Spillover Effects of Crimes in Neighboring States of Mexico

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Abstract

The recent surge in crime and drug-related violence in Mexico has had a profound effect on the Mexican economy. Thousands of businesses have closed in Ciudad Juarez, a city that borders the U.S., due to the violence that has erupted between drug cartels. It has been estimated by Rios (2007) that $4.3 billion of losses occur yearly to Mexico, due to illegal drug activity in the country. Using a spatial model, this paper analyzes the determinants of crime in Mexican states. It was found that high levels of total crime and drug-related violence in neighboring states of Mexico have spillover effects. They lead to higher levels of theft in a given state, which serves as a source of funds to the cartels to purchase drugs they sell and to purchase services of enforcement gangs that carry out the orders of the cartels. Individual state economic growth and development can be significantly increased if a solution can be found to Mexico's crime problem and drug-related violence.

Keywords: Mexico, crime, theft, spatial, cartels

1) *Spillover Effects of Crimes in Neighboring States of Mexico*

1.1 Introduction

Crime and drug-related violence are now major problems in Mexico, spreading from state to state as drug cartels have sought to expand their bases of operation and have foughtto control narcotic trafficking routes. Outbreaks of violence between rival cartels have been especially pronounced in the northern Mexican states where the cartels have competed for the profitable corridors into the U.S. The Sinaloa and Juarez cartels have battled over the Juarez market andthe Gulf cartel has been fighting with Los Zetas in Tamaulipas, Nuevo Leon, and Coahuila.[2] And many other wars are occurring throughout the country between rival cartels. States in Mexico that were once largely untouched by drug-related violence are now feeling its effects. The purpose of this paper is to determine if crime and violence in one state, spills over to (or impacts) other crimesin neighboring Mexican states.Does the level of total crime and drug-related violence in Chihuahua, for example, lead to more assaults in Sonora or does it just lead to more theft? If it only leads to more theft, why is this and what can be done to reduce it?

States in Mexico that have been plagued by high levels of crime and illegal drug activity have seen significant declines in economic activity.

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[2] See Caldwell, A. and M. Stevenson (2010) and Kouri, J. (2011).

In Ciudad Juarez, which is across the U.S. border from El Paso, Texas, approximately 125,000 people have left the city and around 10,000 small businesses have closed in the last five years due to drug-related violence.[3]Families and businesses have also moved from Tijuana, Mexico to San Diego as a result of similar violence.[4] As Marin (2011) stated, "Crime is affecting the economic performances of Chihuahua, Guerrero, Jalisco, Nuevo Leon and Tamaulipas (states), where murders related to drug trafficking haverisen threefold to 18-fold," Desfassaiaux said. The States most affected by job losses and business closings due to crime are Tamaulipas, Nuevo Leon, Chihuahua, Baja California, Baja California Sur and Sinaloa, all located in northern Mexico, the security expert said."[5]Tourism in Mexico has also suffered in places such as Baja California and Acapulco, in the state of Guerrero, due to the violence promulgated by the cartels. It is becoming more and more obvious that state economic growth and development in Mexico are inextricably intertwined with Mexico's problems of crime and drug activity.

The outline of the paper is as follows. In the first section a brief review of the literature will be presented, followed by an overview of the major drug cartels and drug wars. A model of crime, criminal behavior, and spillover effects of crime, will then be presented, followed by the empirical results. The final section will contain a summary and conclusions.

1.2 Literature Review

One of the early empirical studies on crime in Mexico was that by Lin and Loeb (1980). Using a cross-sectional data set for Mexico's 32 state entities in 1970, they found that tourism, urbanization and income, were positively related to certain types of crimes, while industrialization was found to be negatively related to crime. Blanco and Villa (2008) used data from the 1990 and 2000 censuses for the state of Veracruz and its municipalities. They found that with increased female labor force participation and with women moving into higher wage brackets, there was a larger number of alleged offenders involved in crimes committed against women. Albuquerque and Vemala (2008) found that femicide rates in Ciudad Juarez were not significantly different from other Mexican cities, once male homicide rates were taken into account. Williams (2009) drew interesting comparisons between violence in Mexico and violence in Iraq. Rios (2007) analyzed the economic consequences of drug trafficking in Mexico. She found that there were benefits and costs to Mexico. On the benefit side, she calculated that 468,000 people were employed in the drug business and it generated revenues and investment in local communities. On the cost side, corruption and violence has hurt the nation. Overall, she concluded that the drug trade has had a negative effect on Mexico's economy. Widner, Reyes-Loya, and Enomoto (2011), used a panel data set for 2004 to 2008 to estimate the effects of per-capita GDP, incarceration rates, births to single mothers, and expenditures on public security, on different types of crimes. They found that increased expenditures on public security and higher incarceration rates led to more arrests for homicide, theft, property damage, fraud, rape, and assault. While the above studies have examined the effects of socio-economic variables on crime in Mexico, none of them have examined spillover effects of crime from one state to another state within Mexico. The purposes of this paper are to determine if there are spillover effects and what can be done about them.

In the next section, anoverview of the drug cartels, their bases of operation, and conflicts between cartels, will be presented.

1.3 Drug Cartels and the Current Situation in Mexico

There are seven major drug cartels in Mexico and several smaller ones.[6] The major cartels include: the Juarez Cartel, the Tijuana Cartel, the Beltran-Leyva Cartel, Los Zetas Cartel, the Gulf Cartel, the Sinaloa Cartel, and La FamiliaMichoacana Cartel. The locations and areas of operation of the cartels are always changing but some generalizations are made in the literature and by news organizations. Table 1, provides a list of the states in Mexico where the cartels operate. These regions in which the cartels operate are depicted in Figure 1.

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[3] See Alvarado, Martinez, and Chavez (2011).
[4] See Latin America News Dispatch (2010).
[5] See Marin, J.R. (2011).
[6] See Batt, E. (2011).

Table 1: Cartel Operations in Mexico

MAJOR CARTELS

<u>Juarez   Tijuana   Beltran-Leyva   Los Zetas   Gulf   Sinaloa   La Familia M</u>

Juarez	Tijuana	Beltran-Leyva	Los Zetas	Gulf	Sinaloa	La Familia M
Chihuahua	Baja California	Guerrero	Baja California S	Coahuila	Chihuahua	Coahuila
Coahuila	Sinaloa	Mexico	Campeche	Michoacan	Durango	Michoacan
Colima	Sonora	Michoacan	Chiapas	Nuevo Leon	Sinaloa	Sonora
Durango		Morelos	Coahuila	Oaxaca		
Mexico C.		Oaxaca	Jalisco	Tamaulipas		
Nayarit			Morelos			
Sinaloa			Nuevo Leon			
Zacetecas			Oaxaca			
			Tabasco			
	Tamulipas					
Veracruz						
			Yucatan			

Source: Batt, E. (2011).

While there has always been violence and disputes between the organizations, most authorities cite December 2006 as the start of the major drug-related violence in Mexico. In December 2006, Felipe Calderon became president of Mexico and he immediately started to deploy troops throughout Mexico to stop the cartels. The ensuing battles between the Mexican government and the drug organizations upset the former balance of power between cartels.[7] Some cartels were weakened, opening the door for others to emerge as dominant players which resulted in even more inter-cartel violence. There were also breakdowns in what were former cartel alliances. Los Zetas, the enforcing arm of the Gulf Cartel, broke away from the Gulf cartel in 2010 and formed an alliance with the Juarez Cartel, the Tijuana Cartel, and the Beltran-Leyva Cartel. (The Beltran-Leyva Cartel broke away from their one time alliance with the Sinaloa Cartel and even the Gulf Cartel and Tijuana Cartel once had a temporary alliance.[8]) The remaining major cartels, the Gulf, Sinaloa, and La FamiliaMichoacana, formed an alliance to counter the Juarez, Tijuana, Los Zetas, and Beltran-Leyva alliance.

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[7] See STRATFOR (2010).
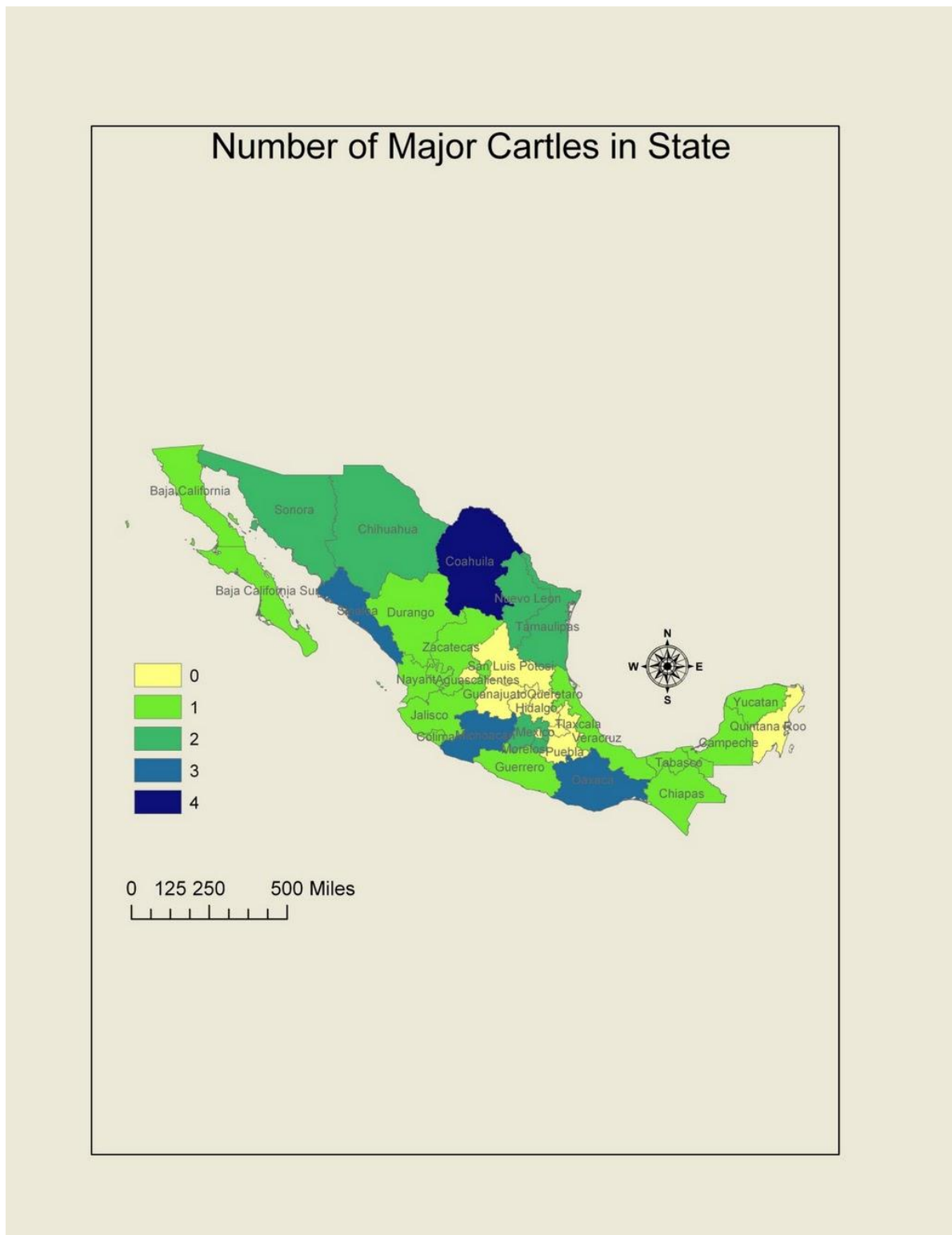[8] See Books LLC.

Figure 1.   Drug Cartels in Mexico

Violence among the drug organizations has been widespread in Mexico. According to STRATFOR (2010):

> In 2010, Mexico's cartel wars have produced unprecedented levels of violence throughout the country. No longer concentrated in just a few states, the violence has spread all across the northern tier of border states and all along both the east and west coasts of Mexico. This year's drug-related homicides have passed the 11,000 mark, a 60 to 70 percent increase from 2009. (p. 2).

Furthermore,

> The degrading security environment in Mexico has been exacerbated by the development of new conflicts in Tamaulipas, Nuevo Leon, Morelos, Mexico,Colima and Jalisco states, as well as by persisting conflicts in Chihuahau, Sinaloa, Durango, Michoacan, and Guerrero states… One reason for the tremendous increase in violence in 2010 is the conflict between the Gulf cartel and Los Zetas. This conflict spread violence throughout the eastern half of the country, common territory where the two groups have significant influence given their past relationship. And the conflict that stemmed from the Beltran-Leyva Organization split has become a new source of violence in the southern states of Morelos, Mexico and Guerrero. All this, combined with the ongoing conflicts between the (Juarez cartel) and the Sinaloa Federation in Chihuahua state; La FamiliaMichoacana and Cartel Pacifico Sur in Michoacan and Guerrero states; and the persistent low-level fighting between the CPS and the Sinaloa Federation in Sinaloa state, has produced this year's unprecedented death toll for the country as a whole. (pp. 14-15).

Besides the homicides and drug-related violence between cartels over territory and narcotic-trafficking routes, the drug cartels of Mexico have also engaged in several activities for profit. They transport cocaine from Columbia through Mexico to the U.S. They produce heroin and marijuana for distribution and sale to the U.S. One of the major areas in which heroin and marijuana are produced in Mexico is in the "Golden Triangle" which consists of the states of Sinaloa, Durango, and Chihuahua. Tofinance their operations and to purchase drugs they sell, the cartels have also resorted to human smuggling, extortion of businesses, kidnapping for ransom, and theft.[9]

In the next section, a model of crime and spillover effects from crime will be developed which takes into account drug cartel behavior.

2) *A Model of Crime and Spillover Effects*

The classic model of crime and perhaps the one most often cited in the literaturewas developed by Becker (1968). Many extensions of that model have since been produced. In these models, criminals are engaged in those activities in which the expected benefit exceeds the expected cost. The expected benefit of committing a crime is equal to the probability of successfully committing the crime multiplied by the benefit or reward from the crime. The expected cost is the probability of being caught multiplied by the cost or fine if caught. In the context of this model, successful business men and women are perceived as better targets by the would-be criminal, simply because the payoff from robbery or kidnapping would be higher. However, business men and women with bodyguards would significantly lower the probability of pulling off the robbery successfully to the would-be criminal and would make these individuals less desirable targets. Since the criminal is the producer of the crime and the consumer (beneficiary) of the crime (in many cases), what lowers the probability of pulling off a crime successfully also raises the probability of being caught committing a crime. Therefore an effective police force not only lowers the probability of successfully carrying out a crime (the benefit side) but it significantly raises the probability of being caught committing a crime (the cost side). Finally, the cost or fine to the criminal is an important determinant of criminal activity. The harsher the punishment for committing a crime, the higher will be the cost of committing a crime.

Mexico faces many problems with its criminal justice system that contribute to crime. Azaola and Bergman (2007) stated that corruption was widespread in Mexico's prison system. There was an established network connecting the administrators, guards, and inmates. Further, the prisons are overcrowded and filled to capacity. Reams (2007) discussed corruption within police organizations. He stated that bribes to police were common. Payan (2006) stated the following about corruption in Mexico's police organization:

> Almost all Mexican law enforcement officials along the border with the United States are bought off by the drug trafficking cartels or neutralized by explicit or implicit threats. The strategy has long been the same: "plata o plomo" (silver or lead). In other words, you either take a bribe (silver) or a bullet to the head (lead). At a minimum, a police officer that does not want to become corrupt will simply keep silence to protect himself and cover the corruption of his fellow officers… The choices do not end there, however.

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[9] See STRATFOR (2010).

> Often, police officers desert the force to become more active members of the drug trade. They become bodyguards, operatives, or even *sicarios* who carry out the executions of those "condemned to death" by a drug lord. Drug lords prefer to recruit former policemen because they are already trained in the use of weapons, and torture techniques, and know everyone else inside the police force, not to mention the weak points of the law enforecement organizations. (p. 40).

Furthermore, there is the problem of underreporting of crimes in Mexico, given that many individuals either distrust the judicial system or believe that reporting a crime will make no difference. Moloeznik (2007) stated:

> Moreover, considering that most crimes are never reported to the authorities, the magnitude of criminal impunity is even greater. One nation-wide survey suggested that during the first half of 2002, only seventeen of every one hundred crimes were reported in Mexico (ICESI 2003).   (p. 470).

Many criminal cases in Mexico never make it to a final hearing before a judge. Some cases are dismissed due to lack of evidence or lack of an identifiable suspect.[10]Seelke and Finklea (2011) stated that the impunity rate in Mexico was close to 98%.[11]As a result of Mexico's high impunity rate, the expected cost of committing a crime to the would-be criminal is greatly reduced. Furthermore, as Payan (2006) has suggested, thousands of men are ready to join the drug trade with the huge profits that it offers and low incomes and high unemployment present in many of Mexico's cities.

The presence of drug cartels and drug wars throughout Mexico has another non-inconsequential effect: they can lead to crime in neighboring states of Mexico. The drug cartels have branched out into human smuggling, kidnapping for ransom, theft, and extortion of businesses, to purchase drugs they sell and to fund their activities. Thus it would be expected that states next to states with high levels of crime and violence may themselves be victims of crime, especially those crimes involving money and property that the gangs and cartels could use to fund their operations.

Given the above mentioned factors affecting crime in Mexico, crime in a given state would depend on 1) Income per person which would reflect the cost or sacrifice involved in committing a crime. Individuals with lower incomes would sacrifice the least in terms of foregone income, if caught and imprisoned. Thus the expected cost of committing a crime would be lower for these individuals and it would be expected that they would commit more crimes, everything else constant. 2) The amount of resources devoted to public security which would increase the probability of being caught committing a crime. Thus states with greater expenditures on public security would tend to have lower crime rates. 3) The percent of the population incarcerated. The larger is the percent of the population incarcerated, the higher is the expected cost to the would-be criminal for committing a crime if he or she anticipates a higher cost or likelihood of being imprisoned.Furthermore, if a larger percent of the population is incarcerated, more criminals are taken off the street which tends to also lowers crime rates. 4) The level of crime in neighboring states. The more crime and violence in surrounding states, the greater is the likelihood of spillover effects, especially with crimes involving monetary rewards.

In the next section, the data involved in estimating the above crime model will be discussed along with the results.

3) *Data and Results*

Federal grants for public security, number of inmates, and number of crimes by state, including theft, assault, damage to property, homicide, fraud, rape, and carrying prohibited arms, were collected from issues of Anuario de EstadisticasporEntidadFederative (Yearbook of Statistics by State), published by (INEGI)—InstitutoNacional De Estadistica Y Geografia (National Institute of Statistics and Geography).[12]Real GDP and the implicit GDP deflators were taken from INEGI's web site and yearly population projections were taken from CONAPO's (ConsejoNacional de Poblacion—National Population Council) web site.[13]

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[10] See Lecuona, (2007).
[11] See Seelke and Finklea (2011).
[12] Since the actual number of crimes is never known, the number of alleged offenders registered in the court of first instance was used.
[13] See http://www.inegi.org.mx and http://www.conapo.gob.mx/

In Figure 2, total number of crimesper 100,000 inhabitants in 2009 is mapped out by state. A darker shade is used for states with higher crime rates while a lighter shade is used for states with lower crime rates.In Figure 3, theft per 100,000 inhabitants in 2009 is mapped out by state. Again the darker shaded states have a higher number of thefts per 100,000 inhabitants.

Figures 2 and 3 indicate what was previously discussed. States with high rates of theft appear to have neighboring states with high levels of total crime per 100,000 inhabitants. The states of Guerrero, Oaxaca, and Chiapas, on the other hand, are neighboring states with low theft rates and low levels of total crime per 100,000 inhabitants. Figures 4, 5, 6, 7, and 8, show rates of assault, homicide, rape, fraud, and damage to property. There is no clear pattern that emerges from these maps showing a relation between these crime rates in states and total crime rates in neighboring states.

Given these possible relationships between particular types of crime in a state and total crime in neighboring states, the following spatial lagmodel was estimated to accommodatethe framework developed in the previous section.

$$crime = \beta_1 + \beta_2 \cdot gdp + \beta_3 \cdot security + \beta_4 \cdot inmates +$$
$$\beta_5 \cdot W \cdot totalcrime + \rho \cdot W \cdot crime + u$$

The dependent crime variable is the number of alleged offenders (for a specific crime such as theft, assault, rape, damage to property, fraud, and homicide) registered in the court of first instance per 100,000 inhabitants.[14] The variables GDP and security represent real per-capitaGDP in billions of pesos and real per capita federal grants for public security in millions of pesos, respectively. Thevariable inmate is the percent of the population in the rest of the nation that is incarcerated. As an example, the variable inmate for the state of Durango for 2009 would be the percent of the population in Mexico that was incarcerated in 2009, not including inmates and the population of Durango. The reason for treating the inmate variable in this fashion was to avoid the simultaneity problem that occurs when a given state's inmates are used in a crime equation. The number of state inmates affects crime but the amount of crime taking place also affects the number of state inmates. By using incarceration rates in the rest of the nation, this problem can be avoided as discussed by Marvell and Moody.[15]

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[14] All variables used in this study were collected for each of the 31 states of Mexico plus the Federal District for the years 2004 to 2009 (32x6=192 observations).
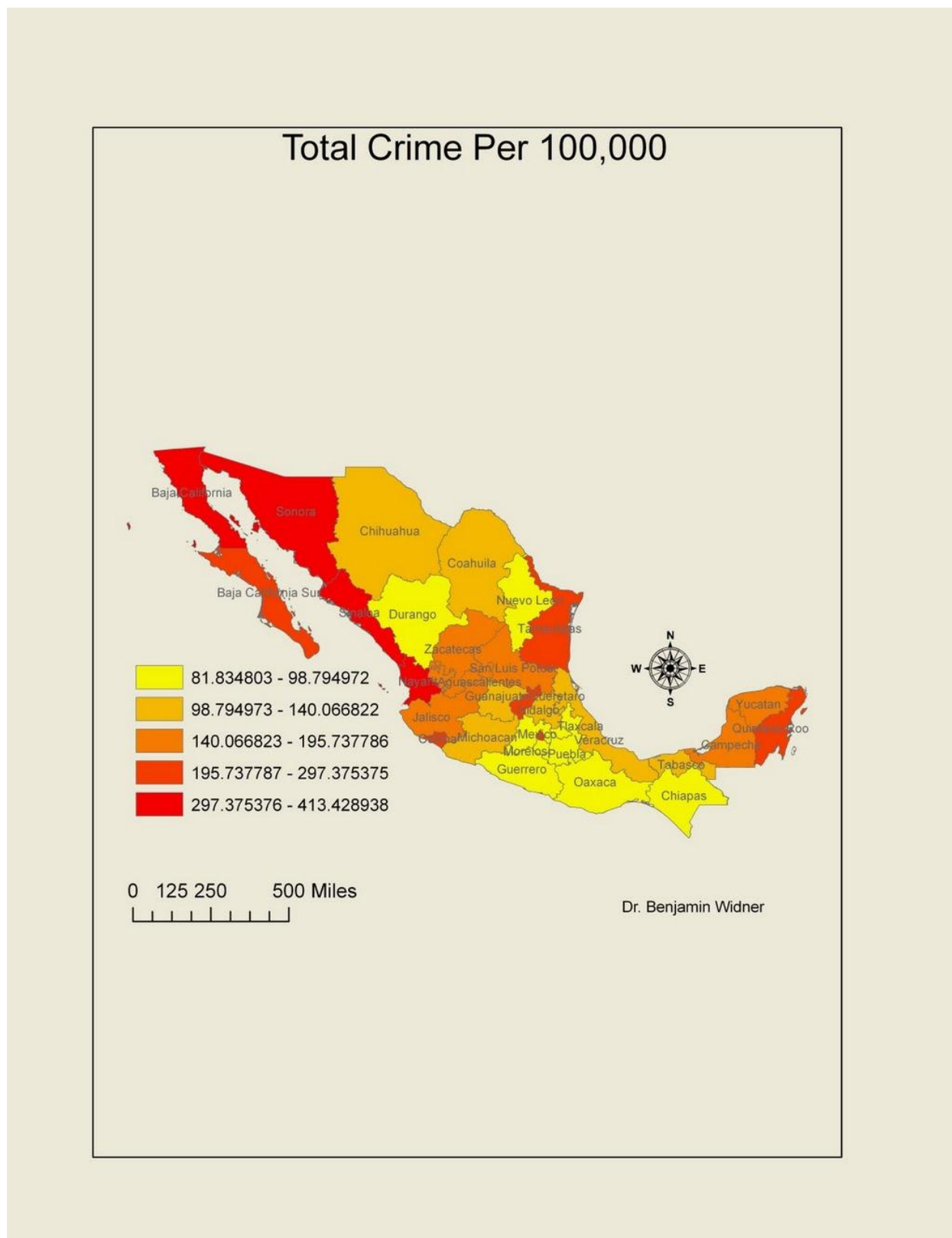[15]See Marvel and Moody (1998).
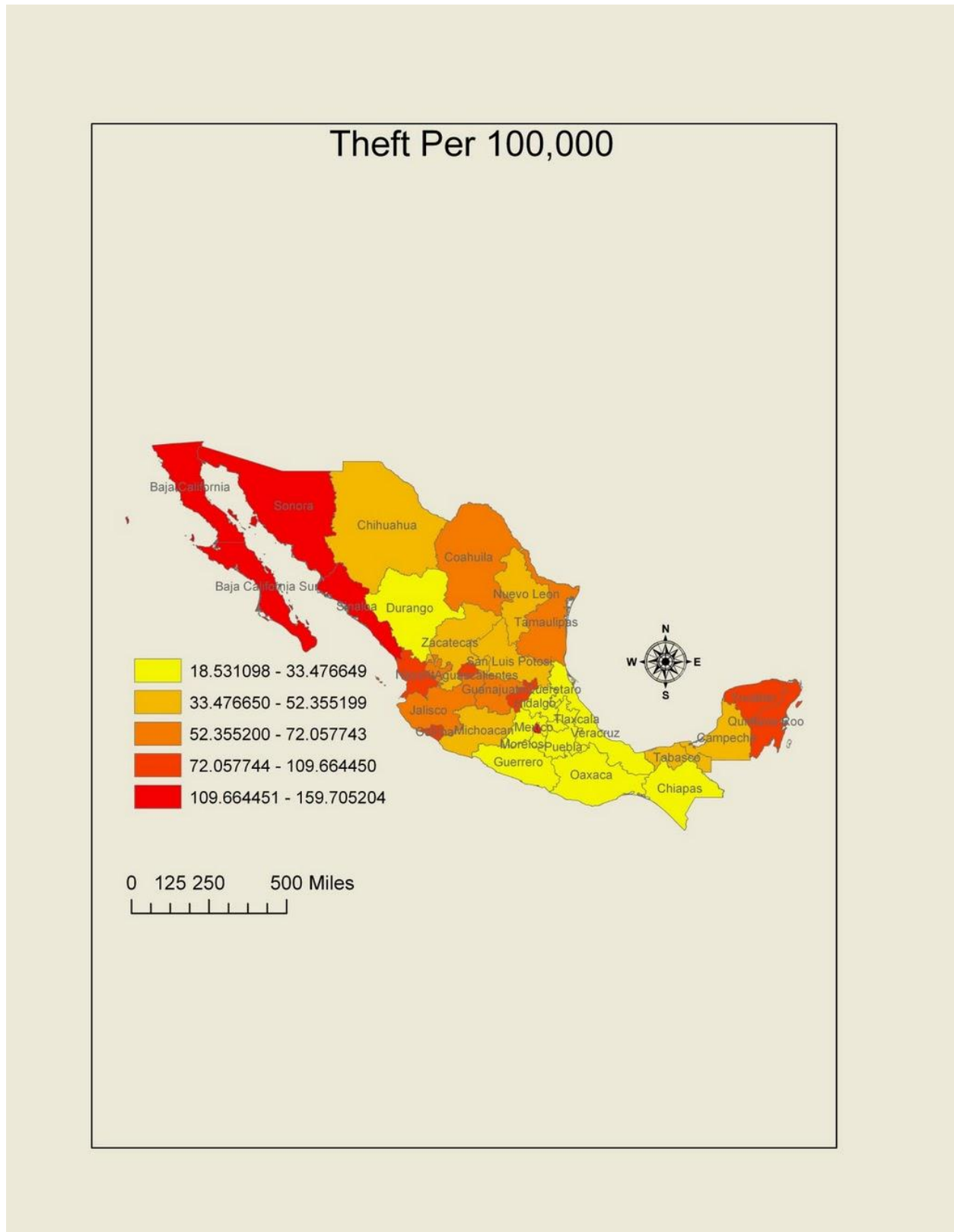
Figure 2. Total crimes per 100,000 inhabitants, 2009

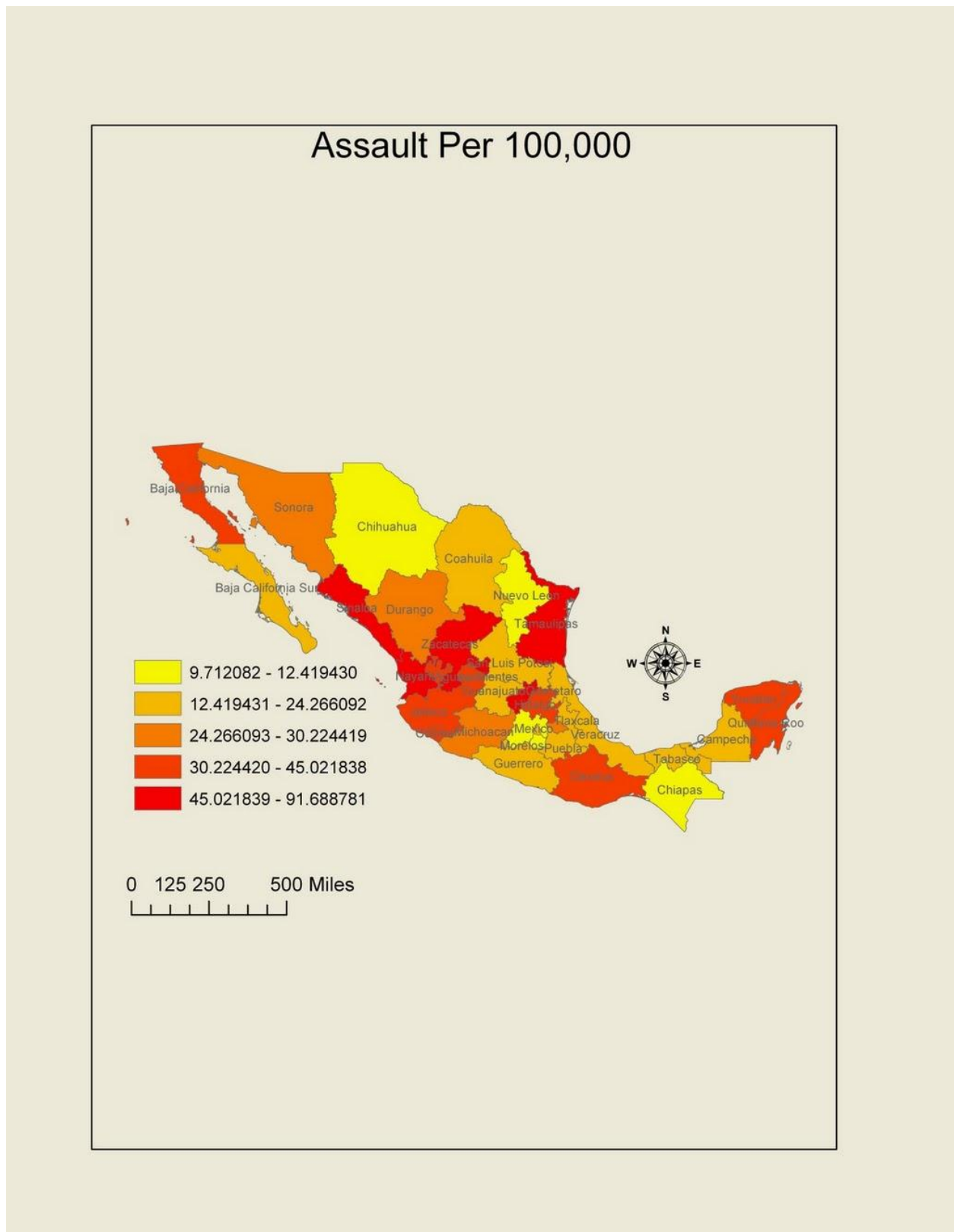**Figure 3. Thefts per 100,000 inhabitants, 2009**

Figure 4. Assaults per 100,000 inhabitants, 2009
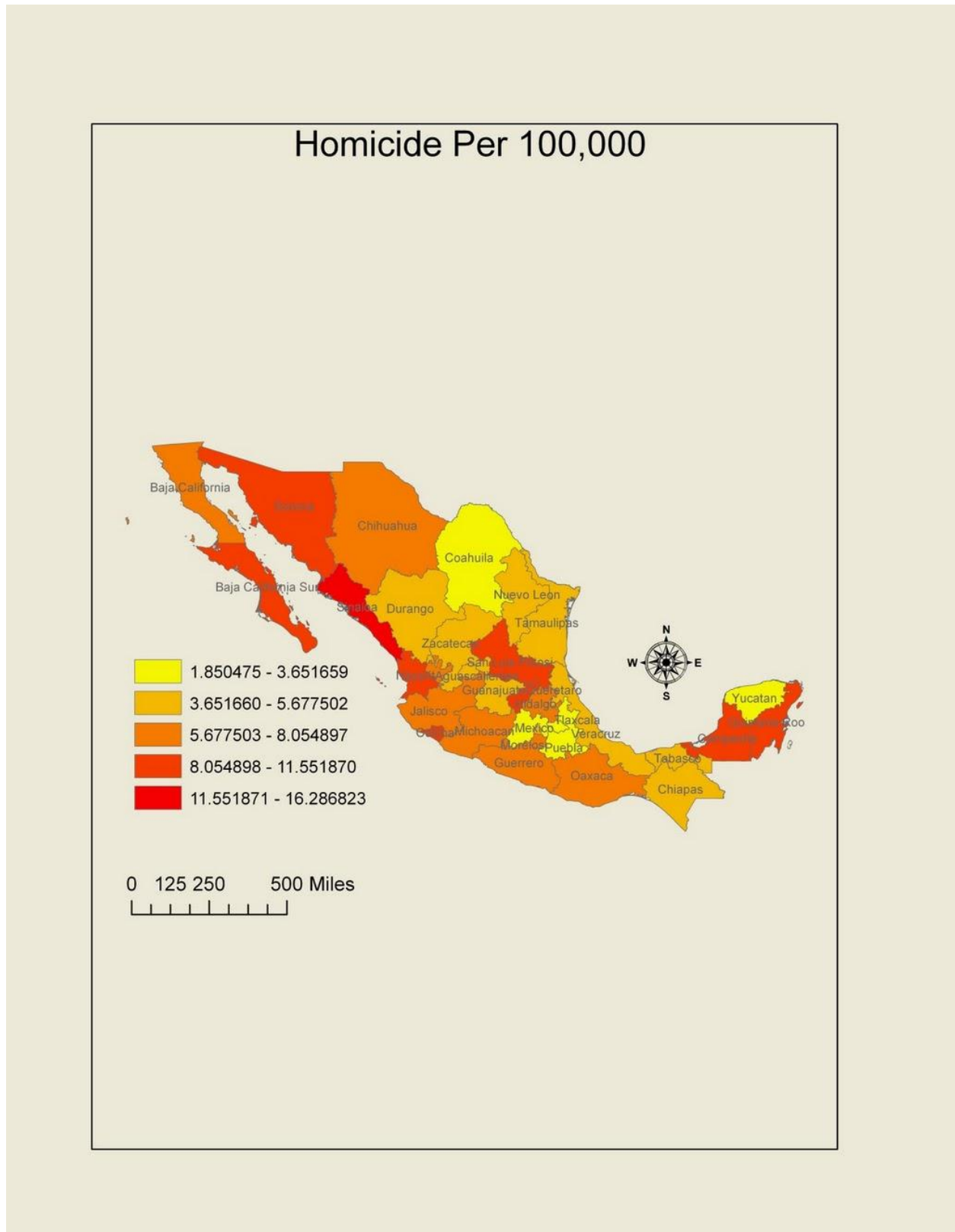
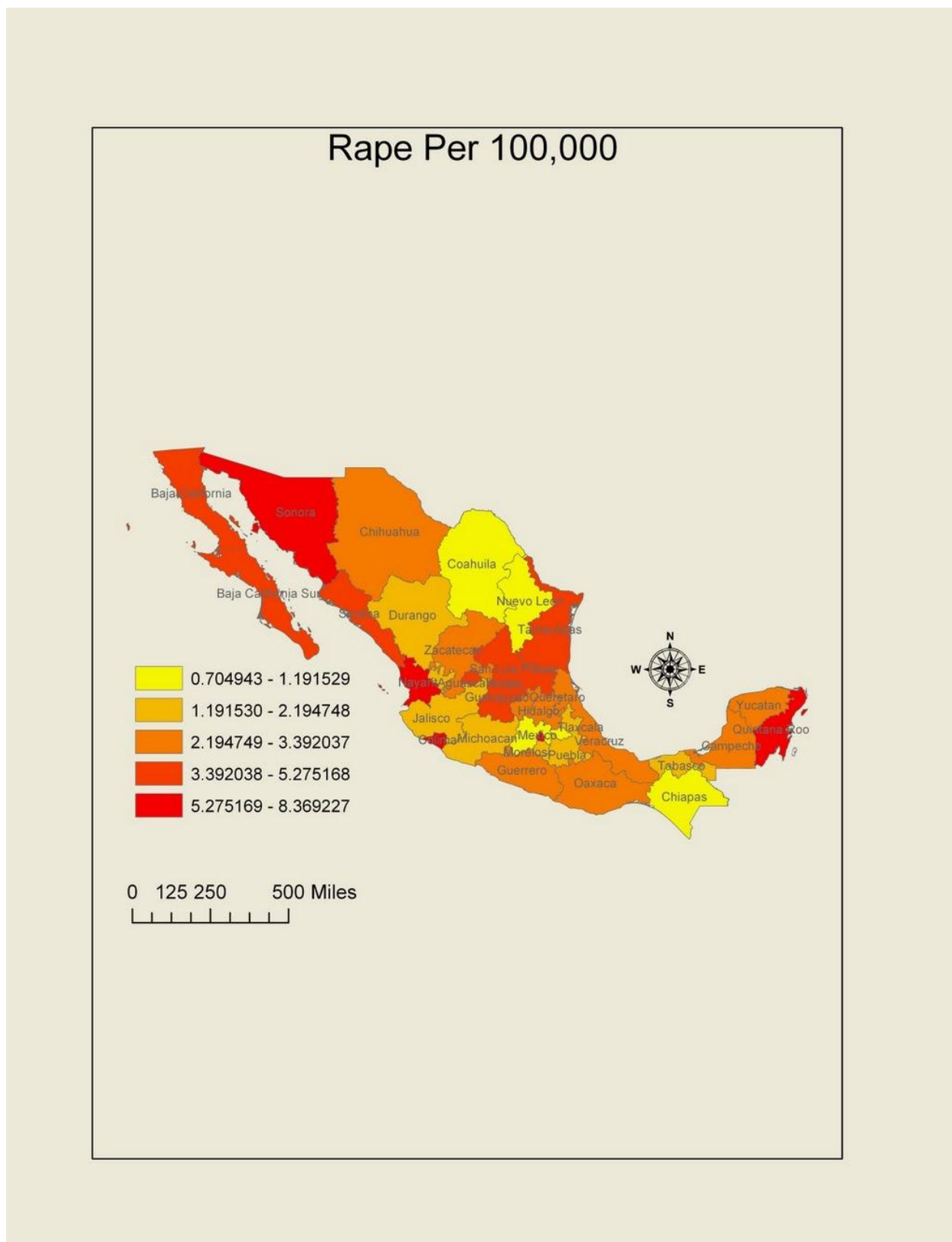**Figure 5. Homicides per 100,000 inhabitants, 2009**

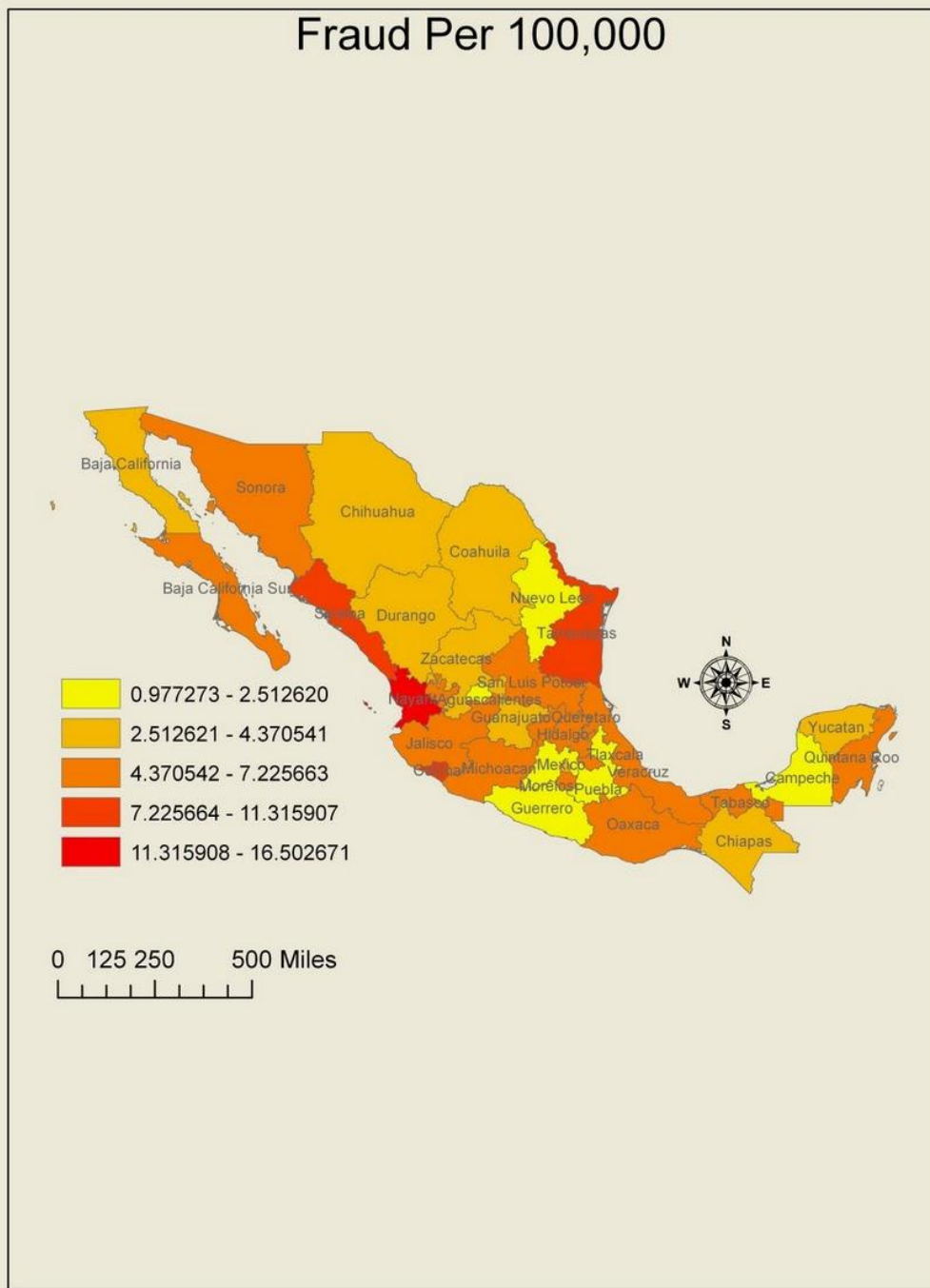**Figure 6. Rapes per 100,000 inhabitants, 2009**

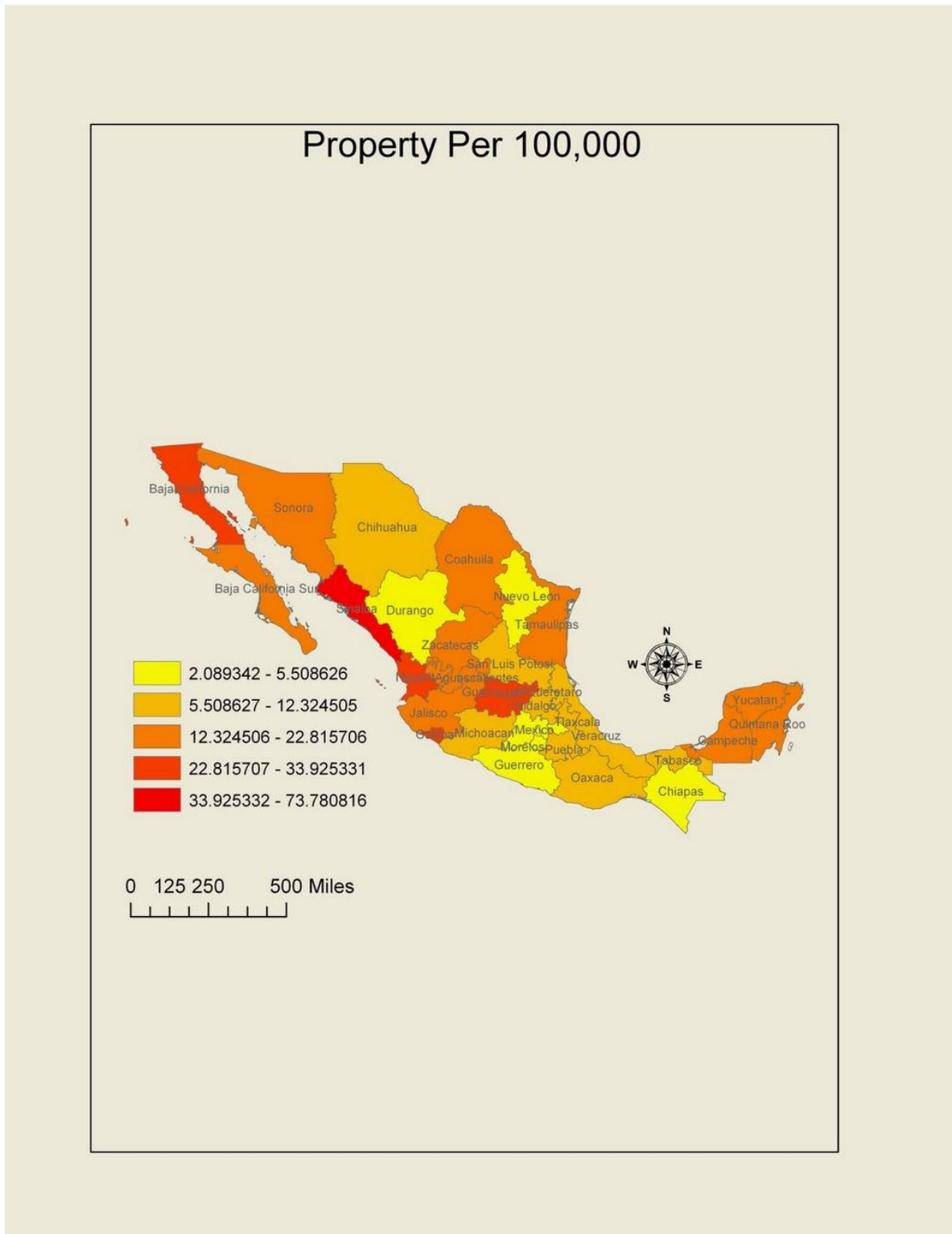**Figure 7. Cases of Fraud per 100,000 inhabitants, 2009**

Figure 8. Cases of property damage per 100,000 inhabitants, 2009

W is the spatial weight matrix. For a cross-sectional dataset, the weight matrix is a block-diagonal N × N matrix, where N is the number of cross-sections, here denoted as W_t.

$$W_t = \begin{pmatrix} 0 & w_{12} & \dots & w_{1N} \\ w_{21} & 0 & \dots & w_{2N} \\ \vdots & \vdots & \ddots & \vdots \\ w_{N1} & w_{N2} & \dots & 0 \end{pmatrix}$$

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A panel dataset is used in this study, so the full weight matrix W is the block-diagonal NT × NT matrix

$$W = I_T \otimes W_t$$

where T is the number of time periods, NT=N*T, l_T is a T ×T identity matrix, and t denotes time period, it can be 1, 2, …, T. In this study, W_t is a binary contiguity weight matrix. If two states have a common border, the element in W_t is set equal to 1, otherwise equal to 0. Here, W_t does not vary over time, and thus it is the same across observation time periods.Following the common practice, the weight matrix W is standardized so that each row sums to unity.

The variable $W \cdot crime$ is the spatially weighted average of crime in neighbor states. A positive ρ means that a particular state'scrime increases (decreases) when neighbor states' crime increases (decreases). A negative ρ means that a particular state's crime decreases (increases) when neighbor states' crime increases (decreases). Similar interpretations apply to the variable$W \cdot totalcrime$, which is the spatially weighted average of total crime in neighbor states, not just the specific crime in question.A summary of the variables, their means and standard deviations, are presented in Table 2.

Table 2
Sample Statistics

Variable	Description	Mean	Std. Deviation
Theft	Theft per 100,000 inhabitants	71.64	47.17
Assault	Assaults per 100,000 inhabitants	36.63	18.18
Fraud	Fraud per 100,000 inhabitants	5.64	3.30
Homicide	Homicides per 100,000 inhabitants	6.87	2.89
Property	Damage to Property per 100,000 inhabitants	17.04	12.43
Rape	Rapes per 100,000 inhabitants	4.75	2.79
Total Crime	Total crimes per 100,000 inhabitants	192.99	96.74
GDP	Real GDP per 100,000 inhabitants (billions-Pesos)	8.24	6.78
Security	Real Federal grants for public security per 100,000 inhabitants (millions- Pesos)	0.05	0.03
Inmates	Inmates per 100,000 inhabitants	207.17	125.36

The spatial lag model for each type of crime was estimated using a panel dataset which consisted of 32 cross sectional units (31 states and the federal district) and 6 time periods (2004 to 2009). Therefore the total number of observations was 192 (32x6) for each crime equation. Fixed state effects are included in the spatial econometrics estimation. The results are presented in Table 3.

The coefficient of the variable GDP was only significant in the theft equation. An increase in real per-capita GDP can have two effects on theft. 1) It can lower theft since higher levels of GDP are associated with growing incomes, jobs, and opportunities. The cost or sacrifice involved in committing theft has been increased. 2) It can increase theft in a state since those individuals who are unemployed in other regions of the nation may be attracted to the state with growing incomes. Unemployed individuals would face a lower opportunity cost of committing crimes compared to those employed. The results in Table 3 indicate that the second effect has dominated the first one.

Table 3: Fixed Effects Spatial Lag Models†

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Theft Fraud			Assault					
Variable	Coefficient	t-statistic	Variable	Coefficient	t-statistic	Variable	Coefficient	t-statistic
GDP	0.220*	2.22	GDP	-0.023	-0.315	GDP	-0.012	-0.908
Security	-0.115	-0.229	Security	0.185	0.490	Security	0.020	0.314
Inmates	-69.163	-0.478	Inmates	-416.039*	-3.573	Inmates	-96.153*	-4.639
W*totalcrime	0.646*	6.658	W*totalcrime	0.047	0.692	W*totalcrime	0.009	0.801
rho	-0.005	-0.048	rho	-0.009	-0.085	rho	-0.109	-1.018

Homicide			Property			Rape		
Variable	Coefficient	t-statistic	Variable	Coefficient	t-statistic	Variable	Coefficient	t-statistic
GDP	0.008	0.747	GDP	-0.013	-0.239	GDP	0.022	1.878
Security	-0.022	-0.398	Security	-0.047	-0.171	Security	0.009	0.151
Inmates	-35.488*	-2.205	Inmates	-79.538	-1.011	Inmates	-78.470*	-4.078
W*totalcrime	0.004	0.417	W*totalcrime	0.040	0.833	W*totalcrime	0.014	1.348
rho	0.093	0.911	rho	-0.039	-0.367	rho	0.179	1.849

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*Denotes significance at the 0.05 level
†Intercepts are not reported
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The coefficient of the variable inmate was negative and significant in the cases of assault, fraud, homicide, and rape. As the percent of the population incarcerated in the rest of the nation increases, these state crimes are reduced. As Levitt (2004) has stated, there are two effects at work. First, higher incarceration rates take criminals off the street. Second, higher incarceration rates serve as a deterrent to would-be criminals. The result is reduced crime.

Theft in neighboring states did not affect theft in a given state and assaults, fraud, homicide, damage to property, and rape, had no individual spillover effects into other states given that the estimate of rho was insignificant in all cases. Total crime in neighboring states, on the other hand, which included all types of crimes and drug-related violence, had a positive and significant effect on theft in a given state but did not affect other crimes such as assault, homicide, rape, fraud, and damage to property. These results show that not all crimes are spilling over to other states, only those that provide funds to finance the purchase of drugs and other cartel operations including the hiring of enforcement gangs.

4) *Discussion and Conclusions*

Ever since President Felipe Calderon declared a war on drugs in December 2006, there has been a surge of drug-related violence and crimes as the drug cartels and their gangs have fought for territory and corridors into the U.S. market. One estimate puts the number of individuals killed due to drug-related violence at 40,000 since President Calderon has been in office.[16]The purpose of this paper was to determine if criminal activity in a given state in Mexico was affected by crime in neighboring states of Mexico.

Drug-related violence has broken out in the northern, western, and eastern parts of the country. Along with this violence, the cartels have engaged in other crimes such as kidnapping for ransom, theft, human smuggling, and extortion, to raise funds to purchase drugs they sell and pay for gangs they hire to torture, murder, and threaten anyone who stands in their way. The results from this study have shown that when the total number of crimes in surrounding states is high, there are indeed, spillover effects. While crimes such as homicide, assault, rape, damage to property, and fraud, are not significantly affected by surrounding violence and crime, theft is affected.

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[16] See BBC News: Latin America & Caribbean (2011).

It is a source of funds and has been used to further enhance the operations of criminal organizations in surrounding states where crime and drug-related violence are high. In Figure 2, the states with the highest levels of total crime per 100,000 inhabitants include Baja California Norte, Baja California Sur, Sinaloa, Sonora, Nayarit, Tamaulipas, and QuitanaRoo.Viridiana Rios and David Shirk stated:

> Increases in violence tend to vary over time in certain states and municipalities.Tijuana, in the state of Baja California (Norte), is the most widely cited example; in 2008, violence from organized crime increased by over 270% before dropping to moderately higher levels than in the past…San Luis Potosi jumped from 8 homicides in 2009 to 135 in 2010, Tamaulipas increased from 90 to 1,209, Nayarit from 37 to 377, and Nuevo Leon increased from 112 to 620…Baja California Sur went from one organized crime killing in 2009 to ten in 2010. (p. 12).

All of this crime and violence has spilled over in the form of high levels of theft per 100,000 inhabitants in the surrounding states of Sinaloa, Sonora, Baja California Norte, Baja California Sur, QuitanaRoo, and Yucatan. Gurerro, Oxaca, Chiapas, Puebla, Tlaxcala, Hidalgo, and Queretaro,are among those states with the lowest total crime rates and being neighboring states, have some of the lowest theft rates. Veracruz has a low theft rate and its neighbors, Chiapas, Oaxaca, and Puebla, are among those states with the lowest total crime rates. Figure 2 for total number of crimes per 100,000 inhabitants and Figure 3 for number of thefts per 100,000 inhabitants appear to roughly tell the same story: states with high theft rates have neighboring states with high total crime rates and a high incidence of drug-related violence.Similar stories, however, are not the case for other crimes. Oaxaca for example, has high rates of assault, homicide, rape, fraud, and damage to property. Yet its neighbors, Chiapas, Guerrero, and Puebla, have relatively low total crime rates.

From a regional development perspective, crime in Mexico confers benefits and costs on Mexican states and Mexico's economy. Rios (2007) concluded that illegal drug trafficking in Mexico has brought in cash flows and investment to certain regions. The costs, however, including drug abuse, violence and corruption, outweigh the benefits. She estimated an annual loss to Mexico of $4.3 billion. There have also been thousands of businesses in Mexico that have either closed or moved to other areas including the U.S. Tourism, in particular, has been especially hard hit in areas such as Acapulco and Tijuana. In order for states in Mexico toexperience substantial economic growth and development, crime and drug-related violence are problems that will need to be addressed. Not only does a state face its own problems with crime which affects its growth, but as the results of this study have shown, a state is affected by crime in neighboring states. What can be done to lower crime rates in states of Mexico? The results of this study indicate that higher incarceration rates have lowered rates of assault, fraud, homicide, and rape. Criminals are being taken off the street and actions of the police and military are having an effect on crime.

In regions of Mexico where drug-related violence and the total number of crimes committed per 100,000 inhabitants are high, this study has shown that spillover effects are occurring with respect to theft. While individual states may lack the power to effectively fight inter-state cartel crime, a coordinated national effort may be successful. This could take the form of increased military activity which was started during Calderon's presidency. Another strategy is discussed by Seelke and Finklea (2011). They stated

> While some have urged the Calderon government to continue its current strategy with slight modifications, others have suggested that the strategy be completely revised. Calderon Administration officials consulted with local and state officials to change the government's military-led strategy for Ciudad Juarez after the massacre of 15 civilians, many of them teenagers, at a private home there in late January 2010. The new strategy that the Calderon government has implemented, "We are All Juarez," involves significant federal government investments in education, job training, and community development programs to help address some of the underlying factors that have contributed to violence in the city. It also involved an April 2010 shift from military to federal police control over security efforts in the city, a strategy shift which appears to have yielded some results. (p. 5)

STRATFOR (Dec. 2010) stated that before the balance of power among Mexico's drug cartels was upset in December 2006, drug-related violence was nowhere near what it is today. To restore that balance of power, either a dominant cartel must emerge or there must be some sort of cooperative agreement reached between the warring factions.

In either case, according to STRATFOR, there would be a reduction in kidnappings, theft, homicides, and other crimes that distract the cartels from their main activity of drug trafficking. Finally, if a dominant cartel was to emerge, it would need the support from the Mexican government to prevent future encroachments upon the established territory of the dominant cartel. STRATFOR and others point out that rival cartels have accused the Mexican government of favoring the Sinaloa cartel which has led to their success and failure of their rivals.

Diaz (2011) stated that the drug-related violence in Tijuana, Mexico has been significantly reduced from what is used to be in 2008. The main reason for this is that the Sinaolo cartel has become the dominant cartel in the area. She stated,

> Tijuana's recovery is a rare bright spot for the government but analysts say there is a more subtle reality—the decline of the Arellano Felix gang has allowed the Sinaloa cartel, Mexico's strongest, to move in and take control. With a clear winner emerging from a turf war, violence has slowed, but the drugs trade is still flourishing here.   "The drugs continue flowing, without a doubt. What has diminished is violence between criminal groups," said Edgardo Buscaglia, a security expert at Mexico's ITAM university…A troubling truth is that violence tends to ease when one cartel establishes control in an area. (pp.2-3).

A similar situation has occurred in Ciudad Juarez, sometimes referred to as one of the most dangerous places in the world outside of war zones. The Associated Press (2010) reported the following.

> After a two-year battle that has killed more than 5,000 people, Mexico's most powerful kingpin now controls the coveted trafficking routes through Ciudad Juarez. That conclusion by U.S. intelligence adds to evidence that Joaquin "El Chapo" Guzman's Sinaloa cartel is winning Mexico's drug war. (p. 1).

A report on June 15, 2011 by Control-Risks stated that Ciudad Juarez is now experiencing a period of relative peace. One possible solution to Mexico's drug-related violence may indeed be one dominant cartel which is informally backed by the government.

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