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Mental Illness, Substance Use, and Co-Occurring Disorders among Jail Inmates: Prevalence, Recidivism, and Gender Differences

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ABSTRACT

Mental illnesses, substance use, and their co-occurrence are significant predictors of maladaptive outcomes such as aggression, criminal behavior, and recidivism. These problems are theorized to be more prevalent and problematic among female inmates than male inmates and may be more relevant in jail settings. However, few studies have examined the relationship between these factors, including gender differences among the jail population. This study seeks to fill these gaps by examining – a) the prevalence of these problems, b) their effects on recidivism, and c) gender differences in these relationships – among jail inmates. Results indicate that mental illness significantly increased recidivism for men and its impact on recidivism was stronger for males than females, and mental illness primarily occurred in the presence of substance use. Finally, although substance use was very high among males and females, it was not significantly related to recidivism for either group. In order to offer programming for these problems, administrators should first implement the use of needs assessments which would identify at-risk inmates.

KEYWORDS

Mental health; mental illness; substance use; co-occurring disorder; recidivism; jail inmates; gender differences

Incarceration in prison or jail costs millions of dollars per inmate in the United States each year. Recidivism accounts for much of that cost, with over 40% of offenders rearrested within one year of release and over 17% being re-incarcerated in prison or jail within that time (Durose et al., 2014). Research demonstrates that certain risk factors such as criminal history, race, age, employment status, homelessness, mental illness, and substance use problems enhance the likelihood of recidivism (Gendreau et al., 1996; Jhi & Joo, 2009; Stahler et al., 2013). The strongest predictors of recidivism dubbed the “big four”, are criminal history (e.g., prior arrests, incarcerations, the seriousness of offenses, etc.), antisocial personality (stimulation seeking, low self-control, and hostility), antisocial peers, and antisocial attitudes (Andrews & Bonta, 2010; Gendreau et al., 1996). The “big eight” risk factors (including the “big four”) for recidivism include substance abuse, employment unsteadiness, family complications, and low involvement in prosocial leisure activities (Andrews et al., 2006).

Mental illness, though not identified as one of the “big eight” predictors of recidivism, is nonetheless a strong correlate of criminal behavior (Swartz et al., 1998), and is increasingly present in the correctional population. For instance, national data (James & Glaze, 2006;

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Lynch et al., 2014) estimates the percentage of mentally ill offenders to be as high as 56%. According to a Bureau of Justice report, 24% of prisoners and 31% of jail inmates self-reported that they suffered from a major depressive disorder (Bronson & Berzofsky, 2017). Mental illness also tends to co-occur with substance use problems (one of the “big eight” predictors of recidivism¹). Further, substance use, mental illness, and the co-occurrence of these problems (termed “co-occurring disorders”, or CODs) exist at an alarming rate among jail inmates (Belknap et al., 2016) – a population less often studied by criminologists in comparison to prison inmates. Yet, these problems may be just as detrimental to jail inmates’ institutional misbehavior and eventual recidivism in the community. Moreover, the interconnectedness between drug use and mental illness among female offenders is particularly strong, and in many cases, means that jails must respond to the problems and needs that women offenders bring with them into jail – including high rates of mental illness, substance use, and CODs. This study attempts to contribute to the limited evidence on recidivism among jail inmates by exploring the prevalence of self-reported mental illnesses, self-reported substance use, and CODs in this population, their impact on inmates’ recidivism, as well as gender differences in these effects.

Literature review

Substance abuse, mental illnesses, and co-occurring disorders

Mental illnesses, substance use, and their co-occurrence are significant predictors of maladaptive outcomes such as aggression, criminal behavior, and recidivism (Hiller et al., 1996). Research has shown that mental illness, substance use, and especially their co-occurrence, also leads to misbehavior among prison inmates during incarceration (Houser et al., 2012). This research suggests that inmates with CODs may pose complications to correctional system administration such as jail/prison staff, correctional officers, and administrators. Researchers have theorized that these problems hinder healthy adjustment to confinement within institutional settings, and as such, raise offenders’ risk of violating prison rules (Houser & Welsh, 2014). Moreover, inmates with CODs also are at an increased risk of serious self-harm while incarcerated (Butler et al., 2021; Cain & Ellison, 2022). Upon release, offenders who suffer from mental illness, substance use problems, or co-occurring disorders may also have difficulty adjusting to supervision in the community or staying away from criminal behavior, which in turn, may lead to their recidivism (Sacks, 2004).

Problems related to mental illness, substance use, and CODs may be also at work in jail settings. However, few studies have examined the relationships between mental illness, substance use, and co-occurring disorders among the jail population (DeHart et al., 2013). This is likely due to many practical and methodological concerns, including the transiency of the jail population – many inmates are confined for less than a day and it is therefore difficult to assess their needs within that timeframe. Further, most jails do not have programming available to treat such problems among their population (Trestman et al., 2007), so identifying mental illnesses, substance use problems and their co-occurrences would hold very little value for many jail administrators.

However, mental illness, substance use, and CODs may be even *more* problematic among jail inmates than prison inmates. First, the prevalence of these problems may be even higher among jail inmates than prison inmates, given that jails house any person who has been

arrested, while prisons house only those convicted of serious crimes. Therefore, jails are likely to house individuals whose mental illness and substance use problems have brought them to the attention of the police, but whose offenses may not be serious enough to progress through the criminal justice system and result in a prison sentence (e.g., drunk driving, homelessness, nuisance crimes, bar assaults, and so forth). Second, the lack of programming and classification in jails may exacerbate the problems created by mental illness, substance use, and CODs in terms of jail inmate misbehavior (Trestman et al., 2007). That is, without housing units designed for inmates with mental illnesses, substance use, or CODs, jail inmates who suffer from these problems are often housed with inmates who do not have these problems, and the potential for misbehavior and/or victimization between the two increases (e.g., an inmate with mental illness may assault another inmate or vice versa). Finally, due to the lack of programming offered by jails, it is more likely that mental illnesses, substance use problems, and CODs go untreated while the offender is incarcerated. Therefore, it is more likely that these problems will again impact their misbehavior in the community, which will, in turn, lead to their subsequent arrest and return to jail. As mentioned, however, few studies have examined these issues as they pertain to jail inmates.

Prevalence of mental illness, substance use, and co-occurring disorders among offenders

The prevalence of mental illness and substance use problems – and their co-occurrence – among the offender population is noteworthy. Numerous studies have demonstrated that a significant proportion of offenders in jail and prison settings suffer from mental illness, with rates much higher in these settings compared to the general population (Sacks, 2004). The percent of mentally ill offenders has increased from 16% in 1998 (Ditton, 1999) to 56% in 2005 (James & Glaze, 2006; Lynch et al., 2014), suggesting that rates of mental illness among inmates in the correctional system have been steadily on the rise (Kleinsasser & Michaud, 2002).

Although the rates for mental illness are high, the prevalence rates for alcohol and drug problems in correctional populations are even higher – it is estimated that over 50% of inmates in jails and prisons suffer from substance dependence or abuse (James & Glaze, 2006; Lynch et al., 2014). Inmates' substance use is related to their criminal behavior – more than 50% of jail inmates were using substances at the time of their arrest, with over 70% of drug or property offenders and 60% of violent or public-order offenders evidencing drug dependence or abuse (Karberg & James, 2005; Meyer et al., 2014).

Given the high rates of mental illness and substance use among inmates, it is not surprising that co-occurring disorders (CODs) are also very prevalent among correctional populations – including jail inmates. Co-occurring disorders refer to the presence of one or more disorders related to alcohol or drugs in concurrence with one or more mental disorder(s); Center for Substance Abuse Treatment (Kassebaum, 1999). It is estimated that approximately 48% of jail inmates are co-disordered, suffering from mental illnesses simultaneously with substance dependence or abuse (James & Glaze, 2006; Meyer et al., 2014). Estimates of CODs among correctional populations can vary depending on certain factors. For instance, Havassy et al. (2004) reported that approximately 90% of inmates with schizophrenia, bipolar disorder, or antisocial personality disorder also suffered from substance abuse or substance disorder, while James and Glaze (2006) reported slightly lower

percentages of inmates (under 76%) with *any* mental illness also evidencing substance dependence or abuse. Regardless of the disorders which are included, whether they are self-reported or officially diagnosed, or the correctional population (i.e., jail versus prison) under consideration, the numbers of CODs are considerably high.

Effects of mental illness, substance use, and co-occurring disorders on recidivism

Individuals with mental illnesses are presumed to be more prone to recidivism, compared to individuals without any mental illness (Wilson et al., 2011). Hartwell (2004) and Messina et al. (2004) found that among a sample of inmates, those with CODs were more at risk of recidivating within the first year of their release compared to those with mental illness only. It is likely that these problems disrupt adjustment to confinement and fulfillment of supervision conditions, and increase the likelihood of continued criminal behavior when the offender is in the community. According to a study by Houser et al. (2012), within the correctional population, mental illness, substance abuse, and CODs manifest in different ways. For instance, mentally ill offenders report symptoms of major depression, mania, or psychotic disorders, which encompass a wide range of feelings and behaviors. Major depression and mania symptoms include continual sadness, nil interest in physical activities, loss of sleep or being sleepy or fatigued all the time, hypersomnia, psychomotor agitation, and perennial irritability. Substance dependence can impact behavior in a variety of ways, too. For instance, intravenous drug users are at a higher risk of contracting infectious diseases and are harmful to themselves as well as fellow inmates, especially when experiencing withdrawal symptoms, or “coming down” from drug use (Wright, 2000). It becomes very difficult for an inmate suffering from CODs to adjust to such an environment because symptoms like emotional instability, delusions, physical pain/withdrawal, and hallucinations make it difficult for them to follow the prison or community rules and regulations; further, these conditions increase the likelihood of triggering a mental-health or COD-related episode among at-risk offenders (Houser et al., 2012). This was further evidenced by ten percent of jail inmates charged or written up with assault who met the threshold of serious psychological distress (Bronson & Berzofsky, 2017).

Because distorted understandings, emotional volatility, social segregation, and withdrawal distress inmates with mental illnesses, they are likely to have a tougher time acclimating to life under supervision. For example, distorted rationale and cognitive distortions may cause offenders to misjudge their reaction to other people’s behavior and supervisors’ demands, and inmates with substance use problems have a tougher time adjusting to life in the community post-release when appropriate treatment is not available which increases their likelihood of recidivism (Draine et al., 1994). Additionally, offenders with dual mental illnesses and substance use disorders (i.e., CODs) may have an even more difficult time coping with the daily rigidities of prison or paroled life (Wood, 2013). Unsurprisingly, inmates with mental illness, substance use problems, or CODs are likely to be disruptive with their behavior (e.g., coming “down from drugs, going through withdrawal, etc.), and may cause injury to correctional staff and fellow inmates (Goetting & Howsen, 1986; Wolff & Shi, 2009). Finally, since institutional misbehavior is related to reoffending risk post-release, it is likely that co-disordered inmates are at an elevated risk of recidivating as well (Cochran et al., 2014; Hausam et al., 2018; Semenza & Grosholz, 2019).

Gender differences in mental illness, substance use, and co-occurring disorders

The War on Drugs impacted women disproportionately in the correctional system primarily because women are arrested for nonviolent drug crimes more often than men (Bloom et al., 2004; Fedock, 2018; Peugh & Belenko, 1999). The nonviolent nature of women's offenses means they are more likely to enter jail settings than prisons; in fact, females are 17.6 times more likely (and males 8.9 times more likely) to be incarcerated in jails rather than prisons (Banks et al., 2000). According to James and Glaze (2006), women in correctional settings pose a substantial risk for mental illness and substance use problems (and their co-occurrence). Compared to women in general community population (non-offender population) samples, female inmates have heightened rates of substance abuse and mental illnesses, including substance abuse and dependence, mood disorders, borderline personality disorders, and anti-social personality (Gehring, 2018; James & Glaze, 2006; Jordan et al., 1996; Lynch et al., 2014; Maden et al., 1994; Tripodi et al., 2019). They also exhibit heightened levels of exposure to traumatic life events like childhood victimization and/or domestic violence (Jordan et al., 1996; Radatz & Wright, 2017). The interconnectedness of mental illness and substance use among female offenders is often attributed to their experiences of trauma, such as abuse and victimization (Bloom et al., 2004). It is theorized that females develop mental illnesses in the aftermath of this victimization (Radatz & Wright, 2017; Tripodi & Pettus-Davis, 2013). Additionally, they may use substances to cope with victimization and/or mental illness (Bloom et al., 2003).

Further, women in correctional settings suffer from mental illness, drug use disorders, and CODs more than their male counterparts (Houser et al., 2012). Again, this could be related in part to their victimization histories: female prisoners are more likely to report physical, sexual, and emotional victimization, as well as victimization during childhood than their male counterparts (Cain et al., 2016; Messina et al., 2006). Drug use differs for men and women as well. In federal prisons, men report higher alcohol consumption and women report higher nonalcoholic (hard drugs) substance use. While drug use is related to both male and female offending, females are more likely to be using hard drug(s) at the time of their offense and are more often arrested and incarcerated for drug-related activities (Mumola & Karberg, 2006).

Finally, co-occurring disorder rates are very high among incarcerated women. Houser et al. (2012), Houser & Welsh (2014)) report between 42 and 64% of incarcerated women have co-occurring mental illness and substance use disorders, a rate much higher than estimates of CODs among women in the general (non-correctional) population (James & Glaze, 2006; Sacks, 2004). Although extremely high, Houser and Welsh (2014) note that the COD prevalence rates for women may be even higher because prison data often reflects only serious diagnoses for mental illness and CODs but leave out the common psychiatric diagnoses for women like anxiety disorders, post-traumatic stress disorders, and borderline personality disorders (see also, Bloom et al., 2003). Houser and Welsh (2014) also suggest that many CODs may be undiscovered because there is a lack of dual disorder screening instruments in these settings.

Mental illness, substance use, and CODs may be even more relevant in jails

Jails may be the first place where some inmates enter with undiagnosed mental illnesses, and become diagnosed after meeting with a mental health provider in the jail. This could be attributed to deinstitutionalization across the nation, which replaced long-stay psychiatric

hospitals with smaller, less secluded community-based substitutes for the care of mentally ill people (Lamb & Weinberger, 2001). Researchers have speculated that deinstitutionalization of psychiatric hospitals and community care for those with mental illness is at least in part to blame for the rise of mentally ill and co-disordered offenders in the U.S. correctional system (Novella, 2010). The rationale given for the widespread closing of these institutions during the 1950s-70s was that the mentally ill could be better taken care of in the community in more humane and economical ways than in psychiatric hospitals (Sporer, 2019). It is possible that this impacted jails disproportionately, since jails report higher proportions of inmates with mental illness than prisons (James & Glaze, 2006).

Within jails, there are at least three reasons why the effects of mental illness, substance use, and CODs among inmates may pose greater problems than they do among prisons. First, the prevalence of these problems may be even higher among jail inmates than prison inmates, given that jails house any person who has been arrested, while prisons house only those convicted of serious crimes (Greenberg & Rosenheck, 2008). Second, the lack of programming and classification in jails may further the problems created by mental illness, substance use, and CODs in terms of inmate misbehavior (Solomon et al., 2008; Trestman et al., 2007). Jails often screen and assess inmates according to their risk levels, using primarily static variables such as prior arrests, but they often do not assess for therapeutic and programming needs, such as mental illnesses (Solomon et al., 2008). This is primarily due to two reasons – first, that jails simply lack many of the programming options available in prisons and, because they often house individuals for fairly short periods of time, they may be unable to provide adequate or long-term programming. Therefore, individuals are housed according to risk levels instead of needs, which increases the potential for misbehavior and/or victimization between high-need and high risk individuals housed in the same unit. Apart from housing constraints and the lack of programming, programming may also be sparse in jails because inmates refuse to participate, thinking that they will not be in the jail for long, and/or having doubts about the importance of treatment (Meyer et al., 2014). The opportunities for institutional misbehavior (rule violation) and violence among inmates with mental illness, substance use problems, and CODs therefore may be higher in jails, in part because of these housing and staffing situations. Since inmates stay in jail for shorter timeframes and because they may refuse to participate in any treatment programs (Meyer et al., 2014), the lack of programming offered by jails means that it is more likely that mental illnesses, substance use problems, and CODs go undiagnosed and/or untreated while the offender is incarcerated (Trestman et al., 2007). Therefore, it is more likely that these problems will again impact their misbehavior in the community, which will, in turn, lead to their subsequent arrest and return to jail. For instance, many psychosocial factors lead to violence (e.g., substance abuse) that can be treated via programming in the facility which would lower inmates' risk of misbehavior within and outside of the jail (Andrews & Bonta, 2010). However, many of these programming options are not available in jails.

Additional risk factors: socio-demographic predictors of recidivism

There are additional risk factors besides mental illnesses, substance use, and co-occurring disorders among jail and prison inmates that enhance their chances of recidivism, and that need to be accounted for in models predicting recidivism. Among these are demographic and background characteristics such as age, gender, race, employment, and housing status.

Age is one of the most potent risk factors when it comes to recidivism among adult inmates incarcerated in correctional facilities, with younger inmates being more vulnerable to subsequent criminal behavior and recidivism, while males and minorities are also more likely to recidivate than females and non-minorities (Gendreau et al., 1996; Loong et al., 2021). According to a study by Kubrin et al. (2007) recidivism is higher among African Americans and Native Americans than Caucasians, perhaps because the social contexts in which minorities live are more conducive to crime, and subsequently, recidivism. Offenders with less stable employment and income opportunities, as well as housing stability (e.g., risk of being homeless upon release) are also more likely to return to criminal behavior (Bonta et al., 2014; Gendreau et al., 1996). Unemployment is closely related to homelessness because it can lead to difficulties in obtaining stable living arrangements, which in turn raises offenders' risk of recidivism (Grace et al., 2008); in fact, homelessness raises one's risk for recidivism by almost four-fold (Fischer et al., 1986; Jacobs & Gottlieb, 2020; Lutze et al., 2014). Measures of risk and criminal history that tap into offenders' propensity for crime and violence, as well as their past misbehavior (both in and outside of correctional facilities), have been linked to recidivism among offenders (Bonta et al., 2014); these measures include the length of stay in the institution, prior criminal history, prior incarceration history, prior violence, gang affiliation, and offense seriousness. All of these measures will be accounted for in the statistical analyses used in the current study.

Methodology

This study seeks to fill this gap in the research by examining the prevalence of self-reported mental illness, self-reported substance use, and their co-occurrence among an intake cohort of jail inmates in a Midwestern County. Further, this study will examine whether inmates with mental illness, substance use problems, or CODs are at increased risk for returning to jail within one year of release. Because it has been documented that mental illnesses, substance use problems, and CODs are more prevalent among women offenders (Bloom & Covington, 2008), this study will also examine whether these patterns exist among female jail inmates and whether the effects of mental illness, substance use, and CODs on recidivism are stronger for women offenders than men offenders.

Primary goals

The primary goals of this study are to understand the prevalence of self-reported mental illness, self-reported substance use problems, and CODs among inmates within a jail setting, to determine their effects on recidivism, and to examine gender differences in these relationships. The following research questions will be examined:

RQ1: What is the prevalence of mental illness, substance use, and CODs among an intake cohort of jail inmates; does the prevalence of mental illness, substance use, and CODs differ significantly for men and women?

RQ2: Does having a history of mental illness predict recidivism among jail inmates after controlling for covariates? Does this effect differ for men and women?

RQ3: Does having a history of substance use predict recidivism among jail inmates after controlling for covariates? Does this effect differ for men and women?

RQ4: Does having a COD predict recidivism among jail inmates above having only mental illness and only substance use? Does this effect differ for men and women?

Sample

The site for the current research was a Midwestern County Jail. The sample for this study included all the inmates admitted to the jail during January 2015 [$N = 1,368$ ($n_{\text{males}} = 989$, $n_{\text{females}} = 379$)]. Inmates were only included in the sample if they were at the jail long enough to be assessed and classified into the system at intake (usually about three hours after arrest); if they “bonded out” and/or were transferred to another facility before being assessed and classified, they were not included in the sample because the assessment and classification tool provided the main independent variables for this study (mental illness, substance use, and CODs). Approximately 9% of inmates booked into the jail “bond out” immediately. At classification and intake, a staff member interviewed each inmate and entered data regarding their risk and need factors (e.g., risk of homelessness, etc.) into the jail administration system. The data for this study were drawn from the jail administration system.

Measures

Independent and Dependent Variables. The dependent variable measured recidivism as *return to jail* and indicated whether an inmate came back to the same jail within one year after release (coded as 1 = yes, 0 = no).² The primary independent variables used in this study were *any mental illness*, *any substance use*, *mental illness only*, *substance use only*, and *co-occurring disorders*. Each of these variables was assessed upon jail entry during the intake process and was self-reported. Mental illnesses included: depression, anxiety, adjustment disorder, bipolar disorder, schizophrenia, attention deficit with hyperactivity, impulse control disorder, panic disorder without agoraphobia, mental disorder, post-traumatic stress disorder, and psychosis. *Any mental illness* reflects whether inmates reported having any of these illnesses. *Mental illness only* is a dichotomous variable that reflects that the inmate only reported having an aforementioned mental illness but did *not* self-report having substance use problems.

At intake, inmates were interviewed about any drugs (legal/illegal) that they had been using and whether they felt any withdrawal symptoms after they stopped using the drugs. Additionally, they were asked to disclose if they have ever received any treatment for substance or alcohol use. Substance use problems upon jail entry was collected by the jail and included: alcohol dependence, drug withdrawal, drug abuse, drug dependence, and stimulant abuse as one variable. *Any substance use* indicates whether inmates responded affirmatively to having any of these substance use problems. *Substance use only* is a dichotomous variable that reflects the inmate only reported having a substance use problem but did not report a mental illness problem. *Co-occurring disorders (COD)* indicate that the inmate suffered from both a mental illness *and* a substance use problem upon jail entry (coded 1 = yes, 0 = no). Table 1 shows the mean, standard deviation, and minimum/maximum values for all the variables, by the “pooled” sample (males and females), as well as by gender groups.

Control Variables. Covariates potentially related to mental illness, substance use, CODs, and recidivism were included as control variables. *Female* is a dichotomous variable indicating the gender of the inmate (coded as 0 = male, 1 = female).³ The race of the inmate

consists of dichotomous variables for *Caucasian* (reference category), *African American*, *Hispanic* and *Other race* (each coded 1 = yes, 0 = no). *Age* reflects how old the inmate was at the time of jail intake and was coded in years. *Unemployed* was a dichotomous variable indicating that the inmate was unemployed at the time of admission (coded 1 = yes, 0 = no). *Homeless* indicates an inmate's self-reported risk of homelessness after their release if they do not have a place to live upon release, and/or could not provide details of a stable living arrangement at post-release (coded 1 = yes, 0 = no). *Custody level* indicates the final custody level assigned for the inmate's housing (coded 1 = minimum security, 2 = medium security, and 3 = maximum security). The type of offense a person was arrested for is captured by several dichotomous variables: *drug offense* (reference category), *felony*, *violent offense*, *property offense*, *public order offense*, and *other offenses*. *Gang member* indicated if the inmate had any type of gang affiliation self-reported or known to the jail (coded 1 = yes, 0 = no). *Time served (logged)* reflects the number of days an inmate stayed in jail after their arrest during January 2015. This variable was logged to reduce skew. Lastly, *Number of times admitted (logged)*, indicated the number of times an inmate had been previously admitted to the jail. It was also logged to reduce skewness.

Statistical Analyses. Several analytic techniques were used to address the research questions of this study. First, descriptive statistics were provided for the “total” sample (men and women combined), as well as for men and women, separately. Difference of means tests (i.e., t-tests and chi-square tests) were conducted to examine whether men and women differed significantly regarding recidivism, mental illness, substance use, co-occurring disorders, and other measures of risk (control variables). Next, a series of multi-variate logistic regression models were conducted to examine the independent effects of mental illness, substance use, and co-occurring disorders on recidivism for men and women separately, and the equality of coefficients test (Clogg et al., 1995) was used to examine whether variables' effects differed significantly by gender.

Results

Descriptive statistics and difference of means tests

Table 1 presents the descriptive statistics for the “total” sample (pooled men and women), as well as for men and women, separately. The last column provides the results from the difference-of-means tests, which indicate whether there are statistically significant differences in the means between men and women. The non-significant tests mean that the levels of the variable are statically similar or the same for men and women. Regarding the total sample, 40% of inmates returned to jail within one year of being released, 20% suffered from any mental illness, 78% suffered from any substance use problems, three percent suffered from problems relating only to mental illness, and 61% suffered from problems pertaining only to substance use. Additionally, 17% of inmates suffered from co-occurring disorders (mental illness and substance use), and 19% of inmates had no substance use and no mental illness problems.

Turning to the gender sub-samples, 43% of male inmates returned to jail within one year of their release, compared to 34% of females ($p \leq .001$, a statistically significant difference). Regarding mental illness, 23% of females suffered any mental illness, compared to 18% of males; this difference was not statistically significant, however. The prevalence of any substance use was higher among men (81%) than women (70%) and this difference was

Table 1. Descriptive statistics (all samples).

	Total Sample					Men					Women					Difference of Means Test
	$\bar{x}$	sd	Min-Max	$\bar{x}$	sd	Min-Max	$\bar{x}$	sd	Min-Max	$\bar{x}$	sd	Min-Max				
													n = 1,368			
Dependent Variables																
Return to Jail	.40	.49	0-1	.43	.50	0-1	.34	.48	0-1	.34	.48	0-1	.34	.48	0-1	2.95***
Independent Variables																
Any Mental Illness	.20	.40	0-1	.18	.39	0-1	.23	.42	0-1	.23	.42	0-1	.23	.42	0-1	-1.77
Any Substance Use	.78	.41	0-1	.81	.39	0-1	.70	.46	0-1	.70	.46	0-1	.70	.46	0-1	4.23***
Mental Illness Only	.03	.16	0-1	.02	.14	0-1	.05	.21	0-1	.05	.21	0-1	.05	.21	0-1	-2.31*
Substance Use Only	.61	.49	0-1	.65	.48	0-1	.52	.50	0-1	.52	.50	0-1	.52	.50	0-1	4.33***
Co-Occurring Disorders	.17	.37	0-1	.16	.37	0-1	.18	.38	0-1	.18	.38	0-1	.18	.38	0-1	-0.72
No Mental Illness & No Substance Use	.19	.39	0-1	.17	.37	0-1	.25	.44	0-1	.25	.44	0-1	.25	.44	0-1	-3.37***
Female	.28	.45	0-1	-	-	-	1.00	.00	0-1	1.00	.00	0-1	1.00	.00	0-1	-
Caucasian (reference)	.41	.49	0-1	.40	.49	0-1	.46	.50	0-1	.46	.50	0-1	.46	.50	0-1	-1.94
African American	.45	.50	0-1	.45	.50	0-1	.44	.47	0-1	.44	.47	0-1	.44	.47	0-1	0.45
Hispanic	.11	.31	0-1	.12	.32	0-1	.07	.26	0-1	.07	.26	0-1	.07	.26	0-1	2.81**
Other Race	.04	.18	0-1	.03	.18	0-1	.04	.20	0-1	.04	.20	0-1	.04	.20	0-1	-0.23
Age	32.65	11.17	18-78	33.41	11.48	18-78	30.68	10.07	18-65	30.68	10.07	18-65	30.68	10.07	18-65	4.30***
Unemployed	.60	.49	0-1	.59	.49	0-1	.64	.48	0-1	.64	.48	0-1	.64	.48	0-1	-1.80
Homeless	.08	.27	0-1	.08	.27	0-1	.08	.27	0-1	.08	.27	0-1	.08	.27	0-1	-0.14
Custody Level	1.21	.46	1-3	1.25	.50	1-3	1.10	.32	1-3	1.10	.32	1-3	1.10	.32	1-3	6.55***
Drug Offense (reference)	.21	.41	0-1	.21	.40	0-1	.21	.41	0-1	.21	.41	0-1	.21	.41	0-1	0.02
Felony	.43	.50	0-1	.45	.50	0-1	.38	.49	0-1	.38	.49	0-1	.38	.49	0-1	2.53*
Violent Offense	.12	.33	0-1	.14	.34	0-1	.09	.29	0-1	.09	.29	0-1	.09	.29	0-1	2.18*
Property Offense	.14	.35	0-1	.13	.34	0-1	.17	.38	0-1	.17	.38	0-1	.17	.38	0-1	-1.84
Public Order Offense	.22	.42	0-1	.21	.40	0-1	.26	.44	0-1	.26	.44	0-1	.26	.44	0-1	-1.76
Other Offense	.31	.46	0-1	.32	.47	0-1	.27	.45	0-1	.27	.45	0-1	.27	.45	0-1	1.65
Gang Member	.12	.33	0-1	.15	.36	0-1	.03	.18	0-1	.03	.18	0-1	.03	.18	0-1	8.42***
Time Served (ln Days) (Logged)	1.86	1.59	.00-6.43	2.00	1.62	.00-.43	1.50	1.44	.012-.21	1.50	1.44	.012-.21	1.50	1.44	.012-.21	5.59***
Number of Times Admitted (Logged)	1.68	1.89	.00-4.51	1.87	1.23	.00-4.51	1.22	0.94	.00-4.29	1.22	0.94	.00-4.29	1.22	0.94	.00-4.29	10.47***

statistically significant ($p \leq .001$). The prevalence of only having a mental illness was higher among women (five percent) than men (two percent) and was statistically different ($p \leq .05$). The prevalence of only having a substance use problem was higher for men (65%) compared to women (52%) and the difference was significant ($p \leq .001$). Among men, 16% suffered from co-occurring disorders, compared to 18% of women (a nonsignificant difference). The percentage of men and women inmates who had no substance use problems or mental illness issues was 17% and 25% respectively, and the difference was also statistically significant ($p \leq .001$).

Multivariate logistic regression models: any mental illness or substance use

Table 2 shows the gender-specific multivariate logistic regression models predicting whether men and women returned to jail within one year of their release. These models consider any mental illness and any substance use as primary independent variables, to answer research questions two and three – *Does having a history of mental illness predict recidivism among jail inmates after controlling for covariates?* and, *does having a history of mental illness predict recidivism among jail inmates after controlling for covariates?* – and specifically, address whether the magnitude of these effects differs for men and women. Equality of coefficients tests (Z-tests in the table) were conducted to indicate whether there were significant gender differences in the effects of variables. Among men, any mental illness was a significant predictor of recidivism ($p \leq .001$), increasing its likelihood by 191%. Any mental illness was not a significant predictor for women's recidivism and showed a 42% increase in the likelihood of recidivism. The equality of coefficients tests demonstrated that these effects were significantly, but modestly, different across genders at the $p \leq .10$ level. These results indicate that the effect of any mental illness on recidivism is stronger among men versus women. Age was inversely related to recidivism among males and females, but this was not statistically

Table 2. Multivariate logistic regression predicting return to jail (any mental illness, any substance use).

	Men			Women			
	<i>b</i>	<i>SE</i>	<i>Exp (b)</i>	<i>b</i>	<i>SE</i>	<i>Exp (b)</i>	<i>z-test</i>
Constant	-.29	.06	.75	-.65	.11	.52	
<i>Independent Variables</i>							
Any Mental Illness	1.07	.20	2.91***	.35	.31	1.42	1.95 ⁺
Any Substance Use	-.11	.20	.90	.01	.29	1.01	-0.33
African American ^a	-.09	.17	.92	-.27	.29	.76	0.56
Hispanic ^a	.29	.26	1.33	.37	.51	1.44	-0.14
Other Race ^a	.69	.45	1.99	.28	.63	1.33	0.52
Age	-.05	.01	.95***	-.04	.02	.96**	-0.18
Unemployed	.15	.15	1.17	.23	.27	1.26	-0.24
Homeless	.46	.28	1.58	.39	.45	1.47	0.14
Custody Level	.10	.17	1.10	.72	.41	2.04	-1.39
Felony ^b	-.03	.17	.97	.59	.30	1.80*	-1.79 ⁺
Violent Offense ^b	-.53	.27	.59	.06	.58	1.06	-0.91
Property Offense ^b	-.30	.26	.74	.50	.44	1.65	-1.56
Public Order Offense ^b	-.42	.23	.66	.64	.41	1.89	-2.26*
Other Offense ^b	-.55	.22	.58**	.57	.41	1.76	-2.42*
Gang Member	.39	.22	1.48	.43	.70	1.54	-0.06
Time Served (In Days) (Logged)	-.21	.05	.81***	-.28	.10	.75**	0.66
Number of Times Admitted (Logged)	.81	.08	2.26***	1.17	.16	3.23***	-1.99*
Nagelkerke R ²		.275			.313		
	n = 989			n = 379			

⁺ $\leq .10$ * $p \leq .05$ ** $p < .01$ *** $p < .001$ (2-tailed); ^aReference category is Caucasian ^bReference category is Drug Offense

different across genders. Women who were arrested for a felony offense were significantly more likely to return to jail than females arrested for a drug offense (reference category), and this effect was slightly stronger ($p \leq .10$) for women than men. Public order offenses were not significant predictors of recidivism for either men or women, but this effect was stronger for women ($p \leq .05$). Being arrested for other offenses was significant ($p \leq .01$) only for men and increased their risk of recidivism by 58%. Equality of coefficients tests demonstrated that this effect was significantly different across genders ($p \leq .05$). Time served was inversely related to the risk of recidivism for both men and women. It significantly decreased the risk of recidivism for males ($p \leq .001$) and females ($p \leq .001$). But, according to the equality of coefficients test, this was not significantly different across genders. Lastly, the number of admits (number of times arrested) was a highly significant factor of recidivism for men and women, and this effect was stronger for women.

Among men, the variables that were not found to be statistically significant were any substance use, race, unemployment, homelessness, custody level, arrested for a felony, arrested for a violent offense, arrested for a property offense, arrested for public order offense, and gang affiliation. Finally, among women, the variables that were not statistically significant were any mental illness, any sub substance use, race, unemployment, homelessness, custody level, arrested for a violent offense, arrested for a property offense, arrested for public order offense, and gang affiliation. Nagelkerke R^2 values indicate that the model explained 27.5% of the variation in men's likelihood of returning to jail and 31.3% of women's likelihood of recidivism.

Multivariate logistic regression models: mental illness only, substance use only, and CODs

Table 3 shows multivariate logistic regressions predicting recidivism separately for men and women jail inmates and includes mental illness only, substance use only, and co-occurring disorders as the primary independent variables. This model is used to examine research question number four – *Does having a COD predict recidivism among jail inmates above having only mental illness and only substance use?* – and focuses specifically on whether this effect differs for men and women. For men, findings suggest that mental illness only is a significant predictor of recidivism and increases the odds of recidivism by 280% – this is a stronger effect on recidivism than among women (at $p \leq .10$ level only). Co-occurring disorders also increase the odds of returning to jail by 161% among men, but there was no gender difference in this effect. Age was inversely related to recidivism among men and women – older inmates were less likely to recidivate than younger inmates, but there were no statistical differences in this effect between the sexes. Being arrested for a felony was significant only for women and increased their risk of recidivism by approximately 88%; the equality of coefficients tests showed a difference between the genders in this effect ($p \leq .10$). Arrests for public order offenses were not significantly related to recidivism among men or women but this effect was significantly different between sexes ($p \leq .05$). Being arrested for “other” offenses decreased men's risk of recidivism by 43% ($p \leq .01$); this effect was significantly different between genders ($p \leq .05$). Time served decreased recidivism among men and women, but the effect was not significantly different across the two. Lastly, the number of times men and women were previously admitted to jail increased the odds of recidivism for males and 223% for females (a statistically significant difference).

Table 3. Multivariate Logistic Regression Predicting Return to Jail (Mental Illness Only, Substance Use Only, COD).

	Men			Women			z-test
	<i>b</i>	<i>SE</i>	<i>Exp (b)</i>	<i>b</i>	<i>SE</i>	<i>Exp (b)</i>	
Constant	-.29	.06	.75	-.65	.11	.52	
<i>Independent Variables</i>							
Mental Illness Only	1.34	.58	3.80*	-.36	.71	.70	1.85 ⁺
Substance Use Only	-.07	.21	.92	-.15	.32	.86	0.19
Co-Occurring Disorder	.96	.27	2.61***	.37	.40	1.45	1.21
African American ^a	-.09	.17	.91	-.28	.29	.75	0.59
Hispanic ^a	.29	.26	1.34	.37	.51	1.44	-0.13
Other Race ^a	.69	.45	1.10	.23	.63	1.26	0.60
Age	-.05	.01	.95***	-.04	.02	.96**	-0.30
Unemployed	.16	.15	1.17	.26	.28	1.30	-0.33
Homeless	.46	.28	1.58	.35	.45	1.43	0.20
Custody Level	.10	.17	1.10	.69	.41	2.00	-1.34
Felony ^b	-.03	.17	.98	.62	.30	1.88*	-1.89 ⁺
Violent Offense ^b	-.52	.27	.59	.01	.58	1.01	-0.83
Property Offense ^b	-.30	.26	.75	.51	.44	1.66	-1.56
Public Order Offense ^b	-.42	.23	.66	.63	.41	1.88	-2.24*
Other Offense ^b	-.55	.22	.58**	.60	.41	1.82	-2.47*
Gang Member	.39	.22	1.48	.42	.70	1.52	-0.03
Time Served (In Days) (Logged)	-.21	.05	.81***	-.28	.10	.75**	0.64
Number of Times Admitted (Logged)	.82	.09	2.26***	1.17	.16	3.23***	1.85 ⁺
Nagelkerke R ²		.275			.317		
		n = 989			n = 379		

+ $\leq .10$ * $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$ (2-tailed); ^aReference category is Caucasian ^bReference category is Drug Offense

Among men, the variables that were not statistically significant were substance use only, race, unemployment, homelessness, custody level, arrested for a felony, arrested for violent offenses, arrested for property offenses, arrested for public order offenses, and gang affiliation. Among women, variables that were not significant were mental illness only, substance use only, co-occurring disorders, race, unemployment, homeless, custody level, arrested for violent offenses, arrested for property offenses, arrested for public order offenses, arrested for other offenses, and gang affiliation. Nagelkerke R² values indicate that the model explained 27.5% of the variation in recidivism for men and 31.7% for women.

Discussion and conclusion

Previous research presented in this paper indicates that mental illness, substance use, and CODs are risk factors of recidivism (Sacks, 2004). The main purposes of this paper were 1) to examine the prevalence of mental illness, substance use, and CODs among jail inmates; 2) to examine how these problems impact recidivism among jail inmates, and 3) to explore whether there were differences in their prevalence and effects for men and women separately concerning their recidivism.

To address the first research question regarding the prevalence of mental illness, substance use, and CODs, the findings showed that among the full sample, mental illness and substance use problems, as well as co-occurring disorders, are relatively prevalent among jail inmates: 20% of inmates suffered from a mental illness, 78% suffered from a substance use problem, and 17% of inmates suffered from co-occurring disorders (mental illness *and* substance use). In fact, only 19% of inmates had no substance use and no mental illness problems. Further, mental illness appears to occur predominantly in the presence of substance use – only three percent of inmates suffered from problems relating only to mental illness – but this is not necessarily true for substance use: 61% of inmates suffered from problems pertaining only to substance use, with no mental illness present.

While we expected the prevalence of these problems to be high among the sample, we also expected significantly higher levels among females. However, the findings yielded few significant differences. In fact, the patterns above were relatively consistent among men and women. Mental illness was fairly high, with 23% of women suffering any mental illness, compared to 18% of men (but this difference was not statistically significant), while substance use was very high for both, and was significantly higher among men (81%) than women (70%). Again, the occurrence of *mental illness appeared to occur primarily when substance use was also present*, with only two and five percent of men and women, respectively, experiencing only mental illness. Consistent with expectations, women were significantly more likely to suffer from mental illness only compared to men. However, contrary to expectations, more men had substance use problems (only) than women. Taken together, the pattern of results suggests that substance use is a significant problem among jail inmates – men and women alike – but affects significantly more men. Mental illness is also a concern for jail inmates and primarily co-occurs with substance use problems. While women are more likely to suffer from only mental illness, men are more likely to suffer from substance use problems, and co-occurring disorders are seen among men and women at about the same level. Importantly, less than one-quarter of inmates have *no* psychological or substance use problems, which means that *three-fourths* of the jail inmate population has some sort of mental illness or substance use problem when they enter the jail setting.

The second and third research questions addressed the impact of mental illness and substance use, respectively, on recidivism. We found that inmates (men and women, pooled) with any mental illness were significantly more likely to return to jail than inmates without any mental illness (increasing the odds of recidivism by 129%). While we expected the impacts of mental illness and substance use to be greater for females than males, this was not the case. Looking at the gender differences, men who had any mental illness were significantly more likely to recidivate (increasing this likelihood by 191%) than those without such problems, but mental illness was not a significant predictor of recidivism for women, which is contradictory to the literature found on this topic and was an unexpected result of the study. Additionally, the effect of mental illness on recidivism was stronger among men than women, another somewhat unexpected finding. Substance use, however, was not significantly related to recidivism in the pooled sample, nor was it a significant predictor for either men or women, and it did not impact recidivism differently for either sex.

We expected the effects of mental illness and substance use to be stronger for women, in part because we expected their prevalence levels to be higher for women. The effects may be muted among women due to low statistical power in the analysis (sample size of 379 for

females). It is also possible that the effects of mental illness were stronger for men because it is a “novel” experience (less prevalent) among men than women (see, Cain et al., 2016; Radatz & Wright, 2017 for a discussion of how novel and unique experiences may have stronger influences on behaviors for men than women). Regardless, taken together, the results suggest that mental illness increases the risk of recidivism among jail inmates, but particularly among *men*. That substance use failed to significantly impact men and women’s recidivism patterns could also be explained by the “normative experiences” argument put forth by Cain et al. (2016) and Radatz and Wright (2017) – that is, substance use is so prevalent for men and women, it fails to significantly impact their behaviors. Nonetheless, the findings presented here suggest that mental illness is a more important risk factor for recidivism than substance use among jail inmates.

Finally, we examined whether, controlling for relevant covariates, CODs predict recidivism among jail inmates beyond having only a mental illness and only substance use (research question 4). Results demonstrated that co-occurring disorders were significantly related to returning to jail among males and females (pooled together) within one year, with inmates with co-occurring disorders being approximately 114% more likely to recidivate than inmates without such disorders. Further, this effect was significant while the effects of having only mental illness or substance use were not significant predictors of recidivism among the total sample. Analyses separated by gender showed that co-occurring disorders significantly increased the odds of returning to jail (by 161%) among *men* but were not a significant predictor among women; further, there was not a gender difference in this effect. Mental illness only, however, did exert a stronger effect on recidivism among men than among women, as it increased the odds of recidivism by 280% for men. Again, however, substance use only was not predictive of recidivism among either sex. The effect of mental illness on men’s recidivism was unexpected, as we hypothesized that the effect would be stronger for women, and again could be explained by the normative experiences argument or lack of power for the female sample.

Taken together, the results of this study demonstrate that mental illness is a significant problem among the jail population and increases inmates’ odds of recidivism. Further, co-occurring disorders – psychological problems and substance use problems simultaneously – are also problematic and increase the chances of recidivism. However, the results suggest that relatively few inmates exhibit *only* psychological problems; that is, *psychological problems appear to occur primarily when substance use is also present*. While women are more likely to experience psychological problems (only) and men are more likely to suffer from substance use problems, their effects in the multivariate regressions were opposite that of the prevalence findings. That is, psychological problems impacted men’s recidivism more so than women’s recidivism, and substance use was not predictive for either gender. Finally, co-occurring disorders significantly raise men’s likelihood of recidivism but did not reach significance among the female sample. We discuss the implications of these findings below.

Implications for Future Research and Policy. The findings of this study suggest that mental illness and co-occurring mental illness with substance use should be important considerations for jail administrators. First, mental illnesses and co-occurring disorders increased the likelihood of recidivism among jail inmates. Second, substance use was very prevalent among jail inmates but, in the presence of mental illness, substantially impacted recidivism. As such, jail administrators would be well-served to consider implementing

programs that target these needs, as they are directly related to their recidivism. In order to offer programming for these problems, administrators should first implement the use of needs assessments which would identify at-risk inmates (Andrews & Bonta, 2010). Second, jail administrators might consider bolstering the programs available to reduce these problems among inmates. Third, since inmates will eventually return to society, it would be beneficial for jail reentry staff to coordinate with service providers in the community who offer services for mental health and substance use (especially their co-occurrence). This way, services would not end upon reentry to society, and instead would “wraparound” to the community (Morrissey et al., 2006).

Finally, findings from this study suggest that men inmates have more problems with substance use, women have slightly more problems with mental illness, and mental illness and co-occurring disorders significantly increase the likelihood that men will recidivate. At first glance, these findings might suggest that programming for mental illness and co-occurring disorders is primarily warranted for men – however, the recommendations provided here are based upon the findings regarding the prevalence *and* effects of these problems. Although mental illness was not extremely prevalent among inmates (men or women), it was more prevalent among women, but it was highly related to recidivism for men. Additionally, when mental illness occurs along with substance use (CODs), it is significantly related to recidivism among males and should be targeted for treatment. Therefore, both males and females would likely benefit from programming for mental illnesses – women from a prevalence standpoint, and men from a recidivism standpoint; further, to the degree that substance use fosters CODs, it should also be targeted for treatment since CODs increased the likelihood of recidivism among inmates.

Gender-specific programming for women might focus on the prevalence of mental health problems in their lives, as well as the interconnectedness between mental health and substance use in their lives (Gehring, 2018; Tripodi et al., 2019). We might suggest that jails begin to assess various types of mental health problems upon intake, as well, expanding upon depression and anxiety, to psychosis, bipolar disorder, schizophrenia and other diagnoses. For men, programming should focus on the interconnections between mental health problems, substance use, and how these issues increase their likelihood of returning to criminal behavior upon release (Teplin, 1994). Jails might also consider programming options that address the dual problems of substance use and mental health problems simultaneously, since their co-occurrence seems most detrimental in terms of recidivism (Robertson et al., 2020).

Limitations. Although this study has answered some important questions regarding mental illness, substance use, and co-occurring disorders among a jail sample, it is nonetheless limited in a few ways, and the results should be considered within this context. First, this study examined recidivism (return to jail in one year) as the outcome but did not consider institutional misconduct as an outcome. As discussed in the literature review, there are many reasons why mental illness, substance use, and CODs might influence institutional misbehavior. Future researchers should consider this outcome in jail settings, as it was beyond the scope of this paper. Additionally, it is possible that some inmates in our sample benefited from treatment while in the jail, which could have impacted their chances of recidivism. Unfortunately, however, we were unable to examine this possibility because we did not have access to inmates’ programming data.

Perhaps most noteworthy is that the prevalence of mental illnesses found in this study is very low (at only 20%) when compared against the national average of 60% (Steadman et al., 2009). There are a few reasons why this number may be low. One plausible explanation would be that the national average figures account for annual numbers, whereas we considered only one month (January 2015) of data. Future studies should consider looking at annual data to get a better picture of mental illness prevalence. Another possibility is that the data considers only jail inmates at intake and does not account for inmates who have already been in the jail for some time (before January 2015); that is, most studies (Fisher et al., 2000; Teplin, 1990) survey inmates who have been in the jail long enough to be assessed and classified into housing units; the current study included inmates who had been at the jail for approximately three hours (only long enough to be assessed), but they had not been there long enough to be assigned a housing unit. Therefore, this sample includes some inmates who very likely would have the means to bond out of jail very soon; it is possible that those inmates who stay in jail long enough to be assigned a housing unit have proportionately more problems, which are reflected in the national surveys. Perhaps most important, the data were self-reported at the time of intake, and it may be unlikely that inmates accurately self-reported their problems at this time. To have a better picture of mental illness, future studies will need to have official data with proper diagnoses to supplement self-reported data. It is also possible that the jail setting is somewhat unique from others around the country – in fact, another study in this facility found the mental illness prevalence at 34% (self-reported) among 1190 inmates (Ellison, 2017). Perhaps this percentage is higher than the 20% found in the current study because Ellison (2017) did not use an intake cohort, and the inmates had been incarcerated for some time, as well as assigned a housing unit. Nevertheless, this study uncovered a connection between mental illness and CODs with recidivism among jail inmates. Given the low prevalence in comparison to national estimates, it is highly likely that this relationship would have been stronger in a sample with a higher prevalence. Thus, the findings reported here should be taken as conservative estimates of the relationship between mental illness and recidivism among jail inmates.

Conclusion. The findings of this study are important to correctional research from both a prevalence and effects standpoint. Findings from this study suggest that, in terms of prevalence, men have more problems with substance use, while women have slightly more problems with mental illness. Regarding the effects of these problems, mental illness and co-occurring disorders significantly increase the likelihood that men will recidivate, which was an unexpected finding in light of the existing literature on this topic. Further, it appears that relatively few inmates exhibit *only* mental illness – instead, psychological problems appear to occur primarily when substance use is also present. Thus, although substance use was not statistically related to recidivism, its high prevalence and co-occurrence with mental illness suggest that both mental illness and substance use should be prioritized for programming within jail settings. Providing needed programming in jails could offer significant cost-savings in terms of reduced recidivism criminal behavior upon release.

Notes

1. For the current study, mental illness and substance use are considered as two separate disorders and their co-morbidity is defined as co-occurring disorders (CODs).

2. Unfortunately, we were unable to determine the reason (e.g., probation violation or new offense) for their return to jail.
3. No other sex categories were collected by the jail.

Ethics approval and consent to participate

The authors declare that a waiver from the Internal Review Board for University of Nebraska was received to proceed with this study. This is a secondary de-identified dataset and has no individual identity markers. No humans have been directly approached or studied for the purpose of this study.

Availability of data and materials

The datasets during and/or analysed during the current study available from the corresponding author on reasonable request.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Authors' contributions

Author 1 collected data, ran the analyses, and drafted sections of the paper. Author 2 drafted the literature review and discussion, supervised overall writing, supervised methods and statistical analyses. Author 3 oversaw the analyses.

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Appendix: Definitions, Means and Standard Deviations of Measures Included in Analyses

Variable	Definition	$\bar{x}$	sd	Min-Max
Returned to Jail	Dichotomous variable indicating if inmate recidivated to the jail in the next 365 days after their first arrest during the research period	.40	.49	0–1
Any Mental Illness	Dichotomous variable indicating if inmate has any mental illness	.20	.40	0–1
Any Substance Use	Dichotomous variable indicating if inmate has any substance use disorder	.78	.41	0–1
Mental Illness Only	Dichotomous variable indicating if inmate only has a mental illness without any substance use disorder	.03	.16	0–1
Substance Use Only	Dichotomous variable indicating if inmate only has a substance use disorder without any mental illness	.61	.49	0–1
Co-occurring Disorder	Dichotomous variable indicating if inmate has a co-occurring disorder (mental illness + substance use disorder)	.17	.37	0–1
No Mental Illness & No Substance Use ^a	Dichotomous variable indicating inmate has no mental illness and no substance use disorder	.19	.39	0–1
Offender is Female	Dichotomous variable indicating inmate is female	.28	.45	0–1
Offender is Caucasian	Dichotomous variable indicating inmate is of Caucasian descent	.41	.49	0–1
Offender is African-American	Dichotomous variable indicating inmate is of African-American descent	.45	.50	0–1
Offender is Hispanic	Dichotomous variable indicating inmate is of Hispanic descent	.11	.31	0–1
Offender is Other Race	Dichotomous variable indicating inmate's race/ethnicity other than Caucasian, Hispanic or African-American	.04	.18	0–1
Age	Variable indicating inmate's age in years at the time of their arrest	32.65	11.17	18–78
Unemployed	Dichotomous variable indicating if inmate was unemployed at the time of their arrest at the jail	.60	.49	0–1
Homeless	Dichotomous variable indicating if inmate is homeless or is at a risk of being homeless at the time of their arrest or after their release from the jail	.08	.27	0–1
Custody Level	Variable indicating the final custody level assigned for inmate housing (1 = minimum security, 2 = medium security and 3 = maximum security)	1.21	.46	1–3
Arrested for Drug Offense ^a	Dichotomous variable indicating if the inmate was arrested for a drug offense	.21	.41	0–1
Arrested for Felony	Dichotomous variable indicating if the inmate was arrested for a felony	.43	.50	0–1
Arrested for Violent Offense	Dichotomous variable indicating if the inmate was arrested for a violent offense	.12	.33	0–1
Arrested for Property Offense	Dichotomous variable indicating if the inmate was arrested for a property offense	.14	.35	0–1
Arrested for Public Order Offense	Dichotomous variable indicating if the inmate was arrested for a public order offense	.22	.42	0–1
Arrested for Other Offense	Dichotomous variable indicating if the inmate was arrested for any other offense	.31	.47	0–1
Gang Member	Dichotomous variable indicating if the inmate has a gang affiliation	.12	.33	0–1
Time Served in Days (Logged)	Variable indicating the time served by an inmate after their arrest during January 2015	1.86	1.59	0–6.43
Number of Times Admitted (Logged)	Variable indicating the number of times an inmate was admitted to the jail	1.68	1.19	.00–4.51

a=Reference category