Behavioral Frictions in Persistent, Repeat Behaviors: A Zero Friction Approach to Addressing the Opioid Crisis*

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Behavioral science shows that frictions can lead to substantial decision-action gaps when it comes to one-time decisions such as retirement savings choices and organ donations. However, it is unclear whether the removal of decision frictions can meaningfully impact behaviors that involve repeated decisions, which characterize many of our most pressing social problems. In this paper, we focus on an important and on its face exceptionally hard-to-change behavior—drug use. Prior efforts to encourage drug users to take up treatment have led to largely disappointing results. However, these efforts missed the key insight we examine in our study—that behavioral responses to frictions may well be non-linear. We study the largest police-led drug diversion program in the United States, a zero friction approach to linking drug arrestees with substance use treatment within police stations. We find that this approach leads to exceptionally high treatment take-up rates even for a population with especially hard to change behavior. We use a triple difference design to show the beneficial downstream impacts of this linkage on both the individual and society—lower likelihood of arrest (for both drug and violent offenses) and suggestive increases in connections with some shelter services, albeit no discernible impact on fatal or non-fatal overdose risk.

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

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1 Introduction

Behavioral science has established that people's actions often don't align with their intentions, especially when frictions necessitate effort to make or carry out a decision. Even small frictions can have an outsized influence on a choice's downstream consequences, as evidence on default options and information search costs in retirement saving choices, organ donations, and healthcare and prescription drug plan enrollment decisions shows (Madrian & Shea, 2001; Choi *et al.*, 2003; Kling *et al.*, 2012; Benartzi & Thaler, 2013; Goldin *et al.*, 2020; Domurat *et al.*, 2021; Brot-Goldberg *et al.*, 2023).

The existing evidence suggests that reducing frictions via "nudges" can meaningfully close the decision-action gap in areas that involve one-off decisions. But what about behaviors that involve countless ongoing decisions, day after day? These sorts of repeated decisions account for many of our most pressing social problems. To what degree can behavioral economics help address those problems?

In this paper we try to answer that question for a socially costly behavior—drug use, or more specifically, opioid use, which is responsible for about 80,000 American deaths per year. This is about as remote from a one-time decision as one can be, since individuals experience withdrawal every few hours after use. Opioid use also seems to be a behavior to which people are deeply committed, which on its face would seem to make it one that would be hard to "nudge" someone away from. For example, only 32% of New Yorkers accepted adjudication in drug court to avoid regular sentencing and access drug treatment, and then 46% failed out of programming, a pattern mirrored nationwide (Brown, 2010; Criminal Court of the City of New York, 2017).

This paper takes a fundamentally different approach by testing the idea that behavioral responses to friction may be non-linear. That is, going from some friction to less friction may be far less impactful than going from less friction to *no* friction. Existing efforts like drug courts attempt to reduce (but do not eliminate) frictions involved in accessing drug treatment; however, it takes an average of 101 days for an individual to be accepted into drug court in

New York (Criminal Court of the City of New York, 2017). Even police-led efforts to connect individuals with treatment, which in theory should begin right after an arrest takes place (i.e., earlier within the criminal justice system process), take an average of 33 days (Bastomski *et al.*, 2019).

In this paper, we evaluate a zero friction approach to address arrestees' dependence on illicit drugs. To do so, we examine the impact of removing friction in a way that on its face may seem small, or even trivial: after an arrest, rather than referring someone to a drug treatment program that they must show up to subsequently, police officers make an immediate referral to a drug treatment provider situated within the police station itself. This is the approach adopted by the United States' largest police-led drug diversion effort, based in Chicago. We show that this approach results in a treatment take up rate of 87%, well above the upper bound of previous evidence (Bastomski *et al.*, 2019; Elliott, 2020; Mitchell, 2024; Zhang *et al.*, 2024; Gilbert *et al.*, 2025). This take up rate is documented in a setting where officers do not select specific individuals for treatment referrals (i.e., eligibility is predetermined) and the threat of prosecution for treatment noncompliance is nonexistent. Notably, this demonstrates large impacts of small changes in choice friction for a population whose behavioral choices may be particularly hard to influence.

Given that zero friction induces meaningful behavior change, the natural follow up question is whether high treatment take up rates benefit the individual and society at large. To address this question, we generate causal estimates using data from 2010 to 2022 in a triple difference design that exploits the staggered rollout of this approach across Chicago's police districts (starting in 2018) in combination with predetermined, individual-level variation in who was eligible for connections with treatment providers within police stations.[1] Amongst those eligible for in-station connections with treatment, the overall re-arrest rate fell by 15%, including a 24% reduction in the probability of being re-arrested for drug charges and a 24%

[1]We explicitly account for biases that emerge in conventional three-way fixed effects designs with variable treatment timing by using Borusyak *et al.* (2024)'s imputation estimator.

reduction in the probability of being re-arrested for violent charges.[2] We also document a large but noisy increase in the probability of being connected with day shelter or emergency shelter services, consistent with in-station counselors making service referrals to address client needs beyond substance use.[3] While we are unable to directly test for impacts on drug use beyond arrests for drug charges, we are able to examine impacts on an arguably extreme manifestation of drug dependence – overdose.[4] Examining data on both fatal and non-fatal overdoses, we show that this approach is, unfortunately, unable to affect these tail end outcomes.

This paper makes several contributions: (1) it examines the potential of removing frictions in circumstances where downstream costs and benefits are magnitudes larger than the effort separating intention and action; (2) it examines a large-scale demonstration of reducing frictions in accessing treatment for a high-need population with low treatment engagement rates; indeed, Chicago is the largest implementer of police-led diversion, a popular but understudied criminal justice system approach to address the opioid crisis; (3) it accounts for selection on unobservables to generate causal estimates of the impact on fatal and non-fatal overdose risk;[5] (4) it finds suggestive evidence that this approach can have positive spillover effects on linkages with short-term housing services, a key outcome given the high rates of homelessness among individuals with substance use disorders; (5) it presents novel evidence on which individuals are served by police-led 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.*, 2023) and to the literature highlighting the scarcity of effective demand-side policy solutions

[2]We implement several tests to show that this reduction is not driven by changes in officer behavior in response to the program, discussed at length in Section 7.

[3]We document a 2.4 percentage point (32%) increase with a p-value of 0.16. For more details about the distinction between these two types of services, see https://hmis.allchicago.org/hc/en-us/articles/115005113243-Project-Type-Descriptions.

[4]6% of drug arrestees that are eligible for diversion in non-treatment districts experience a fatal overdose while 10% experience a non-fatal overdose that is captured in administrative data.

[5]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; Corredor-Waldron & Currie, 2022; Jacome, 2024)

to reduce fatal drug overdoses (Swensen, 2015; Doleac & Mukherjee, 2022; Packham, 2022; Spencer, 2023). Finally, calculating the marginal value of public funds (MVPF), we observe that drug diversion's MVPF is infinity. Compared to over a dozen other crime policies that have MVPF information available, drug diversion is one of the rare interventions that "pays for itself," and it does so while delivering higher returns at lower cost than any other health intervention within the criminal justice system.

The remainder of this paper is organized into seven sections. Section 2 describes the institutional setting, and Section 3 describes the datasets used in the empirical analysis. Section 4 outlines the empirical strategy and Section 5 discusses descriptive evidence. Section 6 presents causal evidence of the impact of drug arrest diversion. Section 7 discusses the potential mechanisms, and Section 8 concludes.

2 Setting

Opioid use is widespread in the U.S., and is associated with a range of adverse health and labor market outcomes beyond increased healthcare costs (Maclean *et al.*, 2020). Opioids also account for two thirds of drug overdoses, which have skyrocketed in recent years (National Institute on Drug Abuse, 2024). Evidence on the impact of regulating the supply of opioids has been mixed, underscoring the need to connect individuals with substance use disorders to treatment at scale (Powell *et al.*, 2020; Neumark & Savych, 2022).

2.1 Criminal Justice System Responses to Drug Use

The scale of the opioid crisis, as well as a shift in how drug use is viewed—a public health challenge in addition to a criminal or legal one—have broadened criminal justice system responses to drug use beyond criminal indictments (Volkow *et al.*, 2017; Caulkins *et al.*, 2021). These responses now include include connections to treatment at or even prior to an arrest (diversion programs), post-arrest (drug courts), and post-conviction (treatment within jails and prisons). While all three approaches share the goal of connecting more people with treat-

ment, the latter two are only able to reach a small share of those who could benefit from substance use treatment. For example, Chicago experienced 2,000 drug overdoses in 2022 but its drug court—which requires a guilty plea and a two-year probation period—only serves a few dozen people per year (Evans, 2022; Main, 2022). Along the same lines, over 50% of those incarcerated in prisons and jails meet the criteria for drug dependence or abuse, but less than 15% receive treatment while incarcerated (Substance Abuse and Mental Health Services Administration, 2000; Bronson, 2017). Diversion programs, on the other hand, divert individuals away from the criminal justice system as early as possible (sometimes even before they are charged with a crime).[6] As such, they have the potential to connect far more people with treatment. Chicago's drug arrest diversion program, for instance, connected several hundred people with treatment over the same time period that its drug court reached only a few dozen.

Diversion programs for narcotics offenses have proliferated at a rapid pace in recent years. By early 2023, there were 617 police departments (up from 153 in 2017) across 40 states with some form of non-arrest treatment linkage program, and over 45 full-fledged post-arrest programs across the country, making diversion one of the most popular policy levers to address drug use and increase treatment access (Beckett, 2014; ICJIA, 2017; LEAD Bureau, 2020).

Despite its popularity, causal evidence on the impact of diversion programs for drug offenses is non-existent. Where small sample or correlational evidence is available, it is largely positive. In Seattle (Washington) and four sites across North Carolina, diversion program participants were less likely to be re-arrested (Collins *et al.*, 2017, 2019; Gilbert *et al.*, 2023); participants in North Carolina also had more outpatient behavioral health visits and higher utilization of medications for treating opioid use disorder; 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). Officer buy-in has been a challenge in some sites – Albany (New

[6]In addition to drug offenses, diversion programs are common for charges related to sex work (where diversion often includes connections to physical health care, housing, and legal employment support services) and charges for individuals with mental health disorders (where diversion often includes connections to mental health care services) (Anglin *et al.*, 2013; Collins *et al.*, 2017; Bird & Shemilt, 2019).

York) reported only 43 diversions in its first year, with Worden & McLean (2018) noting that officers believed the program was implemented too quickly.

2.2 Drug Arrest Diversion in Chicago

Chicago experiences rates of opioid overdose that are higher than both the state and national average (Illinois Department of Public Health, 2025).[7] The U.S. Department of Justice's Drug Enforcement Agency has also 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 largest opioid market, easily accessed via Interstate 290, also called the *heroin highway* (DEA, 2017).[8] This fact is reflected in the geographic concentration of calls for service and deaths related to opioid overdoses within Chicago, shown in Figure A2.[9]

The Narcotics Arrest Diversion Program (NADP) emerged as a direct response to the spread of the opioid epidemic within Chicago, and focuses on addressing substance use through supportive instead of punitive interventions. District 11, home to three of five neighborhoods most impacted by the epidemic, was selected to be the first site; in mid-2018, individuals arrested for drug possession eligible for diversion began to be connected to substance use counselors stationed within police stations in lieu of criminal charges. By the end of 2020, NADP had expanded to three neighboring districts on the West Side, Districts 10, 15, and 25; by the end of 2021, the program expanded to serve the rest of the city.[10] Today, NADP is the largest drug arrest diversion effort led by the criminal justice system in America.[11]

[7] Figure A1 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 (CDPH 2019, NIDA 2020, Chicago Department of Public Health, 2023).

[8] 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.

[9] Figure A3 depicts district-wide homicide rates to show that these districts also experience higher-than-average rates of violence.

[10] Figures A4 and A5 outline the expansion of NADP across Chicago's West Side districts.

[11] 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.

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.[12] Then, the arresting officer evaluates whether the individual is eligible for diversion. Individuals are eligible if they are at least 18 years old, are arrested with one gram or less of the drug in question, and have a valid form of identification; individuals are ineligible if the incident that led to the arrest includes a violent offense, felony offense, or misdemeanor offense involving a victim in *addition* to the drug offense, or if they have previously been convicted of a violent felony offense.[13]

When an individual is deemed eligible for diversion, they are asked if they are interested in receiving substance use treatment. If they agree, they are connected with a treatment provider called Thresholds (one of the state's largest and oldest substance use treatment providers), located inside the police station. If they do not consent, they are processed as they otherwise would be without the program's presence. During the introductory meeting with the substance use counselor, the individual is assessed for service eligibility, which includes assessing whether they have a substance use disorder. In the rare case where they do not, they are processed as they otherwise would be. An in-depth needs assessment follows, after which the provider offers to connect the individual with the most appropriate substance use treatment service.[14] This usually involves one of two outcomes: the individual is offered substance use treatment by the same 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

[12]In the absence of a diversion program, the individual would stay in lockup overnight, be charged with a drug offense, and be transported to bail court. At bail court, they would either be released or held in jail while the prosecutor's office decided whether to bring or dismiss charges against the individual.

[13]1 gram of heroin would last an individual with a severe substance use disorder approximately 2 days (Addiction Center, 2021). The complete list of qualifying and disqualifying characteristics are listed in Figure A6.

[14]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 current and prior drug use, and their potential experiences with overdose and Naloxone (a drug used to reverse overdose by restoring breathing). Once the provider has a clear understanding of the individual's circumstances and needs, the provider and the individual have an active exchange about what kinds 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.

an alternative agency, proximity to their home address, and other considerations.[15] 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 within a few days. Notably, both Thresholds and alternative agencies provide drug-assisted de-addiction services as well as wrap-around services that connect individuals with services such as housing and insurance enrollment. Finally, the diverted individual is officially removed from lockup, and is released without criminal charges.[16] The diversion process from a qualifying individual's perspective is summarized in Figure 1.

NADP is innovative compared to preexisting diversion programs in three ways. First, it places substance use treatment providers within police stations, maximizing the probability of a warm hand-off to a treatment provider, an approach recommended by behavioral health experts (Pace *et al.*, 2018). Second, it does not include the threat of deferred prosecution; in Chicago, diverted individuals are released without criminal charges with no risk of future prosecution as long as they meet with the counselor stationed within the police station (i.e., they do not need to return for treatment after the initial meeting to avoid criminal charges).[17] Figure 2 highlights the early stage at which NADP offers a route out of criminal justice system processing. Third, individual-level eligibility for diversion was determined at the program's onset by a department-wide directive, rather than by officers making case-by-case determinations (as was the case in Seattle's well known Law Enforcement Assisted Diversion program).

Overall, NADP presents a fresh alternative to prosecution. As such, this evaluation tests whether the immediate offer of treatment in lieu of further criminal justice system processing is pivotal in advancing the well-being of individuals arrested for drug offenses as well as their communities. It also reveals that long-term, active, and costly criminal justice monitoring (to

[15] Appendix Tables **??** and **??** list the most popular treatment providers and the service types offered by each provider respectively.

[16] Those who are not diverted are transported to the Cook County jail the following morning and held until further processing at the Cook County courthouse.

[17] Deferred prosecution—where officers file charges with the prosecutor's office but charges are not brought as long as individuals fulfill city-specific treatment-related criteria—are part of most drug diversion programs, including those in Seattle, Santa Fe, San Francisco, and Albany (Collins *et al.*, 2017; New Mexico Sentencing Commission, 2018; Worden & McLean, 2018; Malm *et al.*, 2020).

ensure individuals are meeting the conditions for deferred prosecution) may not be a necessary component of effective diversion.

3 Data

This paper links seven data sources, each of which are described in detail below. Details on the linking procedure are relegated to Appendix section B2. Our longest follow-up period is 3 years as the diversion effort started in a single district in mid-2018 and had spread to the entire city by late 2021. For a subset of our outcomes, data is only available up until the end of 2020; our follow-up period for these outcomes is 1.5 years.

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). Our data is restricted to individuals classified as adults in the CPD data – those aged 21 and up. These data include descriptive information about both the offense and the individuals involved in criminal arrests within the city of Chicago.[18]

Thresholds Data 2018-23. To track whether individuals are connected with treatment following diversion, we rely on the service provider Thresholds' data.[19] Attention is restricted to individuals that consented 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 appearances in jail as well as on electronic monitoring. Note that these appearances can cover the pretrial as

[18] In addition to the 2010-2022 data that includes our pre- and post-intervention periods, we use pre-2010 Chicago Police Department data to identify prior arrests and to improve match quality when matching data across multiple data sources (discussed in Appendix B2).

[19] This includes connections with Thresholds counselors as well as referrals to alternative service providers listed in Tables **??** and **??**.

well as the post-trial period.

Homeless Management Information System Data 2015-22. The Homeless Management Information System (HMIS) in Chicago, managed by the organization All Chicago, tracks interactions with Chicago's homelessness service providers. These interactions fall into two broad categories – services sought (e.g., shelter or temporary housing stays) and services received (e.g., via community outreach). Variables in the dataset record the type of interaction, as well as the date of entry into and exit from services.

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 (CCMEO).[20] This dataset includes case level information on 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.

Chicago Fire Department Data 2016-2020. To examine impacts on overdose events other than fatal overdoses, we rely on 911 calls for service that require an ambulance. This data includes information on the individual as well as timing, location (latitude and longitude), and description code for the call (e.g., whether it was an overdose).

2019 CPD Beat Officer Survey Data. To assess opinions about drug arrest diversion among CPD officers, an in-person survey was conducted in District 11 in June 2019 (a year into its operation). Respondents comprised of 115 distinct 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,

[20]CCMEO investigates all human deaths in Cook County within the following categories: criminal violence; suicide; accident; suddenly when in apparent good condition; unattended by a practicing licensed physician; suspicious or unusual circumstances; unlawful fetal death as provided in Public Act 101-0013 of the 101st General Assembly of Illinois; poisoning or attributable to an adverse reaction to drugs and/or alcohol; disease constituting a threat to public health; injury or toxic agent resulting from employment; during some medical diagnostic or therapeutic procedures; in any prison or penal institution; when involuntarily confined in jail, prison hospitals or other institutions or in police custody; among others. See more at https://www.cookcountyil.gov/agency/medical-examiners-office.

and how many were implementing it with fidelity.

4 Empirical Strategy

Our empirical strategy exploits individual-level variation in eligibility for diversion as well as the differential timing of program implementation across Chicago's neighborhoods. This section specifies the triple difference (DDD) framework used to identify the impact of arrest diversion on subsequent 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 identifying assumption is that the difference in outcomes between eligible and ineligible individuals in treatment districts would have evolved similarly to that in comparison districts in the absence of NADP.

Central Specification. Figure A4 specifies when police officers were trained on how to implement diversion 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 temporal shocks 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 (i.e., the intent-to-treat estimate). $Elig_i$ is an indicator variable that equals one for individuals

eligible for diversion. $Treat_d$ is an indicator variable that equals one if district d trained its patrol officers on how to implement diversion 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 generate point estimates and confidence intervals using Borusyak *et al.* (2023)'s imputation estimator.[21]

Event Study Specification. In order to examine the year-by-year impact of diversion, 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 officers were trained on how to divert individuals in district d exactly τ years before period t. For instance, District 11 trained its officers in July 2018, so $After^1$ indicator equals one for District 11 during July 2018 - June 2019, the $After^2$ indicator equals one for District 11 during July 2019 - June 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. To account for biases that emerge in conventional three-way fixed effects designs, we generate event study plots using Borusyak *et al.* (2023)'s imputation estimator.[22]

5 Descriptive Evidence

In this section, we present descriptive information about individuals connected with substance use treatment, and CPD officers' impressions of the diversion program. Overall, we find that

[21] 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*.

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

the program is able to reach those with medically diagnosed substance use disorders and enjoys the support of CPD officers.

5.1 Individuals Connected With Treatment

To understand who is connected with substance use treatment via diversion, and how long they continue to engage with counselors, we rely on data collected by Thresholds, the service provider embedded within district police stations. We are only able to observe this information for individuals that consented to sharing their health data with the research team, and covers the period July 2018 - December 2023 with a pause between 2020 and early 2021 primarily related to COVID-19. We are able to analyze data on individuals that were diverted by CPD as well as individuals that walked into a police station seeking 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 actively seek out substance use treatment themselves.

Column (1) of Table 1 summarizes descriptive statistics for program participants; column (2) reflects the share of entries for which each variable is missing. 81% of diverted individuals were men, and 60%.[23] 72% report being unemployed. 85% reported using narcotics in the year prior to their screening interview, and among those who did, 76% used it daily. 71% had previously experienced an overdose (though the rate of data missingness for this field is high at 65%). The majority of respondents – 53% – report living in a shelter, on the street, or in some form of non-permanent housing (such as in someone else's apartment). 23% of individuals had appeared in the HMIS data prior to their diversion, reflecting their demand and/or need for housing services.

For individuals who choose to continue with Thresholds as their main treatment provider,

[23]Note that this is a population that is meaningfully older than the typical arrestee in Chicago – in 2018, for instance, individuals older than 40 accounted for just a quarter of all arrests in the city; full report: https://www.chicagopolice.org/2018-Annual-Report.pdf. However, it is consistent with the age groups that are more likely to experience fatal opioid overdose – in 2018, individuals aged 45 and up accounted for 59% of overdose deaths involving opioids in Chicago; full report: https://www.chicago.gov/cdph/statistics_and_reports.pdf.

there is also information available on their subsequent engagement with treatment services.[24] 97% of respondents for which this data field was filled were classified as meeting the medical criteria for a substance use disorder or a mental health disorder; the substance being used was most often an opioid, and the two leading mental health disorders were depression and bipolar disorder. 87% continued to engage with Thresholds after the initial meeting, and 64% remained engaged in treatment (such as attending therapy sessions and meetings with counselors) for at least 30 days, with a median engagement length of 36 days.[25] The retention rate at 30 days—a measure often used to assess substance use program success—places the program's success squarely within that of substance use treatment programs in general, where engagement rates vary from 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. Another sign of the diversion program's ability to engage individuals well after the initial contact is the favorable comparison to those who self-select into treatment in column (3).

5.2 CPD Beat Officer Survey

In June 2019, after NADP had been active in District 11 for a year, 115 beat officers from District 11 were surveyed to understand how they viewed the diversion effort. The survey revealed that officers were broadly supportive of the effort, and many had had a chance to implement it. 86% of officers reported that they did not believe that arrest discouraged

[24] After completing the screening, the counselor, who is associated with Thresholds, refers individuals for treatment to counselors within their own organization or to other organizations working in the substance use treatment field in Chicago. 47% of consenting individuals are referred to Thresholds during the study period. The substance use treatment offered by Thresholds for this population is fairly standard. Thresholds offers outpatient services which occasionally includes medication assisted treatment (using buprenorphine, brand name Suboxone) if warranted, and focused on providing wraparound services including facilitating access to housing. They also emphasize follow up, regularly reaching out to individuals to ensure sustained support. These characteristics make Thresholds a typical provider rather than an exceptionally service-intensive one, suggesting that the type of treatment access discussed in this paper can be replicated and scaled up in other cities.

[25] We base the treatment engagement end date on the last date we observe associated with the individual and their service engagement.

future use.[26] When asked about the benefits of diversion, the most popular answers were that it could benefit CPD's relationship with the community, help 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 by late 2021. 18% had arrested someone who was later referred to treatment. 40% had shared information about CPD's alternatives to arrest with the public, the vast majority doing so while on duty.

6 Results

In this section, we present intent-to-treat estimates of the diversion program's impact on eligible individuals.[27] Throughout this section, we define District 11 as our treatment district and the remaining eighteen non-West Side districts as our comparison districts. These estimates remain informative about the overall impact of diversion as District 11 alone accounts for 40% of all eligible drug arrests in Chicago's 22 policing districts during 2018-2021. We exclude the other three West Side districts – 10, 15, and 25 – from our main sample as there seem to have been some spillover/anticipatory effects of drug arrest diversion in these districts, which we discuss in Section 6.6.

[26]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).

[27]Figure A6 summarizes the eligibility criteria for diversion. 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 substance use treatment. This is not a major concern because the implementation agency (Thresholds) reported that this was always the case. This is in line with Table 1—97% of consenting participants with non-missing data 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 instead 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 were not 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 transported individuals to court every morning.

6.1 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. Our estimation sample includes all arrests that include drug charges in Chicago between 2010-21.[28]

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 on-site counselor as soon as diversion becomes available as an option. Column (1) of Table 2 displays the corresponding point estimate – a precisely estimated increase of 21.9 percentage points (off of a base of 0) in the probability of being connected with an on-site 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.[29] This estimate – an increase of 31 percentage points – is higher than that 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 with the research team; two, the data used in column (1) had its collection temporarily paused primarily due to the onset of the COVID-19 pandemic, and only restarted in 2021.

6.2 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 re-arrest falls (column (3) of Table 2; event study depicted in Figure 4), driven in part by large reductions in re-arrest for drug and violent charges (columns (4) and (5) of Table 2

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

[29] Outside of 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 A7 depicts the raw data corresponding to this variable.

respectively). Overall, eligible individuals are 8.9 percentage points less likely to be re-arrested for any offense, driven by reductions in re-arrest for drug and violent offenses of 8.7 and 3.5 percentage points respectively. These are economically meaningful and amount to reductions of 15, 24, and 24% of their respective means.

6.3 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. This is unsurprising given the discussion in Section 5 – 53% of diverted individuals were not stably housed at the time of diversion, and 23% had had prior engagement with housing service providers (captured by an appearance in the HMIS data). As such, it is natural to examine whether diversion facilitated access to housing services.

Column (6) of Table 2 shows that the overall probability of appearing in Chicago's Homeless Management Information System (HMIS), which tracks interactions with Chicago's homelessness service providers, is unchanged for the treatment group; the point estimate is small in magnitude and statistically indistinguishable from zero. To examine uptake of services that address urgent housing needs, rather than long-term housing needs which involve years-long wait times,[30] we look specifically at the probability of being connected with day shelter or emergency shelter services. Column (7) shows suggestive evidence of an increase—a noisy but large 2.4 percentage point increase equivalent to 32% of the control mean (p-value=0.16).[31] We interpret this as suggestive evidence that the program may have improved individuals' access to services beyond those intended to address substance use.

[30]Long-term housing has an average of four years of wait time in Chicago. See more here: https://blockclubchicago.org/2025/04/30/who-gets-housing-first-while-city-pressured-to-fast-track-apartments-for-some-homeless-most-wait-years/.

[31]Chicago's 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/. For more details about the distinction between day shelters and emergency shelters, see https://hmis.allchicago.org/hc/en-us/articles/115005113243-Project-Type-Descriptions.

6.4 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 opioid overdose. This outcome captures the worst possible manifestation of opioid use, and is arguably a reasonable proxy for intense and/or prolonged opioid use. Of course, those at highest risk of fatal overdose may not overlap perfectly with those who use opioids in large quantities and/or over prolonged periods. As such, this outcome presents a partial test for whether diversion influences extreme opioid use.

Figure 5 summarizes our main findings – event study estimates show that diversion does not impact the risk of fatal opioid overdose. Column (8) of Table 2 displays corresponding point estimates. The control mean indicates that approximately 6% of individuals would have gone on to experience a fatal opioid overdose in the absence of the diversion effort. The triple-difference point estimate is positive (0.8 percentage points) but is not statistically distinguishable from zero at conventional significance levels (p-value=0.462). To show that this result is not sensitive to how we define fatal overdose, Table A1 tests for impacts on three additional, closely related measures of fatality: column (1) is identical to the outcome included in Table 2, estimating impacts on opioid overdoses, while columns (2)-(4) show that these results remain unchanged when we include all drug-involved deaths (irrespective of whether the case is explicitly identified as an overdose) or focus on incidents identified explicitly as overdoses in column (3) and drug overdoses in column (4). As such, we conclude that drug arrest diversion did not have a discernible impact on drug-related fatality during the study period.

6.5 Non-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 non-fatal overdose. As in the previous section, this outcome provides a useful proxy for serious drug use, a phenomenon we cannot observe directly. As it is an imperfect proxy, we continue to interpret the results as suggestive of whether diversion

can influence serious drug use.[32]

To do this, we use administrative data on all calls for Emergency Medical Services (EMS) in Chicago between 2016 and 2020. We examine impacts on being involved in (1) any EMS incident; (2) any EMS incident where EMS responders assessed the scene as an overdose.[33] We find that diversion did not reduce the probabilities of a medical emergency in general or non-fatal overdoses (summarized by Figure 6). Columns (9) and (10) of Table 2 present the corresponding triple-difference point estimates. These are equivalent to 1.4 and 1.1 percentage points respectively (10-11% of their respective means), but are not statistically distinguishable from zero at conventional significance levels (p-values = 0.590 and 0.631 respectively). We take this as evidence consistent with the previous analysis on fatal overdose risk – while diversion is effective at connecting people with ongoing treatment and appears to lower drug use for some individuals (as drug re-arrest rates fall), it may not be able to sufficiently impact drug use for those at highest risk of fatal or non-fatal overdose.

6.6 Expansion of Drug Arrest Diversion

After drug arrest diversion had been active in District 11 for eighteen months, it was gradually expanded to the entire West Side starting with District 10 in December 2019, and Districts 15 and 25 in 2020 (displayed in Figure A5). Estimates using all four treatment districts and their respective diversion implementation dates are displayed in Table A2. This exercise broadly replicates the findings documented above, with the estimated impact on being connected with day shelters or emergency shelters now significant at the 10% level. The last row, however, shows that parallel pretrend tests are rejected for several outcomes for this sample. The failure of these tests indicates that there may have been some anticipatory effects of drug arrest diversion in the three districts closest to District 11. As such, we include these results for transparency but rely on the estimates in Table 2 for our main conclusions.

[32] Another measure of individual well-being is crime victimization that is reported to the police. Diversion does not appear to influence this outcome; these results are available on request.

[33] Substance overdoses encompass incidents where the patient was experiencing an overdose or other substance use-related event (including alcohol).

6.7 Marginal Value of Public Funds

In this section, we compute the marginal value of public funds (MVPF) (Hendren & Sprung-Keyser, 2020), defined as the public's willingness to pay for the diversion effort divided by the net cost to the government (i.e., the up-front or direct cost of implementing diversion less any savings to the government achieved by diversion). The diversion program cost $662,578 to administer (spent primarily on counselors embedded within police stations) which was covered by a federal grant awarded to the Chicago Police Department in 2018.[34] We divide this by the number of arrests eligible for diversion in District 11 (n=1,569) to obtain a per-person cost estimate of $422. This direct cost is more than offset by the intervention's downstream impacts on drug and violent arrests, which Table 2 shows are reduced by 0.087 and 0.035 respectively. McCollister *et al.* (2010) estimate that criminal justice system costs alone (i.e., excluding costs borne by victims) range from $3,380 for lower-level offenses like theft to $10,147 for violent offenses like aggravated assault.[35] As such, the diversion program *reduces* net government cost, and our estimated MVPF is infinity.

How does diversion compare with other interventions aimed at reducing crime? We pull two comparison groups from the Policy Impacts Library[36] – one set focuses on individual-level interventions and another on group or place based interventions. Figure 9 displays each intervention's MVPF on the y-axis, and direct implementation cost on the x-axis. Since we have access to the overall cost of NADP as well as the per-eligible-person cost, we compute both estimates for NADP. This allows us to compare it with other interventions at the individual level (marked in Δ) and those at the aggregate level (marked in $\bullet$).

Figure 9 offers two main takeaways. One, drug diversion stands out as one of a small handful of interventions that "pay for themselves", i.e., have an MVPF estimate of infinity

[34] $662,578 should be interpreted as a conservative cost estimate as it also supported some diversions in the three other West Side districts (Districts 10, 15, and 25).

[35] We inflate McCollister *et al.* (2010)'s estimates of $2,879 and $8,641 in 2008 USD respectively to arrive at comparable numbers for 2018.

[36] This library is a standardized database of MVPF estimates derived from rigorous empirical research and can be accessed at https://policyimpacts.org/policy-impacts-library/.

(driven by net negative government costs). Second, it delivers higher returns at lower cost than health interventions like mandated mental health treatment and Medicaid access. Overall, this picture portrays drug diversion as an extremely cost effective way to connect individuals who are engaged with the criminal justice system with health services to deter future offending.

7 Mechanisms

In this section, we discuss several mechanisms that may explain our findings. We argue that substance use treatment is likely driving the effects we observe by 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.

7.1 Changes in Policing

A potential explanation for the observed reduction in recidivism is that police officers may be 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 can only be accessed once the arrestee has been transported to a police station (i.e., not at the scene of the arrest).[37]

[37] 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 3 years (i.e., the length of our follow-up period). Additionally, this would require a substantial share of diverted individuals to be arrested repeatedly on diversion-eligible

Second, as Figure 7 shows, officers were no less likely to make eligible drug arrests relative to ineligible drug arrests after drug arrest diversion was 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 in addition to the treatment group.

Fourth, arrest-avoidance behavior is not consistent with the 2019 officer survey discussed in Section 5. A sample of 115 officers in District 11 were surveyed a year after the start of drug arrest diversion. The survey found that 72% of officers 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.

7.2 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. Additionally, the recidivism reduction lasts well beyond treatment engagement (median length of 38 days); we show this explicitly in Appendix Table A3, which presents nearly identical reductions in recidivism based on a follow-up period that excludes the first 38 days post diversion.

charges, which we rarely observe in the data. In addition, other eligibility criteria, such as the exact weight of drugs on the person, are arrest incident-specific, and past diversion eligibility does not inform these criteria.

7.3 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 criminogenic impact of jail time. This channel is unlikely to play a major role in our setting—as Table 3 and Figure 8 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 stays that last less than a day. The data allows us to differentiate between those who have at least one overnight stay in Cook County Jail, and those who appear to have been released following their appearance at bond court (i.e., those who spend a few hours in the custody of the Sheriff's Office, but do not spend a night in jail); reductions in jail time are driven solely by the latter group.[38] 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.[39] As a result, most low-level drug offenses (i.e., individuals in the comparison group) end in non-prosecution at bond court the day following the arrest.

7.4 Release Without Criminal Charge

Prior research 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.* 2023). These studies show that reductions in recidivism are driven by young, first-time defendants for whom diversion essentially means no criminal record at all.

This mechanism may explain part of our findings but is unlikely to provide a full explanation for a few reasons. First, we document the largest recidivism reductions significant at the 95% level *only* for those with prior drug arrests (see Table 4 for point estimates), which is inconsistent with a lack of criminal record being the primary driver of our findings. Second,

[38] Prior studies that document the crimonogenic impact of bail and pretrial 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.

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

as discussed above, the local prosecutor's office has deprioritized the prosecution of low-level drug offenses since the mid-2010s, which means that ineligible arrests are also unlikely to end in prosecution (i.e., the comparison group is also unlikely to face criminal charges). Third, the mean age among diverted individuals is 49, indicating that our results are unlikely to be driven by young individuals who avoided a criminal record by being diverted. Finally, Table 1 shows that the vast majority of those diverted that are of working age are unemployed at the time of diversion, indicating a tenuous connection with the formal labor market and, therefore, limited negative effects of a conviction on future employment background checks.

7.5 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 2023. 97% of diverted individuals with non-missing data met the medical criteria for a substance use disorder or mental health disorder, and 76% reported using narcotics daily. The age at first drug use was 26 while the age at diversion was 50, 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, 87% of individuals engage with substance use treatment services after diversion, and 64% remain engaged 30 days out. These numbers are predictably lower than those for individuals who self-select into (i.e., walk in for) treatment, displayed in the last columns of Table 1, but are encouragingly high. In sum, substance use treatment providers make efforts to continue to engage individuals well after the initial intake process.

Relatedly, a large literature documents the recidivism-reducing impact of healthcare ac-

cess. Batistich *et al.* (2021), Deza *et al.* (2022), and Jacome (2024) show that access to mental healthcare reduces crime.[40] Notably, Batistich *et al.* (2021) show that proactively connecting individuals exiting jail with mental healthcare services (i.e., individuals that weren't actively seeking out these services) in Kansas City, Missouri reduced 180-day recidivism by 12 percentage points (a 32% reduction). 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. Kelly *et al.* (2017) use a nationally representative sample to show that those who go through drug courts are more likely to continue seeking out and using support services during their recovery journey; this suggests that diversion, which links individuals with services at an earlier stage of the criminal justice system process, may exert similar impacts.

Is this mechanism inconsistent with the lack of impact on fatal or non-fatal overdose risk? Not necessarily. Within the pool of individuals with substance use disorders, there is likely to be variation in the risk of experiencing an overdose, fatally or non-fatally. Our findings on the recidivism reducing benefits of diversion, especially the reductions in rearrest for drug offenses, indicate that this approach may be chipping away at the demand for drugs amongst a population that uses illegal substances with regularity over long periods. At the same time, it does not appear to hold promise for every subset of this population – specifically, diversion did not reduce the risk of fatal or non-fatal overdose, which was experienced by 6 and 10% of the control group respectively during the study period.

[40] A notable exception is Finkelstein *et al.* (2024) which argues that effects may be limited.

8 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 and outright decriminalization. However, this approach 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 (Substance Abuse and Mental Health Services Administration, 2000; Bronson, 2017). 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 zero friction 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 eligible individuals chiefly because it began to include individuals arrested with drug types such as methamphetamine, PCP, and ecstasy.[41]

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

[41]This expansion also increased the maximum allowable drug weight from one to two grams, and made violent convictions within the past ten years (as opposed to at any time prior to the diversion) a disqualifying characteristic.

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 police officers; 4 out of 5 officers in a survey we conducted 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. Finally, we use a triple difference framework to show causal evidence on this approach's substantial downstream benefits in terms of reductions in subsequent re-arrest, including reductions in re-arrest for drug and violent offenses. We also document an imprecise increase in linkages with some types of shelter services, but do not find that diversion is able to move the needle on reducing the risk of fatal or nonfatal overdose.

Overall, these findings indicate that it is possible to proactively connect those with opioid use disorders with de-addiction treatment and other services, reduce the reach of the criminal justice system, and simultaneously increase public safety. More research is needed to understand how to help the subset of those with substance use issues that are at highest risk of overdose.

References

Addiction Center. 2021. *How Much Do Drugs Cost: The Steep Price of Addiction.* https://www.addictioncenter.com/drugs/how-much-do-drugs-cost/.

Agan, Amanda, Doleac, Jennifer L., & Harvey, Anna. 2023. Misdemeanor prosecution. *The Quarterly Journal of Economics*, **138**(3), 1453–1505. Publisher: Oxford University Press.

Anglin, M. Douglas, Nosyk, Bohdan, Jaffe, Adi, Urada, Darren, & Evans, Elizabeth. 2013. Offender Diversion Into Substance Use Disorder Treatment: The Economic Impact of Cali-

fornia's Proposition 36. *American Journal of Public Health*, **103**(6), 1096–1102.

Arfken, Cynthia L., Klein, Chris, di Menza, Salvatore, & Schuster, Charles R. 2001. Gender Differences in Problem Severity at Assessment and Treatment Retention. *Journal of substance abuse treatment*, **20**(1), 53–57.

Aslim, Erkmen, Mungan, Murat C., Navarro, Carlos I., & Yu, Han. 2022. The Effect of Public Health Insurance on Criminal Recidivism. *Journal of Policy Analysis and Management*.

Bastomski, Sara, Cramer, Lindsey, & Reimal, Emily. 2019. Evaluation of the Contra Costa County Law Enforcement Assisted Diversion Plus Program. 74.

Batistich, Mary Kate, Evans, William N., & Phillips, David C. 2021. Reducing Re-arrests through Light Touch Mental Health Outreach. *Working Paper*.

Beckett, Katherine. 2014. Seattle's Law Enforcement Assisted Diversion Program: Lessons from the First Two Years. 52.

Benartzi, Shlomo, & Thaler, Richard H. 2013. Behavioral Economics and the Retirement Savings Crisis. *Science*, **339**(6124), 1152–1153.

Bird, Karen Schucan, & Shemilt, Ian. 2019. The Crime, Mental Health, and Economic Impacts of Prearrest Diversion of People with Mental Health Problems: A Systematic Review. *Criminal Behaviour and Mental Health*, **29**(3), 142–156.

Bondurant, Samuel R., Lindo, Jason M., & Swensen, Isaac D. 2018. Substance Abuse Treatment Centers and Local Crime. *Journal of Urban Economics*.

Borusyak, Kirill, Jaravel, Xavier, & Spiess, Jann. 2021. Revisiting Event Study Designs: Robust and Efficient Estimation.

Borusyak, Kirill, Jaravel, Xavier, & Spiess, Jann. 2023 (Sept.). *Revisiting Event Study Designs: Robust and Efficient Estimation*. arXiv:2108.12419 [econ].

Borusyak, Kirill, Jaravel, Xavier, & Spiess, Jann. 2024. Revisiting Event-Study Designs: Robust and Efficient Estimation. *Review of Economic Studies*, **91**(6), 3253–3285.

Bronson, Jennifer. 2017. Drug Use, Dependence, and Abuse Among State Prisoners and Jail Inmates, 2007-2009. 27.

Brot-Goldberg, Zarek, Layton, Timothy, Vabson, Boris, & Wang, Adelina Yanyue. 2023. The Behavioral Foundations of Default Effects: Theory and Evidence from Medicare Part D. *American Economic Review*, **113**(10), 2718–2758.

Brown, Randall T. 2010. Systematic review of the impact of adult drug-treatment courts. *Translational Research*, **155**(6), 263–274.

Caulkins, Jonathan P., Gould, Anne, Pardo, Bryce, Reuter, Peter, & Stein, Bradley D. 2021. Opioids and the Criminal Justice System: New Challenges Posed by the Modern Opioid Epidemic. *Annual Review of Criminology*, **4**(1), null.

CDPH. 2019. 2018 Chicago Opioid Overdose Data Brief. *Chicago Department of Public Health Office of Epidemiology*.

Chicago Department of Public Health. 2023 (May). *Opioid Surveillance Report*. Tech. rept.

Chicago High Intensity Drug Trafficking Area. 2009. *Chicago High Intensity Drug Trafficking Area: Drug Market Analysis 2009*.

Choi, James J., Laibson, David, Madrian, Brigitte C., & Metrick, Andrew. 2003. Optimal Defaults. *American Economic Review*, **93**(2), 180–185.

Collins, Susan E., Lonczak, Heather S., & Clifasefi, Seema L. 2017. Seattle's Law Enforcement Assisted Diversion (LEAD): Program Effects on Recidivism Outcomes. *Evaluation and Program Planning*, **64**(Oct.), 49–56.

Collins, Susan E., Lonczak, Heather S., & Clifasefi, Seema L. 2019. Seattle's Law Enforcement Assisted Diversion (LEAD): Program Effects on Criminal Justice and Legal System Utilization and Costs. *Journal of Experimental Criminology*, **15**(2), 201–211.

Condelli, Ward S., Koch, Matthew A., & Fletcher, Bennett. 2000. Treatment Refusal/Attrition among Adults Randomly Assigned to Programs at a Drug Treatment Campus The New Jersey Substance Abuse Treatment Campus, Seacaucus, NJ. *Journal of Substance Abuse Treatment*, **18**(4), 395–407.

Corredor-Waldron, Adriana, & Currie, Janet. 2022. Tackling the Substance Use Disorder Crisis: The Role of Access to Treatment Facilities. *Journal of Health Economics*.

Criminal Court of the City of New York. 2017. *Drug Court Initiative Annual Report 2016*. Tech. rept.

Dakof, Gayle A., Tejeda, Manuel, & Liddle, Howard A. 2001. Predictors of Engagement in Adolescent Drug Abuse Treatment. *Journal of the American Academy of Child & Adolescent Psychiatry*, **40**(3), 274–281.

DEA. 2017. The Opioid Threat in the Chicago Field Division. *Drug Enforcement Authority Intelligence Report DEA-CHI-DIR-023-17*.

Deza, Monica, Maclean, Johanna Catherine, & Solomon, Keisha. 2022. Local Access to Mental Healthcare and Crime. *Journal of Urban Economics*.

District of Columbia Statistical Analysis Center. 2017. Brief: Diversion and Deflection in the District of Columbia. **2**(1).

Dobbie, Will, Goldin, Jacob, & Yang, Crystal S. 2018. The Effects of Pretrial Detention on Conviction, Future Crime, and Employment: Evidence from Randomly Assigned Judges. *American Economic Review*.

Doleac, Jennifer, & Mukherjee, Anita. 2022. DThe Effects of Naloxone Access Laws on Opioid Abuse, Mortality, and Crime. *Journal of Law Economics*.

Domurat, Richard, Menashe, Isaac, & Yin, Wesley. 2021. The Role of Behavioral Frictions in Health Insurance Marketplace Enrollment and Risk: Evidence from a Field Experiment. *American Economic Review*, **111**(5), 1549–1574.

Elliott, Mara W. 2020 (June). *Given a Choice, Many Ask for Drug Treatment over Jail*. Tech. rept. San Diego City Attorney.

Evans, Timothy C. 2022. *Rehabilitation Alternative Probation/ Women's Rehabilitation Alternative Probation (W)RAP Drug Treatment Program Participant Handbook*.

Finkelstein, Amy, Miller, Sarah, & Baicker, Katherine. 2024 (Dec.). *The Effect of Medicaid on Crime: Evidence from the Oregon Health Insurance Experiment.*

Gilbert, Allison R., Siegel, Reah, Easter, Michele M., Sivaraman, Josie Caves, Hofer, Meret, Ariturk, Deniz, Swartz, Marvin S., & Swanson, Jeffrey W. 2023. Law Enforcement Assisted Diversion (LEAD): A multi-site evaluation of North Carolina LEAD programs. *Duke University School of Medicine.*

Gilbert, Allison R., Caves Sivaraman, Josie, Lerebours, Reginald, Easter, Michele M., & Siegel, Reah. 2025. Law enforcement assisted diversion (LEAD) in North Carolina: A longitudinal analysis of criminal-legal outcomes. *Journal of Criminal Justice*, **96**(Jan.), 102323.

Goldin, Jacob, Homonoff, Tatiana, Patterson, Richard, & Skimmyhorn, William. 2020. How much to save? Decision costs and retirement plan participation. *Journal of Public Economics*, **191**(Nov.), 104247.

Gupta, Arpit, Hansman, Christopher, & Frenchman, Ethan. 2016. The Heavy Costs of High Bail: Evidence from Judge Randomization. *The Journal of Legal Studies.*

Harocopos, Alex, & Hough, Mike. 2012. Drug Dealing in Open-Air Markets. *Center for Problem-Oriented Policing*, **No. 31**, 64.

Hefei, Wen, Hockenberry, Jason M., & Cummings, Janet R. 2017. The effect of Medicaid expansion on crime reduction: Evidence from HIFA-waiver expansions. *Journal of Public Economics.*

Hendren, Nathaniel, & Sprung-Keyser, Ben. 2020. A Unified Welfare Analysis of Government Policies*. *The Quarterly Journal of Economics*, **135**(3), 1209–1318.

ICJIA. 2017. Rethinking Law Enforcement's Role on Drugs: Community Drug Intervention and Diversion Efforts. *Illinois Criminal Justice Information Authority Research and Analysis Publications.*

Illinois Department of Public Health. 2025 (Jan.). *Statewide Semiannual Overdose Report.* Tech. rept.

Jacome, Elisa. 2024. Mental Health and Criminal Involvement: Evidence from Losing Medicaid Eligibility. *Working Paper.*

Jelveh, Zubin, McNeill, Melissa, & Lin, Tzu-Yun. 2024 (Jan.). *Name Match*. original-date: 2021-02-26T01:26:17Z.

Kelly, John F., Bergman, Brandon, Hoeppner, Bettina B., Vilsaint, Corrie, & White, William L. 2017. Prevalence and Pathways of Recovery from Drug and Alcohol Problems in the United States Population: Implications for Practice, Research, and Policy. *Drug and Alcohol Dependence*, **181**(Dec.), 162–169.

Kling, Jeffrey R., Mullainathan, Sendhil, Shafir, Eldar, Vermeulen, Lee C., & Wrobel, Marian V. 2012. Comparison Friction: Experimental Evidence from Medicare Drug Plans. *The Quarterly Journal of Economics*, 180–185.

LEAD Bureau. 2020. *LEAD Programs | LEAD National Support Bureau | United States*. https://www.leadbureau.org.

Maclean, Johanna Catherine, Mallatt, Justine, Ruhm, Christopher J., & Simon, Kosali. 2020 (Nov.). *Economic Studies on the Opioid Crisis: A Review*. Tech. rept. w28067. National Bureau of Economic Research.

Madrian, Brigitte C., & Shea, Dennis F. 2001. The Power of Suggestion: Inertia in 401(k) Participation and Savings Behavior. *The Quarterly Journal of Economics*, **116**(4), 1149–1187.

Main, Frank. 2022. This Cook County Judge Gives Convicts His Cell Number — If They Complete Addiction Program. *Chicago Sun-Times*, Jan.

Malm, Aili, Perrone, Dina, & Magana, Erica. 2020. Law Enforcement Assisted Diversion (LEAD) External Evaluation. *School of Criminology, Criminal Justice and Emergency Management California State University Long Beach*.

McCollister, K. E., French, M. T., & Fang, H. 2010. The cost of crime to society: new crime-specific estimates for policy and program evaluation. *Drug and alcohol dependence*.

Mitchell, Rachel H. 2024 (Aug.). *Maricopa County Attorney's Office FY 2024 Deferred Prosecution Program Annual Report*. Tech. rept. Arizona Prosecuting Attorney's Advisory Council.

Mueller-Smith, M., & Schnepel, Kevin. 2020. Diversion in the Criminal Justice System. *The Review of Economic Studies*.

National Institute on Drug Abuse. 2024 (Aug.). *Drug Overdose Deaths: Facts and Figures | National Institute on Drug Abuse (NIDA)*.

Neumark, David, & Savych, Bogdan. 2022. Effects of Opioid-Related Policies on Opioid Utilization, Nature of Medical Care, and Duration of Disability. *American Journal of Health Economics*, Oct.

New Mexico Sentencing Commission. 2018. Santa Fe Law Enforcement Assisted Diversion (LEAD). An Analysis of the Pilot Phase Outcomes.

NIDA. 2020. Illinois: Opioid-Involved Deaths and Related Harms. *National Institute on Drug Abuse*.

Pace, Christine A., Gergen-Barnett, Katherine, Veidis, Alysa, D'Afflitti, Joanna, Worcester, Jason, Fernandez, Pedro, & Lasser, Karen E. 2018. Warm Handoffs and Attendance at Initial Integrated Behavioral Health Appointments. *Annals of Family Medicine*, **16**(4), 346–348.

Packham, Analisa. 2022. Syringe Exchange Programs and Harm Reduction: New Evidence in the Wake of the Opioid Epidemic. *Journal of Public Economics*.

Perry, Claire. 2018. Leading the Way. *East Carolina University*.

Petry, Nancy M., & Bickel, Warren K. 2000. Gender Differences in Hostility of Opioid-Dependent Outpatients: Role in Early Treatment Termination. *Drug and Alcohol Dependence*, **58**(1-2), 27–33.

Powell, David, Pacula, Rosalie Liccardo, & Taylor, Erin. 2020. How Increasing Medical Access to Opioids Contributes to the Opioid Epidemic: Evidence from Medicare Part D. *Journal of health economics*, **71**, 102286.

Rouhani, S., Gudlavalleti, R., Atzmon, D., Park, J. N., Olson, S. P., & Sherman, S. G. 2019. Police attitudes towards pre-booking diversion in Baltimore, Maryland. *International Journal of Drug Policy*.

Spencer, Noah. 2023. Does drug decriminalization increase unintentional drug overdose deaths?: Early evidence from Oregon Measure 110. *Journal of Health Economics*.

Substance Abuse and Mental Health Services Administration. 2000. *Substance Abuse Treatment: For Adults in The Criminal Justice System: (715702007-001)*.

Swensen, Isaac D. 2015. Substance-Abuse Treatment and Mortality. *Journal of Public Economics*, **122**(Feb.), 13–30.

Vogler, Jacob. 2020. Access to Healthcare and Criminal Behavior: Evidence from the ACA Medicaid Expansions. *Journal of Policy Analysis and Management*, **39**(4), 1166–1213.

Volkow, Nora D., Poznyak, Vladimir, Saxena, Shekhar, & Gerra, Gilberto. 2017. Drug Use Disorders: Impact of a Public Health Rather than a Criminal Justice Approach. *World Psychiatry*, **16**(2), 213–214.

Wen, Hefei, Hockenberry, Jason M., & Cummings, Janet R. 2017. The Effect of Medicaid Expansion on Crime Reduction: Evidence from HIFA-Waiver Expansions. *Journal of Public Economics*.

Wilson, D. B., Mitchell, O., & Mackenzie, D. L. 2006. A Systematic Review of Drug Court Effects on Recidivism. *Journal of Experimental Criminology*.

Worden, Robert E., & McLean, Sarah J. 2018. Discretion and Diversion in Albany's LEAD Program. *Criminal justice policy review*, **29**(6-7), 584–610.

Zhang, Alice, Balles, Joseph A., Henningfield, Mary F., Nyland, Jennifer E., Nguyen, Thao H., & Zgierska, Aleksandra E. 2024. Offering recovery rather than punishment: Implementation of a law enforcement–led pre-arrest diversion-to-treatment program for adults with substance use disorders. *Journal of Substance Use & Addiction Treatment*, **159**(Apr.). Publisher: Elsevier.

9 Tables

Table 1: Individuals Connected With Treatment

	Diverted		Walk-in	
Served by Any Treatment Provider				
	Mean (1)	Missing (2)	Mean (3)	Missing (4)
Demographics				
Male	81%	0.24	78%	0.31
Employed	31%	0.25	22%	0.31
Race				
Black	60%	0.25	69%	0.32
White	28%	0.25	29%	0.32
Substance use characteristics				
Used narcotics in the past year	85%	0.24	79%	0.32
Narcotics use frequency: Daily	76%	0.28	75%	0.44
Age at first narcotics use	26	0.29	25	0.42
Ever overdosed	71%	0.65	95%	0.72
Overdosed in the past year	26%	0.65	50%	0.75
Ever witnessed another person overdose	68%	0.51	61%	0.46
Ever had naloxone administered to them	35%	0.53	39%	0.46
Has never attended substance use treatment	23%	0.24	13%	0.35
Housing characteristics and housing service engagement				
Lives in shelter or on the street	11%	0.25	38%	0.32
Non-permanent living situation	42%	0.25	38%	0.32
Prior engagement with housing services (HMIS)	23%	0.08	43%	0.56
Served by Thresholds				
Medically diagnosed substance use disorder (SUD)	97%	0.86	100%	0.42
Medically diagnosed mental health disorder (MHD)	38%	0.58	92%	0.21
Medically diagnosed SUD or MHD	98%	0.75	100%	0.24
Engagement with Thresholds after diversion/walk-in	87%	0	82%	0
Engagement with Thresholds after diversion/walk-in				
Median days engaged	36	0	143	0
Engaged with Thresholds 30 days or longer	64%	0.11	77%	0.09
Engaged with Thresholds 60 days or longer	35%	0.14	63%	0.09

Notes: The sample includes all diverted individuals who consented to sharing their health data with the research team between July 2018 and December 2023 with pause in 2020 and early 2021 primarily related to COVID-19. Narcotics includes heroin, cocaine, and other opioids. The variables *Narcotics use frequency: Daily* and *Age at first narcotics use* 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 continued with Thresholds as a treatment provider following the initial screening conversation at the police station. The variable *Medically diagnosed mental health disorder* refers to additional disorders outside of substance use disorder. Data Source: Thresholds.

Table 2: Impact of Drug Arrest Diversion

Panel A	*Direct Effect*		*Criminal Justice System*		
	Connected with Counselor	Released without Charge	Any Re-arrest	Drug Re-arrest	Violent Re-arrest
	(1)	(2)	(3)	(4)	(5)
Estimate	0.219***	0.310***	-0.089***	-0.087***	-0.035**
	(0.013)	(0.013)	(0.023)	(0.021)	(0.015)
Mean	0.000	0.000	0.595	0.360	0.144
$\frac{\text{DDD Estimate}}{\text{Mean}}$	.%	.%	-14.9%	-24.2%	-24.2%
N	80,538	85,921	85,921	85,921	85,921
Pretrend Test	.	0.087	0.326	0.226	0.343
Panel B	*Housing*			*Health*	
	Any Housing Services	Day or Emergency Shelter	Fatal Opioid Overdose	Any EMS Incident	Substance Overdose Incident
	(6)	(7)	(8)	(9)	(10)
Estimate	-0.012	0.024	0.008	0.014	0.011
	(0.025)	(0.017)	(0.011)	(0.026)	(0.023)
Mean	0.180	0.076	0.059	0.144	0.100
$\frac{\text{DDD Estimate}}{\text{Mean}}$	-6.5%	31.5%	14.2%	9.7%	10.9%
N	33,574	33,574	85,921	25,476	25,476
Pretrend Test	0.180	0.114	0.430	0.721	0.830

Notes: This table displays the estimated impact of drug arrest diversion using all drug arrests involving individuals aged 21 and up in District 11 and eighteen non-Westside comparison districts in Chicago between 2010-2021. 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 Fire Department, Chicago Police Department, Cook County Medical Examiner's Office, Thresholds.

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	0.017	-0.279***
	(0.018)	(0.023)
Mean	0.121	0.636
DDD Estimate / Mean	13.7%	-43.9%
N	40,587	40,586
Pretrend Test	0.132	0.044

Notes: This table displays DDD estimates of the impact of drug arrest diversion on jail outcomes using all drug arrests involving individuals aged 21 and up in District 11 and eighteen non-West Side comparison districts in Chicago between 2014-2021. 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 Sources: Chicago Police Department, Cook County Sheriff's Office.

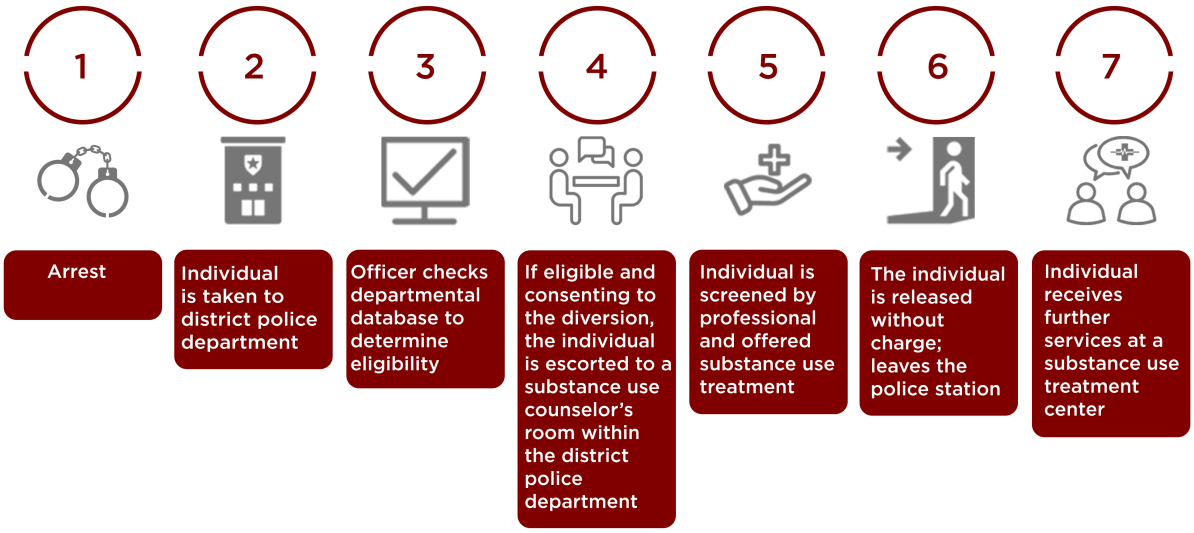
Table 4: Heterogenous Impacts of Drug Arrest Diversion on Recidivism

	Prior Drug Arrest	Prior Non-Drug Arrest	No Prior Arrest
Estimate	-0.081**	0.034	-0.036
	(0.035)	(0.063)	(0.054)
Share of Arrests	0.611	0.189	0.199
Mean	0.604	0.550	0.297
DDD Estimate / Mean	-13.4%	6.3%	-12.1%

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 arrest begins in 2010; we restrict the analysis sample to 2015 and after to ensure each observation (i.e., an arrest) has a lookback period of at least five years. 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.

10 Figures

Figure 1: The Diversion Process



Notes: This figure summarizes the diversion process from a qualifying individual's perspective. Source: Chicago Police Department.

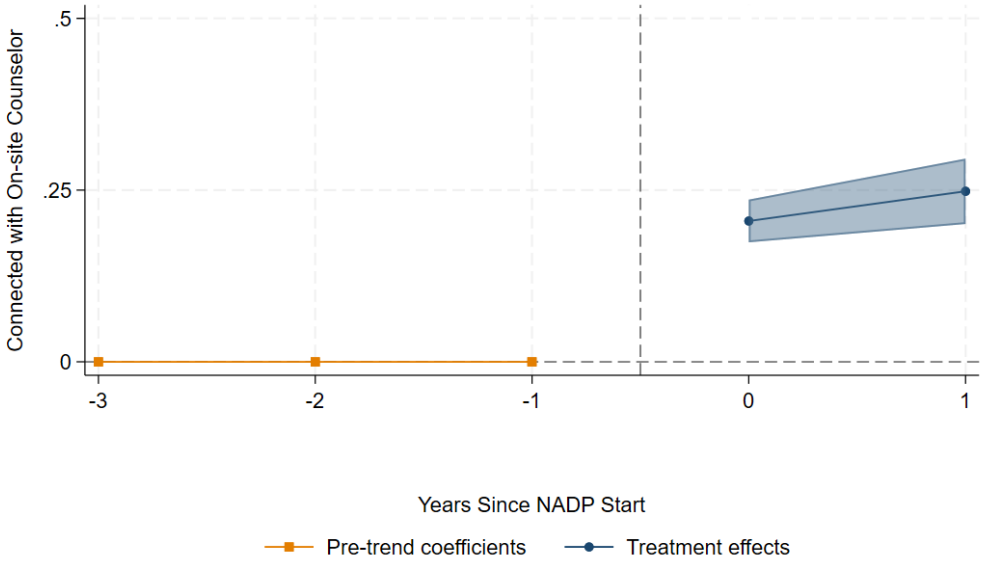
Figure 2: The Criminal Justice System Process



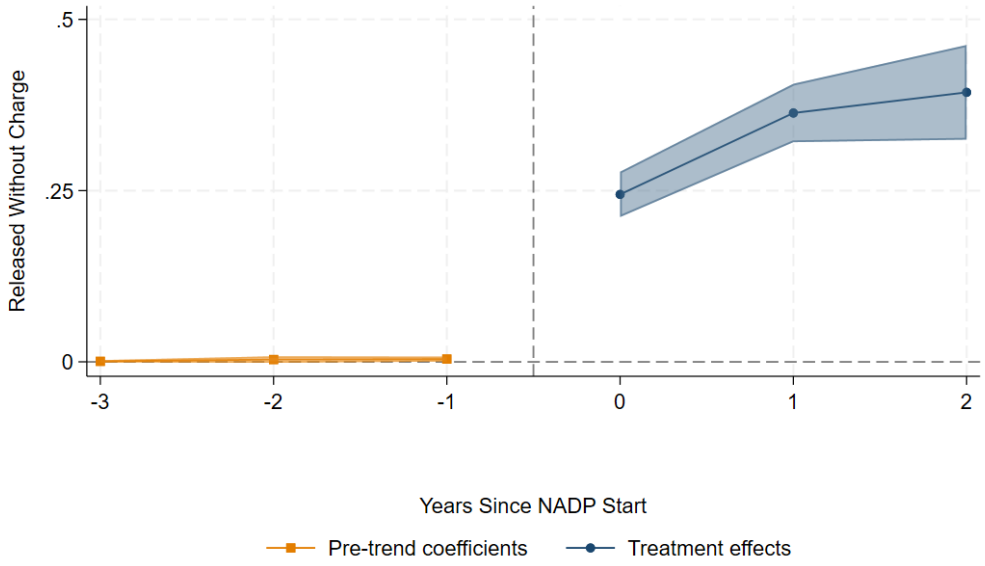
Notes: This figure highlights the stage at which NADP offers a route out of the standard criminal justice system process. Source: District of Columbia Statistical Analysis Center (2017).

Figure 3: Direct Impact of Drug Arrest Diversion

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

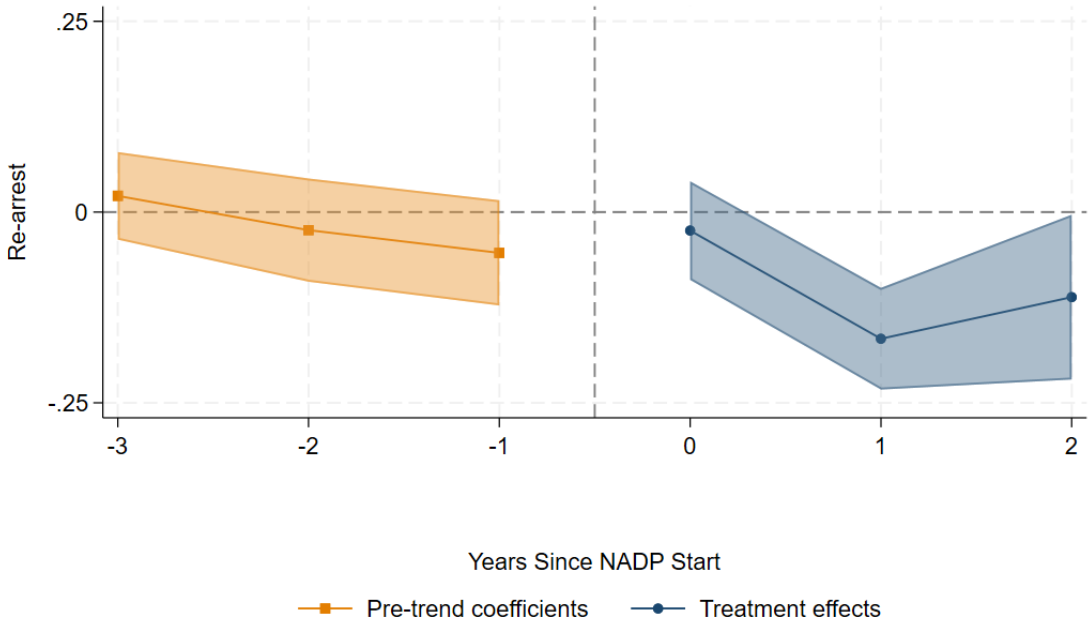


Panel B: Release Without Criminal Charge



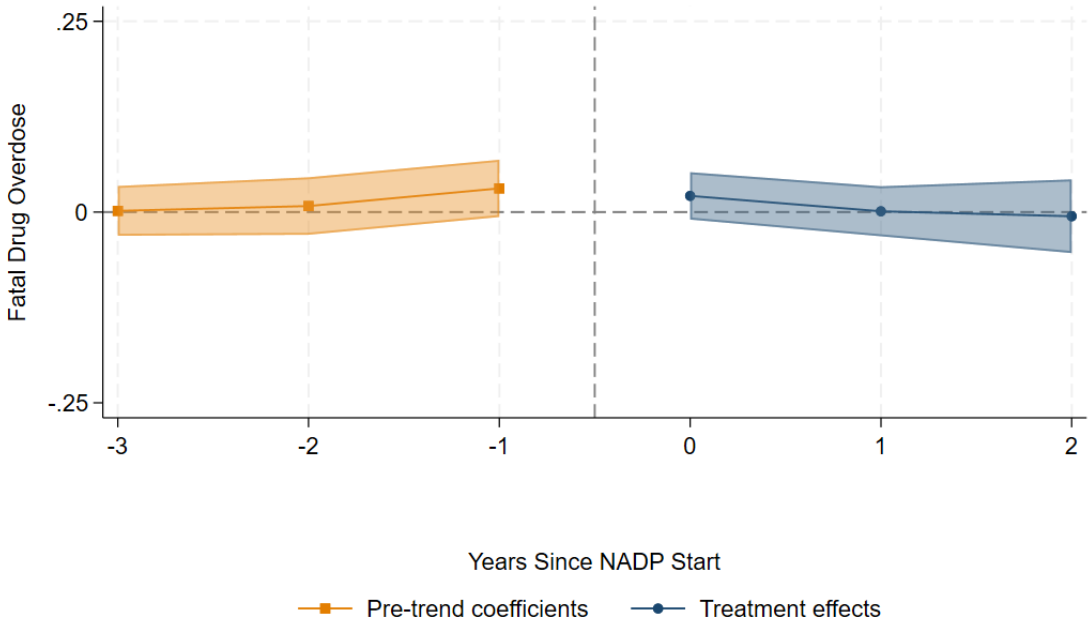
Notes: These figures display DDD point estimates and 95% confidence intervals of the impact of diversion using all drug arrests involving individuals aged 21 and up in District 11 and eighteen non-West Side comparison districts in Chicago between 2010-2021. Regressions include district-year, year-eligibility, and eligibility-district fixed effects, and standard errors are clustered at the individual level. The follow-up period for Panel A ends in 2020 because data and consent form collection was temporarily paused due to COVID-19. Data Sources: Chicago Police Department, Thresholds.

Figure 4: Impact of Drug Arrest Diversion on Recidivism



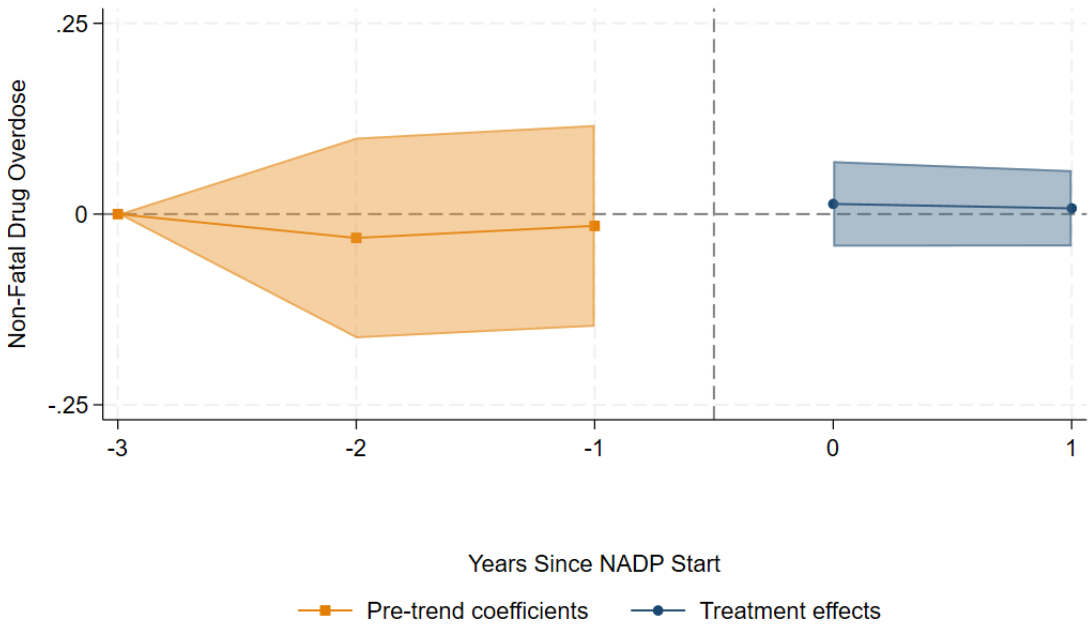
Notes: This figure displays DDD point estimates and 95% confidence intervals of the impact of diversion using all drug arrests involving individuals aged 21 and up in District 11 and eighteen non-West Side comparison districts in Chicago between 2010-2021. The regression includes district-year, year-eligibility, and eligibility-district fixed effects, and standard errors are clustered at the individual level. Data Source: Chicago Police Department.

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



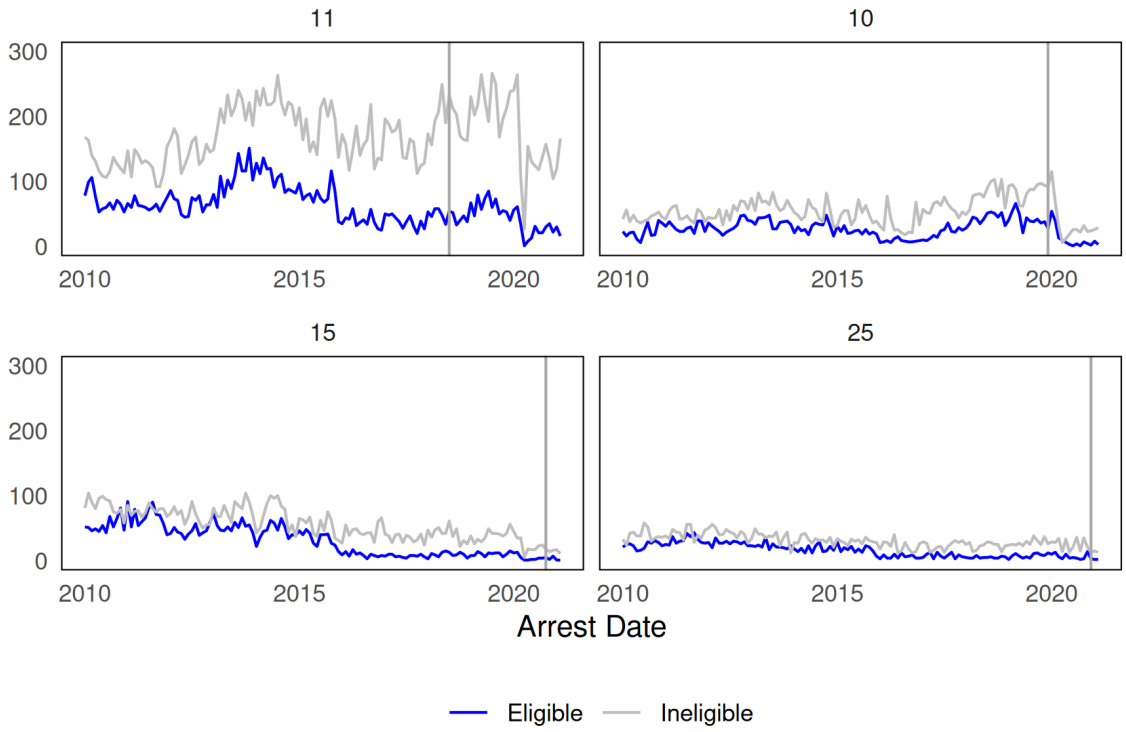
Notes: This figure displays DDD point estimates and 95% confidence intervals of the impact of diversion using all drug arrests involving individuals aged 21 and up in District 11 and eighteen non-West Side comparison districts in Chicago between 2010-2021. The regression includes district-year, year-eligibility, and eligibility-district fixed effects, and standard errors are clustered at the individual level. Data Sources: Chicago Police Department, Cook County Medical Examiner's Office.

Figure 6: Impact of Drug Arrest Diversion on Non-Fatal Overdose Risk



Notes: This figure displays DDD point estimates and 95% confidence intervals of the impact of diversion using all drug arrests involving individuals aged 21 and up in District 11 and eighteen non-West Side comparison districts in Chicago between 2010-2021. The regression includes district-year, year-eligibility, and eligibility-district fixed effects, and standard errors are clustered at the individual level. The follow-up period is shorter than in Figure 5 because outcome data is only available up until 2020. Data Sources: Chicago Police Department, Chicago Fire Department.

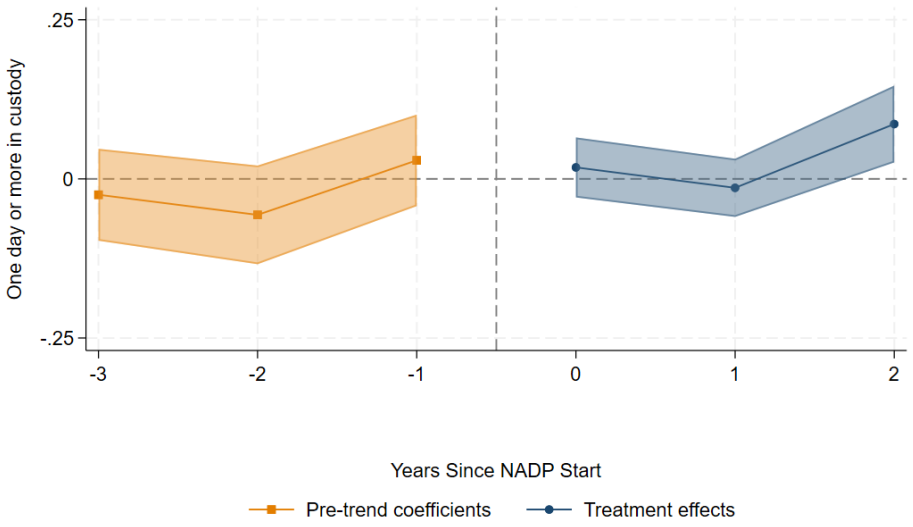
Figure 7: Eligible and Ineligible Drug Arrests



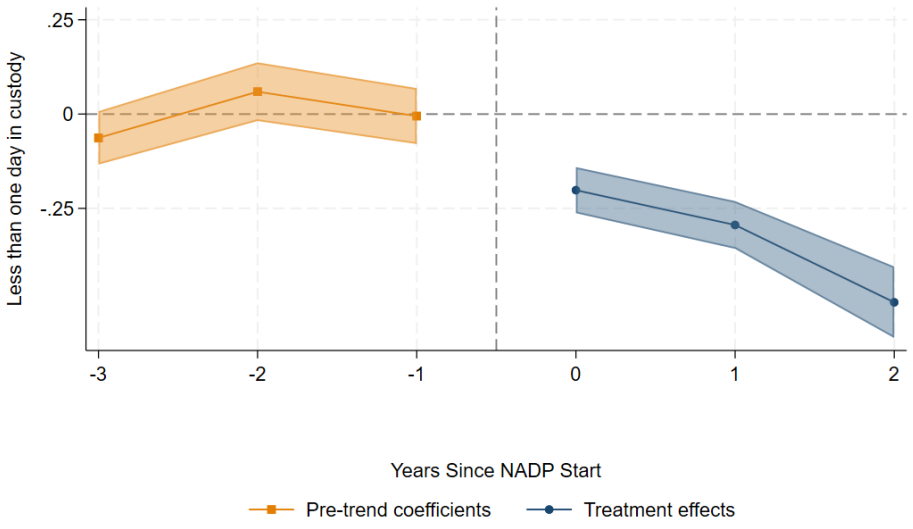
Note: These graphs show that the monthly count of eligible (blue) and ineligible (gray) arrests did not change discontinuously following the start of drug arrest diversion in each district (demarcated by the vertical line in each graph). The reduction in both eligible and ineligible drug arrests in early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

Figure 8: Impact of Drug Arrest Diversion on Jail Time

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

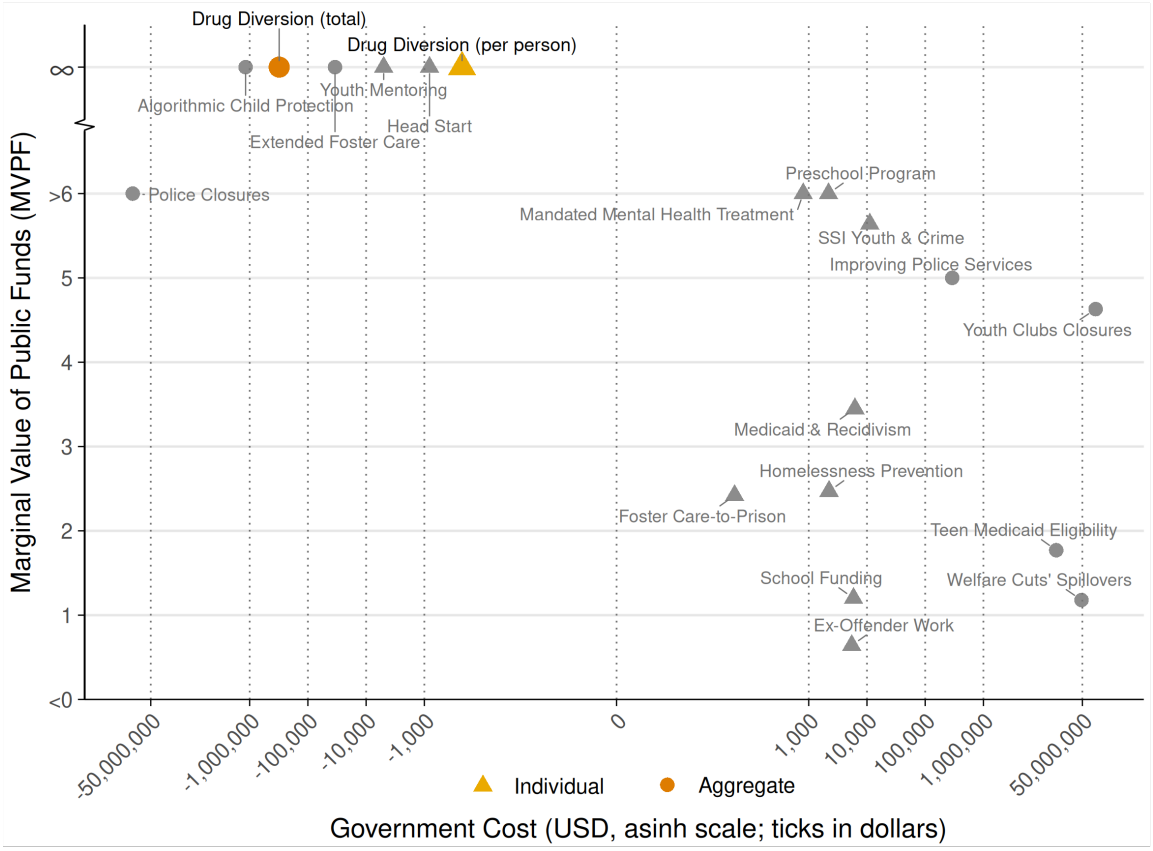


B. Jail Time $<$ 1 Day (Likely Released after Bond Hearing)



Notes: These figures display DDD point estimates and 95% confidence intervals of the impact of drug arrest diversion using drug arrests between 2014-2022 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, Cook County Sheriff's Office.

Figure 9: Social Welfare Gains: Drug Diversion and Other Crime-Reducing Interventions



Notes: This figure plots marginal value of public funds (MVPF) and direct cost estimates for the drug diversion effort evaluated in this study, along with a host of other criminal justice system-related interventions, which we collected via a text search of the Policy Impacts Library (https://policyimpacts.org/policy-impacts-library/). The policies captured here encompass the census of crime-related policies with an MVPF in the Policy Impacts Library as of September 2025.

Appendix A

Tables

Table A1: Impact of Drug Arrest Diversion – Drug and Alcohol Related Deaths

	Fatal Opioid Overdose (1)	Drug or Alcohol Involved Death (2)	Fatal Drug or Alcohol Overdose (3)	Fatal Drug Overdose (4)
Estimate	0.008	0.011	0.011	0.010
	(0.011)	(0.012)	(0.012)	(0.011)
Mean	0.059	0.061	0.060	0.059
$\frac{\text{DDD Estimate}}{\text{Mean}}$	14%	18%	18%	17%
N	85,921	85,921	85,921	85,921
Pretrend Test	0.43	0.59	0.43	0.44

Notes: This table displays the estimated impact of drug arrest diversion using all drug arrests involving individuals aged 21 and up in District 11 and eighteen non-Westside comparison districts in Chicago between 2010-2021. Column (1) identifies deaths where the description mentions an opioid as well as the words "overdose", "intoxication", or "toxicity". Column (2) identifies deaths where the description mentions any drug type. Column (3) identifies deaths where the description mentions the words "overdose", "intoxication", or "toxicity". Column (4) identifies deaths where 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 A2: Impact of Drug Arrest Diversion – Expansion

Panel A	*Direct Effect*		*Criminal Justice System*		
	Connected with Counselor	Released without Charge	Any Re-arrest	Drug Re-arrest	Violent Re-arrest
	(1)	(2)	(3)	(4)	(5)
Estimate	0.180***	0.258***	-0.067***	-0.078***	-0.022*
	(0.011)	(0.010)	(0.019)	(0.018)	(0.012)
Mean	0.000	0.000	0.595	0.360	0.144
$\frac{\text{DDD Estimate}}{\text{Mean}}$	.%	.%	-11.3%	-21.8%	-15.1%
N	107,762	114,554	114,554	114,554	114,554
Pretrend Test	0.800	0.070	0.022	0.004	0.166
Panel B	*Housing*		*Health*		
	Any Housing Services	Day or Emergency Shelter	Fatal Overdose	Any EMS Incident	Substance Overdose Incident
	(6)	(7)	(8)	(9)	(10)
Estimate	-0.000	0.026*	0.011	0.023	0.020
	(0.020)	(0.013)	(0.010)	(0.020)	(0.018)
Mean	0.180	0.076	0.059	0.144	0.100
$\frac{\text{DDD Estimate}}{\text{Mean}}$	-0.2%	33.6%	18.1%	15.8%	19.8%
N	43,986	43,986	114,554	33,814	33,814
Pretrend Test	0.760	0.982	0.367	0.842	0.664

Notes: This table displays the estimated impact of drug arrest diversion using all drug arrests involving individuals aged 21 and up in four treatment districts (Districts 10, 11, 15, and 25) and the rest of the city's eighteen districts as control districts between 2010-21. 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 Fire Department, Chicago Police Department, Cook County Medical Examiner's Office, Thresholds.

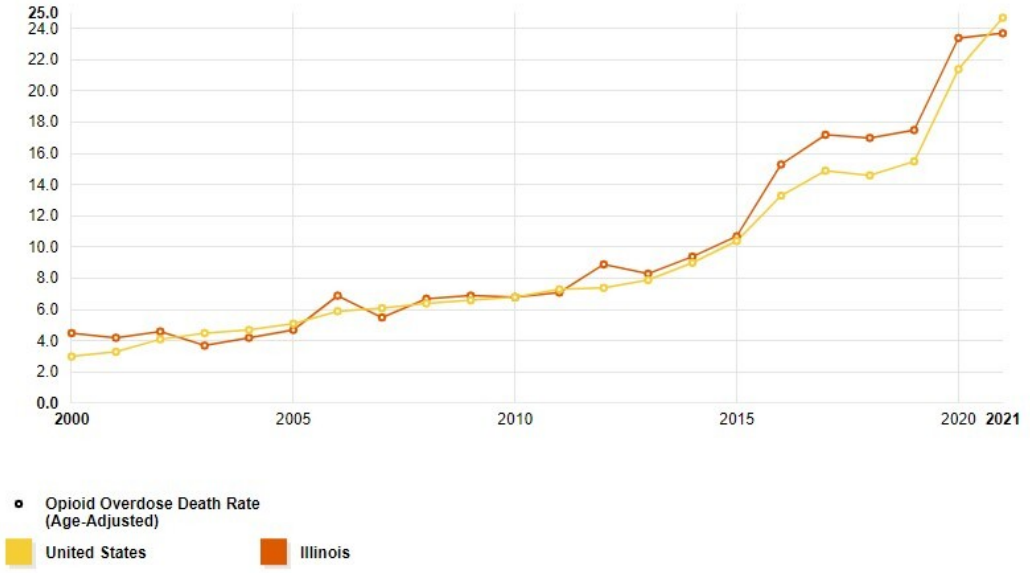
Table A3: Impact of Drug Arrest Diversion – Excluding the First 38 Days after Initial Arrest

Panel A	*Direct Effect*		*Criminal Justice System*		
	Connected with Counselor	Released without Charge	Any Re-arrest	Drug Re-arrest	Violent Re-arrest
	(1)	(2)	(3)	(4)	(5)
Estimate	0.219***	0.310***	-0.088***	-0.077***	-0.032**
	(0.013)	(0.013)	(0.023)	(0.021)	(0.015)
Mean	0.000	0.000	0.579	0.352	0.142
$\frac{\text{DDD Estimate}}{\text{Mean}}$	.%	.%	-15.2%	-21.9%	-22.2%
N	80,538	85,921	85,921	85,921	85,921
Pretrend Test	.	0.087	0.391	0.598	0.347
Panel B	*Housing*		*Health*		
	Any Housing Services	Day or Emergency Shelter	Fatal Overdose	Any EMS Incident	Substance Overdose Incident
	(6)	(7)	(8)	(9)	(10)
Estimate	-0.006	0.027	0.007	0.005	0.005
	(0.024)	(0.017)	(0.011)	(0.025)	(0.022)
Mean	0.174	0.073	0.059	0.133	0.092
$\frac{\text{DDD Estimate}}{\text{Mean}}$	-3.6%	36.7%	11.2%	3.8%	5.3%
N	33,574	33,574	85,921	26,153	26,153
Pretrend Test	0.228	0.105	0.418	0.702	0.509

Notes: This table displays the estimated impact of drug arrest diversion using all drug arrests involving individuals aged 21 and up in District 11 and eighteen non-West Side comparison districts in Chicago between 2010-2021. 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 Fire Department, Chicago Police Department, Cook County Medical Examiner's Office, Thresholds.

Figures

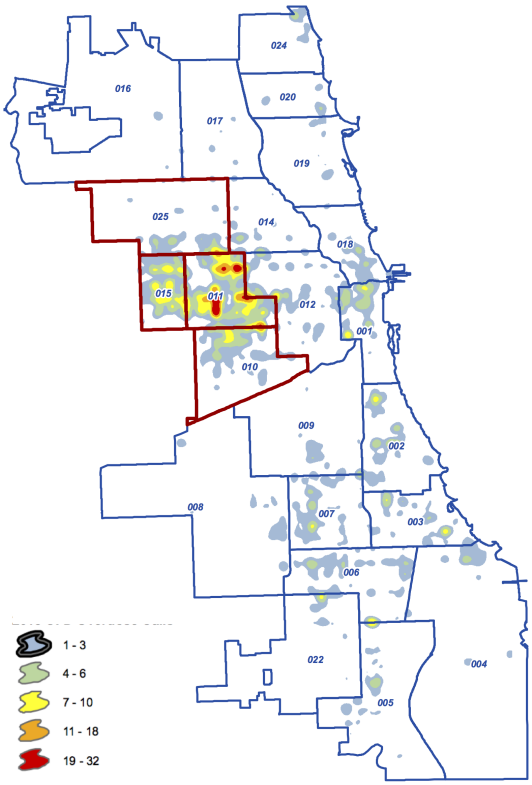
Figure A1: Age-Adjusted Opioid Overdose Death Rates: Illinois and the United States



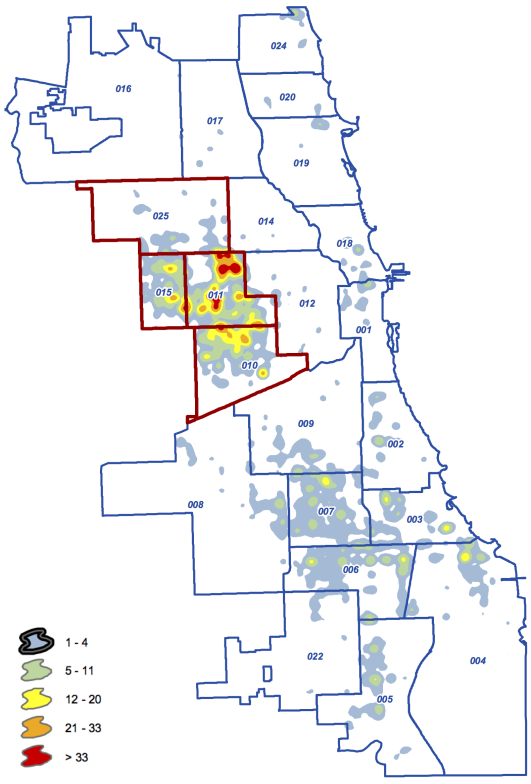
Source: Opioid Overdose Death Rates, State Health Facts, Kaiser Family Foundation.

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

Panel A: Overdose Calls For Service

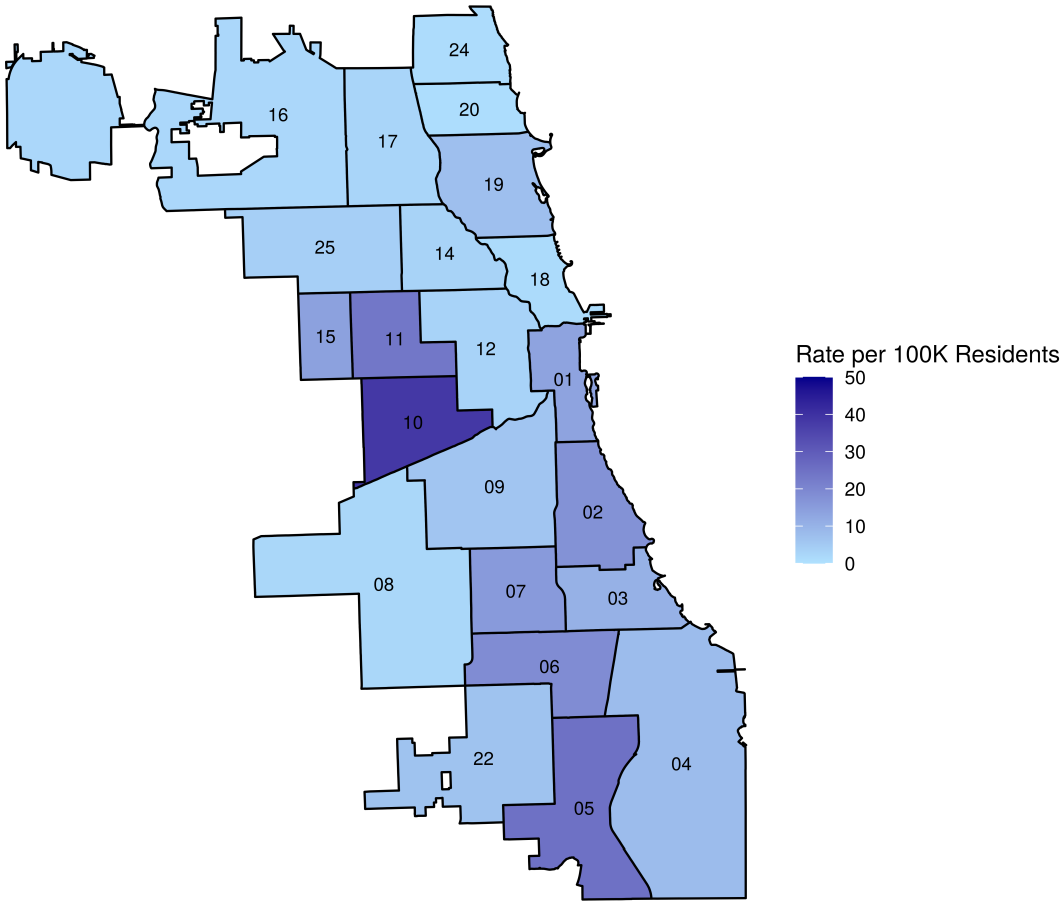


Panel B: Narcotics Arrests



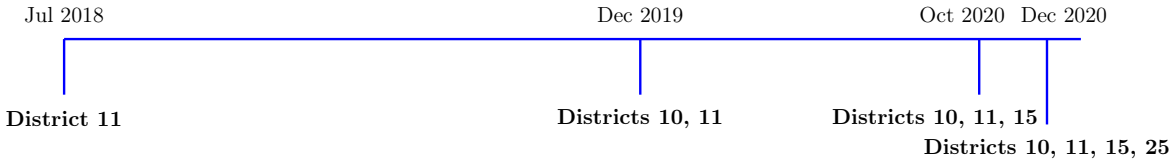
Notes: This figure depicts the geographic concentration of 911 calls for service related to overdose as well as narcotics arrests on the West Side of Chicago (outlined in red), particularly in District 11, in 2018. Source: Chicago Police Department CLEAR Data Warehouse, Office of Emergency Management and Communications Bureau of Technical Services PSIT GIS Print Date: 04-JUN-2019.

Figure A3: Homicides in Chicago in 2018



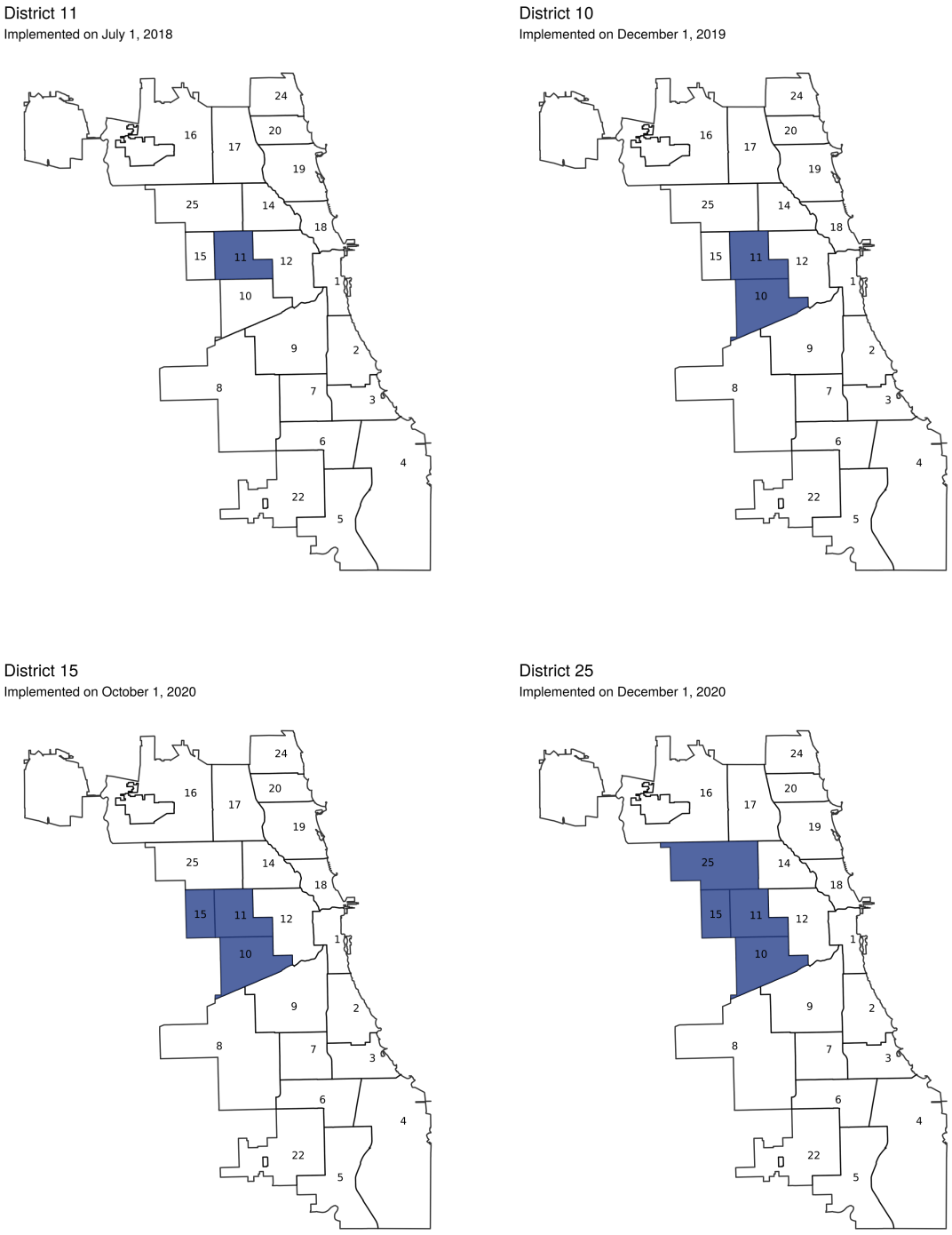
Notes: This figure depicts the district-wide homicide rate in 2018. Source: Chicago Police Department.

Figure A4: NADP Implementation Details 2018-20



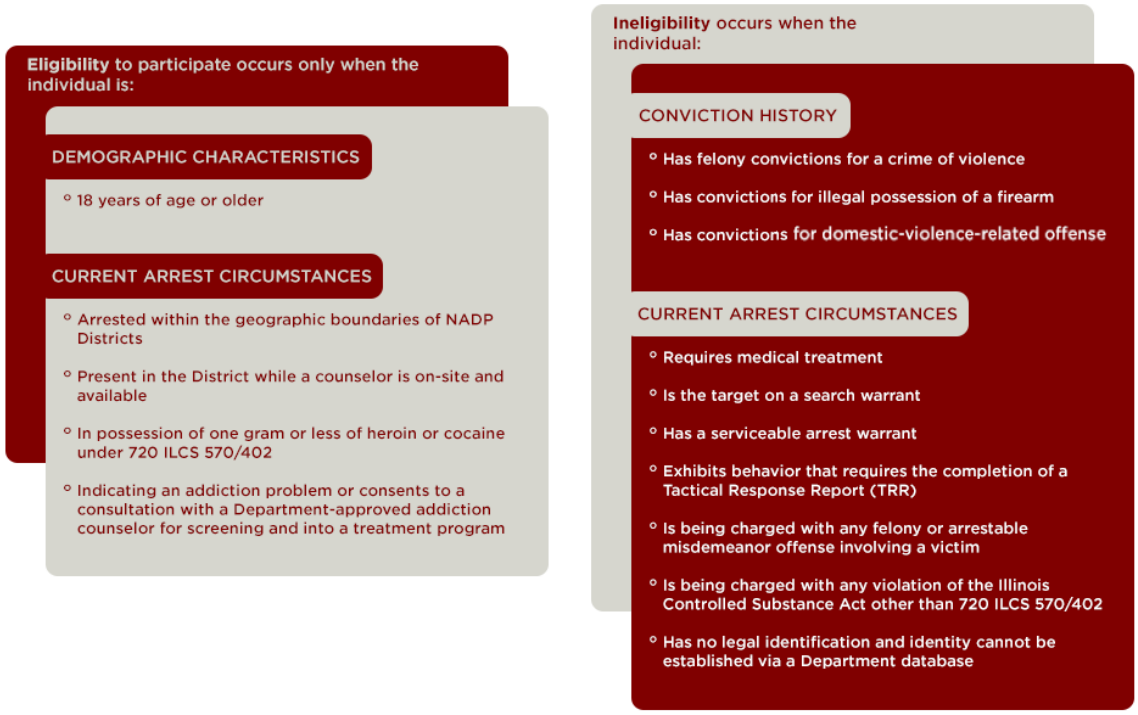
Notes: This figure details the expansion of the Narcotics Arrest Diversion Program across Chicago Police Department (CPD) districts between 2018 and 2020. CPD officers were trained on how to identify arrestees eligible for diversion in District 11, 10, 15, and 25 in July 2018, December 2019, October 2020, and December 2020 respectively. We do not restrict diversion eligibility to those who happened to be arrested during specific hours as Thresholds (the substance use disorder recovery agency providing on-site counseling services) counselors actively encouraged officers to call them irrespective of the time of arrest if they happened to have an eligible individual in custody. Source: Chicago Police Department.

Figure A5: NADP's Spatial Expansion Between 2018 and 2020



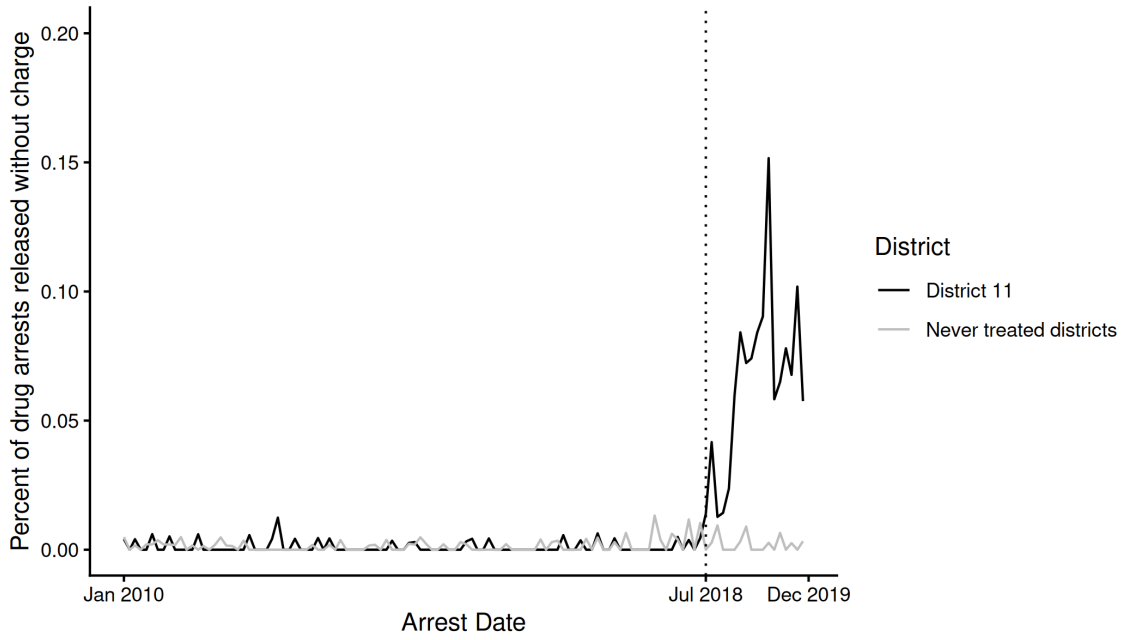
Notes: This figure details the expansion of the Narcotics Arrest Diversion Program across Chicago Police Department (CPD) districts between 2018 and 2020. Source: Chicago Police Department.

Figure A6: Eligibility Criteria for Drug Arrest Diversion



Notes: This figure outlines the full list of qualifying and disqualifying criteria for diversion; an up-to-date list is maintained under the Chicago Police Department Directive here. Repeated diversions under the Narcotics Arrest Diversion Program were not permitted until July 2020. From then on, individuals could be diverted multiple times, regardless of previous program engagement. Repeated eligible arrests during our study period are exceedingly rare. We classify all arrests meeting the above criteria as eligible irrespective of prior diversions. Source: Chicago Police Department.

Figure A7: Drug Arrests Ending in Release Without Criminal Charges



Notes: This figure shows that the probability of being released without criminal charges on a drug offense was exceedingly rare prior to the implementation of diversion in District 11. The vertical line depicts District 11's NADP implementation date. Never-treated districts include the 18 districts outside of the West Side of Chicago. Source: Chicago Police Department.

Appendix B

B1 Analysis Sample

Our analysis dataset is constructed from Chicago Police Department (CPD) arrest records. We include all arrests with at least one drug charge except those that only include marijuana charges since marijuana possession was decriminalized during the study period. A charge is counted as a drug charge if the charge is labeled as one of the following: a drug abuse violation (FBI code 18), possessing a fake prescription (FBI code 26 - miscellaneous non-index offenses - and the statute description includes "SCRIPT" or "LEGEND DRUG"), unspecified drug possession (FBI code 26 and the statute description refers to drugs), possessing cannabis in a penal institution (FBI code 26 and the statute description refers to cannabis), or narcotics-related loitering (FBI code 26 and the statute description refers to narcotics). A charge is labeled a marijuana charge if the statute description refers to cannabis or marijuana.

An artifact of the data procurement process is that our sample excludes expunged arrests. Specifically, arrest-level data on diversion eligibility was calculated and shared with the research team on March 8th, 2023, whereas the rest of the arrest data (starting from January 1st, 2010) was archived in yearly snapshots that excluded expunged arrests. This is not a major concern in our setting because the vast majority of expunged arrests were related to marijuana charges, and we explicitly exclude arrests that only include marijuana charges because of its decriminalization during the study period.

Individual identifiers in the arrest dataset – Identification Record (IR) numbers – were based on fingerprints starting in 2010, allowing us to reliably cluster standard errors at the individual level after January 1st, 2010. Arrests without IR numbers are dropped from the sample (a miniscule proportion). We cut off the sample the day before NADP was scaled to non-West Side districts, which are used as control districts in our analysis. Finally, we exclude arrests with missing district information and with district information linking an arrest to anything but the 22 Chicago Police Department districts in the analysis, such as arrests taking place in "district" 31, which is used to denote arrests made outside of city limits.

B2 Data Linkage

Our outcomes are derived from five data sources besides CPD: Cook County Sheriff's Office (CCSO), the service partner (Thresholds), Homeless Management Information System (HMIS), Cook County Medical Examiner's Office (CCMEO), and Chicago Fire Department (CFD). In order to reliably measure impacts on these outcomes, we linked each dataset to individuals in the CPD arrest data. This process is straightforward for CCSO data; booking records are merged with CPD arrest data using Identification Record (IR) numbers, and arrests are linked to the closest booking for that individual within 0-2 days of the given arrest.

The remaining four datasets do not share a common agency-specific identifier with the CPD data. We employed a probabilistic record linking algorithm called Name Match to link these datasets with CPD data based on identifying information such as name and date of birth. Name Match predicts which records in the CPD arrests data and the outcome dataset belong to the same person. First, the model is trained to identify if a pair of CPD arrest records belongs to the same person using IR number as a ground truth identifier. This model is then applied to records in non-CPD datasets as well as the rest of the arrest data to identify clusters of records associated with the same person.[42]

We matched arrest records with each outcome dataset separately, based on first name, last name, date of birth, age, gender, and race and ethnicity. All matches required that each cluster of records had only one IR number, and each IR number was only associated with one cluster of records. The match with CCMEO data had two additional constraints: each person could only have one death record, and a person could not have arrest records after their date of death.

[42] See Jelveh *et al.* (2024) for more details.