Drug Abuse, Treatment, and Probationer Recidivism

Beth M. Huebner, Ph.D.

University of Missouri-St. Louis
Department of Criminology and Criminal Justice
533 Lucas Hall
8001 Natural Bridge Road
St. Louis, MO 63121
Phone: 314-516-5043
Fax: 314-516-5048
Huebnerb@umsl.edu

Submitted to:

Illinois Criminal Justice Information Authority

This project was supported by Grant # 02-DB-BX-0017, awarded to the Illinois Criminal Justice Information Authority by the Bureau of Justice Assistance, Office of Justice Programs, U.S. Dept. of Justice. Points of view or opinions contained within this document are those of the author and not necessarily represent the official position or policies of the U.D. Department of Justice or the Illinois Criminal Justice Information Authority.

EXECUTIVE SUMMARY

There is a general consensus among researchers and policy makers that drug use is linked in some manner to criminal behavior and recidivism. Research specific to probationers has also identified drug use as an important determinant of negative probation outcomes (Olson, Alderden, & Lurigio, 2003; Olson & Lurigio, 2000; Sims & Jones, 1997). Further, drug treatment has been shown to reduce the chances of recidivism (MacKenzie, 1997). The purpose of this study is to examine the relationship between drug use and recidivism among a sample of probationers and to consider how generalized drug treatment participation and completion further affect this relationship. Data for this project were obtained from the 2000 Illinois Probation Outcome Study and includes 3,017 individuals discharged from probation in the State of Illinois from October 30 through November 30, 2000. Probationers were followed up for four years to ascertain the prevalence and timing of arrests subsequent to discharge from probation. A summary of the prominent findings from this study is presented below.

- Drug abuse is prevalent among probationers in the State of Illinois. In total, 64% of the study sample had a prior history of substance abuse. This finding is consistent with most national research studies that have documented substantial involvement with drugs among the offender population.

- A majority of individuals who were identified as having a substance abuse history received treatment. Of probationers who had a documented substance abuse history, 71% received some form of substance abuse treatment. Moreover, 71% of persons who entered treatment completed the full course of programming.

- Multivariate analyses reveal that, overall, probationers with substance abuse histories were more likely to recidivate and to fail more quickly. Probationers with a history of drug abuse were 1.2 times more likely to be arrested in the four years following discharge and 1.3 times more likely to be arrested on a drug-related charge. In addition, probationers who had a history of drug arrests were also more likely to have been arrested following discharge from probation. Finally, individuals who served time on probation for a drug related offense were 1.7 times more likely to be arrested for a subsequent drug crime.

- Participation in treatment does reduce the chances of recidivism; however, only for individuals who completed the full course of treatment. In fact, probationers who failed to complete treatment were the most likely to recidivate with non-completers 1.69 times more likely to be arrested for any crime and nearly two times more likely to be arrested for a drug crime. In comparison, probationers who had abused drugs but did not receive treatment were 1.42 times likely to be arrested for a drug crime and 1.25 times as likely to be arrested at all.

- Probationers who failed to complete treatment or did not receive treatment also failed more quickly when compared to individuals who completed treatment. Probationers who did not complete treatment had a recidivism rate of 33% at one year and 67% at year four. In contrast, the cumulative survival curves for the non-drug abuse and treatment completer groups were nearly identical. The recidivism rate for the non-drug abuse group was 20% at one year and 44% at the end of the study; while individuals who completed the full course of treatment had recidivism rates of 12% at year one and 37% at year four. Finally, the no treatment group had a 27% failure rate at one year and a failure rate of 53% at year four.

Overall, the findings document a substantial need for treatment among the probationer sample. Most of the probationers received and completed substance abuse treatment thereby reducing their chances for recidivism. That said, the findings reinforce the importance of treatment provision for individuals with drug abuse problems. Moreover, further investigation into the factors that best predict treatment completion is warranted.

INTRODUCTION

Although the true nature of the relationship between drugs and crime has yet to be determined, researchers have amassed considerable evidence as to the prevalence of drug use among offenders in the community. For example, on average, 65% of individuals who participated in the Arrestee Drug Abuse Monitoring (ADAM) program tested positive for cocaine, marijuana, opiates, methamphetamine, or PCP, and 34% of arrestees indicated that they had used illegal drugs regularly during the past year (Crossland & Brownstein, 2003). In addition, Lurigio and colleagues (2003) conducted a random sample of 627 adult probationers in Illinois and found that probationers had significantly higher rates of substance use than the general population.

Researchers have also examined the role that drugs play in the commission of a crime. A national survey of inmates revealed that 19% of State prisoners and 16% of Federal inmates stated that they committed the offense for which they were incarcerated in order to obtain money for drugs (Mumola, 1999). Harlow (1998) also found that over one-third of jail inmates stated that they were under the influence of drugs at the time of the offense. Further, a national study of adult probationers revealed that two thirds of respondents used drugs at some point in their lives and nearly half were under the influence of a drugs or alcohol at the time of their arrest (Mumola & Bonczar, 1998).

In spite of the need for treatment and prominence of drug use in explaining recidivism, there is ample evidence that offenders are currently not receiving drug treatment. For example, less than 10% of arrestees who participated in the ADAM program reported participating in any form of substance abuse treatment (Crossland & Brownstein, 2003). In addition, only 22% of

probationers surveyed in 1995 indicated that they have ever received drug treatment (Mumola & Bonczar, 1998).

Despite the dearth of available resources for treatment, research suggests that drug treatment can reduce recidivism, although the research has been mixed. The underlying premise of drug treatment is that if drug cravings and use can be curtailed, the motivation to engage in crime will decline (Gottfredson, Najaka, & Kearley, 2003). To date, most research has focused on the effect of programming provided in correctional institutions, evaluations of specific, community-based interventions, or drug court programs. Because probation is the most commonly used correctional sanction (Glaze & Palla, 2005), it is important to consider the effect of generalized substance abuse treatment programming on outcomes of the broad probation population.

The purpose of this study is to further the current research on drug use and recidivism by considering how drug treatment participation and completion further affect this relationship. The data used for this study were obtained from the 2000 Illinois Probation Outcome Study and include information on the drug use, treatment, and recidivism outcomes of a cohort of 3,017 individuals discharged from probation in 2000. The research extends the literature by considering the interaction of drug abuse, treatment provision, and treatment completion on both the incidence and timing of arrests four years following discharge from probation.

Drug Use and Probationer Recidivism

Although a correlation between drug use and crime has been well documented, research on the relative effect of drug use on recidivism has been mixed. For example, meta analyses conducted by Gendreau and colleagues (1996) indicate that having a substance abuse problem is

only mildly related to recidivism. In fact, employment, antisocial behavior, criminal companions, and criminal needs are much stronger predictors of failure than substance abuse (see also Bonta, Law, & Hanson, 1998). More recently, Dowden and Brown (2002) conducted a meta-analysis to examine the predictive relationship between substance abuse and recidivism and found that drug use was the strongest single predictor of recidivism.

Overall, most general studies of probationer recidivism conclude that younger, single, minority, less educated, and male individuals and persons with substantial criminal histories are the most likely to fail while on probation (Albonetti & Hepburn, 1997; Hepburn & Albonetti, 1994; Morgan, 1994; Olson et al., 2003; Olson & Lurigio, 2000; Olson, Weisheit, & Ellsworth, 2001; Rhodes, 1986; Sims & Jones, 1997; Visher, Lattimore, & Linster, 1991). The estimates of the prevalence of recidivism have varied dramatically. For example, in a study of felony probationers in California, Petersilia (1985) found that 65% of the total sample was rearrested in the three years following. In contrast, Benedict and Huff-Corzine's (1997) analysis of a national sample of male property offenders revealed a recidivism rate of 33% during a similar time period. In addition, Whitehead (1991) identified a 40% recidivism rate among felony probationers in New Jersey in the three years following discharge from probation (see also Vito, 1986).

There is substantial evidence that drug use or an arrest for a drug offense furthers the chances for probationer recidivism (De Li, Priu, & MacKenzie, 2000; Hepburn & Albonetti, 1994; Olson & Lurigio, 2000; Visher et al., 1991). For example, Olson and Lurigio (2000) found individuals with a history of drug abuse were twice as likely to violate their probation or have it revoked and 60% more likely to be arrested for a new crime while on probation, in comparison to those without a history of drug abuse. Research by De Li, Priu, & MacKenzie

(2000) revealed that probationers who reported drug use and/or were involved in drug dealing were more likely to be involved in property crime as probationers. Interestingly, Benedict and Corzine (1997) found that probationers with a drug abuse history were significantly more likely to recidivate, but that the relationship between drug abuse and recidivism varied by race. White and Hispanic probationers with a history of drug abuse were more likely to recidivate, but a similar relationship was not revealed for black probationers.

Drug Treatment and Probation Outcomes

Research on the relationship between treatment provision and recidivism has been widespread. In contrast to early conclusions that suggested that "nothing works" (Martinson, 1974) most current research has focused on what works for certain types of offenders (Gendreau et al., 1996; Lipsey, 1992; MacKenzie, 1997). In addition to participating in treatment, most recent research suggests that positive treatment results depend largely on how long an individual remained in treatment (Anglin, 1990; Hser, Grella, Chou, & Anglin, 1998; MacKenzie, 1997; Wish & Johnson, 1986).

Most recent studies have been state-level evaluations focused on evaluating the deterrent effect of specific treatment modalities on recidivism (e.g., Austin, Robinson, Elms, & Chan, 1999; Fabelo, 1999; Hearnden, 2000; Sinha, Easton, & Kemp, 2003). For instance, Fabelo's (1999) evaluation of the Substance Abuse Felony Punishment (SAFP) found that probationers who successfully completed the program were significantly less likely to be sentenced to prison in the three years following programming. In addition, Sinha et al. (2003) found that generalized drug treatment did deter future criminality among probationers, but the effect was much stronger for older adult probationers. The effectiveness of drug treatment on recidivism has also been

illustrated in studies using international populations. For example, Hearnden (2000) conducted a study in London on 278 drug offenders on probation to determine the effectiveness of supervision on drug use and crime. Findings indicated that there were significant reductions on substance use, as well as, drug related crimes among probationers in the study. More recently, there have been a number of studies that illustrate the effectiveness of drug treatment when provided under the supervision of a drug court (e.g., Banks & Gottfredson, 2003; Belenko, 2001; e.g., Gottfredson *et al.*, 2003).

Not all program evaluations have linked drug treatment with reduced chances of recidivism. For example, Hepburn and Albonetti (1994) found that drug treatment and monitoring did not affect the likelihood or time to failure for probationers. Similarly, in reviewing 15 community-based outpatient treatment programs for adult drug offenders, Chanhatasilpa et al. (2001) found that programs that included only monitoring, control, or supervision in the community did little to deter chemically dependent offenders; however, programs that included a therapeutic community component with extended aftercare did reduce the chances of recidivism (see also MacKenzie, 1997; Petersilia & Turner, 1991).

DATA

Data for this project were obtained from the 2000 Illinois Probation Outcome Study (see Adams, Olson, & Adkins, 2002). The final data set includes 3,017 individuals discharged from probation in the State of Illinois from October 30 through November 30, 2000.[1] Data on probationer demographic characteristics were obtained from probationers' self-reports; while, information on conditions of probation, criminal histories, and probation outcomes came from official court documentation and probation records. In addition, arrest data were gleaned from

state-level criminal justice records to help understand recidivism in the four years following discharge from probation.

MEASURES

Dependent Measures

The primary goal of the analysis is to examine the relationship between drug abuse, drug treatment, and recidivism. As such, three outcome measures, including new arrest, new drug arrest, and time to new arrest are modeled. *New arrest* and *new drug arrest* are dichotomous and designate if the respondent was arrested for any offense (1=arrest for any new offense; 0=no arrests) or a drug offense (1=arrest for new drug offense; 0=no arrests) subsequent to discharge from probation.[2] In addition, *time to failure* is included and reflects the length of time, in days, until an individual was arrested for a new charge - for offenders who had at least one new arrest during the four-year follow-up period. A description of variables included in the analyses can be found in Appendix A.

Independent measures

Drug abuse, provision of treatment, and treatment completion are the primary independent variables included in the model. A dichotomous measure of *drug abuse* is included in the initial models and is based on formal assessments made by court staff (1= individual has a history of drug abuse; 0= no history of drug abuse). In addition, a series of dichotomous measures were included in the final models to ascertain the need for substance abuse services, the treatment response to those needs, and treatment completion. Probationers with a history of substance abuse were separated into three groups including individuals who: did not receive substance abuse treatment (*No Treatment*), were referred to substance abuse treatment but did not complete it (*Did Not Complete Treatment*), and participated and completed the course of

substance abuse treatment (*Completed Treatment*).[3] Individuals who were not deemed drug dependent, therefore were not offered substance abuse treatment services, serve as the reference category.

Indicators of criminal history and current offense are also incorporated in the models. Measures of the *number of prior convictions* for any crime and a dichotomous indicator of *prior drug arrests* (1= prior arrest for drug crime; 0=no prior drug arrests) are included. In addition, number of *arrests on probation* is included to account for negative behavior on probation. Characterizations of the current offense include *days on probation* and a dichotomous measure of *drug offense* (1=individual served probation on a drug-related offense; 0=served probation for a personal, property, or other type of offense).

Finally, a series of demographic influences were included in the models as controls and include: *age* (in years), *race* (1=Black; 0=White, Other race), *ethnicity* (1=Hispanic; 0=Non-Hispanic), *employment* (1=fulltime or part time), *education* (in years), *gender* (1=male; 0= female) and *supervision setting* (1=urban; 0=residence in a rural area).

ANALYSES

The goals of the research are twofold. First, the relationship between drug abuse and probationer recidivism is considered. Logistic regression is used to estimate the likelihood of a new arrest for any crime or a drug crime while controlling for individual demographic characteristics. This portion of the analysis is largely a replication of past work and was designed to further the existing recidivism literature by using a large sample of probationers discharged from a large Midwestern state. In addition, Cox proportional regression models are

estimated to ascertain the effect of drug abuse on time to arrest for any crime (Allison, 1984; Cox, 1972).

A second objective of the analyses is to further existing research by examining the interaction between drug use, treatment provision, and treatment completion. Similar to the initial models, logistic regression models are used to estimate the likelihood of a new arrest, while survival models consider the timing of subsequent arrests. Different from the initial models, this phase includes a series of dichotomous variables that designate the relationship between need for substance abuse treatment, treatment provision, and treatment completion.[4]

RESULTS

Sample Characteristics

Descriptive statistics by drug abuse history are displayed in Table 1. The majority (64%) of probationers were diagnosed as having drug abuse histories and many were rearrested in the four years following discharge from probation. Overall, 45% of the sample was rearrested for any offense and 18% were rearrested for a drug-related offense. Contrary to expectations, bi-variate analyses revealed that probationers with a history of drug abuse were no more likely to recidivate, or to fail more quickly. However, drug abuse was significantly associated with a new drug arrest.

Consistent with prior research, probationers with a drug abuse history were more likely to be male, black, older, less educated, and living in an urban environment. The two groups were not significantly different in respect to ethnicity, employment, and marital status.

Probationers with drug abuse histories also have more serious criminal histories. Probationers with drug abuse histories were more likely to have had a prior drug arrest, prior

conviction, and to have been arrested while on probation. In addition, probationers with a drug abuse history were more likely to have been serving probation for a drug related offense.

Drug abuse was prevalent among the study sample, and most offenders received substance abuse treatment while on probation. In total, 71% of probationers with a drug abuse history entered treatment, and most (71%) completed the full course of treatment. Although, 29% of the sample that had an identified drug abuse problem did not receive substance abuse treatment. See Table 1.

Table 1: Descriptive Statistics for the Total Sample and by Drug Abuse Status

Variable	Total Sample N = 3,017		Drug Abuse N = 1,934		No Drug Abuse N = 1,083	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Dependent Measures						
New Arrest	0.45	0.50	0.48	0.50	0.44	0.50
New Drug Arrest*	0.18	0.38	0.19	0.39	0.16	0.36
Time to Failure (days)	526.66	419.728	515.24	413.538	560.66	431.688
Demographic Characteristics						
Male*	0.80	0.40	0.81	0.39	0.78	0.41
Black***	0.35	0.48	0.41	0.49	0.32	0.47
Hispanic	0.27	0.68	0.13	0.33	0.15	0.35
Age (years) ***	30.77	10.71	31.39	10.54	29.66	10.93
Years of Education*	11.63	2.02	11.75	1.95	11.57	2.06
Employed	0.59	0.49	0.59	0.49	0.59	0.49
Married	0.78	0.41	0.23	0.42	0.25	0.43
Urban Supervision Environment***	0.52	0.50	0.58	0.49	0.49	0.50
Criminal History						
Prior Convictions***	1.40	2.20	1.57	2.31	1.11	1.97
Prior Drug Arrest***	0.21	0.41	0.23	0.42	0.17	0.37
Arrests on Probation***	0.50	0.93	0.55	0.97	0.41	0.83
Current Offense						
Sentence Length	1235.59	4497.13	1300.43	4758.69	1119.80	3987.08
Drug Charge***	0.24	0.43	0.28	0.45	0.16	0.37
Drug Use and Treatment						
No Drug Abuse (reference)	0.36	0.48	--	--	1.00	1.00
No Treatment	0.18	0.39	0.29	0.45	--	--
Did Not Complete Treatment	0.13	0.34	0.21	0.40	--	--
Completed Treatment	0.33	0.47	0.51	0.50	--	--

Note: Drug Dependent and non-drug dependent groups are significantly different at ***p< .001, **p< .01, *p< .05 (two-tailed tests)

The Effect of Drug Abuse on the Likelihood and Timing of Recidivism

Contrary to the bi-variate analyses, multivariate analyses indicate that probationers who had a history of drug abuse were significantly more likely to be arrested following discharge from probation. As displayed in Table 2, probationers with a history of drug abuse were 1.2 times more likely to be arrested in the four years following discharge from probation and 1.3 times more likely to be arrested on a drug-related charge. In addition, probationers who had a history of drug arrests were also more likely to have been arrested at all (odds=1.3) or for a drug crime (odds=1.8). Finally, individuals who served probation for a drug related offense were 1.7 times more likely to be arrested for a subsequent drug crime, but nature of the current offense did not influence the chances of a general arrest.

Consistent with past research, probationers who were younger, male, less educated, or had a number of prior criminal convictions were most likely to recidivate following discharge. The length of probation and the probationer's marital status did not affect the probability of recidivism. In addition, employment had a particularly strong effect on recidivism with employed persons 32% less likely to be arrested for any crime and 42% less likely for a drug crime. This finding is consistent with prior research that has demonstrated a strong link between employment and reduced chances of recidivism (Sampson & Laub, 1993; Uggen, 1999).

As hypothesized, probationers who were arrested for a new crime while on probation were more likely to be arrested subsequent to discharge from probation with individuals with one arrest 1.28 times more likely to be arrested for any offense and 1.23 times as likely to be arrested for a drug offense. The number of prior convictions was significantly related to general recidivism, although the effect was small (odds=1.10), and the relationship between prior convictions and drug arrests did not achieve statistical significance. In addition, county of residence was a strong indicator of recidivism with individuals living in urban counties 1.2 times

more likely to be arrested in general and 2.2 times more likely to be arrested for a drug related offense.

Race and ethnicity also played a significant role in the models estimated. Black probationers were 1.66 times more likely to be arrested for any crime, but a relationship was not revealed between race and recidivism for a drug offense. Conversely, Hispanic probationers were no more likely to be arrested for any offense, but were 30% less likely to be arrested for a drug offense. Although the research findings provide further insight into the relationship between drug use and recidivism, they explain little model variation as evidenced by the Nagelkerke R^2_L of .16 for the new arrest and .19 for the drug arrest model.[5]

The relationship between drug abuse and timing of recidivism was also considered. The results presented in Table 2 indicate that probationers who abused drugs failed more quickly than individuals who were not abusers, while controlling for demographic characteristics and criminal history. In addition, probationers who had prior arrests for drug crimes also failed more quickly; however, nature of the current offense did not influence time to rearrest. Recidivism also occurred more quickly for men, blacks, younger offenders, less educated probationers, urban dwellers, offenders with prior convictions, and individuals who were rearrested while on probation. Similarly, Hepburn and Albonetti (1994) found that African American probationers failed more quickly than their white counterparts. See Table 2.

Table 2: Logistic Regression and Survival Analysis of Demographic Characteristics, Criminal History, Current Offense, and Drug Abuse on Probationer Recidivism

Variable	New Arrest		Drug Arrest		Time-to-Failure	
	b	Exp(b)	b	Exp(b)	b	Exp(b)
Intercept	1.08***		-.39			
	(.30)	2.94	(.41)	.68		
Demographic Characteristics						
Male	.26**		.20		.20**	
	(.10)	1.29	(.14)	1.22	(.07)	1.22
Black	.50***		.20		.36***	
	(.10)	1.66	(.13)	1.22	(.07)	1.43
Hispanic	.09		-.36*		.08	
	(.13)	1.09	(.19)	.70	(.10)	1.08
Age	-.04***		-.04***		-.03***	
	(.00)	.96	(.01)	.96	(.00)	.97
Years of Education	-.15		-.07*		-.04**	
	(.10)	.86	(.03)	.93	(.01)	.96
Employed	-.38***		-.54***		-.28***	
	(.09)	.68	(.11)	.58	(.06)	.76
Married	-.15		-.28		-.12	
	(.10)	.86	(.15)	.76	(.08)	.89
Supervision Environment	.16		.78***		.20**	
	(.09)	1.18	(.12)	2.17	(.06)	1.22
Criminal History						
Prior Convictions	.09***		.03		.06***	
	(.02)	1.10	(.03)	1.03	(.01)	1.06
Prior Drug Arrests	.26**		.61***		.20**	
	(.10)	1.29	(.12)	1.83	(.06)	1.22
Arrests on Probation	.25***		.20***		.13***	
	(.05)	1.28	(.05)	1.23	(.03)	1.14
Current Offense						
Sentence Length	.00		.00		.00	
	(.00)	1.00	(.00)	1.00	(.00)	1.00
Drug Charge	-.05		.51***	1.66	-.05	.95
	(.10)	.96	(.12)		(.07)	
Drug Use						
Drug Abuse	.19*		.27*	1.31	.14*	1.15
	(.08)	1.21	(.11)		(.06)	
Chi-Square, x df	362.25, 14		361.63, 14		397.96, 14	
-2 Log Likelihood	3803.99		2464.30		21247.14	
Negerlkerke pseudo-R^2	.15		.19			
Cox & Snell pseudo R^2	.11		.11			

Note: Standard errors are in parentheses

***p< .001 **p< .01 *p< .05 (two-tailed tests)

Need for Treatment, Treatment Provision, Treatment Completion, and Recidivism

To further explore the effect that drug treatment provision and completion has on recidivism, three dichotomous variables were substituted for the general measure of drug abuse presented in the initial models. The variables were created to measure the interaction between drug abuse, treatment provision, and treatment completion. Probationers who were not diagnosed as drug dependent, therefore were not eligible for drug treatment, were considered the reference category.

The results of the logistic regression and survival analyses presented in Table 3 are consistent with prior research that suggests that drug treatment can reduce recidivism. However, simply entering treatment does not improve outcomes. In fact, substance-abusing probationers who failed to complete treatment were the most likely to recidivate with non-completers 1.69 times more likely to be arrested for any crime following discharge from probation and nearly two times more likely to be arrested for a drug crime. In comparison, probationers who had abused drugs but did not receive any treatment were 1.42 times likely to be arrested for a drug crime and 1.25 times as likely to be arrested in general. Probationers who did complete treatment were no more likely to be arrested than individuals who did not have a history of drug abuse. Finally, probationers who completed treatment were no more likely to recidivate when compared to probationers who were not drug abusers.

Although the research findings provide further insight into the relationship between drug use, treatment provision, and recidivism, they explain little model variation as evidenced by the Nagelkerke R^2_L of .15 for the new arrest and .16 for the drug arrest model. In addition, disaggregating the drug abuse measure did not affect the original relationships observed between demographic characteristics, criminal history, current offense, and recidivism. See Table 3.

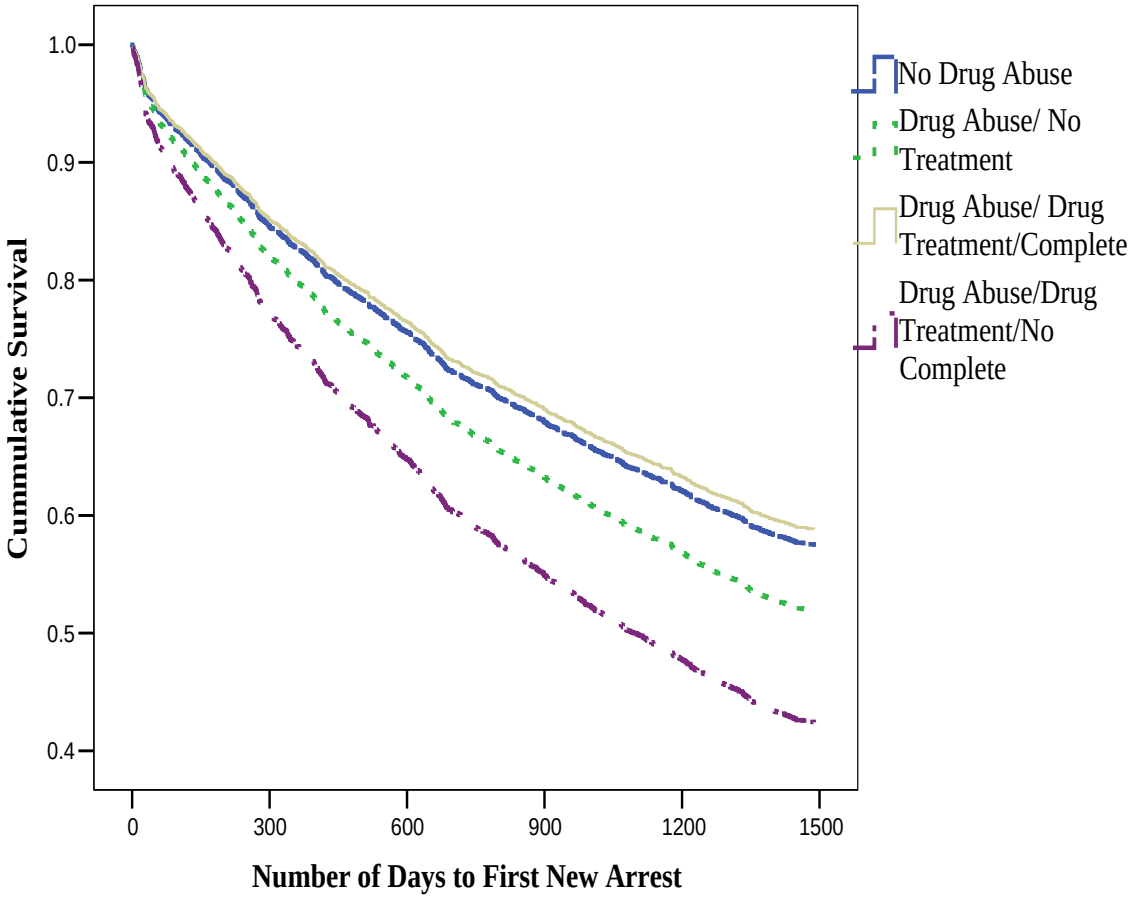
Table 3: Logistic Regression and Survival Analysis of Drug Abuse, Treatment Participation, and Treatment Completion on Probationer Recidivism

Variable	New Arrest		Drug Arrest		Time-to-Failure	
	b	Exp(b)	b	Exp(b)	b	Exp(b)
Intercept	.98***		-.47			
	(.30)	2.66	(.41)	.63		
Demographic Characteristics						
	.25*		.20		.19**	
Male	(.10)	1.29	(.14)	1.22	(.07)	1.21
	.47***		.16		.33***	
Black	(.10)	1.60	(.13)	1.18	(.07)	1.40
	.09		-.36*		.08	
Hispanic	(.13)	1.09	(.19)	.70	(.10)	1.08
	-.04***		-.04***		-.03***	
Age	(.00)	.96	(.01)	.96	(.00)	.97
	-.05*		-.07*		-.04*	
Years of Education	(.02)	.95	(.03)	.94	(.01)	.97
	-.30***		-.48***		-.22***	
Employed	(.09)	.74	(.11)	.62	(.60)	.81
	-.14		-.26		.11	
Married	(.10)	.87	(.15)	.77	(.08)	.89
	.18*		.78***		.22***	
Supervision Environment	(.09)	1.20	(.13)	2.17	(.06)	1.24
Criminal History						
	.09***		.02		.05***	
Prior Convictions	(.02)	1.09	(.03)	1.02	(.01)	1.05
	.25*		.60***		.19**	
Prior Drug Arrests	(.10)	1.28	(.12)	1.82	(.06)	1.21
	.23***	1.26	.19***		.12***	
Arrests on Probation	(.05)		(.05)	1.21	(.03)	1.13
Current Offense						
	.00		.00		.00	
Sentence Length	(.00)	1.00	(.00)	1.00	(.00)	1.00
	-.08		.48***		-.08	.93
Drug Charge	(.10)	.93	(.12)	1.62	(.07)	
Drug Use and Treatment						
	.22*		.35*		.17*	
No Treatment	(.11)	1.25	(.14)	1.42	(.08)	1.19
	.68***		.52***		.44***	
Did Not Complete Treatment	(.13)	1.97	(.16)	1.69	(.08)	1.55
	-.02		.04		-.04	
Completed Treatment	(.10)	.98	(.14)	1.04	(.07)	.96
Chi-Square, x df	388.87, 16		370.70, 16		438.84, 16	
-2 Log Likelihood	3777.38		2455.23		21211.31	
Negerlkerke pseudo-R^2	.16		.19			
Cox & Snell pseudo R^2	.12		.12			

Note: Standard errors are in parentheses
***p< .001 **p< .01 *p< .05 (two-tailed tests)

The differences in timing of recidivism between treatment groups are presented in the cumulative survival distributions displayed in Figure 1. Probationers who had a history of drug abuse, attended treatment, but did not complete the full course were the most likely to recidivate and the likelihood increased steadily over time. Probationers who did not complete treatment had a recidivism rate of 33% at one year, 50% at two years, and 67% at year four. In contrast, the cumulative survival curves for the non-dependent and treatment completer groups were nearly identical. The recidivism rate for the non-dependent group was 20% at 1 year, 31% at two years, and 44% at the end of the study; while individuals who completed the full course of treatment had recidivism rates of 12%, 23%, and 37% at one, two, and four year follow up periods. Finally, probationers who were drug dependent but did not receive services also had high rates of failure; however, the cumulative survival curve was not as precipitous as the failure to complete treatment group. The no treatment group had a 27% failure rate at one year and failure rates of 39% and 53% at year two and four. See Figure 1.

Figure 1. Survival Distribution of Time to New Arrest



CONCLUSIONS

The purpose of the current study is to examine differences in post-discharge arrest rates among a sample of probationers discharged from probation in Illinois in 2000. The prevalence of drug abuse among probationers is quite high with 64% of the sample diagnosed as having a substance abuse problem. As expected, the recidivism rate among the total sample was high and even higher for drug abusing probationers. In total, 45% of the probationers were arrested for a new crime in the four years following discharge from probation. The recidivism rate for individuals with a history of drug abuse was 47% and 44% for probationers without a drug abuse history. In addition, drug abusing offenders were more likely to be arrested for a subsequent drug crime with 19% of drug dependent probationers and 16% of non-dependent probationers rearrested for a drug offense.

More specifically, the primary objective was to consider if substance abuse treatment participation and completion further affected the relationship between drug abuse and recidivism. As hypothesized, probationers who completed the full course of drug abuse treatment were the least likely to recidivate. However, probationers who completed treatment were no more successful than individuals without a substance abuse history. Even more, probationers who failed to complete treatment were more likely to fail than individuals who needed treatment but did not receive it. The results suggest that drug treatment can deter; however, only if participants are able to complete the full course of treatment. This finding is consistent with the body of literature that suggests that positive treatment results depend largely on how long an individual remained in treatment (MacKenzie, 1997).

Clearly, some of the differences in outcomes can be attributed to differences between groups. As presented in Appendix B, individuals who failed to complete treatment had fewer

ties to the community and had more serious criminal histories. Although relevant controls are included in the model, the measures of association presented for the estimated models suggest that there is unobserved heterogeneity that is not being considered in the model. Overall, it is important to continue this line of research to uncover the factors most often associated with probation success.

Although the study results are intriguing, several caveats are in order. First, the available research data lacked measures of the magnitude of substance abuse among probationers and the length and intensity of treatment programming. Individuals with more serious drug problems are more likely to fail; however, the dichotomous measure of drug abuse used in this study does not capture the nature or magnitude of drug use. In addition, it may be that certain forms of drug treatment programming may be more effective for probationers. The length or intensity of programming may also have affected outcomes; however, it was impossible to ascertain the dosage of the treatment programs given the available data. Further research should be conducted to examine the effect of specific forms of treatment on the recidivism outcomes of different offender groups. These data would help practitioners better understand the depth of drug use problem and help assist matching offenders with services.

Despite the limitations of the current models, the research has important implications for policy. First, most probationers who participated in the study and were diagnosed with a substance abuse problem received and completed treatment. Consistent with prior research, mandated treatment represents a viable manner in which to provide treatment to probationers. (Hiller, Knight, Broome, & Simpson, 1998; Maxwell, 2000; Young & Belenko, 2002). What is not known is what aspect of coerced treatment is most effective in enticing offenders to complete treatment; however, researchers have suggested that legal pressure can be viewed either as a

precursor to internalized desire or a catalyst with minimal internalized desire to change (De Leon, 1988; Wild, Newton-Taylor, & Alletto, 1998). Overall, there is substantial evidence that individuals who undergo treatment mandated by the criminal justice system do as well or better than voluntary clients, but it remains important to determine which facets of programming are most effective in reducing recidivism.

Second, the research findings underscore the importance of keeping program participants enrolled and interested in the program for as long as possible. For example, in lieu of program revocation, it may be beneficial to divert individuals with technical violations to jail for a short term of incarceration. This type of program has been successful in other jurisdictions (see Gottfredson et al., 2003). In addition to completing treatment, studies have shown that offenders are more likely to succeed if they receive aftercare following treatment (Inciardi et al., 2004). Thus, continuous aftercare is important because it is likely that progress made by probationers during treatment will be greatly reduced or lost, especially if treatment programs are short-term. Aftercare is rarely offered for probationers and represents an important avenue for future inquiry.

Appendix A: Description of Variables

Variable	Description
Dependent Measures	
New Arrest	A dichotomous variable with respondent arrested for any new offense subsequent to discharge from probation= 1; 0 = respondent was not arrested for any new offense
New Drug Arrest	A dichotomous variable with arrest for a new drug offense subsequent to discharge from probation = 1; 0 = respondent was not arrested for any new drug offenses
Time to Failure	The total number of days between discharge from probation and new arrest for any crime
Demographic Characteristics	
Male	A dichotomous variable with 1 = male; 0 = female
Black	A dichotomous variable with 1 = black; 0 = white
Hispanic	A dichotomous variable with 1 = Hispanic; 0 = Non-Hispanic
Age	Age in years
Years of Education	Education in years
Employed	A dichotomous variable with 1 = fulltime or part time employment; 0 = not employed
Married	A dichotomous variable with 1 = married; 0 = not married
Urban Supervision Environment	A dichotomous variable with 1 = urban; 0 = residence in rural area (county population under 50,000)
Criminal History	
Prior Convictions	Number of prior convictions for any crime
Prior Drug Arrest	A dichotomous variable with 1 = prior arrest for drug crime; 0 = no prior arrest for drug crime
Arrests on Probation	Number of arrests while on probation
Current Offense	
Sentence Length	The total number of days on probation before discharge
Drug Charge	A dichotomous variable with the respondent serving probation on a drug-related offense = 1; 0 = individual served probation for a personal, property, or other type of offense
Drug Use and Treatment	
Drug Dependent	A dichotomous variable with the respondent having a history of drug abuse = 1; 0 = no history of drug abuse
No Drug Abuse (reference)	
No Treatment	A dichotomous variable with probationers who have a history of substance abuse but did not receive substance abuse treatment = 1; 0 = no history of drug abuse
Did Not Complete Treatment	A dichotomous measure with probationers who received substance abuse treatment but did not complete it = 1; 0 = no history of drug abuse
Completed Treatment	A dichotomous variable with probationers who participated and completed the course of the substance abuse treatment = 1; 0 = no history of drug abuse

Appendix B: Descriptive Statistics by Treatment Provision and Completion

Variable	No Treatment N = 549		Did Not Complete Treatment N = 397		Completed Treatment N = 988	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Dependent Measures						
New Arrest[abc]	.53	.50	.67	.47	.37	.48
New Drug Arrest[bc]	.25	.44	.28	.45	.12	.32
Time to Failure (days)[abc]	957.19	587.04	816.53	583.20	1161.63	496.84
Demographic Characteristics						
Male	.82	.38	.81	.39	.81	.39
Black[bc]	.45	.50	.43	.50	.20	.40
Hispanic[bc]	.09	.28	.10	.30	.16	.37
Age (years)[bc]	29.13	9.82	29.59	9.73	33.36	10.86
Years of Education[bc]	11.4	1.73	11.26	1.82	11.78	2.28
Employed[abc]	.51	.50	.33	.47	.73	.44
Married[bc]	.15	.36	.16	.37	.31	.46
Urban Supervision Environment[ab]	.57	.50	.43	.50	.47	.50
Criminal History						
Prior Convictions[ac]	1.45	2.20	2.26	2.68	1.36	2.17
Prior Drug Arrest[bc]	.27	.44	.30	.46	.19	.39
Arrests on Probation[abc]	.58	.99	.92	1.19	.37	.81
Current Offense						
Sentence Length[bc]	1597.2	5707.71	1840.85	6447.48	918.37	3044.79
Drug Charge[bc]	.38	.49	.35	.48	.19	.40

[a] No treatment and did not complete treatment groups are significantly different at $p<.05$

[b] No treatment and completed treatment groups are significantly different at $p<.05$

[c] Did not complete treatment and completed treatment groups are significantly different at $p<.05$

REFERENCES

Adams, S. B., Olson, D. E., & Adkins, R. (2002). *Results from the 2000 Illinois adult probation outcome study*. Chicago: Illinois Criminal Justice Information Authority.

Albonetti, C. A., & Hepburn, J. (1997). Probation revocation: A proportional hazards model of the conditioning effects of social disadvantage. *Social Problems, 44*(1), 120-138.

Allison, P. D. (1984). *Event history analysis: Regression for longitudinal event data*. Beverly Hills, CA: Sage.

Anglin, M. D. H., Y. (1990). Treatment of drug abuse. In M. Tonry & J. Q. Wilson (Eds.), *Crime and justice: A review of the research* (Vol. 13, pp. 393-460). Chicago: University of Chicago Press.

Austin, J., Robinson, B., Elms, B., & Chan, L. (1999). *Evaluation of two models of treating sentenced Federal drug offenders in the community*. Washington, D.C.: National Institute of Justice.

Banks, D., & Gottfredson, D. C. (2003). The effects of drug treatment and supervision on time to rearrest among drug treatment court participants. *Journal of Drug Issues, 33*(2), 385-415.

Belenko, S. (2001). *Research on drug courts: A critical review. 2001 update*. New York: The National Center on Addiction and Substance Abuse at Columbia University.

Benedict, W. R., & Huff-Corzine, L. (1997). Return to the scene of the punishment: Recidivism of adult male property offenders on felony probation, 1986-1989. *Journal of Research in Crime and Delinquency, 34*(2), 237-252.

Bonta, J., Law, M. A., & Hanson, R. K. (1998). The prediction of criminal and violent recidivism among mentally disordered offenders: A meta-analysis. *Psychological Bulletin, 123*, 123-142.

Chanhatasilpa, C., MacKenzie, D., & Hickman, L. J. (2001). The effectiveness of community-based programs for chemically dependent offenders: A review and assessment of the research. *Journal of Substance Abuse Treatment, 19*, 383-393.

Cox, D. R. (1972). Regression models and life tables. *Journal of the Royal Statistical Society, 34*, 187-220.

Crossland, C. R., & Brownstein, H. H. (2003). Drug dependence and treatment. In USDOJ (Ed.), *Adam 2000 Annual Report*. Washington, D.C.: National Institute of Justice.

De Leon, G. (1988). Legal pressure in therapeutic communities. *Journal of Drug Issues, 4*, 625-640.

De Li, S., Priu, H., & MacKenzie, D. L. (2000). Drug involvement, lifestyles, and criminal activities among probationers. *Journal of Drug Issues, 30,* 593-619.

Dowden, C., & Brown, S. L. (2002). The role of substance abuse factors in predicting recidivism: A meta-analysis. *Psychology, Crime & Law, 8*, 243-264.

Fabelo, T. (1999). *Three year recidivism tracking of offenders participating in substance abuse treatment programs*. Austin, TX: Criminal Justice Policy Council.

Fox, J. (1991). *Regression diagnostics: An introduction* (Vol. 07-079). Newbury Park, CA: Sage.

Gendreau, P., Little, T., & Goggin, C. (1996). A meta-analysis of the predictors of adult offender recidivism: What works! *Criminology, 34*(4), 575-607.

Glaze, L. E., & Palla, S. (2005). *Probation and parole in the United States, 2004*. Washington, D.C.: Bureau of Justice Statistics.

Gottfredson, D. C., Najaka, S. S., & Kearley, B. (2003). Effectiveness of drug treatment courts: Evidence from a randomized trial. *Criminology & Public Policy, 2*(2), 171-196.

Harlow, C. W. (1998). *Profile of jail inmates 1996*. Washington, D.C.: U.S. Department of Justice, Bureau of Justice Statistics.

Hearnden, I. (2000). Problem drug use and probation in London: An evaluation. *Drugs: Education, Prevention, and Policy, 7*(4), 367-380.

Hepburn, J., & Albonetti, C. A. (1994). Recidivism among drug offenders: A survival analysis of the effects of offender characteristics, type of offense, and two types of intervention. *Journal of Quantitative Criminology, 10,* 159-179.

Hiller, M., Knight, K., Broome, K. M., & Simpson, D. D. (1998). Legal pressure and treatment retention in a national sample of long-term residential programs. *Criminal Justice and Behavior, 25*(4), 463-481.

Hser, Y.-I., Grella, C., Chou, C.-P., & Anglin, M. D. (1998). Relationships between drug treatment careers and outcomes: Findings from the national drug abuse treatment outcome study. *Evaluation Review*, 496-519.

Lipsey, M. (1992). Juvenile delinquency treatment: A meta-analytic inquiry into the variability of effects. In T. Cook, H. Cooper, D. S. Corday, H. Hartmann, L. V. Hedges, R. J. Light, T. A. Louis & F. Mosteller (Eds.), *Meta-analysis for explanation: A casebook*. New York, NY: Russell Sage.

Long, J. S. (1997). *Regression models for categorical and limited dependent variables*. Thousand Oaks, CA: Sage.

Lurigio, A., Cho, Y., Swartz, J., Johnson, T., Graf, I., & Pickup, L. (2003). Standardized assessment of substance-related, other psychiatric, and comorbid diorders among probationers. *International Journal of Offender Therapy & Comparative Criminology, 47*, 630-652.

MacKenzie, D. (1997). Criminal justice and crime prevention. In L. W. Sherman, D. C. Gottfredson, D. MacKenzie, J. Eck, P. Reuter & S. Bushway (Eds.), *Preventing crime: What works, what doesn't, what's promising?* (pp. 9-76). Washington, D.C.: Office of Justice Programs, National Institute of Justice.

Martinson, R. (1974). What works? - Questions and answers about prison reform. *The Public Interest, 35*, 22-54.

Maxwell, S. R. (2000). Sanction threats in court-ordered programs: Examining their effects on offenders mandated into drug treatment. *Crime and Delinquency, 46*(4), 542-563.

Morgan, K. (1994). Factors associated with probation outcomes. *Journal of Criminal Justice, 22*, 341-353.

Mumola, C. J. (1999). *Substance abuse and treatment of State and Federal prisoners, 1997*. Washington, D.C.: Bureau of Justice Statistics.

Mumola, C. J., & Bonczar, T. P. (1998). *Substance abuse and treatment of adults on probation, 1995*. Washington, D.C.: U.S. Department of Justice.

Olson, D. E., Alderden, M., & Lurigio, A. (2003). Men are from Mars, women are from Venus: But what role does gender play in probationer recidivism? *Justice Research and Policy, 5*(2), 33-54.

Olson, D. E., & Lurigio, A. (2000). Predicting probation outcomes: Factors associated with probation rearrest, revocations, and technical violations during supervision. *Justice Research and Policy, 2*(1), 73-86.

Olson, D. E., Weisheit, R. A., & Ellsworth, T. (2001). Getting down to business: A comparison of rural and urban probationers, probation sentences, and probation outcomes. *Journal of Contemporary Criminal Justice, 17*(1), 4-18.

Petersilia, J. (1985). *Probation and felony offenders*. Washington, DC: U.S. Department of Justice.

Petersilia, J., & Turner, S. (1991). An evaluation of intensive probation in California. *Journal of Criminal Law and Criminology, 82*(3), 610-658.

Rhodes, W. (1986). A survival model with dependent competing events and right-hand censoring: Probation and parole as an illustration. *Journal of Quantitative Criminology, 2*, 113-137.

Sampson, R., & Laub, J. (1993). *Crime in the making: Pathways and turning points through life*. Cambridge, MA: Harvard University Press.

Sims, B., & Jones, M. (1997). Predicting success or failure on probation: Factors associated with felony probation outcomes. *Crime & Delinquency, 43*, 314-327.

Sinha, R., Easton, C., & Kemp, K. (2003). Substance abuse treatment characteristics of probation-referred young adults in a community-based outpatient program. *The American Journal of Drug and Alcohol Abuse, 29*(3), 585-597.

Uggen, C. (1999). Ex-offenders and the conformist alternative: A job quality model of work and crime. *Social Problems, 46*(1), 127-151.

Visher, C. A., Lattimore, P. K., & Linster, R. L. (1991). Predicting the recidivism of serious youthful offenders using survival models. *Criminology*, *29*(3), 329-366.

Vito, G. F. (1986). Felony probation and recidivism: Replication and response. *Federal Probation, 50*, 17-25.

Whitehead, J. T. (1991). The effectiveness of felony probation: Results from an eastern state. *Justice Quarterly, 8*, 525-543.

Wild, T. C., Newton-Taylor, B., & Alletto, R. (1998). Perceived coercion among clients entering substance abuse treatment: Structural and psychological determinants. *Addictive Behaviors, 23*, 81-95.

Wish, E. D., & Johnson, B. D. (1986). The impact of substance abuse on criminal careers. In A. Blumstein, D. Cohen, J. A. Roth & C. A. Visher (Eds.), *Criminal careers and "career criminals"* (Vol. 2, pp. 52-88). Washington, D.C.: National Academy Press.

Young, D., & Belenko, S. (2002). Program retention and percieved coercion in three models of mandatory drug treatment. *Journal of Drug Issues, 22*(2), 297-328.

[1] Recidivism data were not obtained for 347 individuals in the original data set; therefore, they were omitted from the sample. Subsequent analyses revealed that these persons were not significantly different from the total sample in respect to drug abuse, demographic characteristics, and criminal history.

[2] Drug related arrests include a variety of different offenses including: sales, possession, trafficking, manufacturing, and delivery of a controlled substance.

[3] The measure of substance abuse treatment included individuals who participated in either inpatient or outpatient programming. Ideally, treatment would be separated by type; however, only 305 (10%) of the sample were enrolled in inpatient substance abuse treatment. In contrast, 1,203 (40%) individuals participated in inpatient treatment. In order to have ample statistical power to compare outcomes for individuals who had completed or failed treatment, it was necessary to merge inpatient and outpatient substance abuse treatment. It is important to note that 91% of inpatient treatment and 98% of outpatient treatment was mandated by the court. The remainder of individuals participated in treatment because of a self-referral or at the recommendation of friends or family.

[4] To ensure the validity of all the models estimated, tests for multicollinearity were conducted. Variance inflation factors were less than 1.5, which indicates little cause for concern regarding multicollinearity (Fox, 1991).

[5] The Nagelkerke R^2_L is a measure of association. Scores range from 0 to 1 with higher scores signaling stronger association between the independent and dependent variables (see Long, 1997).