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Geographic Differences in Substance Use Screening for Justice-Involved Youth

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Abstract

Justice-involved youth report high rates of substance use. Community Supervision (CS) agencies are uniquely positioned to impact public health through substance use identification and early intervention. Geographic location (i.e., living in an urban versus rural area) is an understudied factor that can be associated with differences in service and resource availability. A secondary analysis of a nationally representative sample of CS agencies assessed agency and youth characteristics, as well as substance use screening in urban and rural CS agencies. Respondents representing rural agencies reported higher rates of substance use, yet were less likely to report using screeners focused on substance use. Respondents representing urban CS agencies reported a wider variety of screening instruments and were more likely to test for drug use during screening. Differences in the screening process can reflect adaptive and culturally responsive approaches to addressing substance use as well as unique barriers to service provision. System-wide improvement is contingent upon implementation strategies that identify and acknowledge geographic differences to more adequately address the common and unique needs of the justice-involved youth they serve.

Keywords

screening; juvenile justice; substance use; geographic difference; rural; urban

I. Introduction

The relationship between substance use and juvenile justice system involvement among youth is well established. An estimated two-thirds of arrested juveniles have a history of substance use (Belenko & Logan, 2003) and over one-third meet criteria for a substance use

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disorder (Aarons, Brown, Hough, Garland, & Wood, 2001; Wasserman, McReynolds, Schwalbe, Keating, & Jones, 2010). In addition to higher rates of mental health disorders, risky sex, and sexually transmitted infections, recidivism rates are higher among substance-using arrested youth (Clark, 2004; Henggeler, Clingempeel, Brondino, & Pickrel, 2002; Hicks, Iacono, & McGue, 2010; Kandel & Davies, 1992; Kandel & Yamaguchi, 2002). The juvenile justice (JJ) system therefore plays a critical role in prevention, identification, and early intervention of high risk behavior, including substance use.

Decreasing substance use among justice-involved youth is contingent on an interconnected behavioral health service cascade including screening, assessment, service referral, and sustained delivery of treatment and recovery support services. This cascade provides a framework to examine linkage between JJ agencies and behavioral health care among justice-involved youth as substance use problems are identified (Belenko et al., 2017). Given the high rates of substance use disorders among justice-involved youth, universal screening for substance use is a critical first step within the behavioral health service cascade (Office of Juvenile Justice and Delinquency Prevention, 2004).

US juvenile courts processed nearly one million delinquency cases in 2014, with approximately one third of cases adjudicated (Sickmund, Sladky, & Kang, 2017). As an alternative to incarceration, the majority of youth who come into contact with the JJ system are supervised in the community (Fabelo, Arrigona, Thompson, Clemens, & Marchbanks, 2015; Puzzanchera & Adams, 2011; Sickmund, Sladky, & Kang, 2015; Office of Juvenile Justice and Delinquency Prevention, 2015). Probation officers often serve as the defacto gatekeepers to services for youth under CS, as they are primarily responsible for screening and referring youth to local community behavioral health partners. Screening can help to efficiently and reliably identify behavioral health problems which youth may otherwise not disclose. Screening instruments should be evidence-based, relatively brief, and suitable for administration by either clinical or non-clinical staff (for review of evidence-based screening tools, see National Institute on Drug Abuse, 2018; Winters & Kaminer, 2008). Screening can indicate that a behavioral health problem is likely, but not definitively present. The results of screening should indicate whether there is need for further clinical assessment (Belenko et al., 2017). In contrast, a clinical assessment is more comprehensive and multidimensional than screening, requires clinical training, and is designed to support diagnosis, placement, and treatment planning related to substance use disorders and other problems such as HIV risk and mental health disorders.

Research examining the continuum of the behavioral health service cascade, beginning with the identification of service needs for juvenile offenders, has largely relied on urban samples or nationally representative data that do not include analyses for urban and rural CS agencies (e.g., Young, Dembo, & Henderson, 2007). However, in the US, approximately 16% of youth 18 years of age and younger live in rural areas (US Department of Health and Human Services, 2014). Urban research may have limited generalizability to youth served by rural CS agencies. Geographic location (i.e., living in an urban versus living in a rural area) is associated with differences in youth substance use as well as interventions and resources available, including CS agencies. Rural adolescents are more likely to use tobacco, smokeless tobacco, alcohol, and methamphetamine than urban youth (Gale, Lenardson,

Lambert, & Hartley, 2017; Gfroerer, Larson, & Colliver, 2007; Hanson, Novilla, Barnes, Eggett, McKell, Reichman, & Havens, 2009; Hutchison & Blakely, 2003; Zollinger, Saywell, Overgaard, Przybylski, & Dutta-Bergman, 2006; but see Hanson et al., 2009; Warren, Smalley, & Barefoot, 2016). Across studies, variation in substance use can be attributed to differences in age, region, and timeframe of data collection. Furthermore, rurality is not a monolithic factor and substance use can vary as a function of rural context (e.g., living on a farm versus in town; Martino, Ellickson, & McCaffrey, 2009; Rhew, Hawkings, & Oesterle, 2011). Geographic location can also be associated with differences in JJ practices and resources. For example, 44% of pre-trial programs for adults established between 2000 and 2009 were in rural areas whereas only 13% were urban, suggesting that rural probation departments utilize pre-trial CS more (Pretrial Justice Institute, 2009). Rural CS agencies face unique barriers to service delivery such as having fewer substance use and mental health providers and further distances to service locations (Dew, Elifson, & Dozier, 2007; Young, Grant, & Tyler, 2015). In addition, social and cultural factors in rural areas can influence perceptions of substance use and treatment acceptance (Dew et al., 2007).

Taken together, geographic location is a proxy for important contextual factors in identifying youth substance use. A notable omission in this literature is an examination of urban and rural differences and similarities in CS agencies screening for substance use among justice-involved youth. This stage of the behavioral health services cascade has important implications for connecting justice-involved youth to appropriate treatment interventions (Belenko et al., 2017). Therefore, the purpose of this study is to profile and compare urban and rural CS agencies providing substance use screening for justice-involved youth.

To do this, a secondary analysis was conducted using National Survey data from the National Institute on Drug Abuse (NIDA) Juvenile Justice Translational Research on Interventions for Adolescents in the Legal System (JJ-TRIALS). Launched in 2013, JJ-TRIALS is using implementation research as a means of identifying, testing, and understanding effective strategies to translate evidence-based screening, assessment, and linkage to treatment for substance-using youth under CS (for detailed description, see Knight et al., 2016). To describe and examine the existing resources and practices within the behavioral health services cascade, a National Survey was administered to three representative national samples between April 2014 and March 2015 (see Scott, Dennis, & Lurigio, 2017), prior to implementation of JJ-TRIALS interventions. Populations included CS agencies providing behavioral health services for justice-involved youth, behavioral health providers treating youth from CS agencies, and juvenile and family court judges monitoring youth from these agencies. The current study examines urban and rural CS agencies providing behavioral health services for justice-involved youth and assesses agency and youth characteristics, as well as screening practices related to substance use. The aims are to 1) profile urban and rural juvenile justice CS agencies and 2) identify differences and similarities in substance use screening content stratified by geographic location.

2. Material and Methods

2.1 Study Design

A nationally representative sample of 20 states was selected for the study based on the number of adolescents between ages 10 and 19 as documented in the 2010 census. The five largest states were sampled with certainty, and the other 15 with probabilities proportionate to the number of youths in those states. Within each state, a representative sample of 8 to 14 counties was selected based on the number of youths, again with the largest one or two counties sampled with certainty, and the remaining counties sampled with probabilities proportionate to the number of youths in those counties. Both states and counties were stratified to ensure the proportionate representation of smaller states and counties.

Surveys were attempted in all CS agencies within all 192 counties sampled. A total of 195 of 203 JJ system CS surveys (96%) were completed and returned. Data were weighted based on the inverse of the inclusion probability and were adjusted for non-response within state. The number of agencies overall and those providing a specific service were estimated by multiplying the weighted average number of agencies per county times the actual number of counties ($n=3,143$) in the United States. This generated a national estimate of 3,202 CS agencies serving 770,323 youth under CS.

The CS agency surveys covered 11 areas on data availability, agency characteristics, youth characteristics, recidivism, behavioral health (substance use, mental health, and HIV) screening, clinical assessment, referrals, substance use prevention, HIV/STI risk prevention, substance use and mental health treatment, family engagement, plus experience and training needs. This paper focuses on geographic variation in agency and youth characteristics, as well as screening characteristics related to substance use.

Data pertain to the knowledge and perceptions of the respondents representing each agency. Survey instructions were provided along with a survey coach to increase the likelihood of accurate and complete responding. Agencies were instructed that “staff familiar with your agency’s organization, priorities, youth under community supervision, and the services they receive at your agency” should complete the survey. Furthermore, “it is likely that several staff will need to provide input.” Other instructions were provided around the target population (i.e., the needs of youth and the services your agency provides to youth under community supervision), definitions of community supervision, survey completeness, survey confidentiality, and contact information for the survey coach.

2.2 Sample

The analyses for this study excluded a) one CS agency whose representatives said it was not able to report information for the sampled county and b) four CS agencies whose representatives could not provide information subset to only youth under CS. This left 190 agencies out of 195 (97%) for analysis. For the agencies excluded from the analysis, two were urban counties and three were rural counties. Using the adjusted weights, the sample size was 85.4% of the 3,202 CS agencies or 2,735 agencies.

2.3 Measures

The CS agencies geographic location, based on adjacency to an urban area, was determined using Beale codes or Rural-Urban Continuum Coding (<https://www.ers.usda.gov/data-products/rural-urban-continuum-codes/>). Agencies were coded, based on their county, into: 1) urban area counties (Beale codes 1 - 3) and 2) rural area counties (Beale codes 4 - 9). Using the adjusted weights, there were 1,203 agencies (44.0%) in the urban group and 1,532 agencies (56%) in the rural group. In order to avoid artificially inflating statistical power for the analyses, weights were adjusted to return the sample size to the original number of agencies. To do this, the weights were multiplied by the constant of the unweighted sample size divided by the weighted population estimate. This returns the total number of CS agencies to 190, with 84 representing urban counties and 106 representing rural counties.

Agency characteristics include the type of CS the agencies provide, such as pre-adjudication, probation, and/or parole. Agencies were also asked the number of physical locations they have within that county, the percent providing screening and clinical assessment directly, as well as the total number of CS youth served annually. These were based on the weighted averages of agencies. Youth characteristics are based on the average percent of youth served across agencies for different age groups, gender, race/ethnicity and substance use problems, as well as the percent referred for substance use screening or clinical assessment. These variables are also weighted to represent the weighted averages of agencies (see Table 2).

As the instruments administered by non-CS agencies were not available, the data has been subset to the agencies directly administering screening at the CS agency. Agency respondents were instructed to select instruments used to screen for potential problems with substance use, HIV, and mental health problems from a prepopulated list. Agencies were also asked to report specific areas that their screening instrument covers as well as other outcomes included in the screening process, such as alcohol and drug tests, hepatitis, HIV, and tuberculosis tests. The most common screeners that agencies reported were using were then examined since agencies could report the use of multiple screening instruments (see Appendix A). Screening instruments with multiple versions (e.g., GAIN-Quick Version 3 and GAIN-Short Screener) were categorized as a single instrument (i.e., GAIN) for the present analyses.

2.4 Analytic Plan

Continuous variables were analyzed by geographic group using the non-parametric Kruskal-Wallis test. The dichotomous variables were analyzed using chi-square tests. All analyses were completed using IBM SPSS version 24. To help with interpretation of the results, given the small unweighted number of rural agencies, effect sizes comparing the rural agencies to the urban agencies are reported. For continuous variables, Cohen's *d* was used for the difference between two means, using the standard deviation of the urban group as the denominator. For the dichotomous variables, Cohen's effect size *h* (Cohen, 1977) for the difference between two proportions is reported:

$$h = 2 * \text{ARCSIN}(\sqrt{\text{Percent Rural}}) - 2 * \text{ARCSIN}(\sqrt{\text{Percent Urban}})$$

Both of these effect sizes are interpreted as 0.20 for small, 0.50 for moderate, and 0.80 for large.

3. Results

3.1 Agency Characteristics

Table 1 reports the weighted estimates of the agency characteristics for the total sample and by the geographic type of the county in which the CS agency was located. The chi-square, p-value, and effect sizes are also reported. Agency respondents in urban agencies reported more physical locations within the county ($M = 3.3$ to 1.7) and serving more youth under CS ($M = 464$ to 122) compared to rural agencies. Compared to urban CS agencies, those in rural areas were more likely to provide pre-trial or pre-adjudication types of CS (66% to 80%). Differences were not detected in the agencies reporting directly providing screening or assessment.

3.2 Youth Characteristics

Table 2 presents the characteristics of youth served in the past year. For the youth characteristics, missing data could be reported as not accessible or not collected. The first column reports the percentage of valid responses to each item (ranging from 45% for youth tobacco use to 89% for gender). Relative to urban agencies, respondents in rural CS agencies served a lower average percentage of Hispanic (14% to 4%; $p < .001$) and Black (22% to 6%; $p < .001$) youth and a higher percentage of Caucasian youth (61% to 85%; $p < .001$). Compared to urban agencies, rural CS agencies also reported a higher average of youth with any substance use problem (45% to 64%; $p < .001$), including alcohol (19% to 38%; $p < .001$, prescription drugs (9% to 24%; $p < .01$), and tobacco (24% to 57%; $p < .001$). Of the youth served in the past year, the urban CS agencies reported significantly fewer youth referred for screening (27% to 39%; $p < .001$) than the rural agencies. However, a major caveat is that a little more than half of CS agency respondents reported collecting or having access to data on whether they referred youth for screening (62%) and/or a clinical assessment (60%).

3.3 Screening Characteristics

Table 3 reports the screening characteristics of a subset of CS agencies providing screening directly. Relative to urban CS agencies, 13% to 28% fewer ($p < .001$) respondents in rural CS agencies reported using screening instruments which included items on use of prescription drugs, other illicit drugs, alcohol, or tobacco. Rural CS agencies also reported being less likely to test for drug use (64% to 28%; $p < .001$) during the screening process. In terms of the instruments the agencies used for screening, respondents in rural agencies reported predominantly using the Massachusetts Youth Screening Instrument-2 (MAYSI-2; 60%), followed by CRAFFT (Car, Relax, Alone, Forget, Friends, Trouble; 18%) and the Global Appraisal of Individual Needs (GAIN-Q3; GAIN-SS; 7%). While the most used among urban CS agencies was the MAYSI-2 (35%), there was a larger variety of screeners used.

4. Discussion

In the behavioral health service cascade (Belenko et al., 2017), a positive initial screen for substance use leads to a more in-depth assessment and, if warranted, linkage to evidence-based care. Despite high rates of substance use among justice-involved youth and strong association with recidivism when untreated, the screening process is not well documented within the JJ system and often represents a critical gap in the service cascade (Knight et al., 2017). Consistent with trends in pre-trial adult CS, a larger percentage of rural agencies' respondents reported providing pre-trial or pre-adjudication CS (Pretrial Justice Institute, 2009). The use of pre-trial CS may reflect unique strengths and limitations of JJ systems in rural agencies. Advantages of pre-trial CS includes cost savings relative to incarceration and reduced crowding in small rural detention centers (Mendel, 2011). Such advantages may be pronounced in rural agencies with limited capacity and financial resources relative to urban detention centers. The potential benefits of pre-trial CS can also be enhanced by rural relationships with behavioral health and other partners which may be more flexible and responsive to individual needs than large, urban bureaucracies (Pretrial Justice Institute, 2009). However, if community resources are limited or not utilized, youth cases may proceed further into the juvenile justice system and continue into the adult criminal justice system (Colwell, Villarreal, & Espinosa, 2012; Osterlind, Koller, & Morris, 2007). CS is also associated with reduced rates of re-offense among those who receive service referrals (Hoeve, McReynolds, & Wasserman, 2014). The positive impact of reducing recidivism is well-documented for justice-involved youth with substance use disorders (McReynolds, Schwalbe, & Wasserman, 2010; Schubert, Mulvey, & Glasheen, 2011).

Youth demographics differed primarily between urban and rural agencies as a function of race (i.e., rural youth predominately Caucasian) and patterns of substance use. Yet noteworthy in the reporting of youth characteristics is the high proportion of agencies that did not report or identify basic demographic variables due to lack of data accessibility or not having collected the demographic data. For example, on average about twenty percent of agencies did not report age, sex, and race demographics and almost half did not report problems associated with substance use. Respondents in neither group reported screening for a full range of substance-using behaviors and predictors. Despite this, higher rates of substance use problems were reported for rural youth. These problems were likely detected through self-report during face-to-face interviews with juvenile justice staff. Such unstructured data collection may inform CS agency reports of youth characteristics in addition to information collected through standardized screening and assessment instruments. Higher rates of rural substance use problems overall and notably alcohol, prescription drugs, and tobacco are consistent with national findings (e.g., Cronk and Sarvela, 1997; Gfroerer et al., 2007; National Survey on Drug Use and Health, 2015; Rhew et al., 2011).

High-risk behaviors associated with drug use including injection use and sexual risk behaviors were also less likely to be evaluated. Despite national increases in prescription opioid misuse as well as injection drug use corresponding with increases in HIV/HCV transmission and overdoses and death, screening for risky injection drug use was reported by less than ten percent of urban and rural CS agencies. Likewise, the use of biological assays

for HIV and Hepatitis C (HCV) were not reported. This finding could have implications for the adult justice system since the societal and economic impact of screening for and treating HCV has risen to the forefront, due to the alarmingly high rates of HCV among justice-involved, substance using adults (Havens, Lofwall, Frost, Oser, Leukefeld, & Crosby, 2013). The screening instruments utilized by rural CS agencies were also less likely to assess peer substance use; the most consistent indicator of adolescent substance use (Branstetter, Low, & Furman, 2011).

Given the high likelihood of substance use problems among justice-involved youth, screening all youth who come in contact with the justice system with an evidence-based instrument is recommended (Binard & Prichard, 2008; Office of Juvenile Justice and Delinquency Prevention, 2016). Almost three-quarters of both urban and rural CS agencies in this representative national sample reported the capacity to directly provide screening, which generally included the most commonly used substances. The most commonly used evidence-based screening instrument across both urban and rural CS agencies is the MAYSI-2, which includes eight items assessing recent (i.e., past few months) substance use and negative consequences of use. The MAYSI-2 was developed specifically for administration by detention center staff to justice-involved youth and its widespread use may reflect its design for a targeted audience, capacity for print and digital mediums, and well established national technical assistance and implementation grants. The preponderance of agencies using the MAYSI-2 is not explained by the JJ-TRIALS intervention, which was initiated subsequent to the survey. The diversity of screening instruments differed as a function of geographic location; a smaller range of screening instruments were reported by rural CS agencies. Variation in the selection of screening instruments across jurisdictions, independent of geographic location, reflects organizational, regional, and state-wide systems policies. Local culture, resources, and traditions may further impact geographic differences in instrument selection. Effective and reliable screening is contingent upon the use of standardized, evidence-based instruments. However, at least one in ten urban CS agencies reported using a locally-developed measure. The percentage of rural agencies using locally-developed measures could not be calculated due to the small sample size.

In contrast to screening which does not require clinical training to administer, only one-quarter of agencies reported the capacity to directly provide clinical assessment (Scott & Dennis, 2015, 2016). Among agencies who tracked referral data, youth referral rates for assessment were higher for rural agencies. Increased rates of youth referral may indicate a greater demand for youth services, better established partnerships with behavioral health agencies, and/or fewer resources within the rural CS agencies to deliver screening and assessment. Although contracting with outside agencies can reduce staff burden and resource constraints, rural behavioral health community partners may be more disperse and youth access to these agencies may be compounded by transportation barriers.

The behavioral health service cascade is contingent on youth access and utilization of behavioral health services. However, less than half of the CS agencies collected and had access to data on whether they referred youth for screening or assessment. Missing data among both urban and rural CS agencies may indicate that referrals are not occurring. Alternatively, referrals may be made, but not sufficiently documented. Documentation can

facilitate communication around ongoing service needs between CS and behavioral health agencies. Monitoring of the referral processes and feedback loops of communication between JJ agencies and community partners was a target of the larger JJ-TRIALS study (Belenko et al., 2017; Knight et al., 2016; Leukefeld et al., 2017). Furthermore, additional research should examine differences in the instruments utilized by non-CS agencies as they may similarly vary by urban and rural geographic location as is observed in the present study.

There are study limitations. First, the data were collected through agency-completed surveys. Surveys were completed by different types of agency staff members (program director, chief administrator, etc.) and no information is available on how those surveys were completed (e.g., whether the survey responses were based on valid or systematic data). Hence, divergent types and lengths of experiences are reflected in the respondents' replies. Many agencies collected no detailed information regarding their practices, resulting in missing data. Finally, only summaries of client data were reported and the specific needs of youth and the services they received could not be isolated. Thus, the current data and analyses are descriptive in nature. Second, although based upon a nationally representative sample, the small unweighted proportion of rural CS agencies directly providing screening limits the ability to draw broad conclusions about rural CS agencies, particularly related to the variation in the screening instruments reported. Effect sizes were therefore utilized to better interpret the magnitude of statistically significant group differences. In addition, non-response bias limits the generalizability of findings. Third, adjacent urban and rural CS agencies were collapsed into one rural group due to the small number of agencies. While these groups are commonly collapsed and differences were not detected in a preliminary analysis of the primary outcomes, relevant differences in their service delivery systems include cultural, socio-economic, and service access and availability. Future studies should oversample these regions to better understand differences and similarities between these geographic areas. Fourth, data collection relying on outside providers to conduct screening was outside the scope of the primary research question. However, to better inform JJ-protocol, substance use interventions for justice-involved youth, and policy more broadly, future research should identify specific aspects of CS agencies in urban and rural geographic regions that impact the delivery and quality of services in the behavioral health service cascade. This data indicate that geographic location may differentially impact the use of outside agencies and consequently additional research is needed to understand the linkage between CS and behavioral health agencies for justice-involved youth.

5. Conclusions

Geographic location is associated with differences in the behavioral health service cascade among justice-involved youth in CS agencies. Differences in screening can reflect the unique resources and constraints of distinct geographic areas. System-wide improvement is contingent upon implementation strategies that identify and acknowledge geographic differences to more adequately address the common and unique needs of the justice-involved youth they serve in a culturally responsive manner. Common features across CS agencies include predominantly utilizing the same evidence-based screening instrument and not screening for a full range of substance use and high-risk behaviors. Independent of

geographic location, screening for substance abuse services should be evidence-based, comprehensive, and be followed by a full clinical assessment and treatment and recovery services, when indicated.

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A: Appendix

Websites for the instruments most commonly reported screeners by CS agencies.

- Child and Adolescent Needs and Strengths (CANS) - <https://praedfoundation.org/tools/the-child-and-adolescent-needs-and-strengths-cans/>
- CRAFFT (Car, Relax, Alone, Forget, Friends, Trouble) - https://en.wikipedia.org/wiki/CRAFFT_Screening_Test
- Global Appraisal of Individual Needs (GAIN) - <http://gaincc.org/>
- Massachusetts Youth Screening Instrument-2 (MAYSI-2) - <http://www.nysap.us/MAYSI2.html>
- Minnesota Multiphasic Personality Inventory-Adolescent (MMPI-A) - <http://www.pearsonclinical.com/psychology/products/100000465/minnesota-multiphasic-personality-inventory-adolescent-mmapi-a.html>
- Ohio Youth Assessment System (OYAS) - https://www.uc.edu/content/dam/uc/corrections/docs/OYAS_Overview_2011.pdf
- Substance Abuse Subtle Screening Inventory (SASSI) - <https://www.sassi.com/>
- Structured Clinical Interview for DSM-IV (SCID) - <http://www.scid4.org/>
- Youth Self-Report (YSR) - <http://www.aseba.org/schoolage.html>

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Highlights

- The screening and assessment process differs between urban and rural agencies.
- The most common screening tool is the Massachusetts Youth Screening Instrument-2.
- Many agencies do not screen for a full range of substance use and high-risk behaviors.
- Screening differences reflect the resources and constraints of geographic areas.

Table 1.**Agency Characteristics by Geographic Location**

	% Total Across	Urban	Rural	chi-sq.	p	Effect Size
Un-weighted Number of agencies	190	154	36			
Weighted Number of agencies	190	84	106			
Row Percentage of agencies	100%	44%	56%			
Agency Characteristics (column % or mean/SD)						
Type of Community Supervision provided						
Pre-trial or pre-adjudication	74%	66%	80%	5.30	0.026	0.32
Post-adjudication	61%	55%	66%	2.19	0.154	0.21
Probation	99%	98%	100%	2.60	0.190	0.30
Parole	25%	26%	23%	0.26	0.629	-0.07
Supervised release	26%	32%	22%	2.82	0.111	-0.23
Other	12%	19%	6%	7.91	0.008	-0.39
Physical locations within county	2.4 (5.5)	3.3 (7.9)	1.7 (2.2)	3.18	0.074	0.16
Grouped number of locations						
0	6%	0%	11%	11.98	0.006	0.69
1	65%	65%	64%			-0.02
2-7	23%	27%	19%			-0.19
8+	6%	8%	5%			-0.11
Services Provided						
Directly providing Screening	72%	75%	70%	0.55	0.534	-0.10
Directly providing Assessment	26%	23%	28%	0.84	0.427	0.13
Neither Screening nor Assessment		25%	30%	2.69	0.442	0.11
Screening Only		53%	41%			-0.23
Assessment Only		0%	0%			0.00
Both Screening and Assessment		22%	28%			0.15
Youth Served per Agency	272.1 (481.9)	464.2 (670.7)	121.5 (109.6)	35.34	0.000	-0.71

Note: Table uses adjusted agency weight; Continuous measures analyzed with Kruskal-Wallis non-parametric tests. Bold chi-square indicates $p < .05$; bold effect sizes of $<-.20$ or $>.20$; Effect size compares Rural to Urban.

Table 2.**Youth Characteristics by Geographic Location**

	% Available in Records	% Total Across	Urban	Rural	chi-sq.	p	Effect Size
Weighted number of youth		190	84	106			
Age							
Under 10	78%	0%	1%	0%	5.37	0.021	-0.25
10–11	81%	2%	2%	1%	26.85	0.000	-0.55
12–13	82%	11%	12%	9%	1.80	0.180	-0.27
14–15	85%	37%	37%	36%	0.46	0.497	-0.02
16–17	85%	44%	42%	46%	3.22	0.073	0.24
18 and over	86%	7%	6%	7%	0.30	0.586	0.12
Gender							
Male	89%	74%	74%	74%	0.03	0.869	0.01
Female	87%	26%	26%	27%	0.59	0.443	0.12
Race/Ethnicity							
Hispanic	75%	9%	14%	4%	18.39	0.000	-0.67
Asian	76%	1%	1%	0%	11.46	0.001	-0.48
Black	84%	14%	22%	6%	28.03	0.000	-0.90
Caucasian	86%	75%	61%	85%	21.08	0.000	0.94
Native American	77%	2%	1%	4%	0.01	0.938	0.41
Other Race	65%	1%	2%	1%	17.09	0.000	-0.55
Multiple/Mixed Race	73%	2%	2%	2%	0.09	0.759	0.03
Substance Use Problems							
Any Substance	67%	56%	45%	64%	18.24	0.000	0.85
Alcohol	60%	31%	19%	38%	20.14	0.000	0.83
Marijuana	59%	48%	43%	50%	3.52	0.061	0.35
Prescription Drugs	52%	19%	9%	24%	9.13	0.003	0.76
Other Drug	58%	15%	18%	13%	8.38	0.004	-0.31
Tobacco Use	45%	49%	24%	57%	20.00	0.000	1.14
Referred for Screening	62%	34%	27%	39%	6.59	0.010	0.46
Referred for Assessment	60%	37%	31%	40%	0.01	0.911	0.29

Note: Table uses adjusted agency weight; Continuous measures analyzed with Kruskal-Wallis non-parametric tests; Bold chi-square indicates $p < .05$; bold effect sizes of $<-.20$ or $>.20$; Effect size compares Rural to Urban; Asian includes Hawaiian/Pacific Islander; Native American includes Alaskan Native; Other drug use refers to stimulants, opioids, hallucinogens.

Table 3.
Screening Characteristics by Geographic Location

Weighted Averages for subset of agencies directly providing screening

	% Total Across	Urban	Rural	chi-sq.	p	Effect Size
Unweighted number of agencies	163	135	28			
Weighted number of agencies	163	74	89			
Agency Characteristics (Col %)						
Problem areas covered by screening:						
Alcohol Use						
Alcohol Use	89%	96%	83%	5.63	0.027	-0.45
Marijuana Use	88%	93%	83%	2.95	0.120	-0.31
Other Illicit Drug Use	78%	86%	70%	5.49	0.023	-0.39
Prescription Drug Misuse	74%	74%	74%	0.00	1.000	0.00
Peer Substance use	49%	64%	36%	11.10	0.001	-0.57
Substance Use Disorders	35%	40%	30%	1.43	0.284	-0.21
Risky Sexual Activity	31%	33%	29%	0.29	0.716	-0.09
Tobacco Use	30%	41%	19%	8.44	0.005	-0.49
Needle or Works Risk Activity	5%	8%	3%	1.50	0.268	-0.23
Routinely collected during screening:						
Drug tests	46%	64%	28%	17.04	0.000	-0.74
Alcohol tests	21%	17%	25%	0.81	0.401	0.19
Tuberculosis	0.4%	0.7%	--	0.00	1.000	-0.17
HIV	0.2%	0.3%	--	0.00	1.000	-0.11
Hepatitis B	0.1%	0.2%	--	0.00	1.000	-0.09
Hepatitis C	0.1%	0.2%	--	0.00	1.000	-0.09
Screening Instruments Used:						
Massachusetts Youth Screening Instrument-2	48%	35%	60%	8.02	0.006	0.51
Global Appraisal of Individual Needs	11%	16%	7%	2.96	0.112	-0.30
Car, Relax, Alone, Forget, Friends, Trouble	11%	4%	18%	8.36	0.005	0.47
Child and Adolescent Needs and Strengths	10%	17%	4%	5.62	0.023	-0.45
Substance Abuse Subtle Screening Inventory	8%	12%	3%	4.17	0.052	-0.36
Use a locally created measure	5%	11%	--	9.00	0.002	-0.68
Problem Oriented Screening Inventory for Teenagers	3%	7%	--	4.37	0.053	-0.54
Ohio Youth Assessment System	3%	4%	2%	0.26	0.676	-0.12
Youth Self-Report	2%	4%	--	3.25	0.112	-0.40
Minnesota Multiphasic Personality Inventory-Adolescent	1%	2%	--	1.07	0.486	-0.28

Notes: Table uses agency weights; bottom half subset to those that provide service directly. -- indicates less than 1% and/or not reliably estimated. Continuous measures analyzed with Kruskal-Wallis non-parametric tests. Bold chi-square indicates $p < .05$; bold effect sizes d of $< -.20$ or $> .20$; Effect size compares Rural to Urban.