Drug Arrest Diversion*

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Drug overdose deaths in the U.S. reached a record high of 107,573 in 2021, 75% of which involved opioids. In response, hundreds of police departments across the country have begun to divert individuals who possess drugs away from arrest and into substance use treatment. This paper evaluates the impact of this approach on future criminal justice system involvement as well as fatal overdose risk using arrest-level variation in diversion eligibility in Chicago between 2010-22. Drug arrest diversion primarily benefitted individuals who used narcotics every day, increased connections with substance use treatment, and reduced subsequent arrests, but had no discernible impact on fatal overdose risk.

Keywords: opioids, diversion, criminal justice, recidivism, substance use

JEL classifications: I18, I38, K32, K42

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Drug overdose deaths in the U.S. reached a record high of 107,573 in 2021, 75% of which involved opioids (CDC, 2023). Overdoses are now responsible for more American deaths than homicides or traffic crashes, even in cities with high rates of violent crime. In response to this crisis, federal, state, and local governments have invested substantial resources in de-addiction services (Maclean *et al.*, 2020). In Illinois, for instance, federal funding for substance use treatment increased to $84 million by 2018, more than double the amount it received in 2014.

A natural question is *how* governments should connect individuals with de-addiction services and treatment. In this paper, we study the impact of linkage to treatment in a potentially unexpected setting—police stations. As the possession of most controlled substances is illegal in the U.S., police officers continue to interface with individuals who seek out the sale of these substances in underground markets. At the same time, there is growing consensus that harsh penalties for drug use do not discourage long-term use (Hayhurst *et al.*, 2015). In this paper, we study an approach that leverages the scale at which police officers can reach individuals who may benefit from substance use treatment *and* removes all penalties associated with that interaction.

Drug arrest diversion is currently being deployed by hundreds of police departments across the U.S., but causal evidence on its impact on downstream criminal justice involvement is limited, while that on overdose risk is non-existent.[1] To address this gap, we evaluate the country's largest drug arrest diversion effort to date. Since 2018, the Chicago Police Department has been connecting individuals arrested for low-level drug possession charges with substance use treatment counselors. Individuals who agree to meet with a counselor are released without criminal charges irrespective of whether they continue with treatment. To generate causal estimates, we use a triple difference design that exploits the staggered rollout of drug arrest diversion across the city in combination with individual-level variation in diversion eligibility.[2]

[1] See the Police Assisted Addiction and Recovery Initiative and LEAD National Support Bureau for examples of jurisdictions implementing this approach. Drug arrest diversion has also received federal encouragement—in May 2022, the White House Office of National Drug Control Policy released the Model Law Enforcement and Other First Responders Deflection Act, which encourages the establishment of deflection programs at the state level.

[2] We explicitly account for biases that emerge in conventional three-way fixed effects designs with variable

Using data on all drug arrests between 2010-22 in Chicago, we show that drug arrest diversion led to 30% of eligible arrestees being dismissed without criminal charges, and at least 21.5% being connected with a substance use counselor.[3] Drug arrest diversion leads to reduction in the overall re-arrest rate by 14%, including a 21% reduction in the probability of being re-arrested for drug charges and a 28% reduction in the probability of being re-arrested for violent charges.[4] Additionally, the diversion program led a 33% increase in using shelters, a form of housing support service. However, drug arrest diversion did not lead to a discernible change in fatal overdose risk—point estimates are *positive*, and not statistically distinguishable from zero. These findings indicate that drug arrest diversion can be a promising way to reduce future contact with the criminal justice system, reduce violent crime in neighborhoods, and increase linkage with public services beyond treatment, but is likely not able to move the needle on reducing the risk of accidental overdose death.

To understand the mechanisms driving these mixed effects, we examine *who* is served by the program, and *how* they engage with treatment services. Data collected by substance use counselors indicates that the program is well-targeted—among diverted individuals that consented to sharing their health data with the research team, 73% reported using narcotics daily, and 37% reported having overdosed in the past. Treatment engagement rates are also high—85% engaged with substance use treatment services after diversion, and 38% remained engaged 60 days out.[5] Finally, survey evidence also indicates that police officers are supportive of the program—a 2019 survey of 115 beat officers found that 86% believed arrest did not

treatment timing by using Borusyak *et al.* (2023)'s imputation estimator.

[3]Our estimate of being connected with a substance use counselor is a lower bound of the true effect as we can only observe this field for diverted individuals who met with a counselor *and* consented to sharing their health data with the research team.

[4]We implement several tests to show that this reduction is not driven by shifts in officer behavior in response to the program, discussed at length in Section 6.

[5]NADP also allowed "walk-ins"—i.e. individuals who were not being arrested could walk in to the district station, and ask to be connected with treatment and counseling. While not the focus of the empirical analysis, treatment engagement rates among this group are helpful in understanding whether engagement rates for diverted individuals—who do not self-select into treatment, and are instead referred by the Chicago Police Department (CPD)—are high. 90% of walk-in individuals start treatment, and 62% remain engaged 60 days out—these are (as expected) higher but very similar to those for the diverted group. Walk-ins account for 10% of connections with counselors, while referrals via diversion by CPD account for 90%.

discourage future drug use, and 40% had shared information about CPD's alternatives to arrest with the public.

This paper makes several policy-relevant academic contributions: (1) it evaluates a large-scale criminal justice approach to connect individuals with substance use treatment; as such, it speaks to the potential impact of a policy that is being deployed by hundreds of police departments across the U.S. in response to the opioid crisis, but whose effects are not well understood; (2) it goes beyond prior work that documents an association between drug arrest diversion and recidivism by using an estimation framework that accounts for selection on unobservables;[6] (3) to the best of our knowledge, it provides the first estimate of the impact of drug arrest diversion on fatal overdose risk; prior work shows that access to treatment can reduce drug-related morbidity and crime, but is largely silent on its impact on mortality (Swensen, 2015; Hefei *et al.*, 2017; Bondurant *et al.*, 2018; Vogler, 2020; Jacome, 2021; Corredor-Waldron & Currie, 2022); (4) to the best of our knowledge, it also provides the first causal estimate of the impact of drug arrest diversion on housing service linkage, a key outcome given that rates of homelessness are particularly high among those with a substance use disorder;[7] (5) it presents novel evidence on *which* individuals are served by drug arrest diversion, not just in terms of demographic characteristics, but in terms of their history of substance use and engagement with post-diversion treatment; (6) it adds to the growing literature on the beneficial impacts of diversion of low-level offenses away from the criminal justice system (Mueller-Smith & Schnepel, 2020; Agan *et al.*, 2021); and (7) it adds to the literature showing that currently identified policy solutions hold limited promise when it comes to reducing fatal drug overdoses—these include syringe exchange programs (Packham, 2022), decriminalization without an accompanying increase in access to treatment (Spencer, 2023), and access to overdose-reversing drugs

[6]Prior studies were based on smaller-scale programs in which participants were subjectively selected by police officers, and were evaluated using propensity score matching designs (Collins *et al.*, 2015a,b). In Chicago, diversion eligibility was predetermined in advance of policy implementation, which allows us to produce estimates that are not biased by selection issues.

[7]For example, sampling 1,281 individuals in substance use treatment programs, Pan *et al.* (2020) find that 37.2% of individuals are either unstably housed or homeless.

(Doleac & Mukherjee, 2022).[8]

The remainder of this paper is organized into seven sections. Section 1 describes the institutional setting, and Section 2 describes the datasets used. Section 3 outlines the empirical strategy and Section 4 discusses descriptive evidence. Section 5 presents causal evidence of the impact of drug arrest diversion. Section 6 discusses the potential mechanisms, and Section 7 concludes.

1 Setting

Opioid use is widespread in the U.S., and is associated with a range of adverse health outcomes, worse labor market outcomes, and increased health care costs (Maclean *et al.*, 2020). Opioids also account for over two thirds of drug overdoses, which have skyrocketed in recent years (Centers for Disease Control and Prevention, 2021). Attempts to regulate the legal opioid market—where individuals' opioid exposure and dependence might begin—have had mixed effectiveness, further underscoring the importance of connecting individuals to substance use treatment at scale (Neumark & Savych, 2022; Powell *et al.*, 2020).[9]

1.1 Criminal Justice System Responses to the Opioid Epidemic

The opioid crisis and an increasing shift of viewing drug use as as much of a public health challenge as a legal one (Volkow *et al.*, 2017; Caulkins *et al.*, 2021) have been present in America for nearly a decade. As a result, initiatives within the U.S. criminal justice system that aim at broadening the possible courses of action beyond criminal conviction for certain crimes have become increasingly prevalent in recent years. These are often also cost effective compared to criminal justice system processing (Anglin *et al.*, 2013).

[8] A notable exception is Swensen (2015) who uses county-level variation in the presence of treatment facilities to show that treatment access can reduce drug-related deaths.

[9] Prior research shows that the opening of additional treatment facilities can reduce substance use related mortality and crime (Swensen, 2015; Bondurant *et al.*, 2018). Improving insurance coverage of substance use treatment services has also been shown to be effective in some instances (Wen *et al.*, 2017; Maclean *et al.*, 2018; Dafny *et al.*, 2022; Maclean *et al.*, 2022). However, access to treatment is still stymied, regardless of coverage (Ali *et al.*, 2017).

These alternative and less punitive approaches chiefly include drug courts and diversion programs. While both of these are necessary to support a multifaceted approach to the challenge, drug courts only reach a very small share of substance users.[10] Meanwhile, over 50% of prison and jail inmates meet the criteria for drug dependence or abuse (Bronson, 2017), but less than 15% receive treatment while incarcerated (Substance Abuse and Mental Health Services Administration, 2000), suggesting that in-prison treatment is rarely a viable alternative.[11] Drug diversion, which aims at disengaging the individual from the criminal justice system as early as possible (such as before they are ever charged with a crime) can therefore be especially valuable.[12]

Diversion programs related to narcotics have proliferated incredibly fast in recent years. As of early 2023, there were 617 police departments (up from 153 in 2017 (ICJIA, 2017)) across 40 states that run some form of non-arrest treatment linkage program (though participation numbers are unknown), and over 45 full-fledged post-arrest programs exist across the country (Beckett, 2014; LEAD Bureau, 2020), making diversion one of the most popular current policy levers to curbing drug use and increasing treatment access. Yet, causal evidence on the efficiency of non-arrest and non-charge diversion programs is currently lacking. The existing literature is largely correlational due to a number of policy characteristics that limit many programs' assessment potential.[13]

Where small sample or correlational evidence is available on drug diversion programs, it is

[10]For example, Chicago's drug court requires a guilty plea and a two-year probation period, making it a very resource-intensive and criminal justice system-involved approach (Evans, 2022). Additionally, it is only able to reach a few dozen people per year (Main, 2022).

[11]Additionally, pre-trial diversion programs may go a long way in addressing this larger systemic shortfall as well, since they are able to intervene much earlier than prison officials, and potentially decrease the demand for in-prison services, thereby increasing the odds of treatment access for those incarcerated on other charges.

[12]Other charges that often have a diversion program attached to them are those related to sex work (where diversion often takes the form of physical health care, housing, and legal employment support) and charges for individuals with mental health disorders (who usually receive mental health care) (Anglin *et al.*, 2013; Collins *et al.*, 2017; Bird & Shemilt, 2019).

[13]Such policy characteristics include that most cities allow complete officer discretion in which arrestee has the opportunity to receive diversion (Beckett, 2014), which evidence in turns suggests will lead to diversions that depend on the officer's view of alternatives to prosecution (Worden & McLean, 2018; Schaible *et al.*, 2020), making those in the treatment and control group not identical; small sample sizes; and the use of propensity score weighting, which does not account for selection on unobservables.

largely positive. In Seattle (Washington) and Fayetteville (North Carolina), diversion program participants were less likely to be re-arrested and in Seattle publicly funded legal costs went down (Collins *et al.*, 2017, 2019); in Contra Costa County (California) over half attended some treatment after being diverted; in San Francisco (California) misdemeanor arrests decreased, but citations increased (Collins *et al.*, 2017; Perry, 2018; Bastomski *et al.*, 2019; Malm *et al.*, 2020). Reaching a large population, and meeting sufficient levels of officer buy-in have been challenges in some diversion programs—Albany (New York) reported only 43 diversions in its first year, noting that officers believed the program was implemented too quickly, leading to low officer buy-in (Worden & McLean, 2018).

1.2 Drug Arrest Diversion in Chicago

Chicago experiences rates of opioid overdose (predominantly from illicit opioids—heroin and its derivatives) that are higher than both the state and national average (IDPH, 2017), and opioid-related deaths in Chicago well over doubled between 2013 and 2018 (IDHS 2017, CDPH 2019).[14] The U.S. Department of Justice's Drug Enforcement Agency has assessed that Chicago serves as the primary distribution hub for opioids and other illegal drugs in the Illinois, Indiana, and Wisconsin region, with the West Side of Chicago being the region's most significant opioid market, easily accessed via Interstate 290, also called the *heroin highway* (DEA, 2017).[15] This fact is reflected in the geographic concentration of calls for service and deaths related to opioid overdoses within Chicago, as shown in Figure A2.

The Narcotics Arrest Diversion Program (NADP) emerged as a direct response to the spread of the opioid epidemic within Chicago. The program focuses on averting negative downstream consequences by addressing the causes of substance use through supportive, rather

[14]The age-adjusted death rate in 2020 (the most recent year for which a report is published) was 47.8 per 100,000 in Chicago and 23.0 in Illinois. Figure A4 shows trends in annual age-adjusted opioid overdose death rates for Illinois and the U.S. between 2000 and 2021. As of 2018, Chicago accounted for 37% of all opioid overdoses in the state of Illinois (NIDA 2020, CDPH 2019, Chicago Department of Public Health, 2023).

[15]The West Side is also home to a large open-air drug market. For more details about open-air drug markets in the country see Harocopos & Hough (2012). See Chicago High Intensity Drug Trafficking Area (2009) for more details about drug dealing and trafficking in Chicago specifically.

than punitive, interventions. District 11, home to three of five neighborhoods most impacted by the epidemic, was selected to be the first site, which in mid-2018 began to connect eligible individuals arrested for drug possession to a Chicago Police Department-approved substance use counselor in lieu of criminal charges. By the end of 2020, NADP had expanded to three neighboring districts, District 10, 15, and 25; and then to the rest of the city by the end of 2021.[16] Today, NADP is the largest criminal justice system-led drug arrest diversion effort across America.[17]

The program is implemented in participating districts as follows. When an individual is arrested for the possession of narcotics or cocaine, they are taken in to the police station for processing, and placed in lockup. Then, the arresting officer evaluates whether the individual qualifies for the diversion program. Qualification requires that the person is arrested with one gram or less of the drug in question, and has a valid form of legal identification, while disqualification includes violent co-charges on the drug arrest and a past violent felony conviction, among others.[18]

Next, if the individual is eligible for diversion, they are asked if they are interested in receiving substance use treatment. If they consent, they are connected with the treatment provider—crucially, located inside the police station. If they do not consent, they are processed as they otherwise would be without the program's presence. During this introductory meeting with the substance use counselor, the individual is assessed for service eligibility, which consists of assessing whether they have a substance use disorder. In the rare case where they do not, they are processed as they would otherwise be. An in-depth needs assessment follows,[19]

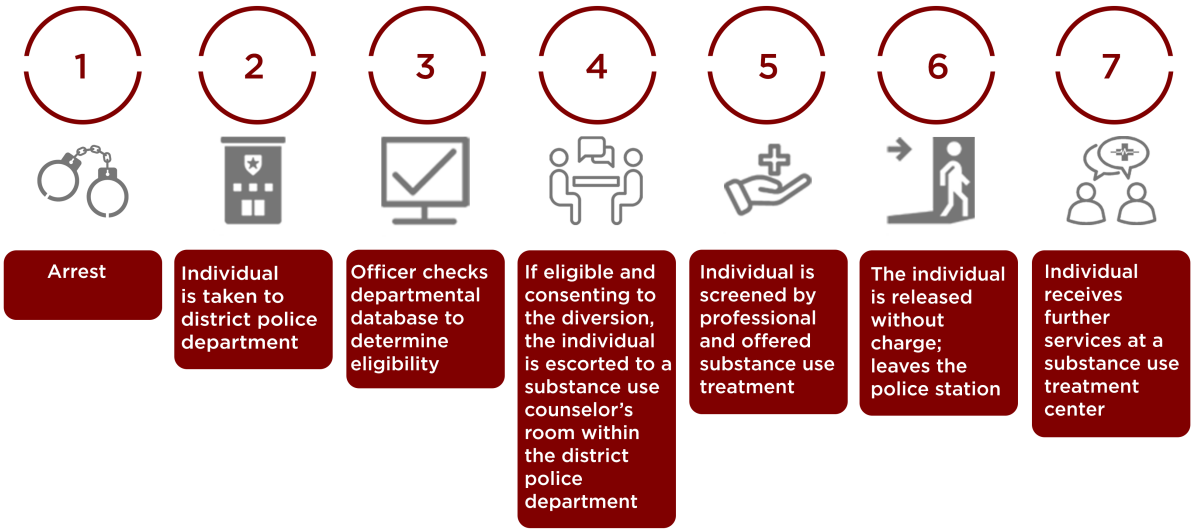
[16]Figures A5 and A6 outline the expansion of NADP in detail. Figure A7 provides additional information on violent crime across CPD districts.

[17]To the best of our knowledge, the only other large (population>1,000,000) cities with narcotics arrest diversion programs are Los Angeles, Philadelphia, and Phoenix, and each of them have served fewer individuals than NADP has in Chicago.

[18]For comparison, 1 gram of heroin is about 1.3 to 2 days worth of substance for someone with a severe substance use disorder (Addiction Center, 2021). Other eligibility criteria include that they must be at least 18 years of age, while other ineligibility criteria include if the person is being charged with another felony, being charged with a misdemeanor involving a victim, or have a conviction for illegal possession of a firearm, or a sex offense. The complete list of qualifying and disqualifying characteristics are listed in Figure A1.

[19]The conversation opens with the provider going through some basic questions to ask the individual how they are doing in that moment, about their housing and other circumstances, their drug use currently and

Figure 1: The Diversion Process



Source: Chicago Police Department. Department Notice D18-03.

after which the provider offers to connect the individual with the most appropriate substance use treatment service. This usually involves one of two outcomes: the individual is offered substance use treatment by the main treatment provider, Thresholds; or is referred out to another treatment provider—in the latter case the provider is chosen based on the individual's potential prior engagement with an alternative agency, proximity to their home address, or other considerations. Once the provider is identified, the individual is offered to be taken to a treatment center directly from the police station, or they can opt to go home and attend an appointment scheduled for the following days. Notably, both Thresholds and many alternative agencies provide both drug-assisted de-addiction services, as will as focusing on wrap-around services—connecting individuals with services such as housing and insurance enrollment.

Finally, the diverted individual is officially removed from lockup, and is released without charge. Those who are not diverted are transported to court for further processing at the

in the past, and their potential experiences with overdose and Naloxone. Then, once the provider has a clear understanding of the individuals circumstances and needs, the provider and the individual have an active exchange about what kind of services the individual might be most interested in. This could involve medication assisted treatment, inpatient treatment, outpatient treatment, and additional potential wraparound services, such as housing or employment assistance.

Cook County courthouse. The diversion process from a qualifying individual's perspective is summarized in Figure 1.[20] Importantly, the two parts of the diversion process—having a conversation with a substance use counselor and being released without charge—always occur together; one cannot take place without the other.

Figure 2: The Criminal Justice System Process



Source: District of Columbia Statistical Analysis Center (2017).

NADP is innovative compared to preexisting diversion programs in three ways. First, it places substance use treatment providers directly in police stations, offering the opportunity for warm hand-off, a broadly recommended behavioral health approach (Pace *et al.*, 2018). Second, it does not include the threat of deferred prosecution—in Chicago, diverted individuals are released without charge, and without the threat of future prosecution.[21] Figure 2 captures at what moment within criminal justice system processing does NADP offer a route out of the criminal justice system for the individual. Third and final, eligibility for diversion is determined at the program's onset, rather than officers making a case-by-case determination.

Overall, NADP changes how we think about alternatives to prosecution. It allows understanding whether long-term, active, and costly criminal justice monitoring (often in some form of deferred prosecution) is a necessary component of non-conviction and non-incarceration for certain types of crimes and for certain populations. At the same time, it also allows testing how crucial the immediate offer of alternatives is in advancing the well-being of arrestees and

[20] See Figure A5 for district-specific expansion details.

[21] Deferred prosecution—where officers still file charges with the prosecutor's office, but charges are deferred as long as individuals fulfill city-specific treatment-related criteria—exists in most drug diversion programs, such as in Seattle, Santa Fe, San Francisco, and Albany, among other cities (Collins *et al.*, 2017; New Mexico Sentencing Commission, 2018; Worden & McLean, 2018; Malm *et al.*, 2020).

of their communities.

Our empirical strategy compares outcomes for individuals arrested for narcotics possession in districts with and without the NADP, pre- and post-program implementation. We also exploit additional layers of variation that result from individual-level variation in eligibility. Our treatment is defined as to whether someone meets the eligibility criteria—that is, Step 3 of Figure 1, meaning we measure the intent-to-treat estimate. We consider the following outcomes. At the individual level, we consider the direct impact of the program—whether an individual is connected with an on-site counselor and released without charge—and the impact of the program for eligible individuals on downstream criminal justice involvement, including future arrests for drug crime and violent crime, as well as the impact of the program on linkages to housing support, and its impact on fatal drug overdoses.

2 Data

We rely on five data sources, described in detail below.

Chicago Police Department Data 2010-22. To measure eligibility for diversion, whether an individual is released without charge, as well as arrests following diversion, we rely on data from the Chicago Police Department (CPD). These data include descriptive information about both the offense and the individuals involved in criminal arrests within the city of Chicago.

Thresholds Data 2018-22. To track whether individuals are connected with counselors following diversion, we rely on the service provider Thresholds' data. This data is restricted to individuals that consent to having their health information included in the study, and includes participant demographics, substance use history, and length of engagement with Thresholds' counselors.

Cook County Sheriff's Office Data 2014-22. We use this dataset to measure pre-trial incarceration (including electronic monitoring) as well as misdemeanor sentences served in Cook

County jails. These records are merged with CPD data using Identification Record (IR) numbers, a fingerprint-based method of identifying arrestees.

Homeless Management Information System Data 2014-23. The Homeless Management Information System (HMIS) data, managed by the organization, All Chicago, tracks every instance an individual appears in any of Chicago's homelessness services. These appearances fall into the broad areas of service seeking (such as staying in a shelter or in temporary housing), service receipt (such as via community outreach). Variables in the dataset record the type of linkage, as well as the entry and exit dates for services (such as entry and exit dates for shelter use). Appearances in HMIS data are merged with CPD data using using personally identifiable information and the recently developed machine learning matching algorithm, Name Match (Jelveh *et al.*, 2024; Tahamont *et al.*, 2023).

Cook County Medical Examiner Data 2010-22. To track the impact of drug arrest diversion on fatal overdoses, we obtained death records from the Cook County Medical Examiner's Office via a Freedom of Information Act (FOIA) request. This dataset includes case level information about all sudden deaths between 2010 and 2022 within Cook County, including name, date of birth, demographic information, cause of death, date, and location of the incident. These records are merged with CPD data as above, using personally identifiable information and the algorithm, Name Match.

2019 CPD Beat Officer Survey Data. To assess opinions about the NADP among CPD officers, an in-person survey was conducted in District 11 in June 2019. At this point, the program had been operational for one year. Respondents comprised of 115 beat officers—those who patrol and make arrests—and responses were anonymized. Opinions gathered through the survey are used to assess how officers implementing the diversion program perceive its benefits and drawbacks, and how many were implementing it with fidelity.

3 Empirical Strategy

This section describes the difference-in-difference-in-differences (DDD) framework used to identify the impact of arrest diversion on subsequent criminal justice involvement and health outcomes. This technique compares drug arrests eligible for diversion with those that were ineligible, before and after the expansion of the diversion program into each CPD district. The DDD estimate relies on the assumption that in the absence of the NADP, the difference in outcomes between eligible and ineligible individuals in treatment districts would have evolved similarly to that in control districts.

Central Specification. Figure A5 specifies when police officers were trained in how to implement the NADP in their respective CPD districts. This information is used to estimate the following equation:

$$Y_{i,d,t} = \beta_0 + \beta_1 Elig_i * Treat_d * After_{dt} + \gamma_{ed} + \gamma_{dt} + \gamma_{et} + \varepsilon_{i,d,t}$$

$Y_{i,d,t}$ is a criminal justice, housing, or health outcome for individual i in district d in year t. Eligibility-district interactions γ_{ed} allow for permanent differences between eligible and ineligible individuals in different districts. Eligibility-time interactions γ_{et} control flexibly for trends that may affect eligible individuals more or less than those ineligible for diversion in Chicago. District-time interactions γ_{dt} control flexibly for factors changing at the district-time level that could affect the outcome of interest. Since treatment varies at the individual level, standard errors are clustered at the individual level to account for serial correlation in the outcome variable.

β_1 captures the impact of having NADP-trained patrol officers on our outcomes of interest. $Elig_i$ is an indicator variable that equals one for individuals eligible for diversion under the NADP. $Treat_d$ is an indicator variable that equals one if district d trained its patrol officers on how to implement the NADP within its boundaries during the study period. $After_{dt}$ is an indicator variable that equals one if NADP-trained officers were patrolling within district

d's boundaries in period t. To account for biases that emerge in conventional three-way fixed effects designs, we use point estimates and confidence intervals generated using Borusyak *et al.* (2023)'s imputation estimator.[22]

Event Study Specification. In order to examine the year-by-year impact of the NADP expansion, we use the following event study specification:

$$Y_{i,d,t} = \sum_{\tau \geq -n} \beta_\tau Elig_i * Treat_d * After_{dt}^{\tau} + \gamma_{ed} + \gamma_{dt} + \gamma_{et} + \varepsilon_{i,d,t}$$

$Y_{i,d,t}, \gamma_{ed}, \gamma_{dt}$ and γ_{et} are defined exactly as above. $After_{dt}^{\tau}$ are indicator variables that equal one if the NADP training was implemented in district d exactly τ years before period t. For instance, District 11 trained its officers in how to implement the NADP in June 2018, so $After^1$ indicator equals one for District 11 during June 2018 - May 2019, the $After^2$ indicator equals one for District 11 during June 2019 - May 2020, and so on. τ can take on negative values, which allows us to test for (and rule out) differences prior to the policy's implementation.[23]

4 Descriptive Evidence

In this section, we present descriptive evidence about individuals connected with substance use treatment by the NADP, and CPD officers' impressions of the diversion program. Overall, we find that the program is able to reach those with medically diagnosed substance use disorders and enjoys the support of CPD officers.

4.1 Individuals Connected With Treatment by NADP

To understand who is connected with substance use treatment by the NADP, and how long they continue to engage with counselors, we rely on data collected by Thresholds, the service

[22] This estimator is constructed in three steps—(1) group and time period fixed effects are fitted by regression on untreated observations only; (2) these are used to impute untreated potential outcomes, and obtain an estimated treatment effect for each treated observation; (3) a weighted average of these treatment effect estimates is taken, corresponding to the estimation target. This is implemented using the Stata command *did_imputation*.

[23] This is implemented using the Stata commands *did_imputation* and *event_plot*.

Table 1: Individuals Connected With Treatment

	Diverted		Walk-in	
Served by Any Treatment Provider				
	Mean	Missing	Mean	Missing
Demographic characteristics				
Male	77%	0.01	74%	0.04
Average age	48	0.01	48	0.04
Unemployed	73%	0.01	88%	0.04
Race				
Black	59%	0.04	71%	0.07
White	28%	0.04	26%	0.07
Other	13%	0.04	2%	0.07
Substance use characteristics				
Currently experiencing withdrawal symptoms	39%	0.4	31%	0.2
Used narcotics in the past year	98%	0.01	86%	0.07
Narcotics use frequency: Daily	74%	0.05	79%	0.24
Age when first used narcotics	26	0.06	25	0.22
Ever overdosed	37%	0.06	44%	0.13
Overdosed in the past year	11%	0.21	24%	0.16
Ever witnessed another person overdose	62%	0.42	59%	0.18
Ever had naloxone administered to them	28%	0.43	41%	0.18
Has never attended substance use treatment	23%	0.02	12%	0.11
Housing characteristics and housing services				
Lives in shelter or on the street	11%	0.04	40%	0.07
Non-permanent living situation	45%	0.04	40%	0.07
Prior engagement with housing services (HMIS)	27%	0.02	47%	0.29
Observations	427		45	
Served by Thresholds				
Medically diagnosed substance use or mental health disorder	98%	0.74	100%	0.29
Medically diagnosed substance use disorder	96%	0.89	100%	0.56
Medically diagnosed mental health disorder	28%	0.37	77%	0.13
Engagement with Thresholds after diversion/walk-in	85%	0.42	90%	0.36
Observations	247		29	
Average days engaged	40	0.01	138	0.07
Engaged with Thresholds 30 days or longer	52%	0.48	76%	0.36
Engaged with Thresholds 60 days or longer	38%	0.52	62%	0.36
Engaged with Thresholds 90 days or longer	29%	0.54	59%	0.36
Observations	209		26	

Note: Total observations between July 2018 - May 2022 are reported. Narcotics includes heroin, cocaine, and opioids. Variables "Narcotics use frequency: Daily" and "Age when first used narcotics" are only available for those who reported narcotics use in the past year. Variables under the "Served by Thresholds" section are available only for those who were offered services by Thresholds, rather than having been referred out to other providers. (Specifically, it includes observations where either in the referral column filled out at the assessment at the police station Thresholds is named, or if a person shows up as a Thresholds service user as part of the NADP program after their diversion.) Variable "Medically diagnosed mental health disorder" refers to additional disorders outside of substance use disorder. Data Source: Thresholds.

provider embedded with district police station. We are only able to observe this information for individuals that consented to sharing their health data with the research team, and cover the periods of 2018-2022. In total, we are able to analyze data on 427 individuals that were diverted by CPD and 45 individuals that walked in for treatment. The latter group is not the main focus of the analysis, but provides a useful benchmark against which to compare treatment take-up and engagement rates among those who are diverted by CPD—i.e. those who did not seek out substance use treatment themselves.[24]

Column (1) of Table 1 summarizes descriptive statistics of program participants—77% of diverted individuals are men, 59% Black, and on, average, 48 years old. 73% report being unemployed. 98% reported using narcotics in the year prior to their screening interview, and among those who did, 74% used it daily. 37% overdosed before. The majority of respondents, 56% report living in a shelter, on the street, or in some form of non-permanent housing (such as someone else's apartment).

For individuals who subsequently engage with Thresholds services, there is additional information available on their subsequent engagement with treatment.[25] 98% of respondents were classified as meeting the medical criteria for a substance use disorder or a mental health disorder, the substance most often being an opioid, and the two leading mental health disorders being depression and bipolar disorder. 52% remain in treatment (attending therapy sessions and meetings with counsellors) for at least 30 days.[26] The retention rate at 30 days—a measure

[24]Our analysis does not include individuals who needed to be taken to the hospital because of the severity of their withdrawal symptoms, as those individuals were not eligible for diversion under NADP.

[25]After completing the screening, the counselor, who is associated with the main substance use treatment organization, Thresholds, refers individuals for treatment to counselors within their own organization or to other organizations working in the substance use treatment field in Chicago. 18% of consenting individuals are referred to Thresholds during the study period. The substance use treatment offered by Thresholds is similar to what treatment provision usually looks like. For this population, Thresholds offers outpatient services only, occasionally offers medication assisted treatment (using buprenorphine, brand name Suboxone), if warranted, and has a strong focus on providing wraparound services related to housing, along with substance use treatment. They also put large emphasis on follow up, regularly reaching out to individuals to ensure sustained support. Overall, these characteristics make Thresholds a broadly typical provider—rather than, for example, an exceptionally service-intensive one—, suggesting that the type of treatment access discussed in this paper is scale-able to other cities.

[26]We base the treatment engagement end date on the last date the individual attended a service. This is a stringent definition, as it excludes days when counselors conducted repeated attempts to get in contact with the diverted individual, before the person was officially deemed closed to services. We calculate average days

often used to assess substance use program success—places the program into a similar success range as substance use treatment programs in general, where engagement rates vary between 53-83%, depending on the context (Condelli *et al.*, 2000; Petry & Bickel, 2000; Arfken *et al.*, 2001; Dakof *et al.*, 2001). This is especially encouraging given that the program connects individuals who are not actively seeking treatment with de-addiction services, without any threat of legal ramifications for non-compliance.

4.2 CPD Beat Officer Survey

In June 2019, after the program had been active in District 11 for a year, 115 beat officers from District 11 were surveyed to understand if and how they valued the program. 86% of officers reported that did not believe that arrest discouraged future use.[27] The majority of officers were clear on which arrestees were eligible for the NADP. When asked about the benefits of the NADP, the most popular answers were that it could support community relationship development, redirect officer time to other public safety matters, and reduce substance use in the community. As a suggestion for program improvement, officers mentioned the expansion of the program to the rest of the city, which was completed late 2021.

One year into the implementation of the program, 18% had detained someone who was referred to treatment via the program. 40% had shared information about CPD's alternatives to arrest with the public, with the vast majority of the 40% doing so while on duty.

5 Results

In this section, we present intent-to-treat estimates of the causal impact of the NADP on individuals eligible for diversion.[28] We find that drug arrest diversion increased the probability

of engagement based on the subset of individuals who are already closed to services.

[27]This finding is not unique to the Chicago context. Survey evidence from Baltimore, for instance, shows that officers do not believe that arrest is an effective way to discourage drug use (Rouhani *et al.*, 2019).

[28]Figure A1 summarizes the eligibility criteria for diversion under NADP. There are at least three reasons why take-up might not be perfect, creating a wedge between the intent-to-treat and treatment-on-treated estimates. First, individuals were diverted only if the counselor assessing them determined that they would benefit from a substance use program. This is not a large concern because the implementation agency (Thresholds) re-

of being connected with a substance use counselor as well as that of being released without criminal charges. Re-arrest rates fell, including a 21% reduction in the probability of being re-arrested for drug charges, and a 28% reduction in the probability of being re-arrested for violent charges. Linkages with housing services increased by 20%. We do not find any discernible impact of drug arrest diversion on fatal overdose risk. We discuss each of these findings in-depth below.

Throughout this section, we define District 11 as our treatment district and the remaining eighteen non-Westside districts as our comparison districts.[29] These estimates are informative about the overall impact of the diversion program as District 11 alone accounts for 40% of all eligible drug arrests in Chicago's 22 policing districts during 2018-2021. Our estimation sample includes all arrests that include drug charges in Chicago between 2010-21.[30]

5.1 Direct Impact

In this section, we show that drug arrest diversion increased the probability that an eligible individual was connected with a Thresholds counselor following a narcotics arrest, and made it more likely that they were released without criminal charges.

Panel A of Figure 3 reflects event study estimates of the impact of drug arrest diversion on connections with treatment providers – we observe a sharp, pronounced increase in the probability of being connected with an onsite counselor as soon as diversion begins. Column (1) of Table 2 displays the corresponding point estimate – a precisely estimated increase of

ported that this was always the case, finding that every person was engaging enough with substances to benefit from the program. This is in line with a finding described below in Table 1—96% of consenting participants met the medical criteria for a substance use disorder. Second, when an individual was offered diversion, they could potentially opt to not participate, and elect to be charged with the crime of possession, and be taken to bond court the following morning. It was exceedingly rare for a person to decline participation; in the first 1.5 years of implementation, there were only 2 such individuals. Third, some individuals that were eligible did not get diverted because some police officers may not have known about the program, or on-site counselors were not available between the time of arrest and the arrival of the county bus that transports individuals to bond court every morning.

[29]We exclude the other three Westside districts – 10, 15, and 25 – from our main sample as there seems to have been some spillover/anticipatory effects of drug arrest diversion in these districts. We discuss these findings in detail in the Appendix.

[30]We exclude arrests where the drug charges were exclusively marijuana offenses since marijuana was legalized during the study period.

Table 2: Impact of Drug Arrest Diversion

	Connected with Counselor	Released without Charge	Any Re-arrest	Drug Re-arrest	Violent Re-arrest	Any Housing Services	Day or Emergency Shelter	Fatal Overdose
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Estimate	0.215***	0.303***	-0.085***	-0.077***	-0.043***	0.012	0.026*	0.011
	(0.013)	(0.012)	(0.022)	(0.020)	(0.015)	(0.020)	(0.014)	(0.011)
Mean	0.000	0.000	0.602	0.359	0.155	0.180	0.078	0.057
N	89,161	95,022	95,022	95,022	95,022	52,838	52,838	95,022
F Test	.	0.068	0.283	0.279	0.119	0.164	0.365	0.300

Notes: This table displays the estimated impact of drug arrest diversion using drug arrests between 2010-2021 in District 11 and eighteen control districts. Regressions include district-year, year-eligibility, and eligibility-district fixed effects. Standard errors are clustered at the individual level, and reported in parentheses. Mean reflects the mean of the dependent variable amongst untreated eligible individuals in control districts. The parallel pre-trends test is based on three pre-treatment periods following Borusyak *et al.* (2023) who recommend not using all pre-treatment periods for this test; results based on the inclusion of more pre-treatment periods are qualitatively similar and available on request. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. Data sources: All Chicago, Chicago Police Department, Cook County Medical Examiner's Office, Thresholds.

21.5 percentage points (off of a base of 0) in the probability of being connected with an onsite counselor.

Panel B of Figure 3 displays a sharp increase in the probability of being released without criminal charges; corresponding estimates are displayed in Column (2) of Table 2.[31] These estimates are higher than those observed in column (1) for two reasons – one, we are only able to observe health data for individuals that were diverted *and* consented to sharing their health data; two, the data used in column (1) had its collection temporarily paused largely due to the onset of the COVID-19 pandemic, and only restarted in 2021.

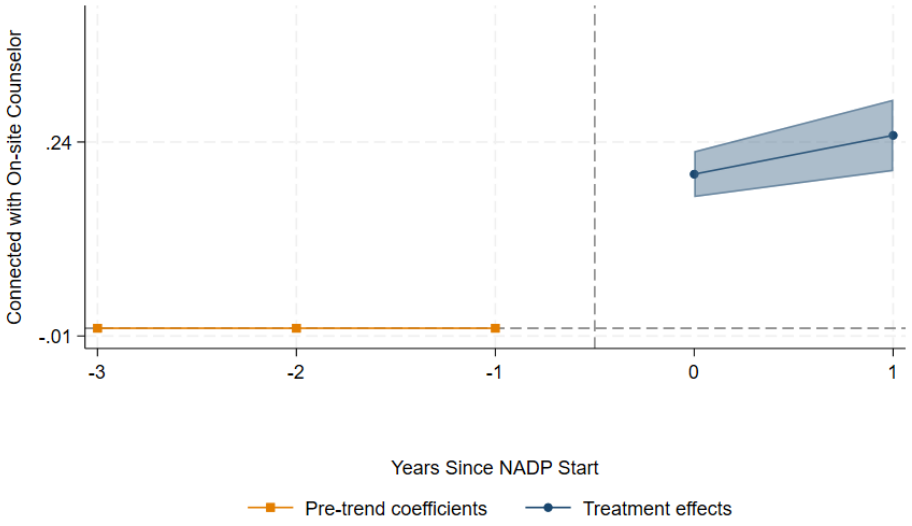
5.2 Subsequent Criminal Justice System Involvement

In this section, we discuss the impact of drug arrest diversion on the probability that an eligible individual was re-arrested following the initial drug arrest. We find that the probability of

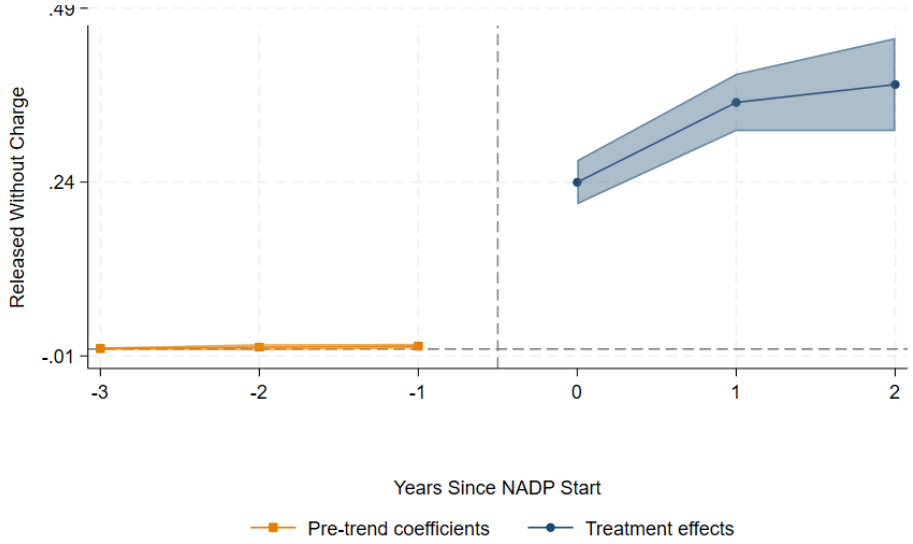
[31] Outside of the NADP, being released without charge following a drug arrest is exceedingly rare. Prior to 2018, 0.07% of drug arrests were released without charge in District 11, and 0.09% citywide. Figure A8 depicts the raw data corresponding to this variable.

Figure 3: Direct Impact of Drug Arrest Diversion

Panel A: Connection with a Counselor + Consent to Share Health Data



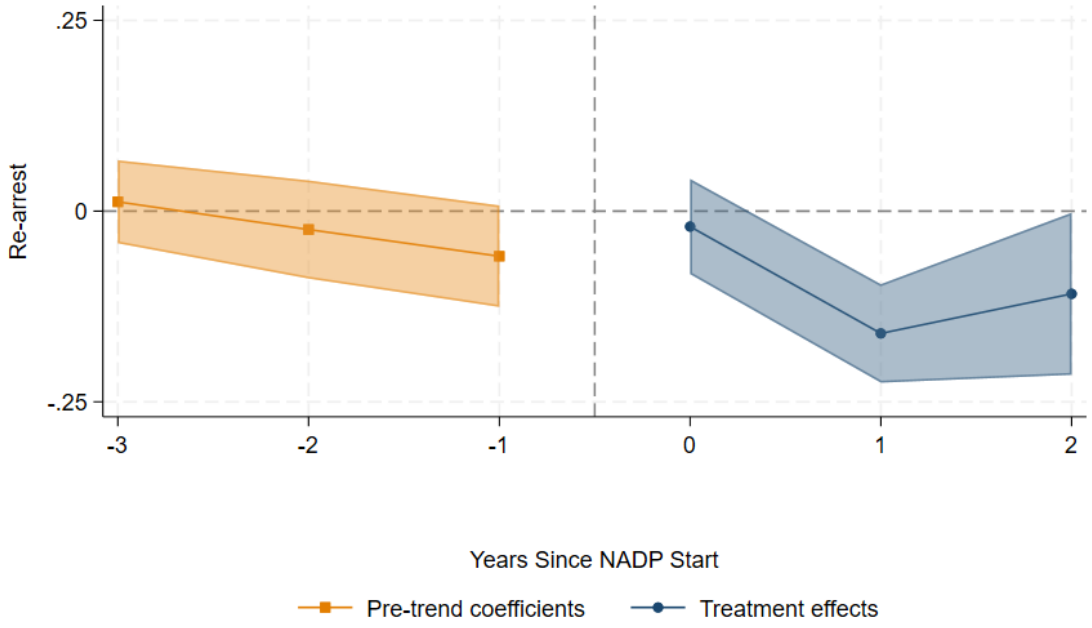
Panel B: Release Without Criminal Charge



Notes: These figures display DDD point estimates and 95% confidence intervals of the impact of the NADP using drug arrests between 2010-2021 in District 11 and eighteen control districts. Regressions include district-year, year-eligibility, and eligibility-district fixed effects, and standard errors are clustered at the individual level. Data Sources: Chicago Police Department, Thresholds.

re-arrest falls (Figure 4, column (3) of Table 2), driven at least in part by reductions in re-arrest for drug and violent charges (columns (4) and (5) of Table 2 respectively). Overall, eligible individuals are 8.5 percentage points less likely to be re-arrested for any offense, 7.7 percentage points less likely for drug offenses, and 4.3 percentage points less likely for violent offenses; these are economically meaningful and amount to reductions of 14, 21, and 28% of their respective means.

Figure 4: Impact of Drug Arrest Diversion on Recidivism



Notes: This figure displays DDD point estimates and 95% confidence intervals of the impact of drug arrest diversion using drug arrests between 2010-2021 in District 11 and eighteen control districts. Regressions include district-year, year-eligibility, and eligibility-district fixed effects, and standard errors are clustered at the individual level. Data Source: Chicago Police Department.

5.3 Housing Services

In this section, we discuss the impact of drug arrest diversion on the probability of being connected with housing services. Besides substance use treatment and mental health counseling, Thresholds counselors also provided service referrals to address client needs, including the

need for stable housing. Columns (6) and (7) of Table 2 show that while overall showing up in Chicago's Homeless Management Information System (HMIS) is unchanged for the treatment group (the point estimate being insignificant and positive), shelter use significantly increases, displaying an estimated increase of 32.9% (2.6 percentage points).[32]

5.4 Fatal Overdose Risk

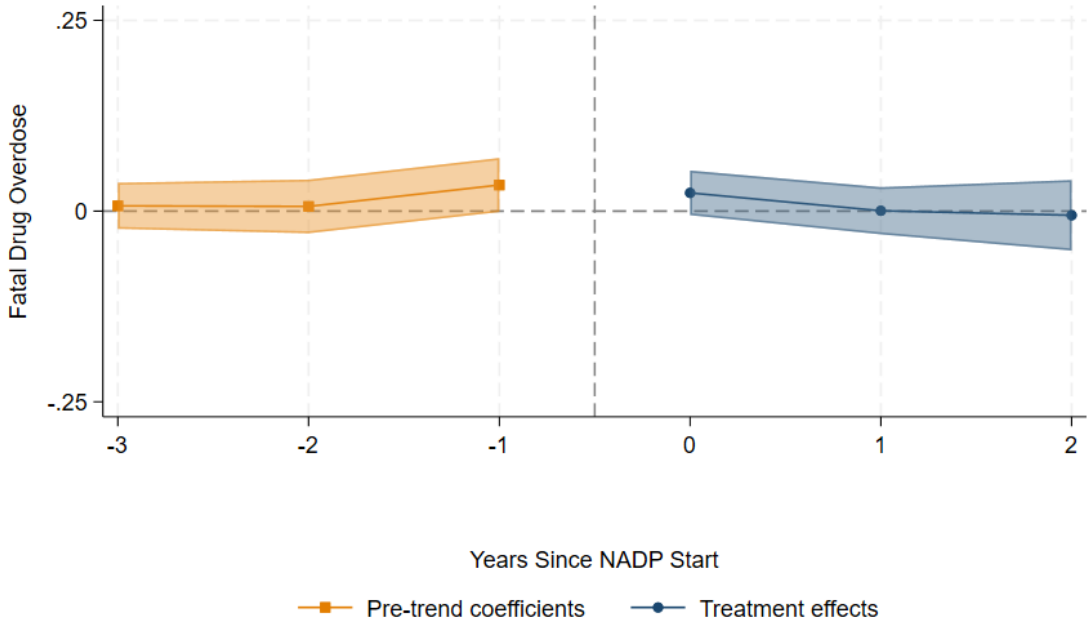
In this section, we discuss the impact of drug arrest diversion on the probability that an eligible individual went on to experience a fatal overdose. Figure 5 displays event study estimates while column (8) of Table 2 displays corresponding point estimates. The triple-difference point estimate is positive, equivalent to an increase of 19% (0.01 percentage points), but is not statistically distinguishable from zero at conventional significance levels. Table A4 extends this analysis to show impacts on three additional, closely related measures of fatality: column (1) reflects the outcome included in Table 2, while columns (2)-(4) show that neither the inclusion of alcohol-related deaths nor restricting attention just to opioid-related deaths change the estimates meaningfully. As such, we conclude that drug arrest diversion did not have a discernible impact on drug-related fatality during the study period.

5.5 Expansion of Drug Arrest Diversion

After drug arrest diversion had been active in District 11 for eighteen months, it was gradually expanded to District 10 in December 2019, and to Districts 15 and 25 in 2020. Our estimates using all four treatment districts are displayed in Table A5, which broadly replicate the findings documented above. The last row, however, shows that tests of parallel pre-trends are rejected for several outcomes for this sample. As such, we include these results for transparency but rely on the estimates in Table 2 for our main conclusions.

[32]Overall showing up in Chicago's Homeless Management Information System (HMIS) includes records for both service-seeking as well as service-receipt of street outreach, assessments, shelters, transitional housing, etc. For more information about the HMIS, see https://www.hudexchange.info/programs/hmis/.

Figure 5: Impact of Drug Arrest Diversion on Fatal Overdose Risk



Notes: This figure displays DDD point estimates and 95% confidence intervals of the impact of drug arrest diversion using drug arrests between 2010-2021 in District 11 and eighteen control districts. Regressions include district-year, year-eligibility, and eligibility-district fixed effects, and standard errors are clustered at the individual level. Data Source: Chicago Police Department, Cook County Medical Examiner's Office.

6 Mechanisms

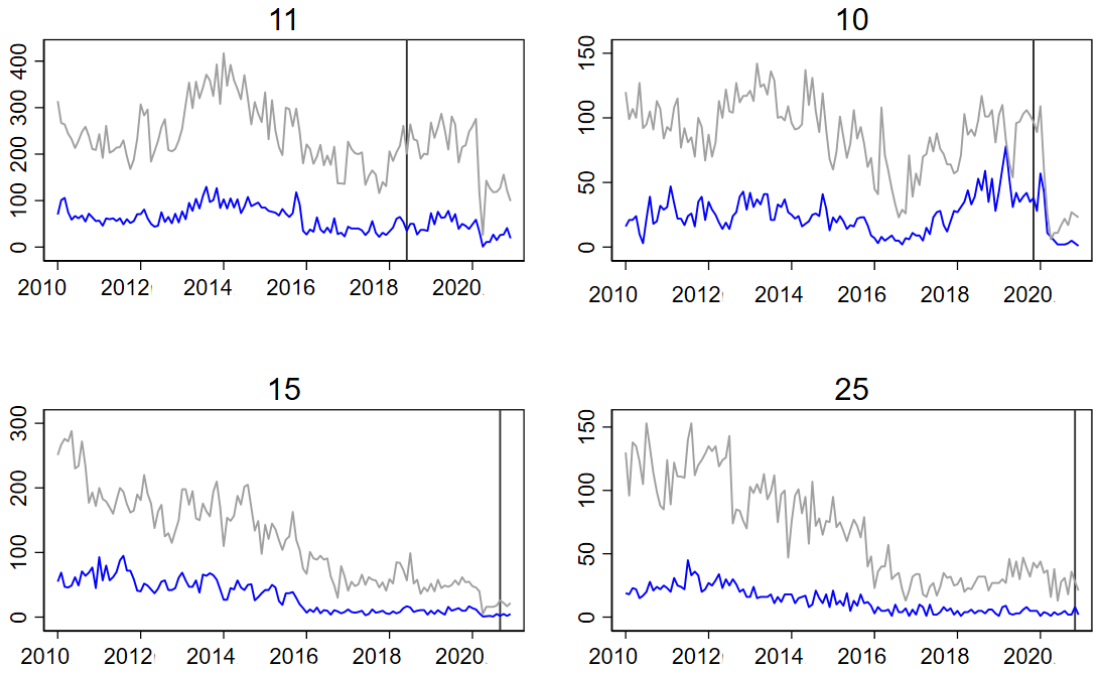
In this section, we discuss several mechanisms that may explain our findings. We argue that it is substance use treatment that drives the effects we observe, while ruling out four alternative explanations. Specifically, we present evidence that changes in police officer behavior, incapacitation, jail time, and being released without criminal charges are unlikely to explain the patterns we document. We argue that the results are most consistent with the increase in access to substance use treatment, both because of how well this approach identifies individuals who could benefit from treatment as well as prior literature that documents the crime-reducing benefits of expanded healthcare in a variety of contexts.

6.1 Changes in Policing

A potential explanation for the observed reduction in recidivism is that police officers are less likely to re-arrest someone that they know will end up being diverted. We argue that this explanation is unlikely to hold in our setting for four reasons.

First, it is actually not possible for an officer to assess an individual's eligibility status prior to making an arrest. For instance, prior violent convictions render arrestees ineligible for diversion, but each individual's criminal history can only be determined via the departmental database which is located in police stations.[33]

Figure 6: Eligible and Ineligible Arrests



Note: These graphs shows that the monthly count of eligible (blue) and ineligible (gray) arrests did not change discontinuously following the start of drug arrest diversion in each district (demarcated by the vertical line in each graph). The reduction in both eligible and ineligible drug arrests in early 2020 is explained by the COVID-19 pandemic. Source: Chicago Police Department.

[33] One could also argue that police officers remember specific individuals that are eligible for diversion and have been diverted in the past, and are less likely to re-arrest them. However, for this to be the mechanism driving the results, the same officer would have to be the only officer that had the chance to interface with and re-arrest the individual over a period of 2.5 years (i.e. the length of our follow-up period). Additionally, this would require a substantial share of the diverted individuals having recurring eligible arrests, which we rarely observe in the data.

Second, as Figure 6 shows, officers were no less likely to make eligible drug arrests relative to ineligible drug arrests after drug arrest diversion rolled out in each district. We also verify this using statistical tests – in District 11, for instance, the ratio of eligible to ineligible arrests was 0.228 in the year prior to the introduction of drug arrest diversion, and 0.225 in the year after. A t-test is unable to reject the hypothesis of equality of these two coefficients (p-value = 0.89).

Third, any degree of de-policing of all drug arrests would bias our estimates towards zero. This is because the vast majority (four-fifths) of drug arrests are *not* eligible for diversion, and de-policing would result in a reduction in recidivism for the comparison group as well in our regressions.

Fourth, arrest-avoidance behavior is not consistent with an officer survey conducted with 115 officers in District 11 in 2019, a year after the start of drug arrest diversion. The survey found that 86% of officers did not believe arrest discouraged drug use, and 72% agreed that diversion had at least one benefit (including the potential to reduce addiction, free up police time for other public safety matters, and improve community relations).

6.2 Incapacitation

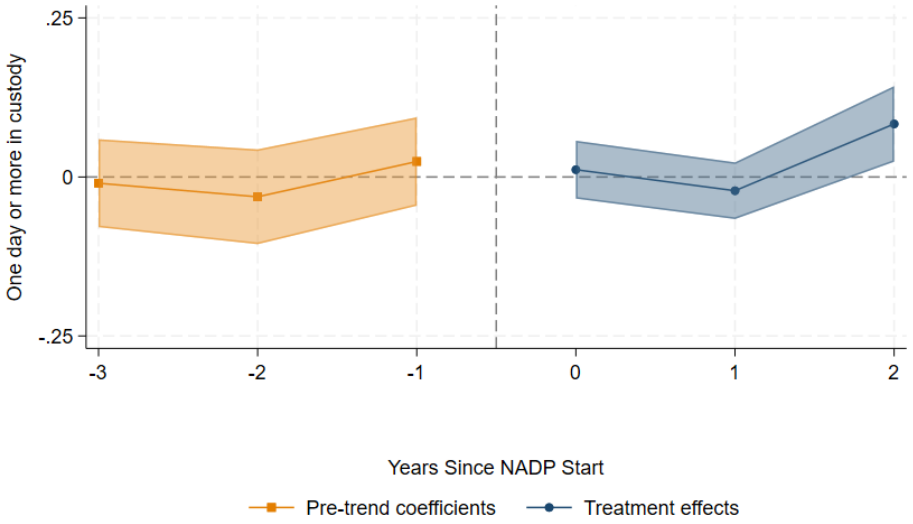
Another channel that may drive the observed reduction in recidivism is incapacitation – i.e., diverted individuals are enrolled in inpatient services and cannot be re-arrested, leading to a mechanical decrease in recidivism. This argument is inconsistent with how drug arrest diversion was implemented—the vast majority of diverted individuals were referred to outpatient services.

6.3 Criminogenic Impact of Jail Time

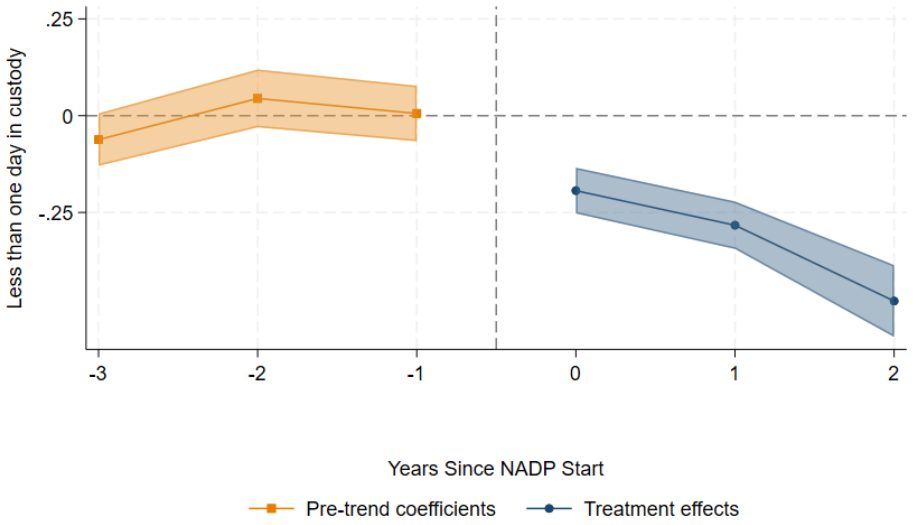
A third explanation for the estimated reduction in recidivism may be that comparison group individuals (i.e., the diversion-ineligible) are more likely to be re-arrested due to the crim-

Figure 7: Impact of Drug Arrest Diversion on Jail Time

A. Jail Time $\geq$ 1 Day (At Least One Overnight Stay in Jail)



B. Jail Time $<$ 1 Day (Likely Released after Bond Hearing)



Notes: This figure displays DDD point estimates and 95% confidence intervals of the impact of drug arrest diversion using drug arrests between 2014-2021 in District 11 and eighteen control districts. Regressions include district-year, year-eligibility, and eligibility-district fixed effects, and standard errors are clustered at the individual level. Data Source: Chicago Police Department, Cook County Sheriff's Office.

inogenic impact of jail time. This channel is unlikely to play a major role in our setting—as Table 3 and Figure 7 show, drug arrest diversion reduces the probability of jail time for those who are eligible for diversion, but this reduction is entirely driven by jail time of less than one day. Specifically, we differentiate between those who have at least one overnight stay in Cook County Jail, and those whole appear in the custody of the Cook County Sheriff's Office, but do not continue on to stay in jail overnight (most likely being released immediately from bond court) and find reductions being driven by the latter group.[34,35] This is because the local prosecutor's office (the Cook County State's Attorney's Office) has deprioritized the prosecution of low-level drug offenses since the mid-2010s.[36] As a result, most low-level drug offenses end in non-prosecution at bond court the day following the arrest.

Table 3: Impact of Drug Arrest Diversion on Incarceration

	Jail $\geq$ 1 Day (at least one overnight stay in jail)	Jail $<$ 1 Day (likely released after bond hearing)
Estimate	0.010	-0.268***
	(0.018)	(0.023)
Mean	0.120	0.636
DDD Estimate / Mean	8.3%	-42.2%
N	44,385	44,384
Pretrend Test	0.501	0.072

Notes: This table displays DDD estimates of the impact of drug arrest diversion on jail outcomes using drug arrests between 2014-2021 in Chicago. Regressions include district-year, year-eligibility, and eligibility-district fixed effects. Standard errors are clustered at the individual level, and reported in parentheses. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. Source: Chicago Police Department, Cook County Sheriff's Office.

[34] Among those with less than one day of Cook County Sheriff's Office custody, the level of detail in the data does not allow for separating with certainty those who were released directly from bond court and those who were briefly taken to jail and released still the same day, but given the detailed information on the movement of those who enter jail for an overnight stay, we posit that it is likely that the vast majority of the individuals did not enter Cook County Jail.

[35] Prior studies that document the crimonogenic impact of pre-trial jail incarceration include Gupta *et al.* (2016) and Dobbie *et al.* (2018), but the median length of incarceration is 200 days in the former, and pre-trial incarceration is defined as greater than 3 days by the latter.

[36] For more details, see https://www.themarshallproject.org/2019/10/24/the-kim-foxx-effect-how-prosecutions-have-changed-in-cook-county.

6.4 Release Without Criminal Charge

Prior research also shows that diversion alone (i.e., without an accompanying referral to or connection with services) can produce sizeable reductions in recidivism (Mueller-Smith & Schnepel 2020, Agan *et al.* 2021). These studies show that reductions in recidivism are driven by young, first-time defendants for whom diversion means no criminal record.

This mechanism may explain part of our findings but is unlikely to provide a full explanation for a few reasons. First, we document recidivism reductions significant at the 95% level *only* for those with prior drug arrests (see Table 4 for point estimates). Second, as discussed above, the local prosecutor's office has deprioritized the prosecution of low-level drug offenses since the mid-2010s, which means that non-eligible arrests are also unlikely to end in prosecution. Third, the median age among diverted individuals is 48, indicating that our results are unlikely to be driven by young individuals who avoid a criminal record if they are diverted.

Table 4: Heterogenous Impacts of Drug Arrest Diversion on Recidivism

	Prior Drug Arrest	Prior Non-Drug Arrest	No Prior Arrest
Estimate	–0.107***	-0.020	0.111*
	(0.026)	(0.062)	(0.060)
Share of Arrests	0.750	0.125	0.125
Mean	0.685	0.545	0.340
DDD Estimate / Mean	-15.7%	-3.6%	32.7%

Notes: This table displays DDD estimates of the impact of drug arrest diversion on three subsets of the data: individuals with prior drug arrests, individuals with prior arrests that do not include drug charges, and individuals with no prior arrests. The lookback period to compute prior arrests begins in 1999. Regressions include district-year, year-eligibility, and eligibility-district fixed effects. Standard errors are clustered at the individual level, and reported in parentheses. $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$. Data source: Chicago Police Department.

6.5 Substance Use Treatment

In this subsection, we argue that connections with substance use treatment providers are likely to explain the lion's share of the reduction in recidivism. This is both because of who drug

arrest diversion reaches, as well as prior work on the crime-reducing benefits of healthcare access.

Table 1 summarizes descriptive characteristics of individuals diverted between 2018 and 2022. 98% of diverted individuals met the medical criteria for a substance use disorder or mental health disorder, and 73% reported using narcotics daily. The age at first drug use was 26 while the age at diversion was 48, indicating that drug arrest diversion is not reaching casual, infrequent drug users, but those who could stand to substantially benefit from treatment. Additionally, diverted individuals face no sanctions if they do not return to start treatment. Despite this, 85% of individuals engage with substance use treatment services after diversion, and 38% remain engaged 60 days out. These numbers are comparable to those who self-select into (i.e., walk in for) treatment, displayed in the last column of Table 1. In sum, substance use treatment providers make efforts to continue to engage individuals well after the initial intake process.

Relatedly, a large literature consistently documents the recidivism-reducing impact of healthcare access. Batistich *et al.* (2021), Jacome (2021), and Deza *et al.* (2022) show that access to mental healthcare reduces crime. This is relevant to the present study because of the meaningful overlap of substance use disorder and mental illness, both nationally (Center for Behavioral Health Statistics and Quality, 2019) and in our sample (see Table 1). Wen *et al.* (2017), Bondurant *et al.* (2018), and Aslim *et al.* (2022) show that access to substance use treatment reduces crime. Wilson *et al.* (2006) review 55 experimental and quasi-experimental studies and conclude that court-mandated treatment programs ("drug courts") also reduce recidivism. Given that Kelly *et al.* (2017) find using a nationally representative sample that those who ever went through drug courts—other alternative pathways, such as diversion, were not asked on the survey—are more likely to continue seeking out and using support services during their recovery journey, diversion might be an especially promising path; marrying direct linkage with support with a substantially lower degree of criminal justice contact.

7 Conclusion

Facing a drug use challenge like few other nations, the U.S. has began ramping up non-punitive approaches to illicit drug use in recent decades. These approaches have included the reclassification of drug possession charges from felonies to misdemeanors, outright decriminalization, and even full legalization. However, this has left unadressed a persistent and fundamental challenge—only one in eight drug users receive treatment services, without which recovery is exceptionally challenging. Treatment is especially under-supplied within the criminal justice system (Bronson, 2017; Substance Abuse and Mental Health Services Administration, 2000). Drug diversion, which simultaneously removes legal consequences for drug possession *and* provides direct linkage to treatment, is widely considered a promising avenue to address this challenge.

Chicago's approach to drug arrest diversion is currently the largest opioid diversion program in the U.S. Operated by the nation's second largest police department, drug arrest diversion has been connecting eligible individuals on the West Side of Chicago with treatment services since mid-2018. While drug arrest diversion started in District 11, home to the highest number of drug arrests in Chicago and one of the nation's few remaining open air drug markets, support from the Chicago Police Department and the Mayor's Office led to the city-wide expansion of this approach by the end of 2021. Then, the Mayor's Office of Chicago substantially expanded eligibility for the diversion program in May 2022, nearly doubling the number of individuals who are eligible—chiefly because the program began to permit drug types such as methamphetamine, PCP, and ecstasy; because it increased the maximum allowable drug weight from one to two grams; and because it made violent convictions within the past ten years (as opposed to at any time prior to the diversion) a disqualifying characteristic.

In this study, we use a difference-in-difference-in-differences framework to assess the impact of diversion on eligible individuals, using the staggered rollout of drug arrest diversion across Chicago districts as well as the individual-level eligibility criteria for diversion. We find that counselor connections increase following the start of drug arrest diversion, and so do the

number of individuals who are released without criminal charges. Subsequent re-arrest rates drop substantively, driven at least in part by a drop in arrests for drug and violent offenses. Connections with housing services providers also increase, but the risk of fatal overdose remains unchanged.

This paper provides descriptive evidence that drug arrest diversion is well-targeted. It serves individuals with very high rates of medically diagnosed substance use disorders, who could substantially benefit from participation in substance use treatment and counseling. Despite the fact that drug arrest diversion connects individuals who are not actively seeking treatment with counselors, we observe treatment engagement lengths similar to that documented in contexts where treatment is actively sought out by individuals themselves. The substance use treatment provided to participants is similar to what providers across the country supply, suggesting that a treatment-centric drug diversion approach can be successfully implemented elsewhere as well. Further, survey evidence indicates that drug arrest diversion enjoys favorable opinions among CPD beat officers; 4 out of 5 officers do not consider arrest to be helpful in discouraging future drug use, and a large majority consider drug arrest diversion to have several benefits, including the potential to reduce substance use and demand for drugs, and improve police-community relations.

Overall, these findings indicate that it is possible to proactively connect those with opioid use disorders, particularly those with severe substance use disorders, with de-addiction treatment and other services, reduce the reach of the criminal justice system and simultaneously increase public safety, but may not be an effective policy lever to reduce the risk of fatal overdose.

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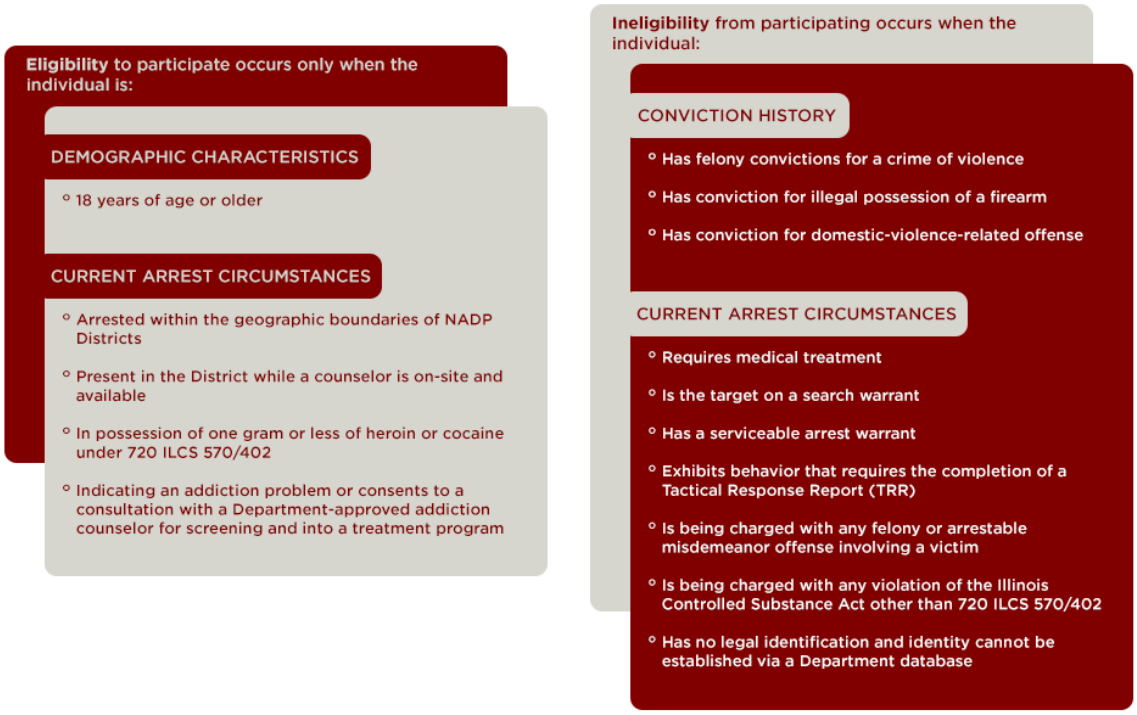
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Appendix

Figures

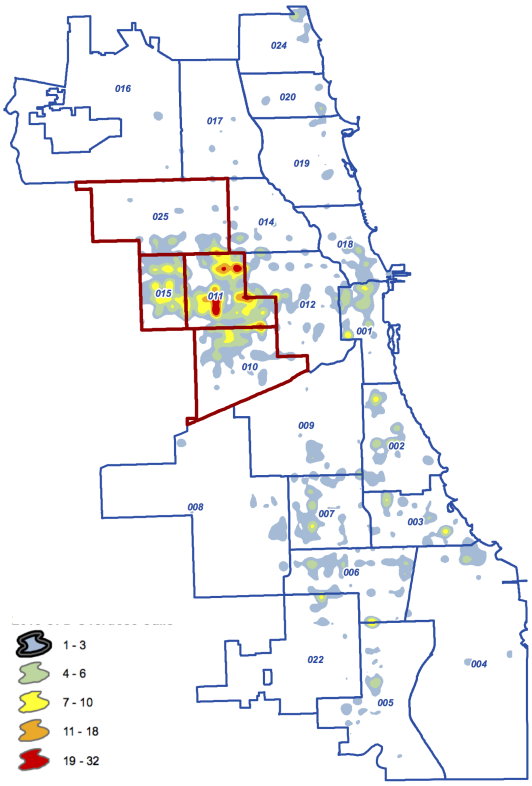
Figure A1: Eligibility Criteria for Drug Arrest Diversion



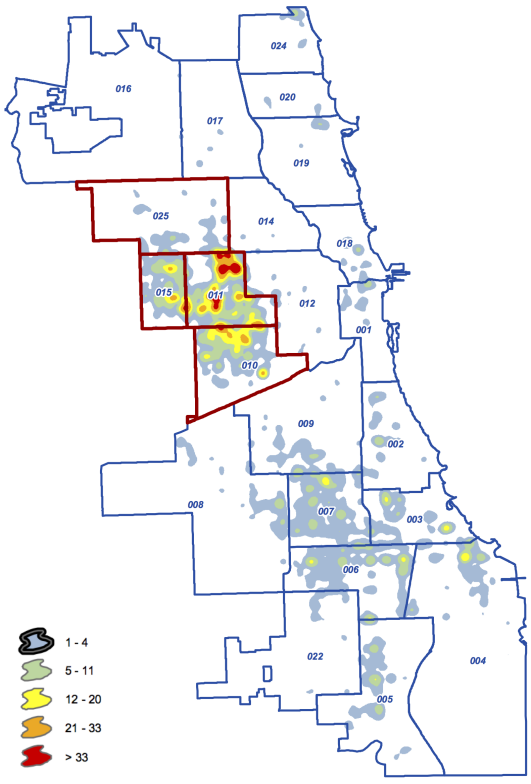
Source: Chicago Police Department. Department Notice D18-03.

Figure A2: Overdose Calls for Service and Arrests in Chicago in 2018

Panel A: Overdose Calls For Service

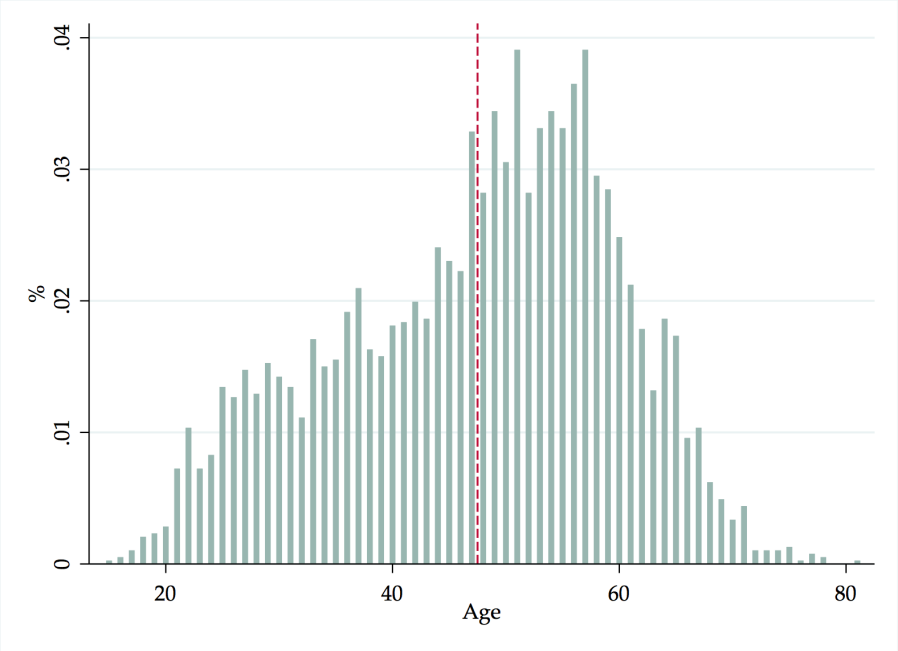


Panel B: Narcotics Arrests



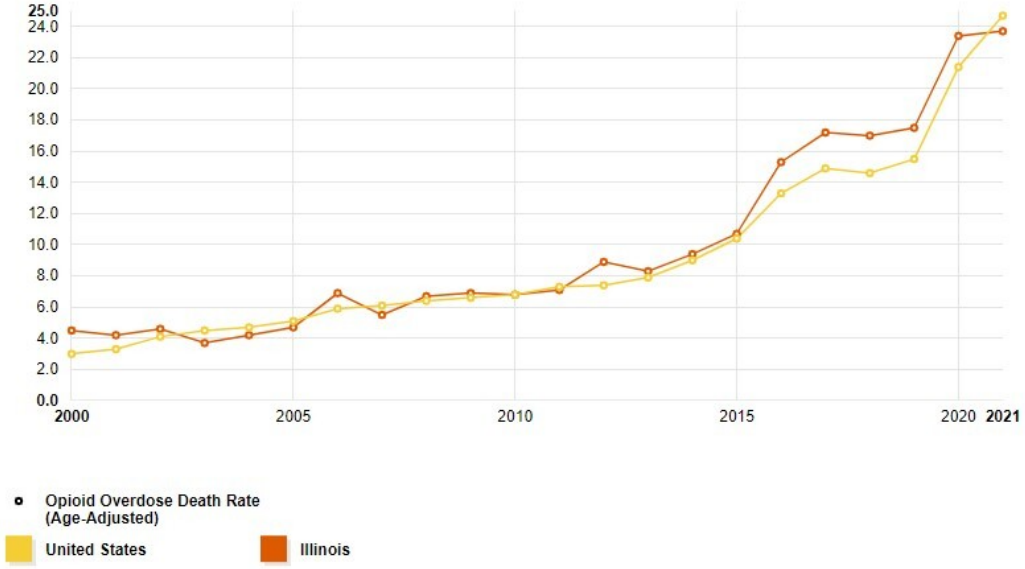
Source: Chicago Police Department CLEAR Data Warehouse, Office of Emergency Management and Communications Bureau of Technical Services PSIT GIS Print Date: 04-JUN-2019. West Side districts in red.

Figure A3: Age Distribution of Opioid Deaths Chicago 2015-19



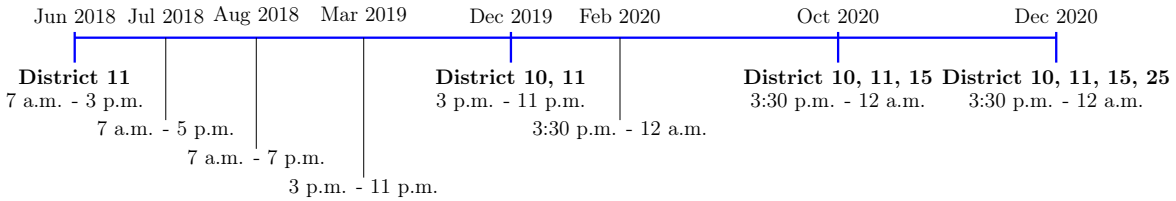
Source: Cook County Medical Examiner Case Archives. Dashed line marks the average age (47.3).

Figure A4: Opioid Overdose (Age-Adjusted) Death Rates: Illinois and the United States



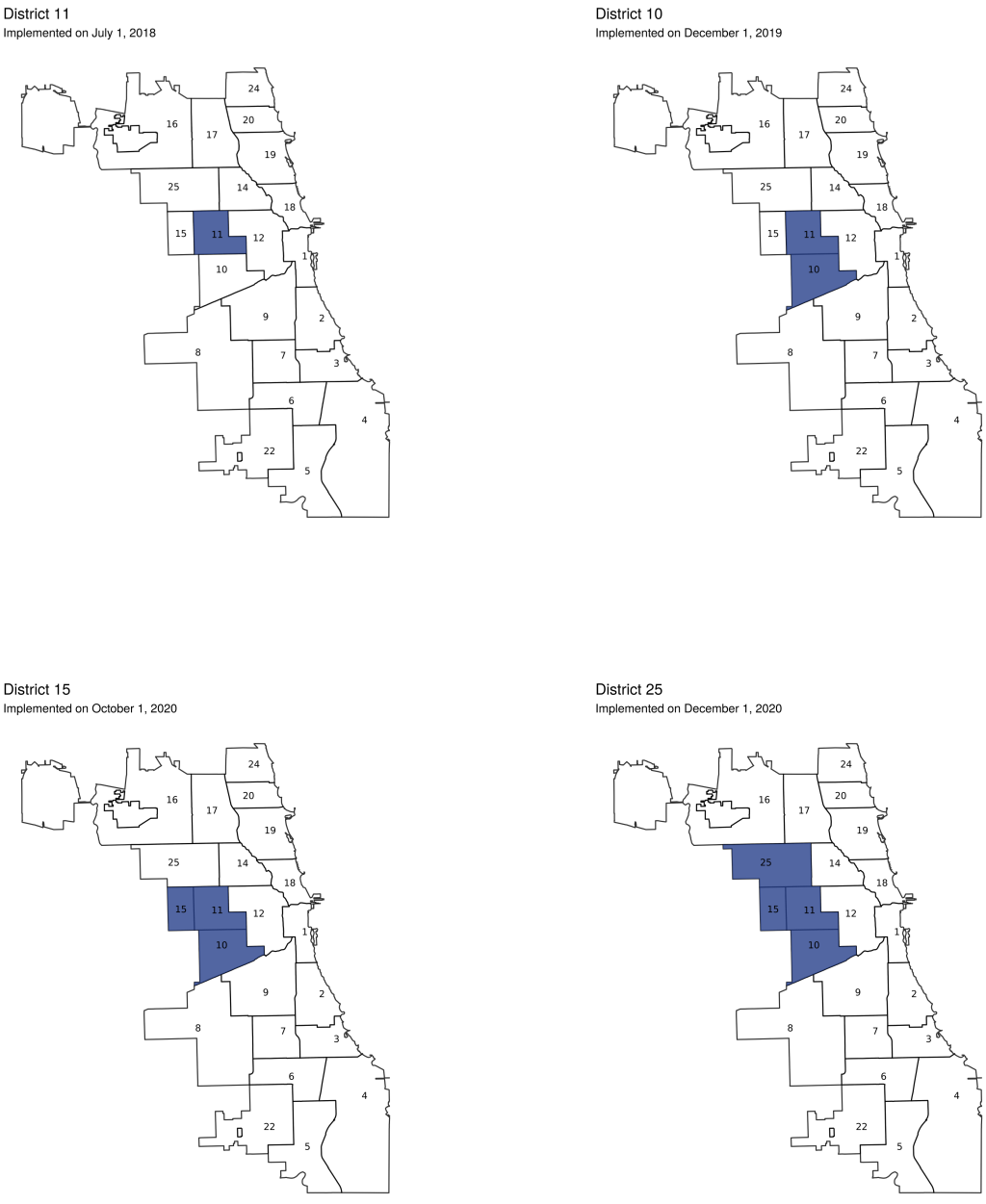
Source: Opioid Overdose Death Rates, State Health Facts, Kaiser Family Foundation.

Figure A5: Implementation



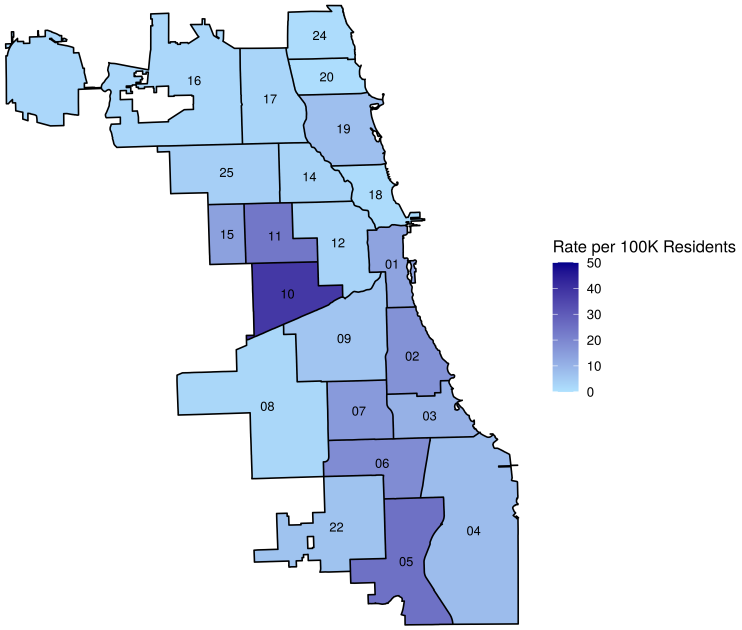
Notes: This figure depicts the expansion of the Narcotics Arrest Diversion Program across Chicago Police Department (CPD) districts between 2018 and 2020. CPD officers were trained on how to identify arrestees eligible for diversion in District 11, 10 and 15 during June 2018, December 2019, and October 2020 respectively. This figure also reflects changes in on-site counselor hours during the expansion; the change from 7 a.m. - 3 p.m in 2018 to 3:30 p.m. - 12 a.m. in 2020 was made in order for Thresholds (the addiction recovery agency providing on-site counseling services) to be able to screen and offer treatment to more individuals each day. However, we find that (a) counselors actively encouraged all officers during drug arrest diversion's roll out training to call them off hours as well if they have an eligible individual in custody, and (b), eligible individuals are indeed very often diverted outside of official hours too. Therefore, we do not differentiate treatment based on hours, but consider all times eligible.

Figure A6: The Spatial Expansion of NADP



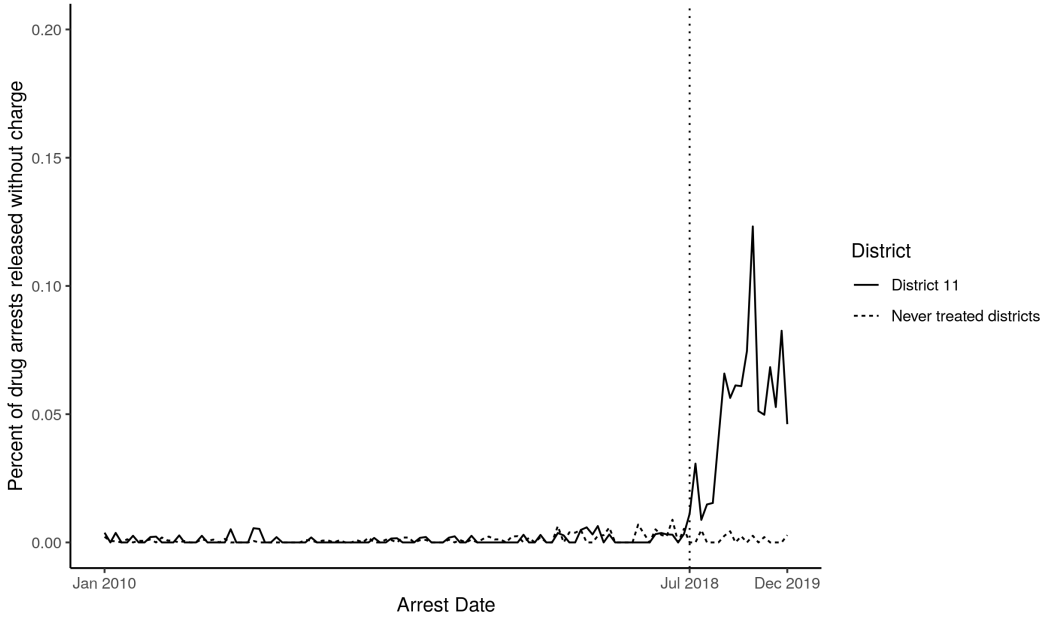
Source: Chicago Police Department.

Figure A7: Homicide Rate in Chicago in 2018



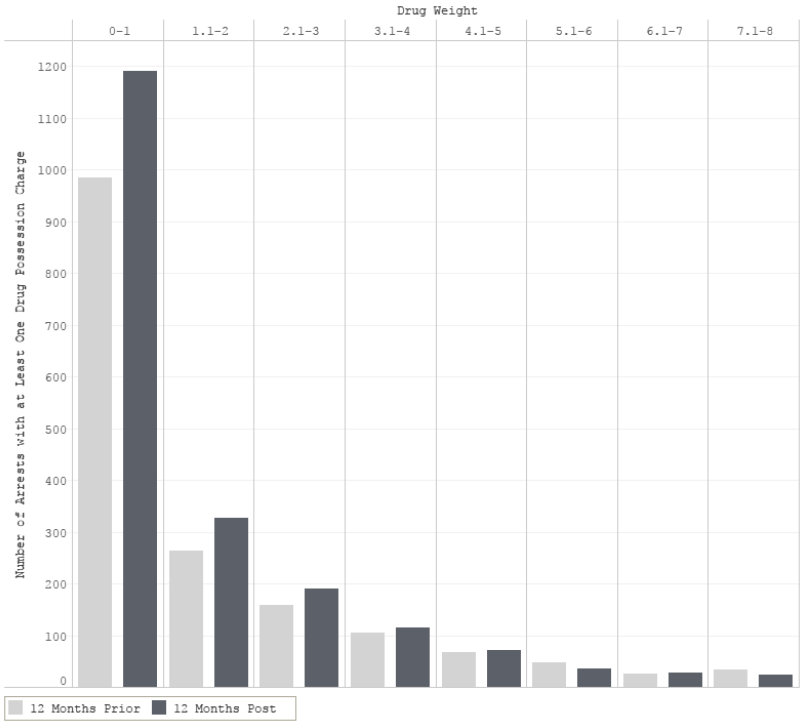
Source: Chicago Police Department.

Figure A8: Drug arrests released without charge



Note: Vertical line at District 11's implementation date. Source: Chicago Police Department.

Figure A9: Distribution of the Weight of Narcotics for Arrests in District 11



Notes: Arrests with 1 gram or below (first two columns) were NADP-eligible, while arrests with over 1 gram were ineligible. The histograms are truncated at 8 grams for displaying. Source: Chicago Police Department.

Tables

Table A1: Top 15 Service Providers where Thresholds Sent Individuals

Service Provider	N	%
Thresholds Treatment	130	26%
Family Guidance	55	17%
Haymarket Center	23	7%
Pilsen Wellness Center	17	5%
Gateway Foundaton	14	4%
Lawndale Christian Health Center	12	4%
Chicago TX Counseling Center	11	3%
Women's Treatment Center	11	3%
El Rincon	10	3%
Healthcare Alternative Systems	10	3%
Loretto	10	3%
St Anthony	10	3%
Garfield Counseling	9	3%
New Age	9	3%
New Vision	8	3%
Southwood Interventions	6	2%
Total for Top 15 Service Providers	215	43%

[1] 504 individuals were diverted to Thresholds from July 2018 to February 2022.
[2] 315 individuals were sent to 70 different treatment providers by Thresholds.
[3] 16 individuals were sent to 'Other' service provider and were excluded from the table.

Table A2: Services Offered by Top 15 Service Providers

Service Provider	Inpatient	Residential	Outpatient	MAT	MH Services	MMD	Toxicology
Thresholds Treatment			X		X		
Family Guidance	X	X	X	X	X	X	X
Haymarket Center	X	X	X			X	
Pilsen Wellness Center				X	X	X	
Gateway Foundaton	X	X	X	X	X		
Lawndale Christian Health Center				X	X		
Chicago TX Counseling Center				X		X	
Women's Treatment Center	X	X	X	X		X	
El Rincon			X	X	X	X	X
Healthcare Alternative Systems	X	X	X	X	X		
Loretto					X		
St Anthony					X		
Garfield Counseling			X		X		
New Age			X	X	X		
New Vision	X					X	
Southwood Interventions	X	X	X			X	
% of Top 15 Service Providers Offering Service	47%	40%	60%	60%	67%	53%	13%

[1] Family Guidance and New Vision also offer hospital handoff services.
[2] Information on services offered by each provider was determined by Crime Lab through reviewing each provider's website.

Table A3: Maximum Number of Individuals Receiving Services from Top 15 Service Providers

Services Offered	N	%
Inpatient	127	40%
Residential	119	38%
Outpatient	147	47%
MAT	149	47%
MH Services	156	50%
MMD	141	45%
Toxicology	65	21%

[1] 315 individuals were sent to 70 different treatment providers by Thresholds.
[2] Counts for each service are not mutually exclusive.

Table A4: Impact of Drug Arrest Diversion – Drug-Related Deaths

	Fatal Drug Overdose	Any Drug-Related Death	Fatal Overdose (any substance)	Fatal Opioid Overdose
	(1)	(2)	(3)	(4)
Estimate	0.012	0.012	0.011	0.010
	(0.011)	(0.011)	(0.011)	(0.011)
Mean	0.059	0.058	0.057	0.057
N	95,022	95,022	95,022	95,022
Pretrend Test	0.427	0.298	0.300	0.301

Notes: This table displays the estimated impact of drug arrest diversion using drug arrests between 2010-2021 in District 11 and eighteen control districts. Column (1) identifies deaths where the description mentions any drug type, excluding alcohol, and mentions the words "overdose," "intoxication," or "toxicity." Column (2) identifies deaths where the description mentions any drug type, excluding alcohol. Column (3) identifies deaths where the description mentions the words "overdose," "intoxication," or "toxicity." (Therefore, Column (1) captures the overlap of Columns (2) and (3).) Lastly, Column (4) identifies deaths where the description mentions an opioid, and the description mentions the words "overdose," "intoxication," or "toxicity." Regressions include district-year, year-eligibility, and eligibility-district fixed effects. Standard errors are clustered at the individual level, and reported in parentheses. Mean reflects the mean of the dependent variable amongst untreated eligible individuals in control districts. The parallel pre-trends test is based on three pre-treatment periods following Borusyak *et al.* (2021) who recommend not using all pre-treatment periods for this test; results based on the inclusion of more pre-treatment periods are qualitatively similar and available on request. $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$. Data sources: Chicago Police Department, Cook County Medical Examiner's Office.

Table A5: Impact of Drug Arrest Diversion – Expansion

	Connected with Counselor	Released without Charge	Any Re-arrest	Drug Re-arrest	Violent Re-arrest	Housing Services	Fatal Overdose
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Estimate	0.177***	0.252***	-0.063***	-0.069***	-0.027**	0.027	0.012
	(0.011)	(0.010)	(0.019)	(0.018)	(0.012)	(0.018)	(0.009)
Mean	0.000	0.000	0.602	0.359	0.155	0.187	0.057
N	118,996	126,367	126,367	126,367	126,367	69,019	126,367
Pretrend Test	0.800	0.095	0.011	0.003	0.052	0.299	0.285

Notes: This table displays the estimated impact of drug arrest diversion using drug arrests between 2010-2021 in District 10, 11, 15, and 25 as treatment districts, and the rest of the city's eighteen districts as control districts. Regressions include district-year, year-eligibility, and eligibility-district fixed effects. Standard errors are clustered at the individual level, and reported in parentheses. Mean reflects the mean of the dependent variable amongst untreated eligible individuals in control districts. The parallel pre-trends test is based on three pre-treatment periods following Borusyak *et al.* (2023) who recommend not using all pre-treatment periods for this test; results based on the inclusion of more pre-treatment periods are qualitatively similar and available on request. $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$. Data sources: All Chicago, Chicago Police Department, Cook County Medical Examiner's Office, Thresholds.