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Correlates of Participation in Peer Recovery Support Groups as well as Voluntary and Mandated Substance Abuse Treatment among Rural and Urban Probationers

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Abstract

This study explores the correlates of probationers' participation in 12-step programs, voluntary treatment, and mandated treatment, with respect to the geographic location of where the services are being provided as the primary covariate of interest. Data were derived from face-to-face interviews with rural and urban probationers (n=1464). Results of the three logistic regression models suggested that even when all the covariates are taken into account, urban probationers were significantly more likely to have been involved in 12-step programs, voluntary treatment, and mandated treatment over their lifespan. Despite high levels of self-reported substance use among all participants, treatment services were underutilized by rural probationers. These data suggest that individuals residing in rural communities may face additional barriers to receiving treatment services and that criminal involvement is associated with participation in peer recovery support groups and treatment. Future studies can investigate criminal involvement as an avenue to enhance recovery as well as how to overcome treatment barriers in rural areas.

Keywords

Rural; Probationers; Peer Recovery Support Groups; Treatment; Mandated Treatment

1. Introduction

In the closely related fields of substance use research and research involving criminal justice populations, there remains a dearth of information on substance use treatment utilization among rural and urban probationers. It has long been established that substance use is a serious problem for individuals within the criminal justice system. For example, the Bureau of Justice Statistics (BJS) reported that 53.4% of state and 45.5% of federal prison inmates meet DSM-IV diagnostic criteria for substance dependence and/or abuse (Mumola & Karberg, 2006). Prevalence rates for meeting DSM-IV dependence criteria and abuse criteria

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among prison and jail inmates (and consequently, parolees who are released) are more readily accessible because of the locatability of these populations, whereas probationers are a population in constant flux who can be difficult to locate, let alone complete a diagnostic interview. However, the characteristics of the probation population and the large number of individuals on probation demonstrate the need for more research on problems among this understudied group.

One area of research on probationers that has not been examined thoroughly is how geographic location – urban or rural – might be associated with the utilization of different types of substance abuse treatment and peer recovery support groups, such as Alcoholics Anonymous (AA) or Narcotics Anonymous (NA). Specifically, the purpose of this study is to assess the independent correlates of participation in 12-step programs, voluntary treatment, and mandated treatment, with respect to the geographic location of where the services are being provided.

A recent report published by the Bureau of Justice Statistics reveals that at yearend 2008, nearly 1 in every 45 adults in the United States were under community supervision by the criminal justice system, making them the largest group of individuals under any form of criminal justice supervision (including prisoners, jail inmates, and parolees) (Glaze & Bonczar, 2009). Moreover, the link between substance use and criminal justice system involvement has been firmly established over decades of research, and studies show that probationers are no exception. Individuals with substance use problems are much more likely to engage in all forms of crime than are non-substance users (Office of National Drug Control Policy, 2000). According to the Substance Abuse and Mental Health Services Administration's (SAMHSA) report on Substance Use Among Adults on Probation, even after accounting for race, age, educational attainment, and other demographic characteristics, probationers were found to be twice as likely as non-probationers to use illicit substances (Office of Applied Studies, 2008). Among probationers, as compared to non-probationers, cocaine use was four times as likely and alcohol use was two and a half times as likely.

Not only do probationers represent an overwhelming percentage of individuals under criminal justice supervision, but they are also more likely to be serving a probation sentence for a drug-related crime. In fact, recent research shows that nearly a third of probationers are under supervision for a drug law violation (Glaze & Bonczar, 2009), and 15% are serving a probation sentence for drinking-and-driving violations (Glaze & Palla, 2005). Additionally, several studies have shown that using substances or being arrested for a drug-related offense increases the likelihood of recidivism among probationers (De Li, Priu, & MacKenzie, 2000; Hepburn & Albonetti, 1994; Olson & Lurigio, 2000; Visher, Lattimore, & Linster, 1991) and that without treatment, substance-abusing offenders are likely to repeatedly engage in behaviors that led to their initial contact with the criminal justice system (Harrison, 2001). Thus, the strong relationship between substance use and criminal behavior is evident in the U.S. probation population. Greater availability and utilization of substance abuse treatment services is a viable method for reducing the total number of offenses committed and also the number of individuals on probation. But the factors contributing to treatment utilization, particularly among individuals on probation, have not been examined extensively. Specifically, the role of geographic location as a predictor of treatment utilization has not been assessed, despite studies which report the importance of geographic location in shaping employment and social opportunities (Clark, Leukefeld, & Godlaski, 1999; Fisher, Cagle, Davis, Fenaughty, Kuhrt-Hunsinger, & Fison, 1997).

The rates of substance abuse and dependence in rural areas have been shown to be equivalent to those in urban areas (Robertson, Sloboda, Boyd, Beatty, & Kozol, 1997;

Lansky, Nakashima, Diaz, Fann, Conti, Herr, Smith, Karon, Jones, & Ward, 2000), with several studies suggesting substance abuse and dependence rates may even be higher in rural areas (Leukefeld, Clayton, & Meyers, 1992; Reilly, Leukefeld, Gao, & Allen, 1994; Warner & Leukefeld, 1999; 2001). However, while overall rates of use are similar, there are many differences in the characteristics of rural and urban populations. One difference between rural and urban populations is the use of different substances. While reports vary greatly based on methodology and demographics, data on substance abuse treatment admission shows that the use of prescription opiates and methamphetamine tends to be higher in rural areas (SAMHSA, 2006) while crack/cocaine and heroin use is typically higher in urban areas (SAMHSA, 2002). A 2007 study on rural and urban probationers corroborated these findings (Havens et al. 2007). These differences in drug of choice are likely due to the greater availability of certain substances in different geographic locations (Wermuth, 2000; Leukefeld et al., 2002; Mateyoke-Scriver, Webster, Staton, & Leukefeld, 2004; Schoeneberger, Leukefeld, Hiller, & Godlaski, 2006).

Despite similarity in the rates of substance use in rural and urban areas, studies show that those residing in rural areas utilize substance abuse treatment less often than those in urban areas because of individual, structural, and geographic barriers, as well as the stigma associated with receiving treatment (Conger, 1997; Fisher, Cagle, Davis, Fenaughty, Kuhrt-Hunsinger, & Fison, 1997; Rural Indiana, 1997; Clark, Leukefeld, & Godlaski, 1999; Warner & Leukefeld, 2001; Leukefeld, Logan, Farabee, & Clayton, 2002; Leukefeld et al, 2002; Leukefeld, McDonald, Staton, & Mateyoke-Scriver, 2004). Issues related to funding and health provider policies also play a role in the variation of treatment utilization between states in the U.S. (McAuliffe & Dunn, 2004). These studies, however, are not specific to probationers and there is no differentiation between types of treatment available – 12-step/peer recovery support programs, voluntary treatment, or treatment mandated by the criminal justice system – and differences in utilization of these treatment types in rural and urban areas.

The “Treatment Admissions in Rural Areas: 2003” report published by SAMHSA (USDHHS, 2005) provides a rationale for the current study. According to this nationwide study of substance abuse treatment admissions, those admitted to treatment programs in rural areas were more likely to have been referred to treatment by the criminal justice system (i.e., “mandated” treatment) than individuals admitted to urban programs (47% vs. 35%). However, this difference is from the very small number of individuals in rural areas that received treatment. There were 115,000 admissions to treatment programs in rural areas in 2003 (USDHHS, 2005). This represents only 6% of all treatment admissions and consequently, the other 94% of treatment admissions were to programs in urban areas. The implications of these findings are important to the current study.

The data for this SAMHSA report is treatment admissions data and cannot attest to the treatment needs of individuals in the U.S. who have not been enrolled in substance abuse treatment. According to the National Survey on Drug Use and Health, there are 23.2 million people in the U.S. (12 years or older) who need treatment for a substance abuse problem. That’s approximately 9.4% of the U.S. population (NIH USDHHS, 2009). Yet only 1.8 million individuals entered a public treatment program in 2003 (USDHHS, 2005). Also, the finding that rural treatment admissions are more likely to have been mandated to treatment than urban admissions could mean very little when placed in a larger public health context because the percentage of individuals receiving treatment at all (whether voluntary or mandatory) is disproportionately lower in rural areas (USDHHS, 2005). Thus, although individuals in rural treatment programs are more likely to have been mandated to treatment, the actual number of rural individuals mandated to treatment represents only a small fraction of the total number in need of treatment. Furthermore, the larger number of urban than rural

treatment admissions are voluntary (35% vs. 26%) could be related to the greater treatment availability in urban areas. There are no known national data on participation in 12-step/peer recovery support program participation among rural and urban probationers.

Although substance abuse treatment has been found to reduce criminal recidivism among the criminal justice population (Chandler & Fletcher, 2006; NIDA, 1999), and specifically among probationers (Huebner & Cobbina, 2007), treatment may not be readily available to all who need it and particularly for those in rural areas. If the severity of substance abuse and dependence is similar in rural and urban areas as research has shown (Robertson, Sloboda, Boyd, Beatty, & Kozol, 1997), it would be expected that treatment utilization – 12-step, voluntary, and mandatory – would be similar in proportion to the population size. However, if rural probationers are less likely to be mandated to treatment than urban probationers, this would represent a treatment access health disparity. As such, the objective of the present study is to examine differences in substance abuse treatment utilization among rural and urban felony probationers to extend on existing research. Bivariate analyses are used to distinguish differences in demographic characteristics, criminal history, substance use, and substance abuse treatment patterns between rural and urban probationers. As a next step, three logistic regression models are used to assess the independent correlates of 12-step program participation as well as voluntary and mandated substance abuse treatment. Geographic location of where the services are being provided is the primary covariate of interest in the multivariate analyses. It is hypothesized that participants in urban areas will be significantly more likely to utilize substance abuse treatment than their rural counterparts.

2. Materials and Methods

2.1. Sample

Data for these analyses were derived from two parallel studies on HIV risk reduction. The overarching goal of these studies was to implement and evaluate the effectiveness of two brief HIV/AIDS risk reduction interventions for felony probationers in rural Kentucky and urban Delaware. Potential subjects were recruited from waiting rooms in county probation offices. Specifically, rural participants were recruited between 2001 and 2004 from two-state defined rural probation districts, comprised of 30 Appalachian and/or rural counties in Kentucky all with populations less than 50,000, while urban participants were recruited between 2000 and 2003 from the largest urban county in Delaware with a population greater than 500,000. The eligibility criteria included being on felony probation and being 18 years or older. Face-to-face interviews were conducted with 800 felony probationers in Kentucky and 796 felony probationers in Delaware. Females were over-sampled at 30% to ensure adequate representation. The overall project was approved through a full Institutional Review Board (IRB) review at the University of Kentucky and the University of Delaware. All project interviewers were trained by key personnel and certified on IRB policies and procedures.

After obtaining informed consent, data was collected in a face-to-face interview on the felony probationers' demographic characteristics, criminal history, substance use patterns, and substance abuse treatment history. The interviews lasted about two hours, and participants were compensated \$50 for their time. Respondents were also asked to voluntarily provide urine and saliva samples for drug screens and HIV testing, respectively. Both the Kentucky probationer sample (Oser, Smiley-McDonald, Havens, Leukefeld, Webster, & Cosentino, 2006) and the Delaware probationer sample (Martin, O'Connell, Inciardi, Beard, & Surratt, 2003) have been described elsewhere.

2.2. Measures

The primary variable of interest was geographic location of where the services are being provided, where participants from urban Delaware were coded '1' and participants from rural Kentucky were coded '0.' Three groups of variables were also included in the bivariate and multivariate models: *Demographic Characteristics*, *Criminal History*, and *Substance Use*. The first area of interest, *Demographic Characteristics*, was comprised four variables, three of which were dichotomous measures and included whether the participant was female (1=yes; 0=no), non-white (1=yes; 0=no), and had a high school diploma (1=yes; 0=no). Age was measured in number of years.

The second group of variables measuring *Criminal History* contained three dichotomous measures. Participants were asked if they were ever arrested as a juvenile (1=yes; 0=no), if they were ever incarcerated as an adult (1=yes; 0=no), and if they had ever been arrested for a drug offense (1=yes; 0=no).

The final variables, called *Substance Use*, were assessed using the Addiction Severity Index (ASI) measures (McLellan et al., 1992). Participants were asked if they had ever in their lifetime used marijuana, cocaine/crack, heroin, prescription opiates, sedatives, amphetamines, PCP, hallucinogens, inhalants, or injection drugs (1=yes; 0=no).

There were three dependent variables of interest. Specifically, participants were asked if they had ever participated in a 12-step program (e.g., Alcoholics Anonymous or Narcotics Anonymous), a voluntary substance abuse treatment program, or a court mandated treatment program (1=yes; 0=no). The operationalization of court-mandated programs includes being sentenced to treatment, treatment in lieu of jail/prison, and early release from jail/prison if entering treatment.

2.3. Analytic Strategy

Only probationers who had ever used an illegal drug were included in the bivariate and multivariate analysis. Thus, 80 rural probationers and 43 urban probationers were excluded from these analyses because of the either no self-reported illegal drug use or missing data on the dichotomous independent variables. Chi-square and independent sample t-tests were used to explore significant differences in categorical and continuous variables, respectively, between the rural (n=720) and urban (n=753) felony probationers. Next, multivariate analyses were conducted using logistic regression models, as the study's goal was to identify the characteristics of those drug-using probationers having ever utilized peer recovery support groups, voluntary substance abuse treatment, or mandated treatment, rather than predicting incremental increases in the number of times treatment was received. Results of the logistic regression models reported the unstandardized coefficients, standard errors, odds ratios, and 95% confidence intervals. None of the independent variables correlated so highly as to imply problems with multicollinearity (e.g., all correlations were $\leq .4$).

3. Results

3.1. Bivariate Analyses

Table 1 displays the results of the bivariate analysis for demographic characteristics, criminal history, lifetime prevalence of substance use, and lifetime use of peer recovery support programs and substance abuse treatment. The vast majority (95%) of rural probationers were white while over three-fourths (76%) of the urban participants were non-white. On average, urban participants were approximately three years older than rural participants. Rural participants reported significantly less education than their urban counterparts as well as less extensive criminal histories.

Rural and urban probationers differed significantly in the types of illegal substances ever used, with the exception of injection drug use. Urban participants were significantly more likely to report having ever used cocaine/crack, heroin, and PCP. Conversely, substantially higher percentages of rural participants reported having ever used marijuana, prescription opiates, sedatives, amphetamines, hallucinogens, and inhalants. Approximately one-fourth of the sample reported lifetime injection drug use and no significant geographic differences were found. The pattern of substance use during the previous 3 months closely mirrors lifetime use trends (results not shown).

Peer recovery support group and treatment utilization differed significantly across rural and urban participants. As hypothesized, rural probationers were under-represented in their lifetime involvement in peer recovery support groups, voluntary substance abuse treatment, and mandated treatment. Thus, participation in peer recovery support group, voluntary treatment, and mandated treatment were examined in greater detail (results not displayed in Table 1). Findings suggest that almost four-fifths of the participants had attended a community AA, NA, or CA group (79%), while the remainder had participated in twelve step programs while in prison, in jail, or on work-release (21%). However, the difference in the location of peer recovery support group attendance did not statistically differ between rural and urban participants ($\chi^2=.23$; $p=.63$). The average participant voluntarily attended formal treatment (not including peer recovery support groups) about two times across the life course and this did not statistically differ by geographic location ($F=7.27$; $p=.21$). However, urban probationers participated in mandated substance abuse treatment significantly more times than rural probationers ($F=5.02$; $p=.03$).

3.2. Logistic Regression Analyses

In Table 2, Models 1, 2, and 3 display the results of the logistic regression models predicting the correlates of the likelihood of a probationer having utilized peer recovery support programs, voluntary treatment, and mandated substance abuse treatment. Model 1 examines the effect of geographic location, net of the effects of demographic characteristics, criminal history, and substance use, on having ever participated in a twelve step program. Odds ratios indicate that probationers located in an urban area were almost 4 times more likely to have participated in a peer recovery support group than rural participants. In fact, this was the most robust correlate of twelve step attendance. Gender was the only significant *Demographic Characteristic*, with females being 12% less likely than males to have attended a peer recovery support program. Regarding *Criminal History*, having been incarceration and arrested for a drug related offense doubled the odds of peer recovery support group attendance. Lifetime use of cocaine, heroin/opiates, and amphetamines also increased the odds of attending a twelve step group.

Geographic location was also a significant correlate in Model 2, which explored the significant correlates of voluntary treatment. Being located in an urban area almost doubled the odds of participating in voluntary treatment. In addition, having a high school degree was associated with a 69% increase in the likelihood of voluntarily attending treatment. One of the *Criminal History* variables was a significant correlate of voluntary treatment attendance. Specifically, having been incarcerated increased the likelihood of voluntary treatment by 62%. In addition, having used cocaine and heroin/opiates were positively associated with voluntary treatment attendance. Moreover, participants who had injected drugs were 54% more likely to have voluntarily attended treatment over the life course.

Model 3 examines the relationships between the independent variables of interest and mandated treatment. Similar to Models 1 and 2, Model 3 reveals that net of the effects of the other variables, geographic location was associated with mandated treatment. Specifically, urban probationers were 59% more likely to have been mandated to treatment as compared

to their rural counterparts. While none of the *Demographic Characteristics* were significant associated with having been mandated to treatment, all of the *Criminal History* variables were related to the dependent variable of interest. However, being arrested before the age of 18 and having been incarcerated increased the likelihood of mandated substance abuse treatment by 27% and 36%, respectively. In addition, odds ratios suggest that participants who had been arrested for a drug offense were 2.2 times more likely to have participated in mandatory treatment at some point during their life course. Moreover, having ever used cocaine and amphetamines increased the odds of mandatory treatment.

4. Discussion

This is the first known study to examine geographic differences in participation in peer recovery support groups, voluntary substance abuse treatment, and mandated substance abuse treatment among rural and urban felony probationers. Overall, bivariate results were consistent with previous research which has found that individuals in rural areas were less likely to have participated in substance abuse treatment than their urban counterparts (Conger, 1997; Fisher, Cagle, Davis, Fenaughty, Kuhrt-Hunsinger, & Fison, 1997; Rural Indiana, 1997; Clark, Leukefeld, & Godlaski, 1999; Warner & Leukefeld, 2001; Leukefeld, Logan, Farabee, & Clayton, 2002; Leukefeld et al, 2002; Leukefeld, McDonald, Staton, & Mateyoke-Scriver, 2004); however, these studies were not specific to probationers nor did they explore various types of treatment and peer recovery support participation. In contrast, this study found that urban probationers were significantly more likely to have ever participated in twelve step programs, voluntary treatment, and mandated treatment. In addition, urban participants had more extensive criminal histories in terms of arrests before the age of 18, ever being incarcerated, and ever being arrested for a drug offense. Similar to national data on substance abuse treatment admissions, rural probationers in this study were significantly more likely to have ever used prescription drugs and amphetamines whereas urban probationers were more likely to have ever used crack/cocaine and heroin (SAMHSA, 2002; 2006).

In each of the three multivariate models, geographic location was a significant correlate. Specifically, residing in an urban area significantly increased probationers' odds of participating in peer recovery support groups, voluntary treatment, and mandated treatment. This contradicts the USDHHS (2005) finding that rural treatment admissions were more likely to be referred or mandated by the criminal justice system to treatment than urban treatment admissions. However, it does lend support for the position that the percentage of individuals receiving any treatment is disproportionately lower in rural areas, as compared to urban areas. The finding from this study that urban participants, as compared to their rural counterparts, were more likely to have received mandated substance abuse treatment, after controlling for criminal history, suggests that geographic location is important. Additional research is needed on the role the criminal justice system plays in substance abuse treatment disparities for offenders residing in rural areas.

While the finding that probationers' participation in peer recovery support groups as well as voluntary and mandated treatment would be higher in urban areas as compared to rural areas was expected, it does present important policy implications. There is a clear health disparity in treatment access in rural areas that needs to be addressed by legislation, the department of corrections, as well as state-driven initiatives. For example, in this study rural probationers were significantly more likely to have been arrested for a drug offense than urban probationers, which may be indicative of a substance use disorder; however, they are significantly less likely to have entered the health care system for substance abuse treatment. Moreover, rural probationers in this study were less likely to be involved in peer recovery support programs, Alcoholics Anonymous (AA) or Narcotics Anonymous (NA), which are

open and free to the public. The lack of participation in both informal peer recovery support groups and in the formalized treatment system may be partially attributed to limited service availability. Specifically, there are few substance abuse treatment programs in rural areas (Simons, Oliver, Gaher, Ebel, & Brummels, 2005) where there is substantial need (Rawson, Huber, et al., 2002), suggesting that rural probationers may have to travel long distances to receive services.

While this study contributes to both the criminal justice and substance abuse treatment literatures, limitations must be noted. This study uses cross-sectional data which doesn't allow for causal inferences. In addition, this study uses data from probationers in one urban and one rural geographic region, thereby limiting generalizability. Findings could be attributed to differences in policing and sentencing in these two diverse geographic regions or different states; however, no measures were included in this study to examine more macro-level issues. Moreover, while self-report data is commonly used to examine substance abuse topics, it could produce biased data because of issues with recall, truthfulness, and social desirability. This risk could be minimized in this study by focusing on major events (e.g., ever becoming incarcerated) and the use of any illicit substance, rather than the number of times they engaged in substance use. Research supports the validity of self-report data when compared to urinalysis for drug use (Del Boca and Noll, 2000; Rutherford et al., 2000). Future studies could incorporate longitudinal data analysis design in a variety of geographic areas with both self-report and substantiated treatment admissions data in order to best determine the predictive factors associated with various forms of treatment as well as peer recovery support participation.

Despite these limitations, examining probationers' use of substance abuse treatment in rural and urban areas is important. According to cost-effectiveness studies (see Meara & Frank, 2005 for overview), substance abuse treatment can produce substantial societal savings with the reduction in associated long-term health care costs and decreases in crime. Moreover, since probationers are the largest segment of the criminal justice system (Glaze & Bonczar, 2009), additional efforts by state entities such as the Department of Corrections as well as revised legislation of state and federal sentencing statutes are needed to ensure that the majority of probationers, including those in rural areas, have access to needed substance abuse treatment services.

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Table 1

Results of Bivariate Analysis for Demographic Characteristics, Criminal History, Types of Substance Ever Used, and Substance Abuse Treatment

Variable	Rural (n=720)	Urban (n=753)
<i>Demographics</i>		
% Female *	34.00	29.00
% Nonwhite ***	5.00	76.00
Age ***	33.98	37.49
% High School Degree ***	42.00	52.00
<i>Criminal History</i>		
% Arrested Before 18 ***	37.00	57.00
% Ever Incarcerated ***	68.00	85.00
% Ever Arrested for Drug Offense **	74.00	68.00
<i>% Ever Used in Lifetime...</i>		
Marijuana ***	99.00	94.00
Cocaine/Crack ***	73.00	80.00
Heroin ***	12.00	40.00
Prescription Opiates ***	66.00	14.00
Sedatives ***	68.00	27.00
Amphetamines ***	58.00	24.00
PCP ***	13.00	30.00
Hallucinogens ***	64.00	34.00
Inhalants ***	26.00	10.00
Injection Drugs	25.00	24.00
<i>% Ever Participated in...</i>		
Twelve Step ***	55.00	82.00
Voluntary Treatment ***	24.00	38.00
Mandated Treatment ***	45.00	57.00

p<.001;

**
p<.01;

*
p<.05

Table 2

Logistic Regression Analyses of Prior Substance Abuse Treatment on Geographic Location, Demographic Characteristics, Criminal History, and Substance Use (n=1,458)

Variables	Model 1: 12-Step Program	Model 2: Voluntary Treatment	Model 3: Mandated Treatment
<i>Urban</i>	3.94** (2.59–5.99)	1.99*** (1.41–2.81)	1.59** (1.14–2.22)
<i>Demographics</i>			
Female	.88* (.67–1.15)	1.04 (.80–1.34)	1.03 (.81–1.30)
Age	1.02 (1.00–1.03)	1.01 (1.00–1.03)	1.00 (.99–1.01)
Non-white	1.25 (.82–1.92)	.89 (.63–1.26)	1.54 (.83–1.61)
High School Degree	.96 (1.75–3.12)	1.69*** (1.33–2.16)	.88 (.70–1.11)
<i>Criminal History</i>			
Arrested Before 18	1.22 (.93–1.61)	1.00 (.78–1.29)	1.27* (1.00–1.60)
Ever Incarcerated	2.34*** (1.75–3.12)	1.62** (1.19–2.21)	1.36* (1.04–1.78)
Ever Arrested for Drug Offense	2.18*** (1.65–2.90)	1.13 (.86–1.48)	2.16*** (1.68–2.77)
<i>Substance Use</i>			
Ever Used Cocaine/Crack	2.79*** (2.03–3.83)	2.06*** (1.44–2.94)	2.13*** (1.58–2.87)
Ever Used Heroin	1.57** (1.16–2.14)	1.32* (1.00–1.74)	1.16 (.90–1.50)
Ever Used Amphetamines	1.52* (1.10–2.12)	1.04 (.77–1.40)	1.36* (1.03–1.79)
Ever Injected Drugs	1.20 (.84–1.71)	1.54** (1.16–2.06)	.86 (.65–1.41)
–2 Log likelihood	1428.70	1661.63	1867.85
χ^2	378.22***	146.88***	152.27***
Nagelkerke R ²	.32	.14	.13

p<.001;

**
p<.01;

*
p<.05