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## Prevalence and Correlates of Receptive Syringe Sharing among People Who Inject Drugs in Rural Appalachia

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### Abstract

**Background and aims:** Syringe sharing significantly increases the risk of HIV and viral hepatitis acquisition among people who inject drugs (PWID). Better understanding correlates of receptive syringe sharing (RSS) is a critical step in preventing bloodborne infectious disease transmission among PWID in rural communities throughout the United States. This study aimed to measure the prevalence and correlates of RSS among PWID in a rural county in Appalachia

**Design:** Observational, cross-sectional sample from a capture-recapture parent study.

**Setting:** Cabell County, West Virginia (WV), USA, June-July 2018.

**Participants:** Sample was restricted to people who reported injecting drugs in the past 6 months (n=420). A total of 180 participants (43%) reported recent (past 6 months) RSS. Participants reported high levels of homelessness (56%), food insecurity (65%), and unemployment (66%).

**Measurements:** The main outcome was recent reuse of syringes that participants knew someone else had used before them. Key explanatory variables of interest, selected from the risk environment framework, included: unemployment, arrest, and receipt of sterile syringes from a syringe services program (SSP). Logistic regression was used to determine correlates of recent RSS.

**Findings:** PWID reporting recent RSS also reported higher prevalence of homelessness, food insecurity, and unemployment than their non-RSS-engaging counterparts. In adjusted analyses,

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**Data Availability:** Data from this study are not available due to privacy concerns.

correlates of RSS included: engagement in transactional sex work (adjusted odds ratio [aOR] 2.27, 95% CI: 1.26-4.09), unemployment (aOR 1.67, 95% CI: 1.03-1.72), number of drug types injected (aOR 1.33, 95% CI: 1.15-1.53), and injection in a public location (aOR 2.59, 95% CI: 1.64-4.08). Having accessed sterile syringes at a SSP was protective against RSS (aOR 0.57, 95% CI: 0.35-0.92).

**Conclusion:** The prevalence of receptive syringe sharing among people who inject drugs (PWID) in a rural US county appears to be high and comparable to urban-based populations. Receptive syringe sharing among PWID in a rural setting appears to be associated with several structural and substance use factors, including unemployment and engaging in public injection drug use. Having recently acquired sterile syringes at a syringe services program appears to be protective against receptive syringe sharing.

### Keywords

HIV; hepatitis C; people who inject drugs; polysubstance use; receptive syringe sharing; rural health

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## INTRODUCTION

Syringe sharing is a primary driver of HIV and hepatitis C (HCV) transmission among people who inject drugs (PWID). Receptive syringe sharing (RSS) refers to when an individual injects with a needle or syringe previously used by another person. RSS paired with other structural vulnerabilities (e.g., housing instability, inadequate healthcare access) and insufficient access to sterile injection equipment place PWID at high risk for HIV and HCV acquisition [1]. Studies have shown that the prevalence of RSS varies across the US and the globe. A recent global systematic review found that 25% of PWID worldwide engaged in RSS in the past year, ranging from 10.2% in Western Europe to 54% in Latin America [2]. A recent estimate for 20 US cities reported a prevalence of 33.5% past year RSS, slightly higher than the global estimate [3]. The high prevalence of RSS is especially worrisome given that over 750,000 people in the US reported past year injection drug use (IDU) and that 7% of HIV diagnoses in 2018 were IDU-associated [4, 5]. Further, more than 60% of acute hepatitis C infections from 1982–2006 were attributable to IDU [6].

Urban-based research has suggested that stigma and polysubstance use are drivers of high-risk injection practices, including RSS and using drugs alone [7–12]. Studies have also shown that patterns of substance use differ between urban and rural areas, with rural persons being more likely than their urban counterparts to inject drugs and engage in polysubstance use [13–15]. IDU-associated consequences can be prevented through the implementation of syringe services programs (SSPs), which provide a myriad of services to PWID, such as access to sterile injection equipment and drug treatment referrals [1]. These programs have consistently been shown to be safe and cost-effective [1, 16, 17]. There is also no evidence that they lead to increases in substance use or crime [1, 16–18]. However, rural-residing PWID often have insufficient access to SSPs and sterile injection equipment, increasing risks for outbreaks of bloodborne infections [19, 20]. Despite extensive research in urban settings demonstrating associations between high-risk injection practices and infectious disease transmission, little comparable work has been conducted among PWID populations

living in rural settings. This gap in the literature warrants additional study as adverse consequences stemming from the modern opioid crisis have dramatically burdened rural communities [21–24].

The risk environment framework provides a theoretical grounding for factors that drive increased risks for HIV/HCV outbreaks among PWID [25, 26]. This framework suggests that while risks for bloodborne infectious disease acquisition among PWID primarily stem from persons sharing injection equipment, these behaviors are shaped by drivers at the economic, social, physical, and policy levels. The risk environment framework has been used extensively in urban-based studies of injection drug use and HIV prevention among PWID and was recently applied in a rural setting. Cloud and colleagues, for example, used the risk environment framework in their exploration of drivers of viral hepatitis among PWID in rural Kentucky. As highlighted by their work, multiple barriers exist for HIV and HCV prevention in rural communities, including household and community economic decline, intergenerational substance use, physical isolation from already scarce resources, fear of legal consequences, and prevailing mental health issues [27]. Other studies conducted in rural settings have found that routine HIV and viral hepatitis testing services may not be accessible or routinely utilized [19, 28–31]. Further, stigma, lack of transportation options, limited access to harm reduction services, and high rates of poverty may impede efforts to engage in risk reduction strategies [9, 19, 27–31]. These barriers to infectious disease prevention are nested among PWID populations who have overlapping HIV/HCV acquisition risk behaviors, such as engagement in sex work and lack access to medication for opioid use disorders [32–34].

Existing data on high-risk injection practices are helpful for informing the design of public health interventions, but they also call for additional study as research on the prevalence and correlates of RSS have almost exclusively been examined among urban PWID populations [35]. Better understanding RSS among non-urban PWID populations represents a key opportunity to enhance existing interventions aimed at preventing infectious disease transmission and combating rising rates of HIV and viral hepatitis in rural communities. Additionally, examining RSS through the risk environment framework may yield important insights into strategies to reduce risks for infectious disease outbreaks among PWID residing in rural areas. We hypothesize that individuals who operate in higher risk environments, both at micro and macro-level, experience greater odds of recent RSS. The purpose of this research is to examine the prevalence and correlates of RSS among PWID in a rural county in Appalachia (Cabell County, WV).

## METHODS

### Data Collection and Study Participants

Data are from a capture-recapture study (June-July 2018) that estimated the number of PWID in Cabell County, WV. Detailed descriptions of the methodology employed during the parent study can be found elsewhere, and we provide an overview [36]. The capture phase took place at the Cabell-Huntington Harm Reduction Program (CHHRP) located at the Cabell-Huntington Health Department and provides PWID access to sterile injection equipment, overdose prevention resources, vaccinations, and drug treatment referrals. The

recapture phase was conducted in Cabell County locations where PWID gather (e.g., parks, sidewalks, parking lots). Based on preliminary conversations with stakeholders in the study setting, it was determined that eligibility criteria should be broad given high levels of stigmatization of IDU. Specifically, in this rural community, our eligibility criteria were broad: (1) at least 18 years old; and (2) ever used drugs via any route of administration. After providing verbal informed consent, participants completed an anonymous survey via audio computer-assisted self-interview (ACASI) covering a range of topics, including demographics, substance use, and service access. Data for the present analyses reflected individuals who indicated injection drug use in the past 6 months. This analysis was not pre-registered on any publicly available platform, and the results should be considered exploratory. The study was approved by the Johns Hopkins Bloomberg School of Public Health Institutional Review Board.

### **Measures: Outcome Variable**

The primary outcome was recent RSS, which was ascertained via the question, “In the last 6 months, did you use any of the following items that you knew had been used by someone else? Select all that apply.” Answer options included syringes or needles, cookers, cotton, and rinse water. Participants who confirmed recent RSS are the focus of this analysis given the high risk for HIV transmission [37].

### **Measures: Explanatory Variables**

We used the risk environment framework to guide our selection of variables we hypothesized may be associated with RSS [25–27]. Factors examined included: age (measured continuously), gender, race/ethnicity, educational attainment (did not graduate high school vs high school graduate, obtained GED, or more education), recent arrest, and employment status (unemployed vs part-time/full-time employment or retired). We also included sexual minority status (individuals who reported their sexual orientation as gay, lesbian, bisexual, questioning, or other). Recent (past 6-months) transactional sex work was defined as selling or trading sex for things like food, drugs, money, or favors. We defined food insecurity as going to bed hungry at least once per week. Additionally, we considered current insurance status at the time of survey administration and recent experiences of homelessness.

Multiple substance use-related measures were included in this analysis. Participants were asked if they recently injected several different types of drugs, including: cocaine, heroin, pain killers (e.g., oxycontin, Percocet, codeine, Darvon, Percodan, Dilaudid, Demerol), speedball (cocaine and heroin), fentanyl, crystal methamphetamine, and buprenorphine or Suboxone. We created a composite measure of the number of types of drugs (ranging from 1–7) persons reported having injected in the past 6 months. In addition, participants reported the number of times they inject drugs on a typical day, and values at 50 or greater were recoded as missing (n=2), and 2 individuals refused to answer this question. We also collected data on the most common location where persons injected drugs in the past 6 months with answer options including: a stairwell in a building or business; an abandoned building; in a car, truck, or other vehicle; in a public bathroom; on the street; at the park or other greenspace; at your home; at someone else’s home; and other. Comparable to related

research, these responses were then dichotomized to public and non-public injection with those who answered with ‘at your home’ or ‘at someone else’s home’ considered as not engaging in public injection; all other responses were categorized as injecting in public, except for the ‘other’ response option, which was coded as missing (n=13) [38]. To understand service access among participants, we examined variables such as whether participants had recently (past 6 months): received sterile syringes from a SSP, acquired naloxone, and had a HIV or hepatitis C test. Among those that said they had ever been tested, we then asked about receiving HIV and HCV diagnoses, with those who reported having never been tested coded as not having received a diagnosis.

### Analytical Sample

A total of 797 surveys were completed as part of the parent study. We restricted our analyses to persons who had injected in the past 6 months (N=421). One participant identified as transgender, and to preserve their anonymity, we excluded them from the present analysis, yielding a sample of N=420. The survey administration software (Questionnaire Design Studio, NOVA Research, Silver Spring, Maryland, USA) precluded most missing data. Overall, 17 surveys were excluded due to missing data. Most excluded surveys were missing one datapoint (16 participants), and one participant was missing both number of injections per day and location of typical drug use. The final sample size for the multivariable model was n=403.

### Statistical Analyses

The relationships between variables and RSS were preliminarily assessed using Pearson’s chi-square and independent sample t-tests. We explored univariate associations between explanatory variables and RSS using logistic regression. Multivariable logistic regression was used to identify correlates of recent RSS, and variables were considered for the multivariable model if their univariate *p*-values were less than 0.20. Due to high correlation among types of drugs injected, we included the count of drugs recently injected rather than measures of individual drugs recently injected. Additionally, food insecurity and homelessness were highly correlated with unemployment and public injection, and as such, food insecurity and homelessness were excluded from adjusted analyses. Results reported are odds ratios (OR) of engaging in RSS in the past 6 months, 95% confidence intervals, and *p*-values with the threshold for statistical significance held at  $p < 0.05$ . All analyses were conducted using Stata/SE 15.1 (StataCorp, College Station, TX, USA).

## RESULTS

A total of 180 participants (43%) reported recently engaging in RSS (Table 1). On average, individuals who had recently engaged in RSS were significantly younger than individuals who had not (34.2 vs. 36.9 years of age). There were no significant differences between individuals who had and had not recently engaged in RSS by gender, race/ethnicity, educational attainment, relationship status, or sexual minority status. Compared to their non-RSS engaging counterparts, those who had engaged in RSS were more likely to report structural vulnerabilities, including: food insecurity (74% vs 58%), homelessness (65% vs. 49%), recent arrest (41% vs. 28%), and unemployment (74% vs. 60%). Persons who

reported recent RSS engagement were also more likely to report having recently engaged in transactional sex work (28% and 11%). Participants who reported RSS also reported a greater number of injections per day (4.8 vs. 4.0) and injecting more types of drugs (3.0 vs. 2.3). A greater proportion of persons who reported RSS indicated use of each of the injection drug use measures and injecting in a public location than their non-RSS counterparts (65% vs. 37%). Participants who reported RSS were less likely to have recently accessed sterile syringes at a syringe services program (59% vs. 70%).

The unadjusted univariate logistic regressions are shown in Table 2. In unadjusted analyses, we found increased odds of recent RSS among PWID who were younger and had recently engaged in transactional sex work. Several structural vulnerabilities were found to have strong relationships with RSS in bivariate analyses while receiving sterile syringes from a SSP was protective against recent RSS.

In adjusted analyses, having recently engaged in transactional sex work and unemployment were independently associated with RSS (adjusted odds ratio [aOR] 2.27, 95% CI: 1.26-4.09 and aOR 1.67, 95% CI: 1.03-2.72, respectively) (Table 2). Two substance use measures had strong relationships with recent RSS: number of drug types recently injected (aOR 1.33, 95% CI: 1.15-1.53) and public injection (aOR 2.59, 95% CI: 1.64-4.08). Having recently received sterile syringes from a SSP was associated with lower odds of recent RSS (aOR 0.57, 95% CI: 0.35-0.92).

## DISCUSSION

The results of this study suggest RSS is common among PWID in rural Appalachia and that the factors associated with this behavior operate at multiple risk environments. Nearly 43% of PWID in our sample reported recent RSS, which is comparable to findings from urban studies, both across the US and globally [2, 3, 39–41]. Further, we found that several structural vulnerabilities (e.g., homelessness, food insecurity, unemployment, recent arrest) were associated with RSS. These data demonstrate that efforts to reduce high risk injection practices among PWID living in rural settings may require novel interventions that not only ensure persons have consistent access to sterile injection equipment, but also ameliorate structural barriers to PWID meeting their basic needs.

We found that unemployment was associated with RSS among PWID dwelling in rural areas. PWID that were unemployed had 67% higher odds of having recently engaged in RSS. These data suggest that limited financial resources may lead to persons experiencing challenges to consistently access sterile injection equipment. While syringe services programs provide access to sterile injection equipment, in rural contexts, PWID with limited financial resources may struggle to afford to travel to access services, particularly as persons may be geographically isolated and reside in locations distal to SSPs. With limited access to sources of sterile injection equipment, PWID may opt to borrow syringes from a friend, use discarded syringes found on the street, or purchase syringes from other PWID, thus increasing risks for HIV and viral hepatitis acquisition [9, 27, 42]. Comprehensively addressing the high prevalence of RSS among PWID in rural communities will require a comprehensive approach in which sterile injection equipment is made accessible at a variety

of venues frequented by PWID and persons receive education about risks associated with RSS. Scaling-up access to sterile injection equipment may be achieved via the implementation of mobile harm reduction programs, co-location of harm reduction services at homeless shelters or food pantries, decriminalization of syringe possession, passing enabling legislation that allows syringes to be sold without a prescription, and encouraging secondary syringe exchange networks [1, 18, 43, 44].

We also found evidence that the physical risk environment was associated with RSS. Primarily injecting in public venues was associated with 58% greater odds of engaging in recent RSS, which is consistent with other research [38, 45]. Public injection was common with 49% of our sample of PWID living in a rural setting reporting a public location as their most common injection location in the past 6 months. Despite this high prevalence, injecting in a public location is often a last resort resulting from PWID lacking stable housing and access to safer, more private locations to inject [27]. Evidence suggests PWID prefer to inject in private locations that are more hygienic and afford privacy such that persons do not feel pressured to rush injections [27]. Additionally, public injection poses health risks and has been shown to increase risk of skin and soft tissue infections from unhygienic injection practices [46].

We also found that PWID who recently engaged in transactional sex work were more likely to report recent RSS. Rural transactional sex work in the United States is an understudied area, yet, from urban studies, research has shown that injection drug use is common among individuals who engage in transactional sex [32, 47]. Data from the 2009 National HIV Behavior Surveillance on 20 US cities found that the prevalence of RSS in the past 12 months among women who inject drugs was significantly higher in women who exchanged sex (56%) than women who did not exchange sex (33.4%) [48]. These vulnerabilities, engagement in sex work and injection drug use compound risks for HIV and other bloodborne diseases as well as violence and RSS; persons who engage in both transactional sex and injection drug use experience risk environments that exceed those of their counterparts who only engage in one activity [48–51]. A study conducted in three cities in Mexico, for example, found that having a recent commercial sex partner doubled the odds of recent RSS [12]. Future work should investigate transactional sex work and its relationship with high-risk injection practices among PWID in rural communities.

We found that polysubstance use was independently associated with engagement in RSS. There are several reasons why PWID who recently injected more types of drugs may be more likely to engage in RSS. For example, polysubstance use may require a greater number of syringes and PWID may have insufficient access to sources of sterile injection equipment, thus increasing risks for RSS. Our finding that all the individual injection drug use measures were associated with engagement in RSS suggests initiatives designed to prevent RSS may require tailoring such that persons receive information specific to their injection drug use activities. Additional research is needed to better understand how to engage PWID with complex patterns of injection drug use in risk reduction interventions aimed at preventing RSS. Developing a more comprehensive understanding of RSS among PWID residing in rural areas is of immediate public health significance as non-urban areas throughout the

country are identifying clusters of HIV infections linked to high-risk injection practices [52, 53].

PWID who reported syringe services program utilization were 43% less likely to report engagement in RSS. This finding aligns with several decades of research demonstrating the public health benefits of comprehensive harm reduction programs in both urban and rural settings [54]. SSPs are one of the most effective evidence-based public health strategies for the prevention of infectious disease transmission among PWID; they not only provide a diversity of services, but also serve as anchor points for persons experiencing intense levels of stigmatization and who may have few options to receive help. Harm reduction programs are of particular importance in West Virginia as two clusters of IDU-associated HIV infections were identified in 2019 [53]. Rural communities should work expeditiously to ensure PWID have access to sterile injection equipment, including through the implementation of comprehensive SSPs. That said, programs must not be one dimensional in their approaches to addressing the public health needs of PWID as there are other factors affecting health outcomes; for example, in this study, we found that sex work, unemployment, and public injection were correlated with sharing syringes. Reducing RSS requires more than simply increasing access to sterile injection equipment; programs should be implemented to holistically assess the public health needs of PWID and provide resources to address the underlying drivers of health disparities among this population.

There are several limitations that should be noted about this research. First, data are cross-sectional, preventing a temporal analysis to understand factors leading to engagement in RSS. Second, we did not capture in-depth information about the social and drug use network characteristics of our participants. As a result, our ability to understand how RSS may vary based on the types of relationships (e.g., familial, friend, sex partner) involved is limited. Interpersonal relationships are important areas of future scientific inquiry as research suggests that intergenerational drug use is common in parts of rural America [27, 55, 56]. Our survey did not include measures for distributive syringe or other injection equipment sharing. Future research should dedicate efforts to understanding distributive syringe sharing in rural communities. Finally, unlike many rural counties, Cabell County has a SSP, and as such, the prevalence of RSS may be lower than rural counties that lack harm reduction programs. Despite these limitations, this study makes meaningful contributions to existing literature by enhancing our understanding of RSS among PWID living in rural communities.

In conclusion, our study demonstrates that a large proportion of PWID residing in a rural county reported recent engagement in RSS and that RSS was associated with several structural vulnerabilities. Factors associated with RSS do not occur in isolation and persons may experience increased vulnerabilities to infectious disease acquisition stemming from other high-risk behaviors, social and economic factors, and limited access to evidence-based HIV prevention strategies, such as comprehensive harm reduction programs. While addressing structural vulnerabilities will take time, increasing individual-level access to harm reduction programs may be an effective strategy for preventing IDU-associated HIV and viral hepatitis outbreaks among PWID living in rural settings.



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**Table 1.**

Descriptive characteristics of people who inject drugs (PWID) by receptive syringe sharing (RSS) status in the past 6 months, Cabell County, WV, June-July 2018 (n=420).

Variable	Total (n=420), N (%)	No receptive syringe sharing (n=240), N (%)	Engaged in receptive syringe sharing (n=180), N (%)	P-value
<b>SOCIO-DEMOGRAPHICS &amp; HEALTH</b>				
Age, mean (SD) <sup>a</sup>	35.8 (8.5)	36.9 (9.2)	34.2 (7.3)	<b>0.001</b>
Gender				0.862
Male	257 (61.2)	146 (60.8)	111 (61.7)	
Female	163 (38.8)	94 (39.2)	69 (38.3)	
Race/Ethnicity				0.378
White, non-Hispanic	341 (83.6)	198 (85.0)	143 (81.7)	
Other	67 (16.4)	35 (15.0)	32 (18.3)	
Did not graduate high school	115 (27.4)	60 (25.1)	55 (30.6)	0.216
Married/In a relationship	193 (46.2)	117 (49.2)	76 (42.2)	0.159
Sexual Minority	73 (17.4)	36 (15.1)	37 (20.6)	0.142
Engaged in transactional sex work, past 6 months	77 (18.3)	27 (11.3)	50 (27.8)	<b>&lt;0.001</b>
Arrest, past 6 months	141 (33.6)	67 (27.9)	74 (41.1)	<b>0.005</b>
Food insecurity	272 (64.8)	138 (57.5)	134 (74.4)	<b>&lt;0.001</b>
Consider self homeless	235 (56.0)	118 (49.2)	117 (65.0)	<b>0.001</b>
Unemployed	277 (66.0)	144 (60.0)	133 (73.9)	<b>0.003</b>
Insured	305 (72.6)	177 (73.8)	128 (71.1)	0.548
<b>SUBSTANCE USE</b>				
Number of injections per day, mean (SD) <sup>a</sup>	4.4 (3.9)	4.0 (4.0)	4.8 (3.7)	<b>0.045</b>
Number of drugs injected, past 6 months, mean (SD) <sup>a</sup>	2.6 (1.5)	2.3 (1.4)	3.0 (1.6)	<b>&lt;0.001</b>
Injection drug use, past 6 months				
Cocaine	144 (34.3)	68 (28.3)	76 (42.2)	<b>0.003</b>
Heroin	340 (81.0)	186 (77.5)	154 (85.6)	<b>0.037</b>
Speedball	161 (38.3)	81 (33.8)	80 (44.4)	<b>0.026</b>
Crystal Methamphetamine	298 (71.1)	145 (60.4)	153 (85.5)	<b>&lt;0.001</b>
Painkillers	99 (23.6)	47 (19.6)	52 (28.9)	<b>0.026</b>
Fentanyl	230 (54.8)	113 (47.1)	117 (65.0)	<b>&lt;0.001</b>
Suboxone or Buprenorphine	127 (30.2)	58 (24.2)	69 (38.3)	<b>0.002</b>
Engaged in public injection, past 6 months	199 (48.9)	85 (36.8)	114 (64.8)	<b>&lt;0.001</b>
<b>SERVICE PROVISION</b>				
Received sterile syringes from a SSP, past 6 months	273 (65.0)	167 (69.6)	106 (58.9)	<b>0.023</b>
Received naloxone, past 6 months	195 (46.5)	112 (46.9)	83 (46.1)	0.879
HIV test, past 6 months	216 (51.7)	123 (51.5)	93 (52.0)	0.921
HIV positive	13 (3.1)	7 (3.0)	6 (3.4)	1.000 <sup>b</sup>

Variable	Total (n=420), N (%)	No receptive syringe sharing (n=240), N (%)	Engaged in receptive syringe sharing (n=180), N (%)	P-value
Hepatitis C test, past 6 months	221 (52.9)	120 (50.4)	101 (56.1)	0.248
Ever diagnosed with hepatitis C	243 (57.9)	113 (47.1)	130 (72.2)	<b>&lt;0.001</b>

<sup>a</sup> t-test

<sup>b</sup> Fisher's exact test

SSP=syringe services program

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**Table 2.**

Unadjusted and adjusted logistic regressions for receptive syringe sharing in the past 6 months among people who inject drugs (PWID); Cabell County, WV, June-July 2018 (n=403).

Variable	Unadjusted			Adjusted		
	OR	95% CI	P-value	aOR	95% CI	P-value
<b>DEMOGRAPHICS</b>						
Age	0.96	0.94 – 0.99	<b>0.002</b>	0.98	0.95 – 1.00	0.083
Married/In a relationship	0.76	0.51 – 1.12	0.159			
Sexual minority	1.46	0.88 – 2.42	0.144			
Engaged in transactional sex work, past 6 months	2.97	1.76 – 5.04	<b>&lt;0.001</b>	2.27	1.26 – 4.09	<b>0.006</b>
Arrest, past 6 months	1.74	1.15 – 2.64	<b>0.009</b>	1.12	0.69 – 1.81	0.642
Consider self homeless	1.94	1.29 – 2.90	<b>0.001</b>			
Unemployed	2.00	1.30 – 3.07	<b>0.002</b>	1.67	1.03 – 2.72	<b>0.037</b>
<b>SUBSTANCE USE</b>						
Number of injections per day, past 6 months	1.05	0.99 – 1.10	0.078	1.01	0.95 – 1.08	0.733
Number of drug types injected, past 6 months	1.43	1.26 – 1.63	<b>&lt;0.001</b>	1.33	1.15 – 1.53	<b>&lt;0.001</b>
Engaged in public injection, past 6 months	3.34	2.21 – 5.05	<b>&lt;0.001</b>	2.59	1.64 – 4.08	<b>&lt;0.001</b>
<b>SERVICE PROVISION</b>						
Received sterile syringes from an SSP, past 6 months	0.67	0.44 – 1.01	0.058	0.57	0.35 – 0.92	<b>0.021</b>

SSP = syringe services program