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The Impact of Reform on the Criminal Justice System in Mexico

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LABOR AND POPULATION

The Impact of Reform on the Criminal Justice System in Mexico

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Abstract

This paper studies the impact of judicial reform in Mexico. It does so using a survey about crime victimization and perceptions of insecurity (Encuesta Nacional Sobre la Inseguridad, ENSI) from 2005, 2008, and 2009 in eleven Mexican cities, three of which implemented the reform in 2007 and 2008. It shows judicial reform reduces victimization but also lowers perceptions of security. These results are robust when considering other subsamples that include only northern cities. In the northern cities, judicial reform is associated with lower trust and lower grades given to the local and preventive federal police. Judicial reform is associated with better grades for the agents of the Public Prosecution Office, although not in Juarez. Judicial reform is also associated with a decrease in bribery of the transit police in northern cities. Using crime level data, we find a significant increase in crime reporting following judicial reform in Chihuahua but a decrease in Juarez. When considering the full sample, we also find that judicial reform is associated with an increase in the probability that the Public Prosecution Office will investigate reported crimes. Nonetheless, this result holds when only Juarez is considered as the treatment city for the different subsamples evaluated.

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I. Introduction

Mexico's judicial reform of 2008 has been considered the most important reform to the criminal justice system since the establishment of the Constitution of 1917 (Comision Nacional de Tribunales Superiores de Justicia de los Estados Unidos Mexicanos, 2008). The judicial system plays a key role ensuring the rule of law and the security of individuals. As a result, judicial reform may have important socio-economic effects in Mexico.

Under the reform, all Mexican states must change their criminal justice system from an inquisitorial to an accusatorial system by 2016. In an accusatorial system, which is common in democratic states, judges evaluate evidence in an open trial and there is a separation between the institution that presents the accusation and the one that makes the judgment (Medina Perea et al., 2009). Oral trials and the separation are not present in the inquisitorial system. Several Mexican states reformed their judicial systems before 2008. The state of Nuevo Leon approved a new penal code in 2004, and the states of Chihuahua, Mexico, and Oaxaca approved a new penal code in 2006 (Vazquez Marin and Rivas Acuna, 2008). These earlier state reforms provided the foundations for federal judicial reform. As of July of 2011, seven states were operating under the new judicial system, and four more were expected to introduce it in 2011 (Secretaria Tecnica [SETEC] 2012).[1]

This paper analyzes the impact of judicial reform on the criminal justice system in Mexico. In particular, it evaluates the impact of judicial reform on crime and individual experiences with the criminal justice system. We use a crime victimization survey, Encuesta Nacional Sobre la Inseguridad (ENSI), which provides information on officially reported and unreported crimes.

[1] No more recent information is available given government restrictions on information that can be provided before a presidential election. As of this writing, the next presidential election in Mexico was to occur in July 2012.

This study is unique for both Mexico and Latin America. There has been no empirical analysis of this kind for Mexico. Because this study uses crime victimization data before and after reform in major Mexican cities, it is unique among studies of judicial reform in Latin America. Evaluating the impact of judicial reform is an important policy issue for Mexico given both high crime rates and high levels of distrust in institutions. We analyze ENSI data from 2005, 2008, and 2009 for eleven cities. We consider the 2005 data to be data from the pre-reform period and 2008 and 2009 data to be the post-reform period. Furthermore, because reforms were implemented in three of these eleven cities (Chihuahua, Juarez, and Cuernavaca) in 2007 and 2008, we consider these cities to be the treatment cities in our analysis.

We find that judicial reform diminishes the probability that a person is a victim of crime but that it also lowers perceptions of security. These results persist when considering only northern cities, which have seen increasing levels of crime related to drug-trafficking activity. Our analysis also shows that judicial reform is associated with lower levels of trust and lower grades given to local and preventive federal police in the northern cities. Judicial reform is associated with better grades given to the agents of the Public Prosecution Office, but not in Juarez. Judicial reform is also associated with a decrease the number of bribes asked by the transit police in northern cities.

When working with crime level data, we found a significant increase in crime reporting in Chihuahua but a decrease in Juarez following judicial reform. We also found judicial reform is associated with an increase in the probability that the Public Prosecution Office will investigate a reported crime when the full sample is considered, but this result only holds when Juarez is considered as the treatment city in the other subsamples.

Before reviewing these results in full, we first review the literature on judicial reform, focusing on the Mexican case. We then discuss the data and methods we use in this analysis. We then present our results in more detail and conclude with policy and research implications.

II. Literature Review

A. Judicial Reform in the Mexican Context

Judicial reform is of special interest to Latin America because countries in the region have weak legal systems that undermine the legitimacy of institutions (Esquirol, 2008). Judicial reform is also important for this region because an effective judicial system may reduce corruption and deter crime (Naggle, 2010; Shirk, 2011a; Shirk, 2011b). Latin America in general suffers from high levels of corruption. In recent decades, it has also experienced a significant increase in crime. Homicide rates in Latin American countries are more than twice the world average, making the region one of the most violent in the world (Di Tella et al., 2010a). Insecurity is currently an important policy issue in Latin America, and reform to the judicial system has become a top priority for policymakers.

Several Latin American countries, including Argentina, Bolivia, Colombia, Costa Rica, Chile, Mexico, and Peru, have implemented judicial reforms to transform their criminal justice system towards an accusatorial system. One of the key features of such reform is the introduction of oral proceedings. Through oral proceedings, the decision of a judge is based on the evidence presented in an open oral trial, and not on written reports as done in the past with the inquisitorial system. In an accusatory system there is a separation between the institution that presents the accusation and the one that makes the judgment, which is an important difference from the inquisitorial system. An oral process is likely to improve civic culture and provide greater

protection to individual rights of the victim and the offender (Ramirez Martinez, 2005; Romero Tequextle, 2006). Under the new system, prosecutors must publicly argue cases, which in turn may lead to higher professionalization and avoidance of bad practices such as arbitrary detentions and fabrication of evidence (Uildriks, 2010, citing Magaloni, 2008). With oral proceedings, the judge will have direct contact with the parties involved and the administration of proofs, which should lead to fairer verdicts and greater justice in the process (Egas Peña, 2003). Altogether, this new criminal justice system is likely to be more efficient, reduce corruption, and increase transparency (Carbonell and Ochoa Reza, 2008). Judicial reform in Latin America can also strengthen institutions and improve governance, leading not only to greater security but also to greater economic development.

Transforming the criminal justice system has been a top priority for policymakers in Mexico for several reasons, one of them being the increase on insecurity in the region. The Latin American Public Opinion Project (LAPOP, 2011) indicates 17 percent of population was a victim of crime in 2004, where 26 percent were in 2010. In relation to perceptions of insecurity in Mexico, the Encuesta Nacional Sobre la Inseguridad (ENSI 7, 2010) found that 59 percent of the population felt insecure in 2007 and that 65 percent did so in 2008 and 2009. Similarly, official statistics show increased homicide rates for Mexican states plagued by organized crime and drug trafficking. Using statistics from the Instituto Ciudadano de Estudios Sobre la Inseguridad (ICESI, 2011a), we find large percentage increases in homicides per 100,000 habitants between 2006 and 2010 for the border states of Baja California (62%), Chihuahua (470%), Coahuila (217%), Sonora (165%), Tamaulipas (98%) and Nuevo Leon (337%). Statistics on homicides related to organized crime also show an upward trend, with the number of homicides related to organized crime increasing from 2,829 in 2007 to 15,227 in 2010

(Presidencia de la Republica, 2011).[2] In sum, crime has become an increasingly important policy issue in Mexico, highlighting the need to determine what policy changes could help reduce it.

The federal judicial reform approved in 2008 was grounded by judicial reform occurring at the state level. The state of Chihuahua was one of the pioneers on judicial reform. It adopted a new penal code in 2006 and introduced it to the judicial district of Morelos (including the city of Chihuahua) in January 2007, the judicial district of Bravos (including Juarez) in January 2008, and in all other districts in July 2008. This penal code has been considered "the most advanced, progressive criminal justice code in Latin America" (USAID, 2007, 11). Baja California and Oaxaca have similarly introduced reform by area over time as well. Nuevo Leon has changed its penal code for certain felonies and is moving towards applying the new code to all felonies by 2016, as required by federal law. The 2008 legislation requires all states function under the new judicial system by 2016.

The reform, a change in Article 20 of the Mexican Constitutions, requires that the judicial process be accusatory and oral and based on principles of publicity, contradiction, concentration, continuation, and immediacy.[3] Under these principles there will be an open trial (publicity), where both parties will present their arguments to the judge (contradiction), proceedings will be reduced to a minimum number (concentration) and be close to each other in time (continuation), and the resolution must be based on the proofs presented during the process (immediacy). The main changes associated with judicial reform in Mexico are: 1) oral proceedings to increase fairness and efficiency, 2) presumption of innocence to protect individual freedoms, 3) increased

[2] Statistics for 2011 and 2012 from this source are not available.
[3] Refer to Comisión Nacional de los Tribunales Superiores de Justicia de los Estados Unidos Mexicanos (2008) and Secretaria de Servicios Parlamentarios (2008) for a thorough review of of what the judicial reform of 2008 entails for Mexico.

role of the police in crime investigations to enhance effectiveness, and 5) tougher measures on acts of crime related to organized crime and drug trafficking.

Judicial reform in Mexico has been criticized on the grounds that it has been difficult to implement. One challenge of the reform has been the need for adequate infrastructure, training, and resources to implement it. Another challenge has been helping the general public understand how the new system works. Many Mexicans have blamed judicial reform for the significant increase in crime that coincided with it. This, in turn, has made its implementation more difficult (Ochoa Reza and Treviño de Hoyos, 2008). There has also been significant resistance to change resulting from the reform not considering those individuals who were to implement it and its failure to specify an evaluation process (Solis Delgadillo, 2010). Despite these challenges to the implementation of judicial reform, Mexico provides a natural laboratory to study its impact on crime, perceptions of insecurity, trust in institutions, and other outcomes.

B. The Impact of Judicial Reform – Theory and Evidence

Judicial reform should lead to a more transparent and efficient criminal justice system in Mexico, which in turn should result in greater trust and satisfaction with criminal justice institutions (e.g., police, prosecutors, and judges). By leading to greater confidence in criminal justice institutions, judicial reform should also help prevent and deter crime. Yet the literature on the impact of judicial reform is scant, and there are contradictory arguments about its effects on crime.

The judicial system is a key institution for promoting good governance, and consequently greater economic growth. An effective judicial system will keep government power under control, enforce property rights, and promote the rule of law (Messick, 1999). Yet developing

and designing adequate judicial reform is very challenging, with the development of econometric techniques to evaluate its effects particularly so (Messick, 1999). Evaluating the effects of judicial reform in Latin America is also especially difficult because of the lack of good data on crime and the criminal justice system (Cornelius and Shirk, 2007).

Judicial reform can be evaluated on three dimensions: 1) indicators related to the efficiency and transparency of the criminal justice system, 2) the interaction between individuals and the criminal justice system, and 3) crime. Evaluating the effect of judicial reform on indicators of efficiency and transparency can be done by examining speediness of processed cases and the quality of convictions (Pasara, 2009). Another way to evaluate this dimension is by determining whether oral proceedings are transparent and provide a fair process. Transparency and fairness can be evaluated by observing oral proceedings. A database of information for processed cases is very important for evaluating the impact of judicial reform. There are very few instances in which information of this nature has been collected.

Analysis of the effect of judicial reform on interactions between individuals and the criminal justice system should assess how reporting of crime varies with levels of trust and satisfaction with criminal justice institutions (Fajnzylber et al., 2000). Levels of crime reporting are considered a measure of institutional development (Soares, 2004), and provide information about access to justice (Powers, 2008). In Mexico, ENSI data indicate only 22 percent of crimes are officially reported (ICESI, 2011b), with individuals typically failing to report crimes because they feel it is futile to do so. Being a victim of crime or having perceptions of high insecurity can also reduce trust in institutions, particularly the police and judicial system (Blanco, 2011). Reducing such trust can lead to more unreported, and unpunished, crime.

Judicial reform may help reduce levels of crime. If criminals are rational, then they will use a cost-benefit analysis to determine whether to engage in criminal activity (Becker, 1968). Should changes in the criminal justice system lead to more reporting of crime and a higher probability of arrest and punishment for a crime, then criminal justice reform would result in lower levels of crime (Lochner, 2007). In other words, criminal justice reform, ideally, would lead to greater costs for committing a crime.

Whether justice reform does lower crime this way is disputed. Pasara (2009) argues that while oral proceedings are more efficient, there is no evidence showing that judicial reform leads to lower crime. Rather, insecurity and crime result from social variables, and the contribution of reform to diminishing and deterring crime is limited (Duce and Perez Perdomo, 2003). That is, crime is a product of society and not of the judicial system.

Few studies have systematically evaluated the impact of judicial reform in Latin America. One of the few is Centro de Estudios de Justicia de las Américas' (CEJA, 2008) overview of judicial reform in Peru, Argentina, and Costa Rica. This study found judicial reform in Peru to be associated with a decrease in processed cases, but an increase in sentences. Reform helped unclog the Peruvian justice system and make it more efficient but was also is associated with greater perceptions of insecurity. Changes of the quality of audiences and decisions due to the reform were evaluated in Argentina (study focuses on Buenos Aires), and oral proceedings were observed with the purpose to determine how the reform works in Costa Rica. Based on these observations, CEJA (2008) concludes that judicial reform had positive effects on the processing of cases in Argentina and Costa Rica.

Empirical studies on the impact of judicial reform on the criminal justice system are also scarce. Within Latin America, Azócar and Undurraga (2005) assess the impact of judicial reform

on crime victimization, fear, crime reporting, and detentions in Chile during the early 2000s. While there are some data limitations to their analysis, they find no association between reform and levels of crime reporting, victimization, or fear. They do find that reform is associated with a greater number of detentions related to theft and aggression, but not with other types of crime. Mohor and Covarrubias (2006) similarly find no increase in crime victimization rates associated with the implementation of judicial reform in Chile. Examining regional changes in Chile, Brashear Tiede (2012) finds that judicial reform led to a reduction in the number of people incarcerated and an increase in economic growth.

In Mexico, there have been no empirical analyses on the impact of judicial reform. Nevertheless, Ingram et al. (2010) surveyed 276 judges, prosecutors, and public defenders in nine Mexican states about the reform. They found strong support for the traditional inquisitorial legal system. Nevertheless, while those interviewed were skeptical about judicial reform, they also believed that the new system would be more efficient and less corrupt.

The Encuesta de Ciudadania, Democracia y Narcoviolencia (CIDENA, 2011) also provides information about perceptions on the criminal justice system for a representative sample of individuals at the national level and in the states of Chihuahua, Distrito Federal, Estado de Mexico, Guerrero, Jalisco, Michoacan and Nuevo Leon (states selected for their levels of violence). On a scale of 1 (very bad) to 10 (very good), respondents gave the criminal justice system in their state an average grade of 3.2. Only 28 percent of respondents said they had heard about judicial reform requiring oral proceedings. In Chihuahua, which is one of the most advanced states in relation to judicial reform, only 15 percent said they had heard of it. Among all respondents, 33 percent said they believed such reform would help improve the judicial system, and 37 percent believed that it would help only a little, while 22 percent said it would

make no difference, and 3 percent that it would make the judicial system worse. In Chihuahua, only 8 percent believe that judicial reform will help to improve the judicial system, 49 percent believe that it will help to improve the system a little, 23 percent said it would make no difference, and 18 percent believe that it would make the system worse.

These surveys indicate there is some resistance to judicial reform in Mexico. While they provide some information about the perceived performance of the criminal justice system under the judicial reform, an empirical analysis that evaluates different dimensions can add new insights. Below we discuss the methods of ours and data used in this analysis.

III. Methodology and Data

This paper analyzes the impact of judicial reform in Mexico on crime victimization, perceptions of insecurity, trust in institutions, and other outcomes related to the criminal justice system. There is no research of this sort that empirically evaluates judicial reform and draws on Mexican data. As a result, we follow the approach taken of Berthelon and Kruger (2011) in assessing the effect of a social reform gradually implemented by region in Chile, specifically that of lengthening the school day on adolescent motherhood and crime. Like that reform, judicial reform in Mexico has been gradually implemented by state, which provides regional and time variations that should be uncorrelated with crime. Our model of crime victimization is based on Gaviria and Pages' (2002) work as well.

We use data mainly from the ENSI, a Mexican national survey of individuals on crime victimization and perceptions of insecurity, and account for differences in the effects of judicial reform by city. ENSI data is representative at the city level for 2004 (ENSI-3), 2005 (ENSI-4),

2008 (ENSI-6), and 2009 (ENSI-7).[4] Table 1 shows the cities for which ENSI data is available consistently over time, as well as the status of state judicial reform in each.

We used a differences-in-differences (DD) identification strategy to estimate the effect of judicial reform. We use repeated cross-section surveys with individual level observations for the major cities in which there is data available consistently over time. We consider data from 2005 (ENSI-4) to be for the pre-reform period and data from 2008 (ENSI-6) and 2009 (ENSI-7) for the post-reform period.[5]

We select 11 cities for this analysis based on data availability and judicial reform status. Treatment cities are those that passed judicial reform before 2009: Chihuahua, Juarez, and Cuernavaca. Control cities are those that did not implement judicial reform before 2009: Acapulco, Cancun, Distrito Federal, Culiacan, Guadalajara, Mexicali, Oaxaca, and Tijuana.

Because of regional differences in economic and security conditions, we also estimate the model with a subset of northern cities (Chihuahua, Juarez, Mexicali and Tijuana) to make treatment and control cities comparable. Because the implementation of reform is not likely to be identical in each city, we consider the treatment cities of Chihuahua and Juarez separately in some cases. While there is consistent data for Monterrey and Toluca, in Monterrey the new criminal code only applies to certain crimes, and Toluca passed judicial reform in October 2009, which is late in the post-reform period considered in this analysis (the last wave refers to crime taking place in 2009).[6] For these reasons, these two cities are not considered in the sample.

[4] The "reference year" is the one for which respondents provide information. The survey is usually conducted one year after the reference year.
[5] The post-reform period for Chihuahua and Juarez considers 2008 and 2009. For Cuernavaca, the post-reform period considers only 2009.
[6] Including data from other counties could increase the number of observations. Nevertheless, because it is important to identify the status of judicial reform at the city level, it is better to include in the estimations only observations

For the empirical strategy to work, the outcome variable must show a change over time. Table 2, presenting the percentage of the population that reported being the victim of a crime over time, shows such variation, as does Figure 1, which shows trends in victimization in cities implementing reform before 2009. Both also show lower victimization after the implementation of reform. Figure 2 presents the crime victimization percentages for the cities that did not implement the reform, where the downward trend is not as marked as in Figure 1.Thus, there is variation allowing us to test the impact of judicial reform. Because of the shifts between 2004 and 2005 in victimization as measured by the ENSI survey, we include only observations for 2005 in assessing the pre-reform period.

We first analyze whether judicial reform status in the city where a person (18 years and older) resides has an impact on the likelihood that she is a victim of crime. We do so using the specification

$$Y_{ijt} = \propto + \beta JR_{jt} + \delta X_{ijt} + \mu M_{jt} + \gamma C_j + \tau T_i + \rho C_j T_i + \varepsilon_{ijt} \qquad (1)$$

where i=1,2,…,I_t and t = 1,2,…,T. Y_{ijt} represents the value of the dependent variable for the i_{th} person in the t_{th} survey in the j city. I_t denotes sample size of the t_{th} survey. α is a vector of constants, X represents a set of variables related to individual characteristics that are presumed to affect the dependent variable, M represents a set of time varying city level characteristics, C represents a set of city dummies, T represents a set of time dummies, CT is a vector of city-year dummy variables that control for city-year trends, and ε_{ijt} represents the error terms for the i_{th} person in the t_{th} survey in the j city. JR, which denotes judicial reform, is our variable of interest.

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where the status of reform is known. Not all waves provide good information on the county where the respondent resides, precluding us from including such observations in our analysis.

It is equal to 1 if a new penal code that introduces oral proceedings becomes law in a specific year and city.

In this model specification, the outcome variable mentioned above is related to crime victimization for the person in the t_{th} survey and the j city where she resides. This variable is equal to 1 if the individual has been a victim of crime in the state where she resides in a specific year, equal to zero otherwise. Unfortunately, it is not possible to know in the data whether the individual was a victim of crime in the city where she resides because this information is not available for all waves. Using the probability that a person has been a victim of crime in the state to determine crime rates in a specific city is not ideal, but it is a good proxy for crime at the city level, given that available ENSI data show that 96 to 98 percent of crime victimization takes place in an individual's city of residence.[7]

Other outcome variables we consider in the estimations are perceptions of security, trust in criminal justice institutions, how prevalent bribing is in these institutions, and performance grades respondents give to institutions. For perceptions of insecurity, we estimate the model using a dependent variable that is equal to one if the individual feels secure in the city where she resides but zero otherwise. We also consider a variable that is equal to one if the individual feels secure in the county where she resides but zero otherwise. We also estimate the model using a dummy variable equal to one if the individual perceived that the number of crimes decreased in the county where she resides (perceptions of a decrease on crime at the city level is not available).

[7] Ideally, we would include whether an individual officially reported a crime as an outcome variable and also control for the type of crime. Similarly, ideally we would have analyzed a data set that merged individual data with aggregate data on crime. This is not possible because of the structure of the dataset provided by ICESI and INEGI. Currently, ICESI does not have the resources to assist the researcher in making adjustments to the provided datasets, and the researcher is unable to do these adjustments without ICESI's help. An analysis using crime level data will provide some insights on these issues, as we later discuss.

We also consider variables on trust, bribing, and grades given to the local police, transit police, judicial police (state), preventive police (federal), Federal Investigation Agency (Agencia Federal de Investigacion, AFI), and agents of the Public Prosecution Office (Agentes del Ministerio Publico, MP).[8] Level of trust for a specific institution is measured with a three-point scale: a lot = 3, a little = 2, none = 1. The variable on bribing is equal to one if the individual was asked for a bribe from a person who works at a specific institution and zero otherwise. Grades for specific institutions are given on a 1 (worst) to 10 (best) scale.

Control variables in our analysis include gender (male=1, female=0), age (in years), age squared, education (primary education or less and secondary and high school education; reference group is those with post-secondary education), and employment status (employed and unemployed; reference group is those who are not in the labor force).[9] To control for city-level characteristics we use population levels and an index of underdevelopment (*indice de rezago*). We constructed aggregate city-level characteristic variables by summing population and averaging the index of underdevelopment values for all counties (*municipios*) that are considered

[8] For the variables related to trust and grade given to AFI, the data was adjusted for the last wave because AFI became the ministerial federal police in 2009. For the variables related to trust and grade given to agents of the Public Prosecution Office, the data was adjusted for the last wave because only ENSI-7 distinguishes between local and federal agents of this office. The trust and grade given to local agents of the Public Prosecution Office is used for the last wave. It is important to note that this survey specifically asks individuals if they are familiar with the institution for which they need to provide their level of trust (i.e. satisfaction). If the individual does not know the institution, then there is no information for this individual about their level of trust in it. This explains why the number of observations varies significantly in the estimations that use trust and grade given to institutions as dependent variable.

[9] For education, the primary education dummy is equal to 1 if the individual has primary education or less and zero otherwise. The secondary education dummy is equal to one if the individual has secondary or high school. High school more is equal to one if the individual attended school at higher levels than high school, which is the reference group in the estimations. These education dummies are not ideal because they cannot distinguish between graduating from secondary and high school and attaining a higher degree. We used these particular education dummies because one of the surveys, ENSI-4, has limited data on education. For the employment status dummies, those individuals who are retired, stay at home, or are incapacitated are included in the not in the labor force category. Those who were in the labor force but did not work were considered unemployed regardless of whether they were actively looking for a job (the survey does not have information about whether individuals were actively looking for a job). We do not use income variables because income levels are not included in the latest wave, ENSI-7.

part of the metropolitan areas.[10] We obtained population levels and the index of underdevelopment values from the Consejo Nacional de Evaluacion de la Politica de Desarrollo Social (CONEVAL, 2012).[11] Table 3 presents the summary statistics for the variables used in this part of the analysis for our 11 cities.

We use a Logit estimator for those estimations where the outcome variable is a dichotomous variable (crime victimization, perceptions of security, and bribing). We use an Ordered Logit for those estimations where we have an ordered categorical outcome variable (trust and grade given to institutions). We also use statistical models for complex sample design surveys in a repeated cross section framework, considering weights for individuals and unique primary sampling units (PSUs) in each wave. We account for stratification only for the crime victimization and perceptions of insecurity models. For the other estimations, stratification is not taken into account because a stratum with a single PSU is found.[12] Not considering stratification is not a problem because using strata tends to decrease standard errors. Thus, estimates not accounting for stratification provide larger standard errors, resulting in a more conservative approach for evaluating significance.[13]

To test for robustness, we explore different samples and model specifications. First, we use four different samples for analyzing the impact of judicial reform on crime victimization. Initially, we estimate the model using the full sample discussed before (11 cities). Because, as noted, the northern states have seen increasing crime due to drug trafficking activity, the sample

[10] We use the definition provided by ICESI for ENSI-6 to determine which counties compose each metro area.
[11] This data is only available for the years 2005 and 2010. Thus, the value of these indicators in 2005 is used for the pre-reform period (ENSI-4-2005), and the value in 2010 for the post-reform period (ENSI-6-2008 and ENSI-7-2009). Population levels are in 100,000 units.
[12] While there is the possibility that a single PSU is merged with an adjacent PSU, this is problematic because the existence of single PSU varies depending on the dependent variable used.
[13] For more discussion on how to apply statistical models for complex survey designs in a repeated cross section refer to Firebaugh (1997) and http://www.stata.com/statalist/archive/2008-10/msg00521.html.

used for estimations is restricted to cities in the northern states of Baja California (control cities: Mexicali and Tijuana) and Chihuahua (treatment cities: Chihuahua and Juarez). Judicial reform is also not expected to be identical from city to city. Thus, to determine whether there is a differential effect of the reform in Chihuahua and Juarez, we estimate the model using two control northern cities (Mexicali and Tijuana)and one treatment city at a time (Chihuahua or Juarez). Because there is significant regional variation in relation to trust on institutions, we restrict the estimation to northern cities in Baja California and Chihuahua when estimating the models that have trust, bribe, and grade given to institutions as dependent variables.[14] Second, when assessing the impact of judicial reform on trust and grade given to institutions, we restrict the sample to those individuals who have been a victim of crime in the state.[15] Third, in order to test whether the impact of judicial reform on crime varies over time, we use a variable denoted as JR_months, equal to the number of months since the reform was implemented in the respondent's city. We also include JR_1year, equal to one if the reform has been in place for more than a year. Through the addition of these terms separately in equation 1, we will explore whether the impact of judicial reform changes over time.[16] Focusing on the four northern cities, we also explore whether the impact of reform in 2008 differs from that in 2009.

This study also analyzes whether judicial reform has affected the probability that an individual reports a crime and how the reported crime is processed. To do this, we use a constructed dataset that provides information about each crime, including whether the individual

[14] See Blanco (2011) for discussion on regional differences in relation to trust on institutions in Mexico.
[15] Ideally for this part of the analysis we would have estimated the model only for those individuals who denounced a crime. This would allow us to see whether there is a difference on trust and grade given to the institutions for those individuals who had direct contact with the criminal justice system. Unfortunately, due to the structure of the dataset, we are not able to distinguish those individuals who denounced a crime in this part of the analysis.
[16] For these variables we considered the beginning of the year as a cut-off point. For example, for the variable JR_months, its value is equal to 12 for Chihuahua in 2008 and to 24 in 2009 (reform in Chihuahua was implemented in January of 2008). For the JR_1year variable, its value is equal to 1 for Chihuahua in 2008 and 2009.

reported it and whether the Public Prosecution Office started an investigation. For some ENSI waves, there is also information about what happened after the individual reported the crime, as well as why the individuals did not report a crime. Through the use of this information, we will be able to see whether cases are processed more efficiently in those cities where reform takes place. In this part of the analysis, where we evaluate the DD change of crime reporting and outcomes before and after judicial reform, we use methods similar to those used by Di Tella et al. (2010b). Table 4 presents the proportions of the different types of crimes in ENSI waves for the 11 cities mentioned above, showing that robbery was, by far, the most commonly reported crime. We will distinguish later by types of crime, similarly to the approach used by Baumer and Lauritsen (2010), who distinguish between violent and property crimes.

For this part of the analysis, we mainly use the data from ENSI 4 (2005) and ENSI 7 (2009) waves. For ENSI 7, due to the structure of the dataset, we are able to use only information related to the last crime. When studying the impact of reform on the reasons why an individual did not report a crime and the investigation outcome of a reported crime, we use data from ENSI 3 (2004) wave for the pre-reform period because this information is not available in ENSI 4 (2005).

Regarding the outcome variables for our DD regression, we make the following hypotheses.

1) Crime victimization. – We expect that the new judicial system should diminish the probability of victimization because the new system promotes transparency and diminishes corruption. With a more transparent and efficient judicial system, we expect

that individuals will be more likely to report crime, which in turn should increase the probability of criminals being caught, leading to higher costs for committing crimes.

2) Perceptions of security. – We expect that judicial reform will have a positive effect because people will feel more secure with the new judicial system. Reduced levels of crime resulting from judicial reform might also help improve perceptions of insecurity. Nonetheless, if the new system is not well understood, individuals might feel more insecure, particularly to the extent they think presumption of innocence will eliminate preventive incarceration.

3) Trust, bribing, and grade given to institutions related to the criminal justice system. – Because the reform is supposed to provide a more efficient and fairer judicial process, we expect that trust and grades given to the performance of institutions related to the criminal justice system, especially the Public Prosecution Office, should improve with the reform. We also expect that reported attempts to induce a bribe will decrease with the reform. Nevertheless, reform can have no effect if individuals do not see the benefits of the new system. Reform can even have a negative effect on trust in institutions if individuals perceive that the new system provides more guarantees for the offender (presumption of innocence) or if they have a bad experience with the new system. We will evaluate the impact of judicial reform on trust, bribing and grade given by those individuals who have been a victim of crime.

Regarding the DD change in crime level data, we hypothesize the following effects:

1) Crime reporting. – We expect that the probability of reporting a crime will increase with the new judicial system. Individuals will perceive the new system as more efficient, and they will see that the benefit of reporting a crime outweighs the cost.

2) Starting an investigation. – We expect that with judicial reform the criminal justice system will become more efficient and more investigations will be undertaken for crimes that are officially reported. In the Mexican system, reporting a crime does not necessarily leads to an investigation. Nevertheless, with the change in the criminal justice system we expect that the Public Prosecution Office will be more accountable for reported crimes, and hence more likely to investigate them.

3) Reasons why the crime was not reported. – We expect that with judicial reform there will be a perceived increase on the efficiency of the criminal justice system, and a consequent decrease in the percentage of people who do not report a crime because they distrust authorities or find them to be hostile.

4) Outcome of reported crimes. – We expect that with judicial reform the criminal justice system will become more efficient and that there will be an improvement on the outcomes on reported crimes, such as less cases in which reported crimes result on no resolution.

IV. Results

A. Individual Level Data

Table 5 shows the estimates for the model using crime victimization as a dependent variable and a Logit estimator for complex sample design surveys, considering weights, strata,

and clusters.[17] Estimates in column 1 are based on the full sample for individuals in 11 cities. The coefficient for the judicial reform variable is negative and statistically significant at the 5 percent level. Most of the control variables have the expected sign in this estimation. The male dummy is positive and statistically significant, which is expected because males are more prone to crime. Age has no significant effect in this estimation, but age squared is negative and statistically significant at the 10 percent level. Primary education and secondary and high school education are negative and statistically significant at the 1 percent level (compared to individuals with more than high school). This is expected because education is likely correlated with socio-economic status and higher socioeconomic status might be associated with greater likelihood of criminal victimization. Among city-level characteristic variables, the underdevelopment index is positive and statistically significant at the 1 percent level. This is expected given that cities with lower levels of development are likely to experience more crime. The coefficient for population is statistically significant at the 5 percent level; its sign unexpectedly indicates higher levels of population are likely to be associated with less crime.

Limiting the sample to only four northern cities (control: Tijuana and Mexicali; treatment: Chihuahua and Juarez), we find similar results, indicated by column 2 of table 5. The coefficient of the judicial reform variable is both statistically significant at the 5 percent level and larger than that in the restricted sample. For robustness, we also estimated the model for the four northern cities using a Logit estimator with robust standard errors clustered by PSUs; results not shown (but available upon request) also indicated a negative and statistically significant effect (at the 5 percent level) for judicial reform on crime victimization.

[17]The model is estimated using STATA's command svy.

To determine whether judicial reform differs in its effects between Chihuahua and Juarez, we estimate the model including one treatment city at the time with other two control cities (Tijuana and Mexicali). Column 3 of Table 5 shows the results for Chihuahua, while column 4 shows the results for Juarez. For both, the coefficient of judicial reform is negative and statistically significant at the 5 percent level as well, although the size of the effect is greater in Chihuahua (-0.65) than in Juarez (-0.41). Because judicial reform started one year earlier in Chihuahua than in Juarez, these results might indicate that the impact of judicial reform increases with time. These results might also indicate that the judicial reform in practice might not be identical in these two cities, which leads to differential effects.

To assess whether the effects of judicial reform vary over time, we show results in column 5 of Table 5 for an equation that includes a variable, JR_months (indicating the number of months since judicial reform was implemented in the city where the individual resides).[18] JR_months is negative and statistically significant at the 5 percent level. Estimates in column 6 of Table 7 include two variables that break down judicial reform in 2008 and 2009.[19] Estimates show that only JR_2009 is statistically significant, where the magnitude of the coefficient is the same as that for the JR variable in column 2 of Table 5. This indicates that the impact of judicial increases over time. We also include in the model a variable that is equal to 1 if judicial reform has been in place at least for a year.[20] Estimates including JR_1year are shown column 7 of

[18] Surveys are collected in a specific year, but the question about whether the individual has been a victim of crime always refers to the previous year. Thus, the reference year is considered the year for which the individual answers the question. For example, judicial reform in the city of Chihuahua was implemented in January of 2007, and JR_months variable is equal to 12 for those individuals in the city of Chihuahua in ENSI-6 (reference year is 2008), and equal to 24 in ENSI-7 (reference year is 2009).

[19] For example, JR_2008 is equal to one for individuals in Chihuahua and Juarez in 2008, equal to zero for other individuals in the sample. JR_2008 is equal to 1 for individuals in Chihuahua and Juarez in 2009.

[20] For example, JR_1year is equal to one for individuals in Chihuahua in 2008 and 2009 and individuals in Juarez in 2009, equal to zero for other individuals in the sample.

Table 5. JR_1year is negative, statistically significant at the 5 percent level, and its magnitude is the same as shown for the JR variable in column 2 of Table 5.

We estimate the model to evaluate the impact of judicial reform on perceptions of security using a Logit estimator for complex sample design surveys as well (considering weights, strata, and clusters). Table 6 shows results of these estimates. Column 1 shows results for the entire 11-city sample with a dependent dummy variable equal to one if the individual feels secure in the city of residence; column 2 shows results for the sample limited to the four cities northern cities. Judicial reform has a negative and significant effect at the 1 percent level in both estimations, with the size of the judicial reform coefficient being larger in the four-city sample (columns 1 and 2 of Table 6). These estimates show that judicial reform decreases the probability that the individual feels secure in the city where she resides. The results are very similar when the individual is asked whether she feels secure in her county of residence (column 3 showing results for the 11-city sample and column 4 showing results for the four-city sample). For column 5, the dependent dummy variable is equal to one if the individual perceives that crime has decreased in her county of residence. Column 5 shows results for the 11-city sample, and column 6 shows results for the four-city sample. Both column 5 and column 6 show that judicial reform decreases the probability that a person perceives a reduction in crime in the county of residence. From these estimates, we can conclude that judicial reform negatively affects perceptions of security.

Table 7 presents the estimates for the judicial reform coefficient and standard error when we use trust, bribing, and grade given to institutions related to the criminal justice system as dependent variables (estimations consider weights and clusters). The estimations of this table are restricted to the sample for northern cities. Columns 1, 2, and 3 in Table 7 show the estimates

obtained when we use trust in institutions as dependent variable. Estimates in column 1 include observations for the 4 northern cities; column 2 assesses the effects in Chihuahua while column 3 assesses those in Juarez (using two northern cities as control in both estimations). We find that judicial reform has a negative effect on trust in the Local and Preventive (Federal) police that is significant at the 1 percent level. In Juarez, judicial reform has also decreased trust in the Federal Agency of Investigation (AFI).

Equations using reported inducement to bribery as the dependent variable are shown in columns 4, 5, and 6 of Table 7. In these estimations, the dependent variable is equal to one if the individual was asked for a bribe by a person who belongs to a specific institution, zero otherwise. Judicial reform is associated with a decrease in the probability that a person from the transit police asks for a bribe in the estimation that considers all four northern cities (column 4), as well as the estimation that considers only Chihuahua as treatment city (column 5), but not in the estimation that considers only Juarez as treatment city (column 6). This is an interesting finding because the Transit Police are considered one of the most susceptible institutions to bribery in Mexico. Judicial reform appears to be associated with greater inducement to bribery by the Judicial State (5-percent statistical significance) and the Preventive Federal Police (10-percent significance) in Juarez.

We also explore whether judicial reform affects the grades respondents give to performance of an institution. Column 7 of Table 7 presents results for all four northern cities, column 8 presents results for Chihuahua, and column 9 presents results for Juarez. These estimates show a negative effect of judicial reform on grades given to local police in the sample that considers four northern cities (column 7) and the one that considers only Chihuahua as treatment city (column 8). Judicial reform is also associated with lower grades given to the

preventive police in all subsamples (significance at least at the 10 percent level). Reform is also associated with positive grades (at the 10-percent significance level) given to the Public Prosecution Office for the sample that considers four northern cities (column 7) and the one that considers only Chihuahua as treatment city (column 8), but negatively associated (at the 5-percent level) with grades given the Federal Investigation Agency when Juarez is considered as treatment city (column 9). The positive effect on grades given to the Public Prosecution Office in Chihuahua with the reform, even if of marginal significance, is interesting to note given judicial reform has a direct effect on the activities of the Public Prosecution Office, which we would expect to provide better service after judicial reform is implemented.

We also estimate the impact of judicial reform on trust and grade given to institutions by those individuals who have been a victim of crime in the state. By looking at this subgroup, we hope to see whether the impact of reform differs for those individuals who are likely to have more experience with the criminal justice system. Such estimates (results not shown but available upon request) are very similar to those shown in Table 7, with the only difference being that in this restricted sample, we do not see an effect of judicial reform on the grade given to agents of the Public Prosecution Office.

B. Crime Level Data

We also use crime-level data to evaluate whether judicial reform changed the way in which individuals interact with the criminal justice system. We use data from ENSI-4 (pre-period, 2005) and ENSI-7 (post-period, 2009) in most cases. We first look at whether judicial reform affects crime reporting. Table 8 presents the estimated proportions of reported crimes before and after judicial reform, where the significance of the difference across groups and

across time is evaluated. While the DD of the proportion of individuals who report a crime is not statistically significant when we use the full sample (11 cities), we observe that it is significantly positive at the 1 percent level when the city of Chihuahua is considered as the treatment city. Chihuahua shows a significant increase on the people who reported a crime with the judicial reform. For the treatment city of Juarez, there is a decrease in the number of crimes reported (DD in the proportion is statistically significant at the 5 percent level) in the post-reform period.

To evaluate efficiency in the judicial system, we estimated proportions of officially reported crimes for which the Public Prosecution Office started an investigation before and after judicial reform (before = ENSI-4, after = ENSI-7). These estimates are shown in Table 9. For the full sample, both treatment and control groups show a significant increase in the number of investigations, where treatment cities show a larger number of investigations that followed crime reporting (DD in the proportion is positive and statistically significant at the 1 percent level). When we use other samples, this finding only holds when Juarez is used as the treatment city.

We also evaluate whether these findings are different when we disaggregate crimes by two broad categories (robbery and aggression). Table 10 shows the coefficient, standard error, and significance of the DD in the proportion of reported crimes (i.e. DD change). For robbery, there is a significant increase on reported robberies in Chihuahua in comparison to the change experienced by the control group with the reform (the DD change is significant at the 5 percent level). Yet there is a significant decrease on reported robberies in Juarez in comparison to the change experienced by the control group (the DD change is significant at the 5 percent level). For aggressions, we find that there is a significant increase on reported crimes with judicial reform for the treatment cities when we consider the four northern cities (the DD change is significant at the 5 percent level). This result holds for Chihuahua alone but not Juarez.

In Table 11, we evaluate whether there was a change following judicial reform on whether the Public Prosecution Office started investigations for the disaggregated crimes of robberies and aggressions. When considering only robberies, we find that for the full sample (11 cities) there is a significant increase on the number of crime investigations following the reform (the DD change is significant at the 5 percent level). This result holds when only Juarez is considered as the treatment city. When only Chihuahua is considered as the treatment city, there is a decrease in the number of investigations of robberies with the reform, but this change is marginally significant (10 percent level). We should be cautious when looking at the estimates that consider only aggressions because the number of crimes considered is very small. When only Chihuahua is considered as the treatment city, there is an increase on crime investigations for aggressions with the reform, but this increase is only marginally significant as well (10 percent level).

We further evaluate whether distrust in the authorities or hostile authorities is why individuals may not report a crime. Table 12 shows the estimated proportions of those crimes that were unreported because individuals distrusted the authority or found it hostile before and after judicial reform (before = ENSI-3, after = ENSI-7).[21] Estimates in Table 12 show that for the full sample, the treatment and control groups show a significant increase in the post-reform period on the number of individuals who do not report a crime because of distrust or hostility. The treatment group also shows a significant difference from the control group in the proportion of individuals who do not report a crime because of this reason during the post-reform period, but the DD change is not statistically significant. For the northern subsample of four cities, we find that there is also a significant difference between the control and treatment group after the

[21] We use ENSI-3 which refers to 2004 since data on the reasons why individual did not report the crime are not available in ENSI-4. For ENSI7, this data is only available for the last crime, which we use.

reform, with more individuals from the treatment group citing distrust and hostility of authorities as the reason for not reporting a crime (DD change is not statistically significant). We found similar results when only Juarez is used as the treatment city.

To determine improvements on the efficiency of the criminal justice system with the reform, we estimated the proportions of crimes that were officially reported but nothing happened before and after judicial reform (before = ENSI-3, after = ENSI-7).[22] These estimates are shown in Table 13. For the full sample, we observe a marginally significant decrease in the number of officially reported crimes for which there was no outcome (the DD in the proportion is statistically significant at the 10 percent level). For the subsamples, the DD in the proportion is statistically significant at the 5 percent level only when Juarez is considered as the treatment city. For the case of Juarez, results show that after judicial reform there was a significant decrease in the number of cases that have no outcome.

C. Discussion

When using individual level data for the full sample, we find that judicial reform is associated with a decrease in the probability of being a victim of crime but an increase in perceptions of insecurity. These findings hold for different subsamples that consider only northern cities. We also find that judicial reform has a negative effect on trust in the Local and Preventive (Federal) police. For Juarez, judicial reform is also associated with decreased trust in the Federal Agency of Investigation (AFI). Judicial reform has a marginal significant positive effect on grade given to the agents of the Public Prosecution Office for the samples that include four and three northern cities (where Chihuahua is the treatment city). Judicial reform decreased

[22] This data is unable for ENSI-4. For ENSI7, this data is only available for the last crime.

the probability that a respondent would be asked by the transit police for a bribe, but this result does not hold when only Juarez is considered as the treatment city. When using crime level data, we find that judicial reform leads to an increase on reported crimes in Chihuahua, but a decrease in Juarez. With judicial reform, there is also an increase in the number of investigations undertaken by the Public Prosecutor Office when Juarez is considered the treatment city. Results also show that after judicial reform there was a significant decrease in the number of cases that have no outcome for Juarez.

There are some limitations to this analysis. First, ENSI data are not longitudinal and do not follow individuals over time. There is no longitudinal database that provides data on crime victimization in Mexico. Nonetheless, ENSI data is adequate for our study because it is representative for the major cities in Mexico in the pre- and post- reform period. Second, judicial reform in Mexico has occurred in a time of increasing crime and violence. We expect that the empirical approach taken here helps dealing with this bias because we include cities that have been equally affected by crime, but have shown different patterns in judicial reform. Third, while the ENSI surveys are available before and after judicial reform, they are not perfect instruments. The ENSI survey does not specifically address the introduction of judicial reform. Thus, there is no specific question in the survey that asks about individuals' experience with the new system. The timing of the surveys also does not perfectly match the introduction of the reform. Fourth, we can only assess short-term effects of the judicial reform in this analysis. In the future, as more states reform their criminal justice system and there are longer time-series data available for those states that initiated early reforms, there will be a better understanding of the short and long run effect of the reform.

Another limitation of this study is the non-random selection of states (cities) that implement judicial the reform. This is a problem present in most quasi-experiments that use the DD approach to study the impact of any reform. In the case of Mexico, it could be argued that reform was likely to take place in more violent states or cities. By 2010, the state of Chihuahua became one of the most violent states, with the highest intentional homicide rate (108 per 100,000 habitants; ICESI, 2011a). Yet crime rates were not high in the state in Chihuahua in 2006, when the new penal code was approved. In 2006, the intentional homicide rate was equal to 18, below those of several states (including Guerrero with 27, Oaxaca with 30, and Sinaloa with 23). Thus, the implementation of judicial reform at the state level might be independent of the current wave of crime that Mexico is suffering.

VI. Conclusion

This empirical analysis on the impact of judicial reform in Mexico provides some interesting findings. First, judicial reform is associated with a decrease in crime. Second, judicial reform is associated with lower perceptions of security. Third, trust in institutions and grade given to the local police and preventive police deteriorate with judicial reform. Nonetheless, judicial reform is associated with a decrease in solicitation of bribes by the transit police, as well as an increase in the grade given to agents of the public prosecution office when Chihuahua is considered as the treatment city. Fourth, there are mixed results for the effect of judicial reform on the probability that an individual reports a crime. When Chihuahua is used as treatment city, there is a significant increase on crime reporting in comparison to the control group. On the other hand, when Juarez is used as a treatment city, there is a significant decrease on crime reporting in relation to the control group. Fifth, we observe that judicial reform is associated with a

significant increase on the number of investigations started after the crime is reported. Sixth, judicial reform is associated with a decrease in the number of crimes that are officially reported but for which nothing happened when Juarez is considered as the treatment city.

There are limitations to this study due to the structure of the data and the period of analysis, which overlaps with a significant increase on crime in the north of Mexico. Nonetheless, studying the impact of judicial reform is a very important task and we should not be deterred by the lack of data or by the presence of empirical complexities. Developing dynamic panel data on crime victimization is warranted. Future studies about crime in Mexico should also link individual information with crime level data better. This study also provides some insights on what type of information future victimization surveys should gather to better understand the impact of judicial reform. Such surveys should be collected every year and comparable over time.

The analysis presented here provides a good framework that can be used to evaluate changes to the criminal justice system. The empirical analysis of data about crime and the judicial system before and after any policy change is likely to help policymakers better understand the impact of a specific policy. This knowledge should lead to the design of effective policies to diminish and deter crime in Latin America.

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Table 1. Judicial Reform Status by Major Metropolitan Cities in Mexico

City	State	Stage of reform (by state)	Date of reform (by city)
Acapulco	Guerrero	Planning	-
Cancún	Quintana Roo	Initial	-
Ciudad Juárez	**Chihuahua**	**Implementation**	**2008, January**
Chihuahua	**Chihuahua**	**Implementation**	**2007, January**
Cuernavaca	**Morelos**	**Implementation**	**2008, October**
Culiacán	Sinaloa	Initial	-
Guadalajara	Jalisco	Planning	-
Toluca	**Edo de Mexico**	**Implementation**	**2009, October**
Metro area	DF	Planning	-
Mexicali	**Baja California**	**Implementation**	**2010, August**
Tijuana	Baja California	Implementation	2012, May*
Monterrey	**Nuevo Leon**	**Implementation**	**2004-2016^**
Nuevo Laredo	Tamaulipas	Planning	-
Oaxaca	Oaxaca	Implementation	Pending
Villahermosa	Tabasco	Planning	-

"^" denotes that reform has been introduced gradually by considering different types of crimes
"*" denotes expected date
Bold denotes that reform is already in place
Sources:
Stage of reform by states, Avances en la implementación de la reforma de justicia penal, online: http://setec.gob.mx/avancesi.htm
Chihuahua, online: http://www.chihuahua.gob.mx/justiciapenal/
Baja California, phone request and online: http://www.justiciabc.gob.mx/index.html
Nuevo Leon, Nuevo Sistema de Justicia Penal, phone request and online: http://arpromo.mx/wordpress/
Morelos, phone request and online: http://juiciosorales.morelos.gob.mx/
Estado de Mexico, Codigo de Procedimientos penales, online: http://www.pjedomex.gob.mx/web2/php/transparencia/index.php
Oaxaca, phone request and online: http://www.juiciooraloaxaca.gob.mx, http://www.tribunaloaxaca.gob.mx/

Table 2. Percentage of the population 18 years and older that has been victim of crime

Reference year	2004	2005	2008	2009
Survey wave	ENSI3	ENSI4	ENSI6	ENSI7
Acapulco	18	17	14	12
Cancún	15	15	16	10
Juárez	15	13	15	15
Chihuahua	13	10	20	15
Cuernavaca	16	10	13	11
Culiacán	21	14	12	10
DF	19	29	19	21
Guadalajara	20	12	15	13
Mexicali	20	18	19	18
Monterrey	8	9	12	10
Nuevo Laredo		9		7
Oaxaca	14	13	13	17
Tijuana	22	19	17	13
Toluca		13	13	12
Villahermosa	13	11		12
Edo de Mexico	19	24	19	21

Source: ICESI (2011b)

Table 3. Summary Statistics – Individual Level Data

	ENSI-4 (2005)			ENSI-6 (2008)			ENSI-7 (2009)			All waves	
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Min	Max
Victim	15094	0.0909	0.2875	18892	0.1494	0.3565	17513	0.1394	0.3464	0	1
Secure city	14623	0.3005	0.4585	18724	0.2329	0.4227	17420	0.2212	0.4151	0	1
Secure county	14688	0.3736	0.4838	18694	0.3093	0.4622	17392	0.2617	0.4396	0	1
Crime decrease (county)	14299	0.0880	0.2833	18586	0.0654	0.2473	17278	0.0829	0.2757	0	1
Trust Local Police	12411	1.9392	0.5826	12880	1.7921	0.5892	13130	1.7706	0.5487	1	3
Trust Transit Police	12312	1.8676	0.6027	14130	1.7435	0.6171	14388	1.7605	0.5689	1	3
Trust Judicial Police	10444	1.9128	0.5939	9663	1.8046	0.6266	4240	1.8389	0.5859	1	3
Trust AFI	9115	2.1176	0.6133	8174	2.0422	0.6815	2860	1.9594	0.6093	1	3
Trust Preventive Police	9493	2.1023	0.5986	8734	2.0357	0.6615	9711	1.9668	0.6347	1	3
Trust Agents MP	9721	1.9174	0.5461	8864	1.8008	0.5816	3704	1.8221	0.5644	1	3
Bribe Local Police	12459	0.0949	0.2930	12928	0.1460	0.3532	13160	0.1469	0.3540	0	1
Bribe Transit Police	12393	0.2368	0.4252	14192	0.3304	0.4704	14454	0.3717	0.4833	0	1
Bribe Judicial Police	10542	0.0451	0.2074	9731	0.0711	0.2570	4266	0.0670	0.2501	0	1
Bribe AFI	9276	0.0155	0.1236	8252	0.0245	0.1545	2870	0.0439	0.2049	0	1
Bribe Prev. Police	9628	0.0245	0.1546	8794	0.0384	0.1923	9769	0.0491	0.2162	0	1
Bribe Agents MP	9806	0.0679	0.2516	8927	0.1117	0.3150	3724	0.1028	0.3038	0	1
Grade Local Police	14034	5.7440	2.3953	12978	5.2179	2.7129	13013	5.5621	2.1961	0	10
Grade Transit Police				14228	4.8907	2.8466	14129	5.3494	2.2325	0	10
Grade Judicial Police	13480	5.5601	2.4112	9778	5.3359	2.8367	4204	5.9377	2.3422	0	10
Grade AFI	13040	6.5357	2.3259	8297	6.2304	2.7752	2831	6.2833	2.3560	0	10
Grade Prev. Police	13312	6.3974	2.2915	8832	6.2126	2.7627	9597	6.3414	2.3465	0	10
Grade Agents MP	13170	5.5696	2.3742	8959	5.2159	2.7064	3660	5.7000	2.3792	0	10
Male	15094	0.4402	0.4964	19025	0.4484	0.4973	17513	0.4490	0.4974	0	1
Age	14851	40.5116	15.7945	18788	41.3335	15.9329	17373	41.5435	16.1395	15	97
Age squared	14851	1890.6400	1489.4850	18788	1962.3020	1515.5570	17373	1986.3300	1539.8850	225	9409
Prim educ	15094	0.3342	0.4717	19025	0.2975	0.4572	17513	0.2766	0.4473	0	10
Sec & high educ	15094	0.4143	0.4926	19025	0.4186	0.4933	17513	0.4251	0.4944	0	10
Work	14900	0.5706	0.4950	18844	0.6165	0.4862	17512	0.6121	0.4873	0	10
No work	14900	0.0756	0.2644	18844	0.0993	0.2991	17512	0.0684	0.2524	0	10
Underdevelopment Index	15094	-1.1935	0.3280	19025	-1.2911	0.3094	17513	-1.2926	0.3075	-1.7612	-0.6681
Population, levels	15094	18.1814	23.0294	19025	20.8115	25.2205	17513	20.8713	25.2835	5.0416	88.5108

Population levels are in 100,000 units.

Table 4. Proportions of different types of crimes – Crime Level Data (Percentages)

Reference year	2004	2005	2008	2009
Survey wave	ENSI 3	ENSI 4	ENSI 6	ENSI 7
Robbery	75.63	90.17	87.67	81.66
Aggression	7.05	6.57	3.29	4.66
Other	17.33	3.25	9.04	13.68
No. Obs.	3307	2951	3439	3173

Note: for ENSI 6 and ENSI 7, we consider the last crime only due to data issues.

Table 5. Impact of judicial reform on crime victimization

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
JR	-0.5979**	-0.6429**	-0.6543**	-0.4075**			
	(0.2373)	(0.2648)	(0.2797)	(0.1877)			
JR_months					-0.0278**		
					(0.0115)		
JR_2008						-0.3185	
						(0.2494)	
JR_2009						-0.6429**	
						(0.2648)	
JR_1year							-0.6429**
							(0.2648)
Male	0.2346***	0.2114***	0.1711**	0.1696**	0.2114***	0.2114***	0.2114***
	(0.0578)	(0.0606)	(0.0694)	(0.0707)	(0.0606)	(0.0606)	(0.0606)
Age	0.0045	0.0296***	0.0245**	0.0244**	0.0296***	0.0296***	0.0296***
	(0.0104)	(0.0091)	(0.0101)	(0.0102)	(0.0091)	(0.0091)	(0.0091)
Age square	-0.0002*	-0.0003***	-0.0003**	-0.0003**	-0.0003***	-0.0003***	-0.0003***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Prim educ	-0.6814***	-0.5278***	-0.4716***	-0.4889***	-0.5278***	-0.5278***	-0.5278***
	(0.0849)	(0.0793)	(0.0928)	(0.0929)	(0.0793)	(0.0793)	(0.0793)
Sec & high educ	-0.2117***	-0.0718	-0.1098	0.0061	-0.0718	-0.0718	-0.0718
	(0.0816)	(0.0625)	(0.0695)	(0.0745)	(0.0625)	(0.0625)	(0.0625)
Work	-0.0171	0.0745	0.1659**	0.085	0.0745	0.0745	0.0745
	(0.0770)	(0.0669)	(0.0776)	(0.0777)	(0.0669)	(0.0669)	(0.0669)
No work	-0.1833	-0.0435	0.094	-0.0544	-0.0435	-0.0435	-0.0435
	(0.1161)	(0.1075)	(0.1303)	(0.1211)	(0.1075)	(0.1075)	(0.1075)
Underdevelopment (Index)	3.3245***	5.9954***	7.1837***	7.2552***	7.6184***	5.9954***	5.9954***
	(0.7079)	(1.2189)	(1.5585)	(1.5635)	(1.4705)	(1.2189)	(1.2189)
Population (Levels)	-1.5232**	-0.2673			0.0772	-0.2673	-0.2673
	(0.5929)	(0.2851)			(0.2038)	(0.2851)	(0.2851)
Constant	136.3768***	9.4029***	9.5545***	7.5082***	9.6468***	9.4029***	9.4029***
	(52.4865)	(2.6211)	(2.7405)	(2.1338)	(2.6965)	(2.6211)	(2.6211)
Obs	50928	17757	13621	13262	17757	17757	17757
F-value	15.96	13.61	13.56	9.44	13.61	13.61	13.61
Sample - No. cities	11	4	3 (Chi)	3 (Jua)	4	4	4

Coefficients with robust standard errors in parenthesis. Significance notated at * p<.1; ** p<.05; *** p<.01. Estimates for city and year dummies and city-year trends not included for purpose of space. Logit estimates using strata, clusters, and weights. Reference group: female, more than high school education, and not in labor force. Dependent variable: victim of crime in the state.

Table 6. Impact of judicial reform on perceptions of insecurity

	(1)	(2)	(3)	(4)	(5)	(6)
JR	-1.1556***	-2.5373***	-1.5397***	-2.3967***	-1.2670***	-1.2997***
	(0.1541)	(0.1806)	(0.1477)	(0.1775)	(0.2294)	(0.2614)
Male	0.1206**	0.1626***	0.1368***	0.1504***	0.1949***	0.1389
	(0.0589)	(0.0503)	(0.0451)	(0.0480)	(0.0740)	(0.0883)
Age	-0.0298***	-0.0211***	-0.0328***	-0.0238***	-0.0047	-0.0166
	(0.0068)	(0.0078)	(0.0067)	(0.0077)	(0.0115)	(0.0149)
Age square	0.0004***	0.0003***	0.0004***	0.0003***	0.0000	0.0002
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0002)
Prim educ	0.1074	-0.0916	-0.1520**	-0.1281*	0.3063***	0.2364*
	(0.0874)	(0.0727)	(0.0687)	(0.0690)	(0.1012)	(0.1394)
Sec & high educ	-0.0327	-0.2209***	-0.2155***	-0.1817***	0.1144	0.0447
	(0.0525)	(0.0595)	(0.0517)	(0.0577)	(0.0819)	(0.1430)
Work	0.1371**	-0.1120*	0.0282	-0.0768	0.0676	0.1263
	(0.0683)	(0.0600)	(0.0573)	(0.0569)	(0.0896)	(0.0969)
No work	0.2596***	0.0826	0.1758**	0.0575	0.3947***	0.1863
	(0.0823)	(0.0871)	(0.0809)	(0.0815)	(0.1305)	(0.1556)
Underdevelopment (Index)	0.9926*	-7.1045***	1.5181***	-3.6014***	-1.2075	-1.4611
	(0.5072)	(1.1727)	(0.4816)	(1.0826)	(0.8045)	(1.9505)
Population (Levels)	-0.4323	-1.4326***	-2.2376***	-0.9204***	-1.1965**	-0.1752
	(0.4562)	(0.2653)	(0.3592)	(0.2461)	(0.4846)	(0.4415)
Constant	37.7049	-0.8866	197.9168***	1.4654	100.2462**	-3.242
	(40.1217)	(1.9930)	(31.7740)	(1.9094)	(42.9696)	(3.0732)
Obs	50244	17553	50245	17523	49652	17368
F-value	65.96	86.16	62.93	68.44	13.84	15.68
Sample - No. cities	11	4	11	4	11	4

Coefficients with robust standard errors in parenthesis. Significance notated at * p<.1; ** p<.05; *** p<.01. Estimates for city and year dummies and city-year trends not included for purpose of space. Logit estimates using strata, clusters, and weights. Reference group: female, more than high school education, and not in labor force. Dependent variables: perception of security in the city for columns 1 and 2, perception of security in the county for columns 3 and 4, and perception of crime decreasing in the county for columns 5 and 6.

Table 7. Impact of judicial reform on trust, probability of bribing, and grade to institutions related to the criminal justice system

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Dependent variable	Trust	Trust	Trust	Bribe	Bribe	Bribe	Grade	Grade	Grade
Local Police	-1.0521***	-1.0842***	-0.5023***	-0.3229	-0.3232	-0.1949	-0.6425***	-0.6926***	-0.1031
	(0.2267)	(0.2347)	(0.1531)	(0.3016)	(0.3225)	(0.2154)	(0.1484)	(0.1577)	(0.1115)
Transit Police	-0.1036	-0.1097	-0.1002	-0.9750***	-1.0428***	0.0353			
	(0.2143)	(0.2244)	(0.1560)	(0.2289)	(0.2422)	(0.1554)			
Judicial Police (State)	-0.3177	-0.3128	-0.2783	-0.9353	-1.0883	0.9960**	0.0109	0.0064	0.0241
	(0.2816)	(0.2869)	(0.1970)	(0.6501)	(0.6977)	(0.4874)	(0.2095)	(0.2216)	(0.1780)
Preventive Police (Federal)	-1.0641***	-1.0057***	-1.6230***	-0.1347	-0.2145	0.9034*	-0.3948**	-0.3437*	-1.1764***
	(0.2443)	(0.2515)	(0.1548)	(0.5660)	(0.6026)	(0.5074)	(0.1807)	(0.1934)	(0.1234)
Federal Investigation Agency	-0.1524	-0.113	-0.7954***	-0.2308	-0.2649	-0.0902	0.142	0.2017	-0.4523**
	(0.2979)	(0.3054)	(0.2423)	(0.9929)	(1.0530)	(0.6368)	(0.2498)	(0.2625)	(0.2165)
Public Prosecution Office (MP), Agents	-0.1124	-0.1077	-0.1807	-0.9107	-1.0656	1.0867	0.4402*	0.4588*	0.0759
	(0.3203)	(0.3290)	(0.2663)	(0.7923)	(0.8480)	(0.6690)	(0.2508)	(0.2608)	(0.2175)
Sample - No. cities	4	3 (Chi)	3 (Jua)	4	3 (Chi)	3 (Jua)	4	3 (Chi)	3 (Jua)

Coefficients with robust standard errors in parenthesis. Significance notated at * p<.1; ** p<.05; *** p<.01. Estimates for city and year dummies and city-year trends not included for purpose of space. Ordered logit (columns 1, 2, 3, 7, 8, and 9) and logit estimates (columns 4, 5, and 6) using clusters and weights (STATA command svy). Control variables included: gender, age, age squared, education and employment status dummies, underdevelopment index and population at the city level, city and year dummies, and city-year trends. Number of observations included in estimations vary between 4988 and 13954. Model using grade to transit police as dependent variable cannot be estimated due to lack of observations for the grade given to transit police for the pre-reform period.

Table 8.Estimated proportions of reported crimes before and after judicial reform (before = ENSI-4, after = ENSI-7)

	Control	Treatment	Difference (Treat-Control)
11 citites			
Report crime, before	0.2797	0.3687	0.0890***
	(0.0092)	(0.0205)	(0.0224)
Report crime, after	0.2730	0.3197	0.0467***
	(0.0091)	(0.0167)	(0.0190)
Change in proportion	-0.0067	-0.0490*	-0.0423
	(0.0129)	(0.0264)	(0.0294)
Observations	17244		
4 cities			
Report crime, before	0.4267	0.3964	-0.0303
	(0.0188)	(0.0248)	(0.0311)
Report crime, after	0.3894	0.3700	-0.0194
	(0.0193)	(0.0205)	(0.0282)
Change in proportion	-0.0373	-0.0264	0.0109
	(0.0269)	(0.0322)	(0.0419)
Observations	6783		
3 cities (Chihuahua)			
Report crime, before	0.4267	0.3296	-0.0971**
	(0.0188)	(0.0352)	(0.0399)
Report crime, after	0.3894	0.4377	0.0483
	(0.0193)	(0.0296)	(0.0354)
Change in proportion	-0.0373	0.1081**	0.1454***
	(0.0269)	(0.0460)	(0.0533)
Observations	5486		
3 cities (Juarez)			
Report crime, before	0.4267	0.4528	0.0261
	(0.0188)	(0.0343)	(0.0391)
Report crime, after	0.3894	0.3004	-0.0890***
	(0.0193)	(0.0278)	(0.0338)
Change in proportion	-0.0373	-0.1525***	-0.1151**
	(0.0269)	(0.0441)	(0.0517)
Observations	5221		

Standard errors in parenthesis. Significance notated at * p<.1; ** p<.05; *** p<.01.

Table 9. Estimated proportions of crimes for which the Public Prosecution Office (Ministerio Publico) started an investigation when crime is officially reported before and after judicial reform (before = ENSI-4, after = ENSI-7)

	Control	Treatment	Difference (Treat-Control)
11 cities			
MP started investigation, before	0.6272	0.5512	-0.0760*
	(0.0187)	(0.0348)	(0.0395)
MP started investigation, after	0.7561	0.7983	0.0422
	(0.0173)	(0.0263)	(0.0315)
Change in proportion	0.1288***	0.2471***	0.1183**
	(0.0255)	(0.0437)	(0.0506)
Observations	3733		
4 cities			
MP started investigation, before	0.5758	0.5419	-0.0338
	(0.0287)	(0.0401)	(0.0494)
MP started investigation, after	0.7615	0.8000	0.0385
	(0.0276)	(0.0291)	(0.0401)
Change in proportion	0.1857***	0.2581***	0.0723
	(0.0399)	(0.0496)	(0.0636)
Observations	1981		
3 cities (Chihuahua)			
MP started investigation, before	0.5758	0.7288	0.1531**
	(0.0287)	(0.0584)	(0.0651)
MP started investigation, after	0.7615	0.7881	0.0266
	(0.0276)	(0.0378)	(0.0468)
Change in proportion	0.1857***	0.0593	-0.1264
	(0.0399)	(0.0695)	(0.0801)
Observations	1651		
3 cities (Juarez)			
MP started investigation, before	0.5758	0.4271	-0.1487***
	(0.0287)	(0.0508)	(0.0583)
MP started investigation, after	0.7615	0.8194	0.0579
	(0.0276)	(0.0456)	(0.0534)
Change in proportion	0.1857***	0.3924***	0.2066***
	(0.0399)	(0.0683)	(0.0790)
Observations	1530		

Standard errors in parenthesis. Significance notated at * p<.1; ** p<.05; *** p<.01.

Table 10. Difference-in-difference in the proportions of reported crimes before and after judicial reform, by different type of crime (robbery and aggression; before = ENSI-4, after = ENSI-7)

	Difference before and after reform			
	11 cities	4 cities	3 cities (Chihuahua)	3 cities (Juarez)
Robbery				
Treatment	-0.0228	-0.0128	0.1167**	-0.1298***
	(0.0286)	(0.0349)	(0.0506)	(0.0474)
Control	0.0113	-0.0019	-0.0019	-0.0019
	(0.0140)	(0.0287)	(0.0287)	(0.0287)
Diff-in-Diff	-0.0341	-0.0109	0.1185**	-0.1279**
	(0.0318)	(0.0452)	(0.0582)	(0.0554)
Observations	14607	5891	4742	4556
Aggression				
Treatment	0.1481	0.2907**	0.6231***	-0.0286
	(0.1286)	(0.1429)	(0.1710)	(0.2133)
Control	-0.0132	-0.1702	-0.1702	-0.1702
	(0.0592)	(0.1387)	(0.1387)	(0.1387)
Diff-in-Diff	0.1614	0.4609**	0.7933***	0.1416
	(0.1416)	(0.1991)	(0.2202)	(0.2545)
Observations	812	268	221	201

Standard errors in parenthesis. Significance notated at * p<.1; ** p<.05; *** p<.01.

Table 11. Difference-in-difference in the proportions of crimes for which the Public Prosecution Office (Ministerio Publico) started an investigation when crime is officially reported before and after judicial reform, by different type of crime (robbery and aggression; before = ENSI-4, after = ENSI-7)

	Difference before and after reform			
	11 cities	4 cities	3 cities (Chihuahua)	3 cities (Juarez)
Robbery				
Treatment	0.2476***	0.2586***	0.0421	0.4046***
	(0.0463)	(0.0527)	(0.0730)	(0.0719)
Control	0.1266***	0.1800***	0.1800***	0.1800***
	(0.0275)	(0.0414)	(0.0414)	(0.0414)
Diff-in-Diff	0.1210**	0.0787	-0.1379*	0.2246***
	(0.0539)	(0.0670)	(0.0839)	(0.0830)
Observations	3250	1803	1498	1407
Aggression				
Treatment	0.3916	0.3896*	0.8571***	0.2500
	(0.1888)	(0.2360)	(0.1429)	(0.3354)
Control	0.1548	0.4615***	0.4615***	0.4615
	(0.0878)	(0.1439)	(0.1439)	(0.1439)
Diff-in-Diff	0.2368	-0.0719	0.3956*	-0.2115
	(0.2082)	(0.2764)	(0.2028)	(0.3650)
Observations	229	74	62	58

Standard errors in parenthesis. Significance notated at * p<.1; ** p<.05; *** p<.01.

Table 12. Estimated proportions of those crimes that were unreported because individuals distrusted the authority or found it hostile before and after judicial reform (before = ENSI-3, after = ENSI-7)

	Control	Treatment	Difference (Treat-Control)
11 cities			
Reason for not reporting	0.1674	0.1843	0.0170
crime, before (Authorities)	(0.0086)	(0.0162)	(0.0183)
Reason for not reporting	0.1924	0.2368	0.0444**
crime, after (Authorities)	(0.0095)	(0.0184)	(0.0207)
Change in proportion	0.0250**	0.0525**	0.0275
	(0.0128)	(0.0245)	(0.0277)
Observations	7266		
4 cities			
Reason for not reporting	0.1679	0.1890	0.0211
crime, before (Authorities)	(0.0161)	(0.0205)	(0.0261)
Reason for not reporting	0.1658	0.2407	0.0749**
crime, after (Authorities)	(0.0188)	(0.0229)	(0.0296)
Change in proportion	-0.0021	0.0516*	0.0537
	(0.0247)	(0.0308)	(0.0395)
Observations	2542		
3 cities (Chihuahua)			
Reason for not reporting	0.1679	0.1602	-0.0077
crime, before (Authorities)	(0.0161)	(0.0273)	(0.0317)
Reason for not reporting	0.1658	0.2342	0.0684*
crime, after (Authorities)	(0.0188)	(0.0338)	(0.0387)
Change in proportion	-0.0021	0.0740*	0.0760
	(0.0247)	(0.0435)	(0.0500)
Observations	2002		
3 cities (Juarez)			
Reason for not reporting	0.1679	0.2174	0.0495
crime, before (Authorities)	(0.0161)	(0.0305)	(0.0345)
Reason for not reporting	0.1658	0.2461	0.0803**
crime, after (Authorities)	(0.0188)	(0.0312)	(0.0365)
Change in proportion	-0.0021	0.0287	0.0308
	(0.0247)	(0.0437)	(0.0502)
Observations	1956		

Standard errors in parenthesis. Significance notated at * p<.1; ** p<.05; *** p<.01.

Table 13. Estimated proportions of crimes that were officially reported but nothing happened before and after judicial reform (before = ENSI-3, after = ENSI-7)

	Control	Treatment	Difference (Treat-Control)
11 cities			
Outcome of reporting a crime,	0.4448	0.5372	0.0924**
before (Nothing)	(0.0196)	(0.0321)	(0.0376)
Outcome of reporting a crime,	0.3834	0.3840	0.0006
after (Nothing)	(0.0191)	(0.0308)	(0.0362)
Change in proportion	-0.0614**	-0.1532***	-0.0918*
	(0.0273)	(0.0445)	(0.0522)
Observations	2709		
4 cities			
Outcome of reporting a crime,	0.5118	0.5562	0.0444
before (Nothing)	(0.0291)	(0.0373)	(0.0473)
Outcome of reporting a crime,	0.4160	0.3756	-0.0404
after (Nothing)	(0.0312)	(0.0339)	(0.0461)
Change in proportion	-0.0958**	-0.1806***	-0.0848
	(0.0427)	(0.0504)	(0.0661)
Observations	1431		
3 cities (Chihuahua)			
Outcome of reporting a crime,	0.5118	0.4468	-0.0650
before (Nothing)	(0.0291)	(0.0516)	(0.0592)
Outcome of reporting a crime,	0.4160	0.3821	-0.0339
after (Nothing)	(0.0312)	(0.0440)	(0.0540)
Change in proportion	-0.0958**	-0.0647	0.0311
	(0.0427)	(0.0678)	(0.0801)
Observations	1189		
3 cities (Juarez)			
Outcome of reporting a crime,	0.5118	0.6786	0.1668***
before (Nothing)	(0.0291)	(0.0513)	(0.0589)
Outcome of reporting a crime,	0.4160	0.3659	-0.0501
after (Nothing)	(0.0312)	(0.0535)	(0.0620)
Change in proportion	-0.0958**	-0.3127***	-0.2169***
	(0.0427)	(0.0741)	(0.0855)
Observations	1088		

Standard errors in parenthesis. Significance notated at * p<.1; ** p<.05; *** p<.01.

Figure 1. Percentage of the population 18 years and older that has been victim of crime in cities that experienced judicial reform before 2009 (year of reform in parenthesis)

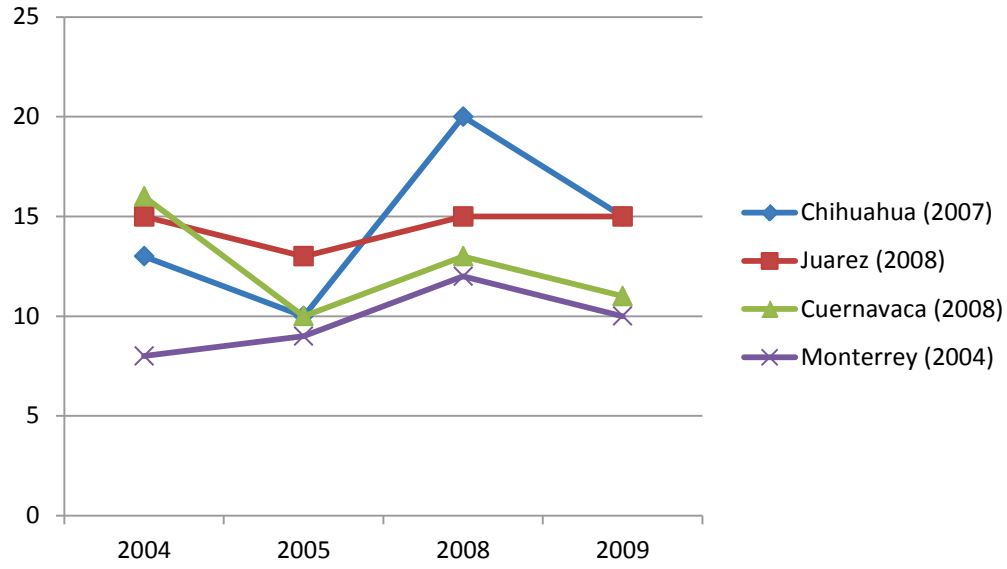

Figure 2. Percentage of the population 18 years and older that has been victim of crime in cities that did not experienced judicial reform before 2009