Colonial Origins of Insecurity: Evidence from Brazil

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Abstract

Does public insecurity have deep historical roots? I argue colonization led to a path dependent alliance between the state's security sector and economic elites, spurring high crime rates and social polarization. I leverage a geographic discontinuity in colonial state presence in Brazil, which was determined by the Treaty of Tordesillas, for identification. Municipalities east of the Tordesillas line had more slavery in 1872, and are more proximate to historical revolts and run-away slave communities (quilombos). Today, municipalities east of the line have higher homicide rates, more police killings of civilians, higher expenditure on security, and a higher probability of having an auxiliary police force. They are also more economically segregated and more likely to have informal housing settlements. The evidence suggests colonization was a critical juncture which shaped public security in highly persistent ways, highlighting the role of conflict, coercive capacity, and criminal violence as legacies of colonialism.

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1 Introduction

The distribution of coercion is the state's core task - governments must monopolize the legitimate use of violence, preventing predatory and opportunistic interpersonal lethal conflicts, while also avoiding draconian violations of civil liberties. Many developing states struggle to monopolize legitimate force evenly across their territory, leaving the most vulnerable and disenfranchised citizens subjected to chronic insecurity and police abuse (Haugen and Boutros, 2015).

Why does the efficacy of the law vary considerably within states? The existence of subnational regions with high homicide rates where state coercion is infrequent yet arbitrary poses a direct threat to democratic citizenship and the rule of law (Balán, 2002; O'Donnell, 1993; Yashar, 2018). Organized criminal operations within states have proven to be incredibly destructive; in some countries, homicides eclipse causalities from warfare and civil conflict (Barnes, 2017). Despite the persistence and lethality of "ungovernable" areas within states, the historical roots of violent crime across space are not well-understood.

I argue extractive colonial institutions created a path dependent process of unevenly applied state coercion, fueling crime, violent policing, economic polarization, and informality. Extractive colonial institutions were highly socially stratified, creating a wealthy oligarchy in opposition to underprivileged masses (Acemoglu, Johnson and Robinson, 2001). Non-elite citizens, with little hope of social advancement under the extractive system, either attempted to overturn the system or exit the arrangement. Therefore, maintaining extraction required an alliance between the state's security sector and economic elites, who worked together to temper social conflict and sustain coerced labor (Acemoglu and Wolitzky, 2011). Further, survival for the disenfranchised relied on informality, since formal institutions were

not designed to enhance their welfare.

Once colonization ended, elites wished to shield themselves from expropriation, and used their de facto power to segregate themselves from the underclass, maintaining their connection with the state's coercive arm to protect their wealth. Since the state relied on elites for economic growth, the pattern of unequal service and protection favoring the wealthy persisted. In fact, allowing some areas to be under-policed by delegating control to criminal groups allowed the state to invest resources elsewhere, leading to a symbiotic relationship between development and pockets of criminality (Arias, 2006; Davis, 2006, 2017). As a consequence, historically disenfranchised groups were relatively under-protected by law enforcement, opening space for predatory actors and forcing communities to rely on self-help for protection. Due to weak connections between law enforcement and under-protected groups, the extent of police presence was characterized by coercion rather than collaboration, and the threat of crime led powerful interest groups to lobby for increasingly repressive security measures.

I study the relationship between historical extractive institutions and modern public security in Brazil. Brazil imported more slaves than any other county during the Atlantic slave trade (Klein and Luna, 2009). Today, it reports some of the world's highest homicide rates. I argue the inefficacy of the government's coercive institutions can be explained by the legacy of colonization at the local level. The initial Portuguese settlement of Brazil was initiated by the creation of Donatary Captaincies (DCs), spanning from the coast to the Tordesillas line, a meridian that separated the areas of the new world that Spain or Portugal could legally settle. DCs were allotted to elites, who could extract resources in exchange for administering the land. The product of the DC system was a highly stratified society,

characterized by inequality and slavery. Although the DC system was short-lived, it created the base of the colonial economy, influencing subsequent colonization patterns and social structures (Augeron and Vidal, 2007; de Carvalho, 2015; Lockhart and Schwartz, 1983). Since the heads of captaincies could extract resources in accordance to their personal will irrespective of community inputs, the institution epitomized extractive colonial institutions.

To credibly isolate the impact of extractive colonization, I follow Fujiwara, Laudares and Valencia (2019) and exploit modern municipalities distance Tordesillas line under a regression discontinuity (RD) framework. I illustrate my argument in two steps. First, I show this increased extractive social relations at the intensive margin: consistent with Fujiwara, Laudares and Valencia (2019), the percentage of the enslaved population in 1872 discretely increases at the boundary. Further, municipalities distance to colonial revolts and run-away slave communities increases at the boundary, suggesting conflict between elite and coerced classes was more intense in the areas formerly under the DC system.

Next, I study the persistence of violence and coercion in the modern day. I find municipalities east of the line (1) have more homicides per capita, which is driven by an increase in the rate of Afro-descendent homicides and (2) have more law enforcement killings of citizens. The results are consistent with the theoretical expectation that municipalities more exposed to extractive colonial institutions were placed on the equilibrium path whereby the state provided uneven protection across social classes, leading to informal economic and security provision, which gave way to organized crime and interpersonal violence.

Finally, I also find these municipalities east of the line have (1) a higher probability of having a Municipal Guard, an auxiliary policing force rooted in the Portuguese colonial era and (2) spend more on public security. The result is consistent with local elite investment in

security. However, the increase in security does not necessarily translate into less homicides overall, because the intention of more police is the protection of wealthy areas rather than informal and hard-to-govern spaces within municipalities. I provide suggestive evidence that this is the case by finding (1) economic segregation increases at the discontinuity and (2) informal housing settlements, such as favelas, increase as well.

My study contributes to debates about conflict and long-term state capacity and the influence of colonial institutions on development. Bellicist theories of state formation emphasize interstate conflict as the driver of state development (Tilly, 1990; Besley and Persson, 2009; Gennaioli and Voth, 2015), however scholars argue Latin American regional development was less characterized by interstate war than Europe (Soifer, 2015; Thies, 2005).[1] Inter-elite conflict theories emphasize competition for influence between elite groups (Beramendi, Dincecco and Rogers, 2019; Garfias, 2018, 2019).

I emphasize elite versus mass conflict as a driver of long-run outcomes (Blattman and Miguel, 2010; Guardado, 2018; Slater, 2010). Scholars have shown the sudden reduction in mass threat can facilitate state centralization (Garfias and Sellars, 2021) or push elites away from state provided security (Dincecco and Wang, 2018). How the persistence of mass threats shapes violent crime and state coercive capacity in the long-term is less well-understood. I argue the coalition of elites, who drove development, and the state's coercive apparatus, which enforced elite interests, formed a stable political pact overtime because elites needed state protection from expropriation from the masses, and the state needed elites to continue driving economic production. However, this alliance had deleterious long-term consequences: it led to more violent crime as underclass citizens were pushed into informal sectors, economic

[1] For an argument in favor of the view that the war made the state in Latin America, see Schenoni (2020).

segregation, and support for more repressive policing. My results show the impact on coercive capacity is nuanced; while the ability to coerce increases, the efficacy at providing security for all citizens declines.

Next, a large literature in comparative development emphasizes how extractive colonial institutions undermined long-run prosperity and fueled inequality (Acemoglu, Johnson and Robinson, 2001; Dell, 2010; Engerman and Sokoloff, 1997), specifically reducing public goods (Iyer, 2010). I contribute to this literature on three fronts. First, the extent to which colonial institutions fueled modern crime is less well-known. Second, I show colonial extraction increased the state's attempt to provide security, a public good less discussed in the literature, due to the increase in coercive capacity as a result of elite lobbying. However, in practice, the provision of the good is uneven, as homicide rates remain high. Third, I show extractive colonization did not just increase variance in income, it also affected the spatial distribution of income within municipalities.

Finally, I illustrate how colonization is a deep structural cause of criminal control of state spaces and human rights violations. Scholarship on the historical causes of crime in Latin America tend to emphasize authoritarian legacies (González, 2019, 2020) or the inheritance of formal legal institutions from colonizers (Magaloni and Rodriguez, 2020). While important, macro-institutional explanations cannot account for subnational variation in violence. I compare municipalities within the same country, meaning all units in the study were exposed to military dictatorship, and all units were subject to the same de jure colonial legacies. The key difference between municipalities east and west of Tordesillas is a de facto imbalance of political power between white and Afro-descendent Brazilians, rather than different criminal procedures or policing institutions.

2 Critical Junctures, Multiple Equilibria, and Violence

The state can manage internal conflict in several ways, although the distributional consequences of the chosen methods are not equal. One approach is open access orders, where entry and exit into political and economic institutions is relatively free, stimulating competition for power and circulation of rents across society. Since advancement in open access orders is attainable and consumption of rents is contingent on peace to maintain production, actors across society are incentivized to abide by laws, follow rules, and abstain from violence (North et al., 2009).

Another approach is "the natural state," wherein an elite coalition blocks access to rents, sharing society's resources amongst themselves. Elites know factional conflict amongst themselves threatens to breakdown the exclusive economic system, since failing to remain united makes them vulnerable to attempts by the masses to force redistribution through conflict (North et al., 2009).

A particular manifestation of the natural state was the extractive colonial economy. Extractive colonial institutions were designed to maximize rents for an elite coalition that controlled the state, at the expense of a disenfranchised mass population, many of whom were forced into coerced labor (Acemoglu and Robinson, 2012). The state's coercive apparatus under extractive colonial institutions was designed to prevent mass uprising, collective dissent, and protect elite wealth, rather than equally serving and protecting all living within the state (Fanon, 1963; Haugen and Boutros, 2015; Thomas, 2012). The role of law enforcement under an extractive system differs from an open-access order; (Fanon, 1963, p.38) describes the open capitalistic system as creating "an atmosphere of submission and of inhibition which lightens the task of policing considerably." In contrast, the threat of violence from below led

elites to establish repressive law enforcement organizations to confront revolutionary threats (Fanon, 1963, p.38).

Origins of these structures occur at critical junctures of state development. Once the economy is based on an elite coalition with the state, the process of law and order asymmetrically serving the wealthy is path dependent. Although colonial institutions go away, the wealth and power elites acquired from extraction does not always fade in kind. Elites then leverage de facto power to maintain patterns of extraction overtime (Acemoglu and Robinson, 2006; Naritomi, Soares and Assunção, 2012).

Fearful of redistributive conflict, elites used their pivotal importance to ensure the state would criminalize the poor and protect their wealth. In the American South, this occurred through convict leasing (Alexander, 2020; Ransom and Sutch, 2001). In Latin America, economic elites leveraged their importance for state development to lobby for police repression of the working class and labor (Davis, 2006, 2010, 2017). The state strategically strengthened its coercive apparatus to prevent mass labor movements, but concentrated its efforts at protection towards wealthy areas. In low-income areas, the state accepted its ability to protect was limited, and allowed informal commerce (Holland, 2016) and even criminal governance (Arias, 2006). By accepting informality, the state was able to channel resources away from low-income communities and towards other objectives, however, a consequence was a languishing relationship between state and society in low-income areas (Davis, 2017, p. 64). As informal markets grew, so did the influence of illicit actors and criminal organizations, who relied on non-state coercion for contract enforcement, boosting violent crime rates.

The end product of the extractive system was an economically polarized cityscape - in some neighborhoods, wealthy elites enjoyed robust protection from law enforcement, whereas

in others, disadvantaged communities were engaged in informal economic activity, where state regulation was supplanted by criminal organizations, which the state and police tolerated (Arias, 2006; Davis, 2017; Caldeira, 2020). The process created a self-perpetuating cycle: elites, originally concerned about redistributive conflict from the masses, shifted their concern to expropriation from criminals, which further justified more policing focused on repressing the poor and keeping them at bay from wealthy areas. In turn, the reliance on the informal sector became more important for non-wealthy citizens, feeding back into the underlying cause of criminal presence and predation in their neighborhoods.

I contextualize my argument by focusing on the case of Brazil. Focusing on a singular case allows me to study subnational variation in violence, holding constant macro-institutional legacies such as authoritarian experience and criminal codes which may confound cross-national comparisons. Aside from unique colonization patterns in Brazil which enable credible identification of the colonial legacy, the case is a particularly important one to understand given its size and its relatively high homicide rate.

3 Donatary Captaincies, Tordesillas, and Colonization of Brazil

Colonization of Brazil began in the 16^{th} century after the Spanish and Portuguese negotiated the Treaty of Tordesillas in 1494. Land to the east of the Tordesillas line could be claimed by Portugal, whereas one's to the west belonged to Spain. The treaty was formalized before Brazil was understood by Europeans, during the process of negotiation, both nations were unaware of "what it was giving away or getting..." (De Abreu, 1998, 166), meaning the

line could not have been influenced by political manipulation on the part of the Portuguese to claim desirable territory or formalize preexisting settlements. Due to geographic barriers, Spain's presence in Brazil was considerable lighter than Portugal's, which went on to claim all of contemporary Brazil, albeit with uneven settlement (Prado, 1969, Ch 1).

To incentivize colonization, the Portuguese crown exchanged segments of land to nobles, which stretched from the coast to the Tordesillas line, the meridian that separated the land Portugal could claim from Spain (de Carvalho, 2015). The tracts of land were called Donatary Captaincies (DC). The crown expected nobles to defend and administer the land under their jurisdiction, in exchange, they were allowed to exploit and profit from natural resource wealth. By allowing individual elites to have such a high degree of control over economic development, the DC system epitomized an extractive colonial institution (Acemoglu and Robinson, 2012). The heads of DCs - called captains - were allowed to act under the assumption lands were"his own personal possessions" (Johnson, 1972). Captains were responsible for taxation, establishing militias, and issuing land grants (Augeron and Vidal, 2007, p.28). "Relatives and clients of grantees" staffed the administration of small towns and capitals established within the captaincy (Augeron and Vidal, 2007, p.27). [2]

The DC system influenced the trajectory of local development despite its short-run existence; "...a number of social and economic patterns were established that continued long after direct royal control had been established" (Lockhart and Schwartz, 1983, p. 186). The DC system may have been a short-lived legal system of administration, but it "...permitted the implantation of an initial administrative, economic, and social structure within the colony" (Augeron and Vidal, 2007, p. 43). Captains were given the power to issue private

[2]The DC system formally existed for only a decade; it was abolished in 1549.

land grants (*sesmeiros*) to persons who could put the land to productive use. Since land was abundant, massive grants were given to individual families, creating large-scale agricultural settlements (de Carvalho, 2015; Lockhart and Schwartz, 1983). The result was a landed elite with ownership of large estates in DC areas.

3.1 Landed Elite: Social Structure and Conflict

The emergence of a landed elite on large-scale plantations created a hierarchical and rigid social structure, centered around coerced labor and economic inequality (Naritomi, Soares and Assunção, 2012). Plantations relied on slavery for production, (Engerman and Sokoloff, 1997), which led to the import of Africans due to Portugal's comparative advantage in the slave trade (Fujiwara, Laudares and Valencia, 2019; Klein and Luna, 2009).

Elite landowners were perpetually fearful of slave uprisings, which posed a threat to their economic interests and social position. Klein and Luna (2009) document "...violence was not only against the slave, but was also a permanent part of the mentality of the owners with their constantly expressed fears of slave rebellion, especially in communities with a high ratio of slaves to free population" (Klein and Luna, 2009, p.209). To repress and deter slave revolts, elites relied on coercion, particularly in the form of police and law enforcement organizations. As put by Holloway (1989) "... the economy and society of Brazil depended fundamentally on slavery, and because slaves were unwilling to submit to their condition without coercion, state authorities and the slavocrats found themselves in uneasy collaboration."

Slaves in Brazil resisted their conditions by flight and direct confrontation with the colonial state. Aside from revolts, runaway slave communities, called *quilombos*, found themselves in violent conflict with colonists, who deployed military and police forces to destroy settle-

ments. Slave rebellion, and the subsequent establishment of *quilombos*, created a militarized response from the colonial state (Schwartz, 1996).

Economic elites and early state officials relied on one another for production and coercion respectively, leading to a symbiotic relationship between the wealthy and security services (Holloway, 1993). Elites preferred a coercive structure that would treat slaves and slave owners much differently, undermining the rule of law.

As the Brazilian state became more solidified, the social stratification that flowed from the landed oligarchy shaped the production of law and order. The first policing organizations were formed in Brazil in 1808, after the Portuguese crown based themselves in Rio de Janeiro (Holloway, 1993, p. 30). The primary goal was providing order for elites (Husain, 2009, 49). Financing of police forces came from fees and loans paid by economic elites, giving local landowners leverage over the exercise of state authority (Holloway, 1993, 34). The police were largely a repressive force designed to maintain the extractive economy. On this point, Holloway (1993) writes:

> "[t]he police force can also be seen as offensive, aimed at establishing control over territory both social and geographical - the public space of the city - by subjecting slaves and restraining the free lower classes through intimidation, exclusion, or subordination as circumstances required" (Holloway, 1993, 36-37).

Police posts were often filled as a way to win favor of local elites; Flory (1975) offers an example from a correspondence between a sheriff and the Ministry of Justice, where the sheriff noted a family was "...annoyed with the government for not having named them subdelegados or alternates . . . in spite of their being the richest planters of the area."

3.2 Path Dependence

The colonial period shaped spatial patterns of development across Brazil in path dependent ways. The end of slavery promoted migration of Afro-brazilians to urban areas looking

for employment, given their initial state of poverty and employment discrimination, this migration promoted an expansion into low income areas (Klein and Luna, 2009, p. 316). Elites, concerned about crime, moved to areas in cities where they would be more remote from the poor due to concerns of exportation (Caldeira, 2020). Economic segregation effectively created two cities in one: wealthy neighborhoods that enjoyed protection from the state, and poor neighborhoods that did not.

The end of colonization and slavery did not change the alliance between the state, its coercive arm, and economic elites at the subnational level. Although de jure rules had changed, elites had the will and capacity to use police as a tool to maintain their position, and since the state relied on elites for continued development, the two cooperated while excluding lower classes. Police were used to suppress organized labor (Dinius, 2006; Alexander and Parker, 2003, 42-43). The state's coercive apparatus grew quickly in the beginning of the the 20th century to enable the control over labor in the growing industrial economy (Gomes, 1988, 74-78). In this vein, French (2005) argues:

> "[v]iewed in the larger sweep of Brazilian history, the roots of police violence and arbitrariness toward labor in the 1930s and 1940s must be sought in the world of slavery, an institution that had been abolished only fifty years earlier" (French, 2005, p.142).

A United States military attachè remarked in 1934 in response to a police union conflict "[i]n Brazil, certainly in Rio De Janeiro, only the simple minded appeal to 'police protection' - unless its protection from the police" (Alexander and Parker, 2003, p 61). Police quickly resorted to violence in response to labor strikes, as one Italian consul noted in a 1906 report, police "hardly distinguish between strikes and revolts" (French, 2005, p.130).[3].

The use of law enforcement to protect elite interests in alliance with Brazil's developmental dictatorships, in tandem with spatial polarization of economic groups within municipalities, meant the coercive arm of the state was expanding without addressing violent

[3]More detail on reforms and organization of police in Appendix A

crime among poor neighborhoods. The absence of a strong state fuels competition among criminal groups vying for influence, driving up homicide rates (Yashar, 2018). Due to a muted state presence, locals in poor neighborhoods rely on police less than informal means of dispute resolution, shying away from cooperation with law enforcement. As a byproduct, police rely on coercion and brutal tactics to control poor neighborhoods, since they cannot obtain collaborators to assist in policing tasks. Brutality, however, feeds back into citizen reluctance to cooperate, reinforcing a cycle of crime and police violence (Arias, 2006; Leeds, 1996; Riccio and Skogan, 2017).

3.3 Observable Implications

Based on the theory and Brazilian context, I form three sets of hypotheses across two time periods: the colonial/imperial era (1500-1888) and the modern day (defined as 2010, based on most recently available census data). The first set of hypotheses concern municipalities expose to extractive colonialism and social conflict historically. I expect municipalities east of the Tordesillas line to have been exposed to more slavery, since the economies east of the line where characterized by oligarchical plantation agriculture. Further, I expect revolts and quilombos to be concentrated east of the line, since slavery was more prevalent there.

The next set of hypotheses test the core of the argument: I expect homicide rates to be larger east of the Tordesillas line due to the legacy of law enforcement gravitating towards protection of the wealthy. Individuals are more likely to commit crimes when the probability of detection and the opportunity cost of violence are low (Becker, 1968). When law enforcement is less present, predatory actors are more likely to emerge, specifically targeting persons when they anticipate law enforcement will be unlikely to successfully investigate the

crime.

I test my mechanism using data on the ethno-racial group of homicide victims. While I lack a precise measure of victim income, whether a victim was a Afro-descenent (black or mixed-race) captures whether they belong to a social group historically not protected by law enforcement. I anticipate the increased homicide rate to be largely driven by victims who were persons of color, who make up a large share of persons within economically disadvantage neighborhoods. Relatedly, I anticipate more police violence due to officers reliance on coercion instead of cooperation for control.

Despite higher homicide rates and languishing police presence in poor areas, I expect more policing overall at the municipality level east of the line. The reason for this somewhat paradoxical relationship is wealthy segments of society demand additional security measures to remain safe from crime as homicide rates increase in poor neighborhoods. While the state's coercive apparatus grows in size, because the distribution of protection is uneven, homicide rates remain high as well.

Finally, I hypothesize economic segregation and informal housing settlements will be higher among municipalities east of the Tordesillas line. The wealthy moved further from the poor after colonization, who moved to cities to search for work but were concentrated in informal housing settlements, which only grew overtime with urbanization. Since informal housing operates outside of the law, citizens are comparatively less reliant on and trusting of the state for services (Davis, 2017). Economically segregated areas further concentrate persons who have a low opportunity cost to crime among persons who are less costly to victimize - the poor (Kang, 2016).

4 Research Design

4.1 Data

For the main analysis, I use data from the 2010 census. I focus on municipalities because they are the smallest relevant administrative unit in Brazil. Theoretically, persistence via social structures would predict increased levels of violence and state coercive capacity at the local level, because the mechanism connecting historical extraction and contemporary outcomes is de facto spatial development rather than de jure institutions. A state-level analysis would be inappropriate both because further aggregation may mask variation in local exposure to extraction, obscuring the relationship between history and modern outcomes, and would also bundle state-level policy with state-level history. By comparing municipalities net of the state-specific heterogeneity, my design isolates the impact of colonial boundaries via local de facto channels rather than state-level institutional channels.

I use historical census, georeferenced atlas, and contemporary administrative datasets to measure outcomes across space and time. Data on slavery is available in the 1872 census. I use the proportion of slaves to the population to measure exposure to coerced labor institutions historically (Fujiwara, Laudares and Valencia, 2019). Information about the number of slaves at the local level is not available in earlier years, and 1872 was near the end of slavery in Brazil. Despite this limitation, a larger share of slaves late in Imperial period suggests slavery's persistence at the municipal level over the course of the empire, which captures the degree to which the practice was embedded in the locality. I use areal weighed interpolation to match the intensity of slavery in 1872 municipalities to 2010 municipalities.

I use data from the Digital Atlas of Portuguese America (Gil and Barleta, 2013) to

measure the location of historical revolts and colonial forts. I use the location of forts and revolts to compute a municipality m's distance to the nearest fort or revolt. Larger values indicate a municipality is further from a colonial fort or revolt, and smaller values indicate the municipality is more proximate to these historical events and structures.

I use mortality data from the Ministry of Health, which measures causes of death per municipality. I use deaths ruled to be caused by aggression to measure homicides. The data include the race of the victim, which I use to construct homicide rates by white and Afro-descendent (*preta* and *parda*) Brazilians. Theoretically, the uneven protection by law enforcement implies that homicide rates ought to be higher among Afro-descendents, who have been afforded less protection by law enforcement historically. I use the same data source to collect deaths caused by law enforcement - due to the relative rarity of the event, I pool this data across 2010-2015.

Systematic information on law enforcement personnel is not available at the local level. Although state governments play the largest role in policing, municipalities are "increasingly important" in crime prevention, and can exceed the floor set by states (Cano, 2006). I use data on public finances to measure municipality public security spending per capita. Scholars have used the same indicator to study municipal effort towards fighting crime (Novaes, 2018). Although municipalities do not shoulder the majority of the security burden, larger municipal expenditures towards security indicate additional effort towards public safety, which is the quantity of interest.

I measure economic segregation among the top 20 and bottom 80 percent of the income distribution within municipalities using data from Johannessen (2021). The data compute a spatial dissimilarity index (D) and a spatial information theory index (H) (Reardon and

O'Sullivan, 2004). Each measure achieves its maximum under complete segregation, with smaller values representing individuals living in more diverse environments.

Finally I use the survey of Basic Municipal Information to measure the degree of informal/irregular housing settlements in a municipality The measure is scored 1 if a municipality reports favelas, occupations of lots, irregular/clandestine lots, or tenements, and zero otherwise.

4.2 Empirical Strategy

The discrete change at the Tordesillas boundary suggests a geographic regression discontinuity approach which compares nearby municipalities on either the eastern or western side of the line with the following estimating equation.

$$(1) \qquad out_m = \alpha + \gamma \text{East}_m + f(\text{geographic location}_m) + \phi_s + \varepsilon_m$$

out_m is the outcome(s) of interest, including historical proximity to forts, revolts, and intensity of slavery, as well as contemporary criminal violence, police violence, and investment in municipal security. $\text{East}_m = \mathbf{1}\{\text{Longitude}_m \geq -48.7\}$ is a binary indicator scored one if a municipality lies on the eastern side of the boundary and zero otherwise. I define the boundary following Fujiwara, Laudares and Valencia (2019) at 48°42″W, or -48.7 in decimal degrees, although the precise location of the boundary is a lively subject of historical inquiry (Cintra, 2013). The original text of the Tordesillas treaty drew the meridian in terms of distance from Cape Verde, however, whether distance was to be measured from the center or the coast of the island was unspecified.

A benefit of the uncertainty around the line is agents were unable to precisely sort around the border; colonizers would have known they were approaching the boundary but would not have been able to exactly select where to situate themselves to fall on one side or another. Since the meridian was drawn prior to the exploration of Brazil, its unlikely that the boundary separated land with vastly different factor endowments.

A disadvantage of this uncertainty is that the scoring variable and exposure indicator are noisy, introducing classical measurement error. To address attenuation bias and the potential for bias resulting from data heaps, I follow Fujiwara, Laudares and Valencia (2019) and estimate a donut RD (Barreca, Lindo and Waddell, 2016). The donut RD is a consistent estimator of treatment effect in the presence of measurement error or heaping in the running variable (Barreca, Lindo and Waddell, 2016). I drop data within 73 kilometers of the meridian on either side of the Tordesillas line, as in Fujiwara, Laudares and Valencia (2019).

The scoring variable $f(\text{geographic location}_m)$ is the deterministic function of treatment status. For estimates in the main text, I project latitude-longitude coordinates into a single dimension by measuring the distance from the municipality's center to the line. In appendix, I include estimates using a polynomial in latitude-longitude space.[4]

Contemporary state-by-state policies and institutions are salient for determining modern homicide rates and security spending, since governors exercise considerable control over crime and social policy. Therefore, I use state fixed-effects ϕ_s to remove state-invariant heterogeneity.

The robust error term is ε_m. I cluster standard errors at the microregion level. Mi-

[4]Letting x denote longitude and y latitude, I follow Dell (2010) and include a linear specification (x+y+xy) and a quadratic ($x + y + xy + x^2 + y^2 + x^2y + y^2x$) to adjust for nonlinear functional form when coordinates are the running variable.

croregions are statistical constructs by IBGE which place nearby municipalities with similar economic, geographic, and demographic characteristics into groups. Similarity of municipalities within these clusters suggest similar error terms and treatment probability, meaning clustering at these levels ought to account for spatial dependence in a more principled way than constructing error correlation ranges using a Conely-type approach, where spatial autocorrelation is estimated by the researcher.

I probe the robustness of my primary approach by using the Calonico, Cattaneo and Titiunik (2014) method. I report results in appendix at alternative bandwidths using the Calonico, Cattaneo and Titiunik (2014) robust nonparametric confidence intervals, obtaining similar findings.

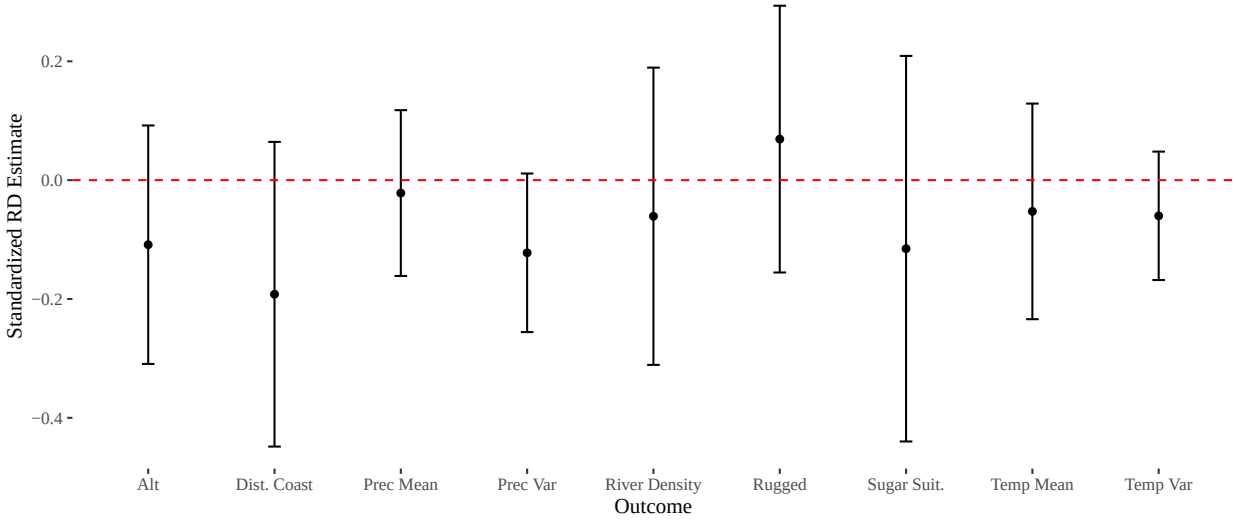
4.3 Identification Assumptions

Identification relies on the assumption that confounds are continuous at the discontinuity. Since the line was negotiated prior to exploration of Brazil, it is unlikely that land east or west of the line is significantly different. Discrete changes in factors that existed prior to colonization would suggest an increase in slavery, homicides, or security sector presence cannot be attributed to patterns of colonization induced by the Tordesillas boundary, and instead reflect geographic, climatic, or spatial determinants of prosperity.

I use data on altitude, terrain ruggedness, sugarcane suitability, temperature (mean and variance), precipitation (mean and variance), river density, and distance to the coast to measure initial factors. Figure 1 shows the results, where the outcomes are standardized. I find no jumps in pre-determined outcome variables, consistent with the assumption that the only salient change at the Tordesillas boundary is historical colonization rather than

factor endowments. Although the estimates are statistically imprecise, the point estimates are nonzero. As such, I adjust for these covariates in some regressions.

Figure 1: Balance Test



Note: Confidence intervals constructed from microregion clustered standard errors. Outcomes are standardized.

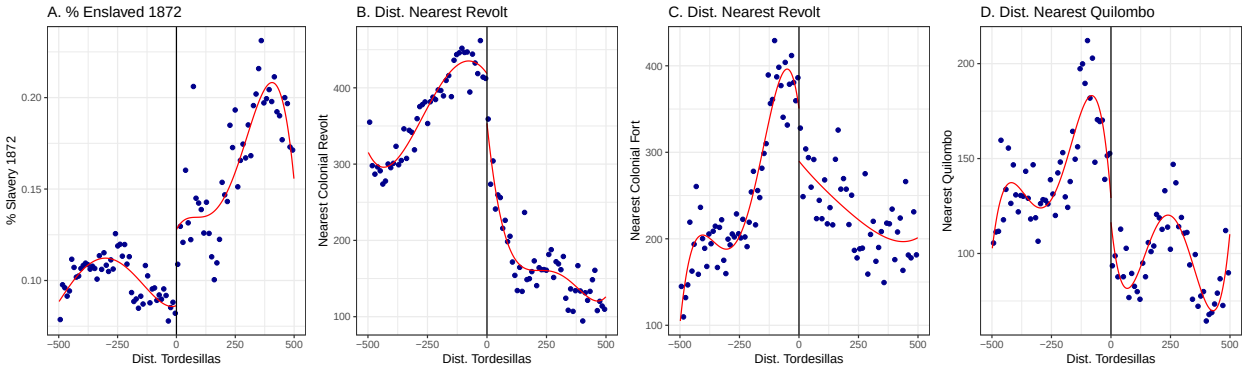
5 Results

5.1 Colonial and Imperial Era: Oligarchy, Revolt, and Military Presence

Descriptively, the relationship between a municipality's historical exposure to colonial institutions as a function of distance to the Tordesillas line is displayed in Figure 2. The share of the enslaved population increases at the boundary, while the distance between a municipality

and a historical slave revolt, fort, and run away slave community decreases.

Figure 2: Colonial Conflict and Coercion



Note: Univariate forcing variable (nearest distance from centroid to the meridian).

Table 1 provides estimates from equation 3.1. All models include state fixed effects, odd columns model the forcing variable as a linear function and even columns use a quadratic in latitude-longitude space. Models 3-4 include baseline covariates (those tested for in Figure 1.) Overall, exposure to colonial extractive institutions increases by nearly a standard deviation for each respective outcome in the baseline, and remain robust to further adjustments.

5.2 Persistence: Contemporary Homicides and Policing

Next, I study whether municipalities in the modern day experience differences in violent crime based on their colonial experience. Figure 3 shows a discrete change in homicide rates at the boundary, which is driven by homicides of black and brown Brazilians, with homicides of whites remaining continuous.

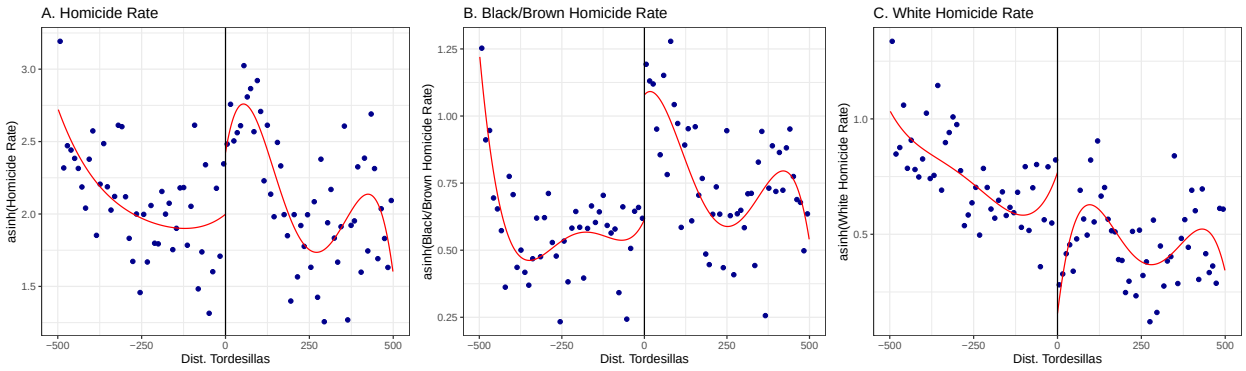
Table 2 provides statistical evidence of the pattern: homicide rates increase overall, but

Table 1: Colonial and Imperial Outcomes

	(1)	(2)	(3)	(4)
Panel A: Slavery 1872 (σ .08)				
1 East	$0.05^{\dagger}$	0.07^{*}	$0.05^{\dagger}$	0.06^{*}
	(0.03)	(0.03)	(0.03)	(0.03)
Panel B: Revolt (σ 195)				
1 East	-188.97^{***}	-141.30^{***}	-191.57^{***}	-138.10^{***}
	(33.79)	(27.35)	(30.78)	(26.65)
Panel C: Quilombo (σ 110)				
1 East	-111.26^{***}	-102.13^{***}	-111.19^{***}	-109.38^{***}
	(28.40)	(29.57)	(24.87)	(26.59)
Panel D: Fort (σ 183)				
1 East	-177.84^{***}	-146.12^{***}	-151.64^{***}	-97.04^{***}
	(39.59)	(25.42)	(18.77)	(19.75)
N.	1740	1740	1740	1740
State Fixed Effects	✓	✓	✓	✓
Linear	✓	-	✓	-
Covariates	-	-	✓	✓

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$, $^{\dagger}p < 0.1$

Figure 3: Homicides by Ethno-Racial Group: 2010



Note: Univariate forcing variable (nearest distance from centroid to the meridian).

when breaking up homicides by ethno-racial subgroup, it is clear that the homicide rate only creases for Preto/Parda Brazilians, and that white homicide rates remain constant at the discontinuity. This evidence suggests the state provides comparatively worse security for ethno-racial groups who were historically disenfranchised.

5.3 Law Enforcement

I expect increased insecurity for black and brown Brazilians to be paradoxically coupled with a more robust security sector at the municipal level: despite increased policing capacity, since the security sector historically services elite interests, the oversized policing force is not effective at protecting historically disenfranchised groups, and is even hostile towards them.

I provide evidence of this pattern in Table 3. Municipalities east of the line are more likely to have a Municipal Guard, spend more on security per capita, and are more likely to have instances of police killing civilians.

Table 2: Homicides

	(1)	(2)	(3)	(4)
Panel A: IHS Homicide Rate (σ 1.84)				
1 East	0.87*	1.06**	0.95**	1.01**
	(0.34)	(0.32)	(0.33)	(0.34)
Panel B: IHS Parda/Preto Homicide Rate (σ .99)				
1 East	0.47**	0.50**	0.47**	0.45*
	(0.17)	(0.18)	(0.17)	(0.20)
Panel C: IHS White Homicide Rate (σ .82)				
1 East	−0.19	−0.10	−0.27	−0.34
	(0.32)	(0.32)	(0.33)	(0.35)
N.	1740	1740	1740	1740
State Fixed Effects	✓	✓	✓	✓
Linear	✓	-	✓	-
Covariates	-	-	✓	✓

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$, $^{\dagger}p < 0.1$

5.3 Mechanism

Next, I evaluate economic segregation as a persistence channel. My argument suggests that the security sector is able to provide biased protection in part because of spatial segregation within municipalities: since wealthy segments of society concentrated themselves in areas separate from less wealthy persons, the police are able to patrol some places and not others with the intention of enforcing a separation between the two groups. Figure 4 provides descriptive evidence of this pattern, as economic segregation and informal housing discretely increases at the discontinuity.

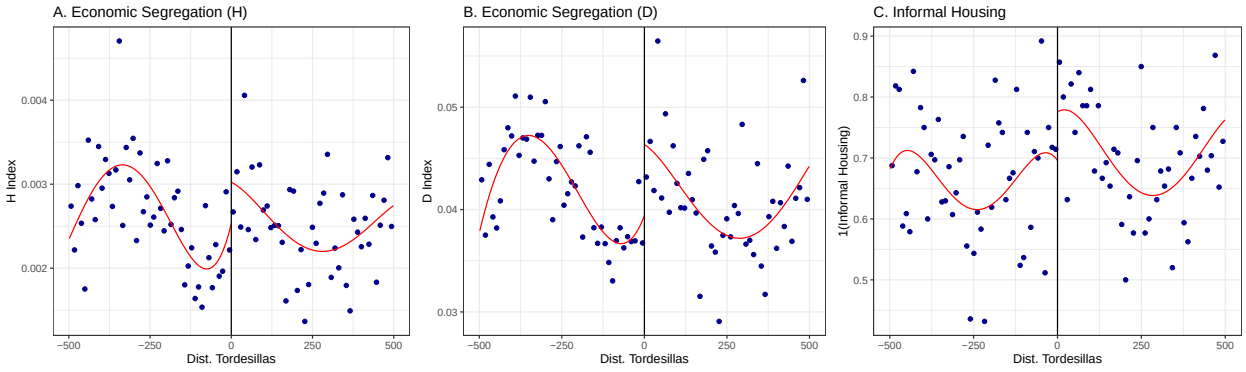
Table 4 shows economic segregation increases when moving from the West to the East of the line. The D and H index provide two separate measures of segregation from on Reardon and O'Sullivan (2004). The consistency of the results based on different measures

Table 3: Law Enforcement Outcomes

	(1)	(2)	(3)	(4)
Panel A: **1** Municipal Guard (σ 0.38)				
1 East	0.37***	0.39***	0.38***	0.39***
	(0.08)	(0.09)	(0.08)	(0.10)
Panel B: IHS Security Spending PC (σ 1.32)				
1 East	1.58***	1.61***	1.58***	1.62***
	(0.33)	(0.35)	(0.36)	(0.39)
Panel C: Law Enforcement Killings (σ 0.26)				
1 East	0.09*	0.10*	0.06	0.05
	(0.04)	(0.04)	(0.04)	(0.04)
N.	1740	1740	1740	1740
State Fixed Effects	✓	✓	✓	✓
Linear	✓	-	✓	-
Covariates	-	-	✓	✓

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$, $^{\dagger}p < 0.1$

Figure 4: Economic Segregation and Informality Mechanism



is suggestive that the findings are not an artifact of one particular measurement choice.

Table 4: Mechanism: Economic Segregation

	(1)	(2)	(3)	(4)
Panel A: D Index σ2.21				
east	1.18**	1.00*	1.24**	0.98*
	(0.37)	(0.38)	(0.39)	(0.42)
Panel B H Index σ0.27				
east	0.11**	0.10*	0.12**	0.11*
	(0.04)	(0.04)	(0.04)	(0.04)
N.	1738	1738	1738	1738
State Fixed Effects	✓	✓	✓	✓
Linear	✓	-	✓	-
Covariates	-	-	✓	✓

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$, $^{\dagger}p < 0.1$

5.4 Robustness

In appendix **??** I show results remain consistent when using the Calonico, Cattaneo and Titiunik (2014) nonparametric RD with a univariate running variable (distance to the meridian) with different bandwidths. The finding provides evidence that the results are not sensitive to a leveraging a particular subset of the data in the neighborhood of the line.

7 Discussion

What explains spatial variance in the state's ability to protect its citizens from violent crime? I theorize contemporary interpersonal violence, security expenditure, and economic segregation are a function of historical legacies of colonization. The state formed coalitions with elite groups during initial phases of colonization and afterwards to sponsor development in exchange for asymmetric law enforcement protection of elite wealth. The legacy of this

arrangement is economically segregated municipalities, where wealth is concentrated in place and protected by the state, and poverty is concentrated in another space, exposed to criminal violence.

I provide empirical evidence with a geographic regression discontinuity design in Brazil, showing colonial extraction and social conflict discreetly increased in areas exposed to the DC system, which determined social and economic structures in path dependent ways. The meridian shaped revolts, slavery, and escape from slavery historically, and influences municipal security in the modern day.

The threat to elite wealth emerging from inequalities created through extraction influences the material strength of police organizations, but does not translate into an even distribution of social peace due to asymmetric protection of elites. My theory highlights how colonial legacies have a nuanced impact on state capacity: in the dimension of resource allocation, coercive capacity increases, along the dimension of overall efficacy, capacity declines since resources are not allocated towards protecting and serving the poor.

My theory highlights how extractive institutions do not only affect the variance of income, they also impact spatial distributions of income. The concentration of the wealthy in some areas along with the concentration of the poor among informal housing settlements explains how security is provided in much different ways across diverse communities: where informality flourishes, the state delegates control to criminal organizations, feeding into the inability of the police to rule without coercion and the overall level of interpersonal violence as a means of conflict mediation in the absence of a credible state (Arias, 2006; Leeds, 1996). The finding suggests a novel mechanism explaining the legacy of colonization on maldevelopment, along with the importance of security as an outcome for continued exploration.

My findings extend beyond the Brazilian context. Extractive colonization, specifically coerced labor, was a feature in colonial economies across Latin America, notably in Colombia, El Salvador, Honduras, and, Jamaica, which have some the regions (and the world's) highest homicide rates. In Mexico, Davis (2017) argues the politicization of policing and violent crime rates were determined at critical junctures which shaped elite alliances with the state. While Davis (2017) centers on the Mexican revolution as a key juncture, I posit colonization was the crucial period that shaped development overtime. Was colonization a necessary condition for the elite-state coalition against the poor, or was it only a sufficient one? A related issue concerns the Latin American experience versus that of East and Southeast Asia. Whereas Latin American countries have startlingly high homicide rates, extractive colonization has not appeared to have had the same pattern on violent crime in Indonesia, or among the states that formerly composed French Indochina. Why did colonization lead to persistent crime in Latin America but not Southeast Asia? These questions, among many others, are important topics for future inquiry.

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A Additional Historical Context

A.1 Background on Brazilian Police

Brazil is a federal republic, having both federal and state police. Federal police control issues of national interest such as immigration and terrorism, and maintain control over indigenous communities. State governments control the majority of policing, with local policing broken into civil and military police organizations. The civilian police are primarily responsible for investigating and prosecuting crimes, whereas military police are tasked with patrolling and maintaining order at the street level. The military police is highly hierarchal in terms of organization and culture, whereas civil police organizations are vertically organized but allow for socialization across ranks more freely (Husain, 2009, p. 48-50). States have both a chief of civil police and a commander of the military police, along with a secretary of public security (**?**).

The civil and military police first formed in 1808 and 1809 when the Portuguese imported their own policing institutions modeled after the French; prior to the formal police force, town councils had organized armed guards (Holloway, 1993). Policing during this period was controlled at the local level. After independence and during the liberal reform period under Pedro I, the 1832 Code of Criminal Procedure established an elected post of justice of the peace at the parish level (Flory, 1975).The reform of the procedural code of 1841 created a policing hierarchy, with chiefs at the province level. Police chiefs were named by the minister of justice, and selected delegados and subdelegados to serve at the municipality and below. The local police had effective judicial functions, since they could charge and prosecute crimes. The central government retained ultimate authority under the empire, however, chiefs at the province level had nominal influence and existed atop the police hierarchy within their respective province (Flory, 1975).

Until 1871, judge and police were considered one in the same. After a reform and thereafter, police investigations follow a similar procedure to other civil law countries, where

police collect information through a non-adversarial process regarding a crime, which gives a large degree of control to civil police in the investigation and prosecution of crime relative to the accused. The lack of competition in the investigation process enables brutality, as **?** argues: "[t]he Code of Criminal Procedure accepts confession as a form of evidence without placing greater restrictions on its use, in effect making it an incentive for the use of force." (**?**). Police conduct manuals are largely inherited from the military, which mostly instruct officers on their behavior within the organization rather than proper relationships between police and citizens (**?**).

Policing was federalized during the military dictatorship, but power was returned to the states in 1982 (**?**). Although policing is formally controlled by state governments, state police provides a floor rather than a ceiling, as municipalities can invest more in their own preventive policing independent of state police via municipal guards (**?**). While not formally police recognized by the constitution, municipal guards serve auxiliary law enforcement functions assisting in patrol and protection of public space. They can coordinate their activity with the military police in patrols, for example, working alongside one another in a municipality to control crime around bars at night (Cano, 2006).

B Univariate Running Variable

Figure B.1: RD Results at Alternative Bandwidths