

# Examining Contextual Differences in Participant Characteristics and During-Program Occurrences With Drug Court Program Completion

Journal of Drug Issues  
2020, Vol. 50(2) 191–208  
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sagepub.com/journals-permissions  
DOI: 10.1177/0022042620901718  
journals.sagepub.com/home/jod



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## Abstract

The study purpose was to compare individuals participating in rural and urban drug courts to examine factors associated with program completion. Secondary data (participant assessment; drug court Management Information System) as well as conviction information from a statewide database were examined for a sample of drug court participants ( $N = 534$ ). Based on multivariate analysis, for rural participants, two variables were significantly associated with increased program completion: age and outpatient treatment. Conversely, for rural participants, the number of felony/misdemeanor convictions before drug court and receiving an incarceration sanction during drug court were associated with program non-completion. For urban participants, gender and age were associated with increased odds of completion, whereas marital status, education, and past 30-day cocaine use were associated with program non-completion. Findings suggest contextual differences in participant characteristics and during-program occurrences, which ultimately influenced program completion. Understanding contextual factors has important implications for program planning and implementation.

## Keywords

drug court, rural, contextual differences, participant characteristics, during program occurrences

Drug courts are community-based programs that provide rehabilitation opportunities to persons with substance abuse problems involved in the criminal justice system. Developed to address the national influx of substance abuse-related crimes, drug courts coordinate the efforts of judges, prosecuting and defense attorneys, law enforcement, probation and parole as well as mental health, social services, and treatment providers to break the cycle of substance abuse, addiction, and crime (National Association of Drug Court Professionals [NADCP], 1997). The NADCP's (1997) *Key Components* offers guiding principles for effective drug court operations. Although the *Key Components*' general benchmarks address programmatic standards such as judicial interaction and integration into judicial case processing, the application of a non-adversarial approach,

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random drug testing, the continuum of treatment and other services, and the development of community partnerships, the framework remains flexible in meeting individualized treatment needs (NADCP, 1997). Two more recent NADCP (2013, 2015) publications, *Best Practice Standards (Volumes I and II)*, offer specific guidelines based on extant adult drug court research.

Over 25 years of research supports the effectiveness of the drug court model. The most cited outcome has been the link between drug court participation and decreased rates of reoffending (Gottfredson et al., 2003; Huddleston & Marlowe, 2011; Kalich & Evans, 2006; Mitchell et al., 2012; Shaffer, 2011). A meta-analysis of 154 drug court evaluations suggests overall recidivism reduced from 50% to 38% and drug-related recidivism reduced from 50% to 37% among adult drug court participants (Mitchell et al., 2012). Other positive outcomes associated with drug court participation involve the decrease in substance use (Belenko, 2001), a reduction in the use of outpatient mental health services, higher annual earnings, increased stability, and higher productivity (Logan et al., 2002). Also noteworthy, drug courts offer participants a constructive means of rehabilitation by integrating criminal justice intervention with substance abuse treatment practices. At the time of this publication, there were 4,168 existent drug courts (National Drug Court Resource Center, 2019). Given the expansive implementation of drug courts and changing substance use and demographic trends, there is a need for continued research to effectively identify and understand underserved populations or those experiencing disparities.

Research focusing on regional context (i.e., rural regions/urban regions) has shown its influential effect on drug court program completion (Mateyoke-Scriver et al., 2004), as well as with substance use, mental health, and criminal activity among participants (Stoops et al., 2005). Stoops et al. (2005) suggested, when compared to their rural counterparts, urban drug court participants report greater polysubstance and lifetime substance use, higher anxiety and psychoticism scores on the Brief Symptom Inventory (BSI), and more involvement with the criminal justice system by way of arrests and criminal activity. Mateyoke-Scriver and colleagues (2004) identified variations in influential factors for program completion for urban (e.g., marital status, employment, substance use, and criminal activity) and rural (e.g., age, juvenile incarceration) drug court participants. Meanwhile, research illuminating the challenges unique to rural areas found that residents in need of substance abuse treatment services often navigate cultural obstacles that urban drug users do not, namely the high value placed on self-reliance in rural areas and a tradition of distrust regarding mental health services (Sullivan et al., 1993). Additional findings on barriers that may complicate or impede effective intervention among rural individuals include a shortage of treatment facilities and other supportive resources, a lack of substance-free housing, limited transportation options, and participant concerns over confidentiality in close-knit communities (Rural Health Information Hub, n.d.).

In Kentucky, where 85 of the 120 counties, or over two-thirds of counties are eligible for rural classification (Economic Research Service, 2004; Office of Rural Health Policy, 2016), the rural region, particularly in Eastern Kentucky, has garnered vast attention due to the high prevalence rates for misuse and nonmedical use of opioids (Havens et al., 2007; Shannon et al., 2009). The National Household Survey on Drug Use and Health (NSDUH) identified many of the rural areas of Kentucky in the highest prevalence regions when examining illicit drug use other than marijuana for persons aged 12 and older (Substance Abuse and Mental Health Services Administration [SAMHSA], 2006). In 2017, there were over 1,100 opioid involved deaths in Kentucky, a rate of 27.9 deaths per 100,000, which is nearly double the national average (14.6 deaths per 100,000; National Institute on Drug Abuse, 2019). According to the Centers for Disease Control (CDC), in 2017, Kentucky ranked fifth in highest rates of overdose deaths, behind West Virginia, Ohio, Pennsylvania, and the District of Columbia (CDC, 2019).

A recent publication by the National Drug Court Institute showed the completion rate for adult drug court participants in Kentucky as 35%. This was the lowest of all the 36 states and territories that reported graduation rates; the majority of drug courts included in the study had completion

rates between 50% and 75% (Marlowe et al., 2016). When taking into account the unique challenges of individuals in rural areas, the need to understand the factors that may assist or inhibit drug court participation becomes more apparent. The goal of this study was to examine individuals participating in rural and urban drug courts to understand factors associated with program completion. To achieve this study goal, the first study aim was to compare social and demographics (e.g., gender, age, and race), past 30-day substance use, past 30-day mental health, prior criminal justice system involvement, and during-program occurrences by rural and urban status. The second study aim was to examine significant associations with program completion independently for rural and urban drug court participants. Given the statewide nature of the Kentucky Specialty Court (KSC) programs, understanding contextual factors of influence, if they exist, could have important implications for program planning and implementation.

## Methodology

The current study analyses utilized data collected as part of a statewide KSC outcome evaluation conducted between 2011 and 2014. All study data were from secondary data sources, including the KSC participant assessment and Management Information System (MIS), as well as CourtNet (an official Kentucky database recording criminal justice system involvement). The project involved the collaboration of the research team with the Kentucky Administrative Office of the Courts (AOC), the overseer of KSC programs. KSCs operate under a unified system. KSC programs consist of three phases and an aftercare component. The program lasts a minimum of 15 months for misdemeanor offenses and 18 months for felony offenses. The program targets non-violent offenders. KSC began in Jefferson County [Louisville, 1993] and Fayette County [Lexington, 1996] (AOC, 2015). There are 120 counties encompassing 57 Kentucky jurisdictions; at the time of this publication, all but four counties had an established drug court for a total of 90 felony and misdemeanor KSCs (some smaller counties have a combined/shared jurisdiction court). Each program operates in accordance with the *Key Components* (NADCP, 1997) and seeks to incorporate *Best Practice Standards* (NADCP, 2013, 2015). There is uniformity in KSC implementation via a statewide procedures manual, statewide policies, and the Administrative Rules of the Supreme Court.

## Participants

Five hundred and thirty-four ( $n = 534$ ) participants (both program graduates and terminators) were selected from a larger KSC population ( $N = 4,881$ ). The total population represented all individuals who had (a) entered KSC since July 1, 2006, after the MIS was implemented and (b) exited prior to January 1, 2011.

To accomplish the study analyses, the 2003 Beale rural-urban continuum codes facilitated recoding drug court sites into rural and urban groups. The Beale codes ranged from 1 (*metro area of 1 million or more*) to 9 (*completely rural or less than 2,500 urban population, not adjacent to a metro area*; Economic Research Service, 2004). Non-metropolitan drug court counties, which had a Beale code of 4 or more, were considered rural (Economic Research Service, 2007).

## Measures/Sources of Data

*KSC participant assessment.* The participant assessment used by KSC, based on the Addiction Severity Index (ASI; McLellan et al., 1980), examined eligibility for the program. Assessment data for these analyses focused on pre-program individual characteristics including self-reported social and demographics (e.g., gender, age, and race), past 30-day substance use, and past 30-day mental health.

**CourtNet.** CourtNet is the official recording system in Kentucky for charges and convictions associated with criminal activity. For each individual, the AOC pulled the CourtNet record. The analyses focused on convictions prior to program entry (based on the program start date). The AOC provided a complete list of convictions and the categorization of these by level (i.e., felony or misdemeanor) as specified in the Kentucky Revised Statutes (KRS). All level of conviction categorizations followed KRS 2013 classifications. Convictions were further classified into 13 categories (1) Property, (2) Drug Trafficking, (3) Drug Possession, (4) Other Drug (e.g., drug paraphernalia), (5) Violent Crime Ineligible (by KSC criteria; robbery), (6) Violent Crime Eligible (by KSC criteria; domestic violence), (7) Traffic, (8) Alcohol, (9) Prostitution, (10) Weapons, (11) Probation/Parole, (12) Other (e.g., escape, harassment, disorderly conduct), and (13) Non-Support (i.e., failure to pay child support).

**KSC MIS.** KSC staff who supervised or interacted with participants collected during-program data; these individuals entered the data into the MIS. MIS information focused on during-program occurrences including participation dates, type of discharge (i.e., program graduate or termination prior to graduation), drug screening/results, incarceration sanctions, and treatment.

## Procedures

**Sample selection.** The KSC participants were randomly selected using a stratified sampling method. The goal was to pull a stratified random sample of participants from each county that would be proportionate to and represent the statewide total using the Epi Info 7 statistics calculator downloaded from the CDC's (2012) website. Using the StatCalc tool, the statewide KSC total ( $N = 4,881$ ) was entered for population size. The proportion each county represented of the total population was entered as the expected frequency; a confidence level of 99.0% was entered to achieve the 10% total desired sample size. In meeting all these criteria, the final sample size was 534. This sample size also met statistical needs based on an a priori power analysis.

**Secondary data analyses.** AOC provided all data (i.e., participant assessment, CourtNet, and MIS); thus, the study solely relied on secondary data analyses. The assessment and MIS data were entered into the Statistical Package for the Social Sciences (SPSS). The participant assessment represented self-reported information prior to KSC participation. The MIS represented information regarding performance during KSC participation (i.e., drug testing, incarceration sanctions, treatment).

The CourtNet records, which represented information prior to KSC participation, required extensive coding. The research team, consisting of five coders, conducted the criminal history analysis. The research team used a specific coding protocol based on the aforementioned KRS offense levels and categories. The first author conducted quality control by assessing 10% of each coders' analyses by analyzing a criminal record before viewing the coder's results for that record. The quality control was designed to catch errors in coding, not inter-coder discrepancies. The coding protocol did not leave room for subjective interpretation; all convictions appeared on the coding protocol with a category and level of offense. If a discrepancy occurred between the two coders, the coding protocol helped to determine the source of the error. The two coders then discussed the occurrence until the achievement of 100% consistency/agreement. These instances were added to the coding protocol and were used for training purposes. Discrepancies were seldom, but these occurrences were shared with other coders. After coding, CourtNet data were entered into SPSS for analysis.

## Analysis

All analyses were conducted using IBM SPSS 23. Bivariate analyses utilized Chi-squares and *t*-tests to assess rural–urban differences. To measure effect sizes, Cramer's  $V$  values were reported

for Chi-square tests of independence and Cohen's  $d$  values for independent samples  $t$ -tests. Cramer's  $V$  effect sizes were interpreted as: small (.10), medium (.30), and large (.50); Cohen's  $d$  effect sizes were interpreted as: small (0.2), medium (0.5), and large (0.8) (Nolan & Heinzen, 2011). Two multivariate logistic regressions, one for rural participants and one for urban participants, examined factors associated with program completion. Multivariate analyses adjusted for variables significantly related ( $p < .05$ ) to rural-urban context in the bivariate analyses as well as variables of potential importance based on existing literature. Odds ratios (ORs) greater than 1 were converted to percentages using the following formula:  $(OR - 1) * 100$ . ORs less than 1 were converted as follows:  $(1 - OR) * 100$ .

Some variables, significant in the bivariate analyses, measured the same constructs as other variables; these were excluded from the multivariate models (e.g., specific pre-drug court felony/misdemeanor convictions excluded, but number of pre-drug court felony/misdemeanor convictions included). Past 30-day heroin and club drug use were excluded from the models due to low percentages (1.8% for each variable). Categorical variables with three categories in the bivariate analyses were recoded to include two categories for the multivariate analyses (i.e., race, marital status, and education).

The dependent variable for both logistic regression models was program completion coded as 0 = *terminator*, 1 = *graduate*. The program completion models contained 17 variables. The social and demographic variables included gender (categorical; coded as 0 = *male*, 1 = *female*), age (continuous variable), race (categorical; coded as 0 = *White*, 1 = *Nonwhite* (Black and Other)), marital status (categorical; coded as 0 = *not married* (single, never married, divorced, separated, widowed, and other), 1 = *married*)), education (categorical; 0 = *high school or above* (high school graduate or equivalent, college or beyond secondary education), 1 = *less than high school*), and employment (categorical; coded as 0 = *unemployed*, 1 = *employed*). The remaining categorical variables (coded as 0 = *no*, 1 = *yes*) were as follows: used alcohol in the past 30 days, used cocaine in the past 30 days, used benzodiazepines in the past 30 days, used opiates in the past 30 days, prescribed medication for any psychological/emotional problem in the past 30 days, received an incarceration sanction during drug court, received outpatient treatment during drug court, and received residential long-term treatment during drug court. The remaining continuous variables were as follows: rural Beale codes (rural participants' model), urban Beale codes (urban participants' model), number of pre-drug court felony/misdemeanor convictions, and number of positive drug tests during drug court.

Based on the multivariate sample sizes and the number of predictors in the multivariate models ( $n = 17$ ), the post hoc power calculation suggested the multivariate models had acceptable power to detect large and medium effect sizes (power  $> .80$ ). The multivariate model had limited power for detecting a small effect size (.20), which is included as a study limitation.

## Results

Table 1 compares the social and demographic characteristics for the rural and urban participants. For the overall sample of 534 participants, over half (56.1%;  $n = 300$ ) participated in a rural drug court. On average, participants were 29 years old; the majority were male (60.3%). The majority reported education level at the time of assessment as high school graduate (or equivalency; 48.6%) or less than 12th grade completed (34.9%). A little under one-third (31.9%) reported employment at program assessment. Significant between-group differences emerged for race (Cramer's  $V = .275$ ) and marital status (Cramer's  $V = .175$ ). Significantly more rural participants were White when compared with urban participants (94.2% vs. 74.8%;  $z = 6.27, p < .001$ ). For marital status, significantly more urban participants reported being married (35.4% vs. 21.5%;  $z = 3.486, p < .001$ ) while more rural participants reported being divorced/separated/widowed/other (34.0% vs. 21.5%;  $z = 3.103, p = .002$ ).

**Table 1.** Social and Demographic Characteristics.

Measure	Rural (n = 300)	Urban (n = 234)	Total (N = 534)	df	$\chi^2/t$	Cramer's V/ Cohen's d
Gender						
Male	60.7%	59.8%	60.3%			.008
Female	39.3%	40.2%	39.7%			
Age (SD)	29.44 (9.36)	29.49 (7.86)	29.46 (8.73)			Cohen's d = .006
Race/ethnicity						
White	94.2%	74.8%	85.6%	2	$\chi^2 = 39.590^{***}$	.275
Black	4.8%	22.2%	12.5%			
Other	1.0%	3.0%	1.9%			
Marital status						
Single/never married	44.4%	43.0%	43.8%	2	$\chi^2 = 15.731^{***}$	.175
Married	21.5%	35.4%	27.6%			
Divorced/separated/ widowed/other	34.0%	21.5%	28.6%			
Education Level						
Less than 12th grade	35.8%	33.8%	34.9%			.064
High school graduate or equivalent	49.8%	47.1%	48.6%			
College or beyond secondary education	14.3%	19.1%	16.4%			
Employed (yes)	30.4%	33.9%	31.9%			.037

Note. All effect sizes are Cramer's V unless specified as Cohen's d.

\*\*\* $p < .001$ .

Table 2 shows substance use and mental health in the past 30 days as reported by participants. The most commonly reported substances used in the past 30 days were marijuana (33.3%), alcohol (32.8%), and opioids (32.7%). There were significant between-group differences for several substance use variables. More urban participants reported use of alcohol (38.8% vs. 28.5%; Cramer's  $V = .108$ ), cocaine (28.9% vs. 9.2%; Cramer's  $V = .256$ ), club drugs (3.2% vs. 0.7%; Cramer's  $V = .095$ ), and heroin (3.2% vs. 0.7%; Cramer's  $V = .095$ ) when compared with rural participants. Conversely, more rural participants reported use of opioids (40.6% vs. 22.1%; Cramer's  $V = .195$ ) and benzodiazepines (27.1% vs. 18.9%; Cramer's  $V = .096$ ) when compared with urban participants. Approximately 15% of participants reported prescription medication for a psychological/emotional problem.

Table 3 shows prior criminal justice involvement. Over three-fourths (80.5%) of the sample had a prior felony and/or misdemeanor conviction. Participants averaged approximately 6 prior felony and/or misdemeanor convictions. A little under one-third (29.6%) had a prior felony conviction; the average number of prior felony convictions was less than one (0.92). The most common prior felony convictions were property (15.7%), drug possession (9.7%), and other drug (4.1%) crimes. There were two significant between-group differences when examining specific prior felony convictions. More urban participants had prior other (6.4% vs. 0.7%; Cramer's  $V = .162$ ) and non-support (3.8% vs. 0.3%; Cramer's  $V = .129$ ) felony convictions compared with rural participants. Over three-fourths (78.1%) had prior misdemeanor convictions; the average number of prior misdemeanor convictions was 5. The most common prior misdemeanor convictions were traffic (43.6%), property (39.9%), alcohol (36.7%), and drug possession (32.0%) crimes. There was one significant between-group difference when examining specific prior misdemeanor convictions. More urban participants had prior drug possession

**Table 2.** Substance Use and Mental Health (Past 30 Days).

Measure	Rural (n = 300)	Urban (n = 234)	Total (N = 534)	df	$\chi^2$	Cramer's V
<b>Substance use</b>						
Marijuana	30.8%	36.8%	33.3%			.062
Alcohol	28.5%	38.8%	32.8%	1	$\chi^2 = 5.779^*$	.108
Opioids	40.6%	22.1%	32.7%	1	$\chi^2 = 18.983^{***}$	.195
Benzodiazepines	27.1%	18.9%	23.6%	1	$\chi^2 = 4.608^*$	.096
Cocaine	9.2%	28.9%	17.5%	1	$\chi^2 = 33.015^{***}$	.256
Stimulants	0.7%	1.0%	0.8%			.015
Methamphetamine	6.2%	6.0%	6.1%			.003
Amphetamines	2.8%	4.3%	3.5%			.042
Club drugs	0.7%	3.2%	1.8%		Fisher's exact $p = .042^*$	.095
Heroin	0.7%	3.2%	1.8%		Fisher's exact $p = .042^*$	.095
Barbiturates	1.7%	0.9%	1.3%			.036
Hallucinogens	0.3%	1.3%	0.8%			.056
Inhalants	1.0%	0%	0.6%			.068
<b>Mental health</b>						
Prescribed medication for any psychological/emotional problem	17.1%	12.3%	15.1%			.067

\* $p < .05$ . \*\*\* $p < .001$ .

(37.6% vs. 27.7%; Cramer's  $V = .106$ ) misdemeanor convictions compared with rural participants.

Table 4 overviews during-program factors, including days in the program, program completion status, drug testing results, sanctions, and treatment. On average, participants in this study were in the program approximately 15.5 months (466 days); a little under two-thirds (63.7%) did not successfully complete the program. Significantly more rural participants graduated the program when compared with urban participants (41.0% vs. 30.3%; Cramer's  $V = .110$ ). Rural participants had significantly more positive drug tests (9.64 vs. 7.28; Cohen's  $d = .197$ ) when compared with urban participants. Over two-thirds of the sample had incarceration sanctions (67.2%). A significant minority of participants (46.8%) received ancillary services as part of the drug court program. There were two significant between-group differences when examining treatment during drug court. More rural participants received outpatient services (40.7% vs. 28.2%; Cramer's  $V = .129$ ), while more urban participants received long-term residential services (14.5% vs. 7.7%; Cramer's  $V = .110$ ).

### Multivariate Results

Table 5 shows the logistic regression model examining factors associated with program completion for rural participants. The model correctly classified 73% of the participants (the constant-only model, without the independent variables, correctly classified 58% of participants). Two variables were significantly associated with increased program completion: age and outpatient treatment. As age increased, the odds of completing drug court also increased about 5% (OR = 1.049, 95% confidence interval [CI] = 1.010–1.089,  $p = .014$ ). Compared to those who did not receive outpatient treatment during drug court, those who received this treatment were associated with 108% increased odds of program completion (OR = 2.075, 95% CI = 1.095–3.931,

**Table 3.** Prior Criminal Justice Involvement (CourtNet).

Measure	Rural (n = 300)	Urban (n = 234)	Total (N = 534)	df	$\chi^2/t$	Cramer's V/ Cohen's d
Any felony or misdemeanor conviction	78.7%	82.9%	80.5%			.053
Average # any convictions (SD)	5.64 (7.03)	6.38 (8.40)	5.96 (7.66)			Cohen's d = .096
Any felony	27.0%	32.9%	29.6%			.064
Average # felonies (SD)	0.79 (3.17)	1.08 (3.12)	0.92 (3.15)			Cohen's d = .092
Property crime	14.3%	17.5%	15.7%			.043
Drug trafficking	2.3%	3.8%	3.0%			.044
Drug possession	8.0%	12.0%	9.7%			.066
Other drug	4.3%	3.8%	4.1%			.012
Ineligible violent	1.3%	0.4%	0.9%			.047
Eligible violent	0.0%	0.0%	0.0%			—
Traffic	1.0%	1.3%	1.1%			.013
Alcohol	1.0%	0.4%	0.7%			.033
Prostitution	0.0%	0.0%	0.0%			—
Weapons	0.0%	0.4%	0.2%			.049
Other	0.7%	6.4%	3.2%	1	$\chi^2 = 14.070^{***}$	.162
Non-support	0.3%	3.8%	1.9%		Fisher's exact $p = .006^{**}$	.129
Any misdemeanor	75.3%	81.6%	78.1%			.075
Average # misdemeanors (SD)	4.85 (5.96)	5.30 (7.26)	5.05 (6.56)			Cohen's d = .068
Property crime	36.7%	44.0%	39.9%			.074
Drug trafficking	3.0%	2.1%	2.6%			.027
Drug possession	27.7%	37.6%	32.0%	1	$\chi^2 = 5.967^*$	.106
Other drug	32.0%	29.9%	31.1%			.022
Ineligible violent	0.7%	1.3%	0.9%			.032
Eligible violent	11.0%	11.1%	11.0%			.002
Traffic	41.0%	47.0%	43.6%			.060
Alcohol	37.3%	35.9%	36.7%			.015
Prostitution	0.0%	1.3%	0.6%			.085
Weapons	1.0%	3.0%	1.9%			.073
Other	25.0%	29.1%	26.8%			.045
Non-support	1.0%	2.1%	1.5%			.046

Note. All effect sizes are Cramer's V unless specified as Cohen's d.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

$p = .025$ ). On the other hand, as the number of prior felony/misdemeanor convictions increased, program completion odds decreased by 9% (OR = 0.915, 95% CI = 0.861–0.972,  $p = .004$ ). In comparison to those who did not receive an incarceration sanction during drug court, those who did were associated with 72% decreased odds of program completion (OR = 0.284, 95% CI = 0.139–0.582,  $p = .001$ ).

Table 6 shows the logistic regression model examining factors associated with program completion among the urban participants. The model correctly classified 76% of the participants (the constant-only model correctly classified 70% of participants). Gender and age were associated with increased odds of graduating. Compared to males, females were associated with 160%



**Table 4.** During-Program Factors.

Measure	Rural ( <i>n</i> = 300)	Urban ( <i>n</i> = 234)	Total ( <i>N</i> = 534)	<i>df</i>	$\chi^2/t$	Cramer's <i>V</i> / Cohen's <i>d</i>
Program participation/completion status						
Days in program	473.34 (278.71)	456.29 (295.77)	465.87 (286.16)			Cohen's <i>d</i> = .059
Program graduate	41.0%	30.3%	36.3%	1	$\chi^2 = 6.46^*$	.110
Program terminator	59.0%	69.7%	63.7%			
Drug testing results						
Average # of positive drug tests ( <i>SD</i> )	9.64 (12.90)	7.28 (11.03)	8.61 (12.16)	527	$t = 2.282^*$	Cohen's <i>d</i> = .197
Sanctions						
Incarceration	64.3%	70.9%	67.2%			Cramer's <i>V</i> = .070
Treatment						
Ancillary	48.3%	44.9%	46.8%			.034
Outpatient	40.7%	28.2%	35.2%	1	$\chi^2 = 8.949^{**}$	.129
Intensive outpatient (IOP)	24.0%	19.2%	21.9%			.057
Residential short-term	18.3%	22.2%	20.0%			.048
Residential long-term	7.7%	14.5%	10.7%	1	$\chi^2 = 6.494^*$	.110
Non-residential	1.3%	2.1%	1.7%			.031

Note. All effect sizes are Cramer's *V* unless specified as Cohen's *d*.

\* $p < .05$ . \*\* $p < .01$ .

increased odds of completing the drug court program (OR = 2.597, 95% CI = 1.118–6.034,  $p = .026$ ). As age increased, the odds of program completion increased by 9% (OR = 1.089, 95% CI = 1.029–1.152,  $p = .003$ ). However, three variables were associated with reduced odds of program completion: marital status, education, and cocaine use in the past 30 days. Compared to unmarried participants, married participants were associated with 65% reduced odds of completing the program (OR = 0.349, 95% CI = 0.130–0.933,  $p = .036$ ). In comparison to those who received a high school education or more, those who did not were associated with 82% reduced odds of program completion (OR = 0.182, 95% CI = 0.063–0.529,  $p = .002$ ). Furthermore, compared to those who reported no cocaine use in the past 30 days, those who did were associated with 71% reduced odds of program completion (OR = 0.294, 95% CI = 0.103–0.839,  $p = .022$ ).

## Discussion

Findings from the current study analyses suggest rural and urban differences in participant characteristics and during-program occurrences, which were ultimately influential on drug court completion. Based on the bivariate analyses, more participants from rural drug courts graduated compared with urban participants. Further examinations showed several between-group differences on social and demographic characteristics, substance use, criminal justice involvement, and during-program occurrences. More specifically, there were numerous differences in substance use in the past 30 days for the rural and urban participants, suggesting different patterns of use and/or drugs of choice. When examining rural and urban groups independently, several factors remained significant for program completion in the multivariate analyses. The multivariate analyses suggested little overlap in influential factors for program completion among rural and urban participants; rather a more nuanced array of variables were uniquely impactful for

**Table 5.** Factors Associated With Program Completion: Rural Participants ( $n = 245$ ).

Predictor	B	OR	95% CI	
			Lower	Upper
Gender	0.201	1.223	0.634	2.360
Age	0.047	1.049*	1.010	1.089
Race	-0.732	0.481	0.094	2.461
Marital status	-0.743	0.476	0.209	1.084
Education	-0.271	0.763	0.403	1.442
Employed	0.602	1.825	0.915	3.642
Rural Beale codes	0.115	1.122	0.859	1.466
Past 30-day alcohol use	0.056	1.058	0.522	2.144
Past 30-day cocaine use	-0.312	0.732	0.214	2.506
Past 30-day benzodiazepine use	-0.077	0.926	0.387	2.217
Past 30-day opiate use	-0.563	0.570	0.257	1.265
Prescribed medication for a psychological/emotional problem in past 30 days	-0.552	0.576	0.244	1.358
Number of felony/misdemeanor convictions before drug court	-0.089	0.915**	0.861	0.972
Number of positive drug tests during drug court	-0.022	0.978	0.949	1.008
Received an incarceration sanction during drug court	-1.258	0.284**	0.139	0.582
Received outpatient treatment during drug court	0.730	2.075*	1.095	3.931
Received residential long-term treatment during drug court	-0.752	0.471	0.124	1.788

Note. OR = odds ratio; CI = confidence interval.

\* $p < .05$ . \*\* $p < .01$ .

each group. Findings suggest contextual factors are critical for consideration for program completion.

Only one factor, age, was influential on program completion for both rural and urban participants. The finding showing increasing age also increases program completion mirrors findings from other studies. Extant literature examining drug court completion has consistently shown age is important (Hickert et al., 2009; Saum et al., 2001; Wolf et al., 2003). Hickert et al. (2009) showed that older age at intake was associated with successful drug court completion. Furthermore, event history analysis conducted by Wolf and colleagues (2003) showed being older was strongly predictive of successful program completion. Past research and current findings suggest critical implications of age for all drug court participants irrespective of program context.

For rural participants, unique contributions to program completion included an equal mix of participant characteristics and during-program occurrences. One participant characteristic, criminal history prior to drug court, was associated with program completion for rural participants. Criminal history, more specifically the number of prior felony and misdemeanor convictions, was associated with program non-completion. This finding is also consistent with past research on drug court, which suggests having a more extensive criminal history was related to drug court drop out (Bouffard & Muftic, 2006; Hickert et al., 2009; Mateyoke-Scriver et al., 2004; Saum et al., 2001; Zanis et al., 2009). Current *Best Practice Standards* recommendations encourage drug courts to serve high-risk and high-needs individuals (NADCP, 2013), which would include those with an extensive prior criminal history. This recommendation may need to be carefully examined within the context of rural environments, given potential limitations in services and other available resources.

**Table 6.** Factors Associated With Program Completion: Urban Participants ( $n = 172$ ).

Predictor	B	OR	95% CI	
			Lower	Upper
Gender	0.955	2.597*	1.118	6.034
Age	0.085	1.089**	1.029	1.152
Race	-1.072	0.342	0.113	1.038
Marital status	-1.054	0.349*	0.130	0.933
Education	-1.701	0.182**	0.063	0.529
Employed	0.806	2.238	0.920	5.445
Urban Beale codes	0.398	1.489	0.808	2.742
Past 30-day alcohol use	0.304	1.356	0.540	3.404
Past 30-day cocaine use	-1.226	0.294*	0.103	0.839
Past 30-day benzodiazepine use	0.471	1.601	0.485	5.283
Past 30-day opiate use	-0.732	0.481	0.150	1.546
Prescribed medication for a psychological/emotional problem in past 30 days	-1.341	0.262	0.068	1.007
Number of felony/misdemeanor convictions before drug court	0.005	1.005	0.952	1.060
Number of positive drug tests during drug court	0.004	1.004	0.965	1.044
Received an incarceration sanction during drug court	-0.490	0.612	0.224	1.671
Received outpatient treatment during drug court	0.173	1.189	0.403	3.502
Received residential long-term treatment during drug court	0.033	1.034	0.307	3.476

Note. OR = odds ratio; CI = confidence interval.

\* $p < .05$ . \*\* $p < .01$ .

There were two during-program occurrences, received outpatient treatment and an incarceration sanction, which had differential effects for rural participants. The receipt of outpatient substance abuse treatment was associated with program completion. Specifically, compared with rural participants who did not receive outpatient treatment during drug court, those who did had 108% increased odds of program completion. This finding may be associated with identifying treatment needs and matching services appropriately. Again, given that drug courts focus on serving high-risk and high-needs individuals, these individuals may often enter drug court having failed at one or multiple standard treatment experiences (Festinger et al., 2002). It may be the case that because of limited treatment spots available in rural areas, only particularly high-risk and high-needs participants were linked to outpatient treatment, whereas those with less serious substance use received other types of referrals (such as in-house educational groups and individual sessions, etc.). Conversely, it may have been the case that certain rural areas had less ability to refer to outpatient treatment; thus, individuals in these specific programs were not referred as often. While data from this study cannot fully explain this finding related to outpatient treatment services, findings suggest a critical opportunity for programmatic success may be linking all participants to an outpatient treatment provider. In regards to an incarceration sanction, rural participants who received an incarceration sanction had 72% decreased odds of program completion when compared to those who did not receive an incarceration sanction during drug court. Receiving an incarceration sanction during drug court is evidence of some type of non-compliant behavior. These findings related to incarceration are consistent with past research. Based on a study by Wu and colleagues (2012), program graduates were less likely to receive a jail time sanction in comparison to those who were terminated from the program. Brown and colleagues (2010) further showed the timing of the first jail sanction was highly predictive of drug court completion, particularly if the jail sanction was within the first 30 days of the program. The drug

court model proposes utilizing graduated sanctions/responses (Huddleston & Marlowe, 2011); an incarceration sanction should be on the more severe end. For rural participants in this study, a little under two-thirds (64.3%) had an incarceration sanction during drug court. This may indicate incarceration is a sanction used for relapses, which are part of recovery and might be better addressed via a therapeutic response. Incarceration may hinder an individual's rehabilitative progress by enhancing connections to those who may be a negative influence and/or may hinder an individual's chance to have/maintain employment, which has been shown as important to drug court completion (Gallagher et al., 2018; Wu et al., 2012). These findings underscore that incarceration as a sanction should be utilized sparingly (NADCP, 2013). The drug court *Best Practice Standards* implores that incarceration only be used if the individual is an immediate public safety risk or after other consequences have been ineffective (NADCP, 2013). Given the nature of the rural areas, it is possible there are not adequate opportunities for other less stringent sanctions (e.g., community service) or therapeutic responses (e.g., self-help meetings, residential treatment). If a sanction is warranted, rather than incarceration, perhaps rural areas could be creative using options such as additional homework/journaling to allow the individual time to reflect on behaviors while an appropriate response is given to enhance recovery, if the individual is not a public safety threat.

For urban participants, only select social and demographic participant characteristics were associated with program completion. Gender, and more specifically being female, was associated with program completion for urban participants; compared with males, females were associated with 160% increased odds of completing the drug court program. The relationship between gender and drug court completion is inconsistent in the extant literature. Nationally, data from the recent *Painting the Current Picture* suggests lower graduation rates for women (39%) when compared with overall drug court completion rates (58%; Marlowe et al., 2016). Programmatic data from a recent statewide examination of New York drug courts suggest no differential impacts by gender (Cissner et al., 2013). Conversely, findings from other previous research suggest women have higher rates of drug court completion (Dannerbeck et al., 2006; Gray & Saum, 2005; Hartman et al., 2007). Despite the lack of consistency across studies, gender appears to be an important consideration for drug court completion, particularly among urban participants. Urban areas tend to have more social service resources available than rural areas; thus, urban women may be more motivated to access/take advantage of these resources than urban males. Possibly being motivated by reunification with children, gendered stigmas related to substance use/abuse among women (especially mothers), or financial independence/stability through employment. Although this study did not measure the participants' motivation, this may be a worthy exploration in future studies to gauge its effect on drug court completion among urban participants.

Three factors, marital status (being married), education (having less than a high school education), and cocaine use 30 days before program assessment, were associated with program non-completion for urban participants. The finding that, for urban participants, being married was associated with program non-completion is contradictory with some past research (Butzin et al., 2002). However, this finding is consistent with other research on KSC, which showed that married urban drug court participants had a 57% reduced likelihood of program completion (Mateyoke-Scrivner et al., 2004). The current study expands on findings from the Mateyoke-Scrivner and colleagues (2004) study, which focused solely on one urban drug court, as the current study included all urban areas of Kentucky. Perhaps marital status is related to the importance of positive prosocial support (Laudet & Stanick, 2010) during treatment/rehabilitation; if the current partner is still using substances, this negatively impacts the individual's performance in the drug court program. Furthermore, it may be that married participants have more external obligations related to married and/or family life, which does not "fit" well with the intense drug court programmatic requirements. For urban participants in the current study, those who had not graduated high school

were associated with 82% reduced odds of program completion. This finding is consistent with past literature suggesting the importance of education for drug court completion. Based on the existing literature, having a higher level of education (Brown, 2010; DeVall & Lanier, 2012; Fulkerson et al., 2012; Hartley & Phillips, 2001; Howard, 2016; Shah et al., 2013) has been associated with better drug court program outcomes. Specifically, Shah and colleagues (2013) showed for each additional year of education, the participant was 1.4 times more likely to graduate. Related to cocaine use, for urban participants who reported cocaine use in the past 30 days, there was a 71% reduced odds of program completion compared with those who reported no cocaine use in the past 30 days. Past literature has suggested that urban individuals are more likely to report the use of cocaine (SAMHSA, 2012) and has also identified cocaine/stimulants use as more difficult to treat (Brown, 2010; Hickert et al., 2009). Research specific to drug court has associated program termination with referrals related to specific substance use (e.g., cocaine; Hartley & Phillips, 2001), the use of specific substances (i.e., cocaine and opioids; Dutra et al., 2008), and having specific substance use disorders (i.e., cocaine use disorder; Brown, 2010). While it is interesting that only one substance was related to program non-completion, and only for the urban participants, findings underscore the importance of a comprehensive substance use assessment to understand all historical factors of importance for current treatment planning. Fortunately, all participant characteristics (gender, marital status, education, and past 30-day cocaine use) are known upon program entry and can become focuses in each participant's individualized program plan.

### Study Implications

Findings from the current study have practical implications for understanding how to focus services for drug court participants to enhance program completion. First, age was important for both the rural and urban participants, a finding supported consistently in the drug court literature. While participant age is not modifiable and is contingent on when the individual was referred to the program, this important factor can still be capitalized upon. For younger participants, there are emerging curriculums to incorporate to make the drug court program more relevant. One example, Habilitation Empowerment Accountability Therapy (HEAT) is a culturally proficient, strength-based, and trauma-informed group counseling intervention designed primarily for individuals between 18 and 29 years of age (Marlowe et al., 2018). Furthermore, peer mentoring, which has been shown to have benefits in Veterans Treatment Courts (Knudsen & Wingenfeld, 2016), may be beneficial to ensure participants of all ages are well connected to the program to enable receiving maximum benefits.

For rural participants, a combination of participant characteristics and during-program occurrences, influenced program completion. Extant research suggests rural drug courts face unique challenges, such as fewer substance abuse treatment and service options in the community (Bouffard & Smith, 2005). Relevant to this study, it may be there was a lack of response options to offer outpatient treatment to all participants and/or to adequately provide responsive services to those with a more extensive criminal history. For those rural participants with more extensive prior criminal justice system involvement and those exhibiting non-compliant behavior (e.g., received an incarceration sanction), a specific in-house intervention during drug court programming such as *Thinking for a Change* (National Institute of Corrections, n.d.), might be beneficial for addressing cognitive and behavioral needs. Research focused on probationers showed a trend toward positive outcomes (e.g., lower recidivism and technical violations, higher interpersonal problem solving skills) for those participating in *Thinking for a Change* compared to those who did not participate (Golden et al., 2006). Furthermore, this is likely something rural drug courts could implement within the program without having to rely on external referrals and resources.

For the urban sample, only participant characteristics, all known at the time of program assessment, were ultimately influential on program completion. All identified factors, including gender,

marital status, education, and cocaine use, suggest the need for individually-tailored programming. Despite recent national data suggesting lower graduation rates for women (39%; Marlowe et al., 2016), findings for the urban participants suggested being female was associated with program completion. While findings on the importance of gender have been inconsistent, enough evidence exists to advise this factor is important, suggesting drug courts should ensure programming inclusive of the needs of both genders. This might necessitate gender-specific programming (e.g., HEAT) to ensure needs are sufficiently met. When addressing the needs of married participants, providers should consider ways to actively engage the participants' families as well as develop participants' skills for meeting familial demands during drug court. This familial engagement may help the drug court staff assess whether the marital partner is providing the needed pro-social support. The *Best Practice Standards* (NADCP, 2015) suggest enlisting at least one pro-social contact to assist with understanding participants' out-of-program environment. Education may be a key factor not only in success in the drug court program, but also after exiting the program. Getting participants linked with appropriate educational resources may help to enhance learning and skills necessary to successfully navigate the drug court program as well as better enhance functioning post-drug court. Finally, since cocaine has been identified as associated with drug court program termination in this and other studies (Dutra et al., 2008; Hartley & Phillips, 2001), perhaps specific treatment services are needed given the highly addictive nature of this drug (National Institutes of Health, 2018). Cocaine appears to be more of an issue for urban drug court participants (only 9.2% of rural participants reported use), which may be related to access, as some research has shown easier access to cocaine in urban areas (Warren et al., 2015). Given the known risk and the fact that there are generally more treatment options available in urban areas, perhaps for individuals with recent cocaine use a specific cognitive behavioral therapy and/or more intensive (e.g., residential) treatment option is needed.

### **Study Limitations**

While this study presents significant findings on influential factors for program completion among rural and urban drug court participants, there are limitations that warrant discussion. First, when collecting secondary data for the overall study, there were instances when the participant assessment could not be located for those originally selected in the sample. To reduce missing data, these participants were removed from the sample. Related, there were instances when a selected participant's status was not graduated or terminated from KSC (i.e., administrative discharge). Participants received administrative discharges when they could not meet programmatic requirements because of something that likely occurred (or was discovered) after admission (e.g., severe illness/injury). The research team removed these participants from the sample to accurately examine program completion. To correct both of the above occurrences, the research team selected a replacement for the number needed to fulfill the required county count. These incidences may have skewed the accuracy of the stratified random sampling plan and may ultimately influence generalizability.

Related to the analyses, sample size and number of predictors included in the multivariate models reduced power for detecting small effect sizes. In addition, the participant assessment was an adapted version of the ASI; specifically, some questions were re-worded slightly to better meet needs of the KSCs, which may affect reliability and validity. Further, these data represent a statewide drug court in one state; thus, findings may have limited generalizability. Finally, despite the statewide nature of the courts, unmeasured contextual factors may be present at local sites, which could have ultimately influenced outcomes and the study analyses. The use of secondary data for the statewide outcome evaluation focused on individual characteristics; there was limited program-related information collected.

## Conclusion

Despite the acknowledged limitations, this study offers important information on participant characteristics, during-program occurrences, and context, which may all be influential on drug court completion. Specifically, this study expands existent literature by examining contextual differences in participant characteristics and during-program occurrences to understand the overlapping and unique contributions to program completion. Findings have important implications showing contextual differences that may impact the effectiveness of drug court programs (Bouffard & Smith, 2005). This may be particularly important for consideration in statewide drug court programs, which may have uniformity in policies and procedures. Findings from the current study underscore the critical importance of individualized program planning and avoiding a “one-size fits all” model to drug court programming and services. Identification of characteristics associated with program completion should not be used to screen future, potential clients in need of services. Rather, these findings should only be utilized to better target and individualize services.

## Acknowledgments

The PI would like to thank the Administrative Office of the Courts for the commitment to programmatic improvements and research. Furthermore, the PI would like to thank all the drug court teams who participated in this project or helped by facilitating data collection. The PI would also like to thank individuals on the research team who helped significantly with data collection, entry, and analyses. Please note, the views expressed within this publication are attributed to the authors and do not necessarily reflect the opinion of the funding agency.


## Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

## Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: Financial support for this project was provided by a United States Department of Justice Bureau of Justice Assistance (BJA) Grant (Principal Investigator (PI): Lisa Shannon; Award Number: 2011-DC-BX-0137).

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