Living in Fear: Mapping the Social Embeddedness of Drug Gangs and Violence in Mexico*

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Abstract

Citizens in Mexico are trapped in between two illegitimate forces – the drug gangs and their criminal organizations and the police who are supposed to protect them. Through the use of list experiments within the Survey on Public Safety and Governance in Mexico (SPSGM), we measure the pervasiveness of drug gang activity as it pertains to strategies of coercion (extortion) and co-optation (offering help) to ordinary citizens. The list experiments also allow us to provide a mapping of the geography of drug activity and the extent to which not only the drug gangs, but also the police, engages in strategies of coercion. The paper seeks to provide a better understanding of which groups are most vulnerable and where is it that drug gangs have become most embedded in society. Our findings suggest that although *narcotraficantes* extort citizens the most in high violence regions and the police does so in low violence ones, both forms of extortion are present everywhere in Mexico. This has triggered a spiral of fear: drug gangs signal unambiguously that they are in control and will punish anyone who provides information to the government, while the police can't credibly signal that they can regain control of the streets. Police corruption is hence an essential part of the story of Mexico's violence. Ever more fearful citizens have turned to the *narcos* for help, we demonstrate, and hence many tacitly –or even openly– support them. The paper results suggest that public strategies emphasizing military action and harsh treatment might not affect the social embeddedness that protects drug gangs and criminal organizations. Instead, enhancing citizen trust within communities and shifting the reputation of police forces while improving the adjudication of justice are more likely to strengthen the social fabric.

El narco está en la sociedad,
arraigado como la corrupción.

El Mayo Zambada

1 Introduction

1.1 Defining the issue

Recent scholarship in conflict ridden nations, such as Afghanistan, Pakistan or Colombia, suggests that when governments fail to provide basic conditions of public safety, insurgent or terrorist organizations may receive tacit support or even sometimes explicit active approval from citizens (Walter, 2009; Weinstein, 2007; Berman, 2009). The perception that the government is powerless vis-a-vis armed groups makes fighting them even more difficult. Citizens will cease to play an active role in helping government find and combat the violent organizations they fear. Fear generates silence and collaboration (Kalyvas, 2006).

Even though citizens may overwhelmingly support the government, and approve of the methods the government uses to fight insurgents, terrorists or drug traffickers, they will unwittingly cooperate with the very groups they are trying to defeat. If the police and armed forces do not count on the population as sources of information and delation regarding the illegal activities, they will have to resort to increasingly more repressive ways to combat the organizations that challenge the state. This may trigger a spiral of fear: armed groups will signal unambiguously that they are in control and will punish anyone who provides information to the government. They will do this through visibility: operating and recruiting members in the streets, leaving messages that can be widely broadcast in the

media, and behaving particularly ruthlessly. Instead of stealth and secrecy, they will operate in the open. Ever more fearful citizens will provide even less information to the forces of order, which will be increasingly isolated and detached from neighborhoods and communities.

This paper suggests that this process of tacit citizen consent is happening in the current Mexican war on drugs. President Felipe Calderón initiated a frontal assault on drug traffic organizations (DTOs) in 2006, shortly upon taking office. Thus far, the war has cost more than 35,000 deaths since January 2007. Around one seventh of those deaths (6437) correspond to a single city, Ciudad Juarez. 15,273 drug related murders occurred in 2010 according to official statistics (CISEN, 2011), and 162 municipalities (out of 2447) are considered as highly violent (GobiernoFederal, 2010). In this study we seek to understand the ways in which fear and intimidation may generate tacit support.

We also explore the ways in which Drug Traffic Organizations (DTOs) become embedded in society. DTOs may not only provide employment (Ríos, 2009), but forms of insurance for hard times as well as providers of public goods. While we are unable to gauge the relative frequency with which *Narcotraficantes* (*narcos*, for short) may fix the local church or provide money for public services in small towns, we are able to provide some insight into the willingness of citizens to seek out their help. We also explore how much citizens feel they are extorted by *narcos*, and compare this extortion with the one made by police. And we assess how often *narcos* operate unhindered across the Mexican territory. Thus we are exploring the embeddedness of DTOs in society. We provide evidence that suggests the pervasiveness of DTOs in Mexican society. In the words of one of Mexico's most notorious drug traffickers, el Mayo Zambada, to journalist Julio Scherer, "Drug

traffickers are in society, deep-rooted like corruption".[1] Our results are consistent with his statements.

1.2 Literature

Beyond contributing to understanding the problem of violence and DTOs in Mexico (Guerrero-Gutierrez, 2010; Ríos and Shirk, 2011; Castañeda and Aguilar, 2010), the paper is related to the broader question of strategies toward civil society during civil conflict. Civil society is a crucial component of many civil conflicts. Gaining the backing of the population –whether through bribes or threats– can mean the difference between winning and losing in a fight for either the armed non-state actor or the government it challenges. Almost all armed non-state actors, even those with external resources, require some level of external social support to survive, and succeed (see Crenshaw (1981) and also Goldstone (2001); Kalyvas (2006); Weinstein (2007).

The existing literature suggests that both of these strategies –bribing and threatening, or worse– are employed during civil conflict. Armed non-state actors use force routinely against civilian populations during civil conflict. For example, during civil war, groups with incomplete control over a region may use selective force there (Kalyvas, 2006). Likewise, groups that rely on the population for resources may also use such selective force (Weinstein, 2007). These acts aim to bring elements of the population not currently under the rule of that group into line. Recent work also shows that indiscriminate force, perhaps through the fear it generates, may also bring a population into the influence of those carrying out the violence (Lyall, 2009).

[1] *Proceso*, 1744, April 6, 2010, cited in Tajonar (2011)

Armed non-state actors may also choose non-violent mechanisms for gaining control over the population. Providing "club goods", those with limited access such as loans, may be one mechanism for gaining the loyalty of civil society (Iannaccone, 1992; Berman, 2000; Berman and Laitin, 2008). Governments and international interveners also use the provision of public goods, for example in Iraq (for example, see Berman et al. (2011)), to "win hearts and minds" in much the same way. Controlling territory may make such provision of goods easier (Zahar, 1999).

We provide an account of the strategies that DTOs in Mexico use toward civil society. To what degree and in what ways are *narcos* active in Mexico with the knowledge of Mexican citizens? Is fear, complicity, or some combination of the two driving the population from the government into the folds of DTOs? We seek to understand both co-optation and coercion strategies that *narcotraficantes* use in Mexico.

We also contribute to a growing literature using list experiments to elicit truthful revelation of socially sanctioned behaviors, such as racial or gender discrimination. Anonymous surveys often elicit honest answers on basic questions (for examples on this topic, see Blumenthal (1972); Blumenthal et al. (1975); Fair and Shepard (2006); Kull (2007); Shikaki (2006)). Questions affected by social desirability, or even illegality, however, may be more difficult to ask with an expectation of an honest answer (Brooks, 2008; Kalyvas, 2006; Krueger, 2007). Individuals may systematically change their behavior when answering these questions (for a general review, see Demaio (1984)). List experiments, also known as the item count technique, overcome social desirability, and perhaps concerns about illegality. The list experiment is an unobtrusive measure that more fundamen-

tally guarantees anonymity, at least to some extent (Sniderman and Grob, 1996; Sniderman, 2011). Used initially to improve estimations of racism in the United States, the list experiment entails giving half the population a list of items that did not include the "treatment" about racial integration and giving the other half the same list with this addition; the difference in means between the two groups represents levels of racism in different populations. List experiments reveal higher reported rates of socially condemned behaviors, such as holding racist views, illegal drug use, and sexually risky conduct, but similar levels of engagement in less socially condemned behaviors (for a thorough literature review on these studies, see Holbrook and Krosnick (2009)).

In the context of elections, some work has used list experiments to study vote-buying and citizen intimidation (for example, see González-Ocantos et al. (2010)). The substantive problem we address, however, is more closely related to studies seeking to gauge support to armed insurgencies in Colombia and Pakistan (Matanock and García Sánchez, 2011; Bullock et al., 2011), although we move beyond these works in providing a more comprehensive set of list experiments that allow to measure co-optation and coercion strategies by drug cartels and their criminal organizations. The experiments provide a good sense of the strategies that *narcos* use against civil society and, as a result, how embedded they have become. The embeddedness of DTOs, especially in certain regions, explains why it is so difficult for the government to fight them. Second, we use the spatial distribution of responses to produce a mapping of the territorial spread of citizen support to DTOs, which provides a better understanding of the effect of the drug violence on the Mexican social fabric.[2]

[2]In what regards the specific issue of the geography of violence in Mexico, our paper complements recent work by Dell (2011) and Dube et al. (2011) that make effective use of geographic

1.3 Paper organization

The paper is organized as follows. The next section provides an overview of the fight against organized crime in Mexico and citizen perceptions of government effectiveness and the general environment of fear. The section after that discusses briefly the problem of social desirability bias and the design of list experiments in our survey. The fourth section presents the design of the survey sample which was stratified by urbanization and levels of violence. That section also reports on the general environment of fear encountered by the enumerators in the collection of the data. The fifth section presents the results of the list experiments; while the sixth one discusses the validity of the experiment. The seventh section briefly discusses some of the differences in the treatments among various socio-demographic breakdowns of our data. The eight section estimates a mapping of the prevalence rates of DTO activity and fear across the territory through the creation of spatially interpolated surfaces. The final section concludes with directions of further research.

2 The fight against organized crime

During the late 1990s and early 2000s Mexico gradually changed from being a transit territory for drugs heading to the United States market to a place of increasing consumption.[3] The change from a transportation to a retail distribution

variation in order to identify the effects of violence on female labor participation and illegal arms dealing.

[3]Such transformation was partially driven by a change in the way that wholesale drug importers were paying for services; it switched from payments only in cash to payments with part of the same drug they were distributing (Castañeda and Aguilar, 2010; Guerrero-Gutierrez, 2010).

business implied that drug cartels had to increase the number of personnel. Having more full-time workforce, the cartels could now count on small armies of salaried criminals at their disposal. The perfect complement was an easily corruptible police and judicial system at all levels of government, that led to an atomization of criminal organizations and the spread of violence. Cartels began to diversify their criminal activities - to extortion, kidnappings, racketeering and control of retail activities in their territories, and extortion of migrant workers-, perhaps in associations with police corporations. Extortions to small business and kidnappings of middle-class individuals began to rise. This is the sort of environment that president Calderón faced when he took office in December 2006.

And things got worse. New criminal gangs and violence emerged and existing cartels divided as their leaders were captured (Killebrew and Bernal, 2010; Beittel, 2011). Given the absence of legal (and peaceful) rules and enforcements mechanisms for competitors in this illegal market, disagreements are being solved violently and the competition for consumers usually implies literally killing the rival. Citizens are caught in the crossfire of rival drug cartels and criminal gangs.

2.1 Fear

In this context, fear is likely the word that best describes Mexican's current mood. As shown in table 1, most Mexicans fear becoming victims: According to the Survey on Public Safety and Governance in Mexico (SPSGM, discussed in more detail below), 8 out of every 10 citizens are afraid of suffering most types of crime. However, the proportion of self-reported victims is not especially high by international standards and has not changed much since the early 2000s (Bailey

Table 1: **Self-declared victimization and fear rates**

	Actual victims	Afraid of being a victim
Kidnapping (not-express)	1.0	81.8
Kidnapping (express)	1.3	82.8
Affected by criminals crossfire	3.1	83.4
Car robbery	5.8	68.6
Public transportation assault	7.4	80.6
House robbery	10.1	84.2
Street assault	10.8	83.0
Car accessories robbery	11.2	65.7
Phone extortion	25.7	81.3

Source: Survey on Public Safety and Governance in Mexico (2011).

et al., 2011).[4]

Individuals' estimation of their likelihood of becoming a victim seems to be independent of the victimization rate. For instance, citizens are equally afraid of being kidnapped than of being blackmailed over the phone, even though the prevalence of those two incidents is very different: according to the SPSGM survey, 1 percent of Mexicans have been kidnapped, and 1 out of every 4 has been extorted over the phone. If we suppose that the "objective" probability of being victim of a crime is related to the current victimization rate, then, the gap between the actual rate of victims and the proportion of individuals who are afraid of being a victim could be thought of as the "subjective" probability of becoming a victim, which we arguably can approximate to fear.

An observable manifestation of fear is the change of daily routines and enter-

[4] Guerrero-Gutierrez (2010) reports several opinion polls that consistently show similar results: 65 percent of people according to ICESI surveys do not feel safe in the state they inhabit; while a Buendía and Laredo poll shows that 76 percent of the respondents are worried about kidnapping, drug cartel violence and robbery. Consulta Mitofsky polls, also quoted by Guerrero-Gutierrez (2010) show that since January 2010 the most worrisome topics for Mexicans are shifting from the economy to security issues.

Table 2: **Changes on daily life activities caused by public insecurity**

		Not doing	Still doing it	Not an activity
Carrying cash	National	37	51	12
By Violence:	High	53	37	10
	Low	35	53	12
Going out at night to have fun	National	29	29	42
By Violence:	High	48	16	36
	Low	27	29	44
Taking a cab at the street	National	23	50	27
By Violence:	High	38	35	27
	Low	21	51	28
Travel by road	National	22	59	19
By Violence:	High	33	40	27
	Low	20	62	18
Using public transport	National	19	68	13
By Violence:	High	23	65	12
	Low	19	68	13

Source: Survey on Public Safety and Governance in Mexico (2011).

tainment habits. We would expect that these changes should vary according to the insecurity context citizens are facing. Table 2 shows the proportion of citizens that have modified specific behaviors because of the insecurity at the national aggregate and in low and high violence areas. The data shows that high proportions of people adapt their behaviors in high violence areas by, for example, reducing their nights out or carrying less cash with them. It is, surprising, however, that a relatively high number of individuals have adapted their behavior also in low violence areas (between a third and a fifth of citizens).

This data suggest that fear is widespread throughout the country. The question is whether such fear is caused by actual events or misperceptions of some "objective reality". Different hypothesis exist. First, fear in this case may be caused by media reports that magnify the actual occurrence of criminal activities,

especially those related to the fight against organized crime. High profile kidnappings or the appearance of dismembered body parts at public places may affect individuals' estimations of their own likelihood of becoming victims. In this case, the daily life of most citizens would not be affected by criminal activities; fear would only be a function of media effects.

A second potential explanation would be mouth-to-mouth information that creates an identification effect on individuals increasing their expected likelihood of being victims; that is, if I know somebody that was victim of a crime (or even if somebody that I know, knows somebody that was a victim), it may imply to me that I can also be a victim. I know that "things are happening close by" but it may be the case that the actual context in which the specific individual live is not directly affected by criminals.

A third potential explanation is that fear is caused not only by victimization rates, but by a rather dangerous environment in which citizens have some sort of frequent contact with criminals; either they watch them transiting freely by the streets, or criminals are active members of the community. This is the sort of information that we explore in this paper using the SPSG.

2.2 Citizen hawkish positions

As a result of the insecurity context that permeates most of Mexico, citizen positions on how to combat the organized crime tend to be tough. If asked whether different types of crimes should be punished with death penalty, between two thirds and half of Mexicans suggest that those related to organized crime, such as drug dealers and kidnappers, should pass through death row (see table 3). But the most worrisome piece of information is that almost 4 out of every 10

Table 3: **In favor of death penalty for different crimes by level of violence**

In favor of death penalty for...	National	High	Low
Kidnappers	68	71	68
Organized crime leaders	68	70	68
Drug dealers	54	54	54
Car thieves	37	41	38

Source: Survey on Public Safety and Governance in Mexico (2011).

Mexicans advocate that car thieves should also be condemned to death! This suggests a rather a configuration of quite a hawkish society. There are no significant differences of these hawkish positions by level of violence, which speaks to a widespread feeling of anger that is not just triggered by direct contact with crossfires, but likely spread by the media or social networks and the presence of criminal activities in most of Mexico, not only where street shootings take place.

The sentiment of fear is likely also fed by the lack of confidence on the work of the states' and municipal police. According to the survey, only 25 and 27 percent of citizens evaluates as good the performance of municipal and state police, respectively (Table 4). Thus, many citizens feel trapped between two fires; in addition to fear of criminals, almost half of the population fear being subject of abuses from municipal or state level polices. Thus, for this segment there is no one to ask for help.[5]

The army has a much better evaluation, 68 percent believes that it is doing a good job in protecting their citizens; but with a caveat, 4 out of every 10 Mexicans have a lot of fear of being abused by the military. The SPSGM survey

[5]Survey after survey show that there is very little confidence in the police. Guerrero-Gutierrez (2010) notes that 80 percent of Mexicans consider the police corrupt; 72 percent do not trust their municipal policemen; and in the data he quotes even the federal police is distrusted by 57 percent of the population.

Table 4: **Percentage that perceives that (...) is bad or very bad at protecting their citizens**

	High	Middle	Low
The municipal police	53.0	52.8	54.1
The state police	46.4	42.8	42.9
The federal police	43.0	27.3	34.7
The army	23.5	11.3	18.6
The governor	32.8	31.7	29.8
The president	31.9	23.3	22.6

Source: Survey on Public Safety and Governance in Mexico (2011).

Table 5: **Percentage that perceives that ... is highly corrupt**

	High	Middle	Low
The municipal police	48	55	42
Prosecutors	36	43	41
The federal police	45	27	31
The governor	22	27	20
The army	16	10	13

Source: Survey on Public Safety and Governance in Mexico (2011).

asked respondents how corrupt different law enforcement agents and the army are. According to the respondents, municipal police are perceived as the most corrupt, regardless of levels of violence. However, in high violence places, the federal police is perceived to be just as corrupt as the municipal police –45 and 48 percent evaluate the federal corps and the municipal police as "very corrupt" in high violence places. In contrast, only between 10 and 16 percent (in low and high violence areas respectively) perceive that the military is very corrupt. The data suggests that despite the fact that the military is not fully trusted by ample segments of the population, it is perceived by far as the best available option from the point of view of citizens.

2.3 Evaluating the fight against organized crime

Fear of crime and the lack of trust on most authorities should be reflected on negative evaluations of rulers. Nevertheless, this is only partially the case. One of the peculiarities of security topics in public opinion is its multidimensionality? as opposed, for instance, to economic performance. Few citizens are totally for or against the government's fight against organized crime in all dimensions (Romero, 2011).[6] In sum, a high proportion of Mexican citizens are living in fear. Such fear is probably affecting the government's performance evaluation, yet citizens' support for the war against organized crime has not been eroded. In the next sections we inquire into the sources of this fear through the use of list experiments.

3 Social desirability bias

3.1 List experiments

How best to elicit truthful responses from citizens when there are good reasons for them to lie because of fear or social desirability? Eliciting truthful responses from citizens for behavior that is not socially acceptable, or where there is a social norm of "proper" behavior is a challenge that has been faced in many contexts. List experiments are a device of indirect questioning in which sensitive issues can be randomized across respondents, and through asking not the particular behaviors, but rather their count, among a series of non-sensitive items, can provide a greater

[6]The SPSGM data depicts various points of contrast in the Mexican case. On the one hand, President Calderón enjoys a huge majority in favor of the fight against organized crime that the government is conducting (86 percent), but only 35 percent perceives that things are better as compared to a year ago; this percentage shrinks to 25 percent in high violence areas.

sense of privacy [7].

In the questionnaire of the Survey on Public Safety and Governance in Mexico (SPSGM) we embedded five list experiments seeking to understand the prevalence of DTO activity in Mexico. We randomly selected 3 groups of 900 observations from the full sample of 2700: one control group and two treatment groups. There were three different types of questionnaires. The individuals in the sample were randomly assigned to every group; when selecting the subjects in sample, the interviewers applied questionnaire 1 to the first individual selected at the polling point, questionnaire 2 to the second individual that was selected, and questionnaire 3 to the third subject; then, they began again with questionnaire 1 and so on. Since the selection of the individuals in the sample was done randomly, then, there is no reason to suspect bias in the sub-samples in every group (although we address this question below).

The lists were directly read by the interviewee from cards given by the interviewer. Each interviewee received a total of 3 different cards. Figure 1 describes the exact wording, and the cards that were given to each experimental group. The control group received all three cards listed in its row; the same for the two treatment groups. In the first experiment, in which gun ownership was the treatment, there was only one treatment group since both treatment groups received the same card. For the other two cards, there were two different treatment groups, one for each experiment [8].

[7] For a discussion of methodological issues in list experiments see Blair and Imai (2011) and Glynn (2010)

[8] This design was established in order to gain more leverage in the diagnostics of the success in fulfilling the assumptions of list experiments, following the advise in Blair and Imai (2011). Unfortunately we did not take advantage of a cross-over design, as suggested by Glynn (2010), but all the control individuals are in the same group

	Card 1	Card 2	Card 3
Introduction	*Please tell me how many of these things you have in your home, We just want to know how many do you have, do not tell me which ones.*	*Please tell me how many of these things you have done in the past 6 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 6 months. We just want to know how many you have done, do not tell me which ones.*
Control Group	1. Refrigerator. 2. TV. 3. Computer. 4. Votive candles.	1. I got drunk at a party I went. 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*) in church or the street.
Treatment Group 1	**EXPERIMENT 1** 5. Gun.	**EXPERIMENT 2** 4. I have seen cars or trucks with armed men who are not policemen in broad daylight. .	**EXPERIMENT 4** 4. I asked for help from someone working for organized crime.
Treatment Group 2		**EXPERIMENT 3** 4. I have given money to drug or criminal organizations so that they do not harm me.	**EXPERIMENT 5** 4. I have given money to the police so that they protect me.

Tanda is a rotated savings and credit informal association

Figure 1: **Description of List Experiments**

The list experiments were placed close to the beginning of the questionnaire to prevent any contamination from other items in the interviewee, especially those related to questions of public security. Interviewers were instructed not to provide any additional information to the interviewees other than that specified in the questionnaire and the cards containing the lists.

In order to provide some context of why we chose the items we did, we should mention that gun ownership, convoys, asking for help from DTOs, and police and Narco extorsion are all frequently mentioned in the press and the policy discussions in Mexico. We assess a form of protection from DTOs and other criminal organizations when police forces fail to be effective, namely taking private forms of protection through the possession of small arms. According to the Small Arms Survey 2007 (Karp, 2007), Mexican civilians hold around 15.5 million small arms [9]. Second, we evaluate the degree to which Narcos can operate unhindered in town and cities going around in convoys. This has become a rather common sight, and some of the vehicles have increasingly become more armored (STRATFOR, 2011). Third, we seek to examine whether DTOs provide personal services similar to those discussed by Gambetta (1996) in the provision of private protection by the Mafia in Sicily. Finally, we examine extortion by either drug traffickers or the police.

[9]Out of those, 4,490,000 are actually registered at SEDENA. This means that private registered ownership rate is of 4.23 firearms per 100 people, and around three times larger including non registered. In addition, the police forces and the military had around 75 thousand and 852 thousand firarms

4 Survey design and implementation

4.1 Geo-referenced violence

In order to design the survey sample, we used a mapping of the prevalence of violence across Mexican municipalities, through a geo-referenced dataset of drug related murders. Since the beginning of the drug violence in 2007 newspapers have kept track of violence and have provided rather comprehensive information on the locations of deaths. Reforma newspaper reports, in particular, have been used by the TransBorder Institute (TBI), for example, to provide a general overview of the state level trends in violence. Since the reluctant release by government officials of the Sistema Nacional de Seguridad Publica dataset [10] it is possible to have a relatively reliable municipal dataset of drug violence, which we use for our sample frame. For a comprehensive discussion of drug related homicide data and trends see Rios and Shirk (2011).

Figure 2 displays cartograms of homicide and drug violence deaths across the Mexican territory, compared to the distribution of population and poverty. A cartogram is a type of map that depicts the municipalities proportionally to their relative size not in land area, but according to the variable of interest. The cartograms were prepared using the GeoDa software. The dots are all the municipalities, colored and sized according to their relative ranking in each variable. The cartograms depict in green municipalities where the event in question is present (i.e. there are always some people who inhabit all the municipalities, and in red those where the event occurs with a particularly high frequency. White dots are municipalities where the event does not occur. The size of the circle denotes a

[10](http://www.cisen.gob.mx/espanol/base-datos-homicidios1.htm

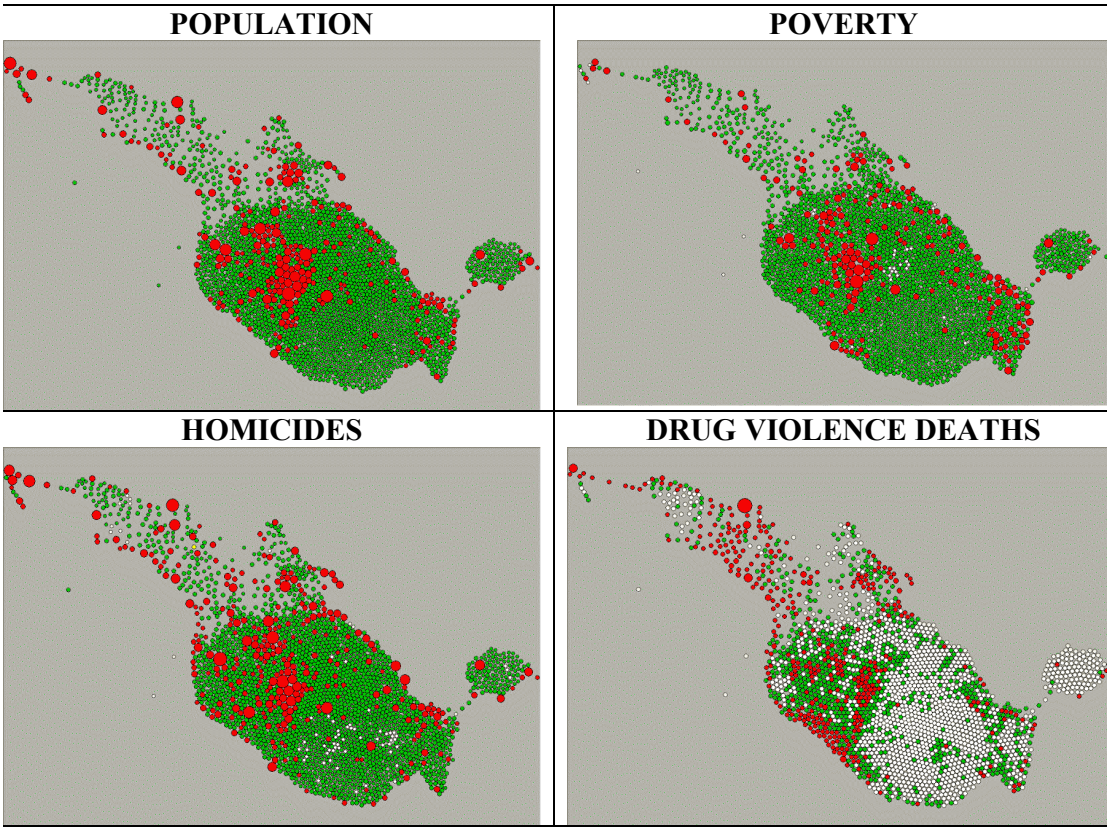

Figure 2: **Cartograms of Municipal Violence.** Murder and Drug Related Deaths Compared to Population and Poverty Profiles.

size ranking. Dots for each municipality are placed as close as possible to their geographic coordinates.

The population cartogram in the upper left quadrant shows that most of the population (according to the official CONAPO estimates for 2010) in Mexico is concentrated in the central highlands. Beyond the core areas around Mexico City and Guadalajara, the coastlines and the border region have red dots denoting large urban concentrations. The north is sparsely populated, and hence the thin density of dots and the elongated shape of the map in that region. The poverty cartogram on the right top quadrant uses the number people who live in households with earnings of less than 1 minimum salary, on the basis of 2000 census data. It shows that the vast majority of the poor are concentrated in the places where population is dense; but the red dots show that there is also a substantial amount of poverty in Southern regions. The lower panels show homicide pattern follows very closely the patterns of population. In contrast, the cartogram of drug violence deaths has its own pattern, related to the entry and exit points of drugs, as discussed by Guerrero-Gutierrez (2010).

The official violence dataset underestimates the true count of drug related deaths. Local newspapers might be more reliable than the *Reforma* newspaper count; and the SNSP data is biased downwards since it counts only the deaths of clashes between DTOs [11]. For our purposes, however, the SNSP dataset provides the necessary information to construct three strata of municipalities according to their levels of violence. The high violence strata is made up of the municipalities where drug related violence has been pervasive, with more than 75 drug related murders per year. The medium violence strata has had between 3 and 25 murders

[11] We thank Guillermo Trejo for these insights.

per year; while the low violence strata, where most of the municipalities in the country fall, has had less than 12 drug related murders since December 2007.

The sample is also stratified by the size of the locality, because we wanted to know whether rural areas in high violence locations have a different pattern of interaction with DTOs that their urban locations. The population stratification is done on the basis of the Federal Electoral Institute (IFE) distinction between urban electoral precincts and rural (plus semi-urban) ones. To gain some insight into the type of places that fall into each strata, figure 3. shows a map of the level of violence and the polling points in the sample. The shading of the map is related to the absolute numbers of drug related killings from 2007 to 2010. Cities like Tijuana or Tepic fall into the medium category, but it is clear that there are medium violence places throughout the country.

All the high violence polling points fell in 4 municipalities: Chihuahua, Juarez, Durango and Acapulco. But it is important to note that half of those points fall in rural locations outside of the main urban conglomeration. Hence the survey has a small component of non-violent locations, and an oversampling of violent places, but it is possible to weight the results to gain insight into national prevalence rates of the various indicators we calculate.

4.2 Sample frame

The survey was made up of 2700 face to face interviews of adults 18 or older interviewed at their homes. A two-stage stratified sampling method was used on the basis of federal electoral precincts, as defined by the Federal Electoral Institute (IFE) in the last update of the voter registration (2010). The sample frame excluded the state of Tamaulipas, that was deemed unsafe for the enumerators.

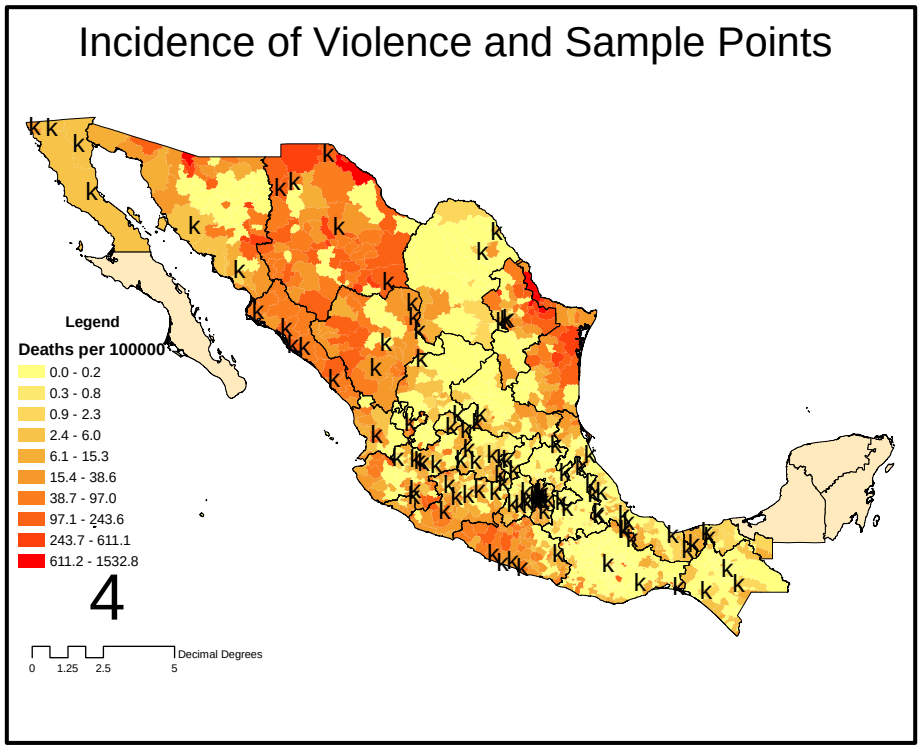

Figure 3: **Sample Points and Violence** Shading According to Drug Related Deaths per 100,000.

The states of Baja California Sur, Campeche, Yucatán and Quintana Roo do not have sample points, due to their relative small size and that their municipalities fall in the low violence stratum. City, town or village blocks in each electoral section were chosen randomly starting from the address of the polling booth, selecting at random three homes in each block. Rejection rates were tallied by the enumerators. An adjustment of quotas was made to reflect the population by age and gender, according to official census data. The margin of error for the full sample is 1.89% at the 95 percent confidence interval.

The survey field work was coordinated by Vidal Romero at ITAM and financed and collected through the Polling Unit of Mexico's Office of the Presidency. The team collecting the survey was trained to understand how to ask the questions related to the list experiments. Questionnaires were randomized by polling point and enumerator, and lists were handed in to respondents as cards, so respondents could read them by themselves. The mechanics of handling cards and questionnaires were pretested before the survey. Several sensitive and control items in the lists were pretested in a nationally representative survey two weeks before the collection of the dataset. The survey was collected from July 9 to 17, 2011.[12]

4.3 Implementation

The original sample frame was implemented with some substitutions of polling points in rural areas of Chiapas. Those substitutions were not related to violence,

[12]In addition to the national survey, we also carried out a shorter version of the questionnaire through telephone interviews to 2793 individuals in 7 highly dangerous cities (Acapulco, Apatzingán, Ciudad Juárez. Monterrey, Nuevo Laredo, Tepic and Tijuana). Respondents were randomly drawn from telephone directories. Given the lower prevalence of land lines among poorer citizens and the explosion of cellular phone subscriptions, we are less confident of the representativeness of the telephone interviews. The margin of error for the city survey is estimated to be 4.91% at the 95 percent confidence interval.

but to logistic difficulties in reaching the selected points during the rainy season. The survey was difficult to implement, however, in places of high violence. The overall rejection rates were 1.82 questionnaires with a standard deviation of 2.95. Hence, on average the enumerators had to knock at two homes before finding a third one to interview. Rejection rates were much lower in rural than in urban locations, regardless of the level of violence. Somewhat surprisingly, high violence strata were not the ones with the highest rejection rates. It was in urban places of medium violence that we observed the highest rejection rate of 2.77, with a standard deviation of 3.5.

The safety of the enumerators was a major cause for concern. During the collection of the survey, the Chief of police of one city called ITAM to ask whether our poll was legitimate. He had detained the enumerators as a precaution, and released them after the phone call. Some enumerators were harassed by members of the drug gangs. Just a week after the collection of our survey, several enumerators from two polling firms (not the one we used) were kidnapped in the area of Apatzingan. Fortunately those enumerators were released after a few days, but clearly pollsters are in a high risk occupation in Mexico these days.

In order to understand some of the challenges faced by the enumerators of the polling firm, we met for several hours with them in Mexico City on August 16, 2011, to give them an opportunity to share their impressions and stories while collecting the survey. Around half of the enumerators participated. The experiences they shared were chilling. When asked at the very start of our meeting whether they felt people were fearful, one of the enumerators answered matter-of-factedly: "no, they are not afraid... they are terrorized!".

In many of the locations where the survey was collected enumerators were

escorted either by the police, or the drug traffickers themselves, while they were doing their work. In several locations they were told to leave town before 6:00 pm, because after that the local dwellers feared for their safety. One group was told not to return the next day to finish their interviews, but the following day, because "tomorrow is when the *narcos* come down to collect their payment (*cuota*)". Our interviewers noted that in the North of the country *narcos* often guard the town doing rounds (*rondínes*) every couple of hours. They told us this is not uncommon in their work, and that men cruising the town streets in pick-up trucks are often referred to as "falcons". In the South their impression was that police had a firmer control. Policemen often stopped them, asking to see the questionnaires, but would allow them to do their work.

During the interviews sometimes members of the drug gangs would hang around watching ("*un Zeta los miraba mientras contestaba*). The impression of our enumerators was that in many towns in fact they were being escorted and taken care of by gang members. When interviewing them, drug traffickers had no qualm in answering directly to the question of occupation with "*sicario*", "*narco*" or "*matón a sueldo*" (hired killer). An in one particular instance when an interviewee with a tattoo of the Valverde (the patron saint of drug traffickers) saw the card of the list experiment regarding guns answered: "oh, you are asking about this, here is the pipe (*aquí está el tubo*) and reached down touching his gun.

In the state of Oaxaca enumerators had to ask permission from the municipal authorities before collecting the survey; while in some other towns they had to ask permission to vigilantes or probably drug gangs patrolling the town. Respondents were sometimes distrustful of the enumerators. They asked why they has chosen to survey a particular town, given that "they had passed ten towns on their way

which were closer". The enumerators explained that this was a random sample. They were asked how much enumerators were paid for each survey they collected, and requested personal information and official id card (*credencial de elector*) before responding. Rejection rates in some of the more dangerous polling points were either because people refused to open the door, or, in the case of Ciudad Juarez, many homes had been abandoned.

Consonant with some anthropological work (McDonald, 2005), they noted that it is easy to figure out whether a town has a strong presence of DTOs. The women wear gold chains and earrings. The homes, even when they look relatively poor ("*casas humildes*"), have satellite dishes and HiFi equipments. People spend large amounts of money in entertainment, and also provide substantial charity to the local church or the feast of the local patron saint. Their cars are easily distinguished because pick-up trucks always have an expensive sound system "and wheel rims that cost as much as the car itself".

Survey team members felt that the questionnaire was well designed to reduce fatigue. People were engaged when responding because they were being asked about something they deeply care about. The enumerators also had the impression that the survey would have been a failure had the sensitive questions not been formulated as list experiments. Specifically one of the enumerators suggested that interviewers would have felt threatened and they would have probably cut the interview short.[13] Another interviewer suggested that giving the respondent a card the respondent could hold close to him or herself in fact empowered them to feel confident about the anonymity of their answer. And they agreed that in

[13]This is something that most likely occurred in the case of the list we tried in the telephone interviews.

general interviewees understood well that the list experiment was done in this particular way in order to protect their privacy, but they also understood the nature of the sensitive questions being asked.

In preparing for the list experiments, we pretested the response items in a nationally representative sample collected in the second week of May 2011. That survey directly asked respondents about the prevailing activities in their neighborhood or town as well as their engagement in various activities. Although this is not a foolproof method to prevent design, floor and ceiling effects, some knowledge regarding the distribution of various responses to items included in the list allowed us to be relatively confident regarding the composition of the items in the control of the experiment.[14]

In designing the items of the lists we ran sociodemographic models (probits) for each of the items we asked directly, in which we tried to ensure that the item was not particularly lopsided for some particular group. Specifically the sociodemographic models included the variables of gender, age, schooling, having access to telephone or internet, affiliation to seguro popular, party identification, and whether they believed the main problem in the country was security or the economy. We made sure to include together some items that had negative corre-

[14]In particular, we sought to know the relative frequency of those behaviors in order to avoid facing ceiling or floor effects in the items included. We found that 82 of the nationally representative sample attended church; 73 reported people throw garbage in the street; 59 that people exercise in public spaces; 41 that people do not respect traffic signals; 30 that people participate in rallies and demonstrations. For sensitive items we explicitly asked whether armed men went around in vehicles in the streets (27 reported this to be the case); whether people knew were the safe houses are (22 percent) and whether drugs were sold outside the schools (19). The percentage of non-response was relatively high in all the sensitive items: 10 percent did not respond the vehicle item; 15 percent on the safe houses and 16 percent on drugs sold in schools. For items related to personal conducts, we found that 60 percent have given money to people in the street; 25 percent have participated in ROSCAS (*tandas*) and only 7 have requested credit to purchase a car. We only found 16 percent admitting givining bribes to policemen; 12 giving bribes to bureaucrats, and 7 paying extortion money.

lations with each other, in order to minimize the chances of hitting floor or ceiling effects.[15]

5 Results

5.1 Design effects

Inherent in using any experiment are the assumptions on which the experiment is based. List experiments rely on two sets of assumptions: no liars and no design effect. Floor and ceiling effects can generate "liars": if an individual has performed none of the actions listed or all of the actions listed, he or she may lie so as to not reveal that he or she has performed (or not) 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.

The other assumption inherent in the list experiment is that there is not a "design effect". That is, if the very addition of the control alters support for the controls, then we might expect that comparing the means, or any analysis based on this concept, is potentially problematic. Thus, we need to test whether the responses on the control items in the list with the sensitive item are significantly different from the responses on the control items in the list without it. New techniques developed for testing this assumption allow us to compare these responses, and, ideally, accept the null hypothesis of no design effect (for more explanation and the R code for the test, see Blair and Imai (2011); for cases of failure in Colombia, see Matanock and García Sánchez (2011)). More specifically, we can identify

[15]We thank Kosuke Imai for generously sharing his survey instrument and giving us advise in that stage.

joint probabilities by comparing the treatment group to the control group, and we expect each probability to be equal to or greater than zero because otherwise there is likely downshifting in the control group. Using a test of two stochastic dominance relationships based on these expectations about the joint probability, then, we can compare the relationships within each number of list items given and emerge with a minimum probability. Using a Bonferroni correction, we reject the joint null if the minimum probability is less than a set alpha.[16]

5.2 balance

The survey was very well randomized across rural and urban regions and across municipalities of different levels of violence, which are two of the factors that we believe should have the most effect on the responses. Additionally, the balance is excellent among different income levels, as measured both by self-reported income brackets and by self-reported eligibility for social services, including *Oportunidades* and *Seguro Popular*. The balance is not perfect for all of the socioeconomic factors, however. For Group 1, gender, age, education, and identification of no political party and of the PRI political party are unbalanced. For Group 2, age, education, and identification of the PRI political party are unbalanced. For Group 3, gender, age, education, and identification of no political party and of the PAN political

[16]In these data, the list experiments regarding armed convoys, DTO lending, extortion by DTOs, and extortion by the police pass the test of no design effect (with, respectively, p=0.6595, p=0.3736, p=2, p=0.5533). The list experiment regarding gun ownership fails the "no design effect" test (p= 0.0007), but when it is subset by urban versus rural regions, rural areas pass, and when it is subset by the level of violence, areas of high violence pass. Thus, there is some concern on the comparison of means on the question of gun ownership in urban areas and those with low and medium levels of violence. A failure to reject the null may occur due to a lack of power, but, given that this is the largest experiment, we should also use some caution in drawing firm results from this particular survey experiment. None of the other list experiments are at all suspect on this dimension.

Table 6: **Average Treatment on the Treated (test of means)**

/hline Treatment	Average Effect	Standard Error	Significance
Own a Gun	0.15	0.04	***
Convoy	0.38	(0.04)	***
Help	0.12	(0.04)	***
DTO Extortion	0.10	(0.04)	***
Police Extortion	0.11	(0.04)	***

party are unbalanced.

5.3 Treatment effects

Overall the list experiments succeeded in providing insight into the prevalence of various drug related activities and citizen responses to them. Table 6 shows the difference in means between the treated and the control groups in the whole survey.

38 percent of the respondents treated with the list that included the convoy item (one third of the sample) responded that they have witnessed this kind of activity. Although the survey did not include direct questions of sensitive items that could have been asked only to the control group (as advised by Imai et al), we know from the pre-testing stage that there are probably large differences in the responses citizens would have given to a direct question. For one thing, the non-response rate is extremely low in the list experiment and it was more than 10 percent in the pre-test. When the question of convoys of armed men going around the streets in broad daylight was asked directly in a national survey a few weeks earlier, only 27 percent reported seeing that kind of activity. Thus, this jumps 10 additional percentage points in the list experiment.

The rate of gun ownership emerging from the survey is 14 percent. With

	Group 1 (Guns)		Group 2 (Convoys and DTO Extortion)		Group 3 (Lending and Police Extortion)	
	Control	Treatment	Control	Treatment	Control	Treatment
Gender: Male	427 *47.44*	926 *51.44*	427 *47.44*	442 *49.11*	427 *47.44*	484 *53.78*
Gender: Female	473 *52.56*	874 *48.56*	473 *52.56*	458 *50.89*	473 *52.56*	416 *46.22*
Age: 18-24	144 *16.00*	337 *18.72*	144 *16.00*	171 *19.00*	144 *16.00*	166 *18.44*
Age: 25-32	171 *19.00*	360 *20.00*	171 *19.00*	195 *21.67*	171 *19.00*	165 *18.33*
Age: 33-40	173 *19.22*	357 *19.83*	315 *19.22*	176 *19.56*	173 *19.22*	181 *20.11*
Age: 41-53	213 *23.67*	384 *21.33*	213 *23.67*	194 *21.56*	213 *23.67*	190 *21.11*
Age: 54+	199 *22.11*	362 *20.11*	199 *22.11*	164 *18.22*	199 *22.11*	198 *22.00*
Education: Primary at most	353 *39.22*	646 *35.91*	353 *39.22*	311 *34.59*	353 *39.22*	335 *37.22*
Education: Secondary+	410 *45.56*	849 *47.19*	410 *45.56*	448 *49.83*	410 *45.56*	401 *44.56*
Education: University+	137 *15.22*	304 *16.90*	137 *15.22*	140 *15.57*	137 *15.22*	164 *18.22*
Income: $1-$1,500	195 *26.46*	380 *25.62*	195 *26.46*	191 *25.43*	195 *26.46*	189 *25.82*
Income: $1,501-$3,000	238 *32.29*	490 *33.04*	238 *32.29*	268 *35.69*	238 *32.29*	222 *30.33*
Income: $3,001-$6,000	204 *27.68*	403 *27.17*	204 *27.68*	191 *25.43*	204 *27.68*	212 *28.96*
Income: $6,001-$1mil	67 *9.09*	151 *10.18*	67 *9.09*	74 *9.85*	67 *9.09*	77 *10.52*
Income: >$1million	33 *4.48*	59 *3.98*	33 *4.48*	27 *3.60*	33 *4.48*	32 *4.37*
Party: None	315 *35.88*	682 *38.60*	315 *35.88*	368 *41.30*	315 *35.88*	314 *35.84*
Party: Other	33 *3.76*	48 *2.72*	33 *3.76*	28 *3.14*	33 *3.76*	20 *2.28*
Party: PAN	164 *18.68*	399 *22.58*	164 *18.68*	193 *21.66*	164 *18.68*	209 *23.52*
Party: PRI	297 *33.83*	495 *28.01*	297 *33.83*	234 *26.26*	297 *33.83*	261 *29.79*
Party: PRD	69 *7.86*	143 *8.09*	69 *7.86*	68 *7.63*	69 *7.86*	75 *8.56*

Figure 4: **Balance**

such rate there would be around 5.6 million homes with firearms (calculating a household size of 5, with two adults in the households, gives 40 million people multiplied by 0.14). This would be the number of small arms if there was only one gun per household. In order to get to the Small Arms Survey estimate, there would have to be around 3 firearms on average in each household, which seems somehow unlikely.

Regarding the insidiousness of DTOs in everyday life, 12 percent of the treated group recognize that they ask for help from individuals connected with the drug trade, and 10 percent report being extorted. Te extortion rate is not different from the one observed in the list experiment for police shakedowns, which come at 11 percent.

The stratification in the sample allows for a breakdown of the responses to the treatments in the list experiments according to the level of violence in the municipality and the urban or non-urban character of the specific sampling point. Hence, we can get some leverage into understanding where it is that DTO activities have become more embedded in the social fabric, and probably perceived by citizens as acceptable ways of life.

The convoy list experiment is a good starting point for the patterns of DTO activity in different types of localities. Table 7 shows the test of means of the difference between the treated and the control groups in the convoy question, hence providing the prevalence of DTO activity in the open, according to the stratification of the sample in 6 cells, corresponding to the combinations of urban character of the locality and levels of violence in the municipality. The table suggests that convoys of armed men who are not police are very prevalent at all levels of violence and both in urban and non-urban settings. Convoys seem to be

Table 7: **Convoy Treatment**

Level of Violence	Urban	Non-urban
High	0.37 (0.10)***	0.29 (0.11)***
Medium	0.36 (0.10)***	0.35 (0.11)***
Low	0.50 (0.10)***	0.40 (0.11)***

Table 8: **Gun Treatment**

Level of Violence	Urban	Non-urban
High	0.12 (0.09)	0.01 (0.09)
Medium	0.17 (0.09)*	0.09 (0.10)
Low	0.18 (0.09)*	0.37 (0.11)***

particularly prevalent in low violence urban localities, where we find a very large treatment effect of 50 percent.

Table 8 reports the results for the gun treatment. The results suggest that citizens have guns mostly in medium and low violence places, and particularly in low violence rural localities where we find a 37 percent treatment effect. Tables 9 reveals that citizens are turning to the narcos for help mostly in low and medium violence places, both showing a 20 percent treatment effect.

Tables 10 and 11 reveal very interesting patterns regarding citizen extortion by DTOs and the police. **??** extortion seems to be more prevalent in high violence places (more than 20 percent), both urban and non-urban, and police extortion happens both in high violence non-urban places (19 percent) and low violence urban places (17 percent). The results thus indicate that **??** prey on citizens more where violence is high, and that citizens turn more to them for help where violence is low or intermediate. However, in these low violence places the police preys on citizens.

Table 9: **Help from Narco Treatment**

Level of Violence	Urban	Non-urban
High	0.10 (0.09)	0.05 (0.10)
Medium	0.20 (0.10)**	0.07 (0.10)
Low	0.24 (0.09)***	0.15 (0.10)

Table 10: **Extortion by Police Treatment**

Level of Violence	Urban	Non-urban
High	0.11 (0.09)	0.19 (0.09)**
Medium	0.08 (0.09)	0.00 (0.10)
Low	0.17 (0.09)**	0.09 (0.09)

Table 11: **Extortion by Narcos Treatment**

Level of Violence	Urban	Non-urban
High	0.23 (0.09)***	0.22 (0.10)**
Medium	0.01 (0.08)	0.15 (0.09)*
Low	0.12 (0.09)	0.16 (0.10)

6 Treatment Effects by Sociodemographic

By disaggregating our results by various sociodemographics, our data allows us to identify whom the narcos and the police target with extortion; who seeks help from the narcos; and who owns more guns or witnesses more armed convoys. Tables 12 and 13 present tests of means for treatment and control groups by social class and levels of violence. We operationalize social class in two ways. In Table 12 we use *Oportunidades* recipient (the Conditional Cash Transfer program) as proxy for poverty and in Table 13 we divide the sample into three categories –poor, middle class and rich. These categories are divided using self-reported income. The lowest two categories (up to 3000 pesos or 250 dollars a month) are coded as poor; the middle two categories (from 3001 to 12,000 pesos a month) as middle class; and the highest category of more than 12,000 pesos or one thousand dollars a month) are coded as rich. The table presents results for all five experiments.

The results show very interesting patterns regarding narco and police extortion. The *Oportunidades* results demonstrate that both the narcos and the police prey on the poor. The percentage of *Oportunidades* recipients who are extorted by the *narcos* is almost 40 percent in low violence places and 24 percent in high violence places. Non-Oportunidades recipients are also being extorted by the DTOs but only in low violence places, where almost 20 percent are forced into giving money to the drug gangs. With respect to police extortion, the data shows that the police preys on both groups, but mostly on the poor in low violence places - almost 30 percent of *Oportunidades* recipients give money to the police for protection in low violence places. The data is revealing of what low violence means in Mexico with respect to the presence of drug gangs, extortion, and criminal activ-

ity. Although low violence places do not exhibit as many murders and other brutal acts of violence, the criminal organizations, including the police, appear to have deep roots and are able to prey on civil society with impunity; not surprisingly, citizens in Mexico feel terrified.

With respect to the treatment of asking for help to the *narcos*, the results suggest that both the poor and the non-poor turn to the DTOs, particularly in high violence places. Our results reveal that in high violence places 33 percent and 15 percent of *Oportunidades* recipients and non-recipients ask for help from the *narcos*, respectively. The armed convoy treatment reveals that almost everyone in Mexico - rich and poor -witnesses armed convoys in their cities, towns, or villages, and this is true at all levels of violence. Finally, the guns treatment reveals that 50 percent of the poor own guns in high violence places. Non-Oportunidades recipients also own guns ?close to twenty percent in high violence places.

Table 13 differentiates social class a bit more by separating poor from middle class and rich. The results allow us to give a more nuanced picture about whom the *narcos* and the police target with extortion. Now we are able to see that there is considerable extortion also in high violence places and that this affects the middle class the most - 38 and 36 percent of the middle class is being extorted by the *narcos* in high and middle violence places, respectively, and this percentage drops to nineteen in low violence places. As in the previous table, we also can see that the poor is being extorted by the DTOs but mainly in low violence places (nineteen percent of the poor give money to the *narcos* in exchange for protection). The patterns of police extortion are similar. The results reveal that, again, the middle class is extorted the most in high violence places, where 28 percent are giving money to the police for protection. The data also reveal that the police

prey on the poor and this is true both in middle violence and low violence places, where 15 and 12 percent of the poor give money to the police for protection.

The data also reveal that the cartels are deeply embedded in civil society not only because of extortion but also co-optation strategies. 23 percent of the middle class is turning to the *narcos* for help; the percentage jumps to 34 in high violence places and to almost 40 percent in low violence places. As in the previous table, we also observe that the poor turn to the *narcos* for help but only in high violence places. Finally, with respect to the convoy and gun treatments, we gain very interesting additional information by disaggregating social class in three groups. We observe that the middle class and the rich are the ones who witness most armed convoys. We also witness that everyone ?poor, middle class and rich ?owns guns in Mexico: the poor in high violence places, the middle class in low violence places, and the rich in intermediate levels of violence.

Table 14 studies the treatment effects by disaggregating by four occupation groups: "informal/self-employed," "private" and "public" sectors, and "housewives." We find that the DTOs prey mostly people in the public sector, followed by private sector workers and then housewives. By contrast, the police prey mostly on the informal/self-employed sector, although they also target housewives. With respect to who turns to the *narcos* for help, we again find that it is mostly people from the public sector (thirty one percent, as opposed to 16 percent in the private sector and 12 percent of the self-employed). Lastly, the gun treatment suggests that it is mostly the self-employed who carry guns.

Table 15 presents the results according to education levels. An important result is that the police prey disproportionately on the uneducated (with primary schooling or less); and the *narcos* target disproportionately those who have only

Table 12: **Treatment Effects by Poverty (*Oportunidades* beneficiary as proxy)**

	All	High	Middle	Low
Extorted by *Narcos*				
Oportunidades	.23***	.24*	.02	.39***
Non-Recipient	.05	.09	.08	.18***
Extorted by Police				
Oportunidades	.15*	.073	.10	.26**
Non-Recipient	.10**	.17**	.04	.069
Ask *Narcos* for help				
Oportunidades	.18***	.33***	.07	.13
Non-Recipient	.10**	.15**	.08	.07
Armed Convoys				
Oportunidades	.42***	.37***	.47***	.42***
Non-Recipient	.37***	.32***	.33***	.47***
Owns Gun				
Oportunidades	.27***	.50***	.12	.16
Non-Recipient	.12***	.18**	.13*	.05

Source: Survey on Public Safety and Governance in Mexico (2011).

attained secondary school or less. Hence, these results indicate that low educational attainment on the part of the victims seems to make it easier for criminal organizations and the police to extort their victims. Lastly, we present the results in 16 by age group; these suggest that the criminal gangs and the police extort the most people from 41 to 53 years old.

7 Spatial Patterns of List Experiment

In a similar vein to the sociodemographic breakdown of the results of the list experiment for some groups, it is possible to reconstruct the geography of DTO activity across the territory making use of advances in geostatistics. In particular, this section constructs, on the basis of the spatial distribution of polling points in

Table 13: **Social class**

	All	High	Middle	Low
Extorted by *Narcos*				
Poor	.11***	.07	.03	.22***
Middle	.15***	.38***	.36***	.19*
Rich	.02	.03	.21	.26
Extorted by the Police				
Poor	.12***	.09	.15*	.12*
Middle	.13**	.28**	.05	.24**
Rich	.13	.16	.06	.27
Ask *Narcos* for help				
Poor	.06	.15**	.005	.04
Middle Class	.23***	.34***	.07	.39***
Rich	.09	.13	.11	.11
Armed Convoys				
Poor	.32***	.42***	.27***	.29***
Middle	.46***	.41***	.37***	.59***
Rich	.47***	.53***	.59***	.10
Owns Gun				
Poor	.13***	.33***	.07	.02
Middle	.14**	.20*	.01	.30**
Rich	.15*	.06	.30**	.05

Source: Survey on Public Safety and Governance in Mexico (2011).

Table 14: **Occupation**

	Informal/Self-employed	Private Sector	Public Sector	Housewife
Extorted by *Narcos*	.10	.16**	.28**	.08*
Extorted by the Police	.22***	.08	.17	.08*
Ask *Narcos* for help	.12*	.16**	.31*	.07
Armed Convoys	.53***	.34***	.49***	.29***
Owns Gun	.34***	.16*	.08	.12

Source: Survey on Public Safety and Governance in Mexico (2011).

Table 15: **Education**

	Primary	Secondary	High School	University or more
Extorted by *Narcos*	.02	.27***	.16**	.03
Extorted by the Police	.17***	.11*	.03	.06
Ask *Narcos* for help	.05	.15**	.13*	.15*
Armed Convoys	.21***	.40***	.40***	.60***
Owns Gun	.15***	.11*	.08	.12*

Source: Survey on Public Safety and Governance in Mexico (2011).

Table 16: **Age Groups**

	18-24	25-32	33-40	41-53	54-
Extorted by *Narcos*	.13*	.001	.07	.30***	.03
Extorted by the Police	.11	.16**	.07	.18***	.009
Ask *Narcos* for help	.15**	.14**	.04	.17**	.08
Armed Convoys	.43***	.41***	.33***	.38***	.29***
Owns Gun	.15*	.19**	.12*	.23***	.005

Source: Survey on Public Safety and Governance in Mexico (2011).

our survey, spatially smoothed surfaces that provide a glimpse at the most likely areas of the country where the embeddedness of drug activity is more prevalent. The mapping exercise is similar to what is done in geospatial public health applications or geomining, seeking to leverage the spatial character of the data to generate smooth prevalence rates. In this case we seek to provide a smooth difference of means between the treated and the control groups of the experiments throughout Mexico.

In order to do this we proceed in two steps. First, we calculate an empirical Bayes smooth estimator, in what constitutes in fact an implicit shrinkage estimator, of the difference of means in each of the 106 polling points, borrowing strength from the six closest contiguous points. That is, we use the spatial proximity of contiguous data in order to group individuals by their location. In sparsely popu-

lated polling points we collected 9 questionnaires, of which one third were in each of the treatment groups. Therefore, the difference in means calculated through this empirical Bayes estimator has an n of at least 42 (6 polling points * 3 treated + 6 polling points * 3 control + 6 from the polling point), but usually more.

Following Anselin et al. (2003) we assume that the prior distribution is characterized by mean θ and variance ϕ. The Bayesian estimate for the difference of means is the weighted average of the raw difference of means d_i, and the prior, with weights inversely related to the variance. The difference of means in our survey can be calculated as:

$$d_i = ((\sum_t iL_i - \sum_c iLi)/P_i) \tag{1}$$

where L_i is the sum of of the items in the list experiment, for either the treated t or the control c groups; i is a specific location of a polling point and P is the total number of treated and control individuals in that survey point.

A standard empirical Bayesian estimator δ_i is known to be:

$$\hat{\delta}_i = \omega_i d_i + (1 - \omega_i)\theta \tag{2}$$

where:

$$\omega_i = \phi/[\phi + (\theta/P_i)] \tag{3}$$

Which means that when the population is large in the given polling point, most of the weight goes to the raw estimate of the difference in means. This Bayes approach is *empirical* because the priors are taken from the distribution of

the data in the neighborhood of the point (i.e. the 6 closest polling locations). We calculated these rates for each polling point using GeoDA. The results are obviously sensitive to the choice of the reference region. In general this approach means that for our survey, in densely populated areas of Central Mexico, the contiguous locations are within a 50 km radius, arguably close enough to think of them as regionally contiguous.

The second part of the method consists of generating a smooth difference interpolated in the unknown territory. We used a simple interpolation technique, which is an Inverse Distance Weighted (IDW) method implemented through ArcGIS. [17]

Thus we can think of this as a moving window that calculates the mean difference between treatment and control, already smoothed spatially in each data point, but that takes into account distance as a discounting factor in the weight observations take.

Figure 5 shows the estimated prevalence of convoys in broad daylight. The red areas denote those where the prevalence of Convoys is larger than 50 percent; while the green areas do not suggest any statistical difference between the treated and the control groups of the experiment, suggesting little drug trafficking activity. A notable feature is that the areas with the most violence are not necessarily those where there is a greater presence of drug gangs, at least as reported by the list experiment. DTO activity seems to go unhindered in Sonora to the North

[17] We also carried out Kriging methods in ArcGIS. Kriging is akin to a spatially weighted GLS regression, in which a semivariogram (a graph that shows the correlation between observations according to the distance) allows for calibrating a model to minimizes errors. The advantage of Kriging is that the method provides good estimates of the degree of uncertainty of our estimates through the calculated errors. But it is a technique that requires a relatively dense set of spatial observations, which we do not have in this survey.

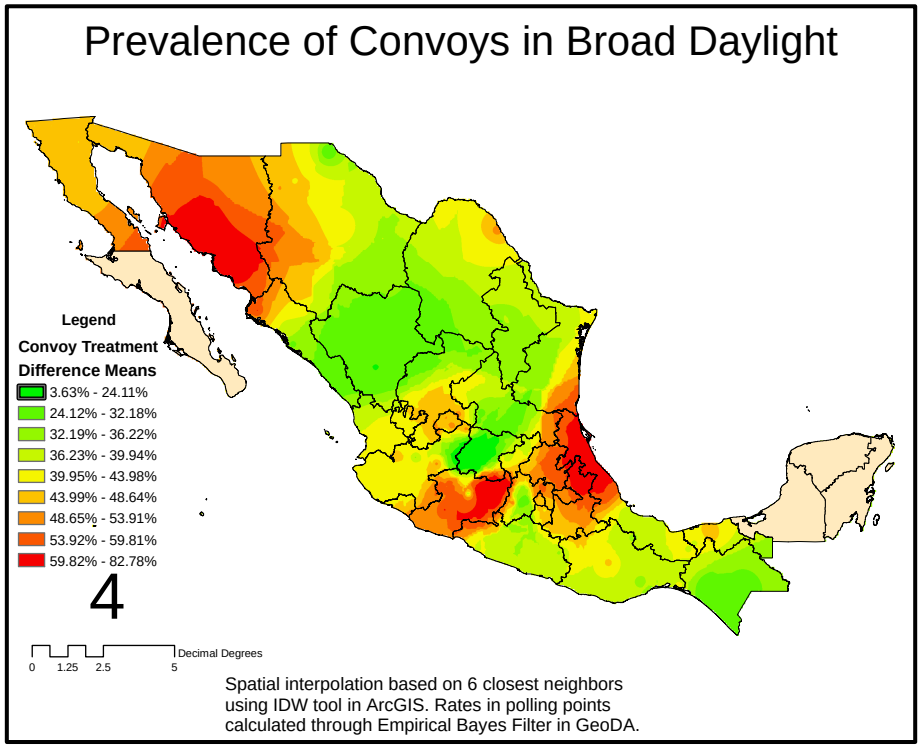

Figure 5: **Empirical Bayes Spatially Smoothed Surface of Convoy Prevalence**

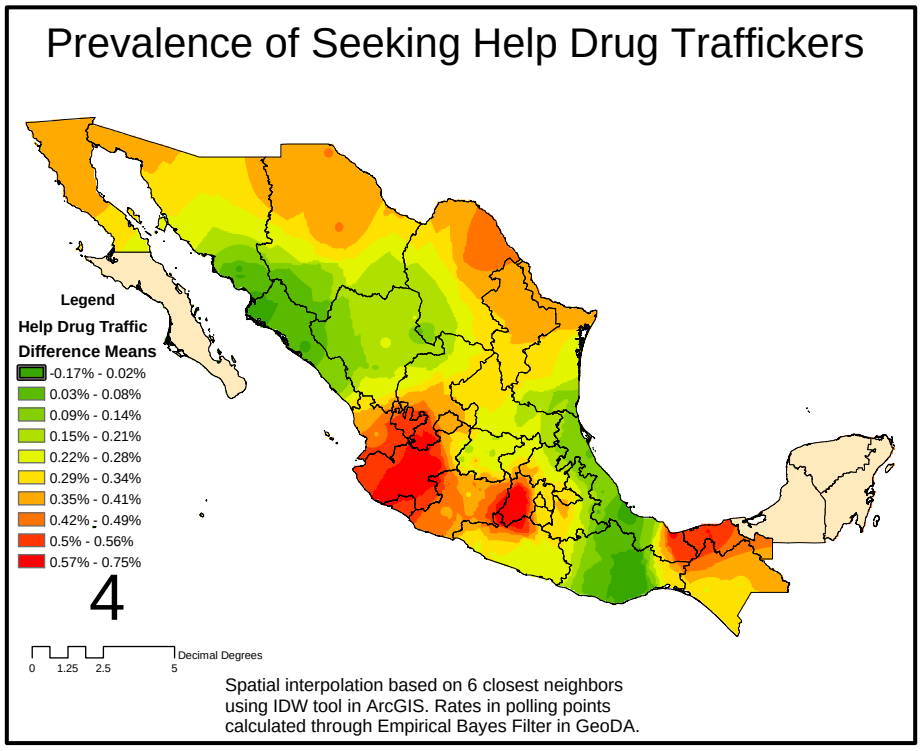

Figure 6: **Empirical Bayes Spatially Smoothed Surface of Prevalence of Asking for Help from Narcos**

and in Veracruz and the North of the Huasteca region. There also seems to be a larger prevalence of convoys in the state of Michacan, which in this case coincides with a region of a large amount of violence. But in places where there is significant military and federal police presence, such as the border cities, and most significantly, Juarez and Chihuahua, our estimates suggest that drug activity is kept more secret.

This is not the same pattern that emerges from the list experiment related to seeking out help from drug traffickers when in serious trouble. Figure 6

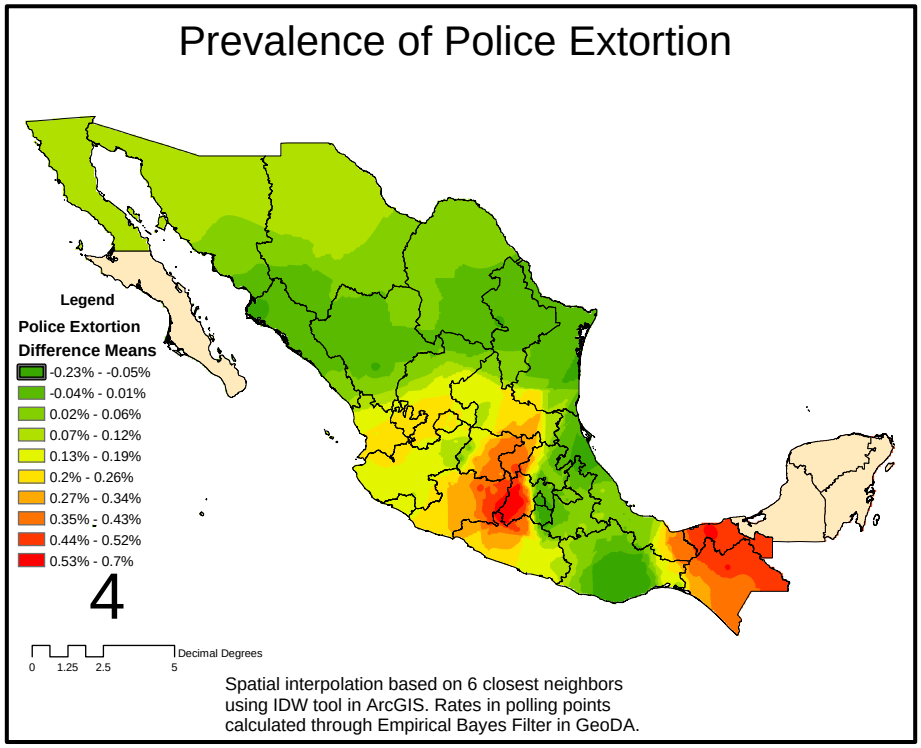

Figure 7: **Empirical Bayes Spatially Smoothed Surface of Police Extortion Prevalence**

Finally, figure 7 displays the spatial distribution of police extorsion as estimated with our spatial smoothing method. The pattern could not be more different than the ones we have previously described for DTO activities in broad daylight and willingness of people to approach Narcos as sources of help when in serious difficulties. The highest prevalence rates are observed in Southern Mexico, specifically in the state of Chiapas and Tabasco, and in a region bordering Michoacan and the Estado de Mexico. In the Northern regions with large DTO violence and presence as measured by the Convoys list experiment there is a very low prevalence of police extortion.

8 Conclusions

This paper elucidates how citizens in Mexico are trapped in between two illegitimate forces –the drug cartels and the police who are in charge of protecting them. Our results demonstrate the extent to which both sides prey on ordinary citizens, asking them for money in exchange for protection. Although the narcos extort citizens the most in high violence regions and the police in low violence ones, both forms of extortion are present everywhere in Mexico.

This has triggered a spiral of fear: drug gangs signal unambiguously that they are in control and will punish anyone who opposes them, while the police can't credibly signal that they can regain control of the streets. Our paper demonstrates that drug gangs have very deep roots in civil society. DTOs simultaneously extort and help citizens. *Narcos*'s social roots are particularly deep among the middle class, and to a less extent among the poor. Our results suggest that in high and middle violence regions close to forty percent of middle class Mexicans are

compelled to give money to the drug gangs in exchange for protection. Moreover, among the middle class, close to forty percent have turned to the *narcos* for help in low violence places while thirty-four percent do so in high violence places. These results mean that the *narcos* in Mexico are present everywhere and even where violence is not particularly severe.

Our findings suggest that public strategies emphasizing exclusively military action are not likely to affect the social embeddedness that protects drug gangs and criminal organizations. This is particularly true because the Mexican state can't count on police corpses that can offer an alternative over the *narcos* to ordinary citizens. The police lacks citizen trust within communities because they engage in similar forms of behavior as the drug gangs. Our results demonstrate that in low violence places the police preys mostly on the middle class and the poor, and that in high violence places they target disproportionately the middle class. Furthermore, our list experiments demonstrate that the police prey the most uneducated citizens.

One policy recommendation emerging from this paper is that public strategies exclusively emphasizing military action are not likely to affect the social embeddedness that protects drug gangs and criminal organizations in Mexico. As long as law enforcement agents are perceived as incapable and unwilling to protect their citizens because of corruption, citizens are likely to continue to live in fear and tacitly protect the *narcos*. Instead, enhancing citizen trust within communities and shifting the reputation of police forces while improving the adjudication of justice are more likely to strengthen the social fabric.

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