Living in Fear: The Dynamics of Extortion in Mexico's Drug War

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Abstract

Why do drug trafficking organizations sometimes prey on the communities in which they operate, but sometimes provide assistance to these communities? What explains their strategies of extortion and cooptation toward civil society? We argue that the level of territorial contestation among armed criminal groups explains variation in coopting and coercing civil society. Using new survey data from Mexico, including list experiments to elicit responses about potentially illegal behavior, the paper measures the prevalence of extortion and assistance among drug trafficking organizations. In general, our experiments find higher extortion rates than those reported in national victimization surveys. In support of our theory, then, these data show that territorial contestation among rival organizations produces more extortion, and, in contrast, uncontested municipalities provide the most assistance.

1 Introduction

Drug trafficking organizations (DTOs) have employed different strategies toward the communities in which they operate. Sometimes, these DTOs have exhibited "benign" relationships with these communities, providing them with assistance. For example, early in its existence, the Mexican DTO La Familia Michoacana provided loans and grants to individuals, businesses, and even churches within the communities where it operated. These activities were widely known and even publicized in local newspapers. The DTO also allegedly targeted criminals from whom the community needed protection for "divine justice." In December 2010, when La Familia Michoacana lost its leader, hundreds in

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Michoacán marched in support of the DTO with signs reading, "Long Live to La Familia Michoacana."[1]

Other times, the relationships are predatory. For instance, after the killing of its leader, La Famila Michoacana fragmented and other DTOs such as Los Zetas, los Caballeros Templarios, and the Cartel Jalisco Nueva Generacio/'n disputed their territory. As these groups battled for control, the population increasingly suffered from the violence - but also from extortion. These criminal groups would charge "protection" fees to individuals and businesses to the point that, in 2013, *Autodefesas* - or self-defense groups formed by local farmers - took up arms against the criminal groups that were preying on them.

These examples are not anomalies: other criminal organizations in Mexico have been known for engaging in these strategies. Former leader of the Sinaloa Cartel, Joaquin el "Chapo" Guzmán, reportedly prohibited his forces from kidnapping, a lucrative business for other DTOs such as Los Zetas, and his organization engaged in food distribution, providing subsidies to local communities. Similarly, former Gulf Cartel boss Osiel Cardenas paid for annual toy giveaways in communities where the gang reigned, and otherwise sought a good relationship with residents, including by hanging banners to assure them of the group's good intentions.

Los Zetas, one of the largest criminal organizations, are known for extorting communities and businesses, killing anyone who refuses to pay. In Coahuila, the group was operating from inside the prison, where they would bring the bodies of their victims to incinerate them [2]

These divergent strategies for engaging with civil society require explanation. Why would DTOs that are pursuing illegal profits at times diversify to other crimes, engaging in extortion, robbery, and other violations against the communities in which they operate – but then at other times even provide assistance to these communities?

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[1]From *Jornada* newspaper by Ferrer and Martinez (2013).
[2]From Proceso by (Cedillo, 2017)

To answer this question, we focus on the drug war in Mexico, where violence has surged since 2006. Drug-related violence occupies a gray zone between civil war and violent crime (Kalyvas, 2015). Access to massive profits turns DTOs into powerful organizations, allowing them to recruit a large number of armed men to serve as assassins; to buy military arsenals to fight the state and rival DTOs; and to buy off government officials and law enforcement agents - in addition to choosing various strategies toward the communities around them.

There is a vibrant scholarly literature on the logic of drug trafficking violence (Trejo and Ley, 2017; Castillo et al., 2013; Shirk and Wallman, 2015; Astorga and Shirk, 2010; Phillips, 2015; Osorio, 2015; Dube et al., 2013a; Lessing, 2015; Bagley, 2012; Snyder and Duran-Martinez, 2009; Durán-Martínez, 2015; Robles, 2017), but DTO strategies for engaging with the population where they operate remain under-theorized.

In their interaction with these communities, DTOs may exhibit patterns of coercion and cooptation. In terms of cooptation, we explore when DTOs provide assistance to the community - loans, cash for health emergencies or burials - or assistance in the form of protection, as in Gambetta (1996). In terms of coercion, we examine extortion, which we define as a DTO charging fees for protection.

To account for variation in DTO strategies toward civil society, this paper develops a theory about DTO incentives and structure. A first set of variables that influence how DTOs interact with the community draw on the civil conflict literature (Mampilly, 2011; Arjona, 2017; Kalyvas, 2006; Humphreys and Weinstein, 2006), among others, which argues that, to successfully gain control of territory by supplanting the state or staking secessionist claims, armed rebels need to collaborate with the population.

If these armed groups do not seek to topple the state, but rather to make money from their illicit activities (Lessing, 2015), then why might drug trafficking groups aspire to control territory? At the very least, DTOs require silence from the community to keep their operations hidden from the state or their criminal rivals. Moreover, DTOs often seek active control of a territory or "turf" not only to hide from the state and

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protect themselves from other criminal groups, but also to extract profits from the illegal trade connected to a given territory. DTOs aspire to control territories that are valuable for the production, as well as processing and trafficking of drugs: areas suitable for drug cultivation, and some strategic locations in ports, border-crossings and cities that are valuable to produce, process and sell drugs (Osorio, 2015; Calderón et al., 2015). Since deals among criminal groups are hard to enforce, DTOs commonly aspire to retain monopolistic control of these turfs. Therefore, to attain profits, cartels seek monopolistic territorial control, especially in strategic or valuable territories.

Our theory argues that, in order to retain control of these valuable territories, DTOs require active collaboration from the community - information as simple as who enters and leaves the territory and as complex as who in the community might be supplying information to the state or cooperating with other criminal groups. DTOs not only need to know what the state is doing, but also what their potential competitors are doing - for example, if another criminal group is seeking to strike deals with farmers to produce drug crops in their turf or if attempting to smuggle drugs through their trafficking corridor without paying their "taxes."

As is the case with armed rebels, pure coercion is not sufficient to gather the type of information that is necessary to keep their turf safe (Arjona, 2017; Kalyvas, 2006). Following Olson (1993) and Arjona (2017), our theory argues that DTOs will be better able to establish collaborative arrangements when they control a region and expect to control it in the future. Under monopolistic control, DTOs can be more confident of reaping future gains if they continue to show restraint, and may even provide a share of those gains to the community to ensure its continued cooperation. Therefore, establishing a sustainable collaborative arrangement with the community requires self-restraint on the part of the criminal group.

A second set of variables that influence how DTOs interact with the community focus on leadership style and organizational structure. Los Zetas, for example, are organized in a highly decentralized fashion, with hundreds of criminal cells operating all over the

county. The Sinaloa cartel, in contrast, has traditionally been more centralized, and is organized around of handful powerful drug capos. In principle, a DTO that has leadership stability and is hierarchical should be better able to restrain its armed cells than a criminal organization that is more decentralized.

A related factor is disruption of hierarchical systems. As existing literature suggests, the Mexican federal government's drug war strategy to arrest or kill drug *capos* has resulted in negative externalities such as an increase in violence (Phillips, 2015; Calderón et al., 2015; Guerrero, 2011b). Leadership neutralization breaks chains of command and increases territorial contestation. According to our theory, both generate more predation on the part of DTOs.

To test our theory that DTO control provides incentives to coopt communities, while DTO competition provides incentives to extort them, conditional on state capture - and also that these strategies are affected by the degree of DTO hierarchy - we conducted a series of list experiments embedded in a probabilistic nationwide survey. The survey was carried out in Mexico in July 2011, collected through the Public Opinion Coordination at the Office of the Mexican Presidency. To ensure proper representation of high-violence areas, even in rural settings, the sample was stratified by population size and level of violence by municipality.

We focus on experimental questions that assess extortion by DTOs and use of DTO assistance. These questions are sensitive in that, if individuals are asked directly, they may feel social pressure or even fear that influences their reported preferences. We therefore asked these questions through a list experiment in which individuals are only asked to report this behavior among other behaviors, hiding their individual use of DTO assistance and extortion by DTOs. The questionnaires therefore randomized a control list with a "treatment" list containing the sensitive items, the statements asking about DTO behavior, across the sample. To measure the critical explanatory variable of territorial contestation, we use the dataset of Coscia and Rios (2012) on areas of operation of Mexican DTOs. The authors developed a Web crawler to extract information from Google

News on the activity of criminal groups in Mexico. We also control for levels of inter-cartel violence.

To test our hypotheses, we use the multivariate regression model of survey data for list experiments proposed by Imai (2011) and Blair and Imai (2012). We specify a linear model with identical covariates to examine the dynamics of civilian extortion and assistance by DTOs.

The results match our theoretical expectations. DTOs extort civilians primarily in contested territories, where various DTOs fight for control of drug production, trafficking, and distribution. In contrast, DTOs provide assistance - and they extort at significantly lower levels - in territories controlled by a single DTO. Moreover, our results demonstrate that the lowest levels of assistance are observed in contested municipalities with high levels of inter-cartel violence.

The paper proceeds as follows. The first section identifies the puzzle, including by presenting some evidence from the Mexican context. The second section provides testable hypotheses, generating theory by drawing on the literature on civil war and mafia crime. The third section describes our method and presents our empirical results. The conclusion discusses the implications of our findings for the study of DTOs and their strategies of interaction with the communities in which they operate.

2 The Drug War and the increase in criminal extortion

Crackdowns on drug production and transportation in Colombia, as well as trafficking through the Caribbean (Bagley, 2012; Shirk and Wallman, 2015), have meant that DTOs have ramped up their operations in Mexico. It is estimated that more than 90% of the cocaine that is bound for the US passes through Mexico. Moreover, in recent years, Mexican DTOs have grown their share of the heroin market, increasing the cultivation of

opium for heroin production. Together, Mexican DTOs traffic more than an estimated quarter-million pounds of heroin into the US (DEA, 2015).

Political changes in Mexico, and the subsequent drug strategy, have also contributed to this climate. During a long period of dominance by the Institutional Revolutionary Party (PRI), deals with the drug traffickers were made at the highest echelons of power - even the presidency's office. Due to the party's hierarchical organization and discipline, these deals could be enforced throughout the country without much violence. It is even believed that these pacts secured a state-sponsored division of territory among a few DTOs (Grillo, 2011). In the 1990s, alternation in political power at the local level began to break existing deals and to incentivize DTOs to form their own militias where state protection was no longer guaranteed, as Trejo and Ley (2017) argue. Moreover, when the PRI lost the presidency to the National Action Party (PAN) in 2000, the existing pacts were disrupted even further. DTOs now had to negotiate protection with governors and mayors that no longer heeded the mandates of a unifying political leader at the top (Dube et al., 2013b; Ríos, 2015; O'Neil, 2009; Astorga and Shirk, 2010).

Beyond alternation, when President Felipe Calderón from the PAN came into office in December 2006, he initiated an aggressive campaign against the DTOs that became a centerpiece of his administration. The federal strategy to combat DTOs involved "joint operations" with thousands of military troops and federal police sent to combat DTOs directly. President Calderón's policies differed significantly from that of previous administrations in his use of a "leadership strategy" - targeting the highest levels or core leadership of criminal networks for arrest. In 2009, the government released a list of Mexico's 37 most wanted drug lords, and by January 2011, the army, navy, and federal police had captured or killed 20 out of the 37, twice the number of kingpins captured during the two previous administrations.

The federal structure, however, complicated Calderón's chances at success with any part of this strategy to combat the drug trade. Each state and municipality has its own police corps, and many of these organizations are weak, corrupt, or captured by DTOs.

Local authorities command most of Mexico's police: 90 percent of the approximately 500,000 police officers are under the command of state and municipal authorities (Guerrero, 2011b). State and municipal police have no jurisdiction over crimes related to the drug trade, but they are valuable allies for organized criminals. Moreover, governors control local prosecutors' offices and have a strong influence over the judiciary, which make them critical allies: they can decide which crimes get investigated, and who is prosecuted and indicted (Trejo and Ley, 2017). The more DTO diversify into common crime activities - including kidnapping and extortion - the more critical it is for these criminal groups to capture local authorities.

Scholarly work agrees that Calderón's policies spread violence (Guerrero, 2011a,b; Escalante, 2011; Dell, 2015; Calderón et al., 2015; Osorio, 2015; Coscia and Rios, 2012), and the federal structure in Mexico may have helped. Figure 1 shows the number of homicides from 2002 to 2015 in the country. Deaths are classified according to whether they are drug-related homicides (see Section 4.1 below) or murders that affect the general population (light area). A sharp increase in violence is noticeable with the onset of the drug war, most of it due to inter-cartel conflict.

Much of the violence from DTOs is located in strategically important areas and conducted by just a handful of DTOs. DTOs fight each other for control of territories that are valuable for the production, transportation and trafficking of drugs to the most profitable markets, most prominently the U.S. The areas with highest homicide rates in Mexico are the Northwest, home of the Sinaloa Cartel and the birthplace of the "narcos." Sinaloa is a major drug cultivation and production zone, as well as a strategic drug trafficking route connecting to Tijuana and Ciudad Juárez, both among the most important border crossings to transport drugs to the US. For years, the Sinaloa Cartel, the Juárez Cartel, the Tijuana Cartel, the Arellano Félix Organization, the Gulf Cartel, and more recently the Cartel Jalisco Nueva Generación, and local gangs working directly for the cartels have vied for control of these border crossings.

The Northeast has similarly suffered high homicide rates. It is home to the Gulf Car-

Figure 1: **Total homicides, 1990-2015**
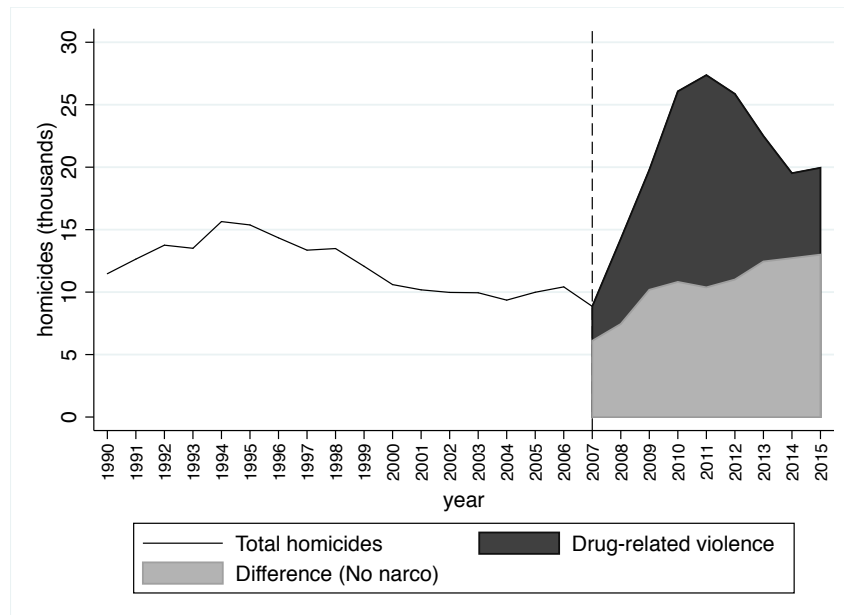
Notes: The graph shows the total number of homicides in Mexico from 1990-
2015 as reported by the National System of Health Information (SINAIS).
The information is based on individual death certificates. The black area
corresponds to the total number of "deaths presumably related to criminal
rivalry," as reported by the federal government. The gray area shows the
difference between the two series.

tel and Los Zetas, notoriously among the most violent criminal organizations operating
in Mexico. Los Zetas emerged as a splinter of the Mexican Army. The group deserted to
work as the enforcement arm of the Gulf Cartel. In 2010, Los Zetas broke away from the
Gulf Cartel and formed their own criminal organization, which has expanded across Mex-
ico, warring with other cartels over territory. Los Zetas are a highly decentralized crime
syndicate who use brutal tactics and engage in a range of criminal activities, including
human trafficking and extortion. Los Zetas war with the Gulf Cartel over the major drug
trafficking routes of the Northeast, which connect to some of the most-traveled border
crossings between the US and Mexico.

Other territories have become more valuable over time. The heroin epidemic in the US
has increased the value of poppy producing regions for Mexican DTOs. The rate of heroin-
related overdose deaths in the US increased 286 percent between 2002 and 2013. Various
DTOs have established a presence in the states of Michoacán, Guerrero, parts of Jalisco

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and Estado de México, including La Familia Michoacana, Los Caballeros Templarios, the Cartel Jalisco Nueva Generación, the Sinaloa and the Beltrán Leyva Cartels, Los Zetas, and many other smaller criminal groups such as Los Rojos, Los Ardillos, and Guerreros Unidos, which fight for control of some of the most profitable poppy production lands in the country.

In addition, important ports where cocaine from South America and chemicals for producing methamphetamines reaches the country from China are also heavily contested in the Southwest. The port of Lázaro Cárdenas, together with Acapulco in Guerrero, and the municipalities of the Costa Grande (Coyuca de Benítez, Técpan de Galeana and Zihuatanejo de Azueta), all constitute the bulk of one vital drug entry zone.

Due to the war on drugs, as well as these shifts in the market, DTOs have undergone two major changes. First, the government's strategy to contain DTOs has been to focus on arresting or killing their leaders, fracturing the large criminal organizations into smaller groups (Guerrero, 2011a; Phillips, 2015). With the use of a quasi-experimental empirical approach, Calderón et al. (2015) estimated the effects of drug capo arrests. Their results demonstrate that arrests or killings of drug capos produced systematic increases not only in DTO-on-DTO violence, but also in violence affecting the surrounding communities.

Second, criminal organizations have multiplied. More criminal groups have fragmented and split from the older DTOs. Mexican authorities [3] have detected at least nine DTOs and more than 37 criminal cells, in addition to hundreds of youth gangs working directly or indirectly with the cartels.

Beyond showing the importance of territory, a factor that underpins our framework that focuses on criminal incentives, the recent events also suggest the tie between this increased DTO competition and an increase in extortion and overall violence affecting the general population.

Before 2006, DTOs mostly focused on trafficking drugs to the U.S., but they have gradually diversified, now engaging in many other crimes including extortion, human

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[3]Data from the Procuraduría General de la República.

Figure 2: **Reported cases of extortion and business theft, 2000-2015**

trafficking, and kidnapping. Extortion specifically has been on the rise over this period. The number of cases of extortion reported to local public prosecutors' offices went from 3,157 in 2006 to 5,127 in 2015. Many small shopkeepers and small businesses have been forced to close rather than pay protection money. The number of reported cases of business thefts increased from 57 to 66 thousand in the same period, peaking in 2011 with 80 thousand cases. An alarming number of cases go unreported. The National Survey of Victimization and Perception about Public Security (ENVIPE) shows that in 2015, for every 100,000 citizens, there were more than 8,600 extortions, which amounts to 7 million incidents. The majority of them related to telephonic extortion (6 million) and an additional 27 thousand related to DTOs' fee for "protection" (cobro de piso).

At times related to extortion, forced disappearances have also increased over this same period.[4] From October 2007 to October 2016, the National Registry of Missing People registered 28,937 forced disappeared cases. Overall, Mexican authorities have uncovered

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[4]One of the most infamous cases of forced disappearance happened in Iguala, Guerrero, when 43 male students from the Ayotzinapa Rural Teachers College went missing in September of 2014. The atrocity gained worldwide condemnation, and it made visible the extent to which the Mexican state is implicated in the violence and human rights violations.

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more than 200 mass graves all over the country in recent years, containing more than 600 bodies. The forced disappearances and mass graves are not only abominable, but reflect the state of violence and impunity that reigns in vast areas of Mexico. In its 2017 report, Amnesty International claims that the forced disappearances are committed with the participation of state agents and that these are a "generalized practice" in Mexico (AI, 2017).

We argue that the competition between DTOs in Mexico has generated many of the incentives for this type of extortion - which has supplanted cooperative relationships with communities in many cases. It is, however, also dependent on local governments that are either too weak to confront them or too eager to collude with the mafia to overcome impunity. The extent to which the Mexican state has failed to provide security is highlighted by the rise of so-called "self-defense" groups (*Autodefensas*) in 2013, among communities in the state of Michoacán and in at least ten other states. These groups took arms to defend their livelihoods, family and property against organized crime.

3   Our Theory

To explain the logic of DTO strategies toward civil society, we start with the assumption that DTOs are primarily business organizations - albeit illegal ones - whose main goal is the production, transport, and sale of a product. The magnitude of the drug market and the profits involved, the dependence of citizens on the industry, as well as DTO capacity to buy off the state, means that these armed groups can mobilize support and extend their influence into society, even beyond what most rebel groups can do.

DTOs are mainly concerned with solving the logistical problem of cultivating, transporting and selling drugs. DTOs aspire to control valuable territories. The most valuable territories are areas suitable for drug cultivation; lines that can move drugs from their production zones to the consumer markets, and hubs along these lines, including ports (which in Mexico include those where cocaine arrives from South America as well as those

where chemicals to produce methamphetamines arrive from China) and border crossings into these valuable markets (mainly the U.S.) (Osorio, 2015; Calderón et al., 2015).

DTOs aspire to control these valuable drug-trafficking routes not only to produce and smuggle drugs, but also to "tax" any illegal long-distance trade that seeks to pass through their turf. Because the transaction costs involved in reaching credible deals with other criminal organizations are so high, DTOs often aspire to keep monopolistic control and fight each other to maintain control of their turf and contest that of their criminal rivals.

DTOs require some form of community collaboration to maintain control of their turf. At the very least, to operate in secrecy, DTOs require the population to keep silent. If community members supply information to the state (or to their rival criminal gangs) about when and where the traffickers perform their operations, who are involved and where the criminals hide, they face a sizable risk of being caught by the state or outmaneuvered by a rival criminal group.

Moreover, DTOs require more active collaboration from the community. DTOs cannot monitor all of the territory they seek to control, nor can they necessarily know when someone in their territory is collaborating with the state or with other criminal groups. They need locals to provide them with this information. In the Mexico, the so-called halcones (falcons) serve as the eyes and ears of the DTOs, monitoring who enters and leaves the territory, and who might be working with rival groups or with the state, or who might be trying to sneak in or sell drugs without paying their due "taxes."

Obtaining the community's silence and direct collaboration typically requires a combination of intimidation and cooptation strategies. For example, people keep silent because of fear - e.g., criminals might torture or even disappear whomever is thought to be working with their enemies or collaborating with the state. However, as is the case with armed rebels, pure coercion is not sufficient to bring about the type of community collaboration to provide the information needed to preserve territorial control (Kalyvas, 2006; Wood, 2003; Arjona, 2017; Mampilly, 2011). Obtaining high-quality intelligence through coercion is difficult (Wood, 2003). Moreover, too much intimidation might be

counter-productive, inspiring strong reaction even the formation of a violent self-defense militia from the community (Kalyvas, 2015).

Building on the civil war literature, we argue that establishing a sustainable collaborative arrangement with the community requires some self-restraint on the part of the criminal group. Below we explore the factors that enable these collaborative arrangements to develop.

3.1   Territorial Control

The current territorial control, and the expected control over time, is critical for DTO behavior toward civilians. Drawing on Olson (1993) and Arjona (2017), we formulate the hypothesis that, if an armed actor is in control of a region and expects to remain in control, we expect it to encourage stability and develop self-restraint to continue to benefit from active collaboration. DTOs that exercise monopolistic control may even provide some share of benefits from their trade to the population to maintain its loyalty (Iannaccone, 1992; Berman et al., 2011; Berman and Laitin, 2008).

In contrast, we expect competition between DTOs for territorial control to be accompanied by increases in civilian extortion for the following reasons: first, as Arjona (2017) indicates, territorial contestation shortens time horizons, incentivizing armed groups to behave more as "roving" bandits rather than to be "stationary bandits," Olson (1993).

Second, when armed groups compete for territorial control, sustaining cooperative relationships with the community becomes more difficult because competition creates a common pools problem: why would a criminal group restrain from preying on the community through extortion or other negative behavior toward the population when they expect other criminal groups not to restrain themselves (for which, potentially, all of the DTOs operating in the community may also be blamed) (Humphreys and Weinstein, 2006)?

Furthermore, because sustaining a turf war is costly, DTOs facing contested territo-

rial control may also adjust to declining profits from their "core" business by diversifying into a host of other criminal activities, including extortion, but also kidnapping for ransom, human trafficking, and theft. In extreme forms of violent contestation, competing DTOs can undermine their collective capacity to extract resources by committing so much abuse that citizens will refuse to pay extortion fees (or will migrate) because no criminal organization can credibly offer protection anymore. With the exception of the last extreme scenario, extortion and these other activities can provide greater profit than drug trafficking alone in the short-term.

Third, in contested regions, DTOs may use extortion to force civilians to withdraw their cooperation from other DTOs or the police. Extortion can provide information in addition to profit. In contrast to homicide, for example, extortion can reveal how much control an actor has control, or their ability to coerce the population in a contested region; it reveals organizational capacity by highlighting the organization's ability to induce cooperation. If individuals pay protection money or ransom, rather than reporting them to the police (or a competing criminal organization and asking for their protection), this reveals public perception about that DTO's level of control compared to a rival or the government. This aspect of the theory builds on the idea that civilian collaboration is a crucial determinant of state capacity, but that such collaboration also reveals the capability of the group competing with the government (Kalyvas, 2006).

Finally, we not only expect that DTOs should be more prone to extortion when they are vying for territorial control, but that extortion should be most pronounced where DTOs use violence against each other. Situations of high inter-cartel violence not only typically shorten time horizons, but because violence imposes financial costs, DTOs may be more prone to turn against the population to extract resources. Additionally, turf wars tend to empower DTO assassins and violent criminal cells, and might even start to operate on their own, with little restraint in their interactions with the community.

These logics relate to ending assistance in addition to increasing extortion: DTOs may reap fewer rewards from information if the intelligence is as obvious as rival has invaded an

entire area, rather than reporting on secret ties or a subtle incursion, and DTOs may also be less likely to receive credit for providing assistance to these communities. In addition, DTOs typically also have fewer resources with which to provide assistance. Finally, once violence in particular spreads, the factions that may have otherwise provided assistance to the community, and received its information, may also be marginalized.

Territorial contestation overlaps with but can differ from levels of violent conflict between DTOs (and our data will allow us to isolate the effects of each). Even when two or more criminal groups contest territory, this does not always imply the presence of violence. Also, although fragile, there are cases in Mexico where DTOs collude with other DTOs, and where they negotiate fees transporting drugs through their territories. We can therefore test the effect of territorial control but also violent conflict between DTOs on extortion.

Overall, then, we theorize that DTO monopolistic control should be associated with lower extortion and higher service provision. Competition among rival criminal gangs should be associated with higher extortion and lower service provision, especially when violent conflict breaks out between DTOs. Higher levels of violence between DTOs ("inter-cartel violence" for convenience) should be associated with less assistance and more extortion.

> **H1:** *Extortion by DTOs should be higher in places contested by DTOs than in places with no competition for territorial control.*

> **H2:** *Assistance by DTOs should be higher in with no competition for territorial control than in places contested by DTOs.*

> **H3:** *Extortion by DTOs should be higher where there is high inter-cartel violence.*

> **H4:** *Assistance by DTOs should be higher in places with low inter-cartel violence.*

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3.2   Leadership style and organizational capacity

Beyond territorial competition among DTOs, we also argue that leadership style and organizational characteristics make them more prone to abuse the population. As noted above, the former leader of the Sinaloa Cartel, Joaquin el "Chapo" Guzmán, prohibited his forces from kidnapping, a lucrative business for other cartels such as Los Zetas. The characteristics of these criminal forces, including the fact that they are armed and are already engaged in illegal activities, can make them difficult to keep disciplined. Only a strong leader with a distinct reason to control his men as Chapo did is likely to be able to enforce such restraint.

We argue that abusive behavior by DTO criminal cells should be more likely in less cohesive criminal organizations, building on insights that hierarchical structures can better overcome principal-agent and other disciplinary problems (e.g. Shapiro (2013)). Grillo (2011) has described DTOs as highly decentralized organizations, in which local *plaza* heads run semi-autonomous criminal cells. Lieutenants are responsible for supervising the criminal cells in their own territory and responding directly to the capos, who supervise the overall business, form strategic alliances, and appoint lieutenants. However, variation in levels of decentralization exists across cartels.

Moreover, in principle, criminal organizations with stable leadership should be better able to control armed men than DTOs that suffer leadership turnover. As argued above, DTOs in Mexico have suffered increasing rates of leadership turnover in the last decade, which, in turn, has shifted their focus from trafficking drugs while minimizing damage to the community to diversifying their portfolio to other crimes. This metamorphosis was in part the unanticipated result of President Felipe Calderón's (2006-2012) "beheading" strategy. When violent gangs are cut loose from drug capos who know how to move drugs to markets in the U.S. or are pushed out of traditional drug-running routes, they turn to new lines of work to generate profits, including extortion and kidnapping.

Other characteristics also distinguish different cartels along organizational lines, as

well: for instance, some are more deeply rooted in their communities - those that integrate drug production, for instance - and may be less prone to abusive behavior because they require more continued cooperation from the local economy to sustain their business.

Beyond some journalistic accounts and classified security intelligence, however, there is little knowledge of the internal organization of Mexican DTOs.[5] Thus, our approach to at least control for some of these additional organization factors is to include fixed effects for each DTO in our empirical models in order to allow for the possibility that each organization might have a distinctive way of interacting with citizens, depending on issues such as leadership style and organization.

4   Empirical analysis of DTO Strategies

We evaluate these hypotheses using a survey list experiment conducted in Mexico that was designed to overcome persistent problems in previous surveys. A well-known problem in public opinion surveys is that respondents often misreport their behavior and beliefs. Survey accuracy is frequently affected by responses that stem from pressure to conform to socially acceptable norms or fear of providing certain information (Brooks, 2008; Kalyvas, 2006; Krueger, 2007). There is significant literature on the problems related to measuring citizens' opinions and attitudes for crime and civil conflict (Matanock and Garcia-Sanchez, 2014; Lyall et al., 2013; Bullock et al., 2011; Bruck et al., 2016; Mosher et al., 2011; Kalyvas and Kocher, 2009; Stylianou, 2003; Warr, 2000). The highly sensitive nature of these topics motivates all actors involved to hide information. DTOs do not advertise their membership, activities, or modus operandi. For national security reasons, the government does not provide much detail on their strategies to combat DTOs, and it certainly does not give out information about its collusion with DTOs or its members' misconduct. For their part, citizens fear that providing information about DTOs may trigger punishment from DTOs or even the state.

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[5]There are serious risks in conducting such research, and it is difficult to assess the potential biases contained in scattered journalistic accounts or leaked intelligence.

The literature suggests maximizing the incidence of truthful responses to sensitive issues with less intrusive questions such as list experiments, especially for individuals to report on their own behavior (Blair and Imai, 2012; Gonzalez-Ocantos et al., 2012; Imai, 2011; Sniderman, 2011; Glynn, 2013; Holbrook and Krosnick, 2010; Corstange, 2009; Kuklinski et al., 1997a,b; Sniderman and Grob, 1996). A list experiment creates two groups of individuals, a control and a treatment group, assigned randomly from the overall sample, so that the two groups are equivalent. Individuals in the control group are shown a list of n items. They are then asked how many of the items they have/do/know of/agree with. It is important not to ask them to specify which items, only their count. The treatment group receives the same list with the n items plus an additional "sensitive" item that we seek to measure. Interviewees in the treated group are also asked to specify a number of items they have/do/know of/agree with, but, again, not to mention which specific items. The difference of the mean item responses between the control and treatment groups provides an adequate estimate of the aggregate proportion of the population that has/does/knows of/agrees with the sensitive item.[6]

Drawing on this literature, we conducted a series of list experiments in the Survey on Public Safety and Governance in Mexico. We randomly selected three groups of 900 observations from the full sample of 2,700: one control group and two treatment groups. There were three different questionnaires. Individuals in the sample were randomly assigned to every group.

The list experiment was carefully designed. The interviewee read the lists from cards distributed by the interviewer. Each interviewee received two different cards. Table 1 describes the exact wording of the cards, and indicates which of the cards were given to each experimental group. We were careful in using control items from which the treatment item would not be obviously different, but also that would encompass different subsets of the populations, so that any individuals should be unlikely to have experienced none

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[6]For more detailed explanations, see Blair and Imai (2012); Imai (2011); Glynn (2013); Corstange (2009).

of the items or all of the items (Glynn, 2013; Berinsky and Glynn, 2010). Each group received the cards listed in its row. There were two different treatment groups, each exposed to a different experiment.[7]

Different subsamples, selected through randomization, therefore received different experiments. Experiment 1 measures an all-too-frequent signal of the failure of state control: sightings of non-state armed convoys. Experiment 2 asks whether citizens turn to DTOs for assistance. Experiment 3 and Experiment 4, respectively, measure extortion by DTOs and the police. The focus of this paper is on Experiment 2 and Experiment 3, but the other experiments also provide insight into how DTOs permeate many aspects of everyday life in Mexico. It is important to note that the extortion questions are framed as issues of protection and avoiding harm. Respondents understand we are not simply asking about transactions involving the purchase of drugs, the payment of private security guards, or the ubiquitous practice of bribing traffic policemen.

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[7]This design was established in order to gain more leverage in testing whether the assumptions of list experiments hold, following Blair and Imai (2012).

Table 1: **Description of List Experiments**

	Card 1	**Card 2**
Introduction to all groups	Please tell me how many of these things you have done in the past six months. We just want to know how many you have done, do not tell me which ones.	Please tell me how many of these things you have done in the past six months. We just want to know how many you have done, do not tell me which ones.
Control Group	1. I got drunk at a party I went to. 2. I did some exercise outdoors. 3. I attended church almost every Sunday.	1. I have received benefits from the Oportunidades program. 2. I have participated in a tanda.* 3. I gave charity (limosna).
Treatment Group 1	**4. I have seen cars or trucks with armed men who are not policemen in broad daylight.**	**4. I have given money to drug or criminal organizations so that they protect me.**
Treatment Group 2	**4. I asked for help from someone working for organized crime.**	**4. I have given money to the police so that they protect me.**

* Rotating Savings and Credit Association (ROSCA).

We were very careful in implementing the list experiment. The team collecting the survey was trained to ask the list experiment questions precisely. Questionnaires were randomized by polling point and enumerator. Lists were handed to respondents on cards, so respondents could read them for themselves.[8] The mechanics of the process were pre-tested before the survey. Both sensitive and control items in the lists were pre-tested as direct questions in a nationally representative survey two weeks before the collection of the dataset.[9]

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[8]Enumerators did not report any problem with respondents' ability to read the cards. The literacy rate in Mexico is high (93.1 percent in 2010), and oversampling in violent urban localities meant that practically every respondent could read.

[9]The non-response rate for the sensitive items when asked directly was above 30% for the questions

The list experiments inherently protect both the interviewers and interviewees, given that no sensitive data on these incidents is collected directly. Of course, the safety of both groups was paramount to us. Members of the DTOs sometimes harassed enumerators. In some locations where this survey was collected, enumerators were escorted either by police, or even DTO operatives, while doing their work. Our interviewers noted that in the north of the country, DTOs often guard the town, doing rounds every couple of hours, just as the police would patrol a "regular" town. It was also common to observe men known as "halcones" (falcons) posted at certain strategic points in both rural and urban localities. These individuals inform the DTO of the presence of government authorities or strangers. The fieldwork team told us that these are not uncommon circumstances in their work. We worked closely with our institutional review board (IRB) to generate an approved plan for safety, which included using these list experiments, rather than direct questions about these sensitive topics, on the survey.

The survey was well randomized across rural and urban regions and across localities with different levels of violence - two of the factors we believe should have the most effect on the responses. The survey is also well randomized across municipalities controlled by different political parties, which we will use as a control variable, together with other socio-economic characteristics. Summary statistics by treatment group and balance tests are shown in Table 2. The table shows that regional characteristics are identical across groups. There were small differences in education, age, and gender across groups. Nevertheless, regression estimates are unaffected once these differences are taken into account.

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of "extortion" and "help." Unfortunately, that data was not properly stored and we lost control of the raw pre-test surveys.

Table 2: **Summary statistics**

Variable	Control % (1)	Treatment Group 1 (diff) (2)		Treatment Group 2 (diff) (3)	
DTO Contestation					
No cartel	0.15	0.00		0.00	
Monopoly	0.23	0.00		0.00	
Contested	0.62	0.00		0.00	
Violence					
Low violence	0.04	0.00		0.00	
Medium violence	0.18	0.00		0.00	
High violence	0.78	0.00		0.00	
Incumbent					
PAN governor and mayor	0.10	0.00		0.00	
PRI governor and mayor	0.43	0.00		0.00	
Other incumbents	0.46	0.00		0.00	
Individual characteristics					
Man	0.47	0.02		0.06	***
Age 18-35	0.41	0.06	***	0.03	
Age 36-50	0.33	-0.00		-0.03	
Age 51-65	0.17	-0.04	***	-0.01	
Age 66 or more	0.09	-0.01		0.00	
Education-College or more	0.15	0.00		0.03	*
Education-Secondary or High School	0.46	0.04	*	-0.01	
Education-None or Primary	0.39	-0.05	**	-0.02	
Oportunidades	0.23	0.00		-0.00	
Peasant	0.08	-0.01		-0.01	
Self Employed	0.17	-0.01		-0.00	
Regional characteristics					
Urban locality	0.68	0.00		0.00	
Rural locality	0.32	0.00		0.00	
Marginalization Index-Low	0.78	0.00		0.00	
Marginalization Index-Medium	0.12	0.00		0.00	
Marginalization Index-High	0.10	0.00		0.00	
Observations	900	900		900	

Notes: The table shows summary statistics of 2,700 interviews in the Survey on Public Safety and Governance in Mexico. Participants were randomly assigned into one control and two treatment groups. Column (1) shows average characteristics in the control group. Columns (2) and (3) show differences with respect to treatment groups. P-values of difference in means tests are also shown: *** : $p < 0.01$, ** : $p < 0.05$, * : $p < 0.1$.

Following Blair and Imai (2012), suppose that in a list experiment there are J control items and a single sensitive item $J + 1$. Let Z_{ij} be an indicator variable on whether individual i has a preference for item j or, as in our experiment, she has been exposed to such situation. Let $Y_i(0) = \sum_{j=1}^{J} Z_{ij}$ and $Y_i(1) = \sum_{j=1}^{J+1} Z_{ij}$ represent the potential answers respondent i would give to the list experiment under the control and treatment conditions, respectively. Finally, let $Z_{i,J+1}^*$ be the truthful answer to the sensitive item. The no design effect assumption implies that $Y_i(1) = Y_i(0) + Z_{i,J+1}(1)$, while the no liars assumption means that $Z_{i,J+1}(1) = Z_{i,J+1}^*$. Under both assumptions, the mean difference estimator is an unbiased estimate of the proportion in the population with an affirmative preference for (or exposure to) the sensitive item.

Moreover, under these assumptions it is possible to estimate the joint distribution of $(Y_i(0), Z_{i,J+1}^*)$, where each type of respondent type is represented by $\pi_{yz} = Pr(Y_i(0) = y, Z_{i,J+1}^* = z)$. In particular, if T_i is the treatment status of individual i, then π_{y1}, which is the estimated proportion of respondents in the sample that have been exposed to y control items and to the sensitive item, can be estimated as:

$$\pi_{y1} = Pr(Y_i \leq y \mid T_i = 0) - Pr(Y_i \leq y \mid T_i = 1). \tag{1}$$

Consequently, the proportion π_{y0} of respondents that have been exposed to y control items but not to the sensitive item can be inferred from the difference between the estimated mass probability $Pr(Y_i = y \mid T_i = 0)$ and π_{y1}.

All the experiments were piloted in advance to avoid potential identification threats. The distribution of answers for each experiment for the control and two treatment groups are shown in Table 3. The table also shows the estimated π_{y1} for each experiment. According to these estimates, approximately 9.9% of the sample has been extorted by DTOs, while 12.2% have received help from them. The prevalence of DTO activities is evident with a remarkable 38.3% of respondents estimated to have seen armed convoys during

daylight hours.Also interesting among these summary statistics, and quite worrisome, is that police extortion is estimated to be even higher than criminal extortion.

List experiments rely on two sets of assumptions: no liars and no design effects. Floor and ceiling effects can generate "liars:" if an individual has performed none or all of the actions listed, he or she may lie so as to not reveal that he or she has performed (or not performed) the sensitive item. Thus, all of the lists are designed to include items rarely expected from the same individual, so that most individuals will have performed at least one of the control items but not all of them, as noted above.

The other assumption inherent in the list experiment is that there is no "design effect." That is, adding an item to the list will not have an effect upon the responses for the other items on the list. A "design effect" would mean the items are not independent from each other.

To test to potential threats of identification posed by design effects or liars, we follow Blair and Imai (2012). Under no design effects, we should expect the cumulative distribution of y in the control group to be greater or equal than the corresponding distribution under treatment. Nevertheless, this distribution should be greater by at most one item at each level y. Algebraically, these two hypotheses are equivalent to the null that $\pi_{yz} \geq 0$ for all y and z. Since this is the case for each list experiment, we conclude that there is no evidence of design effects in our survey.[10]

The low proportion of respondents in the two control groups for which $Y_i(0) = 3$ suggests that the experiments have no ceiling effects. The absence of design effects (the inclusion of the sensitive item does not seem to reduce the number of reported items) and the positive estimated proportions π_{11} are clear indicators of the absence of substantial floor effects.

Our baseline linear model to measure the prevalence of DTO extortion and assistance in our sample is as follows:

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[10]We also use the procedure proposed in Blair and Imai (2012) that compares two tests for stochastic dominance using the Bonferroni correction. As expected, we fail to reject the null hypothesis with a Bonferroni-corrected p-value for each list experiment equal to 1.

Table 3: **Answer distribution of list experiments**

Card 1

Y_i	Control Group Freq.	Control Group Prop.	Convoys Freq.	Convoys Prop.	Convoys $\pi_{y,1}$	Help from crime Freq.	Help from crime Prop.	Help from crime $\pi_{y,1}$
0	148	16.6%	108	12.1%	4.6%	127	14.2%	2.4%
1	423	47.5%	293	32.7%	19.4%	388	43.5%	6.4%
2	263	29.6%	346	38.6%	10.3%	300	33.6%	2.3%
3	56	6.3%	113	12.6%	4%	68	7.6%	1%
4			36	4%		9	1%	
Total	890	100%	896	100%	**38.3%**	892	100%	**12.2%**

Card 2

Y_i	Control Group Freq.	Control Group Prop.	Narco extortion Freq.	Narco extortion Prop.	Narco extortion $\pi_{y,1}$	Police extortion Freq.	Police extortion Prop.	Police extortion $\pi_{y,1}$
0	181	20.3%	168	19%	1.3%	161	18%	2.3%
1	502	56.3%	461	52%	5.6%	468	52.3%	6.2%
2	167	18.7%	201	22.7%	1.6%	206	23%	1.9%
3	42	4.7%	44	5%	1.4%	55	6.2%	0.4%
4			12	1.4%		4	0.4%	
Total	892	100%	886	100%	**9.9%**	894	100%	**10.8%**

Notes: The table shows the number respondents and the distribution of answers for each outcome and treatment group. The table also shows the estimated proportion of each respondent type $\pi_{yz} = Pr(Y_i(0) = y, Z^*_{i,J+1} = z)$ under the no-design effect and no-liars assumptions (see Imai 2011), where $Y_i(0)$ represents the total number of affirmative answers for control items and $Z^*_{i,J+1}$ denotes the truthful occurrence of the sensitive item.

$$y_{ij} = \alpha + \beta_1 T_i + \sum_k \delta_k X_{ik} + \sum_l \gamma_l Z_{jl} + \epsilon_{ij} \tag{2}$$

where y_i is the number of items reported by the respondent i in municipality j and T_i is an indicator variable for treatment. The model also includes k individual covariates and l socio-economic characteristics at the municipality level.

The results of the list experiments show a significant presence of DTOs, including their

use of both extortion and assistance strategies toward the communities in which they operate - much higher than we had anticipated. Table 4 shows our estimated coefficients for each of the four list experiments described above. The estimated coefficients of the models in the first column are equivalent to those of a difference in mean tests. Models in column (2) include individual characteristics and models in column (3) also include regional socio-economic characteristics. On average, one out of every three Mexicans had seen a non-state armed convoy during daylight in the six months prior to the survey. One in ten Mexicans had been extorted by criminal organizations in the past six months. We found that a similar percentage of respondents received help from the criminals as well. Surprisingly, the results show higher rates of extortion by the police. The security situation certainly does not represent stable state control. Moreover, the coefficients are similar when adjusting for slightly imbalanced individual characteristics and identical when including regional covariates.

4.1 Explanatory Variables

In order to test the specific hypotheses derived from our theory, and to learn more about other correlates of extortion, we use a multivariate regression model of survey data for list experiments as proposed by Imai (2011) and Blair and Imai (2012).[11] We specified a linear model with identical covariates for the four treatments analyzed in the paper, inquiring into the dynamics of extortion by DTOs and the assistance also provided by these drug cartels. The baseline models are similar to the one described in equation 2 but also include interaction variables of the treatment indicator with each of the individual and municipal characteristics. We adjust our baseline specification as follows:

$$y_{ij} = \alpha + \beta_1 T_i + \sum_k (\delta_k + \tau_k T_i) X_{ik} + \sum_l (\gamma_l + \eta_l T_i) Z_{jl} + \epsilon_{ij} \tag{3}$$

where τ_k and η_l are the coefficients for the interaction terms between the treatment

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[11]We use the *List* package for R (Blair and Imai, 2012).

Table 4: **Average Effect of List Treatment**

	Average effect					
Treatment	(1)		(2)		(3)	
Card 1						
Convoy	0.38	***	0.37	***	0.37	***
	(0.04)		(0.04)		(0.04)	
Help from criminals	0.12	***	0.10	***	0.10	***
	(0.04)		(0.04)		(0.04)	
Card 2						
Criminal extortion	0.10	**	0.10	***	0.10	***
	(0.04)		(0.04)		(0.04)	
Police extortion	0.11	***	0.12	***	0.12	***
	(0.04)		(0.04)		(0.04)	
Individual covariates	No		Yes		Yes	
Regional covariates	No		No		Yes	

Notes: The rows show the estimated coefficients of four different list experiments included in the Survey on Public Safety and Governance in Mexico in 2011. There were two questions (card 1 and 2) for which respondents were randomly assigned into one control and two treatment groups (see Table 1). The coefficients are estimates of the proportion of the survey sample exposed to the sensitive item. Models in column (2) include individual characteristics and models in column (3) also include regional socio-economic characteristics. Robust standard errors in parenthesis. *** : $p < 0.01$, ** : $p < 0.05$, * : $p < 0.1$.

indicator and the k individual and l regional characteristics, respectively.

Our theory highlights two main explanatory variables: DTO territorial contestation and violent conflict between DTOs. To measure DTO contestation, we use the Coscia and Rios (2012)[12] data on areas of operation of Mexican DTOs. As noted above, those authors developed a Web crawler to extract information on the activity of criminal groups in Mexico from Google News. The data is available at the municipal level from 1990 to 2010. It consists of panel data where each column is a dummy variable indicating whether a given DTO was present in a municipality during a certain year.

We define that a criminal group had "dominant presence" in a municipality if it has reported operations (e.g., it appears in the Coscia and Rios database) each year between

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[12]We thank Viridiana Rios in particular for facilitating the original dataset.

2008 and 2010. We chose this period of three years before the survey to reduce potential classification errors of in the Coscia and Rios database [13] and to better reflect short - and medium- term changes in inter-cartel competition in each municipality. [14] For the purposes of the analysis, a municipality is said to be "contested" if two or more groups have been present there. Similarly, a municipality is a monopoly if a unique, dominant group has been present during the period of study. We estimate that, between 2008 and 2010, DTOs had a monopolistic presence in 10.9 percent of the municipalities (n=268) and contestation in an additional 4.9 percent (n=120). As a matter of fact, based on the Coscia and Rios (2012) dataset, we estimate that 84.2% of the municipalities in Mexico did not have a dominant DTO presence in the period of study. The geographic distribution of the number of DTOs with a dominant presence in each municipality is shown in Figure A1 of the Appendix.

We also use levels of violent conflict between DTOs to capture differing dynamics among contested territories, which we expect may have additional effects on DTO strategies as described in the theory. In 2011, the Mexican government published a dataset on "Deaths Presumably Related to Criminal Rivalry" (SEGOB, 2011). It classifies violent deaths at the municipal level between December 2006 and September 2011 into three categories: 1. "Executions," defined as homicides resulting from violence between DTOs; 2. "Confrontations," defined as killings from clashes between the Mexican authorities and DTOs; and 3. "Aggressions," which refer to unexpected attacks by DTOs on government security agents. Each case was classified by a special council integrated by members of the army, navy, federal police, ministry of interior, and the general public prosecutor's office (SEGOB, 2011).

Nevertheless, government data might suffer bias from underestimation of misclassification of cases. The database only includes cases with an open investigation from the

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[13]An entry in the Coscia and Rios database could be generated by a single news article, without considering the length (days, weeks, or months) or type of drug-related event in a municipality.

[14]During Calderón's administration, DTOs' areas of operation changed frequently, even from month to month, especially after 2007.

federal or local public attorney offices and known by the federal authorities, and their inclusion in the database might change if they no longer meet the established criteria (SEGOB, 2011). Instead, to measure levels of violence, we use rates of homicides by firearms of males between 15 to 39 years old for the following reasons: 1) homicide data comes directly from death certificates, reducing potential underestimation biases, 2) homicides in this group of age and gender best reflect the geo-temporal variance of reported executions between criminal groups (Calderón et al., 2015), and 3) homicides by firearms are directly related to drug-related violence, which helps us to parse different types of violence. The selection of our variable for violence does not significantly affect the results, as shown in the following sections.

Ciudad Juárez was the most dangerous city in the world until 2011, and alone accounted for about 15 percent of the total homicides in our sample between 2007 and 2011. Tijuana, Chihuahua and Culiacán followed, accounting together for another 12.6 percent of all murders. Finally, more than one thousand homicides by firearms in this population group occurred in Acapulco (2.5 percent of the total).

We classified the level of drug-related violence in each municipality according to the tertiles of the distribution of the yearly average rates of our variable between 2008 and 2010. Municipalities with "low" levels of violence observed an average rate of zero, while municipalities with "high" levels of violence observed an annual rate of at least 19.1 homicides per 100 inhabitants.

Table 5 presents cross tables of levels of drug-related violence and territorial contestation. During the period of study, more than half of the population lived in a municipality with a dominant presence of at least one criminal group (59%), from which less than half lived in contested territories (27% of the total population).

About 54% of the contested territories observed high levels of violent conflict between DTOs. These territories averaged of 2.3 DTOs during the period of study. These communities also concentrated 47% of the homicides and only 16.6% of the population. According to our theory, residents in these territories are more vulnerable to victimization

than communities controlled by only one DTO.

Violent conflict between DTOs and territorial contestation among them are not perfectly correlated. While 10% of the municipalities contested by two or more DTOs observed no violence in the period, about 30% of the municipalities with no dominant control observed high levels of violence. These cases illustrate, respectively, examples of collusive behavior between DTOs and sporadic events of violence in unoccupied territories due to fear or uncertainty of an attack (no man's land).

Figure 3 displays our sampling points and the estimated number of cartels in each municipality. Our strategy was to oversample areas of high violence in order to guarantee sufficient spread across areas of differing degrees of DTO dominance. We should note, however, that the entire state of Tamaulipas (area in grey) had to be left out of the sample due to serious risks to our enumerators. We expect to observe more extortion by DTOs in contested municipalities than places where a single DTO has control (Hypothesis 1). Moreover, "assistance" by DTOs should be higher in places of monopolistic control than in contested municipalities (Hypothesis 2). In terms of inter-cartel violence, our expectation is that DTO extortion should be higher and assistance lower where DTOs are fighting violent turf wars (Hypotheses 3 and 4).

We include variables that allow us to highlight groups of respondents that show distinctive patterns, and control for any imbalance in randomization. We add a dummy variable indicating whether the polling point (electoral section) is considered urban according to Mexico's Federal Electoral Institute. We include the municipal level of development by using the marginalization index constructed with 2010 census data (CONAPO, 2010). We also include a dummy variable indicating whether the municipality was governed by the PRI authorities (governor and mayor) for at least six months before the survey was conducted. We include similar variables for PAN authorities.

Furthermore, we include a full set of demographic variables at the individual level - sex, age, occupation (including unemployment), education, and receiving social transfers through the *Oportunidades* program as a proxy for poverty - that control for individual

Figure 3: **DTO dominance and sampling points**
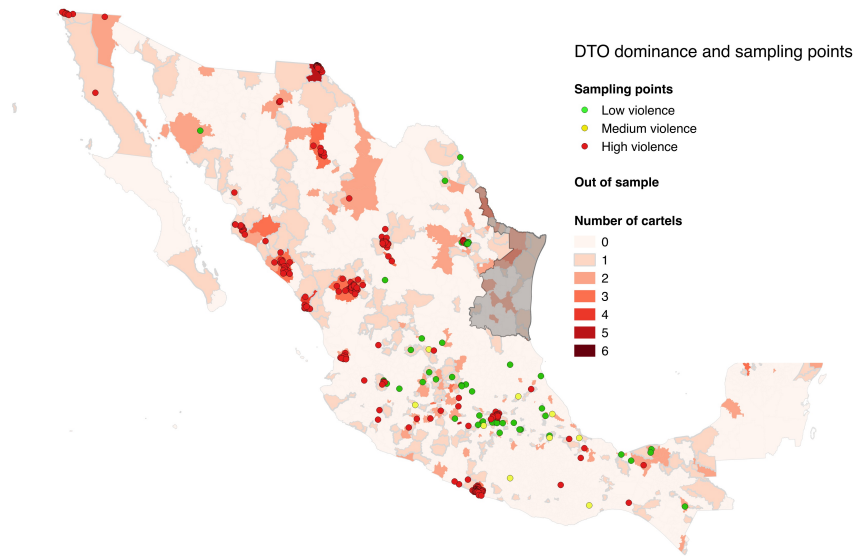
Notes: The graph shows the geographic distribution of 300 sampling points of the Survey on Public Safety and Governance in Mexico conducted in 2011. Sampling points are colored according to the level of drug-related violence in each municipality ("High," "Medium," and "Low"). Categories were defined with respect to the tertiles of the distribution of yearly average rates, between 2008 and 2010, of homicides by firearms of males between 15 to 39 years old. The figure also show the number of dominant DTOs in each municipality between 2008 and 2010. The areas were estimated using the Coscia and Rios (2012) database, that describes the yearly territorial presence of criminal groups using Google News queries. We define that a cartel has had dominant presence in a municipality if it has had operations (it appears in the database) in every year between 2008 and 2010.

Table 5: **Violence and DTO's contestation**

% Population (n = 112.3 million)

	No cartel	Monopoly	Contested	Total
Low violence	8.94	0.72	0.18	9.84
Medium violence	18.54	18.65	10.34	47.53
High violence	13.15	12.89	16.60	42.64
Total	40.62	32.26	27.11	100.00

% Homicides by firearms males 15-39yo (n = 26,766)

	No cartel	Monopoly	Contested	Total
Low violence	0.00	0.00	0.00	0.00
Medium violence	4.15	4.94	2.51	11.6
High violence	18.56	22.69	47.14	88.4
Total	22.72	27.64	49.65	100.00

% Surveys (n = 2,700)

	No cartel	Monopoly	Contested	Total
Low violence	3.00	0.67	0.00	3.67
Medium violence	6.00	8.00	4.00	18.00
High violence	5.67	14.33	58.33	78.33
Total	14.67	23.00	62.33	100.00

Notes: The table shows the distribution of population, homicides by firearms of males between 15 and 39 years old, and respondents, by level of violence and DTO's contestation. Levels of violence were estimated with respect to tertiles of homicides rates by firearms for that population group, between 2008 and 2010. Contestation was estimated using the Coscia and Rios (2012) database, that maps the yearly territorial presence of criminal groups using Google News queries. We define that a cartel has had dominant presence in a municipality if it has had operations (it appears in the database) in every year between 2008 and 2010. A territory is contested if two or more cartels have had dominant presence.

characteristics which may affect citizens' likelihood of being victimized.[15]

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[15]We do not include self-reported income in the main tables because this variable tends to be very unreliable as a proxy for poverty. We did collect this information, though, and the results do not vary when included.

4.2 Extortion and help by DTOs

Table 6 below shows the estimated coefficients for the experiments on DTO extortion and assistance. The full set of coefficients is shown in Table A1 in the Appendix.

To untangle the relationship between contestation and violent conflict between DTOs, we estimated three models for each experiment: one using our proxy for territorial contestation, a second one using our measure of drug-related violence, and a third one using both variables. For interpretation purposes, we use as baseline categories places with a single dominant cartel (monopoly) and/or low violence.

That the coefficient for contestation is positive and statistically significant indicates higher levels of extortion by criminal groups in disputed territories as compared to monopolized areas. On the one hand, once the variables for violence are included, the coefficient is of similar magnitude but lower significance. On the other hand, there is evidence that help from criminal groups is lower in contested municipalities. Nevertheless, the coefficient loses significance in the models that take into account levels violence. Overall, the results indicate that help from criminal groups generally decreases in violent places, suggesting that even groups with monopoly control decrease their help to the population when fighting a turf war.

The estimated coefficients for partisan incumbency suggest that places with a PAN governor and mayor observed significantly lower extortion rates than other incumbents. There were no significant differences between incumbents with respect to help from criminals. Further research should explore the reasons why there is significantly less extortion in PAN-controlled areas, relative to states and municipalities governed by other incumbents.

Table 6: **Estimates on narco extortion and help**

Variable	Narco extortion			Narco help		
	(1)	(2)	(3)	(4)	(5)	(6)
Sensitive item						
No cartel	0.074		0.067	-0.005		-0.063
	(0.132)		(0.136)	(0.14)		(0.146)
Contested	0.196 **		0.188 *	-0.172 *		-0.137
	(0.093)		(0.097)	(0.103)		(0.107)
Medium violence		-0.091	-0.105		-0.301	-0.297
		(0.219)	(0.224)		(0.212)	(0.217)
High violence		0.015	-0.068		-0.426 **	-0.374 *
		(0.208)	(0.222)		(0.203)	(0.219)
PRI gov and mayor	0.269 **	0.33 ***	0.27 **	0.213	0.159	0.203
	(0.13)	(0.125)	(0.13)	(0.137)	(0.132)	(0.137)
Other incumbents	0.277 **	0.312 **	0.279 **	0.024	-0.01	0.014
	(0.126)	(0.124)	(0.126)	(0.131)	(0.13)	(0.132)

Notes: The rows show estimated coefficients for the sensitive item of two list experiments included in the Survey on Public Safety and Governance in Mexico in 2011. There were two questions (card 1 and 2) for which respondents were randomly assigned into one control and two treatment groups (see Table 1). Full coefficient table is shown in the Appendix. All models include regional socio-economic characteristics. Robust standard errors in parenthesis. *** : $p < 0.01$, ** : $p < 0.05$, * : $p < 0.1$.

Figure 4 below shows the average predictions from the full model. For ease of interpretation, we present simulated predicted values and their 90% and 95% confidence intervals. Our explanatory variables are grouped into various categories: 1) those related to our theory regarding levels of contestation and inter-cartel violence; 2) those related to partisan control; 3) individual-level variables that can illuminate patterns of victimization across societal groups; and 4) locality or municipal-level controls related to poverty and urbanization.

The model predicts positive rates of extortion in contested municipalities and in municipalities with high inter-cartel violence. Ceteris paribus, we find a 16 percent incidence of extortion by DTOs in contested municipalities, on average. This rate is significantly higher than the rate estimated for places with a criminal monopoly, which is not statistically different from zero.

The model also shows a positive rate of DTO extortion for municipalities with high inter-cartel violence. The magnitude of the predicted effect is a 10 percent incidence of

extortion. Nevertheless, this rate i not significantly different than the predicted rates of extortion in places of with low and medium violence.

In terms of partisan control, the incidence of extortion is higher in PRI-governed municipalities, where we observe a 12 percent incidence of extortion, on average. Nevertheless, this rate is almost identical to that of other non-PAN incumbents. The incidence of extortion is significantly lower in PAN-governed municipalities, with a predicted negative 15 percent incidence of extortion, although this prediction is not significantly different from zero.

Hence, citizens appear to be "safer", in terms of levels of DTO extortion, where one or no cartel has a dominant presence in a territory, where there are lower levels of intercartel violence, and in PAN municipalities. We note that these results hold controlling for levels of development and urbanization.

Figure 4: **Predicted rates of DTO extortion and co-optation**
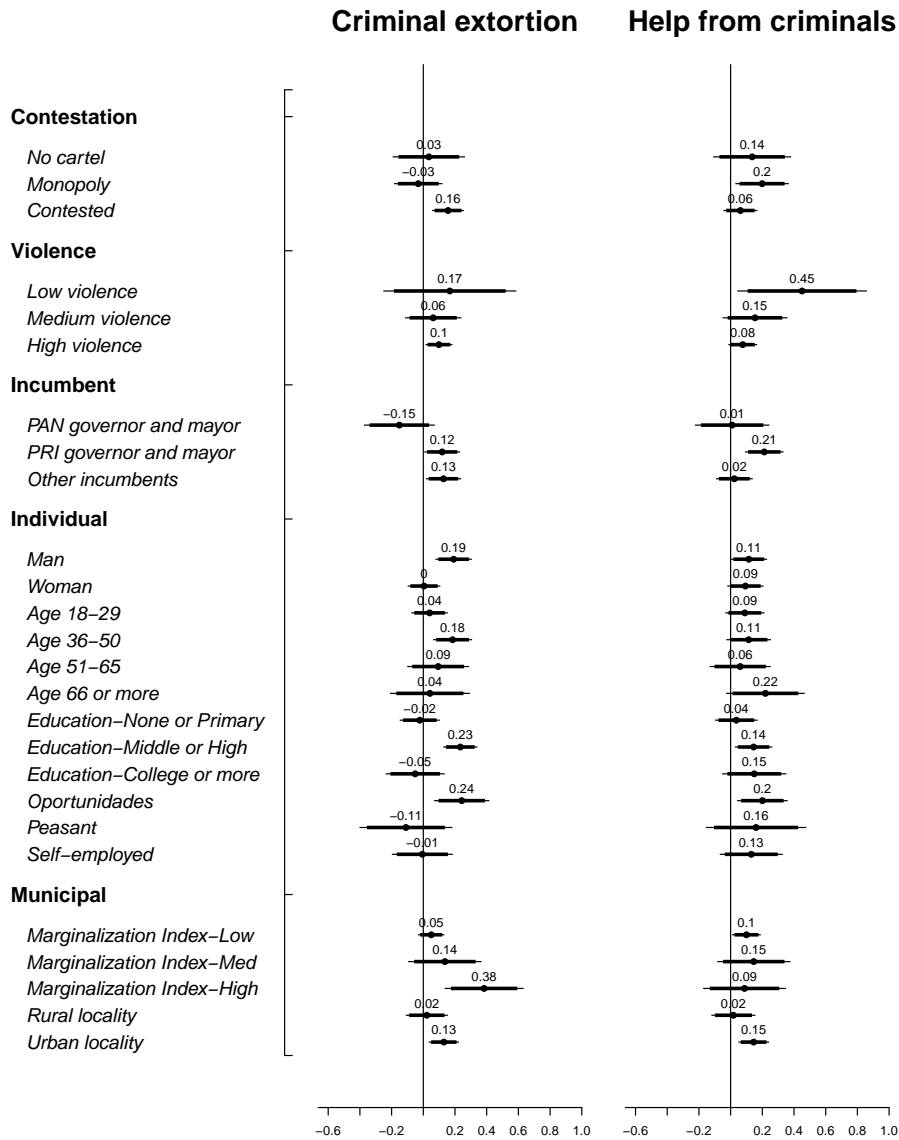
Notes: The figure shows predicted rates of DTO extortion and assistance, and their 90% and 95% confidence intervals, for the two list experiments included in the Survey on Public Safety and Governance in Mexico in 2011. There were two questions (card 1 and 2) for which respondents were randomly assigned into one control and two treatment groups (see Table 1). Full table of coefficients is shown in the Appendix. All models include regional socio-economic characteristics and robust standard errors.

4.3 Police extortion and armed convoys

Our survey included list experiments for items that measure police extortion and other activities by DTOs. Although these experiments do not directly test our theory, we present their results in Table 7 below because they provide additional insight into DTO

activities and state corruption. Neither territorial contestation nor drug-related violence seem to be predictors of police extortion or the sightings of armed convoys. Similar to the results for criminal extortion, the model predicts higher rates of police extortion in non-PAN municipalities.

Table 7: **Estimates on police extortion and sightings of armed convoys**

Variable	Police extortion			Armed convoys		
	(1)	(2)	(3)	(4)	(5)	(6)
Sensitive item						
Contested	-0.077		-0.039	-0.006		-0.024
	(0.095)		(0.1)	(0.11)		(0.115)
No cartel	-0.152		-0.159	-0.025		-0.062
	(0.129)		(0.134)	(0.144)		(0.152)
Medium violence		0.169	0.116		-0.357	-0.374
		(0.217)	(0.221)		(0.25)	(0.257)
High violence		0.048	-0.017		-0.26	-0.278
		(0.206)	(0.221)		(0.241)	(0.262)
PRI gov and mayor	0.251 **	0.243 *	0.248 *	-0.019	-0.026	-0.021
	(0.127)	(0.124)	(0.128)	(0.156)	(0.152)	(0.157)
Other incumbents	0.237 *	0.225 *	0.232 *	0.002	-0.004	0.001
	(0.122)	(0.122)	(0.123)	(0.151)	(0.15)	(0.153)

Notes: The rows show estimated coefficients for the sensitive item of two list experiments included in the Survey on Public Safety and Governance in Mexico in 2011. There were two questions (card 1 and 2) for which respondents were randomly assigned into one control and two treatment groups (see Table 1). Full coefficient table is shown in the Appendix. All models include regional socio-economic characteristics. Robust standard errors in parenthesis. *** : $p < 0.01$, ** : $p < 0.05$, * : $p < 0.1$.

4.4 Heterogenenous effects by DTO

This section explores heterogeneous effects in criminal extortion and help by DTOs. Figure A1 in the Appendix shows the areas of operation of selected drug-trafficking organizations between 2008 and 2010 using the Coscia and Rios (2012) database. The figure also displays if the areas are under the control of one DTO or, instead, if they are contested according to our definitions above.

To test for each DTO strategy towards civil society under different scenarios of territorial control, we replaced our categorical variable for contestation (*No cartel*, *Monopoly*,

Contested) in equation 3. A new variable for territorial control was constructed for each criminal group, indicating whether that group had monopolistic, contested, or no dominant presence in a municipality (for example, *Monopoly Zetas*, *Contested Zetas*, *No presence Zetas*). Different models were run for each cartel, including similar covariates of individual and regional characteristics, such as levels of drug-related violence.
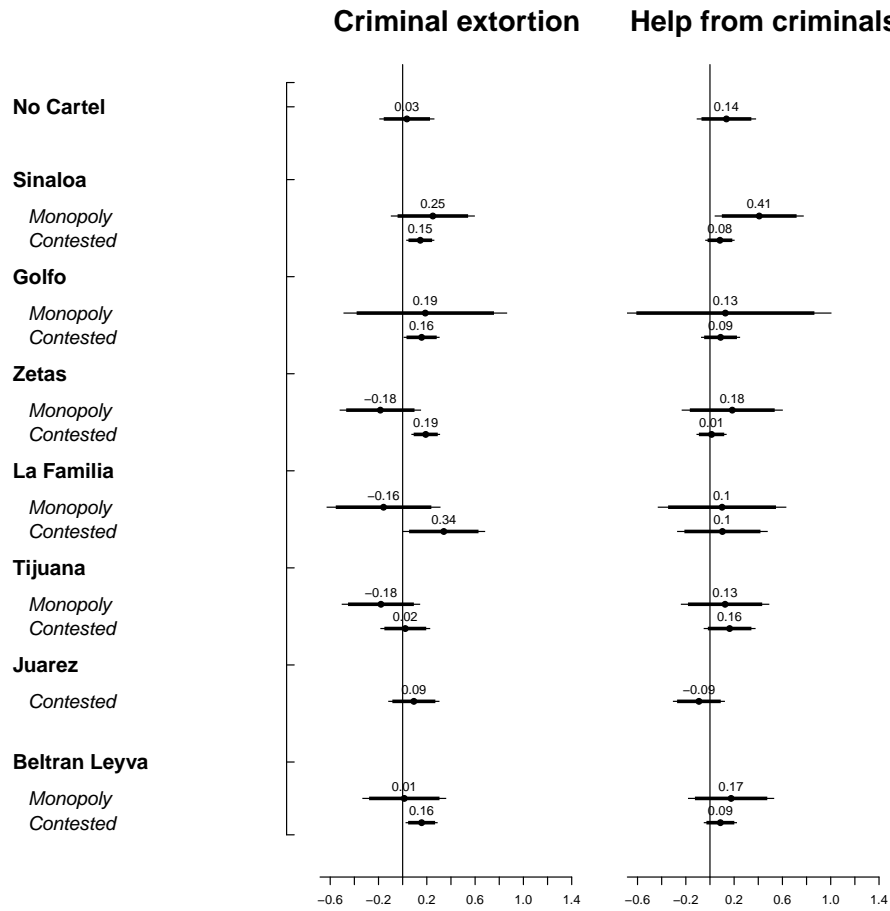
Figure 5 below shows the predicted rates of criminal extortion and assistance for selected DTOs, as well as the predicted rates for municipalities with no dominant presence of DTOs. The results show some differences across criminal groups in how they relate to their communities under DTO monopoly and contestation scenarios. Almost all criminal groups are predicted to have positive rates of extortion when facing contestation from other criminal groups. Moreover, La Familia Michoacana and Los Zetas cartels seem to engage in extortion more frequently when disputing a territory (34% and 19%, respectively). The predicted rate for Los Zetas is also significantly higher than their predicted rate of extortion under monopoly.

The Sinaloa Cartel is the only group for which the predicted rate of assistance under monopoly is significantly different from zero. Our models reveal a high incidence of assistance of 40% when this DTO has monopolistic control. Assistance rate by the Sinaloa Cartel is also significantly different from the predicted rate under contestation. For other cartels, rate differences for extortion and assistance were not statistically significant between monopolistic and contested control. This is partly explain by the smaller subsamples and the magnitude of the confidence intervals.

4.5   Robustness tests

We performed robustness tests related to our choice of proxy for violent conflict between DTOs. One potential objection to our operationalization is that the results hinge on our chosen variable for violence. In Figure A2 in the Annex, we show the estimated rates of criminal extortion and help for different models that include alternative homicide series,

Figure 5: **Predicted rates of criminal extortion and help by DTO**

Criminal extortion   **Help from criminals**

	Criminal extortion	Help from criminals
No Cartel	0.03	0.14
Sinaloa		
Monopoly	0.25	0.41
Contested	0.15	0.08
Golfo		
Monopoly	0.19	0.13
Contested	0.16	0.09
Zetas		
Monopoly	−0.18	0.18
Contested	0.19	0.01
La Familia		
Monopoly	−0.16	0.1
Contested	0.34	0.1
Tijuana		
Monopoly	−0.18	0.13
Contested	0.02	0.16
Juarez		
Contested	0.09	−0.09
Beltran Leyva		
Monopoly	0.01	0.17
Contested	0.16	0.09

Notes: The figure shows predicted rates of criminal extortion and assistance
for selected DTOs, and their 90% and 95% confidence intervals, of two list
experiments included in the Survey on Public Safety and Governance in Mexico
in 2011. There were two questions (card 1 and 2) for which respondents were
randomly assigned into one control and two treatment groups (see Table 1.
All models include regional socio-economic characteristics and robust standard
errors.

both in rates and in total number of cases. To be consistent with our categorization of
low, medium, and high violence, we show the estimated rates by tertiles of the distribution
for each variable.

For all variables, the prediction for criminal extortion is positive and significantly
different from zero in the third tertile of the distribution. Similar to our previous results,
none of these rates are significantly different from the predicted rates of criminal extortion
under monopoly. With only one exception, the prevalence of help from criminals is
substantial and significantly different from zero in the first tertile of the distribution for

all variables. The predicted rates of help in this low-violence bracket are also significantly higher than those predicted in the last tertile of the distribution for all variables except one. This provides clear evidence that our results are not driven by our proxy for drug-related violence.

4.6   The need for list experiments

Finally, our data make an important broader point beyond this particular paper: crime appears to be systematically underreported in Mexico. Comparing crime incidents reported to local public attorney offices (SNSP) and victimization surveys (ENVIPE) in 2011, we estimate that underreporting bias is as high as 87.2% for common crime and 93.2% for extortion. Even victimization surveys can suffer from underreporting if citizens feel unsafe revealing predatory or abusive behavior by criminal groups or the police (see Figure A3 in the Annex).

Our estimates for criminal extortion in 2011 reveal that 16% of the population living in contested territories have been extorted by criminal groups. When asked directly in the national victimization survey, only 6% of the population living in contested places revealed that they had been extorted by criminal groups or had to pay protection fees (derecho de piso). Our estimate is only closer to the 18% of the population reporting extortion in their neighborhoods throughout DTO-contested places. This comparison of extortion rates reveals the advantages of using experimental methodologies, like the item count technique, to increase truthful responses when measuring criminal incidents.

5   Conclusions

The presence of DTOs is not a new phenomenon in Mexico. What is unprecedented is the way in which DTOs have shifted their activities: they no longer focus primarily on the shipment of illegal drugs to international markets, and instead have diversified into criminal activities that prey on citizens, such as extortion, kidnapping, human trafficking,

and the collection of protection money.

This paper seeks to understand why DTOs adopt certain strategies of extortion, and also compare this to cooperative strategies of assistance, in their interactions with the civilian population. Building on the literature on civil war and organized crime, we provide a theoretical framework in which the degree of territorial contestation and violent conflict between DTOs explain how these criminal organizations interact with citizens. Using list experiments, we provide evidence of the pervasiveness of DTO extortion in regions that are contested or suffer high levels of inter-cartel violence. We also estimate the degree of cooptation and assistance provided by DTOs in uncontested and low violence places.

In Mexico's criminal war, citizens are living in fear. Lethal violence is not the only or most pervasive danger. Citizens are trapped in networks of extortion and coercion where DTOs prey on them, often with the acquiescence or direct collaboration of local states and their police corps. When they are in firm control of their territories, DTOs can behave as more benign stationary bandits and offer help to their citizens. But as these criminal organizations violently compete for control of territory and trafficking routes, they turn against citizens to extort resources.

Our theory and empirical results provide insight into the underlying causes of criminal groups' metamorphosis from more "benign" organizations to highly predatory ones. Increased territorial contestation and higher levels of violent conflict between DTOs have increased their tendencies to coerce the community.

Moreover, we have suggested that leadership styles and organizational structures also shape drug cartel behavior. More hierarchical criminal organizations that are headed by strong leaders appear to be more effective controlling predatory behavior. Nevertheless, a more strict test for this hypothesis is left for further research. The federal government attempted to subdue DTOs by assaulting their organization from the top down and fragmenting them into smaller groups. However, the efficacy of this strategy rested on the assumption that violence would not affect the population while "criminals would

exterminate each other."[16] That assumption turned out to be mistaken: disorganized crime is significantly more dangerous for the community than organized crime.

Lastly, our results find that, controlling for levels of DTO territorial contestation and inter-cartel violence, states and municipalities governed by the PAN saw less criminal extortion. Future research should tackle the important question of why there seems to be less extortion in states and municipalities controlled by the PAN. Future research should also explore how drug cartel behavior toward the community is shaped by law enforcement institutions and local state capture by criminal groups. Federalism complicates Mexican security polices because it creates many potential sources of institutional protection, including states and municipalities that are often captured by criminal groups. Mafia states describe the equilibrium, one where criminals extort, kidnap, rape, and terrorize the community with the acquiescence – or direct collusion - of local states and their security apparatuses.

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[16]Personal interviews with a high security official during the Calderón presidency that asked to remain anonymous.

Appendix for
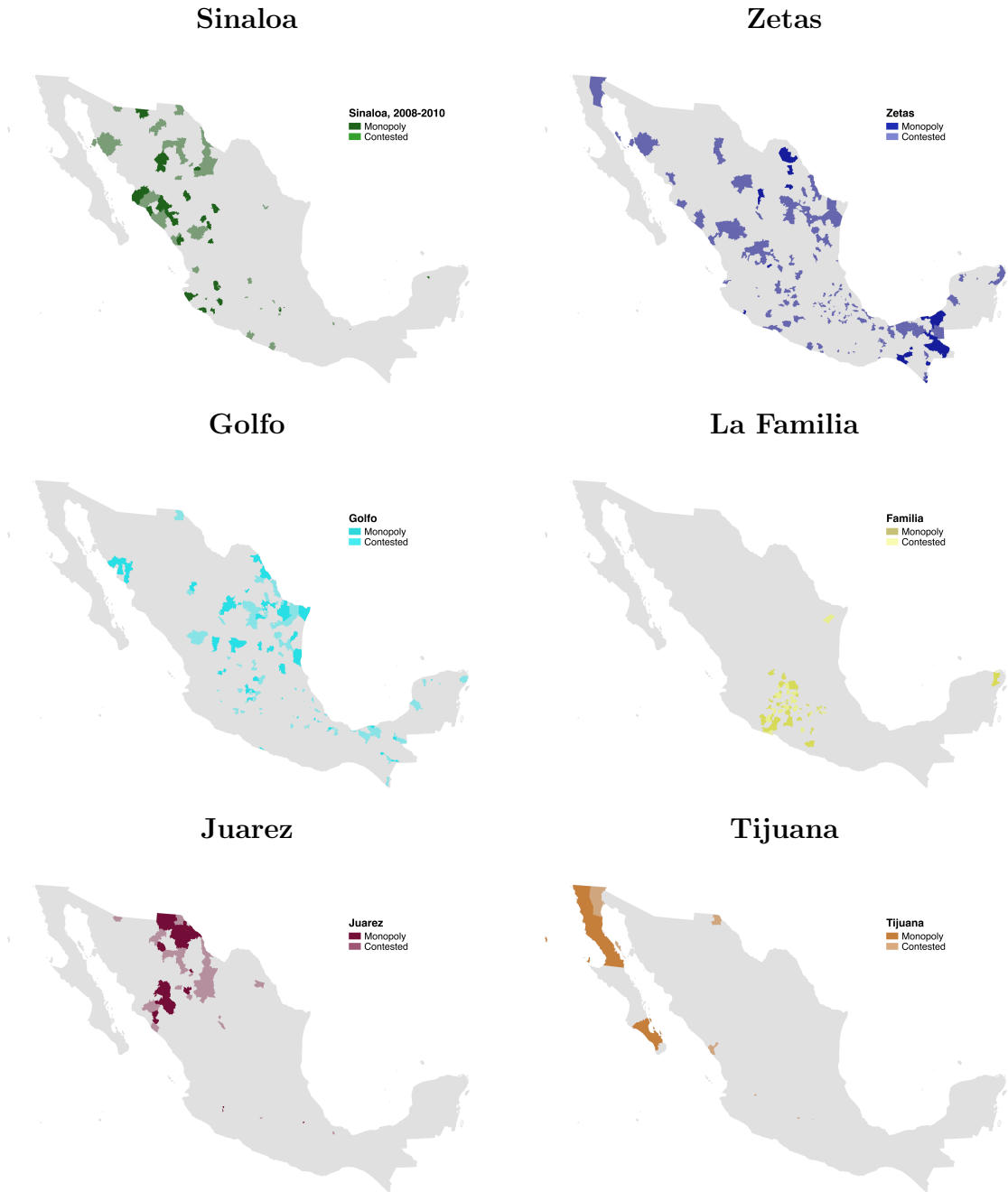
Living in Fear: The Dynamics of Extortion

in Mexico's Drug War

Table A1: **Full estimates**

| Variable	Narco extortion (1)			Narco help (2)			Police extortion (3)			Armed convoys (4)		
Sensitive item												
Intercept	-0.41	(0.25)		0.25	(0.26)		0.08	(0.25)		0.38	(0.32)	
Contested	0.19	(0.1)	*	-0.14	(0.11)		-0.04	(0.1)		-0.02	(0.12)	
No cartel	0.07	(0.14)		-0.06	(0.15)		-0.16	(0.13)		-0.06	(0.15)	
Medium violence	-0.1	(0.22)		-0.3	(0.22)		0.12	(0.22)		-0.37	(0.26)	
High violence	-0.07	(0.22)		-0.37	(0.22)	*	-0.02	(0.22)		-0.28	(0.26)	
PRI gov and mayor	0.27	(0.13)	**	0.2	(0.14)		0.25	(0.13)	*	-0.02	(0.16)	
Other incumbents	0.28	(0.13)	**	0.01	(0.13)		0.23	(0.12)	*	0	(0.15)	
Woman	-0.19	(0.08)	**	-0.02	(0.09)		-0.11	(0.08)		-0.03	(0.09)	
Age 36-50	0.15	(0.09)	*	0.02	(0.1)		0	(0.09)		0	(0.1)	
Age 51-65	0.05	(0.12)		-0.03	(0.12)		-0.13	(0.11)		0.04	(0.14)	
Age 66 or more	0	(0.14)		0.13	(0.15)		-0.14	(0.14)		0.21	(0.18)	
Edn-Sec or High School	0.26	(0.09)	***	0.11	(0.1)		-0.15	(0.09)	*	0.28	(0.1)	***
Ed-College or more	-0.03	(0.12)		0.11	(0.13)		-0.19	(0.12)		0.43	(0.14)	***
Oportunidades	0.19	(0.1)	*	0.13	(0.09)		0.04	(0.1)		0.11	(0.1)	
Peasant	-0.22	(0.16)		0.06	(0.17)		-0.02	(0.15)		-0.09	(0.19)	
Self-employed	-0.12	(0.11)		0.03	(0.11)		0.1	(0.11)		0.19	(0.12)	
Med Marginalization	0.09	(0.13)		0.05	(0.13)		0.11	(0.13)		-0.01	(0.14)	
High Marginalization	0.33	(0.14)	**	-0.01	(0.15)		0.19	(0.14)		0.07	(0.15)	
Urban locality	0.11	(0.09)		0.13	(0.09)		0	(0.09)		0.06	(0.1)	
Control items												
Intercept	0.93	(0.17)	***	1.22	(0.19)	***	0.93	(0.17)	***	1.22	(0.19)	***
Contested	-0.1	(0.07)		-0.04	(0.07)		-0.1	(0.07)		-0.04	(0.07)	
No cartel	0.12	(0.09)		-0.03	(0.1)		0.12	(0.09)		-0.03	(0.1)	
Medium violence	-0.01	(0.16)		0.18	(0.15)		-0.01	(0.16)		0.18	(0.15)	
High violence	0.09	(0.16)		0.19	(0.15)		0.09	(0.16)		0.19	(0.15)	
PRI gov and mayor	-0.15	(0.09)	*	0.01	(0.1)		-0.15	(0.09)	*	0.01	(0.1)	
Other incumbents	-0.14	(0.09)		0.1	(0.09)		-0.14	(0.09)		0.1	(0.09)	
Woman	0.16	(0.06)	***	-0.14	(0.06)	**	0.16	(0.06)	***	-0.14	(0.06)	**
Age 36-50	0.06	(0.06)		-0.1	(0.07)		0.06	(0.06)		-0.1	(0.07)	
Age 51-65	0.04	(0.08)		-0.14	(0.08)	*	0.04	(0.08)		-0.14	(0.08)	*
Age 66 or more	0.06	(0.1)		-0.42	(0.11)	***	0.06	(0.1)		-0.42	(0.11)	***
Edn-Sec or High School	0.07	(0.06)		0.03	(0.07)		0.07	(0.06)		0.03	(0.07)	
Ed-College or more	0.16	(0.09)	*	0.22	(0.09)	**	0.16	(0.09)	*	0.22	(0.09)	**
Oportunidades	0.36	(0.07)	***	-0.15	(0.06)	**	0.36	(0.07)	***	-0.15	(0.06)	**
Peasant	0.03	(0.11)		0.07	(0.12)		0.03	(0.11)		0.07	(0.12)	
Self-employed	0.06	(0.07)		-0.02	(0.08)		0.06	(0.07)		-0.02	(0.08)	
Med Marginalization	-0.04	(0.09)		-0.11	(0.09)		-0.04	(0.09)		-0.11	(0.09)	
High Marginalization	-0.21	(0.1)	**	-0.04	(0.09)		-0.21	(0.1)	**	-0.04	(0.09)	
Urban locality	0.02	(0.06)		0.01	(0.06)		0.02	(0.06)		0.01	(0.06)	

Notes: The rows show estimated coefficients for four list experiments included in the Survey on Public Safety and Governance in Mexico in 2011. There were two questions (card 1 and 2) for which respondents were randomly assigned into one control and two treatment groups (see Table 1). All models include regional socio-economic characteristics. Robust standard errors in parenthesis. *** : $p < 0.01$, ** : $p < 0.05$, * : $p < 0.1$.

Figure A1: **DTOs' areas of operation**

Sinaloa

Sinaloa, 2008-2010
■ Monopoly
■ Contested

Zetas

Zetas
■ Monopoly
■ Contested

Golfo

Golfo
■ Monopoly
■ Contested

La Familia

Familia
■ Monopoly
■ Contested

Juarez

Juarez
■ Monopoly
■ Contested

Tijuana

Tijuana
■ Monopoly
■ Contested

Notes: The figure shows the areas of operation of selected DTOs between 2008 and 2010. The areas were estimated using the Coscia and Rios (2012) database, that describes the yearly territorial presence of criminal groups using Google News queries. We define that a cartel has had dominant presence in a municipality if it has had operations (it appears in the database) in every year between 2008 and 2010. A territory is contested if two or more cartels have had dominant presence.

Figure A2: **Predicted rates of criminal extortion and help for alternative measures of violence**
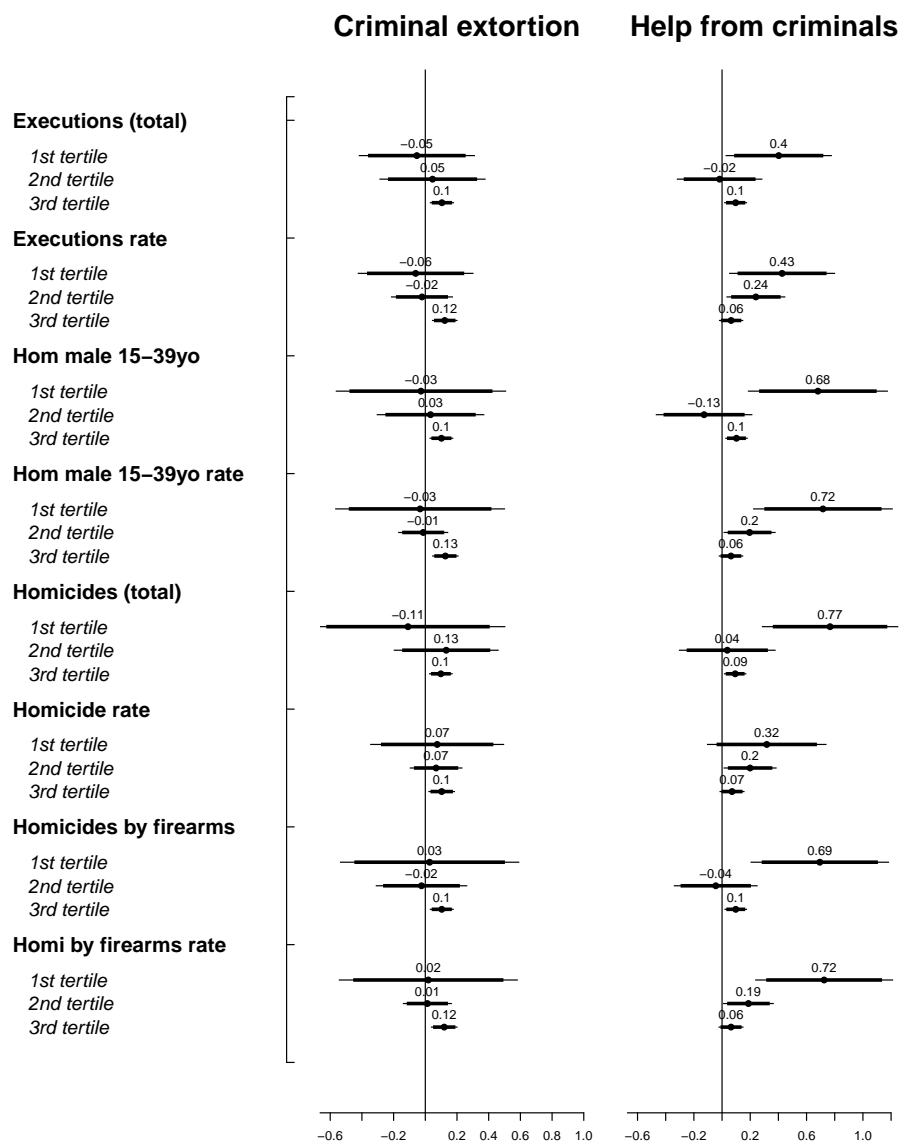
Notes: The figure shows predicted rates of criminal extortion and help for alternative measures of violence, and their 90% and 95% confidence intervals. The estimates come from two list experiments included in the Survey on Public Safety and Governance in Mexico in 2011. There were two questions (card 1 and 2) for which respondents were randomly assigned into one control and two treatment groups (see Table 1. All models include regional socio-economic characteristics and robust standard errors.

Figure A3: **Prevalence of extortion: List experiments vs. victimization surveys**

Prevalence of extortion
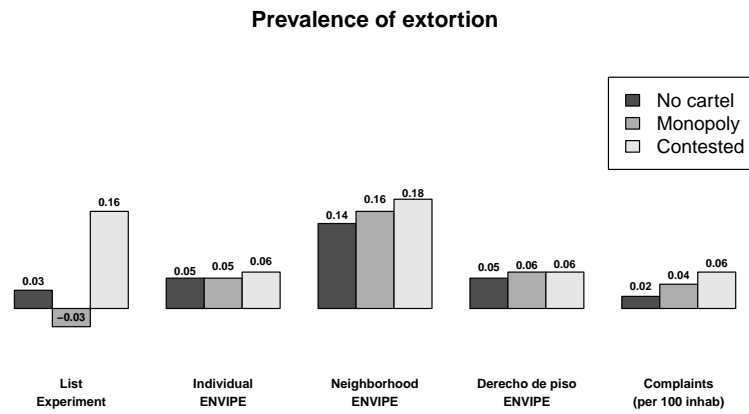
Notes: The figure shows predicted rates of criminal extortion according to different sources. The first column shows estimates for a list experiments included in the Survey on Public Safety and Governance in Mexico in 2011. Data from columns 2 to 4 comes from the 2011 National Victimization Survey (source: ENVIPE) shows the percentage of individuals reporting: being victim of extortion, the occurrence of extortion in their neighborhood, and having paid protection fees to criminals (*Derecho de Piso*). Last columns show the number of incidents, per 100k inhabitants, reported to local public attorney offices (source: SNSP).

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