2024

The Impact of Mental Health on Recidivism: A Logistic Regression Analysis Examining Federal Probation Outcomes

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THE IMPACT OF MENTAL HEALTH ON RECIDIVISM

A LOGISTIC REGRESSION ANALYSIS EXAMINING FEDERAL PROBATION
OUTCOMES

By

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Undergraduate Honors Thesis

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Abstract

This research paper investigates the impact of mental health issues on probation success, utilizing secondary data from the Criminology Research Group at the University of Montana. Employing binary logistic regression analysis, the study examines various factors affecting probation outcomes, with a focus on mental health treatment as a primary independent variable. Findings reveal that individuals receiving outpatient mental health care are significantly more likely to recidivate, supporting the hypothesis that ongoing mental health struggles pose substantial barriers to probation success. Moreover, employment status, age at the start of supervision, adult criminal offenses, and days under supervision emerged as significant predictors of recidivism. These results underscore the importance of addressing mental health issues within probation systems to mitigate recidivism rates and enhance overall rehabilitation efforts.

Keywords: recidivism; probation; mental health

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I.   Introduction

Mass incarceration in the United States has caused many to re-consider imprisonment for alternative sanctions. One such sanction is probation. Placing those convicted of crimes on probation plays a key role in helping to reduce high incarceration rates. Yet, the 'solution' of probation faces additional challenges. Specifically, there is a high rate of recidivism among those placed on probation (Wisevoter, 2023). This issue is compounded by mental health issues faced by individuals on probation. For example, the rate of certain mental illnesses like schizophrenia and major depression are 3 to 6 times higher in the criminal justice system than the general population (Skeem et al., 2017).

The current study addresses these barriers by examining the impact of on-going mental health issues and recidivism within federal probation in the State of Montana. It looks at mental health as a barrier to probation completion in Montana's largely rural state, which has significant barriers to healthcare access (Coombs, 2022). Using secondary data originally collected at the University of Montana (see Tuttle, Heirigs, & Bunch, 2024), I find that people suffering from mental health issues have significantly higher chances of recidivism while on probation. With this in mind, it is important to consider how the existence of mental health issues poses problems to probationers in this largely rural state's federal probation system

II.   Literature Review

Probation is a suspended prison sentence that requires that the offender must meet specific set rules and refrain from committing additional offenses. There are currently just under four million adult offenders under supervision in the United States (Seiter, 2014). Probation is an alternative to prison and can assist in reducing the number of Americans in prison. However, there have been issues even within the probation system, and some of that is involving supervision programs of high intensity and the usage of electronic monitoring

systems. Additionally, probationers are required to follow strict schedules and curfews, seek

and hold a job, stay within set limits, and pass screenings for substance usage, contributing to

high rates of recidivism for these 'technical violations' (Phelps, 2017).

Issues with recidivism on probation are exacerbated by some of the pre-existing

personal issues of those serving a sentence. For example, Brooker et al. (2020) found that

individuals within probation systems are typically social outcasts, economically deprived,

vulnerable, and often dealing with health problems. These problems have often had negative

outcomes resulting in unemployment and experiencing houselessness. Brooker et al. (2020)

also shared that the presence of co-morbidity in probationers is often seen with personality

disorders, substance use disorders, and even psychosis. These findings further back up the

importance of considering probationers plight within the criminal justice system.

In particular, mental health seems to be a major barrier for success on probation.

Skeem and colleagues (2017) conducted a longitudinal study that compared probationers with

serious health issues in a traditional program versus a specialized program. What they found

was that specialty probations were only 28.6% more likely to recidivate whereas those in a

traditional program were 51.8% more likely to recidivate. The researchers point out that

reformation efforts in the probation and justice system could improve the effectiveness of the

system overall.

III.   Method

Given prior research suggesting the higher rate of recidivism for those suffering from

mental health issues, I aim to examine this impact in the state of Montana. My hypothesis is

that people with on-going mental health issues will have more difficulties in successfully

completing their probation terms. I expect this to persist even after the consideration of

relevant factors, such as race, gender, employment, and sentence length. This research is

relevant because if mental health struggles are a significant enough barrier to success, then being able to recognize and address this could in turn ensure individuals are more likely to stick to their probation requirements and not end up back in prison for violating the terms of probation.

To test this hypothesis, I used secondary data collected by the Criminology Research Group at the University of Montana (see Tuttle et al., 2024). Their study examined possible predictors of success and revocation for individuals serving a federal probation sentence in the District of Montana. Their sample of 499 had been randomly drawn from 3,371 individuals who were under probation from 2015 to 2021. They used Client Identification Numbers (CIN) for each docket number to examine demographic information, supervised release history, and how each concluded supervision. The data is derived from the federal Probation and Pretrial Services Automated Case Tracking System (PACTS).

In total, there were 499 individuals included in the sample, including 260 (52.10%) of them who successfully completed their probation term without being revoked once. Additionally, 114 (22.85%) had been revoked and did not return to probation, 65 (13.03%) had remained on probation as of July 31st, 2022. And 54 (10.82%) of the offenders were transferred to another district before completion of their supervision and then six (1.2%) died during supervision. Ultimately, 374, (69.52%) of individuals were found to be successful in completing their supervision at some point (Tuttle et al., 2024).

Following Tuttle and colleagues (2024), I am measuring 'recidivism' as when an individual was revoked, absconded, or reoffended on probation or not and will be measured dichotomously, (coded as 0, or 1) as the dependent variable. The primary independent variable in this study is whether the individual receiving mental health; specifically, outpatient mental health treatment, which is a dichotomous variable that shows whether or not the offender was assigned mental health treatment as a condition under their supervision.

I use this as a proxy measure to capture whether an individual serving a term on probation has an ongoing mental health issue. I predict that mental health treatment will be positively associated with probation revocation. This is because having mental health issues that are serious enough to require treatment can in and of itself prove a barrier to successful completion of probation as it has a serious negative impact on one's life

The other variables that will be used as controls in this analysis are age, gender, race, CPV score, days under supervision, ACE score, adult criminal offenses, and employment. Age is measured for the offender at the beginning of their supervision. Male is coded as a dichotomous variable and accounts for the gender of the offender, (female= 0, male=1). For race, there are two dummy-code variables used: Other and Native American ('other' includes all races except white). I collapse all other races into this category as they make up a very small percentage of Montana's population. CPV Score represent a risk factor that ranges from 0 to 12 under the "Criminal Patterns and Violence" and includes domestic violence, other violence, child abuse, weapons charges, computer assisted crimes, institutional adjustment problems, criminal activity on supervision, pending charges, patterns of criminal activity, criminal associations, gang involvement, and evidence of violent extremist. Days under Supervision is a control variable and accounts for the variable times the criminals spent under probation supervision, used as a proxy measure for sentence length. ACE Score refers to "Adverse Childhood Experiences" that might exist in an offender's history and include different factors, including emotional abuse, physical abuse, sexual abuse, emotional neglect, physical neglect, battered mother, parental separation/divorce, household mental illness, household substance abuse, and incarceration of household member. The score can range from zero to 10. Adult Criminal Offenses account for all previous offenses before the one that is the basis for their current federal probation sentence. And finally, 'employment at start of supervision' is dichotomously measured and indicates whether the offender had or had not

been employed within the first 30 days of supervision. In Table 1, I included descriptive

statistics of my variables.

Table 1. Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Recidivism	398	.00	1.00	.4598	.49901
Outpatient Mental Health	474	0	1	.41	.492
Age at Start	499	17.50	79.29	40.6812	12.61477
Native American Race	499	0	1	.36	.481
Other Race	499	0	1	.10	.301
Employment	472	0	1	.68	.465
Gender	499	0	1	.78	.416
Adult Offenses	491	0	88	10.50	12.312
Days Under Supervision	499	0	3652	847.55	652.371
ACE Total	487	0	8	1.86	1.686
CPV Total	465	0	8	.99	1.806

IV.   Analysis

With this data, I will be conducting a binary logistic regression analysis with recidivism as the binary outcome. This type of regression analysis is more appropriate for this data over linear regression because the outcome is dichotomous. Linear regression models are used to find the relationship between a dependent variable that is continuous and one or more independent variables (IBM, 2023). Specifically, I will be conducting a binary logistic regression where, "0" represents successful completion of probation and, "1" indicates recidivism. To check for collinearity bias between the variables, I conducted a bivariate correlation analysis of all independent and dependent variables. Based on the data that came from this analysis, there was no indication of collinearity bias because none of the Pearson coefficients were .8 (-.8) or stronger (see Appendix A).

V.   Results

The results of the binary logistic regression model are presented in Table 2. The upper and lower estimates within the table represent the 95% confidence interval. Overall, the model explained 38% of variance in recidivism, as estimated using the Cox and Snell R-squared calculation. Within the model, I found five variables to be statistically significant predictors of recidivism. For age at the start of recidivism, each additional year older the probationer got reduced the likelihood of recidivism by 3%. Being employed reduced chances of recidivism by 48% in comparison to individuals who were not employed during the first 30 days of supervision. For every previous offense committed as an adult, there is a 2.6% increased chance of recidivism. Additionally, for each additional day under supervision there is a .2% less likely chance of recidivism.

Most importantly, after accounting for these control variables, there was a 243% greater chance of recidivism among those receiving mental health treatment. This finding supported my hypothesis, suggesting that people who are experiencing ongoing mental health issues will have a significantly harder time successfully fulfilling their probation requirement. With this considered, I encourage renewed efforts into the support for those dealing with mental health issues in order to keep more people from violating probation and being sent back to prison.

Table 2. Binary Logistic Regression

	Exp(B)	Lower	Upper	Sig.
Outpatient Mental Health	2.430	1.429	4.132	.001
Age at Start	.973	.952	.996	.019
Native American Race	1.332	.748	2.371	.331
Other Race	3.633	.948	13.921	.060
Employment	.525	.280	.985	.045
Gender	1.649	.879	3.090	.119
Adult Offenses	1.026	1.003	1.049	.025
Days Under Supervision	.998	.997	.998	<.001
ACE Total	1.118	.954	1.310	.169
CPV Total	1.097	.943	1.278	.231

VI.   **Conclusion**

This research aimed to better understand the impact mental health issues have on probationers' success while in probation. I examined federal probation outcomes in Montana's federal district. By conducting a binary logistic regression analysis, I confirmed the general findings of previous research (i.e., Skeem et al., 2017) that mental illness is a significant barrier to successfully completing a term on probation. After accounting for relevant controls, I found that probationers receiving outpatient mental health treatment were 243% more likely to recidivate. This supported my hypothesis that on-going struggles with mental health issues are a significant barrier to achieving probation success.

In order to address the barriers that ongoing mental health issues present for probationers, some probation systems have adopted a 'specialized' treatment plan. According to Skeem and colleagues (2017:158), this involves:

"…small caseloads (<individuals) composed solely of people with mental illness (vs heterogeneous caseloads, with >100 individuals), (2) sustained officer training in mental health, (3) officer coordination of and direct involvement in probationers' treatment, and (4) reliance on collaborative problem-solving approaches"

Having a catered program that properly addresses mental health issues in probationers has been found by research to decrease the chances of recidivism. Additionally, offering more resources to probation programs such as trauma-informed responses and policies may be useful.

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Appendix A.

Bivariate Correlations of All Independent and Dependent Variables

	Recidivism	Outpatient Mental Health	Age	Race (Native American)	Race (other)	Employment (0,1)	Gender (0,1)	Adult Offenses	Days under supervision	ACE score	CPV (total)
Recidivism	1										
Outpatient Mental Health	-.051	1									
Age	-.139	-.116	1								
Race (Native American)	.042	-.121	.125	1							
Race (other)	.327	-.181	-.036	-.407**	1						
Employment (0, 1)	-.300	.361*	-.278	.208	-.410*	1					
Gender (0,1)	.042	-.194	-.069	-.129	.135	-.303	1				
Adult Offenses	.194	-.045	.082	.373**	-.169	.172	.130	1			
Days Under Supervision	-.547**	.449*	.054	.074	-.077	.218	-.044	-.157	1		
ACE score	.136	-.006	-.101	.167	-.394**	.287	-.164	.133	-.096	1	
CPV (total)	.376	.056	-.073	.191	-.159	-.198	.213	.491*	-.317	-.151	1

$**p < 0.001.$

$*p < 0.05.$