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 shepherd drug users into 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

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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] While we are unable to directly test for impacts on drug use, we are able to examine impacts on an arguably extreme manifestation of drug dependence – overdose.[3] 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;[4] (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.*, 2021) and to the literature highlighting the scarcity of effective demand-side policy solutions to reduce fatal drug overdoses (Swensen, 2015; Doleac & Mukherjee, 2022; Packham, 2022; Spencer, 2023).

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 mech-

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

[3]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.

[4]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)

anisms, 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 treatment, 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 prison and jail inmates 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).[5]

[5]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

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 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).[6] 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

health care services) (Anglin *et al.*, 2013; Collins *et al.*, 2017; Bird & Shemilt, 2019).

[6]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).

Side of Chicago being the region's largest opioid market, easily accessed via Interstate 290, also called the *heroin highway* (DEA, 2017).[7] This fact is reflected in the geographic concentration of calls for service and deaths related to opioid overdoses within Chicago, shown in Figure A2.[8]

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.[9] Today, NADP is the largest drug arrest diversion effort led by the criminal justice system in America.[10]

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.[11] 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

[7] 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.

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

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

[10] 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.

[11] 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.

have previously been convicted of a violent felony offense.[12]

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 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.[13] 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 an alternative agency, proximity to their home address, and other considerations.[14] 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.[15] The diversion process from a qualifying individual's perspective is summarized in Figure 1.

[12] 1 gram of heroin would last an individual with a severe substance use disorder 1-2 days (Addiction Center, 2021). The complete list of qualifying and disqualifying characteristics are listed in Figure A6.

[13] 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.

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

[15] 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.

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

3 Data

This paper links six data sources, each of which are described in detail below. Details on the linking procedure are relegated to Appendix **??**. 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 some outcomes, data is only available up until the end of 2020; our follow-up period for these outcomes is 1.5 years.

[16] 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).

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.

Thresholds Data 2018-23. To track whether individuals are connected with treatment following diversion, we rely on the service provider Thresholds' data.[17] 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 well as the post-trial period.

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).[18] 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.

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

[18] 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; when any human body is to be cremated, dissected or buried at sea; when a dead body is brought into a new medico-legal jurisdiction without proper medical certification.

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, 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, 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.[19]

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

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

$Y_{i,d,t}, \gamma_{ed}, \gamma_{dt}$ and γ_{et} are defined exactly as above. $After^\tau_{dt}$ 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 June 2018, so $After^1$ indicator equals one for District 11 during June 2018 - May 2019, the $After^2$ indicator equals one for District

[19]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*.

11 during June 2019 - May 2020, and so on. τ can take on negative values, which allows us to test for (and rule out) differences prior to the policy's implementation. 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.[20]

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 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 COVID-19 related pause between 2020 and early 2021.

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% Black. 83% report being unemployed. 85% reported using narcotics in the year prior to their screening interview, and among those who did, 75% used it daily. 70% had previously experienced an overdose (though the rate of data missingness for this field is high at 66%). 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).

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

For individuals who choose to continue with Thresholds as their main treatment provider, there is also information available on their subsequent engagement with treatment services.[21] 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 (attending therapy sessions and meetings with counselors) for at least 30 days, with a median engagement length of 38 days.[22] The retention rate at 30 days—a measure often used to assess substance use program success—places the program's success in the upper end of the range 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). 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). 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.

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

[21] 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.

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

implement it. 86% of officers reported that did not believe that arrest discouraged future use.[23] 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.[24] We find that drug arrest diversion increased the probability of being connected with a substance use counselor as well as that of being released without criminal charges. Re-arrest rates fell, including a 24% reduction in the probability of being re-arrested for drug charges, and a 24% reduction in the probability of being re-arrested for violent charges.

While we are unable to directly observe drug use, we take the reduction in drug re-arrest as a positive sign of reduced dependence. We are, however, able to examine two tail end outcomes related to drug use – fatal and non-fatal overdose – both of which are arguably harder to influence and may not be representative of most individuals served by the diversion

[23]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).

[24]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.

effort. Unfortunately, we do not find any discernible impact of drug arrest diversion on the risk of either type of overdose. We discuss these findings in detail below.

Throughout this section, we define District 11 as our treatment district and the remaining eighteen non-Westside 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 Westside 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.

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.[25]

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.[26] This estimate – an increase of 31 percentage points – is higher than that observed in column (1) for

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

[26] 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. **??** depicts the raw data corresponding to this variable.

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 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 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 by 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 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, 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).[27] We interpret this as suggestive evidence that the program may have improved individuals' access to services beyond those intended to address substance use.

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. 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, while columns (2)-(4) show that these results remain unchanged when we include all drug-related deaths (irrespective of whether the case is explicity identified as an overdose), include alcohol-

[27] 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.

related deaths, or restrict attention just to drug-related deaths. 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.[28]

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.[29] 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. 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.

[28] 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.

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

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. 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.

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).[30]

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 diver-

[30] 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 charges, which we rarely observe in the data.

sion 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.

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 time of less than one day. Specifically, we 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., spend a few hours in jail, but do not continue on to stay overnight), and show that reductions in jail time are driven solely by the latter group.[31] 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.[32] 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 also shows that diversion alone (i.e., without an accompanying referral to or connection with services) can produce sizeable reductions in recidivism (Mueller-Smith &

[31] 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.

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

Schnepel 2020, Agan *et al.* 2021). 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 recidivism reductions significant at the 95% level *only* for those with prior drug arrests (see Table 4 for point estimates). Second, as discussed above, the local prosecutor's office has deprioritized the prosecution of low-level drug offenses since the mid-2010s, which means that non-eligible arrests are also unlikely to end in prosecution. Third, the mean age among diverted individuals is 49, indicating that our results are unlikely to be driven by young individuals who avoid a criminal record if they are diverted.

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. 98% of diverted individuals with non-missing data met the medical criteria for a substance use disorder or mental health disorder, and 75% reported using narcotics daily. The age at first drug use was 26 while the age at diversion was 49, 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 36% remain engaged 60 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 column 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 broadly documents the recidivism-reducing impact of healthcare access. Batistich *et al.* (2021), Deza *et al.* (2022), and Jacome (2024) show that access to mental healthcare reduces crime. On the other hand, a recent working paper by Finkelstein *et al.* (2024) suggests the effects are limited. 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 marries direct service linkage with substantially lower degree of criminal justice contact, may exert similar impacts.

Is this argyment 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 overdosing, 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 (experienced by 6 and 10% of the control group respectively during the study period).

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, outright decriminalization,

and even full legalization. However, this has left unadressed a persistent and fundamental challenge—only one in eight drug users receive treatment services, without which recovery is exceptionally challenging. Treatment is especially under-supplied within the criminal justice system (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 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 the program began to permit drug types such as methamphetamine, PCP, and ecstasy; it increased the maximum allowable drug weight from one to two grams; and it made violent convictions within the past ten years (as opposed to at any time prior to the diversion) a disqualifying characteristic.

This paper provides descriptive evidence that drug arrest diversion is well-targeted. It serves individuals with very high rates of medically diagnosed substance use disorders, who could substantially benefit from participation in substance use treatment and counseling. Despite the fact that drug arrest diversion connects individuals who are not actively seeking treatment with counselors, we observe treatment engagement lengths similar to that documented in contexts where treatment is actively sought out by individuals themselves. The substance use treatment provided to participants is similar to what providers across the country supply, suggesting that a treatment-centric drug diversion approach can be successfully

implemented elsewhere as well. Further, survey evidence indicates that drug arrest diversion enjoys favorable opinions among police officers; 4 out of 5 officers in our survey 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 of this approach's impact on increasing the number of individuals arrested on low-level drug charges that are released without criminal charges, and the substantial downstream benefits in terms of reductions in subsequent re-arrest, including drops 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 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.

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9 Tables

Table 1: Individuals Connected With Treatment

	Diverted		Walk-in	
Served by Any Treatment Provider				
	Mean (1)	Missing (2)	Mean (3)	Missing (4)
Demographic characteristics				
Male	81%	0.24	78%	0.38
Unemployed	83%	0.23	90%	0.38
Race				
Black	60%	0.24	69%	0.39
White	28%	0.24	29%	0.39
Substance use characteristics				
Currently experiencing withdrawal symptoms	36%	0.35	28%	0.46
Used narcotics in the past year	85%	0.23	79%	0.39
Narcotics use frequency: Daily	75%	0.28	75%	0.49
Age at first narcotics use	26	0.29	25	0.48
Ever overdosed	70%	0.66	94%	0.77
Overdosed in the past year	26%	0.65	50%	0.77
Ever witnessed another person overdose	68%	0.51	61%	0.52
Ever had naloxone administered to them	34%	0.53	39%	0.52
Has never attended substance use treatment	24%	0.24	13%	0.42
Housing characteristics and housing service engagement				
Lives in a shelter or on the street	10%	0.25	38%	0.39
Non-permanent living situation	43%	0.25	38%	0.39
Served by Thresholds				
Medically diagnosed substance use disorder (SUD)	97%	0.86	100%	0.42
Medically diagnosed mental health disorder (MHD)	38%	0.59	92%	0.21
Medically diagnosed MHD or SUD	98%	0.75	100%	0.24
Engagement with Thresholds after diversion/walk-in	87%	0	82%	0
Engaged with Thresholds 30 days or longer	64%	0.11	77%	0.09
Engaged with Thresholds 60 days or longer	36%	0.14	63%	0.09

Notes: The sample includes all individuals who were eligible for diversion and consented to sharing their data with the research team between July 2018 and December 2023 with a COVID-19 related pause in 2020 and early 2021. Narcotics includes heroin, cocaine, and 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

	Health		
	Fatal Opioid Overdose	Any EMS Incident	Substance Overdose Incident
	(6)	(7)	(8)
Estimate	0.008	0.014	0.011
	(0.011)	(0.026)	(0.023)
Mean	0.059	0.144	0.100
$\frac{\text{DDD Estimate}}{\text{Mean}}$	14.2%	9.7%	10.9%
N	85,921	25,476	25,476
Pretrend Test	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: 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-Westside 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. 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.

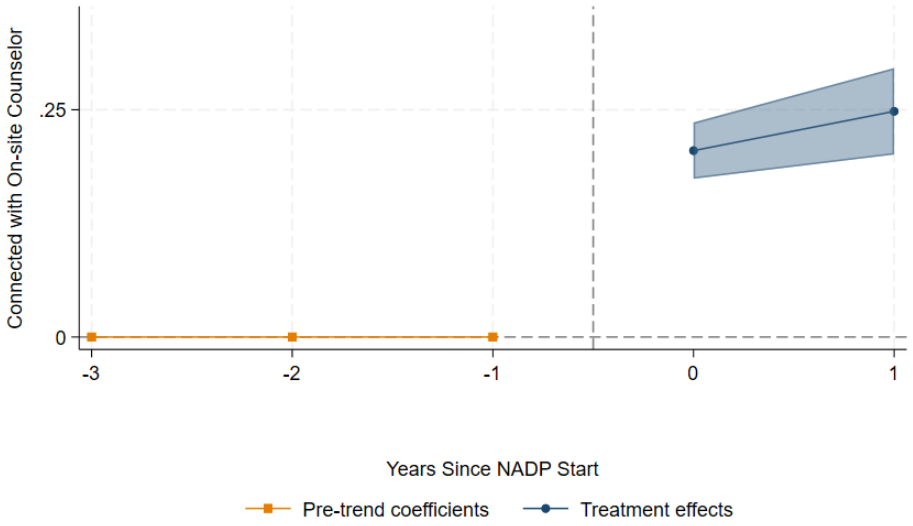
Figure 2: The Criminal Justice System Process



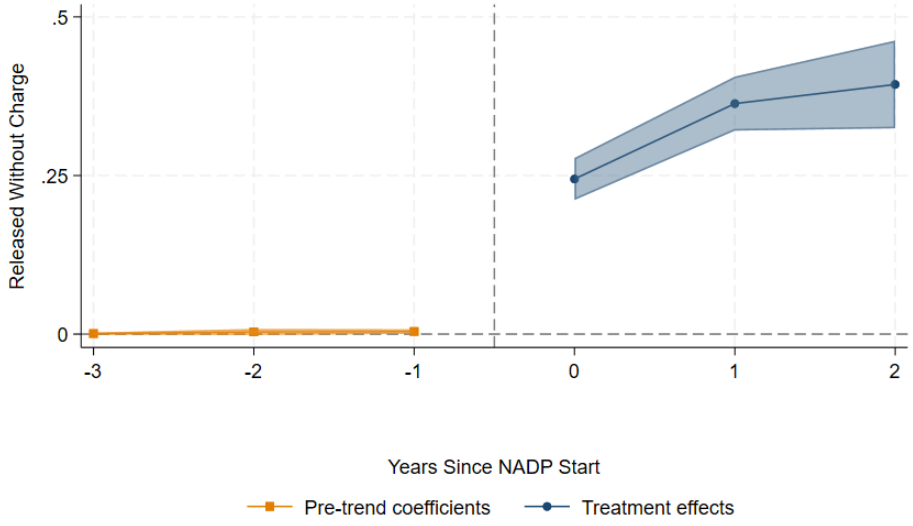
Notes: This figure highlights the stage at which NADP offers a route out of the standard criminal justice system process. Source: District of Columbia Statistical Analysis Center (2017).

Figure 3: Direct Impact of Drug Arrest Diversion

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

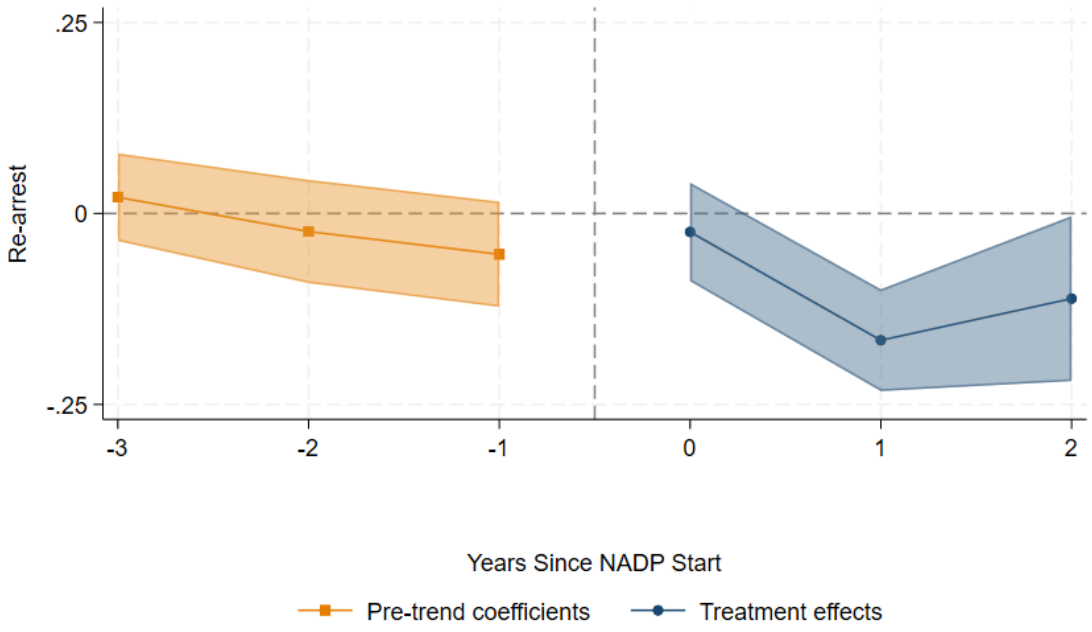


Panel B: Release Without Criminal Charge



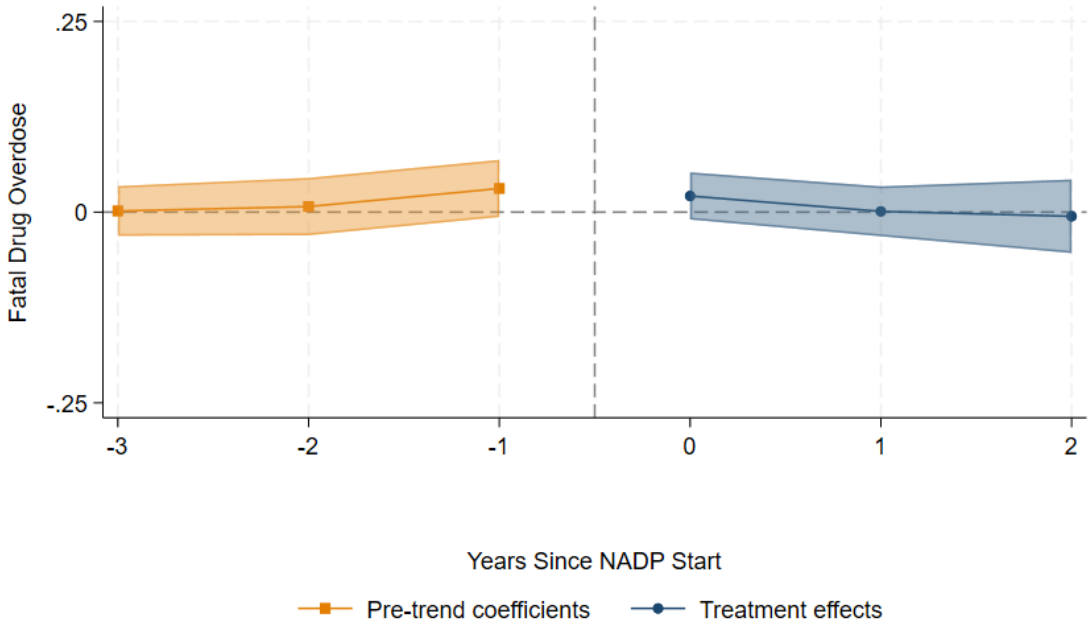
Notes: These figures display DDD point estimates and 95% confidence intervals of the impact of diversion using all drug arrests involving individuals aged 21 and up in District 11 and eighteen non-Westside comparison districts in Chicago between 2010-2021. Regressions include district-year, year-eligibility, 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



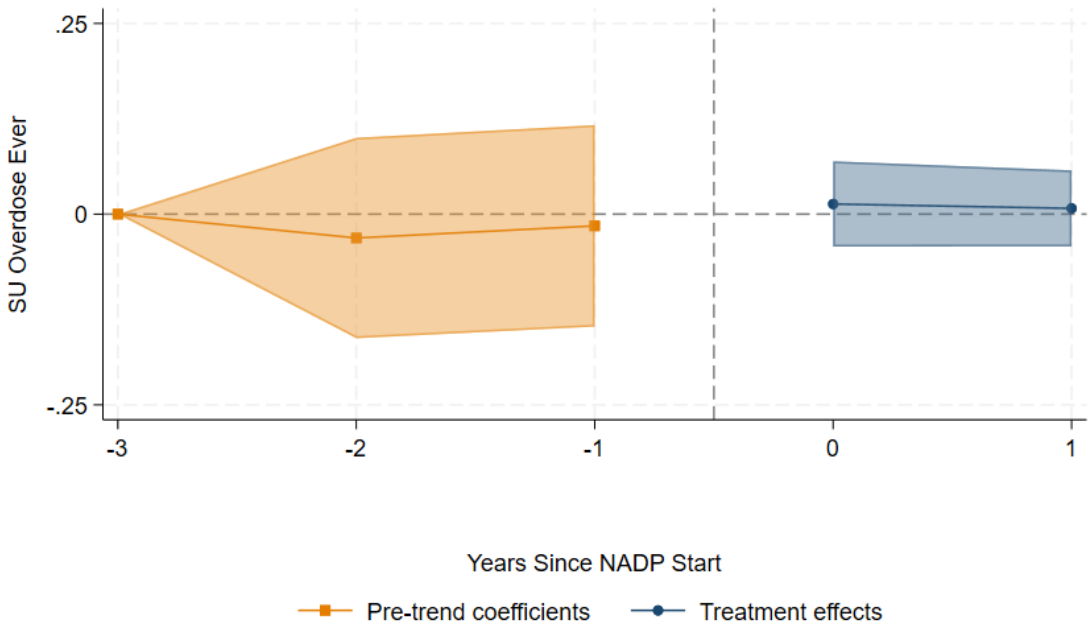
Notes: These figures display DDD point estimates and 95% confidence intervals of the impact of diversion using all drug arrests involving individuals aged 21 and up in District 11 and eighteen non-Westside comparison districts in Chicago between 2010-2021. Regressions include district-year, year-eligibility, and eligibility-district fixed effects, and standard errors are clustered at the individual level. Data Source: Chicago Police Department.

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



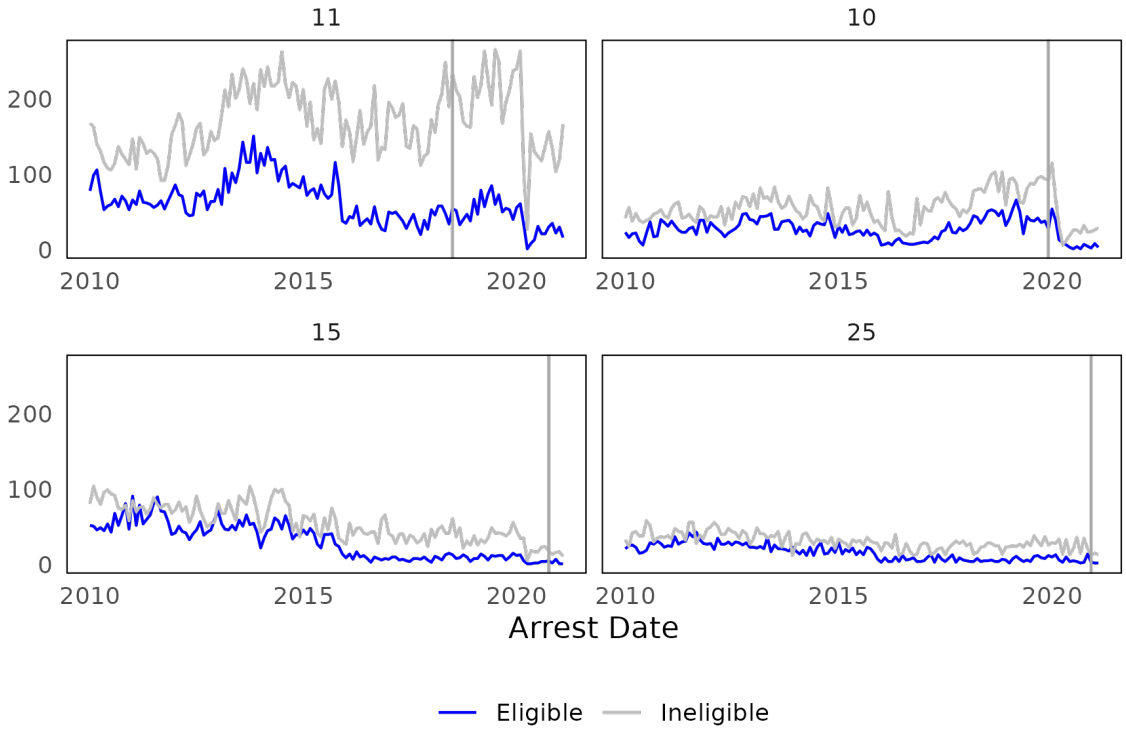
Notes: These figures display DDD point estimates and 95% confidence intervals of the impact of diversion using all drug arrests involving individuals aged 21 and up in District 11 and eighteen non-Westside comparison districts in Chicago between 2010-2021. Regressions include district-year, year-eligibility,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

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



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-Westside 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 is shorter than in Figure 5 because outcome data is only available up until 2020. Data Sources: Chicago Police Department, Chicago Fire Department.

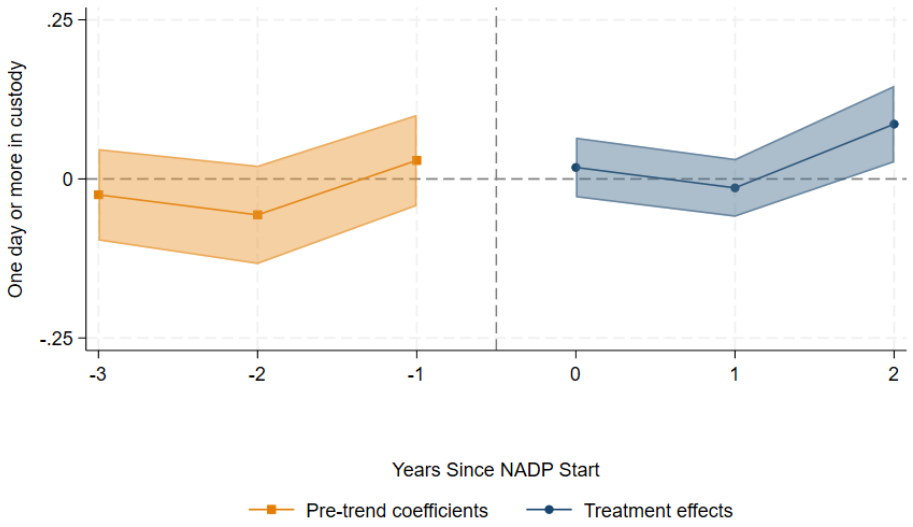
Figure 7: Eligible and Ineligible Drug Arrests



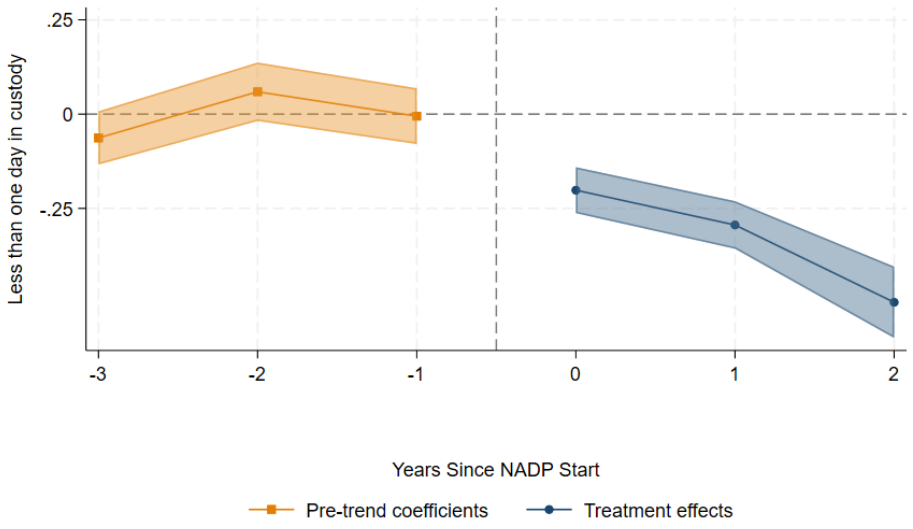
Note: These graphs shows that the monthly count of eligible (blue) and ineligible (gray) arrests did not change discontinuously following the start of drug arrest diversion in each district (demarcated by the vertical line in each graph). The reduction in both eligible and ineligible drug arrests in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

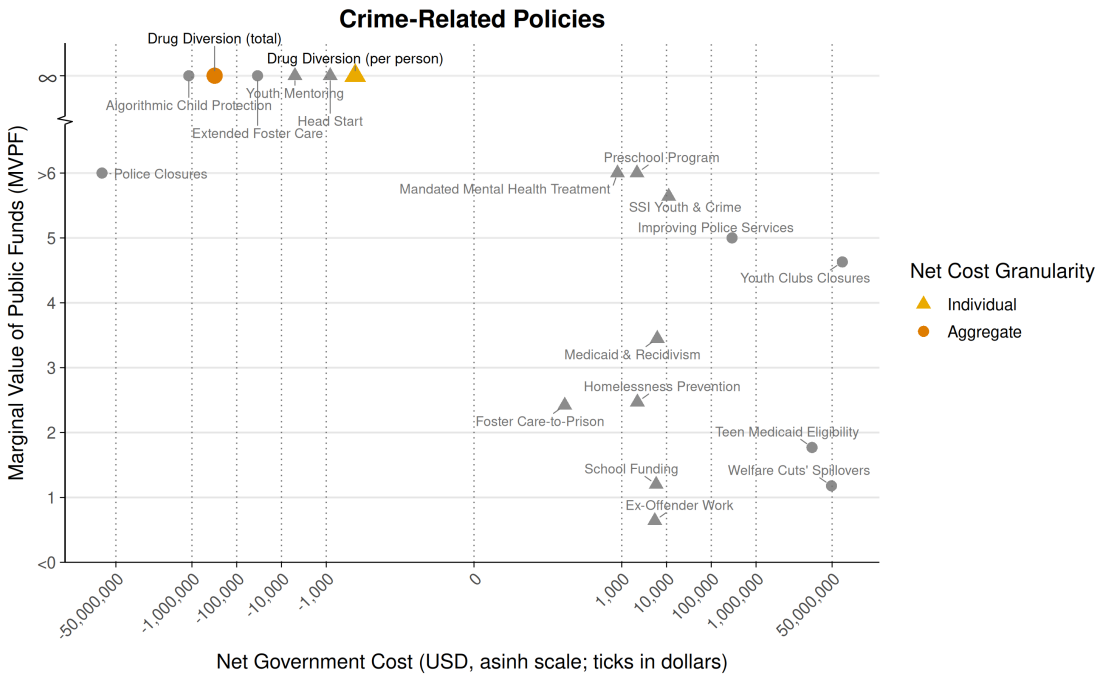


B. Jail Time $<$ 1 Day (Likely Released after Bond Hearing)



Notes: This figure displays 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.

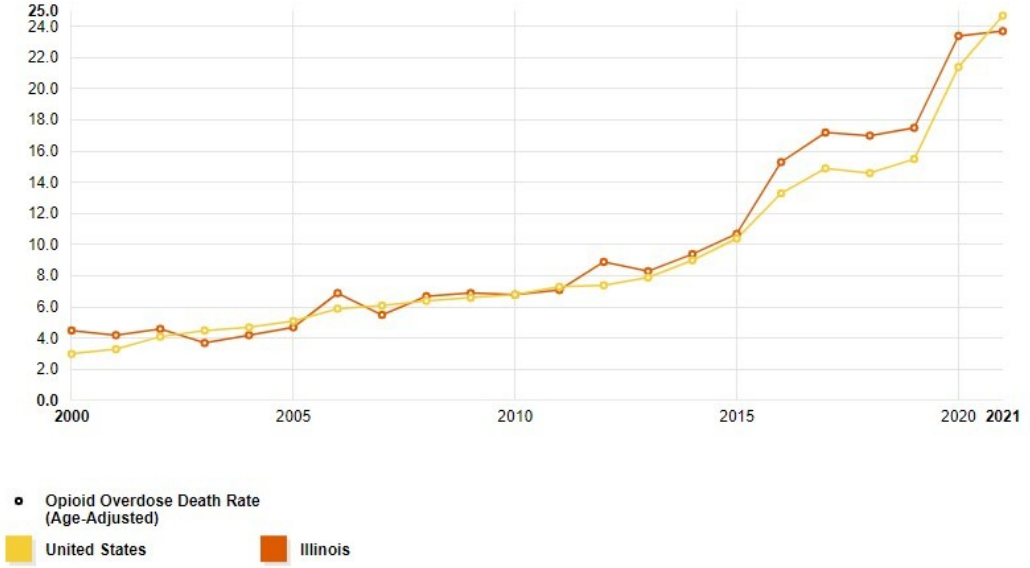
Figure 9: MVPF



Appendix A

Figures

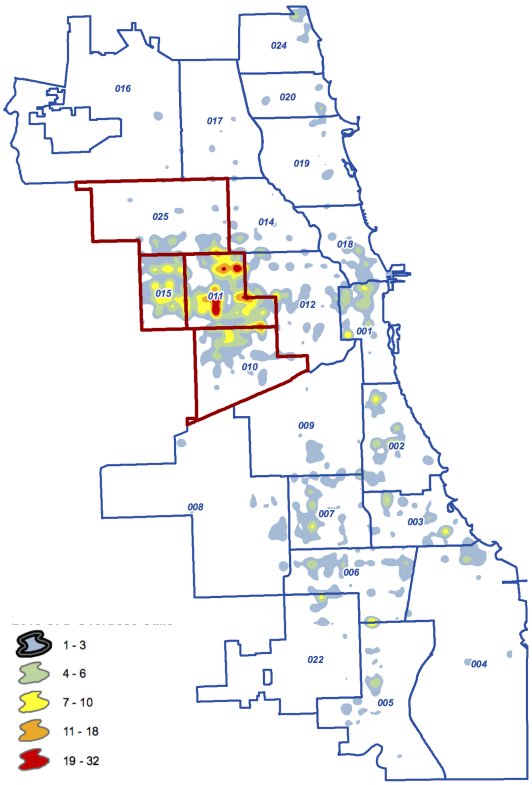
Figure A1: Age-Adjusted Opioid Overdose Death Rates: Illinois and the United States



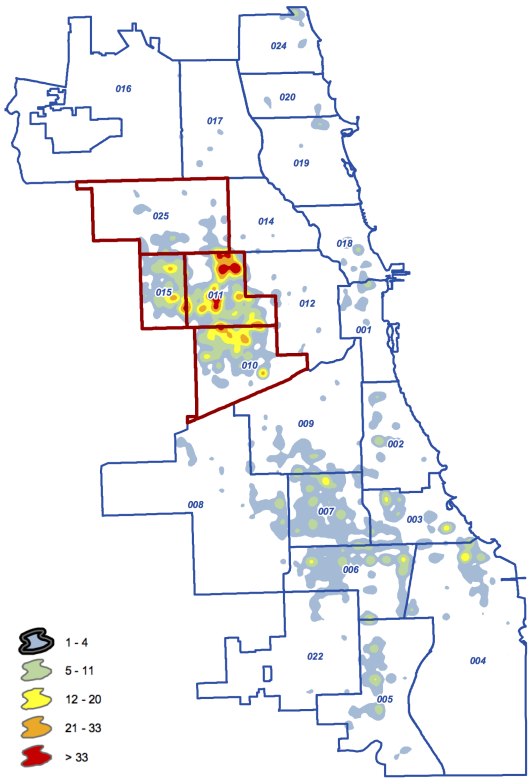
Source: Opioid Overdose Death Rates, State Health Facts, Kaiser Family Foundation.

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

Panel A: Overdose Calls For Service

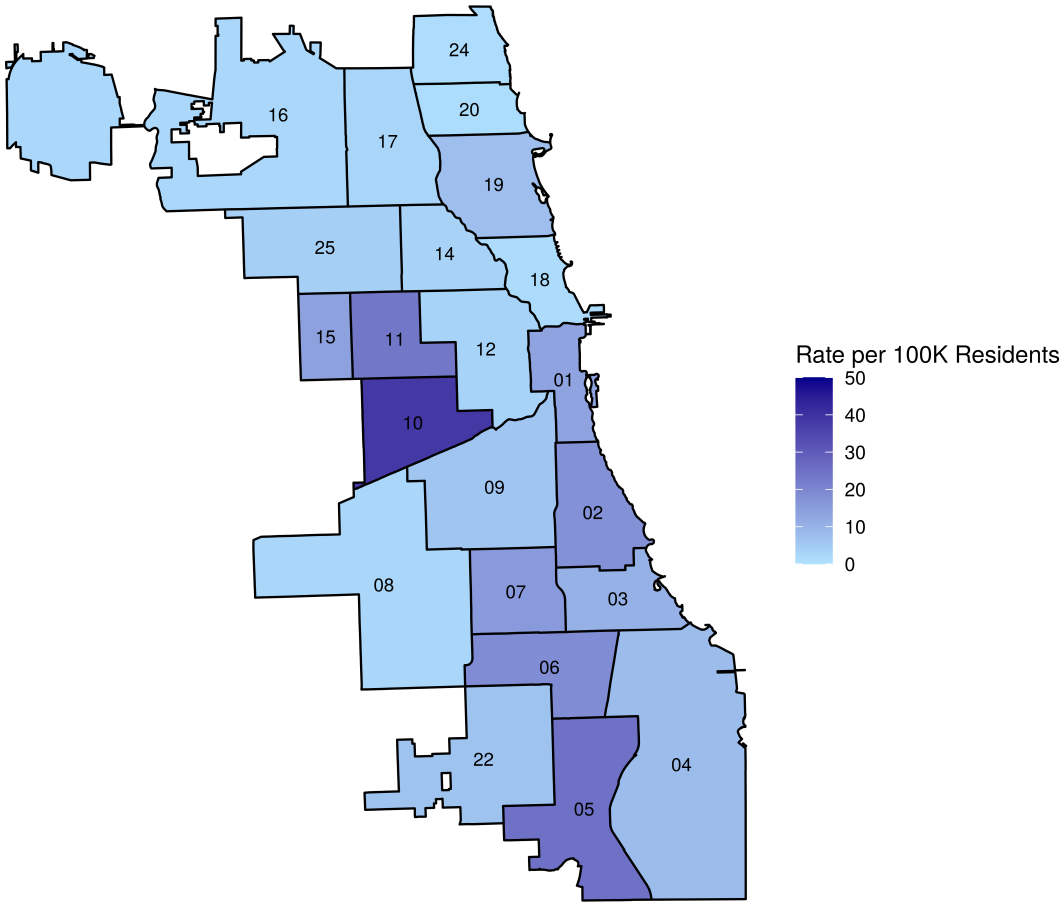


Panel B: Narcotics Arrests



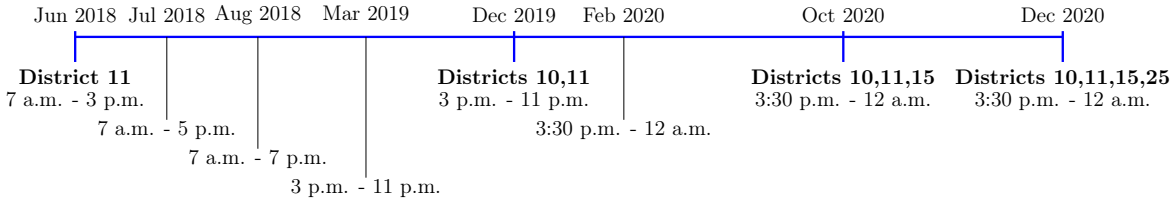
Notes: This figure depicts the geographic concentration of 911 calls for service related to overdose as well as narcotics arrests on the West side of Chicago (outlined in red), particularly in District 11, in 2018. Source: Chicago Police Department CLEAR Data Warehouse, Office of Emergency Management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

Figure A3: Homicides in Chicago in 2018



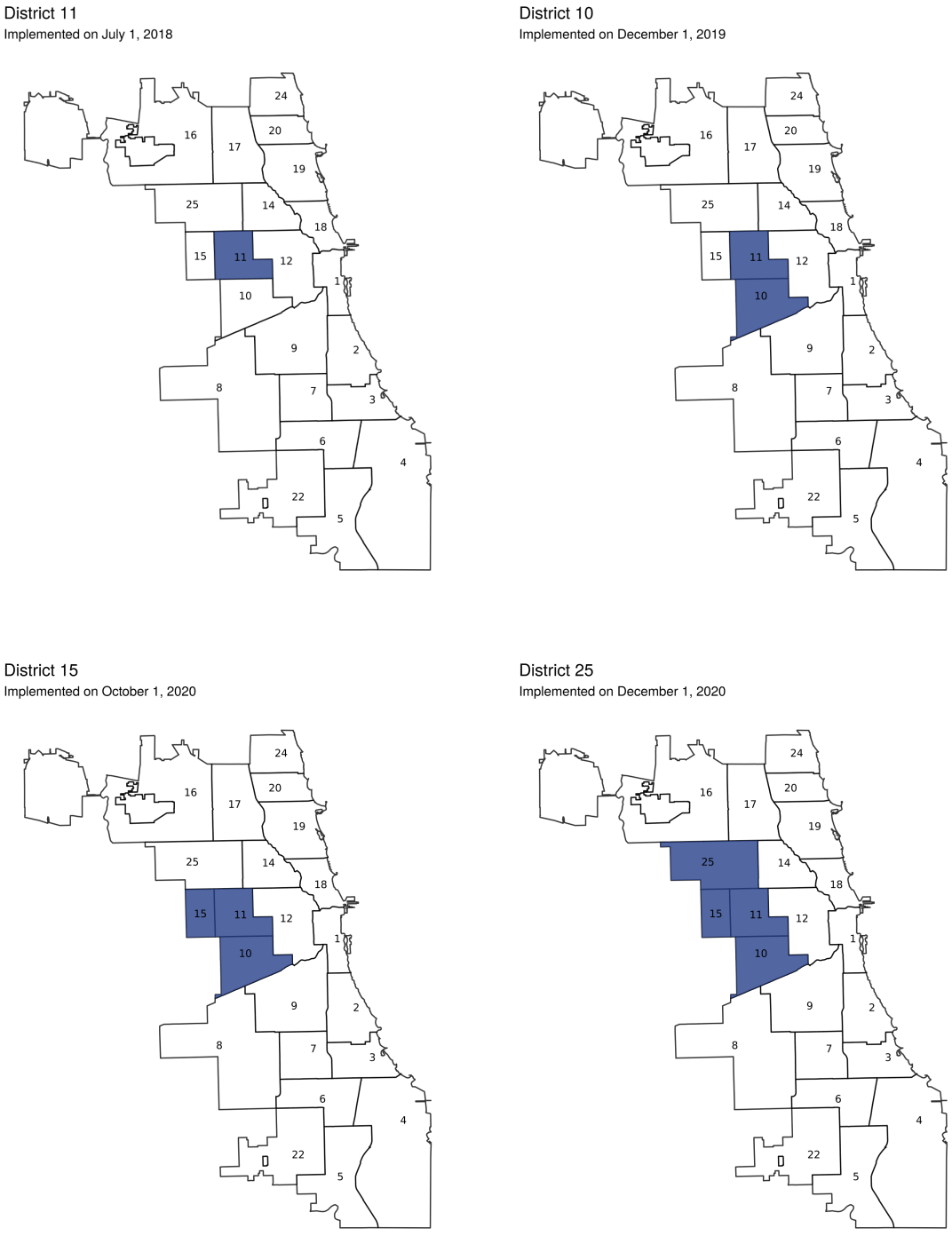
Notes: This figure depicts the district-wide homicide rate in 2018. Source: Chicago Police Department.

Figure A4: NADP Implementation Details 2018-20



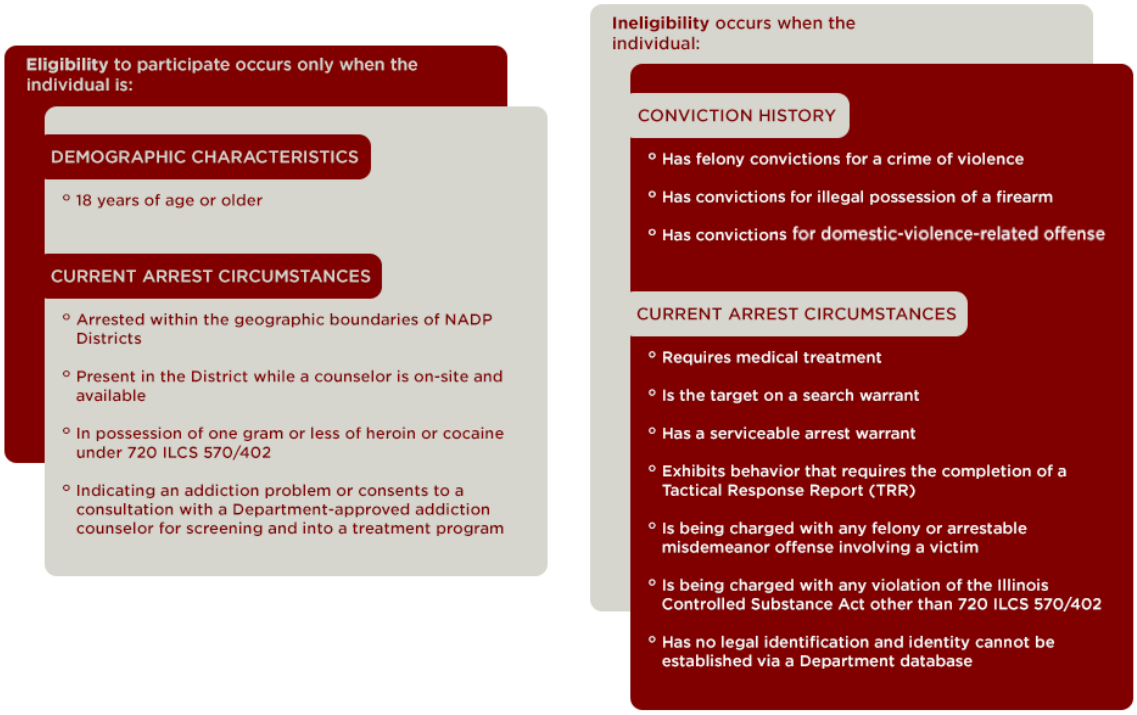
Notes: This figure details the expansion of the Narcotics Arrest Diversion Program across Chicago Police Department (CPD) districts between 2018 and 2020. CPD officers were trained on how to identify arrestees eligible for diversion in District 11, 10, 15, and 25 in June 2018, December 2019, October 2020, and December 2020 respectively. This figure also reflects changes in on-site counselor hours during the expansion; the change from 7 a.m. - 3 p.m in 2018 to 3:30 p.m. - 12 a.m. in 2020 was made in order for Thresholds (the addiction recovery agency providing on-site counseling services) to be able to screen and offer treatment to more individuals each day. However, counselors actively encouraged officers to call them irrespective of the time of arrest if they happened to have an eligible individual in custody. As such, we do not restrict diversion eligibility to those who happened to be arrested during specific hours. 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. The restriction on repeated diversions was lifted in July 2020; individuals can now be diverted multiple times, regardless of previous program engagement. The present study evaluates program impact prior to this change. Source: Chicago Police Department.

Tables

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

	Fatal Opioid Overdose	Drug or Alcohol Involved Death	Fatal Drug or Alcohol Overdose	Fatal Drug Overdose
	(1)	(2)	(3)	(4)
Estimate	0.008	0.010	0.011	0.011
	(0.011)	(0.011)	(0.012)	(0.012)
Mean	0.059	0.061	0.060	0.059
$\frac{\text{DDD Estimate}}{\text{Mean}}$	14.2%	16.8%	17.5%	18.1%
N	85,921	85,921	85,921	85,921
Pretrend Test	0.430	0.443	0.591	0.435

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 including alcohol. 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", but does not mention alcohol. 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	*Health*		
	Fatal Overdose	Any EMS Incident	Substance Overdose Incident
	(6)	(7)	(8)
Estimate	0.011	0.023	0.020
	(0.010)	(0.020)	(0.018)
Mean	0.059	0.144	0.100
$\frac{\text{DDD Estimate}}{\text{Mean}}$	18.1%	15.8%	19.8%
N	114,554	33,814	33,814
Pretrend Test	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: 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	*Health*		
	Fatal Overdose	Any EMS Incident	Substance Overdose Incident
	(6)	(7)	(8)
Estimate	0.007	0.005	0.005
	(0.011)	(0.025)	(0.022)
Mean	0.059	0.133	0.092
$\frac{\text{DDD Estimate}}{\text{Mean}}$	11.2%	3.8%	5.3%
N	85,921	26,153	26,153
Pretrend Test	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-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: Chicago Fire Department, Chicago Police Department, Cook County Medical Examiner's Office, Thresholds.