WHY HERE AND NOT THERE? THE GEOGRAPHY AND ECONOMICS OF DRUG-RELATED VIOLENCE IN MEXICO

By

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(Under the Direction of Robert Grafstein)

ABSTRACT

Since Mexican cartel settlement and violence are not spatially random, I analyze the local economic factors that render particular municipalities more susceptible to drug-related homicides than others. Utilizing a mixture of quantitative and qualitative methods, I find that low standards of living and high levels of poverty are shown to have very strong effects on such homicide rates, as they provide bases from which narco-groups can successfully obtain community support and recruit members. Consequently, economically struggling areas may be some of the most sought-after, and therefore fought over, locations for drug trafficking organizations. Accounting for this, I draw on human geography to understand the causes of and potential remedies for underdevelopment in the Mexican context as means to mitigate narco-violence. As more and more Mexicans are forced to flee their homeland out of fear, understanding these dynamics is central to Mexican public policy debate.

INDEX WORDS: Mexico, cartels, homicide, economics, development, geography

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Bachelor of Arts, University of Georgia, 2020

A Thesis Submitted to the Graduate Faculty of The University of Georgia in Partial Fulfillment of the Requirements for the Degree

MASTER OF ARTS

ATHENS, GEORGIA

2020

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May 2020

DEDICATION

To my parents: None of this would have been possible without 2419. Thank you for always fostering a loving, supportive, and encouraging atmosphere in our home.

I love you both so incredibly much.

To Abi: Siempre has estado a mi lado. Esto es para ti también.

ACKNOWLEDGEMENTS

First and foremost, I would like to thank Dr. Bob Grafstein for answering my endless questions about quantitative analysis. He helped me find solutions to problems that I initially considered insurmountable, and I am so incredibly grateful. Bob, please keep the chalkboard in your office always! I would also like to thank Dr. Andrew Herod, whose course on Labor, Class, and Politics indirectly inspired the spatial aspects of this paper. Andy helped me develop the framework for this thesis, as I frantically scribbled a plethora of ideas in my notebook every time we spoke. In fact, it was after one of our meetings that I thought of the title of this work! Additionally, I owe much gratitude to Dr. Mollie Cohen, who provided wonderful data sources and background on Mexico, as well as advice about statistical analysis. Thanks to you, Mollie, I will indeed be dreaming of OLS and remembering that it is always BLUE!

Appreciation is also in order for several others who have supported me along the way. Dr. Leah Carmichael and Dr. Meghan Skira were some of the first professors to help me navigate the world of economic development, and I am so thankful for all that I learned through directed reading projects with each of them. Finally, to Jessica Hunt, Emily Myers Shirley, Dr. David Williams, and the entire Foundation Fellowship – this thesis would have quite literally been impossible without you. The travels that you funded sparked my interest in development work and enabled me to gain the Spanish skills necessary to conduct this extensive research. Moreover, by taking me on as your graduate assistant, I was able to stay in Georgia for the extra year needed to complete this thesis. I am perpetually grateful. For everyone else who I do not have space to mention: Thank you so much.

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CHAPTER 1

INTRODUCTION

"The violence has included repeated instances of mass killings (in some cases numbering more than 100), decapitation and other forms of vicious mutilation and dismemberment, systematic and gruesome torture, rape and other forms of sexual abuse, immolation of bodies, car bombing, [and] the placement of dozens of cadavers in public places, hanging from bridges and buildings" (Campbell & Hansen, 2014, p. 159)

In 2019, the number of Mexican homicides – 35,588, to be exact (Herrera-Lasso, 2020) – outpaced that of civilian deaths in Afghanistan, a war zone (United Nations, 2020). The majority of this violence has been attributed to the country's numerous drug trafficking organizations, or DTOS[1] (Calderón et al., 2019), who have incited such fear that 74.6% of Mexican adults claimed in 2019 to feel unsafe in their own cities (INEGI, 2019). This insecurity has in turn led many Mexicans to decrease both their formal and informal labor market participation (Robles et al.,

[1] There is debate among academics about the terminology that should be used to label such groups. Some scholars (Shirk, 2010) note the inapplicability of the term "cartels," since it, according to its definition in the field of economics, refers to groups that "collude to reduce…production or to set prices" (Dell, 2014, p. 6), which is not usually the case in the world of DTOs. Moreover, others (Wittens, 2012) voice concern about the word "narcos," saying that it only relates to one type of drug (narcotics) that is being produced and sold by the groups. Yet, even the acronym DTO, which was once widely used, is now also considered outdated, as many such organizations have broadened their activities beyond the realm of the drug trade (see Rios, 2010; Beittel, 2013; Dell, 2014; Hartmeier, 2018). Thus, in the absence of an adequate word or phrase, this paper will employ the terms "cartels," "narcos," and "drug trafficking organizations" interchangeably, since all remain commonly used in both the media and academia, and, as Rios and Shirk (2011, p. 22) note, "While all these arguments [about terminology] have merit, they ultimately come down to semantic differences."

2015; Velásquez, 2019) and/or eventually migrate to the United States in the hopes of escaping potential bloodshed within their communities (Rios, 2012, 2014).

Consequently, reducing cartel-related violence is fundamental to the maintenance of Mexican society and thus is likely to remain at the heart of the country's public policy discussions. However, in order to effectively implement targeted plans that would successfully mitigate this violence, several questions must be addressed. Namely, where is narco-violence produced and re-produced?[2] Moreover, what are the specific local factors that either a) cause an area to have or b) make an area susceptible to such violence?

Since DTOs choose when and where to fight (Rios Contreras, 2013), their violence is by no means spatially random (Lum, 2008; Vilalta, 2009b; Fuentes & Hernández, 2013), and I argue that particular characteristics associated with a place (whether in reality or representation) render that location either more or less attractive to cartels as they decide where to establish bases and battle for turf.

Considering that Mexican drug-trafficking organizations' primary goal is obtaining profit (Wittens, 2012; Beittel, 2013), scholars have noted their tendency to settle in regions most conducive to the drug-trade – specifically, in northern and western states, so as to be closer to the U.S. border and Pacific coast, respectively. Yet, there is a surprising dearth of literature that digs deeper. For example, within a particular state, why is being located in one municipality considered preferable to being in the one next door? Since both would presumably have similar geographic benefits in terms of access to trade routes, it stands to reason that there may be special local factors within given municipalities that cause narco-groups to ascribe a certain

[2] I say that it is re-produced since the factors that lead to narco-violence may be exacerbated by that violence, thereby causing more of it. For example, if poverty is shown to increase the incidence of cartel-related violence, and that violence in turn worsens poverty levels, the violence could continue to be re-produced within the given space.

value to them. As a result, such areas may experience more narco-related violence than their neighbors, as competing cartels vie for their control.

I hypothesize that economic conditions, such as poverty, inequality, and the inability to access decent standards of living,[3] may be highly valued by narco-organizations and thus provide a partial explanation for cartels' willingness to violently fight for hegemony in particular municipalities. After all, if a population is suffering economically, it could be more disposed to join, support, or collaborate with cartels, since DTO involvement is often associated with the visible accumulation of wealth (Malkin, 2001; Rios, 2010). Hence, narco-groups might pay attention to the economic characteristics of municipalities when choosing where to locate in order to ensure that they will be able to garner enough membership and community backing to effectively their conduct their activities. (For more on this theory, see chapter two.)

While such a connection may seem obvious, it has not been the subject of many studies. Much academic work tends to focus on the economic consequences, rather than the causes, of cartel violence (see Rios, 2008; Robles et al., 2015; Balmori de la Miyar, 2016; Velásquez, 2019), and the literature that does trace the roots of such violence often highlights non-economic characteristics, such as social phenomena, including *machismo* (see Neapolitan, 1994), and political factors like corruption (see Morris, 2012), law enforcement (see Schoor, 2013), and government structure (see Rios Contreras, 2012; Osorio, 2013). In addition, spatial components of such arguments are frequently ignored, particularly at the more granular, municipal level.[4]

[3] Low standards of living will also be referred to as "marginalization" throughout this paper, in accord with traditional data sources and research within Mexico.

[4] Some papers, such as those of Vilalta (2009a), Fuentes & Hernández (2013), and Vilalta & Muggah (2014), explore the spatial dynamics of violence within particular Mexican cities, but these works focus more so on neighborhood characteristics. Such research was certainly useful in the formulation of my theory, but I believe more studies analyzing municipal-level variation are also needed. In addition, most of the existing research only looks at neighborhoods within a few specific cities, such as Mexico City, Ciudad Juárez, and Chihuahua.

This paper attempts to fill such gaps by exploring the connection between municipalities' economic conditions and their cartel-related homicide rates. Since much of Mexican inter-cartel violence involves territorial disputes (Guerrero Gutiérrez, 2010; Rios, 2013; Phillips, 2015), these homicide figures can serve as a proxy for the value to which cartels ascribe operating in a given area. By using both quantitative and qualitative methods (specifically in the forms of statistical analysis and case studies), I hope to provide a more complete understanding of the many complexities behind Mexico's unparalleled degree of narco-violence. My hypotheses are as follows:

H1: High levels of municipal-level poverty increase the incidence of municipal-level narco-violence;

H2: High levels of municipal-level inequality increase the incidence of municipal-level narco-violence; and

H3: High levels of municipal-level marginalization increase the incidence of municipal-level narco-violence.

One of the few papers that does attempt to conduct similar research and uncover a link between economic factors and drug-related violence in Mexico (Enamorado et al., 2014) finds a connection between inequality and homicides, but admits that it fails to account for reverse causality and omitted variable bias (OVB). Thus, it, like its predecessors that have also attempted to explain the effects of inequality on crime,[5] may have "fallen short in establishing an unambiguous direction of causality" (p. 2). This paper aims to expand on the work of Enamorado

[5] Although most of these accounts were not focused on Mexico.

et al. (2014) by 1) attempting to reduce the effects of issues related to reverse causality and OVB by employing unique quantitative methods[6] and 2) simultaneously analyzing case studies to provide for a fuller picture of local dynamics. Moreover, I look at economic factors besides inequality (namely poverty and standards of living) in an effort to better understand how such indicators independently and collaboratively work to impact cartel-related violence.[7] While proving causality is nearly impossible, this paper aspires to serve as a step in this direction.

Overall, my thesis has two primary goals. First, Murphy and Rossi (2017, p. 2) note that "the academic literature on drug cartels is both recent and limited," and while more studies are certainly needed, I seek to make a contribution to the burgeoning social science literature on narco-violence. Secondly, I hope to provide policy makers with additional context that may be useful in the formulation of policies aimed at the diminution of such violence. Efficient policy cannot be created in a vacuum, and I believe that scholarly research such as this can offer valuable insights meant to inform policy makers throughout the process of creating and structuring courses of action.

Throughout the last decade, Mexico's principal means of tackling narco-violence has been largely reactive, with the goal of killing and imprisoning high-profile leaders of DTOs. However, this strategy has been mostly unsuccessful, as it has actually been shown to increase drug-related violence (Rios Contreras, 2012). Yet, while "a war against drugs cannot [be won]," (Rios Contreras, 2013), perhaps a war against inequality, poverty, and low standards of living could be. Consequently, this paper has important policy implications, as it may provide some of

[6] I say that these techniques are "unique" with respect to their application to the particular question at hand regarding DTOs; such methods have of course been used in other, unrelated, studies.
[7] Other studies also explore the effects of more than one economic indicator on crime (see Fajnzylber et al., 2002a; Poveda, 2012).

the evidence needed to cultivate a new, full-scale approach for dealing with drug-related violence in Mexico by confronting the origins of the problem.

1.1 Outline of This Work

This thesis will proceed as follows: First, it will begin in chapter two with an explanation of the theoretical foundation for my hypotheses. In chapter three, I present a brief overview of the history and geography of drug-related violence in Mexico in order to provide context. Chapter four includes extensive quantitative analysis that searches for a potentially causal relationship between the economic variables of interest and the cartel-related homicide rate in a given municipality. Qualitative examination will then be performed in chapter five, which explores relevant case studies. Taking into consideration the findings of both my quantitative and qualitative research, chapter six looks at policy options that could potentially decrease Mexico's drug violence, keeping in mind the success (or lack thereof) of initiatives that have already taken place within Mexico (at all levels of government). Finally, the thesis concludes with a chapter that ties together all of the paper's major findings and discusses the future of research on studies relating to drug cartels and the factors behind their geographical settlement and violence.

CHAPTER TWO

THEORY

According to Viridiana Rios (2010, p. 15), "The drug elite buy 15,000 USD flower arrangements for their funerals, buy Mercedes Benz in cash, and use 24 karat gold cell phones."[8] While such a lavish lifestyle may be enticing to individuals across all backgrounds, one could imagine that it may appear even more attractive to those who have close to nothing, whether in terms of income or standards of living. If, for example, someone is struggling to provide financially for themselves or for their family, watching the newest Lamborghini or Ferrari[9] drive down their street could potentially seem like an advertisement, as if DTOs were whispering "You could have this, too."[10]

As a result, logic might tell us that cartels may choose to settle in areas with relatively high levels of poverty, inequality, or marginalization if they hope to successfully recruit and gain support from their local communities. That is not to say that regional geography does not matter – it does; but if two municipalities are both in the same area with equal access to trade routes, what makes one of these locations more attractive for cartel settlement (and thus potentially more susceptible to narco-violence) than the one next door? Since the neighboring municipalities

[8] For other accounts detailing common displays of cartel-related wealth, see McDonald (2005), who mentions "bejeweled houses" (p. 120) and trips to day spas (p. 119), as well as Díaz-Cayeros et. al. (2011), who, among other things, discuss "wheel rims that cost as much as the car itself" (p. 27).

[9] These are some of the cars often driven by high-level drug traffickers, as said in an interview with one cartel member who explained why he, and others, joined a DTO (Rios, 2010).

[10] Of course, low-level cartel members do not earn a lot, as "initial positions are unpaid or paid with lower than minimum wages" (Rios, 2010, p. 15). Yet, many new recruits believe it will one day be possible to attain extraordinary wealth through the drug trade, as "crime offers possibilities of economic mobility that the legal labor market cannot match" (Rios, 2010, p. 15).

likely have fairly similar cultures, climates, and agricultural capabilities, perhaps economic factors could provide some insight.

Specifically, we know that cartels recognize the importance of highlighting monetary compensation as a means of recruitment. Several narco-groups have conducted radio advertisements promising payment for those who would join their organizations (Rios, 2010), and one DTO, Los Zetas, even famously hung signs from bridges which said, "Don't suffer hunger and abuse anymore" (Grillo, 2012). Consequently, we can assume that this awareness may guide cartel leaders as they decide in which municipalities they would like to operate. After all, cartel presence in a municipality is not arbitrary. Rather, "drug trafficking organizations pick their areas of operation quite selectively" (Coscia & Rios, 2012), and the economic characteristics of a given location may be some of the principal factors behind such decisions.

2.1 Poverty

Poverty has been shown to increase the likelihood of violence in a region (see Chon, 2011; Fuentes & Hernández, 2013), and there are numerous reasons why this might also be the case in Mexico. To start, although cartels are different from streets gangs because cartels' principal focuses are often transnational drug trafficking and extortion,[11] the two groups share many similarities, as they are both "turf-oriented" (Sullivan & Bunker, 2002, p. 49) and known for inciting fear through violence. Since most gangs in Latin America are based in impoverished areas (Rodgers, 1999; Dudley, 2010), it is reasonable to believe that the same would hold true for cartels.

[11] Gangs sometimes contract their work to DTOs, but typically they are much more involved in local violence and control within their communities, rather than major international trafficking efforts.

Additionally, successful DTOs require a large employee base to work in jobs involving the growth, storage, transportation, and shipment of contraband (Saviano, 2015), and in order for people to be incentivized to join the illegal labor market, they must be offered wages greater than those that they could expect to receive in the legal one (Rios, 2010). This is because the decision of whether one should engage in criminal activity is based on individuals' calculations of expected utility, or benefits (Becker, 1968), which, in this case, are monetary.[12]

Keeping people's inclination to maximize their utility in mind, cartel leaders may choose to operate in municipalities where the typical income from the legal labor market is low, so that they can effectively offer wages that, although higher than the local legal average, are still much lower than they would have to provide in wealthier regions in order to attract labor. Hence, by establishing bases in more impoverished areas, narco-groups can retain more profit for themselves.

Aside from enhanced profits, cartels can also likely find more recruits in relatively poor areas. Many of Mexico's poorest individuals believe that "an honest job will get you nowhere," (Malkin, 2001, p. 114), and thus may be more willing to join a cartel than people who have enjoyed financial success through the legal labor market.[13] Numerous indigent Mexicans experience skill deficits which can hinder their ability to find legal, well-paid employment, and while acquiring the marketable skills necessary for legal labor market success can be difficult (as it requires resources that may be unavailable in impoverished communities), learning to shoot a

[12] The calculation of expected utility also usually takes into account additional benefits, such as prestige, as well potential costs, including imprisonment or other penalties for crime (Enamorado et. al, 2014).
[13] This is not, however, meant to imply that the only two employment options in Mexico are legal work and DTO membership, as a large number of Mexicans work in the informal labor market as street vendors and service providers, among other occupations (see Bosch & Esteban-Pretel, 2006; Ghosh et al., 2009; Brambila Macias & Cazzavillan, 2010).

gun,[14] for example, is much easier. As a result, poverty can provide a large supply of "potential illegal labour" for DTOs (Livingston, 2011, p. 18).[15]

One example of this lies in farming areas. If cartels hope to involve themselves in the production of drugs, they must take into consideration not just the climate and agricultural landscapes of municipalities, but also their poverty levels and the economic opportunities that these locations provide their inhabitants. In many rural towns within the Mexican state of Guerrero, for instance, local farmers say that they are involved with the cultivation of drugs out of necessity: Their only alternative would be to grow avocados or other vegetables, which are much less profitable (Hartmeier, 2018). Therefore, narco-leaders probably know that, by settling in areas where people are desperate to find a means of earning a living and providing for their children, they will likely encounter a large workforce potentially willing to collaborate with them. In fact, as early as 1998, cartels employed about 300,000 "peasants," who aided DTOs in drug production (Rios, 2008, p. 7).[16]

Considering all of these factors, one can see why cartels might be particularly willing to engage in violence against their opponents in order to maintain or acquire domain in municipalities with elevated levels of poverty, as these locations may be highly sought-after by narco-groups.

[14] "Hitman" is a common occupation for which cartels hire (Valdés Benavides, 2015).
[15] See Beittel (2013) for similar arguments about poverty yielding more recruits for narco-organizations.
[16] It is also possible that cartel leaders may choose to establish bases in areas in which they are most culturally comfortable. Thus, if poor individuals are the main recruits of DTOs, such persons, after gaining leadership positions within their respective organizations, may decide to continue operation in locations that are socioeconomically similar to those in which they were raised. As a result, narco-violence may be reproduced in impoverished areas in this way.

2.2 Inequality

Inequality, which is one of the largest and most persistent problems in Mexico (Fuentes, 2007), is also of interest,[17] as several scholars (see Fajnzylber et al., 1998, 2002a, 2002b; Whitworth, 2012) have found a positive correlation between it and violent crime. Unnithan and Whitt (1992), for example, claim that inequality is one of the best predictors of homicide, and even at the neighborhood level, Morenoff et al. (2006) believe that inequality is a key cause of urban violence, particularly in downtown Chicago. In the Latin American context, Poveda (2012) notes that Colombian cities' homicide rates are closely linked with their levels of development and inequality, while Nadanovsky and Cunha-Cruz (2009) find similar results across Central and South American countries.

In terms of Mexico, those on the bottom half of the income scale in highly unequal municipalities may constantly see visible displays of wealth greater than their own, even prior to a cartel's arrival in the area. Specifically, it is not uncommon throughout Latin America for slums to be located just a stone's throw from mansions, as there are many "landscapes that join luxury and disadvantage" (Dinzey-Flores, 2017, pp. 248-249).

These obvious showcases of inequality can cause frustration, giving way to "unhappiness, low self-esteem, envy…anomie [and] dissatisfaction with the social order" (Bunge, 1989, p. 180). Recognizing this, DTO leaders might highly value unequal areas and consider them to be fertile places for recruitment, since cartel membership can offer the

[17] Although some readers may wonder if the concepts of inequality and poverty are too similar to be thought of separately, scholars have argued that the two should not be conflated, as they refer to distinct economic issues (Sen, 1992; Sandoval Hernández, 2008).

community's economically struggling inhabitants a quick means of moving up the financial ladder.[18]

Additionally, economic inequality is known to foster resentment, as well as "social tension, anxiety, and strain, which [can] lead people to become more violent" (Enamorado, et al., 2014, p. 4).[19] Hoping to capitalize on people's potentially repressed anger, narco-groups might also value unequal municipalities if they believe that they can more easily convince the residents of such areas to fight alongside them.

Consequently, for all of the reasons outlined above, cartel leaders may take municipalities' levels of inequality into consideration as they ascribe values to locations and determine which are worth violently contesting.

2.3 Standards of Living

A municipality's standard a living,[20] which can serve as measure of its economic deprivation (Vilalta & Muggah, 2014), may also be a key indicator of its attractiveness to DTOs, as evident in the fact that some reports (see *Proceso*, 2010; Medel, 2012) have found coincidence of drug production and violence in areas with high marginalization and limited access to social services.

[18] Upward economic mobility can be particularly difficult to achieve legally in unequal societies, because, aside from disproportional access to resources, individuals often claim to see less positive labor and monetary outcomes due to intense competition in such areas (Whitworth, 2012).
[19] Davies (1962) adds to this theory with his concept of a "J-Curve," which represents the discrepancy between people's financial expectations (based on what is possible within their communities) and their realities. When this gap becomes "intolerable," people are said to be more willing to act violently. Davies does not explicitly mention inequality – he instead considers the feelings that arise during economic slumps following periods of growth (which caused expectations to rise as people saw the type of economic success that they and their peers could achieve) – but I believe that his work on unmet expectations is still extraordinarily applicable to this case.
[20] Which should also not be confused with poverty, as middle-class or wealthy individuals may live in an area that still lacks adequate infrastructure and public services.

One reason for this might be a narco-strategy based on dependence. Murphy and Rossi (2017, p. 31), for example, find that "drug lords have great support in the local communities in which they operate," as they often build churches and schools (Saviano, 2015; Hartmeier, 2018) and provide necessary services and insurance (Díaz-Cayeros et al., 2011).[21] In fact, in December 2018, a high-ranking member of the Sinaloa cartel dispatched trucks to hand out free holiday gift baskets (*Mexico News Daily*, 2018), thereby highlighting the fact that DTOs frequently try to project a "Robin Hood" image (Beittel, 2013, p. 18) and convince the public that they are on their side.[22]

Yet, these actions may simply represent a form of "coercing the local community to accept and conceal [the] violent group's activities" by essentially fostering a sense of reliance on the cartel (Flanigan, 2014, p. 63). If DTOs were to settle in municipalities with higher standards of living, this strategy could be rendered ineffective, as people would not need the cartels' charity in providing goods and services that they could otherwise afford for themselves.

Nonetheless, by cultivating a relationship of dependence, cartels know that they can count on a municipalities' residents to, at best, support the cartel, and, at minimum, avoid actively opposing it. Such a relationship is imperative, because DTOs, by nature, need the backing of local inhabitants, as it "can mean the difference between winning and losing in a fight" (Díaz-Cayeros et al., 2011, p. 5). This idea is in line with other work which also argues that armed non-state actors need social support in order to survive (see Crenshaw, 1981;

[21] One may thus wonder about issues of reverse causality – i.e. if cartels impact economic indicators, rather than the other way around, as my theory proposes. However, this will be addressed in chapter four.

[22] However, cartels sometimes do not help the entire municipality, but instead provide "club goods" with limited access (Díaz-Cayeros et al., 2011) as a means of gaining loyalty from their communities, much like other organized groups have done (see Iannaccone, 1992; Berman, 2000; Berman & Laitin, 2008). These club goods are only given to those who actively support the cartel, and while this from of "giving" is different from universal provisions within a municipality, it still fosters the types of loyalty and dependence that would likely be most successful in regions with low standards of living.

Goldstone, 2001; Kalyyas, 2006; Weinstein, 2007). Therefore, narco-organizations may hope to locate in economically deprived areas where their strategy to foster dependence and support may be met with greater success, and they may even be willing to violently fight for such territories.

Additionally, a municipality's low standard of living may reflect the ineffectiveness of its government. If local officials cannot adequately ensure that people have access to running water, for instance, how could they possibly be capable of preventing narco-control? This is similar to the "broken windows" concept (Wilson & Kelling, 1982; Fuentes & Hernández, 2013), which argues that dilapidation or visible signs of marginalization within a community can translate into higher levels of crime, as they indicate social disorder.[23] In this case, DTO leaders might highly value municipalities with low standards of living because they anticipate little government resistance in such areas.

In summary, considering that narco-groups "prey on the poor" (Díaz-Cayeros et al., 2011, p. 36) and on struggling communities, there are many reasons why they might prefer to settle in areas that are poor, unequal, or with low standards of living, and those listed in this chapter have provided an outline of some of the core theories that led to the ultimate construction of my hypotheses. However, before those hypotheses are tested, I will first provide some necessary context regarding the historical and current state of Mexican drug cartels and violence.

[23] Although this theory has been subject to scrutiny (see Taylor, 2018).

CHAPTER THREE

BACKGROUND: DRUG VIOLENCE IN MEXICO

With the hope of putting my statistical analysis and case studies in perspective, this chapter will first offer a brief summary of Mexican drug trafficking and violence before later explaining what is currently known about its geographical dynamics. This chapter, then, presents the framework from which this research is building.

3.1 Overview

While drug-related violence is a fairly new phenomenon in Mexico (as will be discussed later in this section), drug cultivation is not. The Spanish began growing marijuana in Mexico upon their arrival in the mid-1500s (Campos, 2014), and it is believed that opium was introduced to Mexico by Chinese immigrants in the late 19th century (Medel, 2012). However, it was not until the implementation of the United States' prohibition on alcohol in the 1920s that the production of either plant was intensified, as there were "incentives for Mexican gangs to start producing these substances on larger scales and shipping them north" (Medel & Thoumi, 2014, p. 196). With both alcohol and drug consumption deemed illegal in the U.S., numerous black markets emerged (Recio, 2002), and Mexico, taking advantage of both its shared border and fertile grounds for drug production, seized the opportunity.

Drug traffickers from Mexico continued supplying opium and marijuana to the U.S. in the post-Prohibition period, but they also later began helping Colombian cartels smuggle cocaine, the true money-maker, into the United States. Yet, after significant crackdowns by

Colombian authorities, the infamous cocaine-pushing Cali and Medellín cartels started to weaken in the 1990s (Cook, 2007; Rios, 2010), thereby "leaving a power vacuum that Mexican-based drug gangs had little trouble filling" (Medel, 2012, p. 88).[24] Mexican DTOs also ramped up their sale and production of heroin and methamphetamines at this time (Wittens, 2012).

Nevertheless, the majority of the drug cartels had operated peacefully, due to tacit understandings with the Mexican government. Specifically, Mexican authorities (particularly those of the Institutional Revolutionary Party, or PRI, for its initials in Spanish) allowed cartels to operate (Resa Nestares, 2001; Rios Contreras, 2012), so long as they obeyed the rules outlined in a general code of conduct. This code included ten principal components, namely: "(1) No dead people in the streets, (2) no drugs in the schools, (3) no media scandals, (4) periodic seizure of illegal drugs and imprisonment of lower level traffickers, (5) generation of economic revenues for small, poor communities, (6) no gangs, (7) no deals with other branches of government or bureaucracy, (8) mistakes are to be punished with imprisonment, not death, (9) order and respect for territories, and (10) revenues must return to Mexico in the form of investments" (Rios Contreras, 2012, p. 74). In addition, members of government were also to receive hefty monetary compensation in the form of bribes.

This fragile peace shattered in December 2006, when then president Felipe Calderón suddenly declared a "war on drugs."[25] His administration began killing and imprisoning major

[24] It ought to be noted that Mexico has not become involved in the production of cocaine, which can only be grown in the Andean region of Latin America (Dell, 2014); rather, Mexican DTOs have begun acting as "independent firms" rather than "external contractors" (Rios, 2010, p. 5). In other words, Mexican organizations are now buying cocaine from producers in order to sell it on their own, instead of simply working under Colombian cartels and transporting the cocaine for them.

[25] This announcement was unexpected, since Calderón had not mentioned any such idea during his campaign (Dell, 2014). Some say he may have just been looking for a way to "legitimize his administration" (Osorno, 2009) as the economy suffered (Rios Contreras, 2012), while others may question if he had been influenced by the United States, as he and U.S. President Bush convened in 2007 to discuss issues related to security and drug-trafficking (see Astorga & Shirk, 2010).

drug lords in the hopes of weakening groups by taking out their leadership,[26] but this strategy backfired. Seeing that the government had broken its agreement to let cartels operate freely, DTOs were no longer bound by the aforementioned code of conduct. Although narco-organizations previously had to respect the "size and borders of [cartel] territories that were delimited and granted by the PRI," (Rios, 2010, p. 4), all land was now any groups' for the taking. Thus, mass violence could ensue – and it did.

Numerous drug-trafficking organizations were indeed temporarily weakened, but rather than disbanding completely, many faced intra-cartel violence, as various members vied to fill the power vacuums left by their missing leaders (Wittens, 2012). Meanwhile, other groups became fragmented, leading to the emergence of new, smaller cartels that had previously been under the umbrella of their larger counterparts (Beittel, 2013).

These newer groups likely had several goals. First, in order to exhibit their power and be seen as credible, they needed to claim territory of their own. Therefore, fighting emerged as DTOs competed for hegemony in areas that had previously not been under narco-control. Secondly, these new groups also wanted to earn profits, and they attempted to usurp territories that were already occupied by established cartels (particularly those that had recently weakened after losing their leaders) in order to gain domain in places that had long been considered valuable (Dell, 2014). This would be an opportunity for the new cartels to eliminate rivals, demonstrate the fact that they should be feared, and establish their identities as new power players in the game of Mexican drug trafficking (Phillips, 2015). As a result, inter-cartel violence was also a major issue.

In other words, all hell broke loose.

[26] This has been called the "kingpin" method.

Consequently, the commencement of the so-called war on drugs simultaneously marked the beginning of a new – very violent – period in Mexican history, as homicide rates have greatly risen since 2007. These jumps have been dramatic: there were, for instance, only 8,901 cartel-related murders from the years 2001 to 2006, but that figure rose to 41,648 for the period of December 2006 to June 2010, representing an increase that is almost fivefold (Rios, 2013). For a breakdown of homicide statistics, see figures one and two.

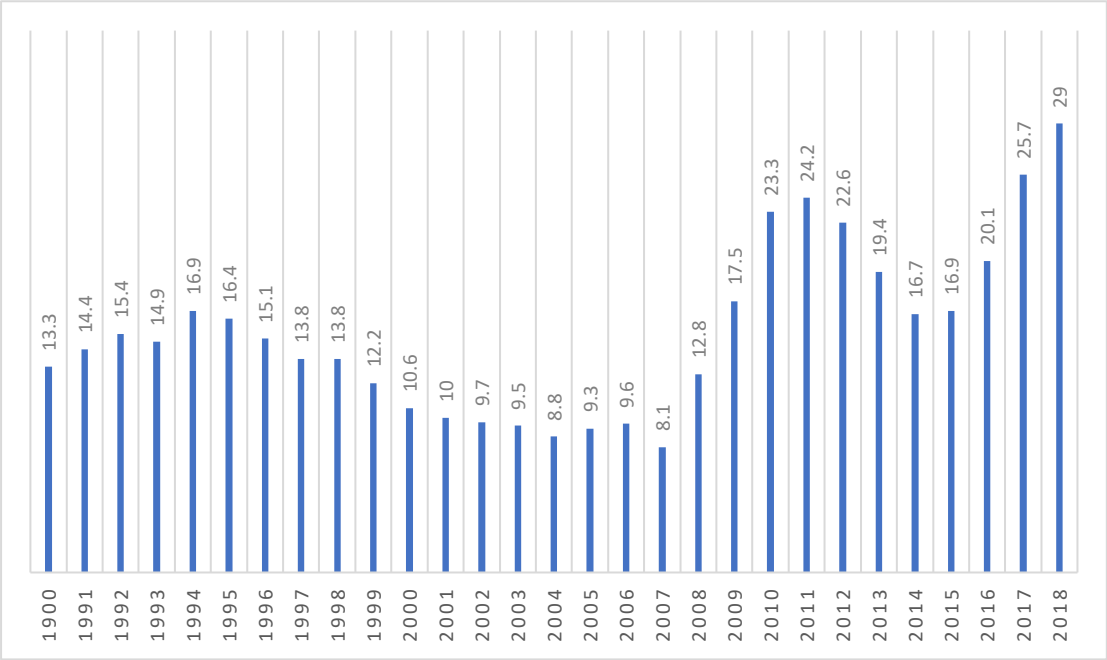

Figure One: National Homicide Rate per 100,000 People in Mexico per Year, 1990-2018

Source: My own creation using INEGI data

Moreover, the type of fighting intensified. Members of Los Zetas, for example, which had previously served as the "hired assassins" of the Gulf Cartel before branching off and forming a DTO themselves (Beittel, 2013, p. 15), "changed the game" (Wittens, 2012, p. 51) by using "sinister" (Eberle, 2011, p. 28) and "savage" (Rios, 2010, p. 16) techniques that other

cartels had to confront and frequently adopt.[27] As of 2010, more than one in ten bodies found after a cartel-related homicide had signs of torture (Rios, 2010), and such displays of brutality, which are often public, remain commonplace today.

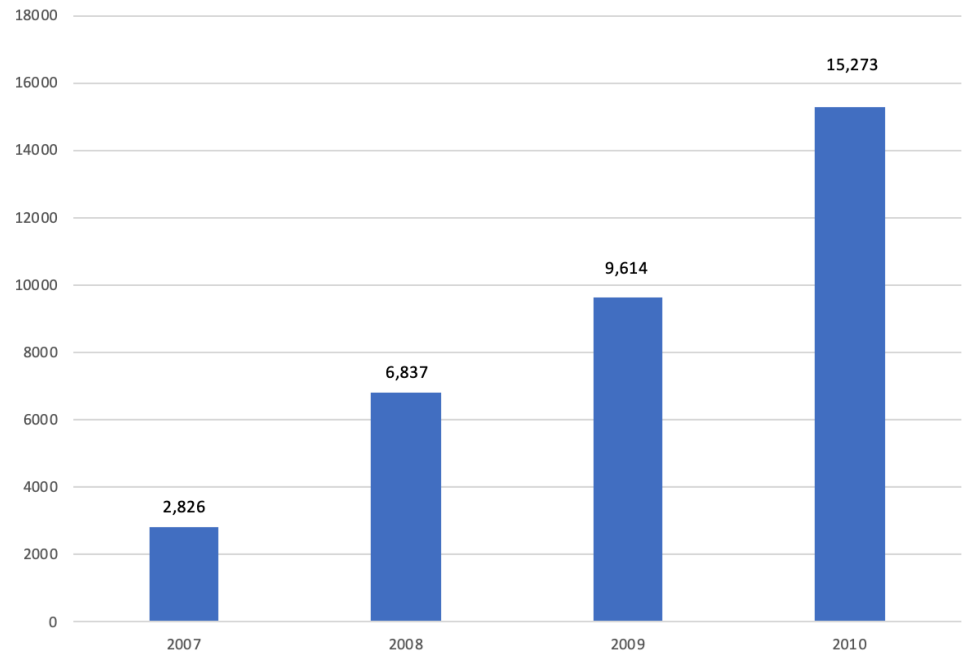

Figure Two: Number of Cartel-Related Homicides in Mexico per Year, 2007-2010[28]

Source: My own creation using SNSP data

In 2020, the Mexican narco-landscape remains similar. Some groups have faded in strength; others have grown. Territories have swapped hands and been controlled by different DTOs at various times, but overall, narco-violence has continued to plague the country much in the same way it did after the onset of Calderón's war on drugs. There have been occasional periods in which the violence seemed to be on the decline, such as it did from 2012 to 2014,[29]

[27] Los Zetas was established by a group of former Mexican soldiers who had received training from the Kaibiles, which are "Guatemala's notoriously violent special forces" (Skeen, 2009).
[28] As will be explained in chapter four, these are the only years for which this data is fully available.
[29] This was immediately following Felipe Calderón's departure from office, as well as a temporary non-aggression pact signed in 2011 by the Sinaloa and Tijuana cartels (Diaz, 2011; Jones, 2011).

but these reductions have been temporary. The year 2019, for example, was the most violent in recent Mexican history, with 35,588 murders (Herrera-Lasso, 2020; Sheridan, 2020).

It should be noted that the quantitative portion of this paper (chapter four) will analyze cartel-related homicide data from the year 2010. While this decision was initially based on data availability (as will be discussed in the next chapter), I believe that looking at 2010 figures may be particularly useful, as it could indicate which municipalities were the most sought-after and violently contested immediately following the commencement of major cartel-related violence. Thus, this research could yield important insights regarding the types of lands that DTOs value most. For example, as groups vied for new territory and fought for control of already established narco-zones following the onset of the war on drugs, what made certain municipalities more attractive, and therefore susceptible to cartel-related violence, than others? What role did the economic makeup of such municipalities play? The quantitative and qualitative portions of this thesis will attempt to answer such queries. However, before diving into that analysis, it is important to first consider what we know about the geographical landscape of narco-trafficking in Mexico.

3.2 Geography

Most of what is understood about the geography of Mexican cartel violence focuses on regional trends, rather than municipal ones. For example, we know that initially (prior to the start of the war on drugs in late 2006), DTOs concentrated their efforts in three states along the Pacific coast: Sinaloa, Guerrero, and Michoacán (Shirk, 2010). This was by no means accidental; as law enforcement authorities became more aware of drug trafficking routes via the Caribbean Sea and Atlantic Ocean, Colombian cocaine suppliers began taking longer – yet, less risky –

routes in order to ship their products across the Pacific Ocean to western Mexican states (see figure three). Sinaloa in particular had long been a drug hub (UNODC, 2012), as it was one of the first states to begin growing poppy seeds to produce opium (Medel, 2012).[30] Moreover, its location along the Sierra Madre mountains makes Sinaloa valuable, as its "rugged terrain" has proven beneficial for drug cultivation (Flores & Villarreal, 2015, p. 36)[31] and its semi-hidden routes are considered "prized" by cartels for smuggling purposes (Grayson, 2010, p. 123).

Figure Three: Suspected Drug Smuggling Routes from Colombia, 2016

Source: Posada, 2019

However, the year 2007 (right before intra- and inter-cartel violence began to skyrocket) marked a "trend of dispersion" (Wittens, 2012, p. 89), as cartels (especially newly formed ones)

[30] It continues to be one of the states most involved in the production and trafficking of marijuana, heroin, and methamphetamines.

[31] Presumably because such a landscape provides a defense that can prevent opponents (either the government or rival DTOs) from finding and destroying the crops. This is a credible fear, as 551 municipalities saw their marijuana crops eradicated in 2010, and 274 had the same happen to their opium poppy plantations that year (Medel, 2012).

began to increase their respective areas of influence and explore new territories.[32] By 2009, the states of Durango and Chihuahua[33] had begun to exert more influence in the DTO world (Wittens, 2012), and the states of Tamaulipas, Nuevo León, and the State of Mexico, among others, also began to see greater narco-presence and -violence (Duran-Martinez et al., 2010). Even states such as Chiapas and Oaxaca, which are located in the southernmost part of Mexico (thereby extremely far from the United States), witnessed enormous increases in their homicide rates at this time (Duran-Martinez et al., 2010).[34] Thus, no area was off-limits for the DTOs, and overall, the number of municipalities across the country with 10-49 homicides per year quadrupled from 2007 to 2011 (Rios & Shirk, 2011).

Since there are drug routes crossing through large portions of Mexico (see figure four), it makes sense that narco-groups have at some point inhabited every state in the country (Wittens, 2012; Muedano, 2018), although more recently, violence has remained fairly concentrated in the northern parts of the nation[35] and along the Pacific coast, as well as around the capital, Mexico City. For a visual representation of the geographic distribution of homicides (a potential proxy for cartel presence and violence) in 2018, see figure five.

[32] Although certain types of new organizations were more willing to expand and compete for turf than others (see Coscia & Rios, 2012).

[33] These states, which have been cultivating marijuana since the 1930s (Medel, 2012), make up the infamous "Golden Triangle" of drug production with their neighboring state, Sinaloa.

[34] This may also be partially explained by the fact that, recently, a lot of Colombian cocaine has been passing through Central America on its way to Mexico, rather than solely through water routes, as a means of adapting to changes in law enforcement (UNODC, 2012). Additionally, new technologies have allowed drugs to be produced in areas that would not normally be conducive to the cultivation of such crops. For example, new irrigation techniques have been used to supplement rainfall, allowing plants like marijuana to be grown even in deserts (Medel, 2012). As a result, Gulf states like Veracruz, although not known for drug production, have started to become involved in such activities.

[35] Being near the U.S. border is considered valuable not only because DTOs can more easily traffic drugs into the United States, but also because they have greater access to guns, as 90% of weapons confiscated in Mexico come from the U.S. (Wittens, 2012). In addition, northern states are home to some of Mexico's most popular tourist destinations among U.S. citizens, which enables cartels to sell drugs to their northern neighbors more directly (Hartmeier, 2018).

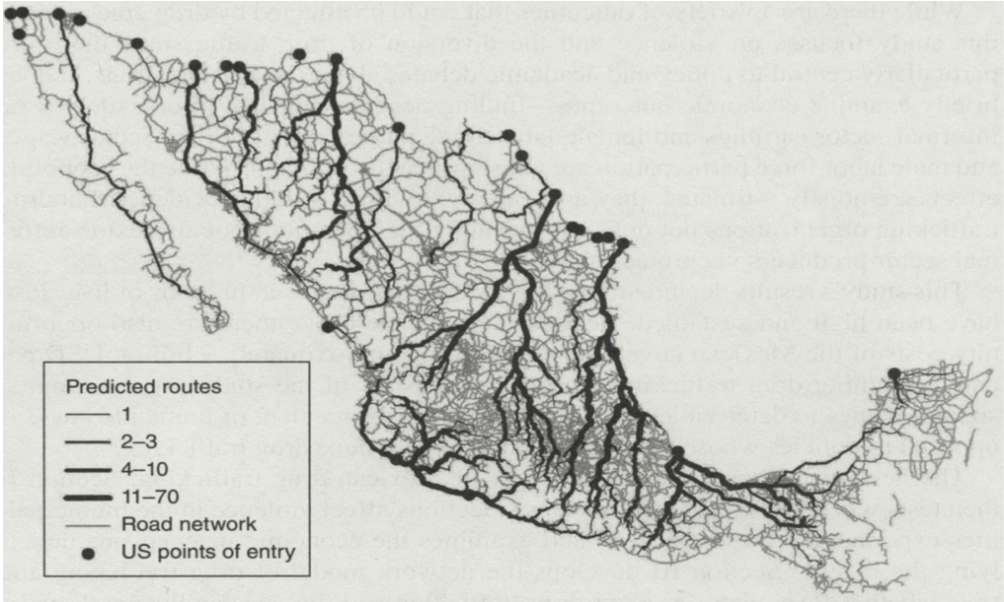

Figure Four: Likely Trafficking Routes in Mexico

Source: Dell, 2014

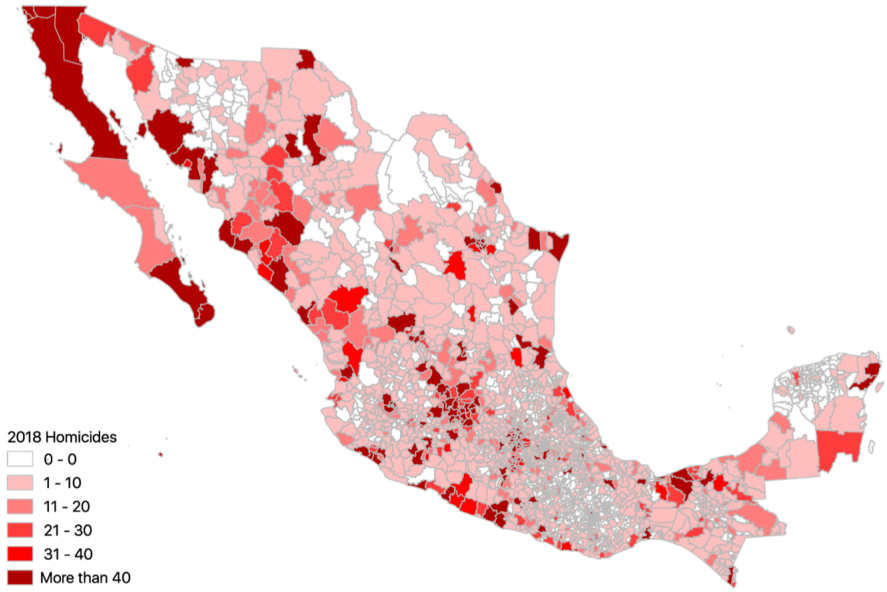

Figure Five: Distribution of Homicides by Municipality in 2018

Source: Calderón et al., 2019

Keeping this brief background in mind is important as I progress to the analysis-based sections of my thesis. If I want to understand the differences in narco-violence between municipalities, I must first recognize the broader state and regional-level trends. For instance, if two municipalities are both on the Pacific coast and near ports that would present DTOs with equal ability to receive maritime shipments from Colombia, what renders one municipality more attractive to narco-groups and at risk of violent contestation than the other? I hope to at least partially answer such inquiries through quantitative and qualitative exploration.

CHAPTER FOUR

QUANITATIVE ANALYSIS

In order to test my theory empirically, I use a large data set that I created to test for possible causality. However, like many other scholars in this field, I wish to first make a disclaimer about my work. Namely, about 90% of crimes in Mexico go unreported (INEGI, 2011-2019),[36] and while one might expect homicides to be an exception (after all, logic may tell us that it is difficult to cover up a murder), this is not the case. Although the exact percentage of homicides that are unreported is not known,[37] there were 61,637 persons registered as "missing" in January 2020 (Government of Mexico, 2020). Many of these individuals, commonly referred to as "*desaparecidos*,"[38] could likely have been killed, yet they are not included in official homicide statistics. Confounding this is the fact that even to be considered a *desaparecido*, one's status as "missing" must also be reported, which again, does not always happen.[39] Consequently, all homicide data used in this study, while representing the best that are available, are flawed to some degree.

[36] See the INEGI's ENVIPE survey results from 2011, the first year in which they were published, up until the most recent in 2019. Specifically, the statistic to which I am referring is the *cifra negra*, which is a phrase that does not translate directly to English. Literally meaning "black figure," this term denotes the amount of crimes that have gone unreported.

[37] At least to my knowledge

[38] This is simply Spanish for "the missing ones."

[39] Many people may particularly fear reporting the homicides or disappearances of their loved ones if they suspect that DTOs were responsible for the crimes. After all, notifying authorities of narco-violence could put one's own life at risk, as cartels may seek revenge on the informant. Moreover, some Mexicans might consider reporting a cartel-related homicide to be useless, as a large portion of the population "view[s] the police with distrust" (Freeman, 2006, p. 1), believing that such forces are corrupt and could be allied to an extent with local narco-groups.

4.1 Methodology

To formally test the relationship between cartel-related homicide rates and economic indicators, the following ordinary least squares (OLS) regression is used:

$$Y_{m,2010} = \beta_0 + \beta_1 pov\_1_{m,2000} + \beta_2 pov\_2_{m,2000} + \beta_3 pov\_3_{m,2000} + \beta_4 inequality_{m,2000} + \beta_5 marg\_index_{m,2000} + \beta_6 govt_{s,2010} + \beta_7 impunity_{s,2010} + \beta_8 popden_{m,2010} + u_{m,t}$$

in which the dependent variable (DV) is the log of the cartel-related homicide rate[40] per 100,000 people in a given municipality, *m*, in the year 2010. I calculate this by dividing each municipality's cartel-related homicide occurrences by its population that year and multiplying this result by 100,000.[41] It should be noted that the dependent variable is in log form to avoid violating the rules of OLS, which state that a DV cannot be bounded, as rates inherently are.

The year 2010 is utilized for two principal reasons. First, the Mexican government tends to release data on a decennial basis. Although this is not the case with cartel-related homicides, it is applicable to several of this study's independent variables. As a result, since 2020 data is not yet available at the time of this thesis, 2010 figures are the most recent that can be used.

Secondly, cartel-related homicide data has only been released by the Mexican government sporadically. It was first made available by Mexico's National System of Public Security (SNSP, for its initials in Spanish) in late 2006, but officials abruptly stopped publishing such statistics in September 2011 (Heinle et al., 2015). Due to pressure from the public, the

[40] I use the homicide rate, rather than its raw number, to account for population differences across municipalities.
[41] Although many Mexican municipalities are fairly small and have less than 20,000 inhabitants, using homicide rates per 100,000 people has been the norm in studies relating to crime. Thus, this paper will employ the same measure.

government released more of this data in 2013,[42] after which it stopped doing so completely. Luckily, the year 2010 falls within the period for which the data is fully available.[43]

Yet, one might ask how exactly a homicide is classified as "cartel-related." Various government agencies related to intelligence and law enforcement formed a task force which was responsible for deeming a murder as such, and they decided to base their categorization on six particular criteria, of which a homicide must satisfy two. These are:

1) Death by high-caliber firearm(s)
2) Signs of torture or severe lesions on the victim
3) The finding of the body in the same spot in which it was killed, or in a vehicle
4) The finding of the body either taped, gagged, or wrapped with sheets
5) Death within a penitentiary and involving criminal organizations
6) Special circumstances, such as if the victim was "abducted prior to assassination, ambushed or chased, an alleged member of a criminal organization, or found with a narco-message on or near the body" (Molzahn et al., 2012, p. 5).

However, these data, like much of Mexican crime data, are imperfect, and there were likely many incidences in which homicides were indeed cartel-related, but not classified as such. To account for this, I will also run the above regression a second time, using a different dependent variable: the log of the total homicide rate in a given municipality in 2010. Since some estimates show that cartels could be responsible for up to two-thirds of all homicides in Mexico (see Calderón et al., 2019), this is a decent proxy method, as well as a means for

[42] Although only for certain months out of the year
[43] While I use government data on cartel-related homicides, there are also other sources of such statistics, including those compiled by the Mexican newspaper, *Reforma* (see Molzahn et al., 2012). However, I choose to use the government's statistics in the hopes of mitigating some of the issues related to underreporting, since the counts by *Reforma* tend to be even lower (Huerta, 2012).

comparison with the other dataset. The raw data for total homicide occurrences comes from INEGI, or Mexico's National Institute of Statistics and Geography, a government agency.

The main independent variables (IVs) of interest are poverty, inequality, and standard of living. Three different indicators are included for poverty level, all from the Mexican government's National Council for the Evaluation of Social Development Policy (CONEVAL). $Pov\_1_{m,t}$ is the percentage of individuals in a given municipality, *m*, who cannot afford to purchase a basic food basket; $pov\_2_{m,t}$ is the percentage who cannot obtain both a basic food basket and necessary health and education services; and $pov\_3_{m,t}$ represents the percentage who are financially unable to access all of the above plus additional necessities, such as clothing and means of transportation. While these levels originally built upon each other (for example, any person in the $pov\_1_{m,t}$ and $pov\_2_{m,t}$ groups was also included in $pov\_3_{m,t}$), I separate the variables through subtraction to show the percentage of individuals *exclusively* in each level of poverty.[44] The reason I include all three indicators is to determine if a specific degree of poverty has a particularly strong influence on cartel-related homicide rates. Based on my theory, I predict that the $pov\_1_{m,t}$ variable (regarding the percentage of people in the most extreme form of poverty), will have more significant effects than the other two poverty variables.

The same CONEVAL dataset from which the poverty figures derive also includes municipal-level Gini coefficients, which serve as the basis for my $inequality_{m,t}$ variable. The Gini Index is one of the most common measures of inequality used by economists, and it has a range

[44] For example, if in the original dataset from CONEVAL a municipality had *pov_1* = 20, *pov_2* = 35, and *pov_3* = 80, I keep the original *pov_1* percentage while making *pov_2* = 15 (because 35 - 20 = 15) and *pov_3* = 45 (because 80 - 35 = 45).

of 0 (perfect equality) to 1 (perfect inequality). Thus, the higher a municipality's Gini Index, the more unequal it is.[45]

Standard of living is measured by the Índice de Marginación, or the "Marginalization Index,"[46] which assigns each municipality a score based on numerous factors, such as the percentages of people who live without running water, electricity, drainage systems, exclusive bathrooms, or floors in their homes,[47] as well as those over the age of 15 who have not completed primary school or are illiterate, among other components (Bustos, 2011). The higher a municipality's score, the more disadvantaged its population is. Marginalization data is from the National Population Council, or CONAPO, another Mexican government agency.

For all of the three aforementioned independent variables of interest, data will be used from the year 2000, rather than 2010. This is to potentially combat any issues of reverse causality, as some scholars argue that cartel presence impacts economic factors, rather than vice versa. Using data from the year 2000 for the economic variables can mitigate fears of this type of endogeneity since, for example, cartel-related violence in a municipality in 2010 could not possibly have been responsible for that area's poverty levels (whether positively or negatively) in the year 2000.[48]

Meanwhile, other covariates are also included in the regression model as controls. First, I created a government ($govt_{s,t}$) variable which represents the number of years that the governing party (in terms of the state's governor) had been in power during the fifty years prior to 2010

[45] The Gini coefficient is, however, limited in scope, as it does not account for geography. For example, a municipality may be highly unequal but also extremely spatially segregated by income level. In such situations, relatively poor individuals would not see constant displays of wealth greater than their own.
[46] This has also sometimes been called the "Disadvantage Index" (see Rios Contreras, 2012).
[47] Instead having a "piso de tierra," or floor made of the earth
[48] Yet, no method is perfect, and while 2010 violence could not feasibly 'go back in time' to impact economic factors in the year 2000, these economic figures may simply reflect the consequences of an already-existing (pre-2000) cartel presence in a given municipality.

(see Appendix A), as this may influence residents' beliefs about the likelihood of future social and economic reforms.[49] If it does not appear that their government will soon implement new policies to improve people's livelihoods, individuals may decide that joining a cartel is their best employment option. Thus, municipalities in states where there has only been one dominant party for many years may serve as fecund recruiting grounds for cartels and their leaders. Moreover, if a state has had the same ruling party for all fifty of the past years looked at in this study, it has likely been run by the Institutional Revolutionary Party, which has historically controlled much of the country and, as previously mentioned, is known for its collaboration with DTOs (Rios Contreras, 2012). Therefore, a strong PRI presence in a state can also serve as a proxy control for corruption.[50] Additionally, the entrenchment of a particular political party within a state can impact the value that narco-groups ascribe to operating within that location, as such embeddedness could allow cartels to more easily and consistently bribe government leaders, since they would not have to constantly 'buy off' individuals from different parties.

An impunity variable, which represents the percentage of homicides within a state[51] that went unpunished in 2010, is also incorporated as a control. This data comes from México Evalúa (2010), a well-respected think tank, which approximated impunity based on numerous sources of government data.[52] Including such a control is important, because traffickers often act violently only when they think that their crimes will go unpunished (Rios Contreras, 2013). Finally, since crime is thought to be concentrated in urban centers (see Ladbrook, 1988; Glaeser & Sacerdote,

[49] Although each municipality in Mexico has a municipal president, this paper chooses to look at the state-level government since it, by definition, wields greater power and thus could potentially have greater influence over people's perceptions. Consequently, all municipalities within the same state are coded the same for a particular year for the purposes of this paper.
[50] Other political parties, such as PAN, have of course also had corrupt leaders that colluded with DTOs (Rios Contreras, 2012), but PRI is known as the traditional ally of Mexican cartels.
[51] This data is not available at the municipal level, and, as in the case of the government variable, all municipalities within the same state are coded the same in terms of impunity.
[52] There are of course no "official" impunity statistics provided by the government.

1999), I account for urban-rural differences by including in the model a municipal-level population density variable. For a complete summary of covariates, see table one.

Table One: Summary Statistics of Covariates

Variable	Obs	Mean	Std.Dev.	Min	Max
pov_1_2000	2453	44.447	24.258	1.6	96.8
pov_2_2000	2453	7.031	1.986	1.2	18.2
pov_3_2000	2453	16.855	5.545	1.4	33.1
inequality2000	2453	.461	.069	.243	.705
marg_2000	2442	0	1	-2.449	3.39
govt2010	2456	37.017	18.261	1	50
impunity2010	2456	66.577	18.68	18.5	90.5
popden2010	2456	276.549	1161.827	.14	17552.79

Lastly, I add dummy variables for each state as additional controls in an attempt to account for state-level effects, including both those that are unobservable (such as cultural factors and local historical considerations) as well as those that are measurable, but not included in the regression (for example, climate and the physical terrain). Hopefully, this technique can reduce the likelihood that the regression suffers from omitted variable bias.

4.2 Results

Upon running my initial regression, I see that poverty (specifically the first and third measures of it) and marginalization appear[53] to have effects on cartel-related homicide rates that are both highly statistically (at the 1% level) and substantively significant. Namely, for every one-unit rise in $pov\_1_{m,t}$, $pov\_3_{m,t}$, and marginalization, there are shown to be increases of .97, .92, and 1.51, respectively, in a municipality's cartel-related homicide rate per 100,000 people.[54]

[53] My language throughout this paper reflects the fact that definitively proving causality is nearly impossible.
[54] These numbers are not listed in table two, which shows coefficients, but that is because the dependent variable was ln(cartel-related homicide rate). Since $\ln(y) = \beta x$ and therefore $y = e^{\beta}$, I raise e to the product of the coefficient and unit-change size in order to find the actual effects of each variable. This same process is used throughout my

While these increases may not seem huge, one should keep in mind that the average cartel-related homicide rate in a given Mexican municipality in 2010 was about 18 (see Appendix E).[55] Thus, these increases would translate to rises in the cartel-related homicide rate of approximately 5.39, 5.11, and 8.39 percent, respectively, which are quite substantive. Yet, interestingly, the second indicator for poverty ($pov\_2_{m,t}$) is only marginally statistically significant, and inequality is not statistically significant at all. (See table two.)

When looking at the same regression on total homicide rates in 2010 (not just on those that were cartel-related), similar results are found, as the first poverty measure and the marginalization score remain statistically significant at the 1% level and one-unit increases in each are shown to cause .99 and 1.39 unit increases, respectively, in the homicide rate. In real terms, since the mean municipal-level rate for all homicides in 2010 was around 25 per 100,000 people, these changes equate to rises of 3.96 and 5.56 percent on average, which again, are very substantial. However, in this case, much like in the first, no other measures of poverty are shown to be statistically significant, and inequality is only marginally. For a complete breakdown of these findings, see table three.

thesis to estimate effects. For more on this method, see Benoit (2011). Also, it should be noted that although the coefficients for the first and third measures of poverty in table two are negative, these figures become positive once performing the transformation explained in this footnote. For that reason, these variables are said to have a positive relationship with cartel-related homicide rates.

[55] From this point on, any data not directly cited can be assumed to be derived from the dataset that I created, which is hyperlinked in Appendix E.

Table Two: Effects on Cartel-Related Homicide Rate, including State Effects

ln(Cartel_HomR)	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
pov_1_2000	-0.026	0.007	-3.53	0.000	-0.041	-0.012	***
pov_2_2000	0.129	0.070	1.84	0.067	-0.009	0.268	*
pov_3_2000	-0.085	0.031	-2.76	0.006	-0.146	-0.025	***
inequality2000	1.333	0.903	1.48	0.140	-0.439	3.106	
marg_2000	0.412	0.114	3.60	0.000	0.187	0.636	***
govt2010	0.032	0.010	3.07	0.002	0.011	0.052	***
impunity2010	0.053	0.003	18.39	0.000	0.047	0.059	***
popden2010	0.000	0.000	-0.97	0.331	0.000	0.000	
state1	1.401	0.412	3.40	0.001	0.593	2.209	***
state2	1.290	0.542	2.38	0.017	0.227	2.354	**
state3	0.274	0.441	0.62	0.534	-0.591	1.139	
state4	1.561	0.121	12.95	0.000	1.325	1.798	***
state5	0.831	0.308	2.70	0.007	0.226	1.436	***
state6	2.886	0.210	13.72	0.000	2.473	3.299	***
state7	1.841	0.413	4.46	0.000	1.031	2.650	***
state8	2.412	0.214	11.24	0.000	1.991	2.833	***
state9	1.478	0.434	3.40	0.001	0.626	2.331	***
state10	2.060	0.217	9.49	0.000	1.634	2.486	***
state11	1.232	0.315	3.91	0.000	0.614	1.851	***
state12	1.989	0.454	4.38	0.000	1.099	2.880	***
state13	1.509	0.225	6.72	0.000	1.068	1.950	***
state14	2.740	0.319	8.60	0.000	2.114	3.366	***
state15	-0.211	0.212	-0.99	0.320	-0.628	0.206	
state16	2.027	0.401	5.05	0.000	1.240	2.814	***
state17	3.122	0.396	7.88	0.000	2.344	3.900	***
state18	3.108	0.345	9.02	0.000	2.432	3.784	***
state19	2.984	0.301	9.92	0.000	2.393	3.574	***
state21	-0.255	0.310	-0.82	0.412	-0.864	0.354	
state22	0.865	0.266	3.26	0.001	0.344	1.387	***
state23	-0.686	0.190	-3.60	0.000	-1.060	-0.312	***
state24	1.683	0.233	7.22	0.000	1.226	2.141	***
state25	2.302	0.191	12.07	0.000	1.928	2.676	***
state26	4.731	0.509	9.29	0.000	3.732	5.731	***
state27	-0.386	0.451	-0.86	0.392	-1.271	0.498	
state28	2.413	0.282	8.55	0.000	1.859	2.968	***
state29	0.000	.	.	.	.	.	
state30	-0.144	0.212	-0.68	0.497	-0.560	0.272	
state31	0.000	.	.	.	.	.	
state32	3.490	0.432	8.08	0.000	2.642	4.339	***
Constant	-2.493	0.860	-2.90	0.004	-4.181	-0.806	***

Mean dependent var	2.547	SD dependent var	1.507
R-squared	0.513	Number of obs	814.000

*** p<0.01, ** p<0.05, *p<0.1

Table Three: Effects on Total Homicide Rate, including State Effects

ln(HomRate)	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
pov_1_2000	-0.010	0.004	-2.67	0.008	-0.018	-0.003	***
pov_2_2000	0.021	0.036	0.57	0.567	-0.050	0.092	
pov_3_2000	-0.023	0.017	-1.34	0.179	-0.057	0.011	
inequality2000	0.779	0.470	1.66	0.098	-0.143	1.702	*
marg_2000	0.332	0.064	5.16	0.000	0.206	0.459	***
govt2010	0.017	0.005	3.43	0.001	0.007	0.026	***
impunity2010	0.022	0.005	4.75	0.000	0.013	0.031	***
popden2010	0.000	0.000	0.59	0.555	0.000	0.000	
state1	-0.199	0.291	-0.69	0.493	-0.770	0.371	
state2	1.155	0.297	3.89	0.000	0.573	1.737	***
state3	0.000	.	.	.	.	.	
state4	-0.221	0.224	-0.99	0.324	-0.661	0.219	
state5	-0.292	0.188	-1.55	0.120	-0.660	0.076	
state6	0.945	0.264	3.58	0.000	0.427	1.463	***
state7	-0.115	0.205	-0.56	0.575	-0.517	0.287	
state8	1.736	0.139	12.49	0.000	1.463	2.008	***
state9	0.654	0.245	2.67	0.008	0.173	1.134	***
state10	1.178	0.170	6.91	0.000	0.844	1.513	***
state11	-0.042	0.170	-0.25	0.806	-0.376	0.292	
state12	0.821	0.242	3.40	0.001	0.347	1.296	***
state13	-0.232	0.247	-0.94	0.348	-0.717	0.253	
state14	0.844	0.160	5.27	0.000	0.530	1.158	***
state15	-0.451	0.118	-3.81	0.000	-0.682	-0.219	***
state16	0.424	0.210	2.01	0.044	0.011	0.836	**
state17	1.206	0.225	5.37	0.000	0.765	1.647	***
state18	1.236	0.284	4.36	0.000	0.680	1.793	***
state19	1.542	0.300	5.14	0.000	0.953	2.131	***
state21	-0.689	0.116	-5.96	0.000	-0.915	-0.462	***
state22	-0.532	0.279	-1.91	0.057	-1.080	0.015	*
state23	-1.240	0.314	-3.95	0.000	-1.856	-0.625	***
state24	-0.008	0.198	-0.04	0.967	-0.396	0.380	
state25	1.504	0.128	11.78	0.000	1.253	1.754	***
state26	2.534	0.276	9.17	0.000	1.992	3.076	***
state27	-0.877	0.197	-4.45	0.000	-1.263	-0.491	***
state28	0.871	0.218	4.00	0.000	0.443	1.298	***
state29	-0.352	0.295	-1.19	0.233	-0.931	0.227	
state30	-0.811	0.115	-7.07	0.000	-1.036	-0.586	***
o.state31	0.000	.	.	.	.	.	
state32	1.002	0.246	4.07	0.000	0.519	1.485	***
Constant	0.908	0.493	1.84	0.066	-0.059	1.875	*

Mean dependent var	2.874	SD dependent var	1.195
R-squared	0.461	Number of obs	1408.000

*** p<0.01, ** p<0.05, *p<0.1

Although the results outlined in tables two and three are found using robust standard errors,[56] I also perform several other statistical checks. First, to identify and downweight outliers, I run robust regressions for the same two models shown above.[57] These results (which can be found in Appendix B) are comparable to my original ones.

Additionally, I check for normality by predicting and plotting the residuals for each regression and comparing them to a normal distribution (see Appendix C). I also perform the Breusch-Pagan test to check for heteroskedasticity (see Appendix D). All of these checks indicate that there are no major issues with my regressions.

Finally, it should be noted that the R^2 in both of the above regressions is about .5, which means that I am explaining approximately 50% of the variance in the model (a relatively decent figure considering the imperfection of my data sources).[58]

4.3 Discussion

Essentially, after a lot of talk about regressions (whew!), there are several major takeaways that should be reiterated and implications that ought to be discussed, namely:

- Poverty and marginalization appear to have strong effects on homicide rates (both cartel-related and general ones), which aligns closely with my hypotheses. Inequality, however, does not seem to have a statistically significant effect on either rate.
- Of all of the indicators of poverty, only the first one (representing the percentage of people in a given municipality who cannot afford even a basic food basket), was found

[56] Meaning that my input in Stata looked like: reg yvar xvar, robust. I use robust standard errors to account for possible correlation between my standard errors and for potential heteroskedasticity within the regression (even though the Breusch-Pagan test shows that I cannot reject the null hypothesis of homoskedasticity). When I run the regressions without robust standard errors, the results are very similar.
[57] In other words, my Stata input was: rreg yvar xvar
[58] Even without state effects included as controls, the R^2 of the regressions is still about .2.

to be consistently correlated with homicide rates. This finding supports my theory that narco-groups value settlement in extremely impoverished areas (more so than semi-impoverished ones), as they are looking to pay the lowest possible wages while still offering amounts above the local average in order to attract a large workforce. This also may indicate that cartels think that they have the best chances for recruitment among the most economically desperate populations.

Going forward, addressing the issues of dire poverty and low standards of living within municipalities may render locations less sought-after by competing narco-groups and thereby potentially mitigate cartel-related violence within them. Such efforts may be particularly impactful if they are targeted and implemented in regions that are prone to narco-violence (see chapter three). Of course, however, as economic conditions improve in one area, there could be "spillover" effects in which DTO violence simply moves to another location,[59] but if numerous areas within a region begin to "develop" economically, perhaps cartels will run out of attractive places to go, as they become unable to acquire sufficient community support and labor supplies in many given municipalities. That is not to say that drug trafficking will stop – while there is demand, specifically from the United States, groups will try to meet it – but maybe, just maybe, the scale of narco-activity and -violence could be reduced.

However, before exploring policy options, it is important to see if qualitative findings corroborate those found from statistical analysis.

[59] This theory, although originally framed in the context of government crackdowns, relates to cartel movement after a municipality becomes unattractive to narco-organizations (see Dell, 2014).

CHAPTER FIVE

QUALITATIVE ANALYSIS

Although quantitative findings are of value in and of themselves, I attempt to complement this work and highlight possible nuances within it through my usage of case studies, which can offer "a detailed analysis of why theoretical concepts or explanations do or do not belong in the context of a case" (Baxter, 2010, p. 82). In relation to Mexican violence, this type of analysis may be particularly useful, since Corcoran (2018) states that "unique local dynamics tend to weigh heavily on crime rates" in the country.

Thus, in this chapter, I look at two sets of case studies. First, I consider two municipalities – Monterrey and Saltillo – which both contain the capital city (of the same name) of their respective northeastern states of Coahuila and Nuevo León. Since the states are adjacent and both border the United States[60] (see figure six), it is remarkable that the municipalities appear to have starkly different rates of cartel violence (see figure seven).

Next, I turn to two neighboring municipalities, Santiago Papasquiaro and Tamazula, in the state of Durango. Considering that the two municipalities are quite literally next-door to each other (see figure eight), are both in the heart of the Golden Triangle of drug production, and have fairly similar populations and topographies, it is astonishing to see disparate levels of violence here as well (see figure nine).[61]

[60]Monterrey and Saltillo are both less than 200 miles from the U.S.

[61] These cases are selected in accord with the Most Similar Systems Design (MSSD), through which "we choose as objects of research systems that are as similar as possible, except with regard to the phenomenon, the effects of which we are interested in assessing" (Anckar, 2008, p. 389). For more on this method, see Mill, 1843(1961); Przeworski & Teune, 1970.

Figure Six: Map of Coahuila and Nuevo León

Key: Blue = Coahuila; Red = Nuevo León

Source: Source: My own creation using an openly sourced map

MONTERREY	SALTILLO
2010	2010
179 Cartel-Related Homicides 359 Total Homicides	15 Cartel-Related Homicides 31 Total Homicides
----------	----------
Cartel-Related Homicide Rate: 15.8* Total Homicide Rate: 31.61	Cartel-Related Homicide Rate: 2.07* Total Homicide Rate: 4.27
*Per 100,000 people	*Per 100,000 people

Figure Seven: Comparison of Violence - Monterrey and Saltillo, 2010

Source: Dataset compiled by the author (see Appendix E).

However, both sets of cases are of interest for another reason: they appear (at least on the surface) to completely contradict my hypotheses. Monterrey and Saltillo, for example, have both been considered economic powerhouses in northern Mexico, with poverty levels well below the national average. Moreover, the two municipalities share similar rates of inequality. Thus, if economic factors aren't driving their disparate homicide rates, what is?

Additionally, while Tamazula had a considerably lower homicide rate in 2010 than Santiago Papasquiaro, it actually had much greater incidence of poverty and marginalization.[62] Again, this raises the question: if it is not economics, what makes one of these areas more attractive to cartels than the other? Hopefully, through qualitative analysis, insights can arise.

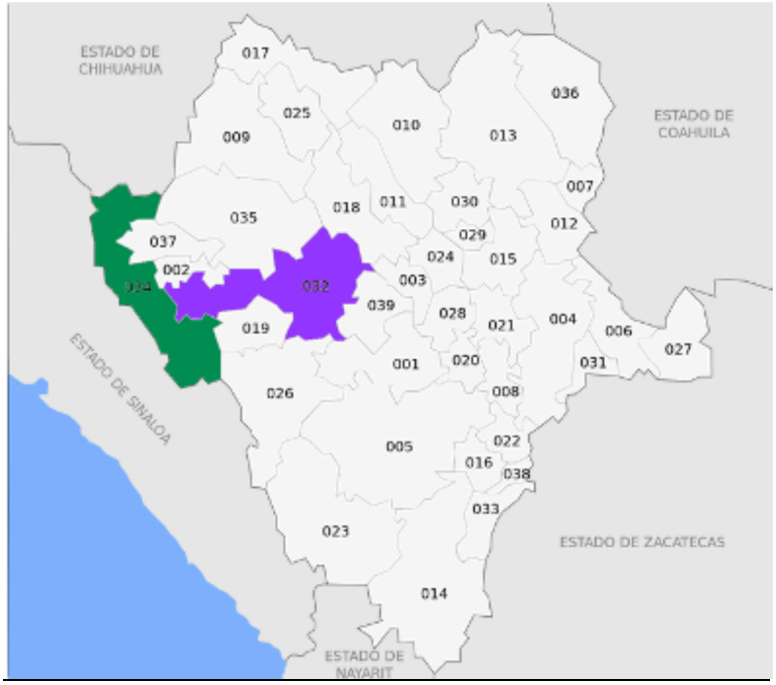

Figure Eight: Map of Santiago Papasquiaro and Tamazula

Key: Green = Tamazula; Purple = Santiago Papasquiaro

Source: My own creation using an openly sourced map

[62] The two locations had comparable scores in terms of inequality.

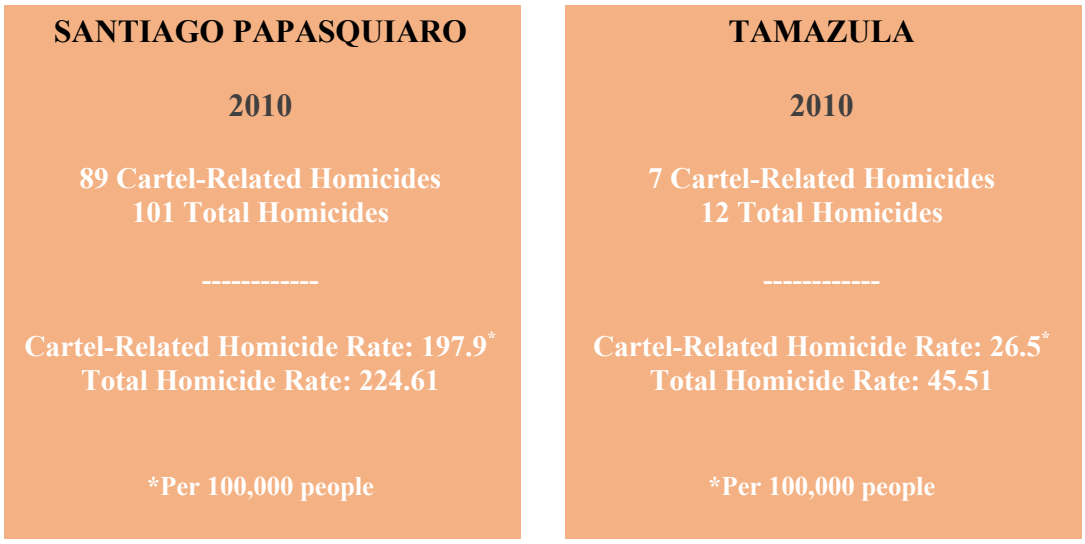

Figure Nine: Comparison of Violence – Santiago Papasquiaro and Tamazula, 2010

Source: Dataset compiled by the author (see Appendix E).

5.1 Monterrey and Saltillo

Monterrey, which has been called one of the richest parts of Mexico (Miglierini, 2010), had a gross domestic product per capita in 2018 that was not only the highest in the country (AMIC, 2018), but was also more than double the national average.[63] As a major industrial center home to manufacturing facilities for numerous international companies, especially those relating to electronics, automobiles, aerospace, and IT (see figure ten),[64] Monterrey has been considered a pioneer in Mexican economic development (Cerutti & Ortega, 1999). In addition to manufacturing, the municipality has also been a hub for steel, iron, and cement industries (Corrales, 2006; Tikkanen, 2018).

[63] Monterrey's GDP per capita that year was equal to $20.86 (AMIC, 2018), while the country-wide mean was equivalent to $9.79 (*Expansión*, 2018).
[64] Examples of famous businesses located in Monterrey include Boeing, BMW, Caterpillar, General Electric, Mercedes, and Samsung, among others (NAI Mexico, 2006; Dudley & Rodríguez, 2013; Flannery, 2014).

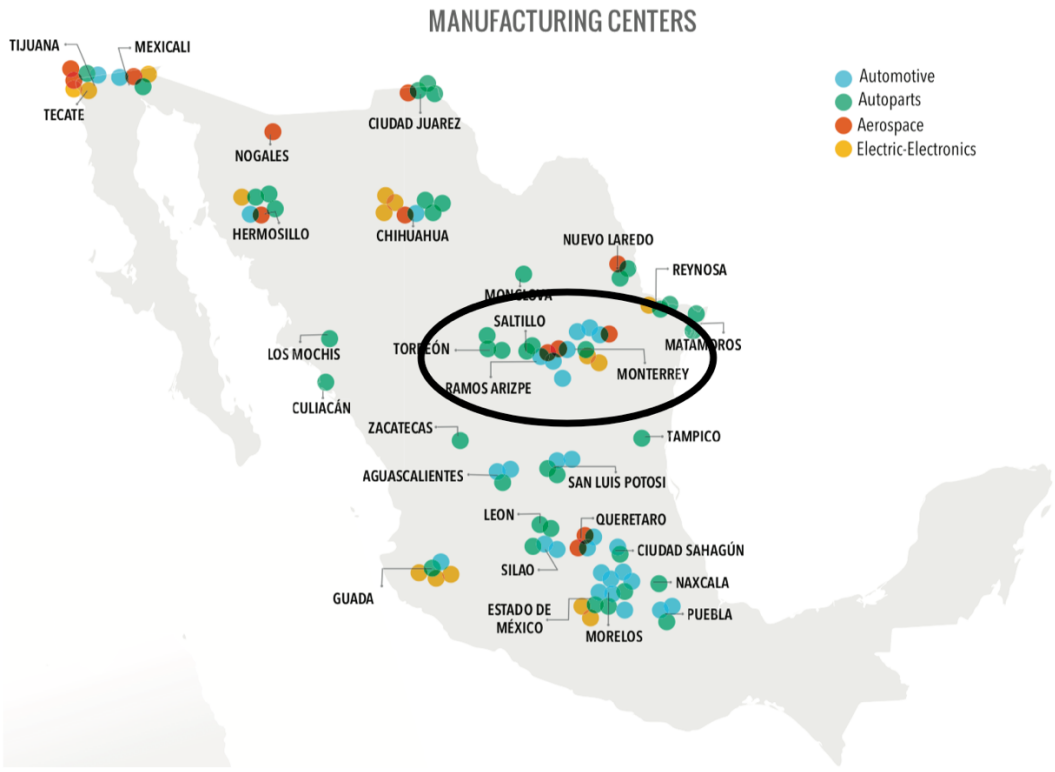

Figure Ten: Manufacturing Centers in Mexico

Source: Hickey & Associates, 2017, with selected portion circled by me

On average, it seems that poverty and marginalization levels in Monterrey have historically been relatively low. (For a summary of these and other statistics in comparison with those of Saltillo, see table four). However, the municipality, which is quite spatially divided between socio-economic groups (Aparicio Moreno et al., 2010), has indeed struggled with economic issues, although such concerns are fairly concentrated in specific locations.

Upon close analysis, one can see that some of Monterrey's poorest neighborhoods, such as Independencia, are truly where the local cartels have set up base, as these areas have been a "fertile recruiting ground" for DTOs and a place to "store drugs, arms, and even people" (Steinberg, 2011). Here, residents live in squalor and often must go without running water or

electricity (Steinberg, 2011), a scenario that rests in sharp contrast to the "fancy museums, glistening high-rises, leafy plazas, and pristine palaces" (Wilkinson, 2009) of the some of the nearby affluent neighborhoods. To account for some of these differences, DTOs in Independencia have provided community members a means to support themselves: cartel membership. By simultaneously offering bribes in the form of goods such as cell phones and backpacks, narco-groups have found what they were looking for in Independencia – people who would remain loyal to them, even though it was "out of economics more than anything else" (Wilkinson, 2009). As a result, poverty and marginalization at the neighborhood level (not just at the municipal one) are also likely considered by cartels to be important when ascribing value to specific locations.

Table Four: Economic Indicators, Monterrey and Saltillo, 2000-2010

	Monterrey		**Saltillo**		**National Average**	
	2000	**2010**	**2000**	**2010**	**2000**	**2010**
Pov_1	4.9	7.6	8.5	7.2	44.48	31.91
Pov_2	3.9	5.6	5.7	5.1	7.03	9.10
Pov_3	18.4	22	22.2	20.9	16.86	23.79
Gini Index	.465	.414	.45	.416	.461	.374
Marg. Index	-2.04	-1.92	-2.01	-1.89	0	0

Yet, ironically, it appears that, at least in Monterrey, the municipality's overarching prosperity is also seen as attractive to cartels, as it affords them a large number of businesses and wealthy individuals from which they can potentially extort.

Over the years, extortion has become a fairly common tactic used by certain cartels to finance their operations (Rios, 2010; Magaloni et al., 2011; Rios Contreras, 2014), as businesses are "taxed" by narco-groups or charged for their "security services" (Beittel, 2013, p. 45). Failure to pay the DTOs often results in death or injury, so cartels' extortion efforts are largely successful, as scared businesspeople are forced to quite literally pay for their lives. One common threat: pay a thousand pesos or have three fingers removed (Wilkinson, 2012).

While extortion can (and has) also worked in poor communities, the potential rewards for it are much higher in richer neighborhoods, as wealthy residents have more to give. Thus, cartels can effectively ask for greater sums of money in these areas, making affluent "Monterrey business owners…prime targets for shakedowns" (Ramsey, 2011). Additionally, kidnapping has become common among cartels as a means of gaining money, and, as in the case of extortion, "wealthy residents [of Monterrey] are a perfect target," as narco-groups can demand "expensive ransom" for them (Miglierini, 2010).

As a result, it appears that inequality within a given municipality can serve as an excellent backdrop to DTO success, as it provides a poor population from which to recruit and a wealthy populace from which to extort. There is a major caveat to this, however, as not all narco-groups actively engage in extortion. Rather, the practice is prevalent principally among specific organizations, such as Los Zetas (Logan, 2011; Correa-Cabrera, 2017). Consequently, the relevancy of extortion in Monterrey may be more of a reflection of the DTO (Los Zetas) that is present within the municipality. This explains why inequality was not shown to be more significant in my quantitative analysis which concerned the entirety of Mexico.[65] Many cartels, nevertheless, have recently started to adopt extortionist methods (Molzahn et al., 2012; Rios

[65] Los Zetas are mainly based in the northeastern parts of the country (Grillo, 2012).

Contreras, 2012), meaning that it is likely that inequality may grow in importance to cartels based in areas throughout all of Mexico in the near future. Moreover, it is worth noting that I did not predict inequality to be significant for purposes relating to extortion (see chapter two). Thus, while my hypothesis regarding inequality was on track, my theory about it seems to not have been.

To add to this analysis, I look at Saltillo. Located just 75 miles from Monterrey, Saltillo is the ideal municipality for comparison. In fact, the two areas are often mentioned in the same breath (see García Ortega, 2003; Anderson & Gerber, 2007). Like Monterrey, Saltillo is an international industrial hub, although it specializes primarily in the automotive industry. Companies such as RAM, Fiat Chrysler, and General Motors all have large plants in Saltillo (Shaiken, 2001; Martínez, 2012; Miller, 2019; Sancak, 2020), leading the *Wall Street Journal* to call it in 1995 a "mini Detroit" (Burian 2015, p. 126). This manufacturing base has led the municipality to have wages that have "always been above the Mexican average" (Knauseder, 2009).

Besides having similar economic statistics, Monterrey and Saltillo also share several other key characteristics that result from their prime locations. Important highways that link numerous Mexican cities to each other and to the United States run through both Saltillo and Monterrey,[66] and the two municipalities also boast railways that provide access to ports, border towns, and major Mexican and U.S. metropolises. Therefore, one might think that Saltillo and Monterrey, with similar climates, geographies, economies, and transit options, would be equally attractive to cartels. However, looking at my dataset, this does not appear to be the case, as the

[66] The "NAFTA Corridor" which consists of Mexico 57, Mexico 85, and US I-35, passes through Saltillo (Tejeda-Honstein et al., 1998), while the North American Superhighway Corridor (NASCO) runs through Monterrey (ICF Consulting, 2001). Several national highways pass through the municipalities as well.

municipalities registered very different homicide rates in 2010. Yet, as evident in table four, inequality, poverty, and marginalization levels are comparable in both areas, so they cannot be driving the disparate homicide rates. What could be?

While the case is perplexing at first, note that Saltillo was not exempt from cartel-related violence. It too was attractive to DTOs and deemed worthy of fighting for; it was just a matter of time. While my data from 2000 to 2010 do not reflect any major increases in Saltillo's cartel-related (or total) homicide rates, things began to change towards the end of 2010, as the municipality progressively became more violent and Los Zetas gained control of it after breaking away from their parent organization, the Gulf cartel (Estrada, 2011; Wilkinson, 2012). Soon after, the Gulf Cartel (allied with the Sinaloa cartel) also entered Saltillo (Estrada, 2011).

Like Monterrey, Saltillo offers cartels the best of both worlds: business leaders who could easily be extorted, as well as a desperate population looking for better opportunities, since the area has historically suffered high levels of unemployment (Rodríguez & Cortes, 2011; *Capital Coahuila*, 2016). This lethal combination may have been what ultimately made Saltillo fall victim to narco-violence, and by 2018 the municipality registered 221 homicides (INEGI, 2018), compared to just the 31 that it had in 2010.

Although some might question why Saltillo hadn't been a center of DTO violence prior to 2010, the answer may be quite simple: there were not as many cartels in the previous decade. In 2006, there were only six major narco-organizations, but by 2011, there were sixteen (Guerrero, 2013; Dell, 2014).[67] The original six could logistically not be everywhere, but as new groups, such as Los Zetas, emerged, every municipality was up for grabs, and those, like Saltillo, that met the criteria for which cartels were looking were indeed grabbed.

[67] This number had risen to 27 by the year 2019 (Monroy, 2019).

5.2 Santiago Papasquiaro and Tamazula

Despite the fact that Santiago Papasquiaro and Tamazula are located right next to each other in the northwestern state of Durango, the two municipalities seem worlds apart with relation to violence. To understand the reasoning behind this, I look at each location more closely.

The Santiago Papasquiaro municipality, although home to a decently sized city of the same name, is overarchingly rural, with a population that is "scarce and very dispersed" (Gonzalbo, 2010, p. 323).[68] In 2010, for example, its 45,000 inhabitants were spread across more than 50 localities, causing a spatial diffusion that is not conducive to employment.

Forestry is one of the leading industries in the municipality, as many individuals are involved with the production of raw materials such as wood (INEGI, 1997; *El Sol de Durango*, 2018). However, unemployment has traditionally been an issue in the area (*El Siglo de Torreón*, 2008; Valdés de León, 2014), with many residents depending principally on remittances from family members living in the United States. Yet, over the years, even these funds have been coming in less and less (Valdés de León, 2014).

Nevertheless, an alternative means of employment has been found with cartels, which take advantage of the municipality's prime location along the Sierra Madre mountains to grow marijuana and opium (Shannon, 1998; *Expansión*, 2011). With almost 60 percent of the Santiago Papasquiaro population living in some form of poverty in the year 2010 (see table five), it makes sense that many of its inhabitants would be willing to work for cartels solely for economic purposes. Taking advantage of both the location and the workforce, the Sinaloa cartel has attempted to hold on to Santiago Papasquiaro for decades, and recently, Los Zetas have tried to gain some leverage in the municipality as well.

[68] This is my translation from a source originally written in Spanish.

Table Five: Economic Indicators, Santiago Papasquiaro and Tamazula, 2000-2010

	Santiago Papasquiaro		Tamazula		National Average	
	2000	**2010**	**2000**	**2010**	**2000**	**2010**
Pov_1	27.9	29.2	61.3	56.5	44.48	31.91
Pov_2	8.5	9.6	7.3	10.2	7.03	9.10
Pov_3	22.8	25.6	15.3	19	16.86	23.79
Gini Index	0.442	0.432	0.457	0.39	.461	.374
Marg. Index	-0.855	-0.627	1.575	1.631	0	0

However, while the levels of poverty and marginalization are certainly high in Santiago Papasquiaro, they are even more elevated in Tamazula, the municipality next-door, where more than 50 percent of the population in 2010 was unable to afford even a basic food basket (see table five). Tamazula, which also relies on industries such as forestry and agriculture (SEMARNAT, 2009), appears, like Santiago Papasquiaro, to be a perfect location for narco-groups, as its extreme poverty levels could create a large workforce willing to provide cartel labor, while the municipality's climate and rural landscape (also at the foothills of the Sierra Madre mountains) could offer the isolation and acreage that DTOs need to efficiently engage in the cultivation of drugs. Thus, its 2010 homicide levels are puzzling. Why weren't narco-groups capitalizing on this land?

Apparently, they were.

After looking deeper into Tamazula, I find that, despite its low levels of violence, the municipality has actually served as a hub of drug production for many years. In fact, it can even be considered a "narco-paradise" (*El Siglo de Durango*, 2007). For instance, in 2009, one of the

largest synthetic drug laboratories in Latin America was discovered in Tamazula (Nájar, 2009), with a separate one also found there in 2020 (Díaz, 2020). Although the laboratories specialized in methamphetamine, Tamazula has ample areas dedicated to the production of marijuana and opium as well (*El Siglo de Durango*, 2007; Le Cour Grandmaison, 2019).

The Sinaloa cartel has historically controlled much of Tamazula, but other DTOs, including the Juárez cartel and Los Zetas, have recently tried to stake claims in the area (Beith, 2010, 2011). Yet, violence has remained low throughout the municipality, as only 5 homicides occurred there in 2018 (Galindo et al., 2019).

It is difficult to completely explain the lack of violence in Tamazula despite its large cartel presence. One possible reason may be the degree to which cartels can seclude themselves in Tamazula, thereby preventing their enemies from finding them. After all, part of what makes Tamazula so appealing to drug traffickers is the secrecy that it provides. With a population density in 2010 of just 5.44 people per kilometer (compared to the national average of 276.5), it can be very hard (both for governments and competing DTOs) to locate cartel hideouts. In fact, the "mega" laboratory found in Tamazula in 2009 was so camouflaged that it could not even be seen from the air (Nájar, 2009).

In addition, many of the individuals working for cartels in Tamazula are likely occupied with drug production, either on farms or in laboratories. Hence, even though multiple cartels might have strongholds in the municipality, it is not guaranteed that they have the interest (in terms of time wasted) or strength (in terms of available fighters) to compete against each other. Moreover, cartels may be fearful of engaging in excessive violence in Tamazula, because the DTOs likely depend on the local inhabitants' cultivation and do not want to risk decimating the population, as doing so would destroy valuable human capital in the form of expertise.

While these conjectures make sense, they do not fully account for the different levels of violence found between Tamazula and Santiago Papasquiaro. However, I argue that one of the principal reasons behind this disparity could be the fact that Santiago Papasquiaro contains a decently sized urban locality, which Tamazula does not. Thus, although the population density of Santiago Papasquiaro is not much higher (7.02 people per kilometer in 2010) than that of Tamazula, the municipality's slightly greater degree of urbanity could reduce any boons related to seclusion, since many of the area's inhabitants likely reside in or near that urban center. Likewise, cartel members living in this urban location may be less physically involved with the production of drugs and therefore have more time available for territory marking and fighting within Santiago Papasquiaro as compared to Tamazula.

5.3 Takeaways

Both of these sets of case studies offer incredible insight into the decision-making processes of cartels as they determine where to settle and when to fight over territory.

First, from the case of Monterrey, we see that even if a municipality does not have high levels of marginalization and poverty overall, it can remain susceptible to cartel violence if such economic issues exist at the more local, neighborhood level, thereby providing a base from which cartels know that they can likely recruit. In other words, although a municipality may be "developed" economically in general terms, DTOs may still highly value local underprivileged areas within it. Moreover, Monterrey shows us that, as extortion becomes more common among DTOs in the future, municipal-level inequality may also grow in importance as a determinant of locations' attractiveness to cartels.

From Saltillo, we learn that violence, or a lack thereof, may be temporal. If a municipality meets some of the conditions identified as being of value to cartels – such as a desperate workforce and a prime location – it may only be a matter of time before narco-groups begin entering the space and battling for its domain.

Furthermore, the cases of Santiago Papasquiaro and Tamazula offer another key lesson that provides a clearer picture of the narco-world. Specifically, the lack of violence within a municipality does not necessarily indicate the lack of a cartel presence. This is important for two principal reasons. First, it highlights a need within academia to develop new techniques for estimating cartel settlement in a region, as violence is not always a fully accurate indicator.[69] Second, it puts policy into perspective, as mass media, politicians, and researchers alike often conflate strategies aimed at reducing narco-violence with those meant to reduce the power and prevalence of DTOs across Mexico. However, as this research shows, these two concepts do not always go hand in hand. Similar arguments have been made by Rios Contreras (2013), who points out that a) it is actually fairly common for Mexican cartels to coexist on the same land peacefully and with few violent incidents and b) drug cultivation is extraordinarily prevalent in Peru and Bolivia, yet both of those nations have some of the lowest rates of violence in Latin America. Thus, when crafting legislation, policy makers must ask themselves what their ultimate goal is, because ending drug cultivation and trafficking (and thereby the existence of DTOs) is fundamentally different from ending drug-related *violence*, as the former is much more difficult than the latter.[70]

[69] See Coscia & Rios (2012) for one novel approach that attempts to quantify narco-presence in an area by using web content.

[70] It must also be remembered that, since cartels provide employment and social services, attempting to end the production of drugs and the presence of DTOs within regions could actually, at least temporarily, further decimate local economies and paradoxically increase the incidence of future violence.

While fully addressing the feasibility of the complete removal of drug cartels is beyond the scope of this thesis, it is worth noting that Mexico's northern neighbor, the United States, spent between $121 and $146 billion on illegal drugs each year from 2006 to 2016 (Galvin, 2019), and "is the largest drug consuming economy on a global scale" (Hartmeier, 2018, p. 8). As the U.S. demand for drugs remains steady amidst the absence of a legal drug market, the resulting economic incentives suggest that it is highly likely that groups capable of meeting such demand will indeed attempt to do so. Therefore, it may be more worthwhile in terms of returns on investment to direct government efforts towards the elimination of some of the roots of cartel-related violence, rather than the elimination of the cartels themselves through a *mano dura* approach.[71] While it is profitable, drug trafficking will continue, but drug-related violence does not necessarily have to.

[71] Literally meaning "iron fist," this concept represents "tough on crime" strategies.

CHAPTER SIX

POLICY

Considering the large role that economic conditions appear to play in the production of drug-related violence in given spaces, it seems crucial that Mexican officials attempt to implement local, targeted plans to reduce the economic struggles in neighborhoods such as Independencia and municipalities like Santiago Papasquiaro. While improving communities' standards of living and decreasing their poverty rates are worthwhile goals in and of themselves, such efforts can be particularly impactful in the fight against narco-violence if they are directed towards localities in regions (such as the northern and western parts of Mexico) that are especially prone to cartel-related bloodshed. In contemplating policy options, I first consider relevant theoretical arguments before delving into practical applications based on past Mexican initiatives that have shown promise.

6.1 Theoretical Foundations

Local governments, such as municipal-level ones, can be particularly effective in reducing poverty, inequality, and marginalization because, aside from understanding the unique issues and intra-neighborhood dynamics within their boundaries, such governments are also the best equipped to have a direct influence on their communities' relevant actors, such as those involved with the facilitation of key services.

According to Meza (2016), municipalities are capable of improving people's economic conditions through two principal means: subsidies (from welfare initiatives) and public

investments. Subsidies have been very common throughout Mexico,[72] as the country was the first in the world to adopt a national conditional cash transfer (CCT) program (Kugler & Rojas, 2018). Most recently known as Prospera (it had previously been called both Oportunidades and Progresa),[73] the program provided monetary compensation to families so long as their children remained in school and met certain health criteria.[74] Yet, while Prospera assistance was useful in the mitigation of families' immediate financial burdens, several studies have found that it, together with its cousin, the BOLSA Família program in Brazil,[75] has actually had little long-term effects on inequality, as students in poverty-stricken neighborhoods lack access to resources similar to those found in the homes and schools of wealthy neighborhoods (see Jones, 2017; Gil-García, 2019).

Thus, while Mexican welfare programs such as Prospera are certainly beneficial, I argue that they must be coupled with significant local commitment to (and implementation of) targeted public investments, especially in impoverished neighborhoods and municipalities that are at high risk for cartel-related violence.

Fuentes (2007) finds that public investments have been extremely important (often more so than welfare services) in reducing inequality in Mexico, and Meza (2016, p. 293) claims that the country's subnational governments, such as municipal ones, are exceptionally equipped to implement such measures, as "Local governments have a privileged position when it comes to public investments such as the provision of services like water, sewage treatment, health, basic

[72] Over "6.8 million households located in 116,601 localities from all 32 Mexican states" received Prospera benefits in 2016 (Kugler & Rojas, 2018, p. 2).
[73] The government abolished the initiative in 2019 after 21 years of existence and replaced it with a scholarship fund (Enciso, 2019).
[74] A family could begin to receive Prospera funds after its child reached the third grade, which is around when many young Mexicans begin to enter the workforce in lieu of continuing their education (Velázquez Leyer, 2018). Eligibility for Prospera benefits ceased once a child reached the age of eighteen (Levy, 2008).
[75] BOLSA Família was another early pioneer in the realm of CCTs, and it is now the largest such program in the world (Kugler & Rojas, 2018).

schooling, parks and recreational facilities, housing, and trash collection." He also adds that such investments generate new jobs within communities.

However, to further understand the importance of public investments, I turn to the fields of human, economic, and labor geography. From these disciplines, we know that space is not simply a reflection of social relationships, but it is also constitutive of them (see Lefebvre, 1970, 1976, 1991; Herod, 2011), as capitalists, both present and past, have sought to create spatial fixes to fundamental contradictions inherent in capitalism by accumulating various factors of production in particular locations (Harvey, 1982). In other words, although capital ideally ought to be mobile and therefore responsive to incentives from various regions, it also must be somewhat fixed (Smith, 1984) so that the necessary raw materials and labor can generate the infrastructure required for success in a capitalist society. As a result, most geographies are not random.

This concept of accumulation has led to the geographic clustering of investments in "factories, dams, offices, shops, warehouses, roads, railways, docks, power stations, water supply and sewage disposal systems, schools, hospitals, parks, cinemas [and] restaurants," (Harvey, 1982, p. 233) in order to ensure that capitalists are able to maximize their profits by rendering capital more productive (Harvey, 1978) and generating "landscapes of consumption" (Herod, 2017, p. 5). As a result, wealth is typically more concentrated in certain areas than others, but the uneven development of space and capitalist social relations are actually reproduced over time (Robinson, 1984), as communities in which capital has not been accumulated are left without ample means to compete successfully and thrive in capitalist societies.[76]

[76] That is not to suggest that I am supporting a specific alternative to capitalism or implying that inequality and clustering would not exist under a different system. Instead, I am simply attempting to understand the dynamics of uneven development within the current capitalist structure to better grasp the roots of and potential remedies to it.

While this paper will not delve into the merits or faults of capitalism, it is important to recognize that Mexico is indeed capitalistic in nature. Thus, the country's spatial and socio-economic stratification is indicative of spatial fixes, with certain areas lacking the same investments and infrastructure as their nearby counterparts. Utilizing this knowledge, I consider policies that could potentially decrease the poverty, marginalization, and inequality within specific locations while operating within the current capitalist framework. In this sense, I argue that the key to decreasing relative deprivation lies in the unraveling of accumulation processes through public investments[77] in areas that have been left behind by capitalists.[78]

6.2 Practical Applications

Similar to my recommendation, Mexico has attempted throughout the past decade to implement programs of local and targeted public investments as a means of "reversing exclusion" and ultimately decreasing narco-violence (WOLA, 2011). Yet, although some of these initiatives can be considered fairly successful, there is still much room for improvement.

In 2010, the Mexican federal government launched "Todos Somos Juárez: Reconstruyamos la Ciudad," or "We Are All Juárez: Let's Rebuild Our City." Known as TSJ for its initials in Spanish, the program involved coordination between federal, state, and local authorities, as well as between relevant local stakeholders and NGOs, who, after hearing citizen input, made a list of 160 concrete goals meant to be completed in under 100 days. Examples of such objectives included upgrading the technology and computers in twelve public libraries,

[77] By public investments, I am referring to the types of infrastructure quoted from Harvey (1982) that I listed on the previous page.
[78] One could of course argue that accumulation will continue to occur so long as Mexico remains capitalist, thereby negating any potential gains from public investments, and while this may be true, I believe that it is important to at least begin the undoing of these processes to foster some degree of increased development.

investing in mental health facilities, paving 42,000 m^2 of roads, and renovating local movie theaters, parks, gyms, museums, and 53 schools with poor infrastructure.[79] These ideas were coupled with enhancements to social welfare programs, as for example, one goal of TSJ was increasing the number of Prospera recipients by 8,500 in 100 days.

Following its completion, Todos Somos Juárez has been met with mixed reviews. There is consensus that the program was likely at least partially responsible for the dramatic drop (93.6%) in the city's homicide rate between 2010 and 2015 (Muggah et al., 2016),[80] but there were also major issues within the program. For instance, although there was input from local municipal figures, there was not sufficient interaction with specific neighborhoods in order to understand their unique needs. As Felbab-Brown (2011, p. 19), says, "Not every area, for example, needed a soccer field." Thus, there is a need to go even more local when executing such programs.

Additionally, TSJ lacked any real means of evaluation. Some hoped that it could serve as a model upon which other violent Mexican cities could build (Gagne, 2015), but there was a lack of adequate measures put into place that would allow officials to discern which of the 160 methods of action were the most effective in reducing violence (ICG, 2015). Since over $400 million was invested in Ciudad Juárez over the course of two years, it is unlikely that other areas can afford such massive programs of public investment (Muggah et al., 2016). Therefore, the ability to assess individual projects would have been extraordinarily useful.

[79] To review the entire list of 160 action items, see: http://www.conadic.salud.gob.mx/pdfs/todos_somos_juarez_28junio.pdf

[80] Although this reduction in violence was also certainly aided by fact that the Sinaloa cartel had successfully gained control of Juárez during this time, thereby unofficially (and temporarily) ending the turf war that had been taking place (Caldwell & Stevenson, 2010; Muggah et al., 2016).

Nevertheless, in 2013, Mexico adopted the National Crime Prevention Program (PRONAPRED for its Spanish initials), which, like TSJ, attempted to combat violence through local, targeted investments in specific communities, but on a country-wide scale. An average of 58 municipalities were selected to receive federal funds each year from 2013 to 2016 (Ramírez-de-Garay & Díaz Román, 2017) and local NGOs or other groups could apply to use the money to fund their individual initiatives (ICG, 2015). However, by 2017, the program was defunded (Martinez Palomares, 2019), and it has not yet been replaced by anything similar.

Like TSJ, PRONAPRED also suffered issues relating to evaluation, particularly because the projects it funded had to be reapproved each year, preventing any analysis of success over time (ICG, 2015). However, we do see that, overall, PRONAPRED ought to be thought of as highly effective, because "homicide rates in Mexico had fallen – from 24 per 100,000 in 2013 to 17 per 100,000 in 2016….[but] since the demise of PRONAPRED and the programs that funding supported, Mexico's homicide rate has exploded again, with 29,000 homicides in 2017, or 22 murders per 100,000 people" (Waller, 2019, pp. 152-153). Moreover, quantitative analysis, such as that by Martinez Palomares (2019), has found greater decreases in homicide rates within municipalities that received PRONAPRED funding as opposed to those that did not.[81]

6.3 Going Forward

From the above discussion, we can see that targeted, local investments in specific communities can indeed be impactful in Mexico's quest to reduce cartel-related violence. However, it appears that the country's federal government lacks the commitment to fund such programs. Despite ending PRONAPRED, Mexico expanded its security measures by 61 percent

[81] Of course, more research analyzing the effects of PRONAPRED ought to be conducted, but the lack of quantitative data on the program renders this endeavor difficult.

from 2010 to 2017 (amounting to about $11 billion annually), highlighting the fact that perhaps government officials are not quite ready to let go of the nation's past *mano dura* tendencies (Waller, 2019).

Locally, municipal-level governments can enact similar initiatives on their own, but this can be difficult in unequal areas, as municipalities' wealthy residents may express disapproval about their tax dollars being spent in ways that do not directly benefit them (Meza, 2016). Since politicians' primary goal is often retaining their seat in office (Mayhew, 2004), it is likely that numerous local elected officials would be hesitant to push for policies that could result in significant backlash from voters, particularly from affluent ones who may donate to their campaigns. Consequently, the conflict of interest across districts can manifest itself at the local legislative level (Besley & Coate, 1999). Meanwhile, areas that are not unequal but are highly impoverished across the board may be unable to provide their local governments the adequate funds needed for major public investments. This is compounded by the fact that local taxes often do not raise sufficient revenue in many parts of Latin America (Bateman, 2012). In Mexico in particular, such taxes were on average found to make up only 13% of local governments' revenues in 2013, with 86.2% coming from federal grants and subsidies (OECD, 2016).[82]

Nonetheless, that is not to say that enacting local public investments without federal assistance is impossible. For example, by framing policies as long-term initiatives to mitigate violence (rather than simply attempts to work on economic development within a struggling area), local governments can potentially gain more support from wealth community members. Additionally, while effectively generating local revenue in Latin America through either taxes or other means has historically been difficult, it is not unachievable.

[82] Another 0.7% came from other sources of revenue, such as water services.

Yet, whether targeted public investments are funded through either local or federal sources, it is imperative that local officials, stakeholders, and most importantly, community members, are involved with the planning and implementation of such projects. Todos Somos Juárez did a good job of receiving and employing local input, but even that initiative needed to become *more local*, so as to understand the particular dynamics within small neighborhoods and sections of the city, as investment/infrastructure needs are not universal.[83]

Gathering residents' input can be difficult, as many Mexicans rightly distrust authorities and claim that the inhabitants who helped in planning TSJ were simply catering to the interests of the business elite (ICG, 2015). While overcoming this obstacle will not be easy, it is crucial that policy makers attempt to do so, because as this paper shows, economic conditions can have a major impact on cartel-related violence, and it is therefore necessary that Mexican officials work with neighborhood organizations and occupants so as to recognize needs within municipalities and adequately address them through public investments. By doing so, communities can deconstruct the spatial and socioeconomic segregation fostered by capitalist processes of accumulation and potentially drastically reduce violence across the nation.

[83] Statistics can also be useful in identifying unique community needs. As in the case of Santa Tecla, a neighborhood in San Salvador, El Salvador, data regarding the time of day and location of robberies was helpful in determining the need for more streetlights on particular roads (Morse, 2011).

CHAPTER SEVEN

FINAL THOUGHTS

This thesis has found that municipalities' economic conditions, such as extreme poverty and marginalization, are strongly related to and may potentially cause greater incidence of cartel-related violence in a location. Specifically, since DTOs' existence and success necessitate a large labor supply, narco-organizations may highly value, and therefore, often fight over, impoverished areas, recognizing that the population within such spaces may be relatively more willing to work with or alongside cartels as a means of increasing its monetary utility. Likewise, municipalities with low standards of living may be attractive to cartels, as narco-groups can carry out strategies of dependence in such areas that might not work as effectively in less marginalized communities.

In addition, although not yet of major importance throughout Mexico, inequality has the potential to also be a major contributing factor to cartel violence, since it can provide the best of both worlds (at least for DTOs who choose to specialize in extortion) by offering a sizable pool of relatively deprived individuals from which cartels can recruit, while simultaneously supplying a solid base of wealthy business owners from which the they can extort. Should more narco-groups add extortion to their repertoire, it is likely that not just poverty and marginalization, but also, inequality, will be high on the list of qualities that render municipalities valuable (and therefore worthy of violent contestation) in the eyes of cartel leaders.

As a result of all of these findings, it appears that Mexican officials ought to target their efforts to reduce cartel-related violence by addressing the poverty, marginalization, and inequality within municipalities, and, more locally, within struggling neighborhoods, such as

Independencia. By recognizing the uneven development that has occurred as a result of spatial fixes and by committing to targeted public investments in key developmental resources and infrastructure, policy makers can attempt to work within the current capitalist system to redress the poverty and marginalization that accumulation processes have fostered in certain areas of Mexico.[84]

Additionally, this paper also highlights the difference between reducing cartel violence and reducing cartel existence. The two goals are not one in the same. As of 2008, there were approximately 468,000 individuals engaged in drug trafficking within Mexico (Rios & Sabet, 2008), and as less people join cartels, there may be fewer DTO members available to battle over territory or engage in extortionary practices. Similarly, as municipalities become less attractive to narco-organizations, there could be less likelihood that wars emerge over particular territories. Yet, hat does not mean that cartels will cease their drug cultivation and trafficking efforts; in fact, they probably will not. After all, cartels' products are highly demanded, and their profit margins are large. While black markets for drugs continue to exist, so too, presumably, will DTOs. However, while *mano dura* policies meant to stamp out cartels have been fairly unsuccessful within Mexico, those aimed at improving local economic conditions have shown great promise as a means of mitigating narco-violence.

Nonetheless, this research is far from perfect. As Coscia and Rios (2012, p. 2) explain, "Criminal organizations hide for a living." Thus, there exists a major lack of information and data about cartels. We do not have fully accurate numbers regarding the amount of homicides that they commit, and we do not possess a truly complete understanding about life in areas in

[84] However, economic development should not be considered a cure-all, as specific noneconomic policies, such as those that would strengthen the rule of law and reform judicial processes, among other initiatives, have also been said to decrease cartel-related violence. (See Rios Contreras, 2013, for a summary of such arguments).

which narcos have established bases or are competing for turf. Moreover, of the literature that does exist, most is from the United States (Witten, 2012), underscoring the need for more work from Mexican authors who better understand the dynamics on the ground. Yet, in general, it is important that social science continues in its endeavors to better grasp the causes and geography of narco-violence, as Mexicans are living in fear and migrating to the United States in record numbers in search of security. As one resident of Tijuana explained, "Fear has become part of our lives…There's panic. We don't know when the shooting is going to break out" (Lacey, 2008). In order to adequately address this issue, the economic and spatial roots of cartel-related violence *must* be understood.

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APPENDIX A

CALCULATION OF THE "GOVERNMENT" VARIABLE

State Code	State	2010 Governor	Party of 2010 Governor	Years Party in Office[85]: 1960-2010
1	Aguascalientes	Luis Armando Reynoso	PAN	12
2	Baja California	José Guadalupe Osuna Millán	PAN	21
3	Baja California Sur	Narciso Agúndez Montaño	PRD	12
4	Campeche	Fernando Ortega Bernés	PRI	50
5	Coahuila de Zaragoza	Humberto Moreira Valdés	PRI	50
6	Colima	Mario Anguiano Moreno	PRI	50
7	Chiapas	Juan José Sabines Guerrero	PRD	10
8	Chihuahua	José Reyes Baeza Terrazas	PRI	44
9	Distrito Federal[86]	Marcelo Luis Ebrard Casaubón	PRD	13
10	Durango	Ismael Alfredo Hernández Deras	PRI	50
11	Guanajuato	Juan Manuel Oliva Ramírez	PAN	19
12	Guerrero	Carlos Zeferino Torreblanca Galindo	PRD	5
13	Hidalgo	Manuel Ángel Osorio Chong	PRI	50
14	Jalisco	Emilio González Márquez	PAN	16
15	México	Enrique Peña Nieto	PRI	50
16	Michoacán	Leonel Godoy Rangel	PRD	8
17	Morelos	Marco Antonio Adame Castillo	PAN	10
18	Nayarit	Ney González Sánchez	PRI	44
19	Nuevo León	Rodrigo Medina de la Cruz	PRI	44
20	Oaxaca	Ulises Ruiz Ortiz	PRI	50
21	Puebla	Mario Marín Torres	PRI	50

[85] 50 year maximum, because only looking at 50 years prior to the year of interest

[86] The leader of the Distrito Federal is not called the governor, but rather, the "Head of Government."

22	Querétaro	José Eduardo Calzada Rovirosa	PRI	38
23	Quintana Roo	Félix Arturo González Canto	PRI	50
24	San Luis Potosí	Fernando Toranzo Fernández	PRI	44
25	Sinaloa	Jesús Alberto Aguilar Padilla	PRI	50
26	Sonora	Guillermo Padrés Elías	PAN	1
27	Tabasco	Andrés Rafael Granier Melo	PRI	50
28	Tamaulipas	Eugenio Javier Hernández Flores	PRI	50
29	Tlaxcala	Héctor Israel Ortiz Ortiz	PAN	5
30	Veracruz	Fidel Herrera Beltrán	PRI	50
31	Yucatán	Ivonne Aracely Ortega Pacheco	PRI	44
32	Zacatecas	Amalia Dolores García Medina	PRD	12

APPENDIX B

ROBUST REGRESSIONS TO DOWNWEIGHT OUTLIERS

Effects on Cartel-Related Homicide Rate

ln(Cartel_HomR)	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
pov_1_2000	-0.026	0.008	-3.34	0.001	-0.041	-0.011	***
pov_2_2000	0.151	0.070	2.14	0.033	0.013	0.289	**
pov_3_2000	-0.083	0.031	-2.68	0.007	-0.144	-0.022	***
inequality2000	0.633	0.823	0.77	0.442	-0.982	2.249	
marg_2000	0.399	0.113	3.52	0.000	0.176	0.621	***
govt2010	0.029	0.015	1.99	0.047	0.000	0.058	**
impunity2010	0.036	0.010	3.62	0.000	0.017	0.056	***
popden2010	0.000	0.000	-0.69	0.492	0.000	0.000	
state1	0.987	0.669	1.48	0.140	-0.325	2.299	
state2	1.072	0.644	1.67	0.096	-0.192	2.336	*
state3	-0.025	0.827	-0.03	0.976	-1.647	1.598	
o.state4	0.000	.	.	.	.	.	
state5	0.415	0.415	1.00	0.318	-0.401	1.230	
state6	2.127	0.614	3.46	0.001	0.922	3.332	***
state7	1.162	0.620	1.87	0.061	-0.055	2.379	*
state8	2.379	0.250	9.53	0.000	1.889	2.869	***
state9	0.865	0.659	1.31	0.189	-0.428	2.158	
state10	1.813	0.301	6.03	0.000	1.223	2.403	***
state11	0.748	0.490	1.53	0.128	-0.214	1.711	
state12	1.942	0.653	2.98	0.003	0.661	3.223	***
state13	0.700	0.547	1.28	0.201	-0.374	1.774	
state14	2.183	0.506	4.31	0.000	1.189	3.178	***
state15	-0.410	0.238	-1.73	0.085	-0.877	0.056	*
state16	1.719	0.585	2.94	0.003	0.570	2.868	***
state17	2.544	0.610	4.17	0.000	1.346	3.741	***
state18	2.282	0.532	4.29	0.000	1.239	3.325	***
state19	2.486	0.387	6.42	0.000	1.725	3.246	***
state21	-0.517	0.283	-1.83	0.068	-1.072	0.038	*
o.state22	0.000	.	.	.	.	.	
state23	-0.875	1.129	-0.78	0.439	-3.091	1.342	
state24	1.095	0.415	2.64	0.008	0.280	1.909	***
state25	2.134	0.332	6.42	0.000	1.482	2.786	***
state26	3.898	0.741	5.26	0.000	2.443	5.353	***
state27	-0.652	0.364	-1.79	0.073	-1.366	0.061	*
state28	2.063	0.295	6.99	0.000	1.483	2.642	***
o.state29	0.000	.	.	.	.	.	
state30	-0.470	0.254	-1.85	0.065	-0.969	0.029	*
o.state31	0.000	.	.	.	.	.	
state32	2.426	0.710	3.42	0.001	1.032	3.820	***
Constant	-0.854	1.169	-0.73	0.465	-3.149	1.441	

Mean dependent var	2.553	SD dependent var	1.502
R-squared	0.493	Number of obs	812.000

*** p<0.01, ** p<0.05, * p<0.1

Effects on Total Homicide Rate

ln(HomRate)	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
pov_1_2000	-0.008	0.004	-1.98	0.048	-0.016	0.000	**
pov_2_2000	0.016	0.038	0.42	0.675	-0.058	0.089	
pov_3_2000	-0.016	0.018	-0.89	0.372	-0.050	0.019	
inequality2000	0.563	0.456	1.24	0.216	-0.330	1.457	
marg_2000	0.298	0.062	4.80	0.000	0.176	0.420	***
govt2010	0.014	0.012	1.15	0.250	-0.010	0.039	
impunity2010	0.025	0.005	5.41	0.000	0.016	0.034	***
popden2010	0.000	0.000	0.80	0.423	0.000	0.000	
state1	-0.181	0.543	-0.33	0.739	-1.246	0.884	
state2	1.145	0.515	2.22	0.026	0.135	2.154	**
o.state3	0.000	.	.	.	.	.	
state4	-0.116	0.400	-0.29	0.772	-0.900	0.668	
state5	-0.230	0.224	-1.03	0.305	-0.670	0.210	
state6	1.108	0.368	3.02	0.003	0.387	1.829	***
state7	-0.143	0.471	-0.30	0.761	-1.066	0.780	
state8	1.836	0.154	11.96	0.000	1.535	2.137	***
state9	0.614	0.504	1.22	0.223	-0.375	1.604	
state10	1.254	0.182	6.89	0.000	0.897	1.610	***
state11	0.001	0.377	0.00	0.998	-0.738	0.740	
state12	0.771	0.565	1.36	0.173	-0.338	1.879	
state13	-0.094	0.258	-0.36	0.716	-0.599	0.412	
state14	0.885	0.390	2.27	0.024	0.119	1.650	**
state15	-0.390	0.123	-3.18	0.001	-0.631	-0.150	***
state16	0.286	0.509	0.56	0.574	-0.713	1.285	
state17	1.201	0.478	2.51	0.012	0.263	2.140	**
state18	1.310	0.280	4.67	0.000	0.760	1.860	***
state19	1.382	0.212	6.53	0.000	0.967	1.797	***
state21	-0.664	0.118	-5.64	0.000	-0.895	-0.433	***
state22	-0.361	0.322	-1.12	0.262	-0.993	0.270	
state23	-1.155	0.319	-3.62	0.000	-1.781	-0.529	***
state24	0.055	0.195	0.28	0.779	-0.328	0.438	
state25	1.575	0.227	6.95	0.000	1.131	2.020	***
state26	2.522	0.564	4.47	0.000	1.416	3.628	***
state27	-0.856	0.234	-3.66	0.000	-1.314	-0.398	***
state28	0.780	0.182	4.29	0.000	0.423	1.137	***
state29	-0.465	0.595	-0.78	0.435	-1.633	0.703	
state30	-0.806	0.116	-6.97	0.000	-1.033	-0.579	***
o.state31	0.000	.	.	.	.	.	
state32	1.115	0.454	2.46	0.014	0.225	2.005	**
Constant	0.687	0.679	1.01	0.312	-0.645	2.018	

Mean dependent var	2.874	SD dependent var	1.195
R-squared	0.463	Number of obs	1408.000

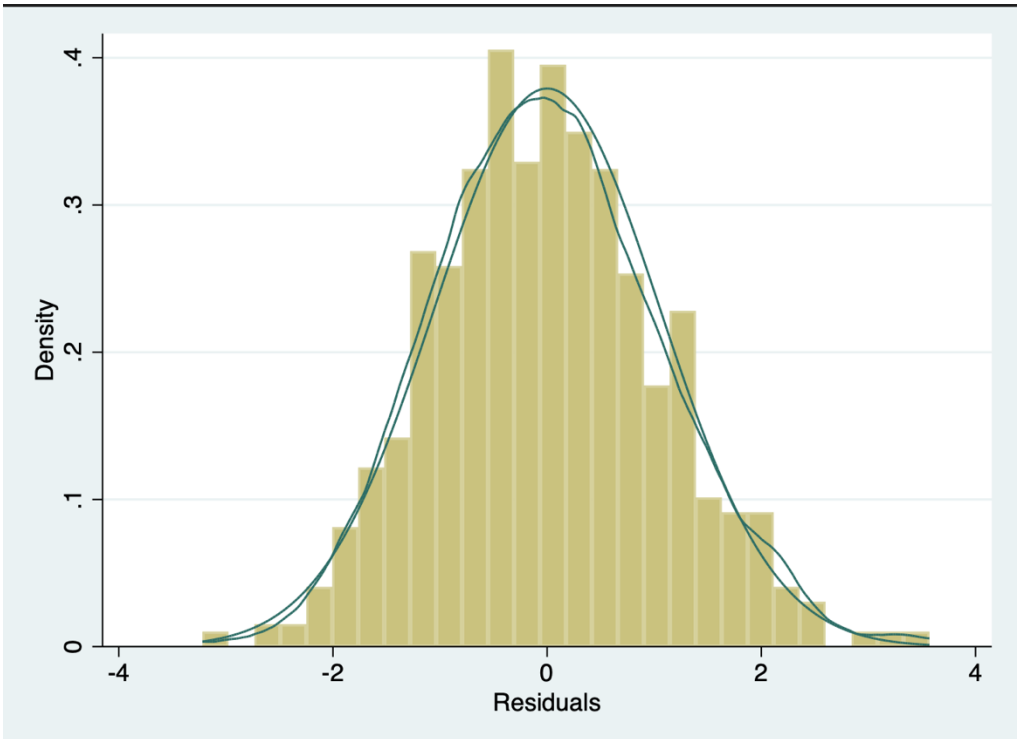
*** p<0.01, ** p<0.05, * p<0.1

APPENDIX C

STATISTICAL CHECK: NORMALITY

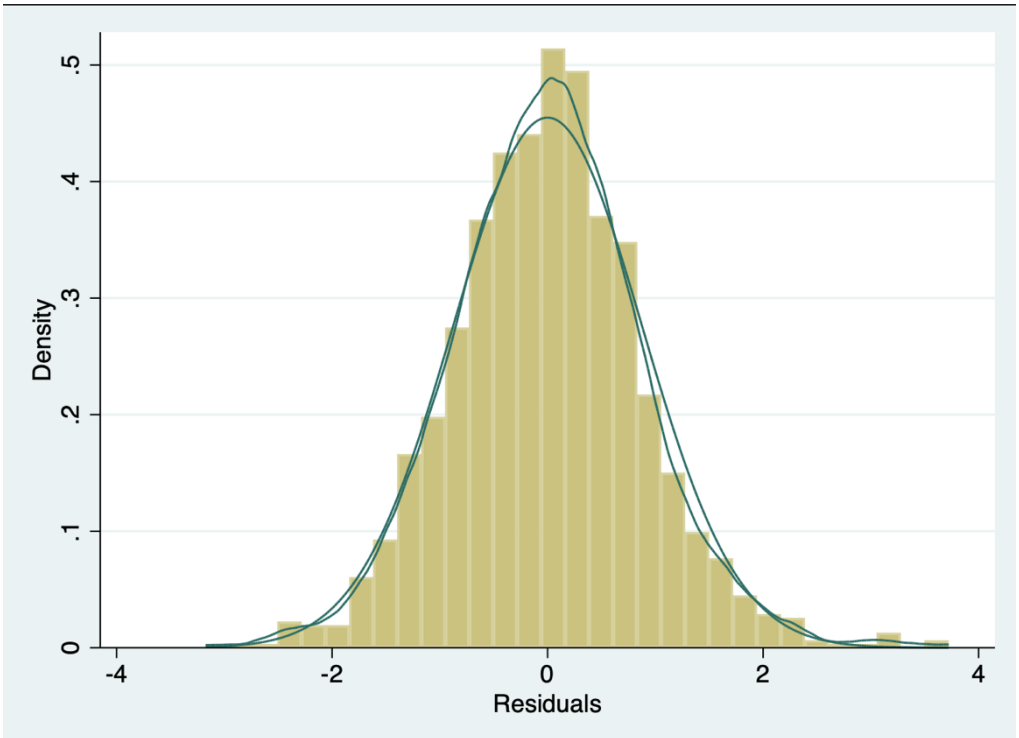
According to the normality assumption of OLS, errors around the regression line are supposed to be normally distributed. I use Stata to predict and plot my residuals[87] and to compare them to a normal distribution. Based on my results, shown below, neither of the regressions appear to violate this assumption.

For Regression with Cartel-Related Homicide Rates



[87] A residual is the difference between the observed value of the dependent variable and the predicted value.

For Regression with Total Homicide Rates



APPENDIX D

STATISTICAL CHECK: HETEROSKEDASTICITY

If a regression suffers from heteroskedasticity, its variance is not constant. To check for heteroskedasticity, I conduct the Breusch-Pagan test using the "hettest" command in Stata. My results are as follows:

For Regressions with Cartel-Related Homicide Rates

Without State Controls:

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Ho: Constant variance

Variables: fitted values of lncartel_homrate_2010

chi2(1) = 1.65

Prob > chi2 = 0.1984

With State Controls:

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Ho: Constant variance

Variables: fitted values of lncartel_homrate_2010

chi2(1) = 9.63

Prob > chi2 = 0.0019

There are 814 observations in each of these regressions, or 813 degrees of freedom (DF). For DF >= 100, the critical value is 67.33. The calculated chi-square test statistics for these models shown above (1.65 and 9.63) are below the critical value, indicating that the null hypothesis of homoskedasticity cannot be rejected. Thus, it appears that the regressions do not suffer any major issues related to heteroskedasticity.

For Regressions with Total Homicide Rates

Without State Controls:

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Ho: Constant variance

Variables: fitted values of lnhomrate2010_100k

chi2(1) = 25.61

Prob > chi2 = 0.0000

With State Controls:

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Ho: Constant variance

Variables: fitted values of lnhomrate2010_100k

chi2(1) = 42.57

Prob > chi2 = 0.0000

There are 1,408 observations in these regressions, so the DF = 1,407. As in the case above, the chi-square test statistics here (25.61 and 42.57) are below the critical value. Consequently, once again, the null hypothesis of homoskedasticity cannot be rejected.

APPENDIX E

DATASET

The dataset used in this thesis can be found here.