Substance Use Treatment and Crime: A State-Level Analysis

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Abstract

This study examined the impact of substance use treatment rates on crime using a two-way fixed effects model that leveraged year-to-year variations in admissions to substance use treatment facilities within U.S. states from 1992 to 2019. By controlling for time-varying state characteristics, the findings suggested that states with higher admission rates often experienced lower crime rates. Specifically, for every additional 100 admissions per 100,000 people within a state, the violent crime rate decreased by 2.6, and the property crime rate decreased by 11.8. These decreases represented declines of 0.67% and 0.35% relative to the sample mean, respectively. Moreover, this impact was more pronounced among female patients in drug treatment programs, with an additional 100 female admissions associated with a decrease of 9.1 in violent crimes and 36.8 in property crimes.
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1. Introduction

Drugs and crime are closely interconnected, as the manufacturing, distribution, and sale of controlled substances are classified as criminal offenses, accounting for over 45% of the federal prison population (BOP, 2022). Additionally, drug use is a major contributor to fatal car accidents, particularly those involving impaired driving, with nearly 44% of drivers in fatal crashes testing positive for drugs (NIH, 2019). Beyond these direct links, drugs and crime are also indirectly related because Substance Use Disorders (SUD) can increase the likelihood of criminal behavior. Individuals with SUD often interact with criminals, drug dealers, and traffickers, exposing them to violent environments that increase their risk of engaging in offenses such as assault or, in extreme cases, homicide.

The financial burden of maintaining a drug habit further reinforces this indirect connection between substance use and crime, as individuals with SUD often resort to crimes such as robbery, burglary, theft, and prostitution to finance their substance use. According to the National Center for Drug Abuse Statistics (NCDAS, 2022), more than 30% of state prisoners and jail inmates report committing offenses either to obtain drugs or to fund their drug purchases. These indirect links between drug use and criminal activities, referred to as "drug-induced crimes" in this study, are the main focus of our research.

Extensive research has already examined the statistical connection between SUD and drug-induced crimes, supporting the hypothesis that SUDs are positively associated with such criminal behavior. A widely cited meta-analysis by Bennett *et al.* (2008), which review 30 studies, finds that individuals with SUDs are three to four times more likely to engage in criminal activities compared to those without such disorders. This association remains consistent across various types of offenses, including robbery, burglary, prostitution, and shoplifting.

Building on this evidence, researchers have also explored whether treating individuals with SUDs can help decrease drug-induced crimes. Studies indicate that expanding access to Substance Use Treatment (SUT) can play a key role in reducing criminal activity among individuals with SUD. For instance, Prendergast *et al.* (2002) review 78 studies, all of which focus on individual patients and the direct benefits of treatments, confirming that SUT reduces both drug use and the crimes linked to it. These findings highlight the importance of integrating SUT programs into the criminal justice system to address the root causes of drug-induced crimes.

The current study also examines the impact of SUT but shifts the focus from its direct benefits for individual patients to its broader societal effects, particularly on crime at the community level. To our knowledge, only two other studies have examined the public aspect of SUT in this context. Wen *et al.* (2014) conduct a natural experimental study evaluating two exogenous state-level policies—insurance expansions and parity mandates for SUT—and find that increasing the rate of SUT within a county significantly reduces the rates of robbery, aggravated assault, and larceny-theft. Similarly, Bondurant *et al.* (2018)) analyze county-level variations in the availability of SUT facilities and estimate that increasing the number of such facilities could lead to reductions in various types of violent and property crimes.

We adopted a methodology similar to that used by Bondurant *et al.* (2018), albeit with several notable differences. First, instead of examining the number of SUT facilities, this study focused on the admission rate to these facilities. This adjustment was made because the number of facilities may not accurately reflect the availability of actual treatment beds, which can vary considerably from year to year based on staffing and funding. For instance, even in states with a higher number of SUT facilities, the overall accessibility to treatment services may still be limited if these establishments are relatively small, costly, predominantly privately owned, or have restrictions on insurance acceptance.

Second, we used data at the state level instead of the county level. Specifically, we analyzed how annual fluctuations in admissions to SUT facilities within a state affect both violent and property crime rates. This shift was important because state-level data could more effectively capture a broader picture of how individuals receiving treatment may be distributed across regions. Increased access to SUT in one county may affect not only crime rates within that specific county but also in nearby counties. For instance, if County A has many treatment facilities, people from neighboring Counties B and C might travel there for treatment. However, any crimes they commit may still happen in Counties B and C rather than in County A. Therefore, using state-level data provides a more comprehensive understanding of how changes in treatment access can impact crime rates across neighboring areas. In addition to that, according to Maltz and Targonski (2003), state-level crime data are deemed more reliable than county-level data due to the voluntary reporting of data by law enforcement agencies to the FBI.

This study contributed to the literature on the role of SUT in crime prevention. By utilizing aggregate state-level data, our analysis not only captured the direct effects of SUT on patients but also considered any spillover effects on friends, family, and the broader community. The findings were consistent with previous research, suggesting that increasing SUT through higher admission rates within each state can effectively reduce both violent and property crimes, thus enhancing public safety. More specifically, for every additional 100 admissions per 100,000 people within a state, the violent crime rate decreased by 2.6, and the property crime rate decreased by 11.8. Moreover, this impact was more pronounced among female patients, with an additional 100 female admissions associated with a decrease of 9.1 in violent crimes and 36.8 in property crimes.

2. Background and Literature Review

Taken together, the statistics provided in the introduction section demonstrate the serious threat that drugs pose to public safety and highlight the urgent need for effective strategies to address both substance use and the crime associated with it. In pursuit of this goal, fighting drug use has consistently been a top priority, with three primary approaches implemented. The first approach involves restricting the supply of illegal drugs in an attempt to prevent their availability to individuals. While this strategy has had some success, it ultimately fails to comprehensively address the underlying cause of the issue. Research consistently shows efforts to curb the supply of illegal drugs do not substantially reduce the number of users, and consequently, these measures have limited impacts on the prevalence of drug-induced crimes (Cunningham and Finlay, 2013; Dobkin and Nicosia, 2009; Dobkin *et al.*, 2014; Kuziemko and Levitt, 2004; Miron, 2003).

A second widely adopted policy involves imposing harsher penalties for drug-induced crimes based on the assumption that stricter punishment will deter drug use, and the crimes linked to it. However, empirical evidence suggests that such measures rarely yield the desired results. In fact, studies show that imprisonment and harsher punishments have little effect on reducing either drug use or drug-induced crimes. It is estimated that approximately 95% of individuals incarcerated for drug-induced offenses relapse after their release, and among those who return to drug use, 60% to 80% subsequently engage in new criminal activities (Doob and Webster, 2003; Hanlon et al., 1998; Langan and Cunniff, 1992; Langan and Levin, 2002; Nurco et al., 1991; Robinson and Darley, 2004; Spohn and Holleran, 2002).

The third approach involves expanding access to SUT and making it easier for individuals with SUD to receive help rather than face incarceration. Recent studies show that when individuals with substance use problems are provided with the opportunity to undergo treatment instead of facing incarceration, there is a significant and lasting reduction in crime rates (Finigan *et al.*, 2007; Gottfredson *et al.*, 2005). This suggests that increasing access to SUTs could be an effective strategy for reducing drug-induced crimes (Bondurant *et al.*, 2018; Swensen, 2015; Wen *et al.*, 2014).

Despite this potential, SUT services are underutilized, largely due to the stigma surrounding addiction. Many people view addiction as a personal choice rather than a medical condition, leading to a lack of empathy and compassion for those struggling with substance use. This mindset often fuels the belief that allocating public funds for rehabilitation is wasteful, which in turn limits access to treatment and fails to address the root causes of the problem. In fact, such stigma not only exacerbates the problem but also discourages individuals from seeking the help they need (Volkow, 2020).

The effectiveness of SUT programs is well-established through evaluations of various treatment models, such as prison-based and court-mandated programs, which are among the most widely implemented. Wilson *et al.* (2006), summarize findings from 50 studies, showing that drug offenders who participate in drug courts are less likely to reoffend compared to similar offenders sentenced to traditional correctional options. Similarly, Mitchell *et al.* (2012), in their review of 74 studies, conclude that prison-based treatment programs consistently result in significant reductions in both recidivism and drug use. These findings underscore the potential of SUT as an effective strategy for reducing criminal behavior and helping individuals overcome substance use.

In sum, the existing literature consistently presents theoretical and empirical evidence that SUT programs are effective in reducing crime. While these studies provide valuable insights, almost all of them are observational and focus on individual-level outcomes, such as drug relapses or recidivism rates. As a result, the broader impact of substance use on families, friends, and communities is often overlooked. Unlike these studies, our paper examined the community-level effects of SUT programs by analyzing annual state-level data on admissions to SUT facilities, assessing how changes in the number of individuals receiving treatment correlate with fluctuations in crime rates.

3. Data and Model

To assess how admission rates to SUT facilities affect crime, we conducted an analysis using the Treatment Episode Data Set-Admission (TEDS-A). This comprehensive national database has been tracking annual admissions to SUT facilities in all 50 states since 1992, focusing on centers that are state-licensed or receive federal public funding. These facilities offer a range of services, including outpatient care, detoxification, and maintenance therapies. Additionally, they offer inpatient services for long-term treatments within hospital settings, as well as both short-term (less than 30 days) and long-term residential care outside of hospitals. As for crime data, we utilized the FBI's Uniform Crime Report, which provides aggregated annual crime data at the state level up to 2019.

The following two-way fixed-effect regression model is estimated for the analysis of this paper:

$$Y_{st} = \alpha Admission_{s,t-1} + \beta X_{st} + \delta_s + \lambda_t + \varepsilon_{st} \tag{1}$$

Where subscript "s" denotes states and subscript "t" denotes years. Y_{st} represents the number of crimes per 100,000 in state s in year t. $Admission_{s,t-1}$ represents the number of admissions per 100,000 to SUT facilities in state s in year $t-1$. Assuming exogenous variation, the estimate of α shows the effect of access to SUT facilities on crime. The vector X_{st} contains a set of control variables that are added to the model to increase the efficiency of the estimations. X_{st} contains state unemployment rates, income per capita, the number of law enforcement per 100,000, and the fraction of the population that is: white, black, male, less than 10 years old, 10-19 years old, …, 60-69 years old. Finally, the terms δ_s and λ_t are the state and year fixed effect dummy variables.

Demographic data used in the analysis were sourced from the U.S. Census, providing information on population characteristics. Unemployment rates were obtained from the Bureau of Labor Statistics (BLS), while per-capita income was obtained from the Federal Reserve Bank of St. Louis. These variables were included in the model to capture the effects of economic conditions on crime rates. Law enforcement data used in the analysis were sourced from the FBI's UCR Program, which provides information on the number of law enforcement personnel. This data was incorporated into the model to account for the presence and strength of law enforcement agencies in each state.

Table 1 presents the mean and standard deviation of the crime rates, admission rates, and other control variables used in the analysis for the period from 1992 to 2019. It provides a summary of the descriptive statistics for these variables. It is important to note that the variables used in the model were expressed in logarithmic form, which allows for a more appropriate representation of their relationships and facilitates the interpretation of coefficients in the regression analysis.

4. Results and Discussion

Expanding access to SUT services can reduce crime through several mechanisms. First, it directly decreases drug use, subsequently lowering associated criminal activities. It is also worth noting that reducing drug use also serves as a preventive measure against other drug-related harms, such as suicides, overdose deaths, and losses in workplace productivity. Second, by addressing the root causes of SUD and providing necessary support, SUT helps alleviate the financial need for drug acquisition, potentially leading to a decrease in property crimes. Lastly, SUT plays a vital role in mitigating violence within drug-dealing and drug-addicted communities, hence contributing to a reduction in violent crimes.

To estimate the impact of SUT rates on crime, Equation (1) was separately estimated for both violent and property crimes. Violent crimes include murder, robbery, and aggravated assault, while property crimes include burglary, larceny, and motor vehicle theft. The results presented in Table (2) indicate that states with higher access to SUT facilities tend to experience lower rates of both violent and property crimes. More specifically, the point estimates indicate that for every additional 100 admissions per 100,000 residents within a state, there is a decrease of 2.6 in the violent crime rate and 11.8 in the property crime rate, corresponding to reductions of 0.67% and 0.35% relative to the sample mean, respectively.

These estimates are consistent with those of Bondurant *et al.* (2018), indicating that increasing resources to treat SUDs—through additional treatment facilities— reduces drug-induced crimes, ultimately enhances public safety. However, our estimates were slightly larger, likely attributed to our use of state-level data. It is important to note that people may reside in one county while receiving treatment in a neighboring county. In such cases, the treatment could potentially prevent them from engaging in criminal activity in their county of residence, but using county-level crime data fails to capture this cross-county effect. As a result, the impact of substance use treatment may be underestimated at the county level.

Equation 1 is estimated three times for each outcome variable, with each estimation using distinct sets of control variables. This approach demonstrates that the inclusion of various model specifications does not produce noticeable changes in the results, hence highlighting the reliability and consistency of the findings. The coefficients for both violent and property crimes are statistically significant, and the estimates remain consistent and robust across various specifications of the model, including those with both limited and extensive sets of control variables.

In Table (3), everything remains consistent except for the admission rate, which is now disaggregated by gender. The estimates suggest that SUT admissions have a stronger impact on crime reduction for females. Specifically, an additional 100 female admissions result in a more substantial reduction in violent crimes (9.1), corresponding to a 2.3% decline, and property crimes (36.8), reflecting a 1.1% decrease. In comparison, male admissions lead to a smaller reduction of 2.7 in violent crimes and 15.9 in property crimes, with percentage changes that are similar to those observed for the entire population. These findings align with existing literature indicating that women's drug use is more strongly linked to their involvement in criminal activities, especially property crimes, compared to men (Swan & Goodman-Delahunty, 2013; Willis & Rushforth, 2003).

Conclusion

This study employs a two-way fixed-effects model to analyze the effect of increasing access to substance use treatment (SUT) on crime rates. The findings demonstrate that a higher rate of admission to SUT facilities not only leads to a decrease in individual-level substance use but also enhances public safety by reducing crime rates in communities. This study contributes to existing literature in two ways. First, it utilizes state-level data to capture the geographical distribution of individuals receiving SUT and involved in criminal activities. This provides a more comprehensive understanding of the positive spillover effects of substance use treatments on communities. Second, instead of focusing solely on the number of rehabilitation facilities, it examines admission rates that offer a more precise reflection of treatment bed availability across states.

The findings suggested that increasing admission rates to SUT facilities within a state may lower both drug use and crime. This highlights the importance of investing in SUT, either by establishing new facilities in high-demand areas or expanding existing capacities. Equally important is encouraging more individuals to seek treatment through policy initiatives such as expanding education programs and implementing criminal justice reforms. Moreover, the findings indicate that SUT has a greater impact on reducing crime among female drug users. Therefore, developing specialized programs tailored to address the unique needs of women with substance use disorders is essential. Examples of such programs include peer support groups, integrated healthcare services, and gender-specific counseling.

Table-1. summary statistics

	Mean	SD
Crime Variables		
crime rate	3697.5	1206.6
violent crime rate	384.6	198.7
property crime rate	3312.8	1073
Substance Use Admissions		
Patient admission rate	691.642	410.932
Male patient admission rate	471.459	291.716
Female patient admission rate	218.544	127.21
Demographic Controls		
population	5,879,491.9	6,509,970.1
population less than 10 years old	789,651.2	906,360.08
population 10-19 years old	814181.8	907,366.8
population 20-29 years old	816,126.4	940,324.4
population 30-39 years old	839,607.3	964,496.6
population 40-49 years old	829,268.2	915,641.2
population 50-59 years old	715,389.9	788,657.9
population 60-69 years old	525,825.8	577,016.7
population more than 70 years old	549,441.02	595,315.2
percentage of male population	49.2	0.81
percentage of female population	50.7	0.81
percentage of black population	10.4	9.5
percentage of white population	82.02	12.2
male median age	35.3	2.4
female median age	37.7	2.7
Economics Controls		
unemployment rate	5.4	1.8
real income per capita	958.7	1147.06
Officer rate	296.7	78.2

Note: The analysis covers all 50 states between 1992 and 2019, resulting in a total of 1400 state-year observations in the dataset. The Table presents the means and standard deviations for both the outcome and control variables utilized in the analysis. The rates provided are per 100,000 individuals.

Table-2. estimated effect of admission to SAT facilities on log crime rates

	Admission rate last year		
	(1)	(2)	(3)
Violent crime rate	-0.037**	-0.034**	-0.033**
	(0.016)	(0.016)	(0.016)
Property crime rate	-.015*	-.014*	-.015*
	(.009)	(.008)	(.009)
State and year fixed effects	Yes	Yes	Yes
Demographic controls	Yes	Yes	Yes
Economics controls	No	Yes	Yes
Officer rate	No	No	Yes

Note: The analysis covers all 50 states between 1992 and 2019, resulting in a total of 1400 state-year observations in the dataset. Each cell is from a separate regression and presents the effect of the admission rate to SUT facilities in the previous year on the log of violent and property crimes. Demographic control variables include the fraction of the population that are: white, black, male, ages 0–9, ages 10–19, ages 20–29, ages 30–39, ages 40–49, ages 50–59, and ages 60–69. Controls for economic conditions include the state unemployment rate and personal income. The rates provided are per 100,000 individuals.
*, **, *** Denote statistical significance at 0.10, 0.05, and 0.001 level respectively.

Table-3. estimated effect of admission to SAT facilities on log crime rates by gender

	Male Admission rate last year			Female Admission rate last year		
	(1)	(2)	(3)	(4)	(5)	(6)
Violent crime rate	-0.044***	-0.042***	-0.041***	-0.014	-0.01	-0.009
	(0.016)	(0.016)	(0.016)	(0.015)	(0.015)	(0.015)
Property crime rate	-0.022**	-0.022**	-0.022**	-0.001	-0.00	-0.00
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
State & year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Demographic controls	Yes	Yes	Yes	Yes	Yes	Yes
Economics controls	No	Yes	Yes	No	Yes	Yes
Officer rate	No	No	Yes	No	No	Yes

Note: The analysis covers all 50 states between 1992 and 2019, resulting in a total of 1400 state-year observations in the dataset. Each cell is from a separate regression and presents the effect of the admission rate to SUT facilities in the previous year on the log of violent and property crimes. Demographic control variables include the fraction of the population that are: white, black, male, ages 0–9, ages 10–19, ages 20–29, ages 30–39, ages 40–49, ages 50–59, and ages 60–69. Controls for economic conditions include the state unemployment rate and personal income. The rates provided are per 100,000 individuals.
*, **, *** Denote statistical significance at 0.10, 0.05, and 0.001 level respectively.

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