

Spring 5-12-2017

Examining Differentiating Characteristics of Individuals Who Cross Over Into The Criminal Justice System In Relation To Their Substance Abuse Treatment

Leyla Compani

Follow this and additional works at: https://scholarworks.gsu.edu/iph_theses

Recommended Citation

Compani, Leyla, "Examining Differentiating Characteristics of Individuals Who Cross Over Into The Criminal Justice System In Relation To Their Substance Abuse Treatment." Thesis, Georgia State University, 2017.
https://scholarworks.gsu.edu/iph_theses/537

This Thesis is brought to you for free and open access by the School of Public Health at ScholarWorks @ Georgia State University. It has been accepted for inclusion in Public Health Theses by an authorized administrator of ScholarWorks @ Georgia State University. For more information, please contact scholarworks@gsu.edu.

ABSTRACT

EXAMINING DIFFERENTIATING CHARACTERISTICS OF INDIVIDUALS WHO CROSS OVER INTO THE CRIMINAL JUSTICE SYSTEM IN RELATION TO THEIR SUBSTANCE ABUSE TREATMENT

By

LEYLA COMPANI

March 1, 2017

INTRODUCTION: In Georgia, criminal justice (CJ) involvement is one of the costliest outcomes experienced by individuals with substance abuse problems. Approximately 8% of individuals in America have needed substance abuse treatment, and in Georgia CJ involvement commonly co-occurs.

AIM: To examine the transition into the CJ system for those entering treatment, and, arrests of individuals in treatment. The aim is to determine defining characteristics exist for an individual who switches over into the CJ system, or an individual who has an arrest while in treatment.

METHODS: Data from the Treatment Episode Data Set from 2011-2015 was examined. Demographics, drug types, frequency of use, poly drug use, number of treatment episodes, time between treatment episodes, and rural and urban geography are analyzed in relation to the dependent study variables. Analytic techniques used are independent samples t-tests and regression analyses. The dependent variables are any switchover into the criminal justice system upon reentering treatment, and any arrest before discharge from treatment.

RESULTS: Factors associated with a switch into the CJ system upon admission are non-completion of high school, ever being unemployed or a student (18 yrs or older), poly drug use, more than one treatment episode, younger at age of first drug use, longer periods of time in treatment, a switch of primary drug to meth, crack-cocaine, opiates, marijuana, or alcohol. Attending self-help programs before entering treatment and living in rural areas also increases a switch to the CJ system. Higher risk of arrest is associated with younger at age of first drug use, being male, black or other non-white race, higher education levels, ever being a student or homeless, attending self-help programs, and living in urban areas.

DISCUSSION: The results and interpretation of this study may help inform and direct one part of a criminal justice prevention strategy and evidence-based health policy, for individuals who are undergoing substance abuse treatment.

EXAMINING DIFFERENTIATING CHARACTERISTICS OF INDIVIDUALS WHO CROSS OVER INTO THE
CRIMINAL JUSTICE SYSTEM IN RELATION TO THEIR SUBSTANCE ABUSE TREATMENT

by

LEYLA COMPANI

B.F.A., ATLANTA COLLEGE OF ART

A Thesis Submitted to the Graduate Faculty
of Georgia State University in Partial Fulfillment
of the
Requirements for the Degree

MASTER OF PUBLIC HEALTH

ATLANTA, GEORGIA
30303

APPROVAL PAGE

EXAMINING DIFFERENTIATING CHARACTERISTICS OF INDIVIDUALS WHO CROSS OVER INTO THE
CRIMINAL JUSTICE SYSTEM IN RELATION TO THEIR SUBSTANCE ABUSE TREATMENT

by

LEYLA COMPANI

Approved:

Dr. Lee Mobley
Committee Chair

Mrs. Stefanie Lopez-Howard
Committee Member

April 25, 2017
Date

Acknowledgments

I would like to thank my husband, Nathan Branscome, for his unbelievable support throughout the writing of this thesis. I would like to thank the staff at the Georgia Criminal Justice Coordinating Council's Statistical Analysis Center, and Dr. Mobley for believing in me. I would also like to thank John Quesenberry at Georgia Department of Behavioral Health and Developmental Disabilities.

Author's Statement Page

In presenting this thesis as a partial fulfillment of the requirements for an advanced degree from Georgia State University, I agree that the Library of the University shall make it available for inspection and circulation in accordance with its regulations governing materials of this type. I agree that permission to quote from, to copy from, or to publish this thesis may be granted by the author or, in his/her absence, by the professor under whose direction it was written, or in his/her absence, by the Associate Dean, School of Public Health. Such quoting, copying, or publishing must be solely for scholarly purposes and will not involve potential financial gain. It is understood that any copying from or publication of this dissertation which involves potential financial gain will not be allowed without written permission of the author.

Leyla Compani
Signature of Author

TABLE OF CONTENTS

ACKNOWLEDGMENTS	4
LIST OF TABLES	7
CHAPTER I - INTRODUCTION	8
1.1 Background	8
1.2 Social and Economic Costs	8
1.3 Research Questions	9
1.4 Definitions	10
CHAPTER II - LITERATURE REVIEW	12
2.1 Substance Abuse Treatment and Arrest	12
2.2 Voluntary Treatment versus CJ Involved Treatment	13
2.3 Drug Use and Criminal Justice Involvement	13
2.4 Co-Occuring Disorders	14
2.5 Gender-Sensitive Treatment	14
2.6 Rural and Urban Impacts	15
CHAPTER III – METHODS AND PROCEDURES	16
3.1 Data Source for Study Sample	16
3.2 Procedures	16
3.3 Statistical Analyses	17
3.4 Analytic Plan	22
3.5 Ethics	23
CHAPTER IV - RESULTS	24
4.1 Descriptive Statistics Results	24
4.2 Results of Switch Over to Criminal Justice Involvement	26
4.3 Results of Arrest Thirty Days Prior to Discharge	30
CHAPTER V - DISCUSSION	35
5.1 Results	35
5.2 Study Limitations	37
5.3 Suggestions for Future Research	37
5.4 Conclusion	38
REFERENCES	39
APPENDICES	43

List of Tables

Table 1. Demographic Characteristics of the Concatenated Data Set (TEDS-A and TEDS-D)

Table 2. Average Length of Treatment in Days

Table 3. Average Length of Time Between Treatment Episodes

Table 4. Two or More Prior Treatment Episodes

Table 5. Results of a CJ Switch Based on Length of Time Between Treatment Episodes

Table 6. Results of a CJ Switch Based on Length of Time In Treatment

Table 7. Any CJ Switch Based on Average Youngest Age of First Use

Table 8. Any CJ Switch Multivariate Logistic Regression Analysis Results

Table 9. The Effect of Time Between Treatment Episodes on Arrest While in Treatment

Table 10. Results of Length of Time in Treatment and its Effect on Arrest

Table 11. Results of Average Youngest Age of First Use on Arrest While in Treatment

Table 12. Multivariate Logistic Regression Results on Any Arrest Before Discharge for All Episodes

Chapter I

Introduction

1.1 Background

In 2015, the National Survey on Drug Use and Health (NSDUH) determined that 8.1%, or 21.7 million people ages 12 or older needed substance abuse treatment in America. (Lipari, Park-Lee, & Van Horn, 2016). Georgia, with its population of 10.1 million people (in 2014), faces its share of the nation's problem. In 2013, 24,003 individuals received treatment for substance abuse on any given day in the state (Substance Abuse and Mental Health Services Administration, 2015). While many of these individuals will have successful outcomes from these treatment episodes, others run a risk of returning immediately to their abuse cycles and ultimately ending up involved in the criminal justice (CJ) system. Substance abuse treatment and CJ involvement are deeply interrelated and CJ involvement is one important outcome measure of substance abuse treatment. A high proportion of arrestees demonstrate drug dependence (Garnick et al., 2014) and the odds of offending are three to four times greater for drug users than those individuals who do not use drugs (Bennett & Holloway, 2005).

Substance abuse is influenced by the characteristics of the communities where individuals reside, socio-economics, and individual factors (Linton et al., 2016); and individuals may seek treatment for substance abuse voluntarily, involuntarily, or through court-order. Negative outcomes from substance abuse include poorer health and the occurrence of chronic health conditions (Lipari, Park-Lee, & Van Horn, 2016), negative economic impacts to communities, a strain on government and community resources, and increased risk of individual involvement in the CJ system (Kissin, Tang, Campbell, Claus & Orwin, 2014). Of these, CJ involvement in Georgia is one of the most severe and costly outcomes experienced by individuals with substance abuse problems. The specific concern which sparks this study is the frequency of transition to involvement in the CJ system of individuals who are directly engaged in treatment, and a desire to identify what causes the transition.

Several mechanisms operating within an ecologic framework may explain the relationships between substance abuse treatment and crossover into the CJ system. To date there has been limited research examining factors that cause an individual who is in and out of substance abuse treatment to transition into CJ involvement, or cause the arrest of an individual who is actively engaged in treatment with no prior CJ involvement. Identifying these possible differentiating characteristics could help public health professionals mitigate the risk of future offense while decreasing the fiscal and societal burdens associated with criminal justice involvement for those in substance abuse treatment.

1.2 Societal and Economic Costs

Substance abuse treatment programs have the potential to decrease criminal justice involvement, and improve the lives of individuals. Per the National Institute on Drug Abuse, in 2012, "every dollar invested in addiction treatment programs yields a return of between \$4 and

\$7 in reduced drug-related crime, CJ costs, and theft. When savings related to healthcare are included, total savings can exceed costs by a ratio of 12 to 1." ("Is drug addiction treatment worth its cost?", 2012). Reduced long-term healthcare costs, social costs, crime-related costs, and improved job market productivity are key elements that reduce the cost burden to the state and its residents. Specifically, the burden on law enforcement and public health resources can be reduced if specific indicators for crossover to the CJ system are explored. Lower hazards of arrests and CJ involvement due to drug-related and violent crime are found when an individual is engaged in substance abuse treatment (Garnick et al., 2014).

Outside of individual and public health outcomes, the most immediately important reason for studying criminal justice involvement as an outcome of substance abuse treatment is its high cost to the state and its residents (Garnick et al., 2013). Costs to operate the Georgia Department of Corrections (DOC) and Department of Behavioral Health and Disabilities (DBHDD), the two state agencies that are most directly involved in the treatment of substance abuse in its intersection with the CJ system, are very high. The total cost to the DOC for inmates alone in FY2015 was \$1,019,983,078. For probation, the cost in FY2015 was \$178,731,524 (*Corrections Costs FY2015*, 2015). 25% (13,354) of male and 14% (549) of female inmates in DOC custody in 2015 had some substance abuse issue (Lopez-Howard, Gonzalez & Hafner, 2015). Drug offenders make up 14% of the total inmate population and they comprise one-third of the total probation population in Georgia. Over \$200 million of the DOC budget is dedicated to Health, which includes constitutionally required physical, dental, and mental health care to all inmates in the correctional system (Governor's Office of Planning and Budget, 2014). The substantial portion of inmates with treatment needs and drug related health problems in the system are significant cost drivers. Furthermore, one-third of referrals for substance abuse treatment reported to State treatment agencies are from the criminal justice system, which is the largest source of referrals (Garnick et al., 2014; Substance Abuse and Mental Health Services Administration, & Office of Applied Studies, 2009).

An additional cost for the state and federal government is through the addiction treatment funding appropriated to DBHDD. The agency receives the funding under the Prevention and Treatment of Substance Abuse Block Grant which in FY 2015 amounted to \$47,482,075 (Governor's Office of Planning and Budget, 2014).

1.3 Research Questions

The question of what factors, if any, are present that may lead an individual in Georgia who was in substance abuse treatment to be more likely to switch over to CJ involvement upon re-entering substance abuse treatment has not been answered. In addition the factors that may lead an individual in substance abuse treatment to be arrested before discharge has not been notably researched. This leads to the question, what are the predictors of this switch to criminal justice involvement, if any, that increase the likelihood?

Most commonly, studies begin with a CJ involved population and retrospectively assess existing or prior substance abuse patterns and history. Others examine the efficacy of drug treatment programs for CJ involved clients, or the success rate of treatment for this population. This study however focuses on the predictors, if any, of involvement or admission into the CJ system for those who are in treatment with no CJ involvement. By focusing on the non-CJ involved population's timeline and characteristics through treatment, predictors of CJ involvement can be illuminated. This will, ideally and with further research, result in risk profile and prevention protocols to help avoid the critical transition into the CJ system in the first place.

1.4 Definitions

Necessary terminology utilized in this study are as follows:

Admission: “The formal acceptance of a client into substance abuse treatment”, and does not include referrals, wait-list, or initial screenings. (Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality, 2014).

Criminal justice (CJ) involvement: An individual who has been in the system of law enforcement, the bar, the judiciary, corrections, and probation that is directly involved in the apprehension, prosecution, defense, sentencing, incarceration, and supervision of those suspected of or charged with criminal offenses.

Discharge: Occurs when services for the client have been terminated. If a formal discharge has not occurred, a treatment episode is considered completed as an administrative discharge if the client, “has not been ‘seen’ in 3 days during inpatient or residential treatment, and 30 days in the case of outpatient treatment”. (Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality, 2014).

Drug Switchover: Defined as the switch from use of one primary drug or substance type for a substance abuse treatment episode to another primary drug or substance type on the next substance abuse treatment episode. The use of differing substances or drugs happens sequentially for each subsequent treatment episode, not concurrently.

Poly Drug Use: Defined in this study as the habitual use of more than one substance or drug type by an individual when entering treatment. The use of multiple drugs happens concurrently, not sequentially.

Specialty facility: Substance use treatment at a hospital (inpatient only, a drug or alcohol rehabilitation facility (inpatient or outpatient), or a mental health center. (Lipari, Park-Lee, & Van Horn, 2016).

Substance abuse treatment: Admission by an individual to a facility that is required to report client information to the state substance abuse/behavioral health agency. This includes detoxification and rehabilitation facilities, and ambulatory treatment services. These may

include hospitals, residential treatment facilities, and specialty substance abuse treatment facilities.

Substance use disorders: When the recurrent use of alcohol and/or drugs causes clinically significant impairment, including health problems, disability, and failure to meet major responsibilities at work, school, or home. ("Mental and Substance Use Disorders", 2016).

TEDS: The U.S. Department of Health and Human Services (DHHS), Substance Abuse and Mental Health Services Administration (SAMHSA), Treatment Episode Data Set A & B, combined into one data set for this study and discussed more thoroughly in the Methods and Procedures section.

Treatment Episode: "The period of service between the beginning of a treatment service for a drug or alcohol problem (admission) and the termination of services for the prescribed treatment plan (discharge)." (Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality, 2014).

Chapter II

Literature Review

Many studies have examined the TEDS data set, however, no one study has been found to explicitly examine crossover to the CJ system for those in substance abuse treatment, or entering substance abuse treatment, with no prior arrests. Similarly, there is a dearth of studies that examine the TEDS to determine arrests while in treatment, and the possible causal factors. The majority of studies in this arena generally begin with justice-involved populations, and chiefly examine recidivism for substance abusers in treatment. Another area of focus are factors related to success of treatment for those who have been referred by the justice system or post-imprisonment outcomes for those who have substance abuse issues, or the associations between drug use and crime. From this lens, however, a framework emerges that can inform possible risk mitigation by determining risk profiles and factors for those without any prior CJ involvement who are in treatment.

2.1 Substance Abuse Treatment and Arrest

The effect of substance abuse treatment on criminality has been studied, but limited mostly to those who abuse opiates. Harris, Jacapraro, & Rastegar (2012) found a two year arrest rate of 38% in a sample of persons in treatment for opiate addiction. A three year prospective study by Campbell, Deck, & Krupski (2007) examined the impact of substance abuse treatment (methadone maintenance) on felony/gross misdemeanor arrests among opiate users who were receiving publicly funded substance abuse services from 1993—2001. The general demographics of individuals in this study were unmarried Caucasian males, 35 years of age or older who had a high school degree or equivalent. Heroin was the primary substance used. Harris, Jacapraro, & Rastegar (2012) cite research and statistics that show a link between offenders in treatment for opiate abuse and males age 16-34.

The Campbell, Deck, & Krupski, (2007) study is utilizes data from publicly-funded treatment programs, similar to this study. The authors compare the outcomes of those who did and did not receive substance abuse treatment. While the population is different than what is identified for this study, the results are still informative on the impact of treatment on arrest risk. The study *did* examine individuals who had no *recent* history of felony/gross misdemeanor arrests, and the reduction of arrest risk was stronger than for those individuals who did have recent histories of arrest(s) when they completed treatment. However, they were both lower than those who never received treatment. A reduction in risk of arrest was also found in those who were still in treatment. By the third year of follow up with the individuals, the risk of arrest for those who had two or more prior arrests was down from a risk rate of 2.8 to 1.8, and for those with only one prior arrest, the risk declined from 1.9 to 1.4. A higher risk of arrest was seen in those individuals who had negative outcomes to treatment, such as withdrawing against advice or relapse. The longer the treatment (90 days or more), risk of arrest declines (p. 515).

This study shows that substance abuse treatment in itself is a protective factor in minimizing arrest risk. Anecdotally, the study suggests that law enforcement agencies may target drug treatment clinics in response to increased levels of drug trafficking in the surrounding areas. This deliberate targeting could mask the benefits of drug treatment on reducing criminality (Campbell, Deck, & Krupski, 2007, p. 519). On the whole, substance abuse treatment results in less involvement in the CJ system: fewer arrests, lower conviction rates, declines in self-reported illegal activities, and lower re-arrest rates (Garnick et al., 2014).

As an example of lower CJ involvement rates, another study done by Merrill, Alterman Cacciola, & Rutherford (1999) showed similar results as the Campbell, Deck, & Krupski, (2007) study. Looking at an individual with a heroin addiction's entire treatment history, a 10% increase in the number of treatments yielded a 1.8% decrease in the number of arrests, and a 25% decrease in probability of arrest post-treatment (Merrill, Alterman, Cacciola, & Rutherford, 1999).

2.2 Voluntary Treatment versus CJ Involved Treatment

A study that observes the differences in characteristics and history of individuals who enter substance abuse treatment voluntarily versus those who are court-mandated was conducted by Banducci et al. (2013) in Washington State. They found demographic and background differences in the two groups. Those who entered treatment voluntarily had higher rates of childhood abuse, emotional abuse, and sexual abuse. Overall, these individuals had higher rates of "psychiatric disorders, substance dependence, comorbidities and medication prescriptions" (Banducci et al., 2013). Results of this study also show that people in court-mandated treatment are less likely to drop out of said treatment, which may be in part due to fear of parole violations or other consequences to leaving treatment. They are also more likely to be employed and less likely to enter treatment again as compared to those entering treatment voluntarily.

2.3 Drug Use and Criminal Justice Involvement

A study conducted by Bennett and Holloway (2005) examined the effects of misusing multiple drugs together, instead of the isolation of one drug, on crime. They believe the direct effects of mixing drugs on behavior, judgement, and potential amplifying effect on offending are significant to examine. Bennett and Holloway's study referenced Chaiken and Chaiken's 1990 study that demonstrated crime commission rates in the general population to be ten to twenty times higher for individuals who used multiple drugs four or more times each. Using data collected as part of the New English and Welsh Arrestee Drug Abuse Monitoring Program (NEW-ADAM) from 2000-2002, and surveys from 16 custody suites in England and Wales, a sample size of 3,135 people was analyzed. The majority of the sample was male (86%) and over the age of 25 (51%). Significant findings show that 69% of multiple drug users had committed one or more acquisitive crimes in the past year as compared to 38% of those who only used one drug type. For those who are non-drug users, that percentage was even lower, at 16%. Their study also showed a significant positive correlation between an increase in the number of drug types consumed and an increase in the mean number of offenses committed. When examining drug combinations, Bennett and Holloway's study showed the highest rates of offending

occurred for those individuals who used heroin and crack in combination with “heroin substitutes, recreational drugs and tranquilizers (Bennett & Holloway, 2005).” They concluded that while their results were significant, the reasons for their results were not as clear. They posit three possible explanations for their findings: that multiple drug use causes high rates of offending; that high rates of offending cause the multiple drug use; and that is a false relationship with no causal connection, but can be attributed to the lifestyle or disposition of the individual. The significance of poly drug use on criminal behavior demonstrated in this study indicates it as an important variable for analysis in determining risk factors for arrest or CJ switch in the present study.

2.4 Co-Occurring Disorders

In many cases, substance abuse treatment occurs with a mental health disorder. Twenty-seven percent of Georgia’s prison population are receiving, or have received in the past, some level of mental health treatment, according to the Georgia Department of Corrections (Georgia Department of Corrections, 2016). A quarter of male and 14% of female inmates in Georgia Department of Corrections custody in 2015 had some substance abuse issue as well. (Lopez-Howard, Gonzalez & Hafner, 2015). In Texas, a study was done to examine the risk of future offense among probationers with co-occurring mental health and substance abuse disorders. The majority of study participants were white (56.3%) and male (71.7%), who had an education level of high school diploma or higher, made less than \$20,000 per year, and whose most common current offense was drug or alcohol related. Calculated measures were scored for likelihood of future crime and violence. Though a different type of CJ involvement than incarceration, it was found that probationers were significantly more likely to be at risk when co-occurring mental health and substance abuse disorders were present, with the highest risk being for those individuals specifically with bipolar disorder (22.6 times more likely) (Balyakina et al., 2013). As compared to substance abuse alone, these individuals have a higher risk of future offense, crime and violence. It is important to highlight the importance of co-occurring disorders when understanding what factors may lead to future CJ involvement, as 70-80% of people entering substance abuse treatment present one co-morbid psychiatric disorder (Steadman et al., 2009; Drug and Alcohol Services Information System, 2001).

The presence of co-occurring disorders seems very likely to have a dramatic impact on a switch to CJ involvement from a previously uninvolved treatment participant. Unfortunately, the dataset available at this time does not include information on co-occurrence as a variable, and as a result it cannot be tested. As such, this variable should be addressed in future studies and research, as it could substantially inform and expand the results of this study.

2.5 Gender-Sensitive Treatment

The specific needs of women who have substance abuse disorders and arrests differ than those of men, and their development is often more severe (Kissin, Tang, Campbell, Claus & Orwin, 2014). While the total number of people incarcerated in Georgia has been dropping since 2011, the percentage of women in Georgia who are incarcerated is steadily increasing. It is higher than the nationwide average by 7%. According to the Georgia Department of Corrections,

9.27% of the prison population in 2011 were women, and this percentage increased to 11.2% in 2014. Forty-five percent of these women had never been incarcerated before (Georgia Department of Corrections, 2011). While men still make up the majority of those affected by CJ involvement, this is an important trend to note in future prevention protocols for those in substance abuse treatment.

According to a study by Salisbury and Van Voorhis offending among women plays out through three common pathways: childhood victimizations, unhealthy relationships, and financial problems. These pathways are contributors to mental health disorders, substance abuse and eventual likelihood of CJ involvement (Salisbury and Van Voorhis, 2009).

2.6 Rural and Urban Impacts

A study by Young, Havens, & Leukefeld (2012) examines differing drug types and use in a rural Appalachian county and an urban cluster in Kentucky. While not focusing on CJ involvement as an outcome, the study identified important distinctions in drug use types between rural and urban settings. The age of first use for those individuals living in a rural Appalachian county (n = 101) for crack, cocaine and opiates was much younger than other drug classes. Rural drug users also had higher odds of lifetime crack and cocaine use. Urban participants (n = 111) had a higher odds of recent crack use. This study also draws on a multitude of prior research that shows higher rates of non-medical drug use and drug related deaths (including poly drug related deaths) in rural areas that go beyond demographics alone. Nationally, individuals in opioid treatment programs located in rural areas had higher rates of past 30-day opioid abuse (Rosenblum et al., 2007). Given the difference between urban and rural populations, this variable could have an impact on CJ involvement as well, and is well worth including in the present analysis.

Chapter III

Methods and Procedures

3.1 Data Source for Study Sample

The Substance Abuse and Mental Health Services Administration's (SAMHSA's) Treatment Episode Data Set (TEDS) is a national, de-identified, compilation of data on substance abuse treatment events. The data are collected by States in monitoring their individual substance abuse treatment systems. Primarily, it includes information on clients who have been admitted and discharged from programs that receive public funds. Data from private programs are included where information is available to the State for reporting.

The TEDS from 2011 to 2015 for Georgia was obtained from the Department of Behavioral Health and Developmental Disabilities. There are two data sets within TEDS: Admissions (TEDS-A) and Discharge (TEDS-D). Admissions data includes information collected at the beginning of a treatment episode. Discharge data includes information collected at the termination of a treatment service or episode. Both are obtained for the aforementioned years. Broadly, TEDS includes demographic, substance abuse, CJ involvement, and socioeconomic characteristics.

27 different TEDS variables that are required to be reported are called the "Minimum Data Set (MDS)". There are 17 variables that are optional, called the "Supplemental Data Set (SuDS)". Some of the optional SuDS variables are used in this analysis. By using both Admissions and Discharge data as endpoints, in addition to any transfer of service data included in the data set, it is possible to construct a more complete picture of treatment episodes than with Admissions data alone. This data can be used for comparisons and trends on the characteristics of persons admitted to and discharged from substance abuse treatment, therefore it is the best source of raw data to use in determining what criminogenic factors may exist for clients receiving substance abuse treatment in Georgia. (Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality, 2014).

3.2 Procedures

IBM SPSS Version 23 and Microsoft Excel were used to run analyses, and clean or transform variables. TEDS is structured such that each record is a case, not an individual. Because it is an admission or discharge case-based system rather than an individual based system, a person who enters treatment more than once is logged for each treatment episode, not as one individual with continuous treatment episodes. After merging the admissions and discharge data set, there were 392,700 cases. The file was restructured by the Client ID variable, which allowed one to see an entire admission and discharge history for each individual, rather than looking at separate treatment admission and discharge cases. The restructured dataset included 128,862 individual records. The maximum number of treatment episodes identified was thirty. Only two persons had this many admissions. Less than 1% of those in the restructured dataset ($n = 1220$) had more than five treatment admissions and discharges. These outliers were removed, leaving 127,642 (99%) of individuals in the data set. The mean treatment episode admissions count was 1.42. The standard deviation was 0.965.

3.3 Statistical Analyses

3.3.1 Demographic Sample

Age is registered in years, as a continuous variable, with the youngest admission at age 3, and the oldest at age 92, with an average age of 36 years. The percentage of men who entered substance abuse treatment was 58.7% (n = 74,888) as compared to women (41.3%, n = 52,754). Whites had the most admissions, at 57% (n = 72,730) with Blacks at 38.7%. Very small percentages of other races, under 2% for each, also entered treatment. Census data for Georgia shows that 9.5% of the population in Georgia in 2015 is of Hispanic or Latino origin ("QuickFacts Georgia", n.d.). The number of individuals of Hispanic or Latino origin entering treatment (2.7%, n = 3,434) in the sample is much lower than Census numbers. Education was measured by highest level of school completed, from zero to eighteen years of schooling.

Employment status was categorized by full-time status (40 hours a week), part-time status (fewer than 30 hours a week), unemployed, and not in the labor force. The majority of the sample is unemployed (54.3%, n = 69,327) which is expected and consistent when considering the possible severity of entering substance abuse treatment on an individual's ability to maintain consistent employment. This percentage is very high as compared to Georgia's overall population. In August 2013, the rate of unemployment for Georgia was 8.7 percent ("QuickFacts Georgia", n.d.). For those who are not in the labor force, disabled individuals made up a substantial percentage of the data set (20.5%, n = 19,567). Students comprise 5.4% of the sample (n = 5,156). A very small percentage are homemakers (3.9%, n = 3,745), retired (0.6%, n = 574), inmate of an institution (1.3%, n = 1,275), or "other" (0.8%, n = 810).

78% of those in the sample live in what are considered to be urban areas (n = 98,584), and 22% live in rural areas in Georgia (n=27,872). The majority of individuals live independently, but a substantial percentage have described themselves as ever experiencing or being homeless across all treatment episodes (8.9%, n = 11,412).

The majority of the sample population have never been married (62.1%, n = 79,288), but a substantial percentage are divorced (14.9%, n = 19,014) or are married/cohabitating (13.4%, n = 17,084). The percentage of women who were pregnant at the time of admission to treatment was 1.3%, and made up only 0.5% of the total sample (n = 691). According to the National Center for Veterans Analysis and Statistics, there were 752,882 veterans living in Georgia in 2014 ("Frequently Asked Questions", 2017). This is 7.5% of Georgia's population. The number of veterans who entered substance abuse treatment in the data set was only 1.7% (n = 2,174), significantly less than the state average. A lower sample size and self-reported data may account for this disparity. A graphical representation of the demographic sample are displayed in Table 1, below.

Table 1.
Demographic Characteristics of the Concatenated Data Set (TEDS-A and TEDS-D)

Variable	Frequency	Percentage
Sex		
Male	74,888	58.70
Female	52,754	41.30
Race		
White	72,730	57
Black	49,367	38.7
Other	5,545	4.3
Ethnicity		
Hispanic	3,434	97.3
Not Hispanic	124,208	2.7
Education		
Did Not Finish High School	47,122	36.9
High School / GED	50,834	39.8
Higher Education	29,686	23.3
Pregnant		
Yes	691	0.5
No	126,951	99.5
Living Arrangements		
Homeless	12,188	9.5
Dependent Living	5,186	4.1
Independent Living	107,323	84.1
Marital Status		
Never Married	79,288	62.1
Married /Cohabiting	17,084	13.4
Separated	8,989	7
Divorced	19,014	14.9
Widowed	2,380	1.9
Employment Status		
Full-Time	7,941	6.2
Part-Time	5,619	4.4
Unemployed	50,625	39.7
Not in Labor Force	31,127	24.4
Not In Labor Force		
Homemaker	3,745	2.9
Student	5,156	4
Retired	574	0.4
Disabled	19,567	15.3
Inmate of Institution	1,275	1

Region Type		
Urban	98,584	77.2
Rural	27,872	21.8

**Note: Percentages may not add to 100% due to missing/unknown data.*

3.3.2 Variables

Variables are created and recoded in addition to the existing variables in TEDS for the analyses.

3.3.2a Race

The race variable was recoded to three mutually exclusive variables: “White”, “Black” and “Other”. “Other” represents those who identified as “Asian”, “Alaska Native-Aleut Eskimo”, “American Indian or Alaska Native”, “Native Hawaiian or Other Pacific Islander”, “Asian or Pacific Islander”, “Other Single Race”, “Two or More Races” and those who were of unknown race. These individuals represented a small percentage of the racial makeup of the data set as a whole (14.3%).

3.3.2b Ethnicity

The ethnicity variable was recoded into a dichotomous variable, “Not of Hispanic or Latino Origin” and “Hispanic or Latino – Not Specified”. The original data set defines ethnicity at a more granular level, with categories including “Mexican”, “Puerto Rican”, “Cuban” and “Other”. Recoding was performed to increase the sample size and statistical power for those who do identify as Hispanic or Latino, which is still a very small percentage of the entire data set (2.7%, n=3,434). Only 0.7% (n=881) are of unknown ethnicity and were excluded from the analysis.

3.3.2c Education

Education is listed in TEDS as a continuous variable, spanning from zero to eighteen years of education--no schooling at all to completion of a Master’s degree. This variable was recoded into three mutually exclusive categories: “Did Not Finish High School” (36.9%, n=47,122), “High School GED” (39.8%, n=50,834) and “Higher Education” (23.3%, n=29,686). Because individuals have multiple treatment episodes, the highest grade completed at their last admission was used to calculate education level.

3.3.2d Veteran Status

Veteran status was recoded in such a way as to capture all treatment episodes at admission— not only the first treatment episode, but also if someone enters treatment a second, third, fourth or fifth time newly categorized as a veteran. This increased the number of individuals who reported themselves to be veterans by 115%, from 2,174 to 2,500 across all treatment episodes. Therefore, a final total of 2.0% of individuals in the data set are reported to be veterans across all treatment episodes (n=2,500).

3.3.2e Employment Status and Those Not in the Labor Force

The employment status variable was recoded to a dichotomous variable, expressed as “Ever Unemployed” or “Never Unemployed”. For those who are not in the labor force, two choices in this variable are extracted for further analyses: students and the disabled. Preliminary cross-tabulation analysis showed that students had higher percentages of arrest. Testing for those who are disabled will be done to determine if a bias toward arrest or criminal justice involvement exists for this population. Two variables were created from the variable that shows individuals who are not in the labor force: “Ever Student” and “Ever Disabled”. These variables show who has reported themselves as a student and/or disabled for their entire treatment episode timeline, not just for one treatment episode.

3.3.2f Average Time in, and Between, Treatment Episodes

The type of service and treatment setting for a client in the TEDS are listed in eight categories:

1. 24 hour/day detoxification in a hospital inpatient setting,
2. 24 hour/day detoxification in a free-standing residential setting,
3. rehabilitation/residential setting in a hospital,
4. short-term rehabilitation/residential (thirty days or less) setting,
5. long-term rehabilitation/residential (thirty days or more) setting,
6. Intensive outpatient ambulatory treatment,
7. non-intensive ambulatory outpatient treatment,
8. ambulatory detoxification.

Average time in treatment was calculated by subtracting discharge from admission date to arrive at a number of days in treatment. A similar process was used to calculate time between treatment episodes using the admission date at episode – minus admission date at episode 1 (and so on, up to 5 treatment episodes). Once those individual treatment lengths were calculated, an average was taken for each individual in the sample, to capture a snapshot of average time in treatment across all episodes. Similarly, an average time between treatment episodes was calculated.

3.3.2g Primary Drug Persistence

A dichotomous variable was created (“Primary Drug Persistence”) to determine how many individuals are seeking treatment for the same primary drug in all of their treatment episodes. The parameters of this variable require that that an individual have more than one treatment episode. Only 0.3% of the data set, or 374 people, had multiple treatment episodes for the same drug or substance type. Therefore, this variable was not used in the final analysis.

3.3.2h Poly Drug Use

A poly drug use variable was created (“Poly Drug Use”) to determine which individuals cite the habitual use of only one drug or substance type, and which individuals cite the habitual use of more than one drug of substance type.

3.3.2i Drug Switch

Cross-tabulation of all drug and substance types listed in the data set are contrasted separately with the two primary dependent variables created for the hypotheses, “Any CJ Switch” and “Any Arrest Before Discharge For All Episodes”. This cross-tabulation determines which top five drugs had the highest percentages of use for each of the two variables.

The five drugs with the highest use as they relate to the aforementioned study variables are methamphetamines, marijuana, alcohol, crack-cocaine and opiates. Heroin was combined into the opiate group to increase statistical power. Separate variables for each of these five drugs were then created to illustrate which individuals switched their primary drug to the drug listed in the variable on their next treatment episode. For instance, an individual’s first treatment episode was for alcohol abuse. They enter treatment a second time, but in this instance, for opiate addiction. They will be captured in the “Opiate Switch” variable. The five variables created to illustrate this switch in primary drug type are: “Meth Switch,” “Marijuana Switch,” “Crack-Cocaine Switch,” “Alcohol Switch,” and “Opiate Switch.”

3.3.2j Rural Versus Urban Geography

The county of residence for each individual’s record was provided as a variable in the data set. To determine if geography has any influence or impact, a variable was created that coded all the counties in the data set into “rural” or “urban” categories. Rural and Urban designations for this variable were derived from the Health Resources and Services Administration (HRSA). HRSA defines rural and urban populations through a mixture of the U. S. Census Bureau and Office of Management and Budget (OMB)’s definitions. To this end, “urban” under the U. S. Census Bureau definition is categorized as “Urbanized Areas of 50,000 or more people and/or urban clusters of at least 2,500 people but less than 50,000 people in Georgia.” (“Defining Rural Population,” 2017). The OMB definition for an urban cluster differs, at 10,000 people or more but less than 50,000 people, however, OMB still considers these “micropolitan” areas to be rural. Thus, “rural” is an area that does not meet the defined population numbers of an “urban” setting—it is the absence of, and not explicitly defined by the U. S. Census Bureau or the OMB (“Defining Rural Population,” 2017).

3.3.2k Two or More Treatment Episodes

Data on the number of previous treatment episodes that were gathered at each admission (one through five) was combined and summed to create a variable called “Maximum Number of Prior Treatments.” This variable was then recoded into a

dichotomous variable called “Two Plus Treatment Episodes”: those individuals who had only one treatment episode, and those who had two or more treatment episodes.

3.3.2l Any Criminal Justice Switch

A variable to determine who switched from having no CJ involvement while in treatment to having CJ involvement at any time from the first treatment admission to the last discharge was created. This is one of the two primary variables that is tested in this study. This variable is based on a recode of the referral admission variable. If an individual was not referred through the courts/criminal justice at treatment 1, but later referred via this means at treatment 2 or later, they are captured in this variable.

3.3.2m Any Arrest Before Discharge

The TEDS provides information on the number of arrests, for each treatment episode in the thirty days leading up to discharge. These five variables were combined to create one variable, named “Any Arrest Before Discharge for All Episodes”, that encompasses all five treatment episodes for an individual, together, so that one can see the total number of people who were arrested prior to their discharge from substance abuse treatment. Some individuals do not have an arrest until their fourth treatment episode, some have an arrest during their first treatment episode. Therefore, it is important to capture the sum of arrests for everyone in this timeline.

3.3.2n Motivation for Attending Self Help Programs

Data on the frequency of an individual’s attendance in a self-help program in the thirty days preceding the date of admission to substance abuse treatment is available as a variable in the TEDS. This includes attendance at AA, NA, and other self-help and support groups that focus on recovery from drug and substance dependence. The variable initially had six categories, ranging from no attendance to 30 days of attendance in one month. This variable was recoded to determine the cumulative score of motivation to attend self-help programs across all of an individual’s treatment episodes. It was then recoded into a dichotomous variable: those who have not attended self-help programs, and those who have.

3.4 Analytic Plan

Two hypotheses are to be tested. First, that there are independent demographic, time and drug usage variables that will increase the likelihood that an individual will switch over from not having criminal justice involvement when first entering substance abuse treatment to having a criminal justice referral to substance abuse treatment on the next episode. Here, we are testing our hypothesis at admission with the dependent variable, “Any CJ Switch”. Second, that these independent demographic, time and drug usage variables will increase the likelihood that an individual will be arrested in the 30 days leading up to their discharge from substance abuse treatment, where the individual had no prior criminal justice involvement. Here, we are testing our hypothesis upon discharge with the dependent variable, “Any Arrest Before Discharge for All Episodes”.

These two hypotheses are to be tested using the selected independent existing and created variables in the data set. The method of analysis is completed via independent samples t-tests, bivariate correlation, and multivariate logistic regression.

3.4.1 Independent Samples T-Tests

Six independent samples t-tests are analyzed:

1. Any switchover to the CJ system (three tests): measures in differences for those who entered substance abuse treatment once again but with a criminal justice referral with reference to:
 1. average time in treatment,
 2. average time between treatment episodes, and
 3. the youngest age at first use for the primary drug or substance type abused.
2. Arrest in the 30 days prior to discharge for any substance abuse treatment episode (three tests): measures in differences for those who did and did not have an arrest with respect to:
 1. average time in treatment,
 2. average time between treatment episodes,
 3. the youngest age at first use for the primary drug or substance type abused.

3.4.2 Bivariate Analysis

Bivariate analysis is completed to determine if any correlations exist between the independent variables and the two primary dependent variables to be tested in the hypotheses. See Appendix A for full results.

3.4.3 Multivariate Logistic Regressions

Two multivariate logistic regressions are completed—one for each of the hypotheses to be tested. The independent variables tested in this analysis are sex; race; ethnicity; education level; veteran status; if an individual was ever unemployed, a student, disabled, or homeless; poly drug use; two or more treatment episodes; a switch of drug to meth, crack-cocaine, opiates, marijuana, or alcohol; motivation to attend self-help programs; and living in a rural area. The two dependent variables in the regression analysis are “Any CJ Switch” and “Any Arrest Before Discharge for All Treatment Episodes.”

3.5 Ethics

The TEDS is a large, de-identified secondary source of data. No privacy issues were broached and Georgia State University’s Institutional Review Board approved this study.

Chapter IV
Results

4.1 Descriptive Statistics Results

4.1.1 Average Length of Treatment

The average length of treatment for an individual in all treatment episodes is 14.59 days (n = 95,302, sd = 91.63). When examining each unique treatment episode, a curve emerges. On the first treatment episode, the average time in treatment is 12.51 days (n = 95,306, sd = 91.31). However, on the second, third and fourth treatment episodes, the length of time in treatment more than doubles to 25.75 days (n = 21,994, sd = 121.62), 31.59 days (n = 6,579, sd = 124.05), and 33.35 days (n = 2,022, sd = 126.23) respectively, before sharply dropping in the fifth treatment episode to only 4.49 days on average (n = 424, sd = 38.09). See Table 2, below.

Table 2.
Average Length of Treatment in Days

	Average	<i>Treatment 1</i>	<i>Treatment 2</i>	<i>Treatment 3</i>	<i>Treatment 4</i>	<i>Treatment 5</i>
<i>N</i>	95,302	95,306	21,994	6,579	2,022	424
<i>Mean</i>	14.6	12.51	25.75	31.59	33.35	4.49
<i>Std. Deviation</i>	91.63	91.315	121.620	124.054	126.234	38.099
<i>Minimum # Days</i>	0	0	0	0	0	0
<i>Maximum # Days</i>	1,511	1,511	1,394	1,313	1,178	431

4.1.2 Average Length of Time Between Treatments

The average length of time between treatment episodes for the entire data set is 320.51 days, on average (n = 31,825, sd = 286.87). When examining the gaps in between treatments, the length of time between each successive treatment episode decreases. Between the first and second treatment episode, the average gap in time is 318.22 days (n = 31,825, sd = 309.63). The length of time between the second and third treatment episode is 268.18 days (n = 10,103, sd = 260.73). Between the third and fourth treatment episodes, an average of 230.39 days (n = 3,417, sd = 225.42), and finally, between the fourth and fifth treatment episodes, an average of 221.44 days (n = 1,005, sd = 216.19). There is a 43.7% decrease in the length of time in between treatments from the first to the last treatment episode, or 97 days. See Table 3, below.

Table 3.
Average Length of Time Between Treatment Episodes

	Average	<i>Between 1 and 2</i>	<i>Between 2 and 3</i>	<i>Between 3 and 4</i>	<i>Between 4 and 5</i>
<i>N</i>	31,825	31,825	10,103	3,417	1,005
<i>Mean</i>	320.51	318.22	268.18	230.39	221.44
<i>Minimum # Days</i>	0	0	0	0	0
<i>Maximum # Days</i>	1,450	1,450	1,415	1,253	1,169

4.1.3 Youngest Age at First Use

Descriptive statistics were used to examine the youngest age an individual first used the primary drug for which they entered treatment, for all their treatment episodes. The youngest age was at birth, and the oldest age was 99 years old. The average age is 18 years old, median age is 16 (n = 127,642, sd = 11.033).

4.1.4 Two or More Treatment Episodes

81.9% of individuals in the data set have only one prior treatment episode (n = 73,083). 18.9% of individuals have one or more prior treatment episodes (n = 16,126). For each successive treatment episode, this average steadily increases, from 2.24 prior treatments on the first treatment episode to 3.30 prior treatments on the fifth treatment episode. See Table 4.

Table 4.
Two or More Prior Treatment Episodes

	<i>In Treatment 1</i>	<i>In Treatment 2</i>	<i>In Treatment 3</i>	<i>In Treatment 4</i>	<i>In Treatment 5</i>
<i>N</i>	127,642	31,825	10,103	3,417	1,005
<i>Average # Prior Treatment Episodes</i>	2.24	2.52	2.87	3.12	3.30
<i>Std. Deviation</i>	2.923	2.812	2.767	2.741	2.719

4.1.5 Arrest Before Discharge From Treatment

Frequencies were run to determine which individuals had any arrests within 30 days prior to discharge from that treatment episode, and how many did not have any arrests. Encompassing all treatment episodes, 4,015 individuals had an arrest in the thirty days leading up to their discharge from treatment. This number is 3.1% of the data set (n = 127,642).

4.1.6 Switch to Criminal Justice Involvement Upon Next Treatment Episode Admission
Frequencies were run to determine which individuals had a referral from the criminal justice system to substance abuse treatment upon their next admission to treatment, where they did not have any previously. For all treatment episodes, 3,036 individuals had a switch over. This number is 2.4% of the data set (n = 127,642).

4.1.7 Poly Drug Use

Only 8.9% of the data set includes individuals who have cited only one primary drug or substance type when they are seeking treatment (n = 11,408). The majority, 91.1%, habitually use more than one drug or substance type (n = 116,234).

4.1.8 Motivation to Attend Self-Help Programs Prior to Treatment

The majority of individuals in the data set, 90.6%, claim to have never attended any self-help programs (n = 115,642). There is a sharp drop-off of individuals who have attended self-help programs as their number of treatment episodes increases. By the fifth episode, only one individual attended such programs. The total percentage of those who have attended self-help programs is 9.4% (n = 12,000).

4.1.9 Primary Drug Switchover

A quarter of the individuals in the data set for each of these variables made a switch into one of the top five drugs tested in the analysis. The lowest percentage of a drug switch was for alcohol. Assumptions are made that once an individual is seeking another drug type, they are ramping up to a drug type with more impact and effect. If an individual is abusing one drug type already that is not alcohol, alcohol may not be the primary substance for which they will seek treatment in a subsequent treatment episode.

Switchover rates:

- Switch to methamphetamines: 23.7% (n = 30,200)
- Switch to marijuana: 22.3% (n = 28,423)
- Switch to crack-cocaine: 23.5% (29,958)
- Switch to alcohol: 17.6% (n = 22,486)
- Switch to opiates: 23.7% (n = 30,258)

4.2 Results of Switch Over to Criminal Justice Involvement (Admission Analysis)

Results of a person's admissions to substance abuse treatment (admissions two through five) are presented to determine if there are significant differences between individuals who did not have a switch over and those that do.

4.2.1 Average Length of Time Between Treatment Episodes

An independent samples t-test was conducted to examine the differences in length of time in between substance abuse treatment episodes for those that do not have a switch over into the criminal justice system on their next treatment episode admission, and those who do. The group of individuals who do not have a switch over to criminal justice involvement (n=28,789)

on their next treatment admission had an average length of time between treatment admissions of 316 days (sd = 288.12). For those that have a switch over to criminal justice involvement on their next treatment admission (n=3,036), the average length of time between treatment episodes is longer, at 363 days (sd = 271.11). Equal variances between these two groups are not assumed based on Levene’s Test for Equality of Variances (p = .000). The independent samples t-test is associated with a statistically significant effect (t(3,795) = -9.075, p<.001, Cohen’s d = 0.17). A graphical representation of the means and the 95% confidence interval are displayed in Table 5. Correlation analysis reveals that there is a significant positive relationship between the average length of time between treatment episodes and a criminal justice switch over, r(31,823) = 0.048, p = .000.

Table 5.
Results of a CJ Switch Based on Length of Time Between Treatment Episodes

Any CJ Switch	N	Mean # Days	Std. Deviation	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
No	28,789	315.99	288.120	-8.639	31823	.000**	-47.237	5.468	-57.954	-36.520
Yes	3,036	363.23	271.111	-9.075	3795.34	.000**	-47.237	5.205	-57.442	-37.031

Two tailed *p<.05, **p<.005

4.2.2 Average Length of Time in Treatment

An independent samples t-test was conducted to examine the differences in the average length of time in substance abuse treatment for those who do not have a switch over into the criminal justice system on their next treatment episode admission, and those who do. The group of individuals who do not have a switch over to criminal justice involvement (n=124,606) on their next treatment admission had an average length of time in treatment of 13.30 days (sd = 88.10). For those who have a switch over to criminal justice involvement on their next treatment admission (n=2,956), the average length of time in treatment is longer, at 55 days (sd = 162.78). Equal variances between these two groups are not assumed based on Levene’s Test for Equality of Variances (p = .000). The independent samples t-test is associated with a statistically significant effect (t(3,010) = -13.954, p<.001, Cohen’s d = 0.32). A graphical representation of the means and the 95% confidence interval are displayed in Table 6. Correlation analysis reveals that there is a significant positive relationship between the average length of time between treatment episodes and a criminal justice switch over, r(95,300) = 0.079, p = .000.

Table 6.

Results of a CJ Switch Based on Length of Time In Treatment

Any CJ Switch	N	Mean # Days	Std. Deviation	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
No	92,346	13.29	88.106	-24.593	95300	.000**	-41.974	1.707	-45.319	-38.628
Yes	2,956	55.26	162.781	-13.954	3010.67	.000**	-41.974	3.008	-47.871	-36.076

Two tailed * $p < .05$, ** $p < .005$

4.2.3 Average Youngest Age at First Use

An independent samples t-test was conducted to examine the differences in the youngest average age of first use for those in substance abuse treatment that do not have a switch over into the criminal justice system on their next treatment episode admission, and those that do. The group of individuals who do not have a switch over to criminal justice involvement (n=124,606) on their next treatment admission were, on average, 18.09 years old when they first used the drug for which they are in treatment (sd = 11.10). For those that have a switch over to criminal justice involvement on their next treatment admission (n=2,956), the average age of first use for the drug they are in treatment for is younger, at 16.29 years old (sd = 7.518). Equal variances between these two groups are not assumed based on Levene’s Test for Equality of Variances ($p = .000$). The independent samples t-test is associated with a statistically significant effect ($t(3,365) = 12.859$, $p < .001$, Cohen’s $d = 0.19$), showing an average age of first use difference of 1.8 years. A graphical representation of the means and the 95% confidence interval are displayed in Table 7, below.

Table 7. *Any CJ Switch Based on Average Youngest Age of First Use*

Any CJ Switch	N	Mean Age	Std. Deviation	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
No	124,606	18.09	11.102	8.887	127640	.000**	1.801	.203	1.403	2.198
Yes	3036	16.29	7.518	12.859	3365.809	.000**	1.801	.140	1.526	2.075

Two tailed * $p < .05$, ** $p < .005$

4.2.4 Multivariate Logistic Regression

The first primary analysis for the study is a multivariate logistic regression to test the impact of the specified independent variables on a CJ switch. The total number of included individuals in this regression analysis is 88,372. Of individuals who have more than one treatment episode (n = 16,126) and therefore could have a CJ switch, 10.5% do have a CJ switch. This accounts for 1.93% of the entire dataset (n = 1,708). Table 8 displays full results of the analysis.

Interestingly, the analysis shows that sex, race and ethnicity are not statistically significant in their impact on a CJ switch, whereas they are statistically significant in the second analysis. The odds ratio (OR) of 0.976 (confidence interval [95% CI] = 0.88-1.08) of sex, with a p value of 0.653 indicates that the difference in being male or female on a CJ switch is not significant. Blacks have no more of an increased risk to switch into CJ involvement as compared to whites (OR = 1.00, 95% CI = 0.89-1.12), nor do races categorized as “other” (OR = 1.09, 95% CI = 0.79-1.51).

Being a veteran also does not have any statistical significance on CJ switch ($p = 0.726$, OR = 1.06, 95% CI = 0.76-1.49), nor does poly drug use ($p = 0.238$, OR = 1.24, 95% CI = 0.87-1.78).

The remaining independent variables tested in the regression are all statistically significant. For education, non-completion of high school or obtaining a GED, the reference group in this analysis, is significant to CJ switch ($p = 0.042$). Obtaining a high school diploma or GED shows potentially decreased odds of a CJ switch by 13% ($p = 0.022$, OR = 0.87, 95% CI = 0.77-0.98), and obtaining higher education yields the exact same 13% decrease ($p = 0.039$, OR = 0.87, 95% CI = 0.76-0.99).

An individual is 77% more likely to have a CJ switch if they have indicated they have ever been unemployed at admission ($p = 0.000$, OR = 1.77, 95% CI = 1.33-2.37). Likewise, an individual is 46% more likely to have a CJ switch if they have ever been a student at admission ($p = 0.002$, OR = 1.46, 95% CI = 1.15-1.85). Labor statistics are gathered for persons over the age of 18, therefore it is safe to assume that by being a subset of the variable “Not in Labor Force”, a student is defined as those individuals who have been enrolled in higher education institutions. Being disabled at admission decreases the likelihood of a CJ switch by 23% ($p = 0.000$, OR = 0.77, 95% CI = 0.68-0.88). Those individuals who are homeless are also less likely to have a CJ switch at admission, by 16% ($p = 0.017$, OR = 0.84, 95% CI = 0.72-0.97).

The number of times an individual has entered substance abuse treatment also has an impact on CJ switch, with an increase of 15% ($p = 0.010$, OR = 1.15, 95% CI = 1.04-1.29). Motivation to attend self-help programs interestingly increases the likelihood of a CJ switch by 23% ($p = 0.000$, OR = 1.23, 95% CI = 1.13-1.35).

When examining the association from a switch from one primary drug to another, the likelihood of a CJ switch is very high. A switch to meth from another primary drug increases an individual’s odds of a CJ switch by 108% ($p = 0.000$, OR = 2.08, 95% CI = 1.69-2.57). For crack-cocaine, the percentage increase is even higher, at 147% ($p = 0.000$, OR = 2.47, 95% CI = 1.99-3.07). For a switch of primary drug to marijuana, the increase is higher still, at 150% ($p = 0.000$, OR = 2.50, 95% CI = 2.10-2.97). The increased likelihood to switch in to CJ involvement with a switch to alcohol was 206% ($p = 0.000$, OR = 3.06, 95% CI = 2.70-3.46). The most astounding increase in likelihood to criminal justice involvement comes with an individual’s switch of primary drug to opiates. They are 370% more likely to have a CJ switch ($p = 0.000$, OR = 4.70, 95% CI = 3.60-6.12).

Finally, individuals living in a rural area are 11% more likely to have a CJ switch ($p = 0.066$, OR = 1.11, 95% CI = 0.99-1.24).

Table 8.
Any CJ Switch Multivariate Logistic Regression Analysis Results

Variable	B	S.E.	Wald	Df	Sig.	Exp(B)	95% C.I. for EXP(B)	
							Lower	Upper
Sex	-.024	.054	.202	1	.653	.976	.879	1.084
Race: White			.289	2	.865			
Race: Black	.000	.060	.000	1	.996	1.000	.889	1.124
Race: Other	.089	.166	.283	1	.595	1.093	.789	1.514
Hispanic	-.382	.240	2.524	1	.112	.683	.426	1.093
Did Not Finish High School			6.333	2	.042*			
Finished High School / GED	-.143	.062	5.256	1	.022*	.867	.768	.980
Higher Education	-.143	.069	4.257	1	.039*	.867	.757	.993
Ever Veteran	.061	.174	.123	1	.726	1.063	.756	1.495
Ever Unemployed	.571	.148	14.947	1	.000**	1.770	1.325	2.365
Ever Student	.375	.122	9.505	1	.002**	1.455	1.146	1.847
Ever Disabled	-.256	.066	15.223	1	.000**	.774	.681	.880
Ever Homeless	-.178	.075	5.719	1	.017*	.837	.723	.968
Poly Drug Use	.217	.184	1.393	1	.238	1.242	.866	1.782
Two or More Treatment Episodes	.143	.055	6.693	1	.010*	1.153	1.035	1.285
Switch to Meth	.734	.107	47.468	1	.000**	2.083	1.691	2.567
Switch to Crack-Cocaine	.906	.110	67.985	1	.000**	2.474	1.994	3.068
Switch to Opiates	1.547	.135	130.694	1	.000**	4.697	3.603	6.124
Switch to Marijuana	.917	.088	108.351	1	.000**	2.501	2.104	2.972
Switch to Alcohol	1.118	.063	310.627	1	.000**	3.059	2.701	3.464
Motivation to Attend Self-Help Programs	.210	.045	22.055	1	.000**	1.234	1.130	1.347
Living in Rural Area	.106	.058	3.378	1	.066	1.112	.993	1.246

Exp(B) is the Odds Ratio.

Exp(B) values statistically significant at the * $p < .05$, ** $p < .005$ levels.

4.3 Results of Arrest Thirty Days Prior to Discharge (Discharge Analysis)

Individuals with a primary referral source to substance abuse treatment, except from the CJ system, on their first admission were selected.

4.3.1 Average Length of Time Between Treatment Episodes

Independent samples t-test analysis was conducted to examine the differences in length of time in between substance abuse treatment episodes for those who do not have an arrest in the thirty days prior to discharge from treatment, and those who do. The group of individuals who do not have an arrest ($n = 29,741$) in the 30 days prior to discharge from treatment had an average length of time between treatment episodes of 322 days ($sd = 288.64$). For those

individuals who do have an arrest in the 30 days prior to discharge from treatment (n = 2,084), the average length of time between treatment episodes is shorter, at 296 days (sd =259.20). Equal variances between these two groups are not assumed based on Levene’s Test for Equality of Variances (p =.000). The independent samples t-test is associated with a statistically significant effect (t(2,459) = 4.370, p<.001, Cohen’s d = 0.09). A graphical representation of the means and the 95% confidence interval are displayed in Table 9. Correlation analysis reveals that there is a significant negative relationship between the average length of time between treatment episodes and arrest, r(31,823) = -0.022, p = .000.

Table 9.
The Effect of Time Between Treatment Episodes on Arrest While in Treatment

Any Arrest Before Discharge for All Episodes	N	Mean # Days	Std. Deviation	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
No	29,741	322.199	288.641	3.980	31823	.000**	25.869	6.499	13.130	38.607
Yes	2084	296.330	259.200	4.370	2459.424	.000**	25.869	5.919	14.261	37.476

Two tailed *p<.05, **p<.005

4.3.2 Average Length of Time in Treatment

An independent samples t-test analysis was conducted to examine the differences in the average length of time in substance abuse treatment for those who do not have an arrest in the 30 days prior to discharge from treatment, and those who do. The group of individuals who do not have an arrest (n=91,288) in the 30 days prior to discharge from treatment had an average length of time in treatment of 14.6 days (sd = 92.27). For those individuals who do have an arrest in the 30 days prior to discharge from treatment (n=4,014), the average length of time in treatment is 13.79 days (sd = 75.78). Equal variances between these two groups is assumed based on Levene’s Test for Equality of Variances (p =.172). The independent samples t-test is not associated with a statistically significant effect (t(95,300) = -0.565, p = .572, Cohen’s d = 0.01). A graphical representation of the means and the 95% confidence interval are displayed in Table 10. Correlation analysis reveals that there is no significant relationship between the average length of time between treatment episodes and arrest, r(95,300) = -0.002, p = .572.

Table 10.

Results of Length of Time in Treatment and its Effect on Arrest

Any Arrest Before Discharge for All Episodes	N	Mean # Days	Std. Deviation	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
No	91,288	14.632	92.267	.565	95300	.572	0.834	1.478	-2.062	3.731
Yes	4,014	13.798	75.786	.676	4552.288	.499	0.834	1.235	-1.586	3.255

Two tailed * $p < .05$, ** $p < .005$

4.3.3 Average Youngest Age at First Use

An independent samples t-test analysis to examine the differences in the youngest average age of first use for those in substance abuse treatment for those who do not have an arrest in the 30 days prior to discharge from treatment, and those who do. The group of individuals who do not have an arrest ($n=123,627$) in the 30 days prior to discharge from treatment were, on average, 18.09 years old ($sd = 11.07$). For those individuals who do have an arrest in the 30 days prior to discharge from treatment ($n=4,014$), the average age of first use for the drug they are in treatment for is also younger, at 16.77 years old ($sd = 9.68$). Equal variances between these two groups are not assumed based on Levene's Test for Equality of Variances ($p = .000$). The independent samples t-test is associated with a statistically significant effect ($t(4,361) = 8.425$, $p < .001$, Cohen's $d = 0.13$), showing an average age of first use difference of 1.32 years. A graphical representation of the means and the 95% confidence interval are displayed in Table 11.

Table 11.

Results of Average Youngest Age of First Use on Arrest While in Treatment

Any Arrest Before Discharge All Episodes	N	Mean Age	Std. Deviation	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
No	123,627	18.09	11.072	7.431	127640	.000**	1.315	.177	.968	1.661
Yes	4,015	16.77	9.683	8.425	4361.871	.000**	1.315	.156	1.009	1.620

Two tailed * $p < .05$, ** $p < .005$

4.3.4 Multivariate Logistic Regression

The second and final analysis for the study is a multivariate logistic regression to test the impact of specified independent variables on the rate of arrest in the thirty days prior to discharge from treatment.

In contrast to testing on a CJ switch, sex and race are significant when examining their impact on an arrest in the 30 days leading up to discharge from substance abuse treatment. Females are 33% less likely to be arrested ($p = 0.000$, OR = 0.67, 95% CI = 0.61-0.73). Blacks are 55% more likely to be arrested while in treatment ($p = 0.000$, OR = 1.55, 95% CI = 1.41-1.80), as are individuals categorized as “other” race, by 44% ($p = 0.000$, OR = 1.44, 95% CI = 1.15-1.80). Ethnicity is still not a significant factor in arrest during treatment.

For an individual’s education level and its impact on arrest during treatment, finishing high school or obtaining a GED lowers the risk by 12.6% ($p = 0.013$, OR = 0.87, 95% CI = 0.79-0.97). But when examining those who have a higher education level, they are 77% more likely to be arrested during this time ($p = 0.000$, OR = 1.77, 95% CI = 1.60-1.96). Individuals who described themselves as ever being a veteran are 35% less likely to be arrested ($p = 0.005$, OR = 0.65, 95% CI = 0.48-0.88).

For those not in the labor force, students in treatment are 73% more likely to be arrested while in treatment ($p = 0.000$, OR = 1.46-2.03). Individuals who are homeless have a 35% increased risk of arrest ($p = 0.000$, OR = 1.35, 95% CI = 1.19-1.51). Disability status had no significant effect on likelihood of arrest in the 30 days prior to discharge ($p = 0.883$, OR 1.00, 95% CI = 0.91-1.12).

Poly drug use and being admitted to substance abuse treatment more than once do not show a significant impact on arrest during treatment. The motivation to attend self-help programs, however, is significant. Those individuals are at a 40% increased risk of arrest ($p = 0.000$, OR = 1.40, 95% CI = 1.29-1.52). Arrests for those in treatment living in rural areas is also significantly less, showing a 30% decrease as compared to urban areas and clusters ($p = 0.000$, OR = 0.70, 95% CI = 0.63-0.78).

With a switch of primary drug from one treatment episode to another, four of the top five drugs tested were not significantly related to likelihood of arrest while in treatment: meth, crack-cocaine, opiates, or marijuana. The only substance that was significant was alcohol. Those individuals who were in treatment for one drug, and switched to alcohol in their next treatment episode are 57% more likely to be arrested while in treatment ($p = 0.000$, OR = 1.57, 95% CI = 1.37-1.79). See table 12 below for complete results.

Table 12.

Multivariate Logistic Regression Results on Any Arrest Before Discharge for All Episodes

Variable	B	S.E.	Wald	df	Sig.	95% C.I. for EXP(B)		
						Exp(B)	Lower	Upper
Sex	-.402	.045	79.033	1	.000**	.669	.612	.731
Race: White			93.984	2	.000**			
Race: Black	.437	.045	92.450	1	.000**	1.548	1.416	1.692
Race: Other	.365	.116	9.884	1	.002**	1.441	1.147	1.809
Hispanic	.028	.143	.039	1	.844	1.028	.778	1.360
Did Not Finish High School			214.345	2	.000**			
Finished High School / GED	-.135	.054	6.237	1	.013*	.874	.786	.971
Higher Education	.572	.052	121.474	1	.000**	1.771	1.600	1.961
Ever Veteran	-.433	.153	8.034	1	.005*	.649	.481	.875
Ever Student	.546	.084	42.301	1	.000**	1.726	1.464	2.034
Ever Disabled	.008	.052	.022	1	.883	1.008	.909	1.117
Ever Homeless	.297	.059	25.240	1	.000**	1.346	1.198	1.511
Poly Drug Use	-.059	.177	.111	1	.738	.943	.667	1.333
Two or More Treatment Episodes	-.006	.053	.013	1	.909	.994	.895	1.104
Switch to Meth	-.121	.115	1.114	1	.291	.886	.707	1.110
Switch to Crack-Cocaine	.118	.107	1.219	1	.269	1.125	.913	1.388
Switch to Opiates	.161	.120	1.787	1	.181	1.174	.928	1.487
Switch to Marijuana	.126	.087	2.069	1	.150	1.134	.955	1.346
Switch to Alcohol	.452	.068	43.524	1	.000**	1.571	1.374	1.797
Motivation to Attend Self-Help Programs	.336	.043	61.600	1	.000**	1.400	1.287	1.522
Living in Rural Area	-.356	.056	40.817	1	.000**	.700	.628	.781

Exp(B) is the Odds Ratio.

Exp(B) values statistically significant at the * $p < .05$, ** $p < .005$ levels.

Chapter V

Discussion

5.1 Results

The results of the regression analyses can be roughly broken into two categories: variables that have common effects between the two tested hypotheses and those that have contrary effects.

5.1.1 Variables with Common Effects

Across the analyses in this study, there are five common factors that increase an individual's overall risk of CJ involvement. They are: the longer the time an individual takes in between treatment episodes, the younger those individuals are the first time they use their primary drug, if they were ever a student, if they switched their primary drug to alcohol, or if they attended self-help programs.

The results show that the average age of first use of primary drug is significantly younger for an individual with CJ involvement (switch or arrest) and is approximately 16 years old. This has a direct link to educational attainment. These individuals are at an age where they are, or would be, attending high school. They are using drugs for the first time as teenagers under the age of 18, which can have an effect on high school or GED completion. The relationship of higher education to student status in the two tested dependent variables appears slightly more complex. The substantial increase of likelihood of CJ switch and Arrest above for those who have obtained a higher educational level is somewhat surprising, and potentially indicates the increase in risky behaviors and lower supervision experienced by college students.

As time goes on, people report having attended self-help less with each subsequent treatment episode. Frequent and long term attendance of self-help programs, while simultaneously entering and exiting treatment programs might indicate long term chronic problems that would increase risk of CJ involvement over time.

5.1.2 Variables with Contrary Effects

It is at first striking that the switch of nearly all primary drugs has an enormous impact on the likelihood of initiating CJ involvement between treatment episodes, but is not significant to risk of arrest during treatment. However, upon consideration, the switch of drugs outside of treatment could be attributed to several factors such as instability, risky behaviors, or impulsivity that are exactly what active treatment is designed to counter. For instance, switching drugs might lead a user to a relationship with a new and unknown dealer, precipitating higher risk. An individual who has switched drugs post treatment has likely backslid into the behaviors that contributed to their initial drug abuse, but possibly even in an exacerbated form. Once that individual returns to treatment, the switch of drug choice is less likely to impact their criminogenic behavior as long as they are a successful participant.

In line with the above supposition is Bennett & Holloway's (2005) study showing the strongest relationship to offending among crack, heroin, and cocaine users where the higher cost to obtain those drugs in comparison to alcohol and marijuana was a likely contributor to criminal behavior. Opiates, heroin, and crack cocaine were likewise, by far, the most likely to involve a CJ switch between treatment episodes in the current study.

Race is not a significant factor in a CJ switch between treatment episodes, however it is a factor in arrest risk during treatment. This could be a circumstance of individuals entering treatment without CJ involvement being one population, as opposed to those who are arrested during treatment who could have already had prior CJ involvement (without a CJ referral to treatment) that could have increased their likelihood of arrest. Entry into treatment without CJ involvement is essentially a neutral playing field between races. However when addressing arrest during treatment, it is likely that the higher probability of law enforcement encounters experienced by Blacks and other minorities comes into play. In addition, the results show that there is an increased likelihood of arrest during treatment in urban areas as compared to rural. Georgia's urban areas have a higher proportion of black and minority residents.

This makeup of race and ethnicity entering treatment shows a stark contrast to studies by Des Jarlais et al., in New York City, and Linton et al., in Atlanta. They state that as compared to Whites, Blacks are less likely to utilize drug treatment despite reporting more severe substance abuse disorders (Des Jarlais et al., 2013; Linton et al., 2016,). For Blacks in substance abuse treatment, retention is poorer than Whites (Davey, Latkin, Hua, Tobin, & Strathdee, 2007). If there is more rapid cycling of Blacks in and out of treatment as compared to Whites, this could account for the higher percentage of Blacks entering treatment than the racial makeup of Georgia Census data shows. Point of entry, financial stability, differing racial population characteristics of other states in the aforementioned study, or other variables could also possibly account for poorer retention among Blacks.

Many factors could influence a CJ switch for individuals living in rural areas. There could be greater obstacles to those who live in rural areas that impact their willingness and ability to admit themselves to substance abuse treatment. For example this could be due to a dearth of treatment services or programs, lack of transportation, confidentiality concerns, stigmas with obtaining treatment, or lack of insurance coverage. This can prohibit timely treatment, exacerbating consequences of drug use and addiction, as well as the severity and negative implications of substance abuse (Young, Havens, & Leukefeld, 2012). In turn these obstacles can lead to an arrest in between treatment episodes that results in court referral to treatment, rather than an arrest while in treatment.

The increased risk of arrest while in treatment for the homeless population could be completely unrelated to drug abuse or drug-crimes. If a person is in an outpatient treatment setting, their chances of arrest by police due to simply being homeless is higher because of their potential or known involvement with illicit substances. The homeless population is typically greater in urban areas, and this study does show that there is an increased likelihood of arrest in urban settings as compared to rural regions.

An individual having ever been unemployed is a factor in increased odds of a CJ switch, however, in regard to the arrest variable, there were no individuals who had an arrest who had never been unemployed and therefore could not be included in that regression analysis. This combination substantially suggests that consistent employment could be a powerful protector against CJ involvement. Fisher et al. (2014) posit that the temporal order of substance abuse and offending is of note when developing prevention protocols, however, this alone ignores other risk factors that may interplay with substance abuse disorders, such as prior arrest history, mental health issues, and the use of other drugs. Individuals with substance abuse disorders who do end up having CJ involvement may need more resources to avoid cycling back into substance abuse (Garnick et al., 2014). The analyses here indicate that employment services and vocational training are critical, as are connections to social networks and housing.

5.2 Study Limitations

The TEDS sample that is examined for this study utilizes self-reported data only. While the information on referral source may be obtained from court documentation, the information on arrests in the 30 days prior to discharge is based on self-reports. Without linking treatment data to criminal history data, we cannot know for certain how many persons receiving substance abuse treatment contact the criminal justice system some time before discharge. Although the sample spans a five year period and is large, accuracy may be more limited and bias may exist, especially considering the circumstances at which the information was given by the individual. Misclassification may have occurred by the facilities or individuals' self-report. Finally, the data are fully representative of Georgia as they are a complete population, however, the findings cannot be generalized to other states.

Care was taken to ensure interpretation of the TEDS did not extend beyond the limitations of the data. Limitations to the TEDS do exist. An individual's primary, secondary, and tertiary substance use which led to treatment are reported to TEDS, and are not necessarily a complete enumeration of all the substances used at the time of admission.

The primary source of income for individuals in the sample was not made available. Health insurance data was also not available. Additionally, and perhaps one of the greatest limitations of this analysis, is that information about co-occurring psychiatric disorders was missing from the TEDS sample.

5.3 Suggestions for Future Research

This sample did not provide the type of health insurance, if any, that was used for those entering substance abuse treatment. With the implementation of the Affordable Care Act (ACA) in 2010, future research could determine the impact, if any, of the ACA on access to treatment, treatment success and/or retention, and criminal justice outcomes for those in treatment as compared to a time before ACA legislation was passed.

Completing a study of co-occurring disorders while in treatment and its effect on CJ involvement in Georgia might provide another strong indicator of the potential for an individual to transition in CJ involvement and strengthen the results of this study.

5.4 Conclusion

The results and interpretation of this study may help inform and direct one part of a criminal justice prevention strategy and evidence-based health policy for individuals who are undergoing substance abuse treatment. Of particular value are the possible impact of age of first drug use, unemployment, switching drugs, and any behaviors that increase the likelihood of an individuals' risk taking, particularly at a young age. Further study of these interactions and developing more effective treatment and intervention methods for individuals with these characteristics could dramatically improve outcomes and decrease burdens on the criminal justice system in the long-term.

References

Banducci, A., Dahne, J., Magidson, J., Chen, K., Daughters, S., & Lejuez, C. (2013). Clinical characteristics as a function of referral status among substance users in residential treatment. *Addictive Behaviors*, 38(4), 1924-1930. <http://dx.doi.org/10.1016/j.addbeh.2012.12.015>

Balyakina, E., Mann, C., Ellison, M., Sivernell, R., Fulda, K., Sarai, S., & Cardarelli, R. (2013). Risk of Future Offense Among Probationers with Co-occurring Substance Use and Mental Health Disorders. *Community Mental Health Journal*, 50(3), 288-295. <http://dx.doi.org/10.1007/s10597-013-9624-4>

Bennett, T., & Holloway, K. (2005). The Association Between Multiple Drug Misuse and Crime. *International Journal Of Offender Therapy And Comparative Criminology*, 49(1), 63-81. <http://dx.doi.org/10.1177/0306624x04269003>

Campbell, K., Deck, D., & Krupski, A. (2007). Impact of Substance Abuse Treatment on Arrests among Opiate Users in Washington State. *American Journal On Addictions*, 16(6), 510-520. <http://dx.doi.org/10.1080/10550490701641157>

Corrections Costs FY2015. (2015) Atlanta. Retrieved from <http://www.dcor.state.ga.us/sites/default/files/Corrections%20Costs%20FY2015.pdf>

Davey, M., Latkin, C., Hua, W., Tobin, K., & Strathdee, S. (2007). Individual and Social Network Factors that Predict Entry to Drug Treatment. *American Journal On Addictions*, 16(1), 38-45. <http://dx.doi.org/10.1080/10601330601080057>

Defining Rural Population. (2017). *Hrsa.gov*. Retrieved 30 March 2017, from <https://www.hrsa.gov/ruralhealth/aboutus/definition.html>

Des Jarlais, D., Arasteh, K., Mcknight, C., Feelemyer, J., Hagan, H., Cooper, H., & Perlman, D. (2013). Combined HIV Prevention, the New York City Condom Distribution Program, and the Evolution of Safer Sex Behavior Among Persons Who Inject Drugs in New York City. *AIDS And Behavior*, 18(3), 443-451. <http://dx.doi.org/10.1007/s10461-013-0664-0>

Fisher, W., Clark, R., Baxter, J., Barton, B., O'Connell, E., & Aweh, G. (2014). Co-occurring risk factors for arrest among persons with opioid abuse and dependence: Implications for developing interventions to limit criminal justice involvement. *Journal Of Substance Abuse Treatment*, 47(3), 197-201. <http://dx.doi.org/10.1016/j.jsat.2014.05.002>

Frequently Asked Questions. (2017). *Veterans.georgia.gov*. Retrieved 19 March 2017, from <https://veterans.georgia.gov/faq#ncvas>

Garnick, D., Horgan, C., Acevedo, A., Lee, M., Panas, L., & Ritter, G. et al. (2014). Criminal justice outcomes after engagement in outpatient substance abuse treatment. *Journal Of Substance Abuse Treatment*, 46(3), 295-305. <http://dx.doi.org/10.1016/j.jsat.2013.10.005>

Georgia Department of Corrections. (2011). Inmate Statistical Profile (p. 47). Forsyth, GA: State of Georgia.

Georgia Department of Corrections. (2016). Inmate Statistical Profile (p. 47). Forsyth, GA: State of Georgia.

Governor's Office of Planning and Budget. (2014). State of Georgia's Budget Report FY 2015 (pp. 146-154). Atlanta, GA: State of Georgia.

Harris, E., Jacapraro, J., & Rastegar, D. (2012). Criminal charges prior to and after initiation of office-based buprenorphine treatment. *Substance Abuse Treatment, Prevention, And Policy*, 7(1), 10. <http://dx.doi.org/10.1186/1747-597x-7-10>

Kissin, W., Tang, Z., Campbell, K., Claus, R., & Orwin, R. (2014). Gender-Sensitive Substance Abuse Treatment and Arrest Outcomes for Women. *Journal Of Substance Abuse Treatment*, 46(3), 332-339. doi:10.1016/j.jsat.2013.09.005

Kubiak, S., Arfken, C., Swartz, J., & Koch, A. (2006). Treatment at the front end of the criminal justice continuum: the association between arrest and admission into specialty substance abuse treatment. *Substance Abuse Treatment, Prevention, And Policy*, 1(1), 20. <http://dx.doi.org/10.1186/1747-597x-1-20>

Linton, S., Cooper, H., Luo, R., Karnes, C., Renneker, K., & Haley, D. et al. (2016). People and places: Relocating to neighborhoods with better economic and social conditions is associated with less risky drug/alcohol network characteristics among African American adults in Atlanta, GA. *Drug And Alcohol Dependence*, 160, 30-41. <http://dx.doi.org/10.1016/j.drugalcdep.2015.11.036>

Lopez-Howard, S., Gonzalez, S., & Hafner, R. (2015). *Toward a State Drug Enforcement Strategy: A Multi-Sector Needs Assessment* (1st ed., p. 4). Atlanta: Criminal Justice Coordinating Council.

Mennis, J., & Stahler, G. (2016). Racial and Ethnic Disparities in Outpatient Substance Use Disorder Treatment Episode Completion for Different Substances. *Journal Of Substance Abuse Treatment*, 63, 25-33. <http://dx.doi.org/10.1016/j.jsat.2015.12.007>

Merrill, J., Alterman, A., Cacciola, J., & Rutherford, M. (1999). Prior Treatment History and Its Impact on Criminal Recidivism. *Journal Of Substance Abuse Treatment*, 17(4), 313-319. [http://dx.doi.org/10.1016/s0740-5472\(99\)00012-4](http://dx.doi.org/10.1016/s0740-5472(99)00012-4)

Morley, K., Lynskey, M., Moran, P., Borschmann, R., & Winstock, A. (2015). Polysubstance use, mental health and high-risk behaviours: Results from the 2012 Global Drug Survey. *Drug And Alcohol Review*, 34(4), 427-437. <http://dx.doi.org/10.1111/dar.12263>

Mutter, R., Ali, M., Smith, K., & Strashny, A. (2015). Factors associated with substance use treatment completion in residential facilities. *Drug And Alcohol Dependence*, 154, 291-295. <http://dx.doi.org/10.1016/j.drugalcdep.2015.07.004>

Is drug addiction treatment worth its cost?. (2012). *Principles of Drug Addiction Treatment: A Research-Based Guide (Third Edition)*. Retrieved 19 February 2017, from NIDA (2012). Principles of Drug Addiction Treatment: A Research-Based Guide (Third Edition). Retrieved February 19, 2017, from <https://www.drugabuse.gov/publications/principles-drug-addiction-treatment-research-based-guide-third-edition>

Lipari, R., Park-Lee, E., & Van Horn, S. (2016). *America's need for and receipt of substance use treatment in 2015*. SAMHSA. Retrieved from https://www.samhsa.gov/data/sites/default/files/report_2716/ShortReport-2716.html

Mennis, J., & Stahler, G. (2016). Racial and Ethnic Disparities in Outpatient Substance Use Disorder Treatment Episode Completion for Different Substances. *Journal Of Substance Abuse Treatment*, 63, 25-33. <http://dx.doi.org/10.1016/j.jsat.2015.12.007>

Mental and Substance Use Disorders. (2016). *Samhsa.gov*. Retrieved 20 January 2017, from <https://www.samhsa.gov/disorders>

Office of Planning and Budget,. (2014). *The Governor's Budget Report Fiscal Year 2015*. Atlanta: The State of Georgia.

QuickFacts Georgia. *Census.gov*. Retrieved 28 February 2017, from <https://www.census.gov/quickfacts/table/PST045216/13#headnote-js-a>

Rosenblum, A., Parrino, M., Schnoll, S., Fong, C., Maxwell, C., & Cleland, C. et al. (2007). Prescription opioid abuse among enrollees into methadone maintenance treatment. *Drug And Alcohol Dependence*, 90(1), 64-71. <http://dx.doi.org/10.1016/j.drugalcdep.2007.02.012>

Sahker, E., Acion, L., & Arndt, S. (2015). National Analysis of Differences Among Substance Abuse Treatment Outcomes: College Student and Nonstudent Emerging Adults. *Journal Of American College Health*, 63(2), 118-124. <http://dx.doi.org/10.1080/07448481.2014.990970>

Sakher, E., Toussaint, M., Ramirez, M., Ali, S., & Arndt, S. (2015). Evaluating racial disparity in referral source and successful completion of substance abuse treatment. *Addictive Behaviors*, 48(25-29).

Substance Abuse and Mental Health Services Administration,. (2015). *Behavioral Health Barometer: Georgia, 2014*. (p. 15). Rockville, MD: Substance Abuse and Mental Health Services Administration.

Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality. (2014). Treatment Episode Data Set (TEDS) State Instruction Manual with State TEDS Submission System (STTS) Guide. Version 3.2. Rockville: The State of Maryland.

U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Office of Applied Studies. (2015). *Treatment episode data set -- admissions (TEDS-A) -- concatenated, 2010 to 2015* [Data set]. doi:10.3886/ICPSR30122.v2

U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Office of Applied Studies. (2015). *Treatment episode data set -- discharges (TEDS-D) -- concatenated, 2010 to 2015* [Data set]. doi:10.3886/ICPSR30122.v2

Young, A., Havens, J., & Leukefeld, C. (2012). A Comparison of Rural and Urban Nonmedical Prescription Opioid Users' Lifetime and Recent Drug Use. *The American Journal Of Drug And Alcohol Abuse*, 38(3), 220-227. <http://dx.doi.org/10.3109/00952990.2011.643971>

Appendices

A. CJ Switch Bivariate Analysis

Variables		Any CJ Switch
Any CJ Switch	Pearson Correlation	1
	Sig. (2-tailed)	
	N	127642
Sex	Pearson Correlation	.003
	Sig. (2-tailed)	.215
	N	127642
Race	Pearson Correlation	-.013**
	Sig. (2-tailed)	.000
	N	127642
Hispanic	Pearson Correlation	-.008**
	Sig. (2-tailed)	.005
	N	127642
Education Level	Pearson Correlation	.017**
	Sig. (2-tailed)	.000
	N	127642
Ever Homeless	Pearson Correlation	.051**
	Sig. (2-tailed)	.000
	N	127642
Ever Disabled	Pearson Correlation	.033**
	Sig. (2-tailed)	.000
	N	127642
Ever Student	Pearson Correlation	.019**
	Sig. (2-tailed)	.000
	N	127642
Ever Unemployed	Pearson Correlation	.082**
	Sig. (2-tailed)	.000
	N	127642
Ever Veteran	Pearson Correlation	.002
	Sig. (2-tailed)	.548
	N	127642
Multiple Drugs Used	Pearson Correlation	.014**
	Sig. (2-tailed)	.000
	N	127642
Two or More Treatment Episodes	Pearson Correlation	.087**
	Sig. (2-tailed)	.000
	N	89209
Living in Rural Area	Pearson Correlation	.008**
	Sig. (2-tailed)	.003

	N	126456
Motivation to Attend Self-Help Across all Treatment Episodes	Pearson Correlation	.088**
	Sig. (2-tailed)	.000
	N	127642
Switch to Meth	Pearson Correlation	.252**
	Sig. (2-tailed)	0.000
	N	127642
Switch to Crack-Cocaine	Pearson Correlation	.259**
	Sig. (2-tailed)	0.000
	N	127642
Switch to Opiates	Pearson Correlation	.264**
	Sig. (2-tailed)	0.000
	N	127642
Switch to Marijuana	Pearson Correlation	.249**
	Sig. (2-tailed)	0.000
	N	127642
Switch to Alcohol	Pearson Correlation	.262**
	Sig. (2-tailed)	0.000
	N	127642
Youngest Age at First Use for All Admissions	Pearson Correlation	-.025**
	Sig. (2-tailed)	.000
	N	127642

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

B. Any Arrest Before Discharge for All Treatment Episodes Bivariate Analysis

Variables		Any Arrest Before Discharge for All Episodes
Any Arrest Before Discharge for All Episodes	Pearson Correlation	1
	Sig. (2-tailed)	
	N	127642
Sex	Pearson Correlation	-.031**
	Sig. (2-tailed)	.000
	N	127642
Race	Pearson Correlation	.041**
	Sig. (2-tailed)	.000
	N	127642
Hispanic	Pearson Correlation	.001
	Sig. (2-tailed)	.768
	N	127642
Education Level	Pearson Correlation	.044**
	Sig. (2-tailed)	.000
	N	127642
Ever Homeless	Pearson Correlation	.085**
	Sig. (2-tailed)	.000
	N	127642
Ever Disabled	Pearson Correlation	.047**
	Sig. (2-tailed)	.000
	N	127642
Ever Student	Pearson Correlation	.029**
	Sig. (2-tailed)	.000
	N	127642
Ever Unemployed	Pearson Correlation	.105**
	Sig. (2-tailed)	0.000
	N	127642
Ever Veteran	Pearson Correlation	-.001
	Sig. (2-tailed)	.850
	N	127642
Multiple Drug Use	Pearson Correlation	.020**
	Sig. (2-tailed)	.000
	N	127642
Two or More Treatment Episodes	Pearson Correlation	.026**
	Sig. (2-tailed)	.000
	N	89209
Living in Rural Area	Pearson Correlation	-.036**
	Sig. (2-tailed)	.000

	N	126456
Motivation to Attend Self-Help Across all Treatment Episodes	Pearson Correlation	.096**
	Sig. (2-tailed)	.000
	N	127642
Switch to Meth	Pearson Correlation	.111**
	Sig. (2-tailed)	0.000
	N	127642
Switch to Crack	Pearson Correlation	.109**
	Sig. (2-tailed)	0.000
	N	127642
Switch to Opiates	Pearson Correlation	.112**
	Sig. (2-tailed)	0.000
	N	127642
Switch to Marijuana	Pearson Correlation	.103**
	Sig. (2-tailed)	.000
	N	127642
Switch to Alcohol	Pearson Correlation	.101**
	Sig. (2-tailed)	.000
	N	127642
Youngest Age at First Use for All Admissions	Pearson Correlation	-.021**
	Sig. (2-tailed)	.000
	N	127642

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).