



Published in final edited form as:

Int J Drug Policy. 2018 April ; 54: 1–8. doi:10.1016/j.drugpo.2017.12.006.

The Law On The Streets: Evaluating The Impact of Mexico's Drug Decriminalization Reform on Drug Possession Arrests in Tijuana, Mexico

J. Arredondo^{a,b,1}, T. Gaines^a, S. Manian^a, C. Vilalta^c, A. Bañuelos^d, SA Strathdee^a, and L. Beletsky^{a,e}

^aUniversity of California, San Diego. 9500 Gilman Dr, La Jolla, CA 92093, USA

^bSan Diego State University, San Diego. 5500 Campanile Drive, San Diego, CA 92182, USA

^cCenter for Research in Geography and Geomatics (CentroGeo). Lomas de Padierna, CP 14240, CDMX, Mexico

^dSecretaría de Seguridad Pública Municipal, Dirección de Planeación y Proyectos Estratégicos. Blvd Cuauhtémoc Sur y Rio Suchiate #2141, colonia Marrón, C.P 22015. Tijuana, Mexico

^eNortheastern University, School of Law & Bouvé College of Health Sciences. 360 Huntington Ave. Boston, Massachusetts 02115. USA

Abstract

Background—In 2009, Mexican Federal Government enacted “narcomenudeo” reforms decriminalizing possession of small amounts of drugs, delegating prosecution of retail drug sales to the state courts, and mandating treatment diversion for habitual drug users. There has been insufficient effort to formally assess the decriminalization policy's population-level impact, despite mounting interest in analogous reforms across the globe.

Methods—Using a dataset of municipal police incident reports, we examined patterns of drug possession, and violent and non-violent crime arrests between January 2009 and December 2014. A hierarchical panel data analysis with random effects was conducted to assess the impact of narcomenudeo's drug decriminalization provision.

Results—The reforms had no significant impact on the number of drug possession or violent crime arrests, after controlling for other variables (e.g. time trends, electoral cycles, and precinct-

¹Corresponding author: Jarredon@ucsd.edu, Division of Global Public Health, UC San Diego – School of Medicine, Third Floor, CRSF, La Jolla, CA 92093-0548.

Declarations: Ethics approval: The study was approved by the Institutional Review Boards of UCSD School of Medicine.

Consent for publication: The current work has not been published previously and it is not under consideration for publication elsewhere. The publication is approved by all authors. If accepted, it will not be published elsewhere in the same form, in English or in any other language, including electronically without the written consent of the copyright-holder.

Conflicts of interest: We wish to confirm that there are no known conflicts of interest associated with this publication.

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

level socioeconomic factors). Time periods directly preceding local elections were observed to be statistically associated with elevated arrest volume.

Conclusions—Analysis of police statistics parallel prior findings that Mexico's reform decriminalizing small amounts of drugs does not appear to have significantly shifted drug law enforcement in Tijuana. More research is required to fully understand the policy transformation process for drug decriminalization and other structural interventions in Mexico and similar regional and international efforts. Observed relationship between policing and political cycles echo associations in other settings whereby law-and-order activities increase during mayoral electoral campaigns.

Keywords

Police; Harm Reduction; Decriminalization; Drug Policy; Narcomenudeo; Mexico

Introduction

Over the recent decades, countries in Latin America have reacted to changes in drug trafficking and consumption patterns by adapting new policy and enforcement responses (Csete et al., 2016). Some countries have mounted heavily-militarized campaigns focused on suppressing drug production (Smith, 1992; Labate et al., 2015). Others have embarked on a transition from a punitive, prohibitionist approach toward a legal framework that promotes harm reduction and decriminalization (Bastos et al., 2007; Metaal et al., 2014). There is, however, little research evaluating early adopters of such decriminalization reforms and their population-level impact (Beletsky et al., 2016).

In 2009, the federal Mexican congress promulgated a set of changes, known as the “narcomenudeo” reforms, shifting the legal prosecution of small-scale drug possession to the state (rather than the federal) level (Hernandez & Zamudio, 2009). The overarching goal of the reforms was to reserve federal resources for high level drug traffickers, while state and local governments would focus on small-scale dealers or “narcomenudistas.” Additionally, these reforms promoted treatment and harm reduction rather than incarceration by decriminalizing the possession of drugs in amounts below certain volume thresholds. Individuals found in possession of amounts above these thresholds were to be processed and referred to substance use treatment through the justice system (Russoniello, 2012). These modifications specifically set allowable amounts of drug possession (e.g. 50mg for heroin, 5g for marijuana) for immediate personal consumption without being considered a felony (De La Federación, D. O., 2009), and mandated states to create free substance use rehabilitation systems to which habitual users would be diverted (Werb et al., 2014). On the state level, the state of Baja California set a deadline of August 2012 for full implementation and funding of the reforms (Del Estado de Baja California, P. O., 2010).

At the time of passage, there was ample speculation about the impact of these new policy shifts on policing practice. One might expect the “narcomenudeo” reforms to decrease arrests for drug possession, because the reforms aimed to strengthen coordination between police and health officials, with the goal of minimizing the negative effects of illegal drug use. This could possibly benefit both the users and the broader community (De La

Federación, D. O., 2009). In addition, as has occurred in other decriminalization contexts, police managers or street-level officers could respond to decriminalization by discretionarily shifting their enforcement attention away from small-scale drug crimes (Woods, 2014). However, there are also several reasons to speculate that the reforms may increase drug possession arrests (Boiteux, Corda, & Edwards, 2010). Under the new law, state and municipal, rather than federal officers would now be expected to conduct the bulk of drug law enforcement activities, including presenting all individuals detained with drugs to the “Ministerio Público” (Public Prosecutor) to assess whether the possession of drugs fell below the established legal threshold. These encounters could also become more frequent because police might increase their presence in street-based drug markets in order to target dealers, increasing the possibility of corruption. In addition, by giving the state police new authority over drug possession crimes, the reforms could divert policing efforts from other high-impact crimes, such as homicides or armed robbery (Hernandez & Zamudio, 2009; Russoniello, 2012).

Tijuana is an international metropolitan area situated in the northern border region in the State of Baja California, Mexico. The city is a major route for drug trafficking of heroin, cocaine, marijuana and methamphetamines with local drug consumption patterns influenced by the dynamics of these supply chains and its geographic proximity to the US (Villatoro et al., 2012; Brouwer et al., 2006; Bucardo et al., 2005). As such, Tijuana has a high concentration of drug users, particularly people who inject drugs (PWID), a large number of whom inhabit an area that physically divides the US and Mexico (locally referred to as “El Bordo”). Many of these users are migrants and deportees who lack access to formal health, housing and other government services (Velasco & Albicker, 2013). The nearby Tijuana's downtown precinct “Centro” exhibits higher rates of drug possession arrests, as it includes several open air drug markets and is the nexus for other drug-related activity (Gaines et al., 2016). In total, this locale has been subject to police raids to “clean up” public space, increasing the number of detentions for loitering or vagrancy among PWID (Semanario Zeta Tijuana, 2015). The experience of Tijuana as a locale with elevated levels of black market drug activity and drug-related harms (Pollini et al., 2008) presents a unique opportunity to analyze the application of the “narcomenudeo” reforms in a case study setting where its benefits are especially consequential.

Local dynamics of law enforcement deployment provide a unique setting for such an assessment. During 2008, Tijuana experienced a rapid increase in violence, from 14 homicides per 100,000 in 2007 to 49 per 100,000 in 2008, (SINAIS 2010) that led the federal government to implement a series of police capacity-building reforms. Through a federal subsidy to local public safety (SUBSEMUN), the Tijuana Police Department standardized its protocols (i.e. frisking, patrolling) and police identity (i.e. uniforms), in addition to instituting higher salaries and acquiring a range of new equipment (i.e. surveillance cameras, computers) (Arredondo, 2010; Sabet, 2012). These efforts also included improvements in police data collection systems. As a result, the Tijuana Police Department, which is among the largest municipal agencies in the country, also emerged as one of Mexico's better-equipped, well-compensated, and professionalized law enforcement institutions. Currently, it employs approximately 2,100 officers, who work on shifts of eight hours per day and rotate among the 11 policing sectors (precincts) of the city.

In March 2013, a Memorandum of understanding (MoU) was signed between the University of California San Diego (UCSD) and the Tijuana Ministry of Public Safety (Secretaria de Seguridad Publica Municipal de Tijuana - SSPM Tijuana) facilitating access to police databases for academic research purposes. Building on this unique data agreement, this study seeks to assess the impact of the “narcomenudeo” reforms on police enforcement patterns by analyzing SSPM Tijuana's monthly crime incident reports. We measured changes in drug possession arrests in comparison to arrests for other violent and non-violent crimes before and after the mandated implementation of the “narcomenudeo” reforms. Although the reform could be expected to directly modify drug-related arrests, our study also examined its potential impact on a wider range of criminal offenses (Freeman et al., 2005; Rosenfeld & Fornango, 2014). We hypothesized that the reforms increased monthly drug possession arrests after they were fully implemented in August 2012, in response to the contemplated shift of drug law enforcement to local police.

Methods

Data sources

The current study used an institutional panel dataset summarizing monthly arrests for drug possession and other violent (e.g. robbery, homicides, injuries) and non-violent (e.g. car theft, theft) crimes. This information draws on mandated officer daily incident reports, collected across all 11 police precincts of the city and is utilized to inform police management and deployment decisions. This secondary data analysis was approved by the Institutional Review Board of UCSD School of Medicine, USA.

Measures

The primary outcome under investigation is the monthly number of drug possession arrests recorded at the precinct level over a 72-month period (January 2009-December 2014). Secondary outcomes include a subset of violent (injuries, robbery, homicides) and non-violent (theft, possession of stolen car) arrests during the same time period. The primary independent variable is implementation of the “narcomenudeo” reforms defined as a binary indicator (yes/no), with the value of 1 from the time it was slated to be fully implemented (August 2012– December 2014), and 0 otherwise (January 2009– July 2012).

To account for changes in arrests patterns over time that are unrelated to the implementation of “narcomenudeo” reforms (Wooldridge, 2012), we adjusted for both seasonal and annual time trends (Greenberg, 2014). Ignoring these underlying time trends might lead us to falsely conclude that the drug reform change is modifying the patterns over time, or that changes in the outcome variables are caused by any other of the independent variables. Annual time trends are coded with dummy variables for each year, using 2009 as the reference point. Following a visual analysis of the arrests in the city, which seemed to show a cyclic pattern in the crime trends, it was decided to model seasonality in a quarterly format (Kuhn, 1994).

Furthermore, other studies have documented increases in police activity and hiring during mayoral elections because they align with “tough on crime” rhetoric, given that public safety

and security are often principal concerns among local electorates (Levitt, 1997; Guillamón, Bastida, & Benito 2013). These electoral cycles are also associated with higher rates of prosecution and sentencing of crimes that might be dismissed at other times (Dyke, 2007; Berdejo & Yuchtman, 2012). Therefore, we controlled for the effect of local electoral cycles on arrest patterns by creating a binary indicator defined as 1 reflecting the 3-4 months of mayoral political campaigning (including primaries) before Election Day (elections held July 2010 and 2013), and 0 otherwise.

Additional confounding factors adjusted for in the models include unique police precinct environments, such as demographic and socioeconomic conditions, because arrests can be differently distributed in accordance to the socio-demographics of neighborhoods (Stockwell et al., 2015; Greenberg, 2014; Chauhan, et al. 2011; Fagan, Davies & Carlis, 2010; Germán, Fagan & Kiss, 2005; Wilson & Kelling, 1982). The following control variables used in other crime-related analyses (Vilalta, 2010; Cooper, Wypij & Krieger 2005) were applied to this analysis: (1) Number of men per 100 women, (2) percentage of population 15 years or older with incomplete basic education, (3) percentage of population with no health insurance coverage, (4) percentage of private houses with dirt floor, (5) percentage of female headed households, (6) percentage of general unemployment (individuals age 15 and older). All of the socio-demographic variables were obtained from the 2010 Mexican Census (INEGI, 2011) and precinct-level summaries were computed (Gorr, 2012) using ArcGIS-ESRI version 10 software.

Data Analysis

A hierarchical panel data analysis with random and fixed effects (Bell & Jones, 2015; de Looze et al., 2015; Greenberg, 2014; Rodriguez & Elo, 2003) was used to examine changes in the number of drug possession, violent and non-violent arrests over a 72-month period. The outcome variables were log transformed to fulfill the assumptions of general linear modeling regression (i.e., normality, linearity and constant variance), while also allowing the regression coefficients to be interpreted as percentage change of the outcome (Tabachnick, Fidell & Osterlind, 2001).

Under the hierarchical model, the number of arrests were nested within precincts. This allowed us to control for unobservable characteristics and unmeasured heterogeneity that are inherent to the lower unit of analysis such as, changes to the drug market structure including drug availability on the street or the price of drugs. We compared results generated under a random effects model to a fixed effect model. A random effects model uses both the cross-sectional and temporal variations of the data, so it allows us to study the effects of time-invariant variables. In contrast, the fixed effect model automatically controls for any observable or unobservable time-constant confounders (e.g. census data per precinct). Thus, the fixed effect model uses only within-precinct changes, while ignoring between-precinct variation. A Hausman Test (Wooldridge, 2012) indicated that the random effects model was not statistically different from the fixed effects model; therefore, we retained the random effects model to allow for analysis of time-invariant covariates. These models also provide an Intraclass Correlation Coefficient (ICC) that explains the proportion of variance that is attributable to the clustering by units, in this case, police precincts (Rodriguez & Elo 2003;

de Looze, 2015). All statistical analyses were conducted using STATA 14 (StataCorp, LP, College Station, TX, USA). Estimations were obtained using robust standard errors clustered on precinct level (Greenberg, 2014).

Results

A visual analysis of the city-wide drug possession arrests suggests a moderate decrease in the immediate months (August – December 2012) after the full schedule of the reforms (See Figure 1). However, the city saw an subsequent increase in the total arrests for drug possession in the first quarter of 2013 (January – March) and reached almost the same number as the first quarter of 2010 (around 450 per month). Relative to violent and non-violent arrests, drug possession arrests fluctuated more over the 72-month period displaying a noticeable increase in the number of arrests during local election months (March-May) in 2010 and 2013. In contrast, violent and non-violent arrests were relatively stable and often overlapped each other, with the “narcomenudeo” reforms appearing to have no effect.

Over the 72-month period, arrests for drug possession, and violent and non-violent crime were unevenly distributed across the precincts (see Table 1). The precinct “Centro” (Downtown), had the highest average arrest rates across all three categories, with arrest rates exceeding the city-wide mean by at least 1 standard deviation. Nonetheless, Centro had a socio-demographic composition similar to the other precincts and did not substantially differ from the overall city profile.

We conducted a correlation analysis for all the city-wide crimes (see Table 2). The relationship between violent and non-violent arrests was strong and statistically significant ($r = 0.724$, $p < 0.01$), while the correlation of drug possession with violent and non-violent crimes was moderate but still statistically significant ($r = 0.5$, $p < 0.01$). These results suggest that the policing of drug possession crimes follows a different pattern from policing of other violent and non-violent crime in the city.

Based on the hierarchical panel data analysis, implementation of the narcomenudeo reforms had no significant association with arrests for drug possession or other violent and nonviolent crimes at the $p < 0.05$ level (See Table 3). In contrast, local elections were significantly and positively associated with arrests across all models ($p < 0.01$). Drug possession arrests had the strongest association with local elections ($b = 0.546$, $p < 0.01$), followed by arrests for violent ($b = 0.204$, $p < 0.01$) and non-violent ($b = 0.196$, $p < 0.01$) crimes. Specifically, drug possession arrests increased 54% during electoral cycles compared to other periods. According to the ICC, only 16% of variation in drug possession arrests between precincts was explained by the model; substantially larger percentages of between precinct variation in violent (40%) and non-violent crimes (36%) were explained by the inclusion of the socio-economic controls.

Discussion

While the decriminalization of small amounts of illegal drugs is theoretically expected to impact police enforcement patterns, we found no significant association between drug-related arrests and implementation of the narcomenudeo reforms in Tijuana. These results

coincide with qualitative findings that identified gaps in narcomenudeo's street-level implementation that included a lack of preparation and coordination between key institutional stakeholders from public security, drug treatment, judicial, and public health sectors (Werb et al., 2015). Similarly, drug users involved in the criminal justice system in Tijuana have reported nearly universal absence of drug user knowledge or experiences of these reforms, including diversion to drug treatment or weighting of personal possession of drugs (Beletsky et al., 2015). To our understanding, no other study in Mexico has used longitudinal precinct-level local police data to assess the effects of the recent “narcomenudeo” drug reforms.

Although it was not initially considered one of the main questions of our study, it is important to highlight the relationship between elections, particularly local mayoral races, and policing patterns. Compared to non-electoral cycles, we found a 54% spike in monthly drug possession arrests, as well as close to 20% increase in arrests for violent and non-violent crime arrests during electoral cycles. This is consistent with previous results on incentives for mayors to increase policing in advance of elections to secure positive electoral results, as they are mainly responsible for providing public security and hence are blamed for poor performance (Levitt, 1997). While the results showed an increase in arrests across crime categories, it is important to point out that drug possession arrests more than doubled during these periods (Feb-June/2010 and March-June/2013). This might be a reflection of police targeting the “low-hanging fruit” such as street drug users and the homeless (Beletsky & Heimer, 2009), undermining the secondary objectives of the decriminalization reforms and making it more difficult for people to access rehabilitation services (Werb et al., 2016). Although the reforms have removed all penal sanctions for personal possession and consumption from the drug laws, in practice, these encounters with the public safety system continue to make criminalization a de facto experience for drug users (Correa & Meneses, 2014).

The differences of ICCs among the regression models emphasize the importance of the local covariates in understanding the variability in spatial distribution of crime. Our model for drug possession arrests only accounted for 16% of the variation among precincts, emphasizing that there are other unmeasured factors that could further explain drug-related arrests patterns (e.g. number of street dealers or shooting galleries). Such factors could further elucidate the relationship between policy reforms and its impact on the policing on drug-related crimes. Additional statistical models that include a time lag for crime could help to deal with the simultaneity of police arrests and crimes, allowing us to control for historical factors that might affect current crime levels (Rosenfeld, 2014).

Another important finding was the identification of precincts with elevated crime rates, or “hot-spots,” which in turn could be targeted for designing and implementing more effective crime prevention programs (Eck & Weisburd, 1995). In this study, we found that the precinct, “Centro”, had the highest number of official arrests across all three categories of crime. This corroborates prior findings that this area is a hotspot of drug possession arrests, based on drug user reports over a three-year period (Gaines et al., 2016). Thus, it is important to study if these hotspots are stable across time or the result of temporary changes in the city (Spelman, 1995; Johnson & Bowers, 2008). A stable crime area can present an

opportunity for structural interventions that maximize resource allocation to promote public health goals. Under the framework of the narcomenudeo reforms, this could include the establishment of opioid substitution therapy (OST), safe consumption rooms (SCR), needle exchange programs or HIV treatment and testing in hot-spots, thus helping reduce barriers to service access among vulnerable drug users.

Although we hypothesized an increase in arrests flowing from the law, one could also hypothesize that the law's impact would decrease their prevalence. Such an outcome could result if police were shifting their enforcement discretion away from small-scale drug crimes in view of decriminalization. Several jurisdictions have adopted strategies that assigned low priority to policing small-scale drug possession. This resulted in a decrease of drug users' arrests, with no effect, either positive or negative on the general crime trends (Ross & Walker, 2016). However, even under this alternative hypothesis, our analysis indicates that there is no significant change (increase or decrease) linked to the implementation of the decriminalization reforms in Tijuana.

Our study should be considered in light of several limitations. First, as previous research has documented, there could be gaps in police data due to factors such as incomplete reporting, error checking, or the size of the agency that reports them (Arango, 2003; Maltz, 1999). In addition, police data might not reflect true trends in crime, as the vast majority of crimes, close to 94% according to national numbers (ENVIPE 2016), go unreported (Wittebrood & Junger, 2002). There is also a possibility that municipal police data does not fully represent drug-related events since instances of police corruption, such as monetary or sexual bribes to avoid arrest may lead to fewer incident reports (Booth et al., 2013). The municipal dataset we analyzed contained additional inherent limitations, such as the lack of specificity insofar as the substance leading to arrest; this level of additional detail could have further informed this analysis. Although one's place of residence can act as a structural determinant of health risk, this dataset did not allow for an assessment of the arrestees' residential origin. Nonetheless, our prior research identified the location of police-drug user encounters as an important structural driver of health risk (Gaines et al., 2016). Secondly, although electoral cycles are significantly statistically associated with an increase in the number of arrests, policing enforcement could also be driven by external factors that were not measured in the current study, such as the influx of deportees from the US (Chishti, Pierce & Bolter, 2017), isolated federal or state police interventions in one neighborhood that might accidentally affect nearby areas (Wyant, 2008), or the aggressive activities of Drug Trafficking Organizations (DTO) to take over the territory of a rival gang (Shirk, 2011).

Finally, we cannot conclusively confirm or refute a causal relationship between drug-related arrests or other crimes, and the changes in the law, as there are many additional ecological factors that might erode the validity of our results (Schwartz, 1994; Piantadosi, Byar & Green, 1988). These factors include changes in local police deployments and administration, local drug market structure, vagrancy and loitering enforcement, or the variable influx of deportees from the US. Third, generalizability is limited as the results of this study only reflects one municipality, and it is unlikely that the reforms were uniformly implemented across Mexico.

Despite these limitations, this analysis offers a unique street-level evaluation of a drug policy intervention using institutional data, drawing on a collaboration between UCSD and SSPM Tijuana. In turn, such collaboration creates a platform for designing and implementing trainings and other interventions intended to close the policy implementation gaps identified in this and other research (Beletsky, Macalino, & Burris, 2005; Banta-Green et al., 2013; Strathdee et al., 2015). Such collaborations are rare in Mexico and can help bring accountability and transparency to a realm that is usually resistant to outside input.

Conclusion

There is an ample body of evidence that law reforms exhibit a major policy implementation gap, whereby policing practices may systematically differ from newly-enacted drug policies. This applies to policy interventions intended to closer align policing practices with public health objectives (Beletsky et al., 2014; Silverman et al., 2012; Burris et al., 2004). Traditionally, public health and public safety have had different approaches in addressing drug-related harms, but both sectors have emphasized the need to promote health and security at the community level. Legal frameworks can create barriers for accessing effective prevention services, access to harm reduction strategies, such as OST, SCR and clean syringe access, as well as increasing arrests by police officers (Csete, 2016; Rhodes, 2002; Bluthenthal et al., 1999). Law reforms may be vital, but not in-and-of-themselves sufficient to accomplish the intended impact of drug decriminalization reforms (Beletsky et al., 2012; DeBeck et al., 2008).

In the same manner, Mexico's reforms decriminalizing small amounts of drugs does not appear to have significantly shifted drug law enforcement in Tijuana. While the reforms had the potential to increase cross-sectoral cooperation between police and health, the lack of a proper implementation has undermined this goal. Additionally, the observed relationship between policing and political cycles echo associations in other settings in which law-and-order activities increase during mayoral electoral campaigns and must be explored in detail in further studies. Finally, we need to design evidence-based interventions that align public health and security goals, modifying the way that street-level officers and police management deal with vulnerable populations, such as street drug users. These changes should contribute towards a new policing strategy that promotes harm minimization of drug use and can lead to access for drug treatment, lower infections of blood borne diseases, and respect for human rights (Maher & Dixon, 1999; Davis & Beletsky, 2009; Beletsky et al., 2011).

Acknowledgments

The authors gratefully acknowledge the collaboration from the Ministry of Public Safety and the special programs division. Special thanks to Victor Alaníz, and the rest of the statistical analysis unit. Support for the current research was provided by the Fogarty International Center of the National Institutes of Health under award Number D43TW008633 and R25TW009343, and by the National Institute on Drug Abuse (R01DA039073, R37DA019829 and T32DA023356). Additional support was granted by the CONACYT-UC MEXUS Doctoral scholarship and the Center for US-Mexican Studies at UCSD. The funders had no role in the design of the study, data collection, analysis, interpretation of data and writing of the manuscript.

References

- Arango A. Indicadores de seguridad pública en México. 2003
- Arredondo, J. Mapping Violence Homicides Trends in Mexico and Brazil 1990–2010. University of California, San Diego; 2012.
- Banta-Green CJ, Beletsky L, Schoeppe JA, Coffin PO, Kuszler PC. Police officers' and paramedics' experiences with overdose and their knowledge and opinions of Washington State's drug overdose-naloxone-Good Samaritan law. *Journal of urban health: bulletin of the New York Academy of Medicine*. 2013; 90(6):1102. [PubMed: 23900788]
- Bastos FI, Caiaffa W, Rossi D, Vila M, Malta M. The children of mama coca: Coca, cocaine and the fate of harm reduction in South America. *International Journal of Drug Policy*. 2007; 18(2):99–106. [PubMed: 17689352]
- Beletsky L, Heimer R. *Aligning Criminal Justice and HIV Prevention: From Conflict to Synergy*. 2009
- Beletsky L, Agrawal A, Moreau B, Kumar P, Weiss-Laxer N, Heimer R. Police training to align law enforcement and HIV prevention: preliminary evidence from the field. *American Journal of Public Health*. 2011; 101(11):2012–2015. [PubMed: 21940924]
- Beletsky L, Heller D, Jenness SM, Neaigus A, Gelpi-Acosta C, Hagan H. Syringe access, syringe sharing, and police encounters among people who inject drugs in New York City: a community-level perspective. *International Journal of Drug Policy*. 2014; 25(1):105–111. [PubMed: 23916801]
- Beletsky L, Macalino GE, Burris S. Attitudes of police officers towards syringe access, occupational needle-sticks, and drug use: a qualitative study of one city police department in the United States. *International Journal of drug policy*. 2005; 16(4):267–274.
- Beletsky L, Thomas R, Smelyanskaya M, Artamonova I, Shumskaya N, Dooronbekova, Mukambetov A, Doyle H, Tolson R. Policy reform to shift the health and human rights environment for vulnerable groups: The case of Kyrgyzstan's Instruction 417 On August 14, 2013. *Health and Human rights*. 2012; 14(2):2. In Volume 14, Number 2.
- Beletsky L, Wagner KD, Arredondo J, Palinkas L, Magis Rodríguez C, Kalic, Ludwig-Barron N, Strathdee SA. Implementing Mexico's "Narcomenudeo" drug law reform: A mixed methods assessment of early experiences among people who inject drugs. *Journal of Mixed Methods Research*. 2016; 10(4):384–401.
- Bell A, Jones K. Explaining fixed effects: Random effects modeling of time-series cross-sectional and panel data. *Political Science Research and Methods*. 2015; 3(1):133–153.
- Berdej C, Yuchtman N. Crime, punishment, and politics: an analysis of political cycles in criminal sentencing. *Review of Economics and Statistics*. 2013; 95(3):741–756.
- Bluthenthal R, Lorvick J, Kral A, Erringer E, Kahn J. Collateral damage in the war on drugs: HIV risk behaviors among injection drug users. *International Journal of Drug Policy*. 1999; 10(1):25–38.
- Boiteux, L., Corda, A., Edwards, S. *Sistemas sobrecargados: Leyes de drogas y cárceles en América Latina*. TNI; 2010.
- Booth RE, Dvoryak S, Sung-Joon M, Brewster JT, Wendt WW, Corsi KF, et al. Strathdee SA. Law enforcement practices associated with HIV infection among injection drug users in Odessa, Ukraine. *AIDS and Behavior*. 2013; 17(8):2604. [PubMed: 23754613]
- Brouwer KC, Case P, Ramos R, Magis-Rodríguez C, Bucardo J, Patterson TL, Strathdee SA. Trends in production, trafficking, and consumption of methamphetamine and cocaine in Mexico. *Substance use & misuse*. 2006; 41(5):707–727. [PubMed: 16603456]
- Bucardo J, Brouwer KC, Magis-Rodríguez C, Ramos R, Fraga M, Perez SG, Patterson TL, Strathdee SA. Historical trends in the production and consumption of illicit drugs in Mexico: implications for the prevention of blood borne infections. *Drug and alcohol dependence*. 2005; 79(3):281–293. [PubMed: 16102372]
- Burris S, Blankenship KM, Donoghoe M, Sherman S, Vernick JS, Case P, Lazzarini Z, Koester S. Addressing the "risk environment" for injection drug users: the mysterious case of the missing cop. *The Milbank Quarterly*. 2004; 82(1):125–156. [PubMed: 15016246]
- Chauhan P, Cerdá M, Messner SF, Tracy M, Tardiff K, Galea S. Race/ethnic-specific homicide rates in new york city: Evaluating the impact of broken windows policing and crack cocaine markets. *Homicide studies*. 2011; 15(3):268–290. [PubMed: 22328820]

- Chishti M, Pierce S, Bolter J. The Obama Record on Deportations: Deportee in Chief or Not? Migration Policy Institute, January. 2017; 26
- Cooper HL, Wypij D, Krieger N. Police drug crackdowns and hospitalisation rates for illicit-injection-related infections in New York City. *International Journal of Drug Policy*. 2005; 16(3):150–160.
- Csete J, Kamarulzaman A, Kazatchkine M, Altice F, Balicki M, Buxton J, Cepeda J, Comfort M, Goosby E, Goulão J, Hart C. Public Health and International Drug Policy: Report of the Johns Hopkins–Lancet Commission on Drug Policy and Health. *Lancet* (London, England). 2016; 387(10026):1427.
- Davis CS, Beletsky L. Bundling occupational safety with harm reduction information as a feasible method for improving police receptiveness to syringe access programs: evidence from three US cities. *Harm reduction journal*. 2009; 616(1)
- De La Federación DO. Diario oficial de la federación. DECRETO por el que se reforman, adicionan y derogan diversas disposiciones de la Ley General de Salud, del Código Penal Federal y del Código Federal de Procedimientos Penales. 2009
- de Looze M, Janssen I, Elgar FJ, Craig W, Pickett W. Neighbourhood crime and adolescent cannabis use in Canadian adolescents. *Drug and alcohol dependence*. 2015; 146:68–74. [PubMed: 25466799]
- DeBeck K, Wood E, Zhang R, Tyndall M, Montaner J, Kerr T. Police and public health partnerships: Evidence from the evaluation of Vancouver's supervised injection facility. *Substance abuse treatment, prevention, and policy*. 2008; 311(1)
- Del Estado de Baja California, P. O. Tomo CXVII, Segunda Seccion. 2010 Decreto No. 4415 de Octubre de 2010, No. 44.
- Dyke A. Electoral cycles in the administration of criminal justice. *Public Choice*. 2007; 133(3):417–437.
- Eck, JE., Weisburd, D. Crime and place, crime prevention studies. Vol. 1995. Monsey, NY: Criminal Justice Press EckCrime and Place, Crime Prevention Studies4Monsey; 1995.
- Fagan J, Davies G, Carlis A. Race and selective enforcement in public housing. *Journal of empirical legal studies*. 2012; 9(4):697–728.
- Freeman K, Jones CG, Weatherburn DJ, Rutter S, Spooner CJ, Donnelly N. The impact of the Sydney medically supervised injecting centre (MSIC) on crime. *Drug and Alcohol Review*. 2005; 24(2): 173–184. [PubMed: 16076587]
- Gaines TL, Werb D, Arredondo J, Alaniz VM, Vilalta C, Beletsky L. The spatial-temporal pattern of policing following a drug policy reform: triangulating self-reported arrests with official crime statistics. *Substance use & misuse*. 2017; 52(2):214–222. [PubMed: 27767367]
- Gelman A, Fagan J, Kiss A. An analysis of the New York City police department's "stop-and-frisk" policy in the context of claims of racial bias. *Journal of the American Statistical Association*. 2007; 102(479):813–823.
- Gorr, WL., Kurland, KS. GIS tutorial for crime analysis. Redlands, CA: Esri Press; 2012.
- Greenberg DF. Studying New York City's crime decline: methodological issues. *Justice Quarterly*. 2014; 31(1):154–188.
- Guillamón MD, Bastida F, Benito B. The electoral budget cycle on municipal police expenditure. *European Journal of Law and Economics*. 2013:1–23.
- Hernandez, J., Zamudio, C. Serie reforma legislativa en materia de drogas. Washington Office in Latin America; 2009. Mexico: Ley Contra el Narcomenudeo, una apuesta dudosa.
- Instituto Nacional de Estadística y Geografía. Principals resultados del Censo de Población y Vivienda 2010. 2011. Retrieved January 1st 2017 from: <http://www.inegi.org.mx/>
- Instituto Nacional de Estadística y Geografía. Encuesta Nacional de Victimización y Percepción sobre Seguridad Pública (ENVIPE). 2016. Retrieved June 1st 2017 from: <http://www.beta.inegi.org.mx/proyectos/enchogares/regulares/envipe/2016/>
- Johnson SD, Bowers KJ. Stable and fluid hotspots of crime: differentiation and identification. *Built Environment*. 2008; 34(1):32–45.
- Kuhn L, Davidson LL, Durkin MS. Use of Poisson regression and time series analysis for detecting changes over time in rates of child injury following a prevention program. *American Journal of Epidemiology*. 1994; 140(10):943–955. [PubMed: 7977282]

- Labate, B. Drogas, política y sociedad en América Latina y el Caribe. Vol. 1. CIDE; 2015.
- Levitt SD. Using Electoral Cycles in Police Hiring to Estimate the Effect of Police on Crime (No w4991). National Bureau of Economic Research. 1995
- Maher L, Dixon D. Policing and public health: Law enforcement and harm minimization in a street-level drug market. *British journal of criminology*. 1999; 39(4):488–512.
- Maltz, MD. Bridging gaps in police crime data. DIANE Publishing; 1999.
- Metaal P. En busca de los derechos: Usuarios de drogas y las respuestas estatales en América Latina. Colectivo de Estudios Drogas y Derecho. 2014
- Pérez Correa, C., Meneses, R. Cuadernos de Trabajo, Programa de Política de Drogas. México: PPD-CIDE; 2014. La guerra contra las drogas y el procesamiento penal de los delitos de drogas 2006-2012.
- Piantadosi S, Byar DP, Green SB. The ecological fallacy. *American journal of epidemiology*. 1988; 127(5):893–904. [PubMed: 3282433]
- Pollini RA, Brouwer KC, Lozada RM, Ramos R, Cruz MF, Magis-Rodriguez C, Case P, Burris S, Pu M, Frost SD, Palinkas LA. Syringe possession arrests are associated with receptive syringe sharing in two Mexico-US border cities. *Addiction*. 2008; 103(1):101–108. [PubMed: 18028520]
- Reportaje BCS. Limpiecito. *Semanario Zeta Tijuana*. 2015 Mar 9. Retrieved June 5th 2016 from <http://zetatijuana.com/2015/03/09/limpiecito/>
- Rhodes T. The 'risk environment': a framework for understanding and reducing drug-related harm. *International journal of drug policy*. 2002; 13(2):85–94.
- Rodriguez G, Elo I. Intra-class correlation in random-effects models for binary data. *Stata J*. 2003; 3(1):32–46.
- Rosenfeld R, Fornango R. The impact of police stops on precinct robbery and burglary rates in New York City, 2003–2010. *Justice Quarterly*. 2014; 31(1):96–122.
- Ross A, Walker A. The Impact of Low-Priority Laws on Criminal Activity: Evidence from California. *Contemporary Economic Policy*. 2017; 35(2):239–252.
- Russoniello K. The devil (and drugs) in the details: Portugal's focus on public health as a model for decriminalization of drugs in Mexico. *Yale J Health Pol'y L & Ethics*. 2012; 12:371.
- Sabet, D. Police reform in Mexico: informal politics and the challenge of institutional change. Stanford University Press; 2012.
- Schwartz S. The fallacy of the ecological fallacy: the potential misuse of a concept and the consequences. *American journal of public health*. 1994; 84(5):819–824. [PubMed: 8179055]
- Secretaría de Salud, Mexico. Sistema Nacional de Información de Salud (SINAIS). 2016. Retrieved June 1st 2017 from: <http://www.dgis.salud.gob.mx/contenidos/sinais/estadisticas.html>
- Shirk, DA. The drug war in Mexico: confronting a shared threat. Council on Foreign Relations; 2011.
- Silverman B, Davis CS, Graff J, Bhatti U, Santos M, Beletsky L. Harmonizing disease prevention and police practice in the implementation of HIV prevention programs: up-stream strategies from Wilmington, Delaware. *Harm reduction journal*. 2012; 917(1)
- Smith, PH., editor. Drug policy in the Americas. Westview Press; 1992.
- Spelman W. Criminal careers of public places. *Crime and place: Crime prevention studies*. 1995; 4:115–142.
- Stockwell T, Zhao J, Marzell M, Gruenewald PJ, Macdonald S, Ponicki WR, Martin G. Relationships between minimum alcohol pricing and crime during the partial privatization of a Canadian government alcohol monopoly. *Journal of studies on alcohol and drugs*. 2015; 76(4):628–634. [PubMed: 26098040]
- Strathdee SA, Arredondo J, Rocha T, Abramovitz D, Rolon ML, Mandujano EP, Rangel MG, Olivarría HO, Gaines T, Patterson TL, Beletsky L. A police education programme to integrate occupational safety and HIV prevention: protocol for a modified stepped-wedge study design with parallel prospective cohorts to assess behavioural outcomes. *BMJ open*. 2015; 5(8):e008958.
- Tabachnick BG, Fidell LS, Osterlind SJ. Using multivariate statistics. 2001
- Tinajero JH, Angles CZ. Mexico: The Law Against Small-Scale Drug Dealing A Doubtful Venture. Policy. 2009

- Velasco, L., Albicker, SL. Estimacion y caracterizacion de la poblacion residente en el Bordo del canal del rio Tijuana. COLEF; 2013.
- Vilalta CJ. The spatial dynamics and socioeconomic correlates of drug arrests in Mexico City. *Applied Geography*. 2010; 30(2):263–270.
- Villatoro-Velázquez, JA., Medina-Mora, ME., Fleiz-Bautista, C., Téllez-Rojo, MM., Mendoza-Alvarado, LR., Romero-Martínez, M., Gutiérrez-Reyes, JP., Castro-Tinoco, M., Hernández-Ávila, M., Tena-Tamayo, C., Sevilla, CA. Encuesta nacional de adicciones 2011: reporte de drogas. México: Instituto Nacional de Psiquiatría Ramón de la Fuente Muñiz; 2012.
- Werb D, Mora MEM, Beletsky L, Rafful C, Mackey T, Arredondo J, Strathdee SA. Mexico's drug policy reform: Cutting edge success or crisis in the making? *The International journal on drug policy*. 2014; 25(5):823. [PubMed: 24974368]
- Werb D, Strathdee SA, Vera A, Arredondo J, Beletsky L, Gonzalez-Zuniga P, Gaines T. Spatial patterns of arrests, police assault and addiction treatment center locations in Tijuana, Mexico. *Addiction*. 2016; 111(7):1246–1256. [PubMed: 26879179]
- Wilson JQ, Kelling GL. Broken windows. *Atlantic monthly*. 1982; 249(3):29–38.
- Wittebrood K, Junger M. Trends in violent crime: a comparison between police statistics and victimization surveys. *Social indicators research*. 2002; 59(2):153–173.
- Woods JB. Decriminalization, police authority, and routine traffic stops. 2014
- Woolridge, JM. *Introductory Econometrics: A Modern Approach*. Vol. 5. Thomson/South-Western, Cengage Learning; 2012.
- Wyant BR. Multilevel impacts of perceived incivilities and perceptions of crime risk on fear of crime: Isolating endogenous impacts. *Journal of Research in Crime and Delinquency*. 2008; 45(1):39–64.

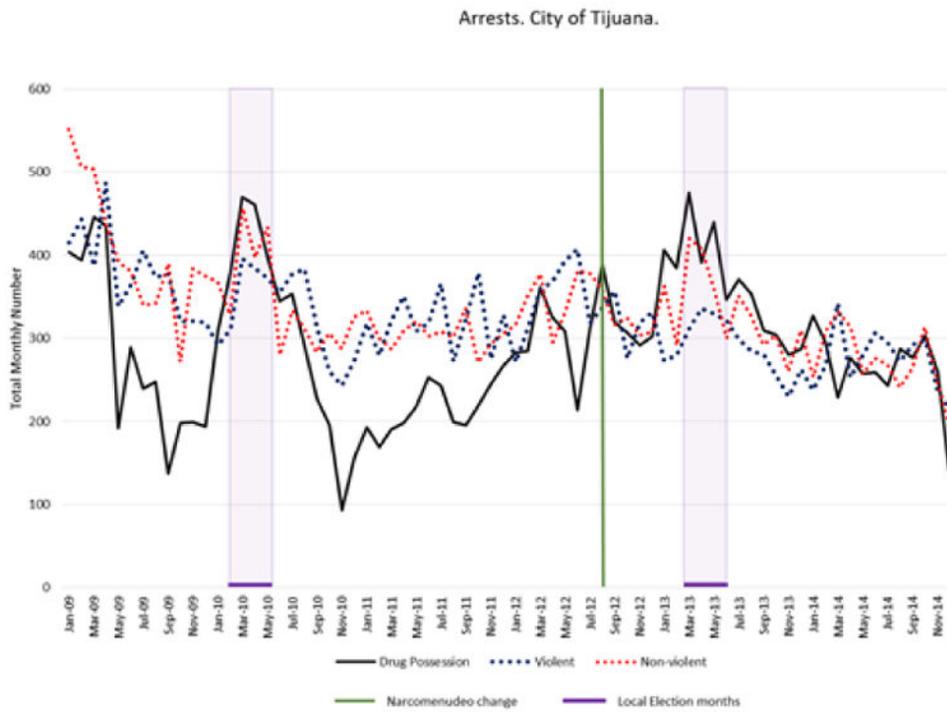


Figure 1. Tijuana wide trends for drug possession, violent and non-violent arrests, January 2009-December 2014. All information was taken from the internal COMPSTAT systems.

Table 1

Table of descriptive statistics for monthly average number of arrests during January 2009 - December 2014, and 2010 census values by the existing 11 police precincts used by the Tijuana Ministry of Public Safety.

	Monthly # of Arrests				Socio-Economic controls (census 2010)							
	Drug Possession		Violent		Non Violent		# of Men per 100 Women	% Pop >15 with incomplete basic education	% Pop with no social security coverage	% of Private houses with dirt floor	% Female headed households	% General Unemployment
	Mean	S.D.	Mean	S.D.	Mean	S.D.						
Tijuana - city wide	26.31	18.88	29.23	21.22	30.23	16.09	103.21	32.52	35.82	2.34	29.38	4.36
By Police Precinct												
Centenario	24.12	10.90	21.45	8.35	23.95	8.47	103.07	32.38	34.21	3.15	27.53	3.54
Centro	57.47	21.79	81.19	23.32	59.61	15.88	104.83	25.80	40.94	0.66	33.21	3.57
Cerro Colorado	15.55	11.09	19.11	7.93	21.70	9.63	101.38	29.39	34.14	0.94	29.98	4.09
Los Pinos	19.72	11.06	23.77	8.74	31.08	9.39	102.00	35.49	30.63	3.28	30.14	3.78
La Mesa	13.06	8.21	26.02	11.37	30.09	11.57	99.25	22.64	37.46	1.15	32.46	2.03
La Presa	31.73	17.30	44.37	11.33	44.95	13.46	104.67	33.60	33.70	2.85	24.59	5.35
Mesa de Otay	29.65	22.12	17.48	9.05	18.55	9.08	103.69	33.14	43.36	1.59	31.62	5.15
Playas de Tijuana	20.70	17.58	17.55	8.09	21.62	8.85	101.85	29.61	37.58	1.23	29.61	4.76
Presa Rural	22.61	11.96	18.97	7.24	24.29	9.69	106.28	42.48	30.49	5.65	25.32	5.17
San Antonio de los	29.59	15.74	31.15	10.33	35.98	13.24						
Buenos Sanchez Taboada	25.23	12.19	21.47	7.26	20.73	7.26	105.03	34.86	35.51	1.32	27.87	5.27
							103.31	38.32	36.05	3.92	30.85	5.27

Table 2

Table of pearson's correlations coefficients between crimes and statistical significance level.

Variables	Drug Possession	Violent (Homicides + Injuries + Robbery)	Non Violent (theft + car theft)
Drug Possession	1		
Violent	0.522 ***	1	
Non Violent	0.503 ***	0.724 ***	1

p<0.01,

**
p<0.05,

*
p<0.1

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Table 3

Panel analysis of Drug possession, violent and non-violent logged arrests per 11 police precincts for the city of Tijuana.

Model	1	2	3
Outcome	ln (DrugPoss)	ln (violent)	ln (nonviolent)
Stop and Arrests	Drug Possession	Homicides + Injuries + Robbery	theft + car theft
Time Controls (Quarter Seasonality, Year Dummies)	YES	YES	YES
Variables of Interest			
Narcomenudeo Law (August 2012)	0.187 (0.151)	0.001 (0.090)	-0.043 (0.071)
Local Election months	0.546 *** (0.088)	0.204 *** (0.044)	0.196 *** (0.049)
Socio-Economic controls (census 2010) (Demographics, Schooling, Social Security Coverage, Housing Conditions, Female-Headed Households, Economic Structure)	YES	YES	YES
# of Men per 100 Women	0.274 *** (0.026)	0.332 *** (0.033)	0.245 *** (0.024)
% Pop >15 with incomplete basic education	-0.071 ** (0.033)	-0.200 *** -0.053	-0.131 *** -0.043
% Pop with no social security coverage	-0.012 (0.024)	-0.116 *** (0.025)	-0.099 *** (0.026)
% of Private houses with dirt floor	0.087 (0.073)	0.206 (0.131)	0.084 (0.106)
% Female headed households	0.075 * (0.039)	0.136 *** (0.033)	0.080 *** (0.028)
% Female Unemployment	0.097 (0.154)	0.317 * (0.192)	0.156 (0.150)
Constant	-25.49 *** (2.684)	-26.10 *** (3.651)	-17.27 *** (2.766)
R-sq: overall	0.348	0.487	0.421
Intraclas correlation coefficient (ICC)	0.163	0.405	0.369
Observations	791	792	792
Number of police precincts	11	11	11

Robust standard errors in parentheses

p<0.01,

**
p<0.05,

*
p<0.1