# Using statewide administrative data and brief mental health screening to estimate the prevalence of mental illness among probationers

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**Abstract**
There is little published information about the measures that probation agencies in the United States use to identify individuals with mental illnesses who are under community supervision. This study used statewide administrative data to estimate and compare the prevalence of mental illnesses among probationers using officer report and offender self-report data. Prevalence estimates of mental illnesses ranged from 15 percent to 19 percent, which is consistent with prior studies that used formal diagnostic assessments. In the absence of costly and time-consuming diagnostic assessments, probation agency-developed mental health scales can aid in identifying those who might be in need of additional mental health assessment.

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## Introduction

Individuals with mental illnesses make up a substantial portion of the worldwide population of adults in prisons, jails and on community supervision (i.e. probation and parole). Although estimates vary by country, diagnosis, criminal justice setting (i.e. jail, prison, community supervision), and study methodology (e.g. sampling, definition of mental illness, measures used), rates of mental illnesses among those under correctional supervision range from 3 percent to more than 60 percent and are higher compared to the general population (Brooker et al., 2012; Crilly et al., 2009; Ditton, 1999; Fazel and Seewald, 2012; James and Glaze, 2006; Lamberti, 2007; Lurigio et al., 2003; Prins, 2014; Sirdifield, 2012; Steadman et al., 2009; Teplin, 1990, 1994). Although prevalence of mental illnesses among prisoners in Europe, Australia, and the United States is well-documented (Butler et al., 2006, 2011; Fazel and Seewald, 2012; Prins, 2014), less attention has been paid to the mental health problems among probationers, particularly in the United States, where rates of probation are five times higher compared to European countries (Corda and Phelps, 2017) and where 70 percent of the country's 6.9 million adults in the corrections system are supervised (Kaeble et al., 2015).

In the United States, best estimates suggest between 16 percent and 27 percent of probationers (i.e. between 753,296 and nearly 1.3 million) have a mental illness (Crilly et al., 2009; Ditton, 1999; Lurigio et al., 2003). These estimates vary by gender and race with 21.7 percent of female probationers, 14.7 percent of male probationers, 19.6 percent of white probationers, 10.4 percent of black probationers, and 9 percent of Hispanic probationers reporting mental health problems (Ditton, 1999). The large numbers of probationers with mental illnesses pose significant challenges for local and state criminal justice authorities, especially in light of probation officers' large caseload sizes, a general lack of officers' specialized mental health training, limited available resources for probationers with mental illnesses in the community, and an increased risk for violations, revocations and rearrests among probationers with mental illnesses (Eno Louden and Skeem, 2011; Porporino and Motiuk, 1995; Skeem and Eno Louden, 2006; Van Deinse et al., 2018). The large and growing number of individuals with mental illnesses on probation combined with the challenges that officers face supervising probationers with mental illnesses create significant programmatic and policy challenges for state corrections officials.

To date, there are only a few studies that have examined the prevalence of mental illnesses among probationers in the United States (Ditton, 1999; Lurigio et al., 2003). Ditton (1999), one of the most frequently cited studies in this area, used a 1995 survey of a nationally representative sample of probationers to examine how many self-identified as having a mental illness, which was defined as either a current mental condition or previous overnight stay in a psychiatric hospital.

Ditton (1999) found that 16 percent of probationers had a mental illness, 13.8 percent indicated that they had a mental or emotional condition, and 8.2 percent reported that they had been admitted to a mental health hospital or treatment program.

The second study, conducted by Lurigio and colleagues (Lurigio et al., 2003), used the Mini International Neuropsychiatric Interview (MINI; Sheehan et al., 1998) to estimate the prevalence of mental illnesses among a sample of probationers and found a range in the prevalence of multiple mental health conditions: 18.2 percent were at-risk for suicide, 13.4 percent had a current major depressive episode, 11.2 percent had a current psychotic disorder, 9.4 percent had a current mood disorder with psychotic features, 3.0 percent had post-traumatic stress disorder, and 3.0 percent had a current manic episode. Estimates for a lifetime diagnosis were considerably higher with 18.8 percent having had a psychotic disorder, 15.9 percent having had antisocial personality disorder, 7.5 percent having had a manic episode, and 6.9 percent having had a recurring major depressive episode. In addition, compared to males, females had higher rates of depression, manic episodes, suicide risk, post-traumatic stress disorder, mood disorder with psychotic features, and lifetime recurring major depressive episodes (Lurigio et al., 2003).

Another frequently cited study (Crilly et al., 2009) used data from the 2001 National Household Survey on Drug Abuse (US Department of Health and Human Services, 2001) and estimated that 27 percent of respondents self-reported symptoms of mental illness as well as a period of supervision on probation within the last year; however, this prevalence estimate represents the percentage of people in the general population with a history of probation who have a mental health problem, not the percentage of people on probation with a mental illness. Thus, the utility of this prevalence estimate is limited by the fact that the sample was drawn from a community-based population, rather than a probation population.

In recent years, a growing number of researchers and policy-makers have been using administrative records to identify people with mental illnesses involved in the criminal justice system. Most of the work to date has focused on using behavioral health records to identify justice-involved persons with mental illnesses (for example, see Baillargeon et al., 2009; Cuddeback et al., 2010; Draine et al., 2010; McCabe et al., 2012; Morrissey et al., 2006, 2007; Wilson et al., 2011). Although this method of case identification is promising, the use of this method depends on access to behavioral health records, and the skills and knowledge needed to merge and analyze these data (Morabito and Wilson, 2015).

To inform policy, programming and resource allocation to improve criminal justice and mental health outcomes for probationers with mental illnesses, criminal justice authorities must have feasible, pragmatic and valid ways to identify individuals in need of mental health assessment and to estimate the prevalence of mental illness (Morabito and Wilson, 2015). The current state of research on the prevalence of mental illnesses among probationers forces criminal justice practitioners and policy-makers to make sense of a range of prevalence estimates derived from a small number of research studies which differ due to variability in how mental

illness is defined and in the methods used to identify and/or select probationers with mental illnesses (Morabito and Wilson, 2015).

A growing number of criminal justice authorities have developed their own methods and procedures for identifying individuals with mental illnesses on community supervision, which are feasible and pragmatic for local correctional jurisdictions because they are not dependent on outside resources or funding. In doing so, criminal justice agencies must determine how mental illness will be defined (for further discussion see Draine et al., 2007; Roesch et al., 1995; Teplin, 1983, 1990) and how individual cases will be identified (Morabito and Wilson, 2015). Despite the growing use and promise of these strategies, there is little published information about what indicators correctional agencies use to identify people with mental illnesses, what these indicators yield in terms of population-based prevalence estimates, or how these estimates may vary by gender and race. Here, to advance the literature in this area, we report population-based prevalence estimates using statewide administrative data from a probation department, which include self-report and officer-report indicators of mental illness.

## Methods

### *Design and sample*

An observational study design was used to examine indicators of mental illness among a statewide population of offenders in the United States who were under community supervision (i.e. probation) during a five-year period between 2009 and 2013. We used administrative data, which contained demographic and criminal justice information as well as offender self-report measures regarding criminogenic risks and mental illness. This study was approved by the Institutional Review Board at the University of North Carolina at Chapel Hill (omitted to preserve anonymity of the review).

The analysis presented here is based on an unduplicated sample of individuals ($n = 231{,}905$) who were on probation between 2009 and 2013. That is, if a probationer was sentenced twice during that time period, only his/her first episode was included. Among those in the sample, 73.93 percent ($n = 171{,}440$) were male, 48.37 percent ($n = 112{,}183$) identified as white/Caucasian, 44.91 percent ($n = 104{,}154$) identified as black/African American, 3.27 percent ($n = 7585$) identified as Native American, 2.63 percent ($n = 6103$) identified as Hispanic, 0.35 percent ($n = 816$) identified as Asian, and 0.46 percent ($n = 1064$) identified as Other. Approximately 47.75 percent ($n = 110{,}734$) had a high school diploma. The average age was 37.46 ($SD = 12.04$).

### *Measures*

All of the variables used in this analysis came from the administrative files provided by the state's Department of Public Safety (DPS). The data included basic demographic information and two measures – an offender self-report (OSR) inventory and a probation officer impression inventory (OII) – that the state created to capture a

broad range of mental health functioning and needs and to identify individuals for further assessment. When used together, the OSR and the OII capture a range of needs among those with less severe symptoms, moderate symptoms, or more severe symptoms, which guide decisions about referrals for further assessment and the allocation of special programming and resources.

*Indicators of mental illness*

The first indicator of mental illness was the OII, which is designed as a brief screening tool for probation officers to indicate the need for further mental health assessment. The OII contains items similar to those asked in the Bureau of Justice Statistics (BJS) study examining prevalence of mental illness (Ditton, 1999), which includes items regarding a probationer's history of treatment, hospitalization, and medication for mental health problems. Although officers are responsible for asking the screening questions and documenting the answers, the OII measure is based on offender self-report. Specifically, probation officers ask probationers the following questions: (1) Have you ever been hospitalized for emotional or mental health problems? and (2) Are you now on medication for emotional or mental health problems? Probationers were identified as having a mental illness if they answered affirmatively to either one of these items.

A second indicator of mental illness is based on a four-item mental health scale – the OSR – completed by probationers within the first 60 days of probation. Probationers respond to items with a 5-point response pattern: *never true* (0), *rarely true* (1), *sometimes true* (2), *usually true* (3), or *always true* (4). The four OSR questions are: (1) I hear or see things that other people say they don't hear or see; (2) I believe that other people can control my mind by putting thoughts into my head or taking thoughts out of my head; (3) I have so much energy that I can go for days without sleep and thoughts just race through my head; and (4) I feel so bad that I think of taking my own life. Item responses were summed to create a total score, which ranged from 0 to 16, with higher scores indicating more mental health problems.

The brief OSR mental health scale demonstrated acceptable reliability and validity (Cuddeback and Lambert, 2012) and results from exploratory and confirmatory factor analyses suggested one factor with all four items loading on that factor. The 4-item scale had acceptable internal consistency ($\alpha = .62$) and evidence of concurrent criterion validity in that offenders who had reported a history of psychiatric hospitalization, medication or mental health treatment on the Officer Impression Inventory (OII) had higher scores, on average, than those offenders who reported no such histories.

Further, item-response theory analyses suggested the OSR mental health scale was most useful in identifying those with more severe mental health problems. Scores on the mental health scale for the 231,905 probationers in the sample ranged from 0 to 16, with a Mean score of 0.96 ($SD = 1.91$). Using a recommended cut-off score of one standard deviation above the mean for this measure (Cuddeback and Lambert, 2012), probationers with mental health scores of 3.0 or greater (2.87, which is one standard deviation [1.91] above the population mean 0.96) were considered as having a mental illness. The use of a cutoff value derived

from the population standard deviation is empirically supported by the results of a validation study of the state's measure (Cuddeback and Lambert, 2012) and is also a feasible way for the state to identify offenders with mental health problems in the absence of diagnostic information from costly and time-consuming structured diagnostic assessments or other mental health records.

### *Data analysis*

Descriptive statistics were used to examine the prevalence of mental illnesses among probationers. Chi-square tests were used to examine the relationship between mental illness and categorical demographic variables, gender and race. Cohen's kappa coefficient was used to determine the degree to which the indicators of mental illness matched across sources (i.e. OSR, OII). The Cohen's kappa coefficient measures the agreement between raters of categorical or nominal data and is chance-corrected in that it accounts for inter-rater agreement that occurs by chance (Cohen, 1960, 1988). Opinions about acceptable Kappa statistics vary, although there is some consensus that Kappa statistics of .61 or greater show substantial agreement between measures (Landis and Koch, 1977). Stata version 14 was used for the analyses (StataCorp, 2015).

## Results

Among the sample of 231,905 probationers, the estimated prevalence of mental illness was 14.61 percent ($n = 33{,}874$) based on the OSR indicator and 18.73 percent ($n = 43{,}442$) based on the OII indicator. Results from the OSR suggested that the prevalence of mental illness among males and females differed by 1 percent (14.38% vs 15.25%, respectively). However, the prevalence of mental illness among females was twice as high compared to males using the OII indicator (29.91% vs 14.79%, respectively). Further, the prevalence estimate of mental illness among women was twice as high when using the OII compared to the OSR (29.91% vs 15.25%, respectively). Based on the OII indicator, the prevalence of mental illness among White/Caucasians (25.62%) was approximately twice as high compared to both Black/African Americans and Hispanics (12.64% and 13.49%, respectively) and was twice as high as the OSR estimate for White/Caucasians (12.68%). Although prevalence rates based on the OSR were comparable across race and ethnicity, Asians and Black/African Americans had the highest prevalence rates (18.14% and 16.79%, respectively).

Overall concordance between the OSR and OII estimates, as measured by Cohen's kappa, was 76.90 percent, with a kappa value of 0.17, suggesting that the OSR and OII agreed 76.90 percent (kappa = 0.17, $p < 0.001$; see Table 1) of the time after correcting for chance agreement. Agreement between the OII and OSR for male prevalence estimates was comparable at 79.34 percent (kappa = 0.17, $p < 0.001$); however, the agreement between OSR and OII indicators was lower for prevalence estimates among females (69.99%, kappa = 0.17, $p < 0.001$).

**Table 1.** Results: Prevalence and concordance of mental illness indicators by gender and race (n=231,905).

| | Officer impression indicator of mental illness[1] | Offender self report indicator of mental illness[2] | Kappa |
|---|---|---|---|
| Overall | 18.73 (43,442) | 14.61 (33,874) | 76.90 (0.17) |
| Gender | | | |
| Male | 14.79 (25,356) | 14.38 (24,653) | 79.34 (0.17) |
| Female | 29.91 (18,086) | 15.25 (9,221) | 69.99 (0.17) |
| Race and ethnicity | | | |
| White/Caucasian | 25.62 (28,746) | 12.68 (14,221) | 73.47 (0.17) |
| Black/African American | 12.64 (13,168) | 16.79 (17,486) | 79.73 (0.17) |
| Hispanic | 13.49 (823) | 15.03 (917) | 81.19 (0.23) |
| Asian | 9.56 (78) | 18.14 (148) | 79.41 (0.15) |
| Native American | 6.70 (508) | 12.67 (961) | 84.22 (0.11) |
| Other race/ethnicity | 11.18 (119) | 13.25 (141) | 82.14 (0.17) |

[1] Indicated by positive scores on either of the two officer impression questions.
[2] Indicated by a score that is at least one standard deviation above the sample mean.

Chance-corrected agreement between the OSR and OII indicators for each category of race and ethnicity was comparable with 73.47 percent (kappa = 0.17, $p < .001$) among white/Caucasian probationers, 79.73 percent (kappa = 0.17, $p < .001$) among black/African American probationers, 81.19 percent (kappa = 0.23, $p < .001$) among Hispanic probationers, 79.41 percent (kappa = 0.15, $p < .001$) among Asian probationers, 84.22 percent (kappa = 0.11, $p < .001$) among Native American probationers, and 82.14 percent (kappa = 0.17, $p < .001$) among probationers identifying as 'Other'. The kappa value for each of these tests ranged from 0.11 to 0.23 and, although statistically significant, indicates weak agreement between these two indicators of mental illness (Landis and Koch, 1977).

## Discussion

This study used population-based administrative data and two indicators of mental illness created by a state criminal justice authority to estimate the prevalence of mental illnesses among probationers. Prevalence estimates ranged from 14.61 percent to 18.73 percent overall and from 15.25 percent to 29.91 percent among women and 14.38 percent to 14.79 percent among men. The chance-corrected agreement between the two indicators of mental illness – OSR and OII – was weak but acceptable.

The findings presented here have three important implications. First, this study demonstrates how administrative data can be used to develop prevalence estimates from the general population of probationers using offender- and officer-report data. Thus, administrative data and agency-created mental health screens offer jurisdictions feasible and practical ways to generate local estimates of the prevalence of probationers with mental illnesses in order to tailor program planning and resource allocation for a high-risk, high-need population. Further, prevalence estimates from

the two indicators used in this study were comparable to those from existing studies (e.g. Ditton, 1999), including those that used diagnostic assessments to determine mental health status (e.g. Lurigio et al., 2003).

Given the large and growing numbers of persons with mental illnesses in justice settings, it is important for criminal justice authorities to have reliable and valid mental health assessments to aid in estimating the prevalence of probationers with behavioural health disorders and to aid in allocating special programming and other resources for those with the most severe behavioral health needs. It is important to note that such measures do not provide a clinical diagnosis, which would be needed to establish prevalence of particular diagnoses. However, mental health screening items, such as those in the LSI-R (Andrews and Bonta, 1995) or those created by probation agencies like the items described here, could be used for the purposes of estimating the incidence and prevalence of offenders with behavioral health problems.

Although diagnostic interviewing may be widely used in research studies and considered the gold standard for accurately estimating prevalence of mental health conditions (Draine et al., 2007; Nordgaard et al., 2012), limitations in agency funding and staffing patterns may limit the use of such measures in everyday practice. Information from brief mental health screening indicators (e.g. OII, OSR) offer an inexpensive and pragmatic strategy to identify individuals in need of referrals for mental health services and to establish aggregate estimates of mental illness.

Although the concordance between offender- and officer-report indicators presented here was acceptable, there was still incongruence between the OII (officer impression) and OSR (offender self-report) measures. This incongruence may be indicative of the different dimensions of mental illness that the indicators measure; however, both are important to identifying offenders with behavioral health needs for further assessment. For instance, if probation agencies define mental illness based solely on offender self-report, then they must rely on probationers' willingness to disclose their mental health conditions or even their awareness of having a mental health condition. Similarly, if agencies rely on officer impression, then the reliability of this indicator is only as good as the training officers have in identifying mental illness. Thus, some probationers in need of mental health services may remain unidentified. Consequently, agencies may consider developing screening and assessment protocol around use of both indicators as a brief screen for further assessment.

Third, the study also showed variation in the prevalence of mental illness by gender and race. Namely, prevalence estimates for mental illness among women were twice as high according to officer-report data compared to offender self-report data. In addition, estimates for mental illness among white/Caucasian individuals were twice as high according to officer-report data compared to offender self-report data; however, officer-report estimates for all other categories of race and ethnicity were lower compared to offender self-report estimates. Variation may be explained by a number of factors (e.g. genuine differences in mental health) and service use (e.g. females typically have more positive attitudes toward mental health treatment compared to males; Mojtabai, 2007), greater likelihood of females and white/

Caucasian individuals to disclose their mental health status to officers, and/or potential race- or gender-based biases in officer-reporting of probationers' mental health needs. Understanding the reason behind this variation is outside the scope of this study; however, the variation in prevalence of mental illness based on gender and race is consistent with other studies (Ditton, 1999; Steadman et al., 2009), and criminal justice authorities that develop their own offender and officer mental health indicators should be aware of these differences.

Regardless of the variation in estimates, this study shows that locally-developed mental health scales can be used to identify those who might be in need of additional mental health assessment and treatment, which can aid agencies to better align resource capacity with demand (e.g. more mental health probation officers, more social workers in prisons). For instance, when used together, the OSR and the OII capture a range of behavioral health needs, which affords a probation agency flexibility in its definition of mental illness ranging from more inclusive (i.e. probationers with any behavioral health needs) to less inclusive (i.e. probationers who have current and/or more severe mental health conditions).

## Limitations

This study used a mental health scale that demonstrated acceptable reliability (i.e. internal consistency) and validity (e.g. concurrent criterion related) that was created by a state criminal justice authority to generate estimates of the prevalence of mental illnesses among a population-based sample of probationers in a large southeastern state. The primary limitation is the lack of external validation of mental illness from a clinical diagnostic assessment and/or mental health utilization records. Although standardized diagnostic instruments are the most empirically rigorous way to assess for the presence of mental illness, the costs, time and expertise associated with using these instruments make their use impractical in all but a few well-funded research studies. Therefore, research studies, such as the one presented here, are needed to examine and report on the reliability and validity of other measures and indicators of mental illness created by state correctional authorities.

Also, the estimates presented here are based on self-report of offenders, which may have biased results in unknown ways. Thus, although the estimates of mental illnesses among probationers are aligned with other studies that used different methods, the extent to which the findings here can be generalized to other states and criminal justice settings is unknown. Despite these limitations, this study advances our understanding of how criminal justice agency-based mental health screening procedures can be useful towards estimating the prevalence of mental illnesses among probationers, how prevalence estimates may vary by gender and race, and how these estimates vary by offender self-report and officer-report.

## Conclusion

This study adds to a growing literature that indicates that a large number of adults who are on probation in the United States have a mental illness. Routine brief mental

health screening instruments – such as those examined in this study – are a viable approach that allows state criminal justice agencies to identify individuals who are in need of further assessment and/or specialized mental health programming.


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