



# Substance abuse treatment centers and local crime<sup>☆</sup>

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## ABSTRACT

In this paper we estimate the effects of expanding access to substance-abuse treatment on local crime. We do so using an identification strategy that leverages variation driven by substance-abuse-treatment facility openings and closings measured at the county level. The results indicate that substance-abuse-treatment facilities reduce both violent and financially motivated crimes in an area, and that the effects are particularly pronounced for relatively serious crimes. The effects on homicides are documented in two sources of homicide data and are concentrated in highly populated areas.

## 1. Introduction

Drug-induced deaths in the United States have increased 280% since 1999 and now represent the largest major category of external causes of death by a wide margin: there were 47,055 deaths due to drug overdoses in 2014 compared to 32,675 due to motor vehicle accidents.<sup>1</sup> These facts underscore a growing need to understand how to reduce drug-related harms. Towards this end, a large body of work has shown that policies targeting the supply of illicit drugs are rarely effective.<sup>2</sup> In contrast, recent work indicates that expanding access to substance-abuse-treatment (SAT) facilities significantly reduces severe drug abuse, as measured by drug-induced mortality (Swensen, 2015). While this evidence highlights that investments in SAT can improve outcomes for some individuals, it does not necessarily reflect a broad-based benefit for communities that might be considering making such investments. In this paper we fill this important gap in the literature by estimating the effects of SAT facilities on homicide rates, which are especially high in urban areas, other violent crimes, and property crimes.<sup>3</sup>

There are several mechanisms through which SAT facilities may affect local crime. As outlined in Goldstein's (1985) influential tripartite

conceptual framework for the drugs-violence nexus, drugs may affect violence through psychopharmacological effects, economically compulsive effects, and systemic effects. In these terms, SAT could be expected to reduce violence by: (i) reducing the use of drugs that lead to aggressive behavior (though there may be some offsetting effects caused by withdrawal), (ii) by reducing conflicts associated with financially motivated crimes committed by addicts seeking funds to buy drugs, and (iii) by reducing violence among and against those associated with the drug trade.<sup>4</sup> Moreover, drug-abuse treatment may reduce gun carrying through all three of these mechanisms, which could serve to reduce the amount—and intensity—of violence in communities. It is also important to keep in mind that a relatively large share of drug users have mental health problems that contribute to their addiction and to violent behaviors (Lavine, 1997; Hoaken and Stewart, 2003). As such, we could expect SAT to reduce violence because it can itself include—or can direct patients towards—treatment for underlying mental health problems that contribute to violence (Lavine, 1997; Marcotte and Markowitz, 2011). Finally, SAT treatment may reduce criminal activity through positive spillover effects on friends and family members of those receiving treatment.

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<sup>1</sup> See Rudd et al. (2016) and NCSA (2015).

<sup>2</sup> See for instance DiNardo (1993); Yuan and Caulkins (1998); Miron (2003); Cunningham and Liu (2003); Kuziemko and Levitt (2004); Dobkin and Nicosia (2009); Cunningham and Finlay (2013), and Dobkin et al. (2014).

<sup>3</sup> In 2012, the homicide rate was 7.4 per 100,000 in central metropolitan counties compared to 4.1 per 100,000 in other counties. These statistics are based on the Uniform Crime Reports data described in detail in Section 3.

<sup>4</sup> Prior studies have documented causal effects of drug activity on community violence by exploiting variation in drug use induced by price shocks (Markowitz, 2001; 2005) and by exploiting variation in the timing with which specific drugs became available across different cities (Evans et al., 2012; Fryer et al., 2013).

Although these mechanisms highlight how SAT facilities can reduce crime through their effect on drug abuse, there are other mechanisms through which we might expect SAT facilities to *increase* local crime. Featuring prominently in not-in-my-backyard arguments against SAT facilities is the notion that such facilities pose risks by drawing into the area individuals who have relatively high rates of crime perpetration (drug users). Going beyond the idea of shifting crime perpetration from one place to another, SAT facilities could increase crime by altering the social and environmental context faced by drug users. That is, by altering the types of people and places that they encounter and with which they interact.

In this study we contribute to this policy debate by quantifying the effects of SAT facilities on crime. Specifically, we use annual county-level data on the number of SAT facilities to evaluate the degree to which crime rates change when SAT facilities open and close. We consider various crime outcomes measured over time at the county and law-enforcement agency level, based on data from the National Center for Health Statistics and the FBI's Uniform Crime Reporting Program. These panel data allow us to include a rich set of fixed effects (county/agency and state-by-year) and control variables (demographics, various measures of economic conditions, and law enforcement presence) in our models, so the estimates are identified based on plausibly exogenous variation. Several ancillary analyses support the validity of this research design, including analyses that demonstrate that outcomes in an area change after but not before the number of facilities change.

Our approach shifts the focus from the effects of SAT on those who receive treatment to the effects of SAT facilities on the communities they serve. This allows us to make several contributions. First, we consider outcomes that tend to be beyond the scope of randomized control trials (RCTs), which are limited by small samples, short follow-up periods, and the potential for false reporting. In particular, our approach allows us to consider severe-but-infrequent outcomes (e.g., homicide) and behaviors that individuals are likely to conceal (e.g., sexual assault). Second, our estimates reflect the effects of SAT on patients and the spillover effects onto the broader community, inclusive of any spillover effects on nearby friends and family and on the market for illegal drugs. In so doing, our estimates will allow for more comprehensive cost-benefit considerations. Third, whereas the nature of RCTs tends to require the use of small localized samples, which may have limited external validity, our use of administrative data allows us to obtain estimates that reflect the effects of SAT facilities across the United States.

Our analysis reveals significant and robust evidence that expanding access to SAT through additional treatment facilities reduces local crime. The effects appear to be particularly pronounced for relatively serious violent and financially motivated crimes: homicides, aggravated assaults, robbery, and motor vehicle theft. We do not find significant effects on more frequent but less serious crimes (simple assault, burglary, and larceny), nor do we find a significant effect on sexual assault. We show that the estimated effects on homicides are present across two different sources of homicide data and that they are concentrated in highly populated areas.<sup>5</sup>

Despite the various contributions of our research described above, there are some limitations that bear noting. First, our empirical approach, which focuses on county- and law-enforcement-agency-level aggregates, implies that we cannot separate the effects of SAT facilities on those who receive treatment from the effects of SAT facilities on the broader community. Our use of aggregate data also implies that we cannot separately identify effects for areas in a county that are nearer

versus farther from a SAT facility. That said, we view these as a reasonable tradeoffs in order to be able to speak to the effects on the community as a whole. Second, while there is significant variation across SAT facilities in the types of treatment that they offer and in the number of patients they can treat, our estimates will reflect an average of the effects of these facilities. Finally, openings and closings of SAT facilities are not random. While this has the potential to compromise our ability to identify causal effects, our ancillary analyses, which are discussed in detail in subsequent sections, demonstrate that it is unlikely in light of our empirical strategy.

## 2. Background

### 2.1. Substance abuse and treatment

According to the National Survey of Drug Use and Health over 21.5 million people in the U.S. are classified as having a substance-use disorder (CBHSQ, 2015).<sup>6</sup> A high incidence of substance abuse is also apparent in crime perpetration, with 40% of convicted violent criminals being under the influence of alcohol and nearly 60% of all arrestees testing positive for some illicit substance at the time of arrest.<sup>7</sup> The annual societal costs of drug abuse solely in terms of drug-related crime are estimated at over 56 billion dollars.<sup>8</sup>

Though substance-abuse treatment is a promising avenue to reduce these costs, treatment rates for those in need remain very low. In 2014, 85% of those abusing or dependent on an illicit substance did not receive treatment and 91% of those abusing or dependent upon alcohol did not receive treatment. Moreover, despite the prevalence of alcohol and drugs among arrestees, 70% of arrestees have never been in any form of drug or alcohol treatment (ONDCP, 2014). Notably, recent changes brought about by the Affordable Care Act are expected to increase coverage and take-up of treatment (Buck, 2011; Beronio et al., 2014).

In this context, the number of substance-abuse treatment facilities may be a particularly relevant policy parameter. In the United States, over 14,500 stand-alone treatment facilities are the primary setting for delivery of substance-abuse treatment, offering a wide range of drug-treatment programs and related services (SAMHSA, 2014). Local treatment centers most commonly offer outpatient care to deliver treatment programs such as detoxification, methadone maintenance, regular outpatient, adolescent outpatient, and drug-court programs (SAMHSA, 2014). For more serious substance-abuse problems, facilities provide residential treatment in which clients temporarily live at the treatment site (e.g. inpatient detoxification, chemical dependency programs, therapeutic communities). While treatment programs vary substantially and often target particular demographic groups or specific drug addictions, all treatment approaches share similar goals to mitigate the consequences of drug abuse and encourage healthier lifestyles. According to the National Survey of Drug Use and Health (2015), 62% of individuals undergoing treatment reported receiving treatment for alcohol, 21% reported receiving treatment for marijuana, 18% reported receiving treatment for pain relievers, 14% reported receiving treatment for cocaine, 13% reported receiving treatment for heroin, and 11% reported receiving treatment for stimulants such as methamphetamine.

More broadly, the substance-abuse treatment industry includes profit, non-profit, and public providers, the bulk of which (87%) are privately-owned facilities.<sup>9</sup> Though the objective functions of facilities may differ somewhat by ownership status and treatment focus, the

<sup>5</sup> In an earlier version of this study (Bondurant et al., 2016), we updated Swensen's (2015) analysis and showed that the impacts on drug abuse—as measured by drug-induced mortality—are readily apparent in an analysis that uses the same years of data as our analysis of crime. These results indicate a 0.50% decline in drug-induced mortality rates associated with an additional SAT facility in a county, a bit larger than the estimated effect of 0.42% reported in Swensen (2015).

<sup>6</sup> Based on criteria specified in the Diagnostic and Statistical Manual of Mental Disorders, 4th edition (DSM-IV).

<sup>7</sup> See <https://ncadd.org/about-addiction/alcohol-drugs-and-crime>.

<sup>8</sup> Estimates based on the 2011 National Drug Threat Assessment conducted by the National Drug Intelligence Center.

<sup>9</sup> According to the 2013 National Survey of Substance Abuse Treatment Services, 60% of facilities are nonprofit, 30% are for profit, and 10% are public.

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