69.07]
Outcome mean	42.60	17.42	7.48	49.87	20.16	44.14	19.49
Outcome std. dev.	15.41	18.86	8.69	22.09	13.89	21.80	12.96

Notes: All specifications are estimated using OLS and include municipality and election-year fixed effects. Robust standard errors clustered by municipality are in parentheses.

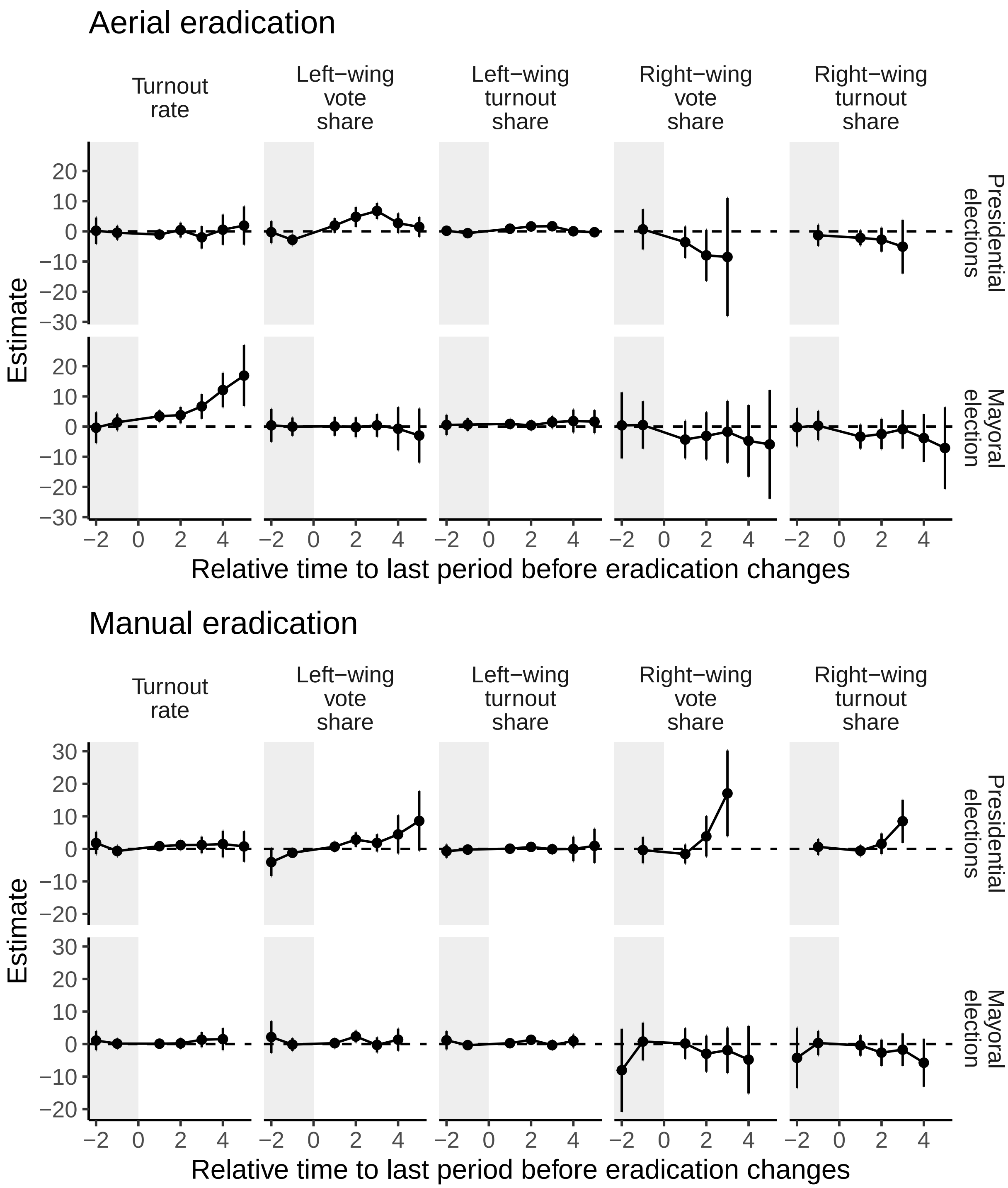
Table B.8: Relationship between manual eradication and local voting behavior.

Outcomes:	Turnout	Right-wing candidates		Left-wing candidates	
		Vote share	Turnout share	Vote share	Turnout share
	(1)	(2)	(3)	(4)	(5)
Panel A: Manual eradication (hectares)					
Eradication	0.009	-0.019	-0.037	0.002	0.003
	(0.007)	(0.005)	(0.006)	(0.002)	(0.003)
R^2	0.85	0.63	0.55	0.45	0.46
Eradication range	[0-1,277]	[0-1,277]	[0-1,277]	[0-1,277]	[0-1,277]
Eradication mean	3.95	3.95	3.95	3.95	3.95
Eradication std. dev.	36.24	36.24	36.24	36.24	36.24
Panel B: Manual eradication (ln + 1)					
radication	0.939	-0.232	-0.672	0.423	0.519
	(0.278)	(0.544)	(0.801)	(0.214)	(0.328)
R^2	0.85	0.63	0.55	0.46	0.47
Eradication range	[0-7.15]	[0-7.15]	[0-7.15]	[0-7.15]	[0-7.15]
Eradication mean	0.42	0.42	0.42	0.42	0.42
Eradication std. dev.	0.93	0.93	0.93	0.93	0.93
Panel C: Manual eradication (% area)					
Eradication	11.493	-12.510	-26.282	6.038	8.072
	(2.213)	(10.312)	(13.419)	(2.573)	(3.770)
R^2	0.85	0.63	0.55	0.45	0.47
Eradication range	[0-1.3]	[0-1.3]	[0-1.3]	[0-1.3]	[0-1.3]
Eradication mean	0	0	0	0	0
Eradication std. dev.	0.04	0.04	0.04	0.04	0.04
Panel D: Aerial eradication (> 0)					
Eradication	1.294	2.211	2.244	0.191	-0.069
	(0.469)	(1.085)	(1.540)	(0.411)	(0.617)
R^2	0.85	0.63	0.55	0.45	0.46
Eradication range	{0,1}	{0,1}	{0,1}	{0,1}	{0,1}
Eradication mean	0.34	0.34	0.34	0.34	0.34
Eradication std. dev.	0.47	0.47	0.47	0.47	0.47
Observations	2,396	2,396	2,396	2,396	2,396
Municipalities	519	519	519	519	519
Outcome range	[7.83-100]	[0-151.11]	[0-99.11]	[0-64.4]	[0-97.82]
Outcome mean	66.40	31.82	45.36	2.16	3.52
Outcome std. dev.	16.30	25.61	32.29	6.78	10.73

Notes: All specifications are estimated using OLS and include municipality and election-year fixed effects. Robust standard errors clustered by municipality are in parentheses.

B.11 Parallel trends

Figure B.9: Dynamic relationship between eradication and voting behavior.



Notes: All specifications are estimated using OLS and include municipality and election-year fixed effects from De Chaisemartin and d'Haultfoeuille (2024). Robust standard errors clustered by municipality to construct 95% confidence intervals. "Right-wing" vote share for presidential elections refers to Uribe and Santos.

Figure B.10: Presidential outcome patterns by when municipalities first experienced aerial eradication relative to time to eradication.

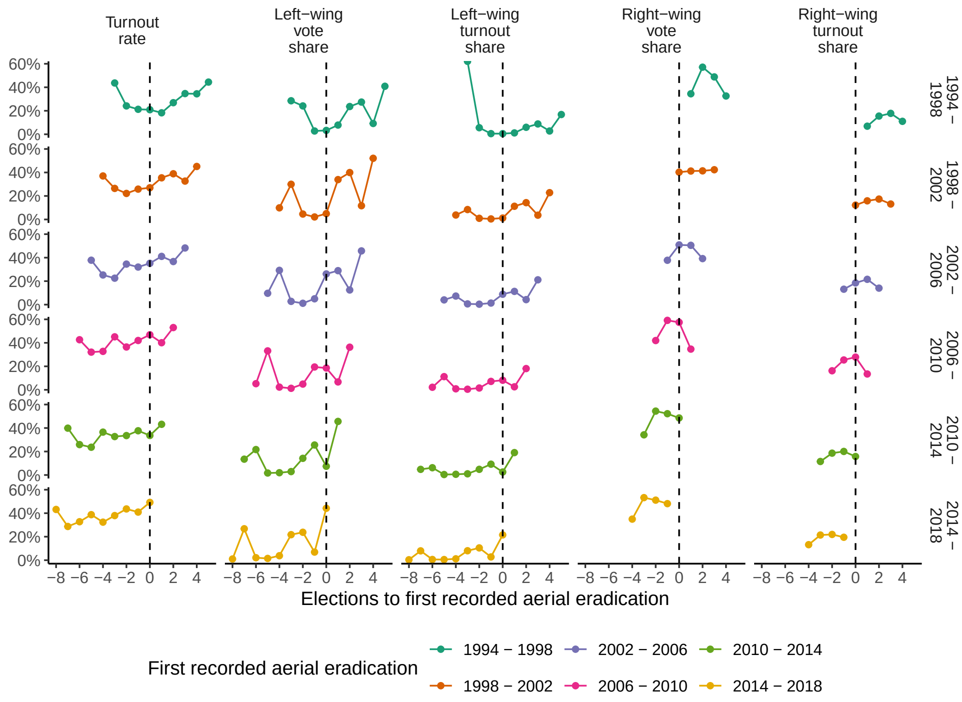


Figure B.11: Presidential outcome patterns by when municipalities first experienced manual eradication relative to time to eradication.