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Road to Recovery: Recidivism and the McLean County Drug Court

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ROAD TO RECOVERY: RECIDIVISM AND THE MCLEAN COUNTY DRUG COURT

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Fall 2015

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Abstract

This study explores the effectiveness of the McLean County Drug Court at reducing time to recidivism using survival analysis techniques. Data on 146 drug court participants was collected using the county's proprietary case management systems. Findings suggest that length of drug court programming significantly reduces time to recidivism. Unfortunately, black offenders and offenders with prior criminal history were found to return to the prison system more rapidly than other groups, suggesting that drug court programming may not be addressing the greater systemic issues present in the criminal justice system. These findings collectively inform policy recommendations provided to county administrators and drug court officials.

Introduction

Philosophies informing the role of the criminal justice system have developed and changed throughout American history. Although predominantly viewed as penal in nature, the modern justice system frequently makes use of reintegration and rehabilitation programs, such as probation and job training, in lieu of or in conjunction with incarceration sentences. Criminal justice officials hope that such programs will reduce the number of re-offenders, thereby reducing the strain on America's overburdened criminal justice system. One of the more popular emerging practices towards this goal is the adoption of problem-solving courts, court-based rehabilitation programs that seek to address issues that contribute to high probability of re-offense such as drug use and mental illness. The first U.S. problem-solving courts opened in the early 1990's and there are several thousand courts in operation today (Bureau of Justice Assistance 2014).

In 2008, the McLean County, Illinois Court system experienced unprecedented rates of incarceration. The resultant overcrowding stressed the county's financial resources and placed additional burdens on court and jail staff. In response to significant criticisms in the wake of 2008, the county formulated a Criminal Justice Coordinating Council (CJCC) comprised of several key criminal justice agencies and partners. The CJCC aims to research and implement evidenced-based best practices that "provide fair and just outcomes, improve public safety, reduce recidivism, and responsibly use resources for the benefit of McLean County residents." There are nineteen permanent members of the CJCC board including the Chief Circuit Judge, County Sheriff and State's Attorney (McLean County Criminal Justice Coordinating Council).

Since 2008, the CJCC and its county collaborators have rapidly expanded the availability of pre and post-trial services, including specialty courts. The effects of court-based programs

have been studied nationally; however, few efforts have been made to assess outcomes at the local level. Using McLean County's Drug Court (founded in 2006) as a test case, this capstone contributes to the existing recidivism literature by informing future models that seek to evaluate drug courts and recidivism in a local context.¹ Employing survival analysis techniques using county data collected from 2006 through 2014, the following research questions are examined:

- 1) Does the amount of time an individual spends in drug court programming have an effect on how quickly they recidivate?
- 2) Can additional sociodemographic and criminal history-related variables explain differences in time to recidivism among drug court participants?

¹ This project grew out of CJCC's ongoing data management partnership with Illinois State University's Stevenson Center for Community and Economic Development.

Literature Review

There is a growing body of literature assessing the effectiveness of drug courts in reducing participant re-offense rates. Studies have been conducted within individual court systems as well as on the aggregate level, with mixed and widely variable outcomes. This literature review presents a historic view on drug-based correctional treatment as it relates to the development of the alternative court system. The review also outlines methodologies and findings in drug court research in an effort to inform the McLean County study.

Theory

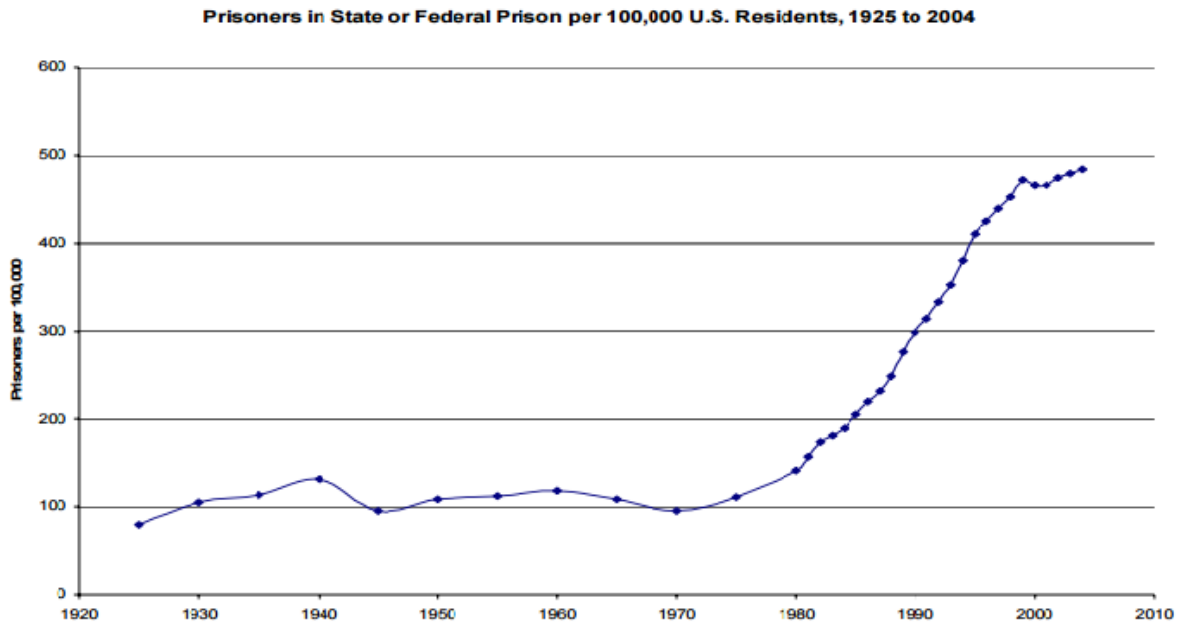
There are two major theoretical schools of thought on why people commit crimes. These schools of thought are important to the study of recidivism because they directly inform U.S. correctional treatment practices. The first theory is classical theory, which is rooted in the rational choice model. The model hypothesizes that individuals weigh the costs and benefits of engaging in criminal activity versus noncriminal activity. They choose to commit a crime if and only if the total expected utility of committing the crime is higher than the utility of not committing it (Moore & Morris, 2011, Apel 2012). Belief in classical theory logically leads to the conclusion that the costs of crime must be high in order to discourage criminal participation. The practical application of this concept presents in the form of deterrence theory, which suggests that crime is best mitigated through a system of negative incentives (Moore & Morris, 2011.) Belenko (2001) notes that “fear of punishment” is the driving force behind deterrence correctional policies such as mandatory minimum sentences and three strikes laws (p. 373).

The second school of thought is critical theory, a product of neo-Marxism. Critical theory suggests, in contrast to the rational choice model, that external social factors are the underlying causes of individual crime (Moore & Morris, 2011 p. 288). One of the most important

components of critical theory is conflict theory, the idea that crime is a “byproduct of political and social conflict” over resources (Vold, 1951, p. 160, Zembroski 2011). A second concept stemming from critical theory is labeling theory, which postulates that participation in the criminal justice system is stigmatized by both society and the offender. This stigmatization limits the offender’s societal participation, thereby hindering offender reintegration (Moore & Morris, 2011, p. 290, Belenko, 2001, p. 373). The theory that crime stimulants can be external and well as internal underlies operant behavior treatment, a treatment approach that combines positive behavior incentives with more traditional disincentive approaches. Operant behavior programs teach offenders the skills they need to succeed in society through structured, court-mandated rehabilitation programs such as probation, addiction services, job training and anger management classes (Braukmann et al., 1975).

Prior to 1970, operant behavior programming was the preferred approach to reducing recidivism (Andrews, Zinger, Hoge, Bonta, Gendreau & Cullen, 1990; Cullen & Gendreau 2000). Scientific research conducted in the 1970’s, however, dealt a significant blow to rehabilitation’s credibility. A meta-analysis of over 300 U.S. rehab programs conducted by Lipton, Martinson and Wilkes revealed “no appreciable effect” of rehabilitation programs on recidivism (Lipton, Martinson & Wilkes, 1975 as cited in Andrews et al., 1990; Martinson 1974). This ushered in the era of the “Nothing Works” doctrine, which harshly criticized rehabilitation programs and re-ignited a focus on deterrence-centric policies (Cullen & Gendreau, 2000, p. 119).

The renewed focus on deterrence theory through the late 1900’s led to system overcrowding. From 1970 to 1990, the number of persons in state or federal prison in the United States tripled, from 100 to 300 per 100,000 residents (Figure 1).

Figure 1

Data source: Raphael & Stoll, 2008, p. 73

While this increase can be attributed to a number of different factors, increased drug admissions assuredly played a role (Listwan, Sundt, Holsinger, & Latessa, 2003, p. 390). According to data from Raphael and Stoll (2008), U.S. prison admissions for drug related offenses rose from approximately 10 percent to approximately 32 percent of all admissions in the latter 1980's alone (p. 79). The increasing number of arrests during this time period overloaded the court system, lengthening case processing time and overcrowding jails and prisons across the country. The response to this was a renewed interest in community-based programs that could lessen the burden on systems of incarceration by physically keeping individuals out of jails and prisons and simultaneously providing rehabilitative services (Listwan et al., 2003; Zehr & Toews, 2004; Fulkerson 2012).

Drug courts were one of several community-based alternatives enacted in the late 1980's and early 1990's. The primary operating goals of a drug court are to reduce drug use, address

external and internal issues that pre-dispose individuals to commit crime and ultimately to reduce recidivism (Belenko, 2001; Brown, 2011). Drug courts operate with an interdisciplinary team of court and treatment specialists including a judge, lawyers, mental health providers and probation officers, among others. Participants agree to a set of rules which typically include substance abstinence, random drug testing, restitution payments and attendance at all mandated hearings and treatment sessions. In exchange, incarceration time is reduced or, in some cases, eliminated entirely (Huddleston, Marlow & Casebolt, 2008, p. 7). Drug courts have become popular alternatives in the American court system; there were approximately 700 drug courts operating in 2000 and that number has grown to over 2600 courts in 2014 (Belenko, 2001, p. 5; Gallagher, 2014; Brown, 2011). Federal funding for drug courts increased 250 percent from 2008 to 2010 alone and an estimated 70,000 persons are enrolled in U.S. drug court programming at any given time (Huddleston, et al, 2008, p. 2).

Findings

Studies examining the effectiveness of drug courts at reducing recidivism in the United States have delivered inconsistent results. Some researchers have concluded that drug court participants have significantly reduced recidivism rates (Banks & Gottfredson; 2004; Brewster, 2001; Goldkamp & Weiland, 1993; Gottfredson, Kearley, Najaka & Rocha, 2005; Listwan et al., 2003). Others argue that there is no statistical difference between participant and non-participant groups in their respective research samples (Deschenes & Greenwood, 1994; Granfield, Eby & Brewster, 1998; Miethe, Lu & Reese, 2000). However, studies comparing time to reconviction have generally suggested that drug court non-participants tend to reoffend more quickly than drug court participants (Banks & Gottfredson, 2004; Brewster, 2001).

Given the wide variety of outcomes obtained from individual studies, meta-analytic research is the most useful in terms of reporting generalized findings. The meta-analytic approaches utilized by Belenko (2001), Lowenkamp et al. (2005), Wilson et al. (2006), Mitchell et al. (2012), Roman et al. (2003) and Shaffer (2011) categorized individual studies into methodologically similar groups to facilitate a more accurate aggregate assessment of drug court recidivism rates. Belenko (2001), Lowenkamp et al. (2005), Wilson et al. (2006), Mitchell et al. (2012) and Shaffer (2011) each collected over 100 initial drug court studies, but excluded studies without rigorous statistical methodology, leaving sample sizes of 37, 22, 50, 154 and 76 studies respectively. Roman et al. (2003) took a unique approach via the selection of a random sample of drug court graduates and non-graduates at the national level rather than from specific court systems. Further filtering measures include Belenko's (2001) exclusion of internally reported studies to better control for selective reporting bias. Similarly, Wilson et al. (2006) utilized control measures for publication bias by selecting primarily unpublished studies (p. 465.) Lastly, Wilson et al. (2006) and Mitchell et al. (2012) categorized studies on level of statistical rigor. Wilson et al. (2006) utilized dichotomous categorization, identifying studies as "Weak" or "Strong" in their application of statistical measures (p. 468). Mitchell et al. (2012) employed an ordinal scoring approach with one representing quasi-experimental selection and four representing completely randomized selection (p. 63).

Results from these prominent meta-analyses can be collectively characterized as cautiously optimistic. Findings reported by Belenko (2001) and Roman et al. (2003) were mixed. However, Lowenkamp et al. (2005) and Shaffer (2011) found decreased recidivism rates among drug court participants, 7.3 percent and 9 percent respectively (significant at $\alpha = .05$ level). Wilson et al. (2006) and Mitchell et al. (2012) found similarly modest reductions in aggregate

recidivism rates. However, both researchers noted a negative correlation between study rigor and recidivism reduction, suggesting that non-random selection measures may produce inflated results.

Methodological Challenges

Each of these meta-analyses presented in the previous findings section characterized the field of drug court recidivism research as having weak methodology. This deficiency stems from a lack in both definitional standards and statistical rigor. The former issue derives from the absence of a standard practice definition of recidivism. Table 1 presents a sample of definitions used in selected alternative court recidivism studies.

TABLE 1. Recidivism Definitions

Study	Definition of Recidivism
National Institute of Justice (2014)	A re-arrest, reconviction or return to prison with or without a new sentence during the 3-year period following prison release
McClure (2013)	Any charge within 2 years of program completion
Brown (2011)	Any reconviction
Roman, Townsend & Bhati (2003)	Any arrest and charge for an offense punishable by incarceration for at least one year following a previous offense
Banks & Gottfredson (2003)	Any arrest within 2 years of program completion

McLean County Court Administrator W. Scanlon explained that different definitions of recidivism are more or less important to different criminal justice system players. Judges, for example, may be concerned with measuring recidivism as it relates to reconviction, whereas jail supervisors may consider re-arrest to be more significant (personal communication, October 3, 2014). In any case, the lack of a clear, consistent definition of recidivism restricts comparison of studies at the aggregate level (McCoy, 2010).

Lack of attention to sample size, participant bias and graduation status has also hindered alternative court evaluation. Several researchers note that studies utilizing small sample sizes and short follow-up timeframes to measure recidivism are common, but theoretically unreliable (Belenko, 2001; Mitchell, Wilson, Eggers & MacKenzie, 2012; Brown, 2011). Numerous studies also fail to differentiate between court participants who self-select into the program and those whose participation is court mandated (Brown, 2011; McClure 2013; McCoy 2010). Wilson et al. (2012) estimated that, of the hundreds of drug court studies they surveyed, about half “did not use random assignment, statistical control, or subject level matching” (p. 468.) Additionally, Belenko (2001) and Gallagher (2014) note that the majority of studies focus exclusively on drug court program graduates as opposed to all program participants. With drug court dropout rates exceeding 50 percent on average, Belenko (2001) contends that excluding program drop-outs may bias rates of participant success (p. 54).

Given the wide range of methodological issues, assessing findings within the aggregate literature is understandably challenging. County-level studies to date have produced highly variable results due to inconsistencies in research methods and variable definitions of recidivism. The following research presents survival analysis as an operational approach to county-level drug court impact assessment. While survival analysis has only been utilized a handful of times in drug court recidivism studies conducted at the county level, meta-analytic researchers consider the technique to be among the most statistically rigorous approaches available for studying recidivism. The following research, utilizing McLean County’s Drug Court as a test case, provides a practical demonstration of how survival analysis techniques can be feasibly and realistically applied at the county level.

McLean County Drug Court

McLean County is located in Central Illinois, less than 200 miles from the Chicago and St. Louis metropolitan areas. The area is home to 22 municipalities, the largest of which are Bloomington (population 78,000) and Normal (population 54,000). Total county population is 172,281 (Bloomington-Normal Economic Development Council 2015). The area is known as the home of Illinois State and Illinois Wesleyan Universities as well as Fortune 500 Company State Farm.

The racial makeup of the city is predominantly White (84.6 percent) followed by African American (7.7 percent), Asian (5.2 percent) and Hispanic/Latino (4.7 percent). Almost 95 percent of persons over age 25 have finished high school and forty three percent have completed a Bachelor's degree (U.S. Census Bureau 2015). Median resident age is 32.3 years and median household income is significantly higher than the Illinois average at \$62,089. Approximately fourteen percent of persons are considered below poverty level and annual unemployment rates have held relatively steady at about seven percent since 2010 (Bloomington-Normal Economic Development Council 2015).

McLean County's jail is located in downtown Bloomington, IL. The facility was constructed in 1976 with an 85 inmate capacity. Vertical construction in 1990 added an additional 108 cells. Today, the jail can accommodate up to 225 inmates per night (McLean County Facilities). Current development plans call for the expansion of the jail to 354 beds with 56 beds serving as a specialized holding center for mentally ill inmates. The expansion is estimated to cost between 27 and 43.7 million dollars (Brady-Lunny 2015).

McLean County's drug court was initiated in August 2006. The court serves as a "specialized, problem-solving court for non-violent offenders with a substance abuse addiction

and a high likelihood for rehabilitation” (McLean County Adult Court Services 2015). Drug court participants serve an average of 24 months in the program, typically as an alternative to a prison sentence. The heart of the county’s program is a triple emphasis on medical treatment, judicial supervision and participant accountability. Offenders participate in a variety of programs including frequent drug treatment and testing, meetings with drug court officers and program sponsors, substance abuse counseling and employment or community service programs. Participants must also make regular court appearances to review their progress (Swiech 2013).

The McLean County drug court seeks to serve a target population of high risk offenders. Because of this, drug court participants typically fall into one or more of the following groups: probation violator, prior criminal involvement, homeless, unemployed or low education level. In addition, the following participant factors must apply:

- Demonstrated substance abuse issues
- Diagnosed drug dependency
- Offense related to substance abuse issue
- Non-violent offender (as defined by state and county statutes)
- Felony level offender
- Adult offender
- Resident of McLean County
- Prior felony convictions (most cases, not required)

Factors that may disqualify someone from participation in drug court include the following: violent offense history, active gang membership as defined by Illinois criminal code, diagnosis of severe mental health issues, prior completion or discharge from a drug court or denial of additional/dependency/abuse (McLean County Adult Court Services 2015).

Methods

Data Sources

As indicated, this study intends to evaluate the effectiveness of the McLean County Drug Court at reducing participant time to recidivism. Relevant data was obtained from two sources. The first is the EJES records system, maintained by McLean County, which provided comprehensive information on convictions and sentencing as well as demographic information for individual participants. Information pertaining specifically to the drug court, including program completion and compliance status, was obtained from McLean County's Drug Court records. All participants were given a unique identification number to ensure participant privacy. Additionally, data in this study is presented in aggregate form to prevent recognition of system individuals. EJES data and drug court records information is not publically available; however, Stevenson Center researchers have access to both databases.

Research Design

Survival analysis is used to assess the effectiveness of McLean County Drug Court programming. The risk set consists of 146 adult participants who entered and exited drug court programming between August 2006 and December 2014 (the end of the research period) totaling 196,819 observation days. This set includes all drug court participants, not just graduates, and therefore negates the upward success bias seen in much of the drug court evaluation literature. A binary logit approach was initially considered, however, survival analysis was ultimately selected due to its ability to account for staggered entry times. Additionally, survival analysis captures the differences between individuals who recidivate at different time intervals. An individual who receives a subsequent conviction four months after starting drug court programming, for example, is likely different from an individual who receives a subsequent

conviction four years after programming. A binary logit approach treats both outcomes as failures and will not be able to differentiate between them whereas survival analysis can capture any differences.

Unfortunately, McLean County's offender tracking system does not allow for the creation of a matched cohort study. Offenders in the EJES system can be matched on age, race, gender and criminal history. However, EJES does not track the essential selection factor for drug court: substance abuse. Because of this, it is not possible to compare recidivism rates for substance abuse populations who receive drug court programming and substance abuse populations who do not receive programming. Therefore only data from drug court participants is utilized (146 participants since program inception) to determine the influence of drug court programming on time to recidivism.

Independent Variables

The key independent variable, drug court treatment days, indicates the number of days between drug court entry and exit.² The failure event is a dummy variable coded as one for persons with subsequent convictions after the start of drug court programming (recidivism) and zero for persons without subsequent convictions.³ McLean County's decision to base recidivism on convictions rather than on arrests is based on the theoretical viewpoint that offenders are "innocent until proven guilty" (W. Scanlon, personal communication, October 3, 2014). The time variable in the analysis corresponds to the total number of days elapsed between drug court commencement and a subsequent conviction (time to recidivism). The maximum amount of time

² The initial approach was to use a dummy variable for drug court graduation, with one indicating a graduate and zero indicating a non-graduate. Treatment days was determined to be a superior dependent variable because it offers a more detailed analysis of programming effects.

³ Subsequent convictions do not have to be classified as drug related.

an individual could be tracked is 3043 days (August 2006 through December 2014, the end of the observation period).

Utilizing a long censoring period avoids the short follow-up timeframe often seen in recidivism literature. An additional benefit to using survival analysis over a long period of time is that it allows court officials the flexibility to interpret recidivism as it pertains to particular policies. This is because survival analysis can provide projected recidivism rates at specific points in time in addition to information on overall time-based recidivism trends.

Control Variables

The control variable framework is drawn from Monnery's (2013) aggregation of the literature on individual criminal behavior determinants.⁴ Determinants are classified into four primary categories: Sociodemographic, Cognitive and Psychological, Prior Criminal Behavior and Environmental/Institutional. Due to county data collection and data availability, this study focuses primarily on sociodemographic and prior criminal behavior as determinants of recidivism.

Sociodemographic factors that have been found to be statistically significant in contributing to criminal behavior include sex, age, ethnic origin, marital status, education level and standards of living (Monnery 2013, p. 2, Banks & Gottfredson, 2004; Listwan et al., 2003). Sociodemographic variables have been linked to propensity to recidivate for decades and are found on virtually all standard practice recidivism risk indicators including the Level of Service Inventory-Revised (LSIR) and the General Statistical Information on Recidivism measure (Collins 2010). Monnery (2013) argues that gender and age are two of the most robust determinants of criminal behavior, noting that young males are frequently found to have the

⁴ These factors are derived from classical and critical theories, recidivism studies and research generally related to crime propensity.

highest subgroup risk of recidivism (p. 3). McCoy and Miller (2013) confirm that risk of recidivism for nonviolent crime differs across genders, particularly when examining property and prostitution-related offenses. A fifteen year study on recidivism utilizing data from over 6000 federal offenders found that, on average, women recidivate at a lower rate than men. Additionally, the study found that recidivism rates “decline relatively consistently as age increases”, reporting that offenders over age 50 recidivate at less than a quarter of the rate of persons under age 21 (U.S. Sentencing Commission 2004).

Differences in race/ethnicity and recidivism rates are well documented in criminal justice research. Most studies report that blacks recidivate at the highest rates followed by Hispanics and whites (Florida Department of Corrections 2013, U.S. Sentencing Commission 2004, McGovern, Demuth & Jacoby, 2009). It is important to note, however, that these differences may be secondarily influenced by other issues such as institutionalized discrimination and differential poverty rates, which are often difficult to measure. For the purposes of this study, race is examined purely to determine if statistical differences exist, not to evaluate the possible reasons underlying the greater phenomenon.

The McLean County dataset includes variables for gender, age and ethnic origin. Gender is captured by a dummy variable where female is coded as one. Age is determined as the number of years since birth at the time of drug court program entry. Ethnic origin is captured by a dummy variable which codes black as one and white as zero. Only one participant of Asian ethnicity participated in drug court; this individual was removed as an outlier. No persons of other ethnic origins have participated in drug court to date.

The second category of criminal risk accounted for is prior criminal behavior. The most common factors measured include number of prior convictions and type of offense. The

metaphor of prison as a revolving door is critical to the construction of the prior convictions variable. Guidelines for federal and state sentencing ubiquitously operate on the theoretical premise that repeated criminal behavior increases the likelihood of future crime (Russell 2010, Freeman 2003). Standardized entries for number of prior convictions, like sociodemographic variables, are present in standard practice recidivism measures like the LSIR (Collins 2010).

The literature on offense type indicates that persons with property offenses⁵ have the highest recidivism risk (Monnery 2013, Pennsylvania Department of Corrections 2013). The McLean County dataset includes a factor variable for charge type that categorizes the conviction an individual receives prior to drug court entry. This variable separates charges into drug (one), property (two) and other (three). Individuals that have convictions with multiple charges are given the highest severity charge designation.⁶

McLean County is also concerned about the effect of mental illness risk on recidivism. While persons with diagnosed mental illnesses are excluded from drug court programming, participants are still screened for indicators that categorize them as “mental problem risks”. These indicators include history of mental illness issues and/or treatment, attempted suicide, attempted suicide of a close relative, self-harm (self-reported indicators), and irrational behavior (as perceived by jail staff). Mental illness risk is captured by a dummy variable with one indicating that the individual has been identified as “at-risk”. While much research has been done on the relationship between mentally ill offenders and recidivism, virtually nothing has been published on mental health risk indicators. McLean County officials proprietarily developed the “mental problem risk” variable to account for some of the issues they witness in

⁵ Property offenses in the McLean County dataset include burglary, larceny-theft and motor vehicle theft.

⁶ The charge severity scale ranges from Misdemeanor (least severe) to Class 1 Felony (most severe). In the variable selection process, a person who receives both a Criminal Felony Class 1 property charge and a Criminal Misdemeanor drug charge would be assigned to the most severe charge (in this case, the Felony Class1 property charge).

their offender population. They hypothesize that an individual who is identified as having a “mental problem risk” is more likely to recidivate than an individual without demonstrated risk. The complete model for success of drug court participants at avoiding reconviction over time is demonstrated by the following equation (Survival analysis via Cox proportional hazards):

$$h(t|X) = h(t) \exp(\beta_1 \textit{Drug Court Treatment Days} + \beta_2 \textit{Number of Prior Convictions} + \beta_3 \textit{Charge Type} + \beta_5 \textit{Gender} + \beta_6 \textit{Race} + \beta_6 \textit{Mental Problem Risk})^7$$

⁷ Note: no time-dependent variables

Data Summary and Analysis

TABLE 2. Sample Descriptive Statistics

Factors	mean/percent	min	max
Reconviction			
Recidivism(=1)	44%	0	1
Time to Recidivism	1348.08	62	3043
Drug Court Treatment Days	623.47	62	1480
Criminal History			
Number of Prior Convictions	2.21	0	9
Charge Type		1	3
Drug (=1)	52.05%		
Property (=2)	31.51%		
Other (=3)	16.44%		
Sociodemographic			
Age	35.84	22	62
Female (=1)	33%	0	1
Black (=1)	30%	0	1
Mental Problem Risk	.31	0	1

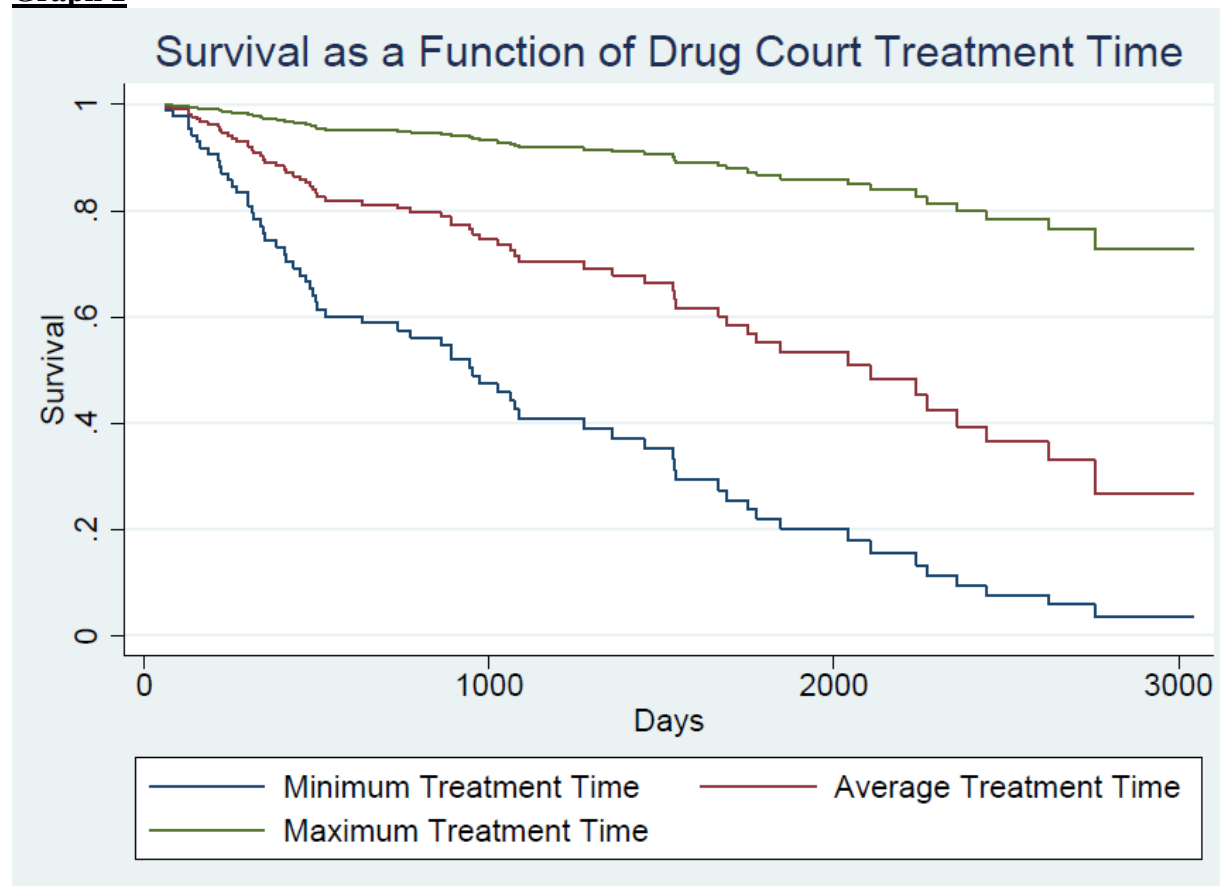
N=146

Table 2 presents descriptive statistics for the dependent and independent variables. Within the sample of 146 drug court participants, 44 percent had a subsequent conviction following drug court treatment with an average time to recidivism of 3.7 years. Drug court treatment time averaged a little less than two years and ranged from 62 days to four years. Most participants had convictions prior to drug court entry (2.21 conviction average), reflecting court preference for treating frequent reoffenders. Approximately half of convictions were drug related followed by property (32 percent) and other (16 percent). The average drug court participant was 36 years old, white and male. One third of participants were female; similarly one third of participants were black. A third of the drug court population was identified as having a “mental problem risk.”

TABLE 3. Cox Proportional Hazards Model for Time to Recidivism

Factors	hazard ratio	p-value	(95% CI)
Drug Court Treatment Days	.998**	0.00**	(.997-.999)
Criminal History			
Number of Prior Convictions	1.35**	0.00**	(1.20-1.52)
Charge Type			
Drug			
Property	1.34	.30	(.77-2.33)
Other	.99	.97	(.45-2.19)
Sociodemographic			
Age	.97*	.03*	(.94-.99)
Female	1.15	.65	(.63-2.11)
Black	1.88*	.03*	(1.07-3.3)
Mental Problem Risk	1.21	.519	(.68-2.13)

* $p < .05$; ** $p < .01$, two-tailed test.

Graph 1

Results of the Cox proportional-hazards model for time to recidivism are outlined in Table 3. Coefficients, p-values and confidence intervals are displayed for each variable. The hypothesized relationship between McLean County Drug Court programming and time to recidivism is confirmed at the .01 significance level. The hazard of recidivating decreases by 1.4 percent for each additional week spent in drug court programming, all other variables held constant, suggesting that drug court programming is effective in reducing recidivism over time ($1.4\% = 0.002 \times 7 \text{ days} \times 100\%$). This can be visualized in the survival profile presented in Graph 1 with lines representing minimum, average and maximum drug court treatment times. In this case, “survival” indicates the likelihood that an individual has not received a subsequent conviction. Persons with the minimum amount of treatment (62 days) have a 50 percent probability of “surviving” to 1000 days from the start of treatment. Persons with average treatment time (623 days) have a 79 percent probability of surviving to that point; persons with maximum treatment time (1480 days) have a 94 percent survival probability.

The criminal history category of variables produces mixed results. The number of prior convictions is highly significant at the .01 level. The hazard ratio of 1.35 suggests that persons are convicted 35 percent sooner for each conviction held prior to drug court entry. For example, an individual with one prior may be predicted to recidivate at 24 months whereas a similar individual without priors would be predicted to recidivate at 37 months (over a year after the individual with priors). Variables for charge type were not found to be significant in this data, indicating that persons with drug, property and other charges recidivate in statistically similar timeframes.

The finding that the number of prior convictions is significant is troubling for the McLean County Drug Court. This is because, as mentioned in the drug court overview, Drug

Court seeks to rehabilitate habitual offenders. The significance of prior convictions suggests that Drug Court programming is not accomplishing its goal of breaking the cycle of re-offense. The Drug Court may want to consider assessing the treatment it provides to reoffenders, especially those with an above-average number of prior offenses.

Sociodemographic variables significant at the .05 level include age and race. No significant gender differences in time to recidivism were indicated. Age interacts with recidivism as hypothesized; as individuals grow older, they are less likely to recidivate and, as a result, their anticipated time to recidivism is greater. The model predicts that each one year increase in age corresponds to a three percent recidivism hazard decrease. In the case of race, time to recidivism is predicted to be 88 percent faster for black individuals than for white individuals. To offer an example, a 35 year old black man is predicted to recidivate almost twice as quickly as a 35 year old white man with identical criminal history. This substantial difference in time to recidivism may be an area of concern for McLean County Drug Court administrators. It is possible that programmatic changes can be made to better address issues of race and the criminal justice system at the individual level. More likely, this is a reflection of racial inequalities within the criminal justice system as a whole (a separate issue not directly addressed in this paper). Generally speaking, knowledge of a measureable outcome difference between black and white individuals is an important component to consider when assessing program development.

The county's variable for mental problem risk was not significant. This suggests that risk of mental problems does not affect recidivism or that the county's measurement for mental problem risk is flawed. A combination of the two issues is most likely. From a logical standpoint, it seems suspect to assume that persons with a history of psychiatric treatment and persons who have experienced the suicide of a relative are at equal risk for mental issues. An

ordinal ranking of mental illness issues from least to most severe might provide more useful results.

Limitations and Future Recommendations

This approach has a number of limitations, some of which were discussed in the Literature Review and Methods sections. The primary restriction is that the design is not experimental and consequentially presents the researcher with potential issues related to sample validity. Future quasi-experimental studies are possible if McLean County develops a case management system with a substance abuse indicator for all offenders, not just offenders who enter drug court. A substance abuse indicator would allow for the creation of a matched cohort group (substance abuser, non-drug court participant) based on sociodemographic and criminal history factors. Unfortunately, a fully experimental design will never be possible due to McLean County's philosophy that all non-violent offenders should have the opportunity to self-select into drug court programming. As a result, quasi-experimental design will be the most statistically rigorous approach available in future McLean County Drug Court studies.

A second limiting factor is the availability of data. Gaining access to state and county offender information is difficult and time consuming. Additionally, the McLean County EJES database currently tracks only a portion of the demonstrated causes of criminal behavior discussed in the literature review (primarily sociodemographic and criminal history factors). Additional environmental and institutional factors such as employment status, poverty, repressive institutions, family ties and neighborhood effects have been shown to have a significant impact on an individual's crime propensity (Monnery 2013, p. 2). Employment status is considered to be a particularly relevant variable in recidivism literature (Allison 2014). Monnery (2013) also suggests that individual cognitive and psychological factors such as risk aversion, self-control and coping skills can play a strong role in predicting criminal behavior (p. 2).

McLean County is currently in the process of shopping for a new case management system to replace the outdated EJES system. Based on the limitations discovered in this research, the county should select a database that allows them to systematically track additional factors (environmental, institutional, cognitive, psychological, substance addiction, etc.) that have been shown to affect the crime propensity of individual offenders. In the event that tracking numerous factors proves difficult, tracking employment status alone will be beneficial. Current county offender risk assessments already take some additional factors into consideration, but often on a by-offender basis and with text-based, narrative reporting. The adoption of specific, systematic factor identifiers is essential to the validity of many future studies, recidivism and otherwise, that the county hopes to pursue.

Future drug court impact studies could also benefit from a coherent follow-up program. Currently, there is no data collected on McLean County Drug Court participants once they exit drug court. Thus, important time-dependent factors that may change after program departure, such as employment and marital status, are not accounted for. County drug court officials are working towards a follow-up program, but are currently unable to provide one due to staffing constraints. Future grant funding may support this effort. As an alternative, court administrators may consider employing an intern or specialized community volunteer to facilitate follow-up data collection.

Conclusion

The U.S. criminal justice system has fluctuated between periods of deterrence and rehabilitative policies. At present, rehabilitative programs are the preferred tool for combatting both prison overcrowding and recidivism rates. The use of alternative problem-solving courts, including drug courts, is becoming an increasingly common approach to fighting drug issues at the county level. Despite the overwhelming popularity of drug court programs, studies have not demonstrated ubiquitously positive outcomes at the aggregate level.

The outcomes of this example study support the general consensus that drug court programming reduces recidivism. However, findings also demonstrate that there is substantial room for programming improvements. Specifically, the county should reconsider its treatment approaches for offenders with significant criminal history as well as for black offenders, both of whom recidivate significantly faster than their counterpart groups. The county as a whole should also consider purchasing a case management system that allows for more detailed offender tracking before, during and after drug court programming to facilitate future research.

This paper provides both practical and theoretical contributions to the field of drug court and recidivism assessment. Locally, the outcomes of this study will inform McLean County policymakers as they look to modify and expand drug and other alternative court programming. Additionally, the assessment methods used in this study, while imperfect due to data collection issues, are significantly more statistically rigorous than methods used by counties in the status quo. The independent and control variable data used in the analysis is easily accessible at the county level and the statistical knowledge needed to support a study can be accessed relatively inexpensively via university research partnerships and grant-supported research. Ideally, this study will serve as a template for future drug court evaluations conducted at the county level.

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