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Mexico’s Northern Border Conflict: Collateral Damage to Health and Human Rights of Vulnerable Groups

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Abstract

Objectives: Given links between policing environment and infectious disease risk among vulnerable groups, we surveyed female sex workers who inject drugs in Tijuana and Ciudad (Cd.) Juarez. Data were used to 1. compare distributions of human rights violations and disease risk, 2. juxtapose these patterns against demographic and structural environment variables, and 3. formulate implications for structural interventions.

Methods: Structured interviews and testing for sexually-transmitted infections (STIs) were conducted (October 2008-October 2009). Frequency of individual and environmental factors, including police abuse, HIV risk and protective behaviors were compared between sites using univariate logistic regression.

Results: Of 624 women, almost half reported police syringe confiscation despite syringes being legal and 55.6% reported extortion (last 6 months), with significantly-higher proportions in Cd. Juarez (p<0.001). Reports of recent solicitation of sexual favors (28.5% in Tijuana, 36.5% in Cd. Juarez, p=0.04) and sexual abuse were commonplace (15.7% v 18.3%). Significantly lower prevalence of STIs in Tijuana (64.2% v 83.4%, p<0.001) paralleled lower prevalence of sexual risk behaviors there. Cd. Juarez respondents reported significantly-higher median client loads (1.5 v 6.9, p<0.001) and lower median pay per sex act (US$20 v US$10, p<0.001) (last month). Relative to Tijuana, security deployment was perceived to increase more in Cd. Juarez (last year), especially army presence (59.2% v 72.1%, p=0.001).

Conclusions: Collateral damage from police practices in the context of Mexico’s drug conflict may impact public health in the Northern Border Region. Itinerant officers may facilitate disease spread beyond the Region. The urgency for mounting structural interventions is discussed.

Key Words: Female sex workers, injection drug users, conflict, structural environment, gender violence, HIV, infectious disease
Background

In recent decades, public health research has become increasingly concerned with the impact of structural violence and militarized conflict, including violence against women and broader gendered human rights violations on long-term physical and mental health outcomes. (1) Sexual and gender-based violence has been inflicted in warzones and refugee camps throughout the world, with grave implications on health and mental health outcomes. (2, 3) Research from post-conflict settings indicates that such violence against women, often perpetrated by military groups, can become normalized in the wake of political unrest and displacement. (4, 5) In the context of a global HIV epidemic, injecting drug users (IDUs) and female sex workers (FSWs), as well as female sex workers who are also IDUs (FSW-IDUs) are particularly vulnerable to victimization and endure harassment as high risk groups with few means of recourse. Violence and harassment of these marginalized groups are furthered by entrenched poverty, lack of access to healthcare services, (6) fear of harassment from police, (7) and policies and practices of state actors that prevent FSW-IDUs from having control over their risk environment. (6, 8-12) The public health consequences of these macro forces have been analyzed to some extent in conflict or transitional settings (5, 11), but have not been considered in the context of Mexico’s violent struggle against drug cartels.

At a time when the death toll from drug-related violence along the Northern Mexico Border continues to mount, the deployment and militarization of law enforcement in the region has reached unprecedented levels. (13, 14) Comprised of Federal army and police working alongside state and municipal law enforcement, this force lacks coordination in command and control and has been implicated in a range of human rights abuses, including violence against FSWs. (13, 15, 16) Law enforcement officers (especially at the municipal level) have been accused of corruption, including racketeering, extortion and actually managing drug and sex markets. (14) During our study period (2008-2009), violence in Ciudad (Cd.) Juarez was growing precipitously as was the deployment of police, while in Tijuana 2008 served as the height of violence (17) and the number of police deployment in Tijuana remained relatively steady. (14)

A key gateway and a legendary destination for drug and sex tourism, the Mexico-US border is a nexus for injection drug use and associated infectious diseases. Elevated levels of drug use have resulted from ‘spillover’ along the US-bound drug trafficking routes. (18) This has acutely affected Mexico’s Northern Border states where, as trafficking and migration channels converge, rates of injection drug use and commercial sex activity are estimated to be 10-15 times the national average. (18, 19) Tijuana is home to approximately 6000 FSWs and 10000 IDUs; the FSW population in Cd. is believed to number over 4000 Juarez and the IDU population around 6,500. (15, 19) FSWs who are also IDUs exhibit particular vulnerability to disease acquisition because they can acquire communicable infections through both the sexual and injection routes; this subgroup may also act as a bridge through which HIV and other STIs are transmitted from higher prevalence to lower prevalence populations. (15, 20, 21) At this time, there are no reliable estimates for the overall number of FSW-IDUs in the two research site cities.

Unlike many other countries, Mexico does not formally prohibit prostitution on the national level, leaving its regulation up to local determination. Sex work in Tijuana formally exists under a permit system, although approximately half of FSWs skirt the requirements such as age limitations and periodic STI testing. (19) In Cd. Juarez, FSWs do not work under any formal regulatory framework. Mexican laws also permit over-the-counter pharmacy access, but many IDUs report difficulty purchasing syringes because
of arbitrary restrictions and discrimination. Past research in the Mexico-US border Region suggests that it is common for IDUs to be arrested and detained for carrying syringes, even though syringe possession is legal. In one study, reports of police violence, corruption and extortion were commonplace; of IDUs ever arrested (91%), 57% had been arrested for carrying a syringe. Arrest for possessing syringes was also independently associated with a three-fold increase in the odds of receptive syringe sharing and use of shooting galleries, both which are known risk factors for the spread of HIV and other blood-borne infections.

Given the dynamics of survival and street-based sex work, FSW-IDUs face elevated risk of violence from clients, pimps, and law enforcement. Human rights abuses such as physical violence and extortion by uniformed personnel are especially dangerous because they push commercial sex activity underground where FSWs are less able to negotiate safer practices. Providing free sexual services is a frequent form of extortion by police and military. Wide-spread abuses of FSWs by police and army in hotspots like Tijuana and Cd. Juarez can have public health consequences far beyond the Region.

Despite keen interest in the Northern Border conflict, its public health impact is poorly understood. Our research in the Region has identified high levels of police abuse among IDUs and FSWs, but no study has focused specifically on the FSW-IDU population. Given the epidemiological importance and heightened vulnerability of FSW-IDUs in the context of massive security personnel deployment, we analyzed responses from Tijuana and Cd. Juarez FSW-IDU on perceived changes in levels of law enforcement, experiences of police abuse, and HIV/STI risk. The study’s dual-site design affords an opportunity to conduct a comparison between a city experiencing continued escalation in law enforcement deployment (Cd.Juarez) with one where deployment has leveled off (Tijuana). Based on our findings, we provide recommendations for public health and public security research and policy.

**Materials and Methods**

The study instrument and research methodology have been described in detail elsewhere. In short, between October 2008-October 2009, participants were recruited in venues frequented by FSWs (bars, street corners and motels) as part of a behavioral intervention study to reduce injection and sexual risks. Eligibility criteria included being at least 18, reporting unprotected sex with a male client in the last month, having injected drugs and shared injection equipment within the past month, and agreeing to accept free STI treatment if medically indicated. After receiving informed consent, computer-assisted surveys and biological testing for HIV and STIs were administered by outreach staff.

Collected data included sociodemographics and sexual and drug use risk behaviors. Questions included age, marital status, income, and housing. Items related to sexual behavior included age at initiation and reasons for entering sex work and sexual practices. Questions on drug use included age at first injection, drugs used, and frequency. Key to this analysis, we assessed FSW-IDUs’ personal experiences with the police. These questions included lifetime and last six months’ experience of syringe confiscation, extortion, and physical and sexual abuse, although respondents were not asked about their experience of unwanted or unplanned pregnancies. Perceptions of changes in the sex work environment, such as levels of police and army deployment, frequency of FSW arrests, cartel visibility and built environment (e.g. visibility of torn-down buildings) were also collected. Other components of the physical, social, economic environments, understood to influence disease risk were assessed, including migration.
and deportation experience, homelessness, and earnings from commercial sex activity.(11)

Descriptive statistics were used to compare baseline sociodemographic, behavioral, economic, policing, and disease characteristics by city. The Wilcoxon rank sum test was used for all continuous outcomes because these variables tended to have non-Normal distributions. Chi-square tests were used to compare binary outcomes, except in cases where expected values were <5, when Fisher’s exact test was used. Univariate logistic regression was used to compare individual and structural HIV risk and protective factors between cities, treating Cd. Juarez as the reference group. Institutional review boards at UCSD School of Medicine, Tijuana General Hospital, and the Universidad Autonoma de Ciudad Juarez approved the study.

Results

Sociodemographic Characteristics
By design, the sample of 624 FSW-IDUs was evenly split between the two study sites (312 from Tijuana and 312 from Cd. Juarez). Median age was 33, median level of education completed was 6 years, and a slight majority (53%) had income below 3,500 pesos, equivalent to approximately US$300 per month. The median age of drug initiation was 20 and median age of sex work initiation was 19. FSW-IDUs in our sample spent a median of 10 hours/day on the street.

Demographically, significant differences were observed between the Tijuana and Cd. Juarez samples on a number of indicators, including the median percent of respondents describing themselves as homeless (8.3% v 2.9%, p=0.005), median years of education completed (8 [interquartile range [IQR], 6-10] v 6 [IQR, 4-8], p<0.001), median income below 3,500 pesos (34.3% v 59.9%, p<0.001), and median time (hours) spent on street (12 [IQR, 8-18] v 10 [IQR, 7-12], p<0.001). Compared to women in Cd. Juarez, a lower proportion of Tijuana women lived in the city of interview their entire life (32.4% v 55.1%, p<0.001), a higher proportion had been deported from US (14.4% v 3.5%, p<0.001), and a higher proportion had English proficiency (39.4% v 13.5%, p<0.001).

Health Status, Risk Factors, and Program Utilization
The prevalence of infectious disease risk factors was generally significantly different between the two sites. Data on injection risk behaviors were mixed, with Tijuana respondents reporting lower median numbers of injecting partners in the last month (2 [IQR, 1-5] v 3 [IQR, 2-5], p<0.001). Relative to Cd. Juarez, a higher proportion of Tijuana respondents also reported syringe sharing more than half of the time (62.3% v 36.5%, p<0.001).

Compared to Ciudad Juarez, more Tijuana respondents reported often or always injecting drugs with sex clients (47.4% v 19.2%, p<0.001) and intimate sex partners (28.3% v 14.1%, p<0.001), in the last month. In Cd. Juarez, sexual risk behaviors were significantly more prevalent, including higher median numbers of clients (1.5 [IQR, 0.6-3] v 6.9 [IQR, 3-10.8], p<0.001) and higher levels of inconsistent condom use, with 14.8% v 43.8% reporting using condoms infrequently during vaginal sex (p<0.001). Relative to Tijuana, substantially higher proportions of Juarez respondents also reported earning more for unprotected sex (32.5% v 61.7%, p<0.001). The elevated prevalence of STIs in
Cd. Juarez (64.2% v 83.4%, p<0.001) paralleled the higher levels of risk behavior in that city but HIV prevalence was comparable across sites at an average of 5.5%.

Lifetime experience with public health services were similar across sites, including the proportion who had attended a syringe exchange program (SEP) in the last month (10.8% overall) and ever had an HIV test (51.8% overall). However, the sites differed significantly in terms of lifetime prevalence of drug treatment utilization (42.3% in Tijuana v 60.3% in Cd. Juarez, p<0.001) and incarceration (66.7% in Tijuana v 80.8% in Cd. Juarez, p<0.001).

Experiences of Police and Trends in Structural Environment
Comparing the cities in terms of criminal justice-related experiences (Table 2), almost 50% of the study sample reported syringe confiscation within the last 6 months despite syringes being legal. An even larger proportion (55.6%) reported financial extortion during this period, with 42.9% reporting police forcibly confiscating money; the proportions in Cd. Juarez were significantly higher on virtually all indicators of the policing risk environment. Across the samples, 32.5% reported police requests for free sexual services and 17.0% reported sexual abuse by police officers in the last 6 months, with Cd. Juarez demonstrating higher levels (28.5% v 36.5%, p=0.04, and 15.7% v 18.3%, p=0.46, respectively).

As shown in Table 3, across several categories, law enforcement deployment was perceived to have increased more in Cd. Juarez, including Federal police (57.5% v 59.8%), municipal police (48.7% v 50.3%) and Federal army showing an especially high and significant increase during this period (59.2% v 72.1%, p=0.001). There were no significant differences between cities in terms of perceived changes in levels of street violence (53.4% overall), cartel visibility (53.4% overall), and number of sex workers arrested in the last year (44.7% overall). However, Tijuana respondents reported more of an increase in client violence (32.4% v 14.3%, p<0.001), while Cd. Juarez experienced a higher increase in visibility of torn-down buildings (34.2% v 57.7%, p<0.001). In terms of trends in service access, Tijuana respondents reported significantly improved access to healthcare (37.4% v 15.2%, p<0.001), as well as better access to condoms (44.8% v 17.9%, p<0.001) and sterile syringes (44.5% v 17.7%, p<0.001) over the last year.

Discussion
This study represents an analysis of FSW-IDUs’ experiences relating to the criminal justice-driven risk environment in the context of Mexico’s Northern border conflict.

Relative to Tijuana, respondents from Cd. Juarez reported significantly higher levels of police abuse across the spectrum of categories we assessed, including syringe confiscation, requests for free sexual services, financial extortion, and robbery. FSW-IDUs there also demonstrated higher perceptions of increased police deployment across all categories, with army deployment perceived to have increased by the vast majority of respondents.

As we and others previously found,(15, 19, 23, 27, 28) reported levels of police abuse corresponded to elevated vulnerabilities in a number of risk behavior and health outcome domains. Although causality cannot be determined in this cross-sectional analysis, it is notable that significantly higher prevalence of sexual service extortion and marginally higher prevalence of police sexual abuse in Cd. Juarez paralleled higher
proportions of respondents reporting infrequent condom use with clients and being paid more for unprotected sex. Women in Cd. Juarez also earned significantly less for sex compared to women in Tijuana; amounts earned were significantly lower than those found in 2004-2006. (29)

Respondents from Cd. Juarez were observed to have significantly higher STI prevalence. Given the compounded gender and power imbalance, it is unlikely that FSWs can exert control over their sexual encounters with police, contributing to the individual and network STI transmission risk, including their abusers. The substantially higher prevalence of STIs in this city and lack of improved access to prevention and health services further underscores the dire situation of vulnerable populations in this conflict setting. In the face of extreme levels of structural violence and disruption, it may be unrealistic to expect that behavioral interventions that focusing on individual responsibility to change HIV/STI risk behavior can be effective without addressing the underlying drivers in the risk environment.

Sexual violence perpetrated by state actors imposes a particularly heavy burden because of low self-efficacy to seek justice in the aftermath and the lack of adequate medical and social services to mitigate the long-term effects of trauma. (30, 31) Especially prevalent and acute in conflict settings, forced sexual encounters with uniformed personnel can generate a cascade of detrimental health consequences, including post-traumatic stress, substance abuse, and elevated risk of STIs. (32) Violent conflict produces detrimental consequences on community health independent of police and army abuse, (3, 32, 33) so contextual levels of structural violence can only aggravate the individual-level risk flowing from experiences observed in our sample.

Analogous paradigms frame the health consequences of extortion and robbery by police. As FSWs respond to these practices by protecting their financial interests and physical safety, these behavioral pressures can force even legitimized sex markets underground. (30) In the context of furtive sex transactions, FSWs experience reduced ability to negotiate condom use, impaired leverage to demand fair pay, and increased risk of victimization by clients. (6)

Experience of extra-judicial syringe confiscation carries a public health detriment through a different set of mechanisms. Removal of injection equipment directly reduces IDU access to clean injection equipment, while also increasing the likelihood of syringe sharing. Such activity also deters IDUs from carrying syringes to avoid confiscation and extortion practices, while also creating real and perceived barriers to utilization of SEPs, pharmacies, and related public health prevention services. (33) Syringe confiscation has been associated with increased infection risk. (28, 35, 36) In this sample, although a higher proportion of Cd. Juarez respondents reported syringe confiscation and a slightly higher proportion reported lifetime prevalence of syringe sharing, other indicators of injection risk, such as frequent receptive syringe sharing, were higher in Tijuana. Given that HIV prevalence was comparable across cities, research assessing additional proximal risk factors is needed to unpack the public health impact of syringe confiscation on injection risk.

However horrific and irreparable, damage caused by these civil and human rights violations goes well beyond the physical and psychological health of the individual women. Disease acquired as a result of adverse police practices can spread quickly through FSW-IDU sexual and drug injection networks, fueling concentrated epidemics among high-risk groups as well as transmission to the general population. Forced sexual activity with multiple FSWs also suggests a possible role of law enforcement personnel as vectors of STIs among FSWs and others in the community. Meanwhile, given the large number of itinerant Federal military and police personnel in the Northern Border region, our data illuminate a substantial risk of diffusion of STIs once itinerant soldiers
return to their places of origin. This pattern would parallel phenomena repeatedly observed on other continents, where itinerant troops effectively distributed an epidemic from an epicenter conflict locale to populations in their places of origin.

As matters stand, only about half of our respondents reported ever having an HIV test, while only about one in 10 had ever attended a SEP. In Tijuana, women reported experiencing significantly greater access to sterile syringes, condoms, and primary health care over the past year relative to Cd. Juarez, which reflects considerable resources that were expended by State and Federal health authorities in HIV/STI prevention in that city. In contrast, in Cd. Juarez, few women reported improvements in any of these services over the past year. Urgency to build and sustain capacity in HIV/STI prevention efforts is paramount, especially in light of recent reports that support from the Global Fund on HIV, TB and Malaria may be significantly curtailed. Our respondents reported relatively high prevalence of incarceration and drug treatment experiences. Based on international best practices and the United Nations Office of Drugs and Crime (UNODC) guidelines, contact with these institutional structures can serve as an important opportunity for delivery of HIV testing, treatment, education, and opioid substitution therapy.

Pervasive corruption, high rates of injection drug use and sexual abuse, and other human rights abuses make them venues for increased sexual and injection risk. Although progress has been recently made in institutional reform to align drug treatment and correctional institutions with public health prevention goals to reach high risk groups in Mexico, many challenges remain in shifting approaches taken by these institutions from purely punitive frameworks for drug abuse towards evidence-based models.

As these institutions strive towards reform, upstream challenges in the realm of street-level police and army practices towards vulnerable populations remain formidable. Theoretically, the relatively liberal legal regimes relating to syringe possession and sex work open the door for harmonization of policing and public health efforts targeting FSW-IDUs. As is often the case, however, the law “on the books” differs substantially from the “law on the street” in these cross-border cities. Our findings paint a troubling picture of pervasive abuse and extra-judicial punishment at the hands of law enforcement, with synergistic detriment to the FSW-IDUs health and human rights.

Facets of the structural environment, such as laws and policies, employment opportunities, access to health services and other exogenous factors are understood to influence disease risks. Structural interventions can help shift this environment, therefore improving health and human rights outcomes. These interventions range from legislation to decriminalize sex work to police training and professionalization, to strategic litigation against police abuse. Mexico has already embarked on a program of legislative reforms designed to humanize drug policy. Ambitious changes in the criminal justice system and the judiciary have also been initiated, with promise to promote transparency, accountability, and professionalism among police, judges, and other public servants. In view of multiple governance failures and challenges faced by the Mexican judicial system, police training, human rights surveillance, and relationship-building between law enforcement and public health sectors are the approaches that are more likely to produce street-level change.

Given the nature of this analysis, the associations we report should be viewed with several caveats. Our comparative analysis did not control for potential confounding effects of observed and other, unobserved factors. Cross-sectional data do not provide an opportunity to draw causal inferences, which require confirmation in prospective analyses. Our sample is likely not representative of the overall FSW-IDU population in either city because, by design, recent unprotected sex and sharing of injection equipment were among the inclusion criteria. Measuring representativeness is especially
difficult in view of the lack of reliable estimates for the overall population of FSW-IDUs in the two study cities.

Despite these limitations, the present study provides a unique empirical perspective on the potential influence of policing on health and human rights of a highly vulnerable population in the area affected by Mexico’s drug-related violence. Our findings suggest that the continuing militarization of security may exacerbate HIV/STI risk among FSW-IDUs and uniformed personnel, with broader implications for health outcomes in the Northern Border Region and beyond. These data highlight the critical need to scale up public health efforts and to redouble investment in domestic and international policy approaches to mitigate the collateral public health harm from the cross-continental campaign against the drug cartels.

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Tables and Figures
Table 1. Sociodemographic Sample Characteristics of FSW-IDUs in Tijuana and Ciudad Juarez, 2009-2010, by City of Interview

| Characteristics                              | Tijuana (n=312) | Tijuana (n=312) %/IQR | Cd.Juarez (n=312) | Cd.Juarez (n=312) %/IQR | Total (N=624) | Total (N=624) %/IQR | P-value   | Odds Ratio | 95% C.I. |
|----------------------------------------------|-----------------|------------------------|--------------------|-------------------------|---------------|---------------------|-----------|------------|----------|
| **Sociodemographics (IQR)**                  |                 |                        |                    |                         |               |                     |           |            |          |
| Median age (years)                           | 33              | 28-41                  | 33                 | 27-39                   | 33            | 27-40               | 0.347     | 1.01       | 0.99-1.03 |
| Median education completed (years)           | 8               | 6-10                   | 6                  | 4-8                     | 3             | 5-9                 | <0.001   | 1.21       | 1.15-1.28 |
| Speaks English                               | 123             | 39.4                   | 42                 | 13.5                    | 165           | 26.4                | <0.001   | 4.18       | 2.81-6.22 |
| Married/common law partner                   | 127             | 40.7                   | 109                | 34.9                    | 236           | 37.8                | 0.160     | 1.28       | 0.92-1.77 |
| **Any STI (non-HIV)**                         | 199             | 64.2                   | 256                | 83.4                    | 455           | 73.7                | <0.001   | 0.36       | 0.24-0.52 |
| **HIV+**                                     | 18              | 5.8                    | 16                 | 5.1                     | 34            | 5.5                 | 0.860     | 1.13       | 0.56-2.26 |
| **Individual Risk Behaviors (IQR)**          |                 |                        |                    |                         |               |                     |           |            |          |
| Median age when first trading sex            | 19              | 15-24                  | 18                 | 15-23                   | 19            | 15-23               | 0.341     | 1.00       | 0.98-1.03 |
| Median years as FSW                         | 11              | 6-17                   | 12                 | 6-17.5                  | 11            | 6-17                | 0.725     | 1.00       | 0.98-1.02 |
| Median age at 1st injection                  | 20              | 17-24                  | 20                 | 17-27                   | 20            | 17-25               | 0.538     | 0.98       | 0.96-1.00 |
| **Disease Risk Factors (IQR)**               |                 |                        |                    |                         |               |                     |           |            |          |
| Any receptive needle sharing†                | 295             | 94.9                   | 299                | 95.8                    | 594           | 95.3                | 0.575     | 0.80       | 0.38-1.70 |
| Shared inj. paraphernalia                    | 193             | 62.3                   | 114                | 36.5                    | 307           | 49.4                | <0.001   | 2.86       | 2.07-3.97 |
| ≥half the time†                              | 1.5             | 0.6-3                  | 6.9                | 3-10.8                  | 3             | 1-8                 | <0.001   | 0.72       | 0.68-0.76 |
| Infreq. uses condoms w clients               | 44              | 14.8                   | 135                | 43.8                    | 179           | 29.5                | <0.001   | 0.22       | 0.15-0.33 |
| **Physical Environment (IQR)**               |                 |                        |                    |                         |               |                     |           |            |          |
| Lived in Tijuana/Cd. Juarez whole life       | 101             | 32.4                   | 172                | 55.1                    | 273           | 43.8                | <0.001   | 0.39       | 0.28-0.54 |
| Median time spent on str,(hrs) *            | 12              | 8-18                   | 10                 | 7-12                    | 10            | 7-15                | <0.001   | 1.09       | 1.06-1.13 |
| Mostly homeless†                             | 26              | 8.3                    | 9                  | 2.9                     | 35            | 5.6                 | 0.005     | 3.06       | 1.41-6.64 |
| Have been incarcerated                       | 208             | 66.7                   | 252                | 80.8                    | 460           | 73.7                | <0.001   | 0.48       | 0.33-0.69 |
| Ever deported from US                        | 45              | 14.4                   | 11                 | 3.5                     | 56            | 9.0                 | <0.001   | 4.61       | 2.34-9.10 |
| Attended syringe exchange†                   | 29              | 9.3                    | 38                 | 12.2                    | 67            | 10.8                | 0.301     | 0.74       | 0.44-1.24 |
| Ever enrolled in drug treatment             | 132             | 42.3                   | 188                | 60.3                    | 320           | 51.3                | <0.001   | 0.48       | 0.35-0.67 |
| Ever tested for HIV                          | 163             | 52.4                   | 160                | 51.3                    | 323           | 51.8                | 0.810     | 1.05       | 0.76-1.43 |
| **Social Environment (IQR)**                 |                 |                        |                    |                         |               |                     |           |            |          |
| Median no. people usually injected with†    | 2               | 1-5                    | 3                  | 2.5                     | 3             | 1-5                 | <0.001   | 1.00       | 0.98-1.02 |
| Injected drugs with a client often/always†   | 148             | 47.4                   | 60                 | 19.2                    | 208           | 33.3                | <0.001   | 3.79       | 2.65-5.43 |
| Injected drugs with intimate sex partner/spouse/family† | 87 | 28.3                   | 44                 | 14.1                    | 131           | 21.2                | <0.001   | 2.41       | 1.61-3.61 |
| **Economic Environment (IQR)**               |                 |                        |                    |                         |               |                     |           |            |          |
| Average monthly income ≥ 3500 pesos          | 107             | 34.3                   | 187                | 59.9                    | 294           | 47.1                | <0.001   | 0.35       | 0.25-0.48 |
| Earns more for unprotected sex               | 996             | 32.5                   | 190                | 61.7                    | 286           | 47.4                | <0.001   | 0.30       | 0.21-0.42 |
| Amount earned per vaginal sex act with condom (US$) | 20 | 20-30                  | 10                 | 10-15                   | 15            | 10-20               | <0.001   | 1.23       | 1.19-1.27 |
| Amount earned per vaginal sex act without a condom (US$) | 25 | 20-35                  | 15                 | 10-20                   | 20            | 15-30               | <0.001   | 1.07       | 1.06-1.09 |

*Past 6 months; †Past month. NOTE: Certain percentages may reflect denominators smaller than the N value given in the column head. These discrepancies are due to missing data. y = years; h = hours. ** Includes syphilis, gonorrhea, Chlamydia, Trichomoniasis, and bacterial vaginosis.

1 FSW-IDU denotes female sex workers who are also injection drug users.
Table 2. Descriptive Statistics of Police Encounters (last 6 months) of FSW-IDUs\(^2\) in Tijuana and Ciudad Juarez, 2009-2010, by City of Interview

| Characteristics                              | Tijuana (n=312) | Tijuana (n=312) % | Cd.Juarez (n=312) | Cd.Juarez (n=312) % | Total (N=624) | Total (N=624) % | P-value | Odds Ratio | 95% C.I. |
|----------------------------------------------|-----------------|-------------------|-------------------|-------------------|--------------|----------------|---------|------------|----------|
| Asked for sexual favors by police            | 89              | 28.5              | 114               | 36.5              | 203          | 32.5           | 0.040   | 0.69       | 0.49-0.97|
| Sexually abused by police                    | 49              | 15.7              | 57                | 18.3              | 106          | 17.0           | 0.456   | 0.83       | 0.55-1.27|
| Syringes taken by police                     | 118             | 37.8              | 183               | 58.7              | 301          | 48.2           | <0.001  | 0.43       | 0.31-0.59|
| Money exchanged for not arresting by police  | 145             | 46.5              | 202               | 64.7              | 347          | 55.6           | <0.001  | 0.47       | 0.34-0.65|
| Money taken forcibly by police               | 117             | 37.5              | 151               | 48.4              | 268          | 42.9           | 0.008   | 0.64       | 0.46-0.88|

NOTE: Certain percentages may reflect denominators smaller than the N value given in the column head. These discrepancies are due to missing data. y = years; h = hours.

Table 3. Perceived Changes in Environment among FSW-IDUs\(^3\) in Tijuana and Ciudad Juarez, 2008-2009 (more vs less/no change) (last year)

| Changes Perceived                          | Tijuana (n=312) | Tijuana (n=312) % | Cd.Juarez (n=312) | Cd.Juarez (n=312) % | Total (N=624) | Total (N=624) % | P-value | Odds Ratio | 95% C.I. |
|--------------------------------------------|-----------------|-------------------|-------------------|-------------------|--------------|----------------|---------|------------|----------|
| Municipal police presence                  | 150             | 48.7              | 157               | 50.3              | 307          | 49.5           | 0.689   | 0.94       | 0.68-1.28|
| Federal police presence                    | 176             | 57.5              | 186               | 59.8              | 362          | 58.7           | 0.568   | 0.91       | 0.66-1.25|
| Federal army presence                      | 183             | 59.2              | 225               | 72.1              | 408          | 65.7           | 0.001   | 0.56       | 0.40-0.79|
| Violence from clients                      | 97              | 32.4              | 43                | 14.3              | 140          | 23.4           | <0.001  | 2.87       | 1.92-4.30|
| Street violence                            | 170             | 55.0              | 161               | 51.8              | 331          | 53.4           | 0.422   | 1.14       | 0.83-1.56|
| Visibility of mafia/cartels                | 159             | 52.6              | 160               | 54.2              | 319          | 53.4           | 0.743   | 0.94       | 0.68-1.29|
| Sex workers arrested                       | 141             | 48.0              | 127               | 41.5              | 268          | 44.7           | 0.119   | 1.30       | 0.94-1.79|
| Access to health care/medical services     | 110             | 37.4              | 43                | 15.2              | 153          | 26.5           | <0.001  | 3.34       | 2.23-4.98|
| Access to condoms                          | 133             | 44.8              | 56                | 17.9              | 189          | 31.0           | <0.001  | 3.71       | 2.56-5.36|
| Access to sterile syringes                 | 133             | 44.5              | 55                | 17.7              | 188          | 30.8           | <0.001  | 3.73       | 2.58-5.40|
| Visibility of torn down buildings          | 93              | 34.2              | 179               | 57.7              | 272          | 46.7           | <0.001  | 0.38       | 0.27-0.53|
| Number of Mexican clients                  | 35              | 11.4              | 33                | 10.6              | 68           | 11.0           | 0.798   | 1.09       | 0.66-1.81|
| Number of US clients                       | 22              | 7.3               | 8                 | 2.9               | 30           | 5.2            | 0.023   | 2.67       | 1.17-6.10|
| Number of foreign clients                  | 13              | 4.5               | 4                 | 2.1               | 17           | 3.6            | 0.210   | 2.22       | 0.71-6.91|

NOTE: Certain percentages may reflect denominators smaller than the N value given in the column head. These discrepancies are due to missing data. y = years; h = hours.

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2 FSW-IDU denotes female sex workers who are also injection drug users
3 FSW-IDU denotes female sex workers who are also injection drug users