

Policing Substance Use: Chicago's Treatment Program for Narcotics Arrests*

Ashna Arora[†] and Panka Bencsik[‡]

November 6, 2021

In the United States, law enforcement officers serve as first responders to most health crises, allowing them to connect many more individuals to treatment services than other government actors, a fact that has come into increasing focus due to the opioid epidemic. In response, police departments across the country have begun to divert individuals that possess narcotics away from arrest and towards treatment and recovery. Evidence on whether these programs are able to engender meaningful change—initially by increasing participation in substance use treatment, and eventually by reducing the likelihood of continued drug use and criminal justice involvement—remains limited. This paper aims to shed light on the potential of these programs by exploiting the eligibility criteria for and staggered rollout of narcotics arrest diversion in Chicago between 2018 and 2020 using a difference-in-difference-in-differences framework. We find that the program reaches individuals with medically diagnosed substance use disorders, increases connections with substance use treatment, and reduces subsequent arrests. We conclude that Chicago's drug diversion program is able to simultaneously reduce the reach of the criminal justice system, expand the number of individuals with substance use disorders connected with treatment, and improve public safety.

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

JEL classifications: K32, K42, I18, I38

*Alphabetical authorship; equal contributions by each author. Latest version of the draft [here](#).

For invaluable help with monitoring, data collection, and analysis we thank Ryan Carlino, Lucia Delgado, Brendan Hall, Leah Luben, Jacob Miller, Evelyn Morris, Michelle Ochoa, Ashley Orosz, Christine Pang, and Diamond Thompson. For feedback throughout the project we thank Alex Heaton and Harold Pollack. For thoughtful comments, we thank Catherine Maclean, Jesse Bruhn, and participants at seminars at Vanderbilt University, Purdue University, San José State University, the Federal Reserve Bank of Chicago, and at the America Latina Crime and Policy Network Conference, the Discrimination and Diversity Workshop at the University of East Anglia, the European Association of Labour Economists conference, and the Stockholm Criminology Symposium. This research was supported by the Bureau of Justice Assistance and the Charles Koch Foundation. We also thank the Laura and John Arnold Foundation, Robert Wood Johnson Foundation, Roseanna Ander, Ruth Coffman, Tim Devitt, and Nick Roti for their support of the effort that was eventually scaled up as the program we evaluate.

[†]University of Chicago, 33 N LaSalle St, Chicago, IL 60602. Email: ashnaarora@uchicago.edu

[‡]Corresponding author. Vanderbilt University, 2201 West End Ave, Nashville, TN 37235. Email: panka.bencsik@vanderbilt.edu

1 Introduction

Drug overdose deaths in the U.S. reached a record high of 93,000 in 2020, 75% of these involved opioids (CDC, 2021). In the same year, overdoses claimed more lives in Chicago than gun-related homicides or traffic crashes. In response to this crisis, federal, state, and local governments have invested substantial resources in de-addiction services (Maclean *et al.*, 2020). In Illinois, this resulted in 84 million dollars in federal funding for substance use treatment in 2018, more than double the amount it received in 2014.

A natural question is *how* governments should connect individuals with de-addiction services and treatment. As the possession of most drugs is illegal in the U.S., police officers continue to interface with the majority of drug users, who must seek out the sale of controlled substances in illegal markets. However, there is also a growing consensus that criminalization and heavy penalties for drug use do not discourage long-term use (Hayhurst *et al.*, 2015). In this paper, we study the impact of a popular new approach—police assisted diversion—that utilizes the ability of officers to connect individuals with treatment at a large scale.¹

Our test case is the largest drug diversion program in the U.S., the Chicago Police Department’s Narcotics Arrest Diversion Program (NADP). Since its inception in 2018, NADP has diverted hundreds of individuals arrested with small amounts of narcotics away from further criminal justice system processing.² Individuals eligible for diversion are connected with a substance use counselor, are released without criminal charges, and face no threat of future prosecution on this arrest. To identify the causal impact of the program on downstream criminal justice involvement, we exploit the program’s staggered roll-out across CPD districts combined with individual-level eligibility criteria in a difference-in-difference-in-differences framework.

¹Drug diversion programs are being deployed by hundreds of police departments across the U.S. (ICJIA, 2017); see <https://paariusa.org/our-partners/> for a full list of law enforcement agencies that are working with the Police Assisted Addiction and Recovery Initiative (PAARI) to create non-arrest pathways to treatment and recovery.

²Chicago experiences rates of opioid overdose that are higher than both the state and national average (IDPH, 2017). The age-adjusted death rate in 2016 was 21.7 per 100,000 in Chicago and 14.7 in Illinois. Figure A3 shows trends in annual age-adjusted opioid overdose death rates for Illinois and the U.S. between 2000 and 2018.

Using arrest-level data for 2010-2020, we find that connections with substance use counselors sharply increase among those eligible for diversion, as does the probability of being released without criminal charges. Re-arrest rates fall, including a 15% reduction in the probability of being re-arrested for drug charges, indicating that the program may be chipping away at the demand for drugs. Additionally, the probability of being re-arrested for violent charges decreases by 17%, indicating that the program also improved public safety. We implement several tests to show that this reduction is not driven by shifts in officer behavior in response to the program, discussed at length in Section 6.4. Our results are also robust to specifications that explicitly account for biases that emerge in three-way fixed effects designs with variable treatment timing (Borusyak *et al.*, 2021).

To understand the mechanisms driving these results, we examine *who* is served by the program, and *how* they engage with treatment services. Data collected by substance use counselors indicates that the program is well-targeted—among diverted individuals that consented to sharing their health data with the research team, 69% reported using heroin daily, and 34% reported overdosing in the past. Treatment engagement rates are also high—79% start treatment, and 43% remain engaged 60 days out.³ Finally, survey evidence also indicates that police officers are supportive of the program—a 2019 survey of 115 beat officers found that 86% believed arrest did not discourage future drug use, and 40% had shared information about CPD’s alternatives to arrest with the public.

This paper ties into the nascent, but growing literature on diversion away from the criminal justice system. Evidence on non-prosecution for misdemeanors (Agan *et al.*, 2021) and deferred prosecution for felonies (Mueller-Smith & Schnepel, 2020) indicates that diversion can reduce recidivism by 50-58%. This paper also ties into the literature on the crime-reducing benefits of

³NADP also allowed “walk-ins”—i.e. individuals who were not being arrested could walk in to the district station, and ask to be connected with treatment and counseling. While not the focus of the empirical analysis, treatment engagement rates among this group are helpful in understanding whether engagement rates for diverted individuals—who do not self select into treatment, and are instead referred by CPD—are high. 100% of walk-in individuals start treatment, and 50% remain engaged 60 days out—these are (expectedly) higher but very similar to those for the diverted group. Walk-ins account for less than 13% of connections with counselors, while referrals via diversion by CPD account for over 87%.

expanding access to health care (Hefei *et al.* 2017, Bondurant *et al.* 2018, Vogler 2018, Jacome 2021).

In the context of diversion related to substance use, the most well known is Seattle’s Law Enforcement Assisted Diversion (LEAD) program, which offered police officers in one neighborhood the opportunity to divert those arrested with drugs away from prosecution; officers still file charges with the prosecutor’s office, but charges are deferred as long as individuals begin treatment within thirty days (Beckett, 2014). Evaluations using propensity score weighting show that this approach reduced re-arrest rates by 58% (Collins *et al.* 2015a, Collins *et al.* 2015b).⁴ As propensity score weighting does not account for selection on unobservables, these estimates may be biased. Our research design overcomes this limitation by comparing individuals eligible for diversion with those who *would* have been eligible if the program been active in their district. Our intent-to-treat estimates of the probabilities of being released without charge and any re-arrest are +25 and –11 percentage points respectively, indicating a back-of-the-envelope treatment-on-treated estimate of a 44 percentage point (or 72%) reduction in recidivism.

This study makes several contributions: (1) it examines whether the benefits of diversion programs for drug arrests can scale—evaluations of LEAD were based on implementation within a single Seattle neighborhood, whereas Chicago’s diversion program for narcotics arrests is the largest of its kind in the U.S.;⁵ (2) it studies whether drug diversion programs that do not include the threat of deferred prosecution can be successful; in Chicago, diverted individuals are released without charge, and without the threat of future prosecution; (3) relatedly, it studies whether linking individuals to treatment—as opposed to individuals actively seeking out treatment themselves—can have beneficial impacts; (4) it generates estimates that account for selection on unobservables; and (5) it finds evidence consistent with previous research on

⁴Additional studies on the potential benefits and challenges of LEAD-like programs include Perry (2018), Worden & McLean (2018), Bastomski *et al.* (2019), and Malm *et al.* (2020); we discuss these in Section 2.

⁵To 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.

diversion away from the criminal justice system and the expansion of access to health care—recidivism falls substantively.

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

2 Setting

2.1 The Opioid Epidemic and Diversion in the Criminal Justice System

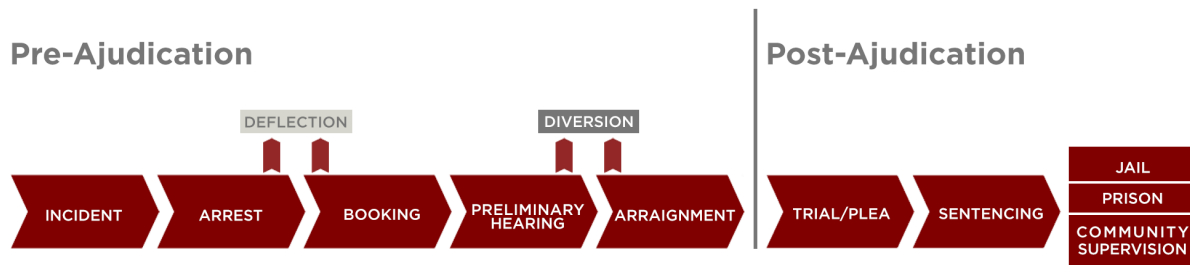
Opioid use is widespread in the U.S., with over two thirds of all drug overdoses involving narcotics (Centers for Disease Control and Prevention, 2021). Opioid use leads to a range of potential adverse health outcomes, including substance use disorder, increased health care costs, and neonatal abstinence syndrome for children exposed to narcotics in-utero (Maclean *et al.*, 2020).

Meanwhile, initiatives within the U.S. criminal justice system that aim at broadening the possible courses of action beyond criminal conviction for certain crimes have become increasingly prevalent in recent years. Such initiatives can be grouped into two major categories: diversion efforts and deflection efforts. Diversion occurs when an individual has the potential to engage with alternative services after the arrest or booking (for example as an alternative to prosecution or sentencing), while deflection occurs when the person is offered such alternative services pre-arrest or pre-booking, thus avoiding ever processing a person into the criminal justice system (District of Columbia Statistical Analysis Center, 2017).⁶ The difference between deflection and diversion is summarized in Figure 1.

Currently, populations most often targeted with diversion and deflection efforts in the U.S.

⁶While the intervention evaluated in this study is called Narcotics Arrest Diversion Program, it is a deflection program, as it occurs pre-booking. Throughout the article we refer to the program as diversion, to follow its naming convention, but we note that the correct technical term would be deflection.

Figure 1: Deflection and Diversion in the Criminal Justice System



Source: Criminal Justice Coordinating Council for the District of Columbia.

are those arrested for crimes related to drugs, individuals with mental health disorders, and individuals engaged in sex work (Anglin *et al.* 2013, Collins *et al.* 2017, Bird & Shemilt 2019). For the first two groups, such efforts are most often targeted towards redirecting individuals from the criminal justice system towards substance use and mental health care services, while for the latter group diversion often takes the form of the provision of physical health care services.

Diversion and deflection programs related to narcotics specifically have also proliferated in recent years. Outside of Chicago’s standalone NADP program, the most widespread program implemented across a range of cities is the Law Enforcement Assisted Diversion (LEAD) program (Anglin *et al.*, 2013; Bondurant *et al.*, 2018; Caulkins *et al.*, 2021). Initially implemented in Seattle since 2011, an evaluation of LEAD found that it reduced recidivism and publicly funded legal costs (Collins *et al.*, 2017, 2019). The program—which maintains core principles but allows sites to develop local procedures and protocols—has since spread to 43 sites across the United States, as of 2020 (Beckett, 2014; LEAD Bureau, 2020).

LEAD programs range substantially in how charges are handled for those that are diverted. For example, in Seattle, Santa Fe, San Francisco, and Albany, the District Attorney maintains the ability to press charges, often tied to whether the participant fills out a treatment intake assessment form within an allotted number days from the arrest (Collins *et al.*, 2017; New Mexico Sentencing Commission, 2018; Worden & McLean, 2018; Malm *et al.*, 2020). Additionally, a crucial component of many LEAD programs is that it permits officer discretion in

which individuals are referred to services. As Beckett (2014) notes, after an arrest for a drug offense “a trained police officer may elect to refer that individual to a LEAD case manager instead of booking the arrested individual into jail.” The summary goes on to state that “in Seattle, LEAD stakeholders elected to allow participating officers to retain a high degree of discretion over the referral process.” The fact that individual officers can make the choice to offer diversion to an individual or not is consequential, as Schaible *et al.* (2020) in their evaluation of a site-specific LEAD implementation find that officer attitudes, including how optimistic an officer is about offender rehabilitation as well as whether they believe that the arrested individuals were victims of their structural circumstances, substantively influenced their willingness to divert an individual. Worden & McLean (2018) present corroborative evidence, finding that officers in favor of the program were twice as likely to divert an eligible individual.⁷

Due to the range of city-specific LEAD rules, and the fact that causal evidence is largely missing, it is not straightforward to compare outcomes across cities. However, existing evidence is largely positive. In Seattle (Washington) and Fayetteville (North Carolina), LEAD participants were less likely to be re-arrested; in Contra Costa County (California), over half attended some treatment after being diverted; in San Francisco (California), misdemeanor arrests decreased, but citations increased (Collins *et al.*, 2017; Perry, 2018; Bastomski *et al.*, 2019; Malm *et al.*, 2020). Reaching a large population, and meeting sufficient levels of officer buy in have been challenges in some LEAD programs—Albany reported only 43 diversions in its first year, noting that officers believed the program was implemented too quickly, leading to low officer buy-in (Worden & McLean, 2018).

⁷Beyond Seattle LEAD, examples of other LEAD programs that explicitly permit officer discretion include those in Los Angeles County, San Francisco, and Contra Costa County in California, Santa Fe in New Mexico, Fayetteville in North Carolina, Longmont in Colorado, and Albany in New York, among others.

2.2 Chicago’s Narcotics Arrest Diversion Program

Opioid-related deaths in Chicago surged from 301 to 793 between 2013 and 2018 (IDHS 2017, CDPH 2019).⁸ The U.S. Department of Justice’s Drug Enforcement Agency has assessed that Chicago serves as the primary distribution hub for opioids and other illegal drugs in the Illinois, Indiana, and Wisconsin region, with the West Side of Chicago being the region’s most significant opioid market, easily accessed via Interstate 290, also called the *heroin highway* (DEA, 2017).⁹ This fact is reflected in the geographic concentration of calls for service and deaths related to opioid overdoses within Chicago, as shown in Figure A1.

The Narcotics Arrest Diversion Program (NADP) emerged as a direct response to the spread of the opioid epidemic within Chicago. The program focuses on averting negative downstream consequences by addressing the causes of substance use through supportive, rather than punitive, interventions. District 11, home to three of five neighborhoods most impacted by the epidemic, was selected to be the pilot site, which in mid-2018 began to connect eligible individuals arrested for drug possession to a Chicago Police Department-approved substance use counselor in lieu of criminal charges. By the end of 2020, NADP had expanded to three neighboring districts, District 10, 15, and 25; it will expand to the rest of the city by the end of 2021. Figure A4 outlines the expansion of the NADP in detail.

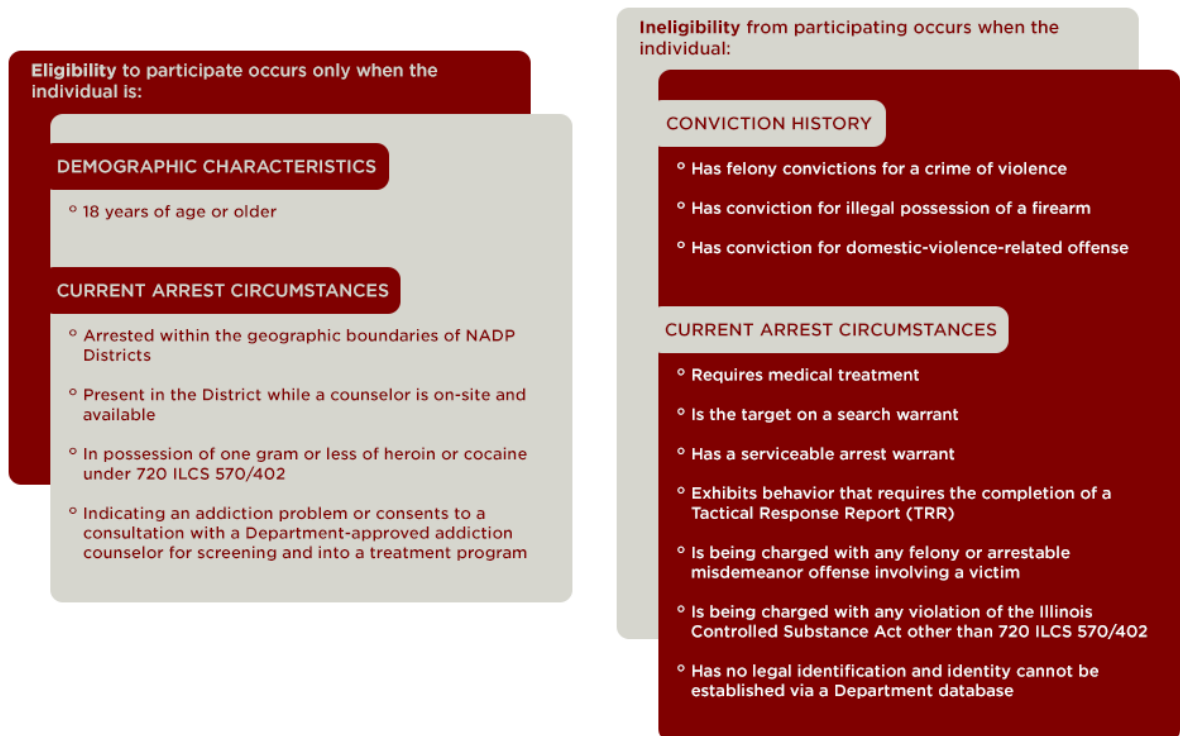
The program is implemented in participating districts as follows. When an individual is arrested for the possession of narcotics or cocaine, they are taken in to the police station for processing, and placed in lockup. Then, the arresting officer evaluates whether the individual qualifies for the diversion program. The complete list of qualifying and disqualifying characteristics are listed in Figure 2. These include that they must be at least 18 years of age, be arrested with one gram or less of the drug in question, and have a valid form of legal iden-

⁸As of 2018, Chicago accounts for 37% of all opioid overdoses in the state of Illinois (NIDA 2020, CDPH 2019). Preliminary data analysis suggests that both the overall counts in the city and state, as well as the proportion accounted for by Chicago have increased in 2020 (Sanchez & Eldeib, 2020).

⁹The 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.

tification.¹⁰ Individuals are ineligible if they are charged with a violent crime in association with the narcotics charge, are being charged with another felony, are being charged with a misdemeanor involving a victim, or have a conviction for a violent felony, illegal possession of a firearm, or a sex offense.

Figure 2: Eligibility Criteria for the Diversion Program



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

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

¹⁰For comparison, someone with a severe substance use disorder would use approximately 0.5-0.75 grams of heroin per day (Addiction Center, 2021).

they are processed as they would otherwise be.

If the individual is assessed as having a substance use disorder, they qualify for treatment, and the counselor initiates a needs assessment. Ultimately, the meeting concludes with an agreement on next steps for the individual. This usually involves one of two outcomes: the individual is offered substance use treatment by the main treatment provider, Thresholds; or is referred out to another treatment provider—in the latter case the provider is chosen based on the individual’s potential prior engagement with an alternative agency, proximity to their home address, or other considerations. Once the provider is identified, the individual is offered to be taken to a treatment center directly from the police station, or they can opt to go home and attend an appointment scheduled for the following days. Both Thresholds and the alternative agencies provide drug-assisted de-addiction services, but also attempt to connect individuals with services such as housing and insurance enrollment.

Finally, the diverted individual is officially removed from lockup, and is released without charge. Those who are not diverted are transported to court for further processing at the Cook County courthouse. The diversion process from a qualifying individual’s perspective is summarized in Figure 3.¹¹ Importantly, the two parts of the diversion process—having a conversation with a substance use counselor and being released without charge—always and exclusively occur together; one cannot take place without the other.

Our empirical strategy compares outcomes for individuals arrested for narcotics possession in districts with and without the NADP, pre- and post-program implementation. We also exploit additional layers of variation that result from individual-level variation in eligibility. We consider the following outcomes. At the individual level, we consider the direct impact of the program—whether an individual is connected with an on-site counselor and released without charge—and the impact of the program for eligible individuals on downstream criminal justice involvement, including future arrests for drug crime, property crime, and violent crime.

¹¹See Figure A4 for district-specific expansion details.

Figure 3: The Diversion Process



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

3 Data

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

Chicago Police Department Data. 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. These data include descriptive information about both the offense and the individuals involved in criminal arrests within the city of Chicago.

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

Chicago Police Department Beat Officer Survey Data. To assess opinions about the NADP among CPD officers, an in-person survey was conducted in District 11 in June 2019. At this point, the program had been operational for one year. Respondents comprised of 115 beat

officers—those who patrol and make arrests—and responses were anonymized. Opinions gathered through the survey are used to assess how officers implementing the diversion program perceive its benefits and drawbacks, and how many were implementing it with fidelity.

4 Empirical Strategy

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

Central Specification

Figure A4 specifies when police officers were trained in how to implement the NADP in their respective CPD districts. This information is used to estimate the following equation:

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

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

β_1 captures the impact of having NADP-trained patrol officers on our outcomes of interest. $Elig_i$ is an indicator variable that equals one for individuals eligible for diversion under the

NADP. $Treat_d$ is an indicator variable that equals one if district d trained its patrol officers on how to implement the NADP within its boundaries during the study period 2010-2020. $After_{dt}$ is an indicator variable that equals one if NADP-trained officers were patrolling within district d 's boundaries in period t .

Event Study Specification

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

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

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

5 Descriptive Evidence

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

5.1 Individuals Connected With Treatment by NADP

To understand who is connected with substance use treatment by the NADP, and how long they continue to engage with counselors, we rely on data collected by Thresholds, the service provider embedded with the District 11 station. We are only able to observe this information

Table 1: Individuals Connected With Treatment by NADP

	Diverted (1)	Walk-in (2)
<i>Served by Any Treatment Provider</i>		
Male	0.78	0.71
Average age	47.51	48.53
Employed	0.34	0.16
Black	0.61	0.76
Lives in shelter or on the street	0.12	0.37
Currently experiencing withdrawal symptoms	0.39	0.31
Used heroin in the past year	0.87	0.79
Heroin use frequency: Daily	0.79	0.93
Age when first used heroin	26.73	25.17
Ever overdosed	0.34	0.43
Overdosed in the past year	0.14	0.24
Ever had Naloxone administered to them	0.29	0.38
Observations	263	38
<i>Served by the Main Treatment Provider (Thresholds)</i>		
Medically diagnosed substance use disorder	0.89	0.90
Medically diagnosed mental health disorder	0.21	0.40
Starts treatment	0.79	1.00
In treatment for 30 days or longer	0.52	0.83
In treatment for 60 days or longer	0.43	0.50
In treatment for 90 days or longer	0.31	0.50
Average days in treatment	122.31	115.17
Attends therapy	0.57	0.90
Observations	47	20

Note: Total observations between July 2018 - December 2019 are reported; some variables have missing values. Variables “Heroin use frequency: Daily” and “Age when first used heroin” are only available for those who reported heroin use in the past year. Variables under the “Served by Thresholds” section are available only for those who were offered services by Thresholds, rather than having been referred out to other providers. Variable “Medically diagnosed mental health disorder” refers to additional disorders outside of substance use disorder. Variable “Attends therapy” refers to an individual taking part in at least one one-on-one therapy session, group therapy session, or a meeting with a psychiatrist. Data Source: Thresholds.

for individuals that consented to sharing their health data with the research team until the end of 2019. In total, we are able to analyze data on 263 individuals that were diverted by CPD and 38 individuals that walked in for treatment. The latter group is not the main focus

of the analysis, but provides a useful benchmark against which to compare treatment take-up and engagement rates among those who are diverted by CPD—i.e. those who did not seek out substance use treatment themselves.¹²

Column (1) of Table 1 summarizes descriptive statistics of program participants—78% of diverted individuals are men, 61% Black, and on, average, 48 years old. 34% report being employed and 12% report living in a shelter or on the street. 87% reported using heroin in the year prior to their screening interview, and among those who did, 79% used it daily. When assessed, 89% of respondents were classified as meeting the medical criteria for a substance use disorder, most often for heroin. Notably, 21% also met the criteria for at least one mental health disorder beyond the substance use disorder, with the two leading disorders being depression and bipolar disorder.

After completing the screening, the counselor, who is associated with the main substance use treatment organization, Thresholds, refers individuals for treatment to counselors within their own organization or to other organizations working in the substance use treatment field in Chicago. 18% of consenting individuals are referred to Thresholds during the study period. For these individuals, there is additional information available on their subsequent engagement with treatment. 79% enroll in the treatment program, with 52% being actively enrolled (attending therapy sessions and meetings with counsellors) for at least 30 days.¹³ The retention rate at 30 days—a measure often used to assess substance use program success—places the program into a similar success range as substance use treatment programs in general, where engagement rates vary between 53-83%, depending on the context (Condelli *et al.*, 2000; Petry & Bickel, 2000; Arfken *et al.*, 2001; Dakof *et al.*, 2001). This is especially encouraging given that the program connects individuals who are not actively seeking treatment with de-addiction services, without any threat of legal ramifications for non-compliance.

¹²Our analysis does not include individuals who needed to be taken to the hospital because of the severity of their withdrawal symptoms, as those individuals were not eligible for diversion under NADP.

¹³We base the treatment engagement end date on the last date the individual attended a service. This is a stringent definition, as it excludes days when counselors conducted repeated attempts to get in contact with the diverted individual, before the person was officially deemed closed to services. We calculate average days of engagement based on the subset of individuals who are already closed to services.

5.2 CPD Beat Officer Survey

In June 2019, after the program had been active in District 11 for a year, 115 beat officers from District 11 were surveyed to understand if and how they valued the program. 86% of officers reported that did not believe that arrest discouraged future use.¹⁴ The majority of officers were clear on which arrestees were eligible for the NADP. When asked about the benefits of the NADP, the most popular answers were that it could support community relationship development, redirect officer time to other public safety matters, and reduce substance use in the community. As a suggestion for program improvement, officers mentioned the expansion of the program to the rest of the city, which is now underway.

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

6 Results

In this section, we present intent-to-treat estimates of the causal impact of the NADP on individuals eligible for diversion.¹⁵ We find that the program increases connections with substance use counselors and the probability of being released without criminal charges. Re-arrest rates fall, including a 15% reduction in the probability of being re-arrested for drug

¹⁴This 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).

¹⁵Figure 2 summarizes the eligibility criteria for diversion under NADP. There are at least three reasons why take-up might not be perfect, creating a wedge between the intent-to-treat and treatment-on-treated estimates. First, individuals were diverted only if the counselor assessing them determined that they would benefit from a substance use program. This is not a large concern because the implementation agency (Thresholds) reported that this never occurred. They found that every person was engaging enough with substances to benefit from the program. This is in line with a finding described below in Table 1—89% of consenting participants met the medical criteria for a substance use disorder. Second, when an individual was offered diversion, they could potentially opt to not participate, and elect to be charged with the crime of possession, and be taken to bond court the following morning. It was exceedingly rare for a person to decline participation; in the first 1.5 years of implementation, there were only 2 such individuals. Third, some individuals that were eligible did not get diverted because some police officers may not have known about the program, or on-site counselors were not available between the time of arrest and the arrival of the county bus that transports individuals to bond court every morning.

charges, indicating that the program may be chipping away at the demand for drugs, and a 17% reduction in the probability of being re-arrested for violent charges, indicating that the program also improved public safety.

6.1 Direct Impact

In this section, we discuss the impact of the program on the probability that an eligible individual was screened and diverted by a Thresholds counselor following a narcotics arrest. Our estimation sample includes all arrests that include drug charges in Chicago between 2010-20. To minimize issues with conventional DDD estimators with staggered treatment dates, we first focus on District 11 and eighteen control districts. These estimates are informative about the program’s impact in its initial implementation site.

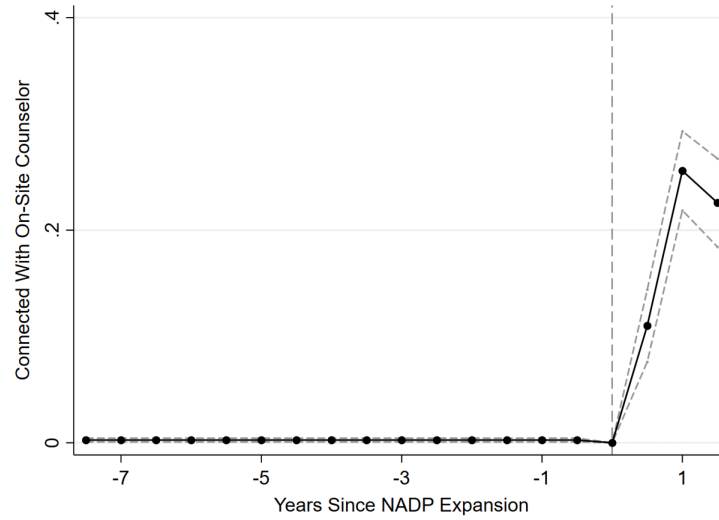
Panel A of Figure 4 shows that when we compare eligible drug arrests with ineligible drug arrests, we observe a sharp, pronounced increase in the probability of being connected with the treatment provider (Thresholds) after the start of the program. The probability of meeting with the treatment provider significantly increases for all observed periods. Column (1) of Table 2 shows a precisely estimated increase of 18 percentage points in the probability of being connected with a counselor in District 11. Table A1 shows that these results are robust to addressing methodological concerns around three-way fixed effects designs, by showing that the Borusyak *et al.* (2021) estimator produces near-identical point estimates.

Parallel with treatment linkage, Column (2) shows a sharp increase in being released without charge, with a 25 percentage point increase for eligible arrests compared to ineligible ones. Panel B of Figure 4 shows that by the end of the study period, the probability of being released without charges was near 40%.¹⁶ These estimates are higher than those observed in column (1) as we are only able to observe health data for individuals that were diverted *and* consented to sharing their health data, and the data used in column (1) cease at the end of 2019.

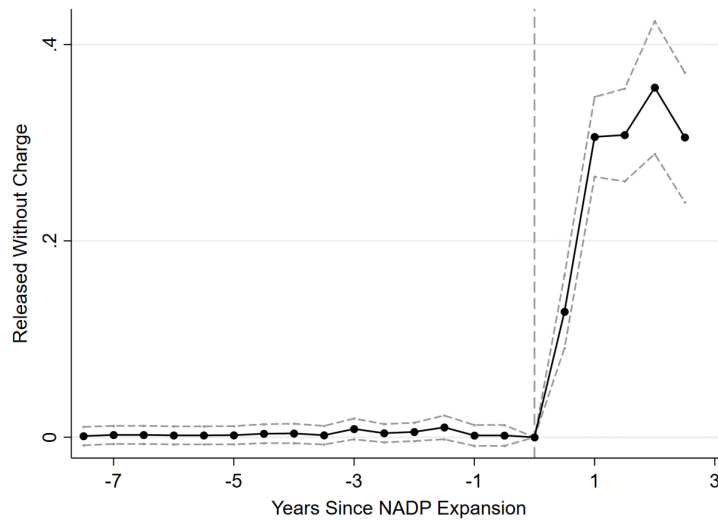
¹⁶Outside of the NADP, being released without charge following a drug arrest is exceedingly rare. Prior to 2018, 0.07% of drug arrests were released without charge in District 11, and 0.09% citywide. See the parallel trends in Figure A6.

Figure 4: Direct Impact of the Narcotics Arrest Diversion Program

Panel A: Connected with Counselor + Consented to Sharing Health Data



Panel B: Released Without Charge



Notes: These figures display DDD point estimates and 90% confidence intervals of the impact of the NADP using drug arrests between 2010-2020 in District 11 and eighteen control districts. Regressions include district-year, year-eligibility, and eligibility-district fixed effects, and standard errors are clustered at the individual level. Data Sources: Chicago Police Department, Thresholds.

Table 2: Direct Impact of the Narcotics Arrest Diversion Program

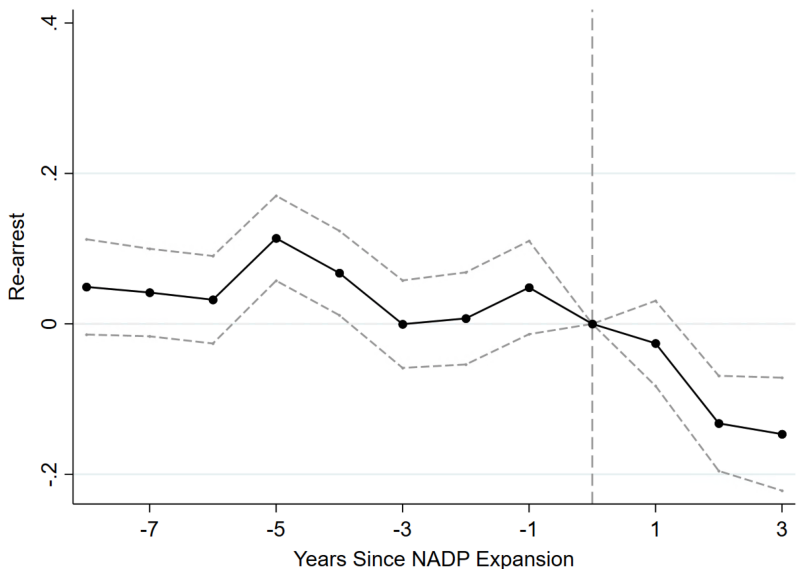
	(1)	(2)
	<i>Dependent Variable:</i> <i>Connected with On-Site Counselor</i>	<i>Dependent Variable:</i> <i>Released Without Charge</i>
Estimate	0.177*** (0.012)	0.251*** (0.013)
Mean	0.002	0.005
Untreated Eligible Mean	0.000	0.002
N	123,194	127,815
Districts Excluded	10, 15, 25	10, 15, 25

Notes: This table displays the estimated impact of the NADP using drug arrests between 2010-2020 in District 11 and eighteen control districts. Regressions include district-year, year-eligibility, and eligibility-district fixed effects. Standard errors are clustered at the individual level, and reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Source: Chicago Police Department, Thresholds.

6.2 Recidivism

In this section, we discuss the impact of the NADP on the probability that an eligible individual was re-arrested following the initial drug arrest. We find that compared to the treatment group, those eligible for diversion were significantly less likely to be rearrested in the subsequent years, as seen in Figure 5. Table 3 shows that this effect is present for arrests for drug charges, for violent charges, and for other charges. Overall, eligible individuals are 6.4 percentage points less likely to be arrested for a drug offense, 3.4 percentage point less likely for violent offenses, and 8.8 percentage point less likely for other offenses; these amount to reductions of 15, 17, and 19% of their respective means. Column (2) shows that these results are robust to addressing methodological concerns around three-way fixed effects designs, by showing that the Borusyak *et al.* (2021) estimator produces near-identical point estimates.

Figure 5: Impact of the Narcotics Arrest Diversion Program on Re-arrest Rates



Notes: This figure displays DDD point estimates and 90% confidence intervals of the impact of the NADP using drug arrests between 2010-2020 in District 11 and eighteen control districts. Regressions include district-year, year-eligibility, and eligibility-district fixed effects, and standard errors are clustered at the individual level. Data Source: Chicago Police Department.

6.3 Program Expansion

After the NADP had been active in District 11 for eighteen months, it was gradually expanded to District 10 in December 2019, and to Districts 15 and 25 in 2020. Using all four treatment districts does not change our main findings—Columns (1) and (2) of Table 4 show that the increase in the probabilities of being connected with a counselor and being released without charge are positive, statistically significant, and very similar to those reported in Table 2. We also find similar negative and statistically significant impacts on subsequent arrests, shown in Table 5. To address concerns about DDD regressions with staggered treatment dates, we follow Borusyak *et al.* (2021), to our knowledge the only empirical correction offered to date for a triple difference design. Implementing this robust estimator, we find very similar point estimates and standard errors in columns (1) and (3) of Table A1, and in Panel B of Table 5.

Table 3: Impact of the Narcotics Arrest Diversion Program on Re-arrest Rates

	(1)	(2)	(3)	(4)	(5)
<i>Re-arrest charges:</i>	<i>All</i>	<i>Drug</i>	<i>Violent</i>	<i>Property</i>	<i>Other</i>
<i>Panel A: DDD</i>					
Estimate	-0.110*** (0.021)	-0.064*** (0.019)	-0.034** (0.011)	-0.010 (0.012)	-0.088*** (0.019)
Mean	0.624	0.425	0.198	0.120	0.466
Untreated Eligible Mean	0.607	0.423	0.127	0.150	0.423
<i>Panel B: Borusyak et al. (2021) Imputation DDD</i>					
Estimate	-0.103** (0.022)	-0.078*** (0.019)	-0.034** (0.012)	-0.000 (0.013)	-0.085*** (0.020)
Mean	0.624	0.425	0.198	0.120	0.466
Untreated Eligible Mean	0.719	0.536	0.278	0.154	0.558
N	127,815	127,815	127,815	127,815	127,815
Districts Excluded	10, 15, 25	10, 15, 25	10, 15, 25	10, 15, 25	10, 15, 25

Notes: This table displays the estimated impact of the NADP using drug arrests between 2010-2020 in District 11 and eighteen control districts. Regressions include district-year, year-eligibility, and eligibility-district fixed effects. Standard errors are clustered at the individual level, and reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Source: Chicago Police Department

6.4 Robustness Checks

In this section, we discuss a number of robustness checks to rule out alternative explanations for the patterns documented above.

Changes in Policing. One interpretation of the reduction in recidivism may be that police officers simply stop arresting those eligible for diversion after the NADP expands to their district. We argue that this is unlikely to be the case for four reasons. First, we plot the total number of eligible and ineligible drug arrests in Districts 10, 11, 15, and 25 in Figure A5; there does not appear to be a drop in the eligible arrests relative to ineligible arrests in any of these Districts. Second, we formally test that the ratio of eligible to ineligible drug arrests, and

Table 4: Direct Impact of the Narcotics Arrest Diversion Program — Expansion

	(1)	(2)
	<i>Dependent Variable:</i> <i>Connected with On-Site Counselor</i>	<i>Dependent Variable:</i> <i>Released Without Charge</i>
Estimate	0.176*** (0.012)	0.232*** (0.012)
Mean	0.002	0.004
Untreated Eligible Mean	0.000	0.002
N	162,640	168,465
Districts Excluded	None	None

Notes: This table displays the estimated impact of the NADP using drug arrests between 2010-2020 in Chicago. Regressions include district-year, year-eligibility, and eligibility-district fixed effects. Standard errors are clustered at the individual level, and reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Source: Chicago Police Department, Thresholds.

find that the twelve months prior to the start of programming in District 11 (22.8%) was not statistically distinguishable from that of the twelve months after (22.5%); a t-test is unable to reject the hypothesis of equality with p-value 0.89. Third, it is actually not possible for an officer to assess an individual’s eligibility status prior to making the arrest, since they need to verify which substance the individual has on them and in what exact amount, if they have legal identification, etc. Fourth, the vast majority (four-fifths) of drug arrests are *not* eligible for diversion. Therefore, any degree of de-policing by an officer would likely result in fewer arrests of ineligible individuals, which would bias our estimates of recidivism towards zero.

Drug Weight Distribution. To ensure that reported drug quantities are not manipulated up or down, we follow Tuttle (2019) and plot the distribution of drug weights in the 12 months prior to implementation and the first 12 months post-implementation in District 11 in Figure A7. We find no evidence of bunching around the 1 gram weight limit—the maximum limit for diversion eligibility—for individuals arrested with narcotics once NADP is active in District 11.

Table 5: Impact of the Narcotics Arrest Diversion Program on Re-arrest Rates — Expansion

	(1)	(2)	(3)	(4)	(5)
<i>Re-arrest charges:</i>	<i>All</i>	<i>Drug</i>	<i>Violent</i>	<i>Property</i>	<i>Other</i>
<i>Panel A: DDD</i>					
Estimate	-0.089*** (0.018)	-0.055*** (0.016)	-0.026*** (0.009)	-0.001 (0.011)	-0.074*** (0.017)
Mean	0.630	0.436	0.194	0.118	0.471
Untreated Eligible Mean	0.612	0.439	0.123	0.146	0.419
<i>Panel B: Borusyak et al. (2021) Imputation DDD</i>					
Estimate	-0.085*** (0.018)	-0.068*** (0.016)	-0.028*** (0.009)	-0.008 (0.010)	-0.070*** (0.017)
Mean	0.630	0.436	0.194	0.118	0.471
Untreated Eligible Mean	0.726	0.547	0.273	0.151	0.565
N	168,465	168,465	168,465	168,465	168,465
Districts Excluded	None	None	None	None	None

Notes: This table displays the estimated impact of the NADP using drug arrests between 2010-2020 in Chicago. Regressions include district-year, year-eligibility, and eligibility-district fixed effects. Standard errors are clustered at the individual level, and reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Source: Chicago Police Department.

Smaller Samples of Drug Arrests. Next, we show that our results are robust to re-defining the study sample in two ways. Panel A of Table A2 shows our estimates using all drug arrests that include at least one *narcotics* charge. Panel B shows our estimates when we further restrict the sample to only include narcotics arrests that were eligible for diversion or ineligible for exactly one reason. This way, we create treatment and control samples that are as similar to each other as possible. We find that the point estimates do not change meaningfully, though statistical power falls because of the significantly smaller sample sizes.

Arrest by Charge Severity. To show that NADP is not just impacting low-level arrests,

we also estimate the impact of the program on re-arrest for felony and misdemeanor charges. Table A3 shows that NADP reduces the probability of any felony re-arrest by 5.4-6.8 percentage points and the probability of any misdemeanor re-arrest by 7.8-9.3 percentage points. Estimates are negative and statistically distinguishable from zero irrespective of the sample (including/excluding Districts 10, 15, and 25) and estimator (conventional DDD / Borusyak *et al.* 2021 DDD) used.

7 Conclusion

Chicago’s Narcotics Arrest Diversion Program is currently the largest opioid diversion program in the U.S. Operated by the nation’s second largest police department, the program has been diverting eligible individuals on the Westside of Chicago since mid-2018. While the program 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 has led to the (ongoing) expansion of the program, which will be operational citywide by the end of 2021.

Descriptive evidence indicates that the program 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 the program connects individuals who are not actively seeking treatment with counselors, we observe treatment engagement length similar to that documented in contexts where treatment is actively sought out by individuals themselves. Further, survey evidence indicates that the program enjoys favorable opinions among CPD beat officers; 4 out of 5 officers do not consider arrest to be helpful in discouraging future drug use, and a large majority consider the NADP to have several benefits, including the potential to reduce substance use and demand for drugs, and improve police-community relations.

In this study, we use a difference-in-difference-in-differences framework to assess the impact of diversion on eligible individuals, using the staggered rollout of the program across Chicago

districts as well as the individual-level eligibility criteria for diversion. We find that counselor connections increase following the start of the program, and so do the number of individuals who are released without criminal charges. Subsequent re-arrest rates drop substantively, driven by a drop in arrests for drug, violent, and other non-property charges. Overall, these findings indicate that it is possible to proactively connect those with opioid use disorders, particularly those with severe substance use disorders, with de-addiction treatment, reduce the reach of the criminal justice system, and simultaneously increase public safety. Drug diversion appears to hold immense promise as a policy solution to address the ongoing opioid epidemic and its associated costs.

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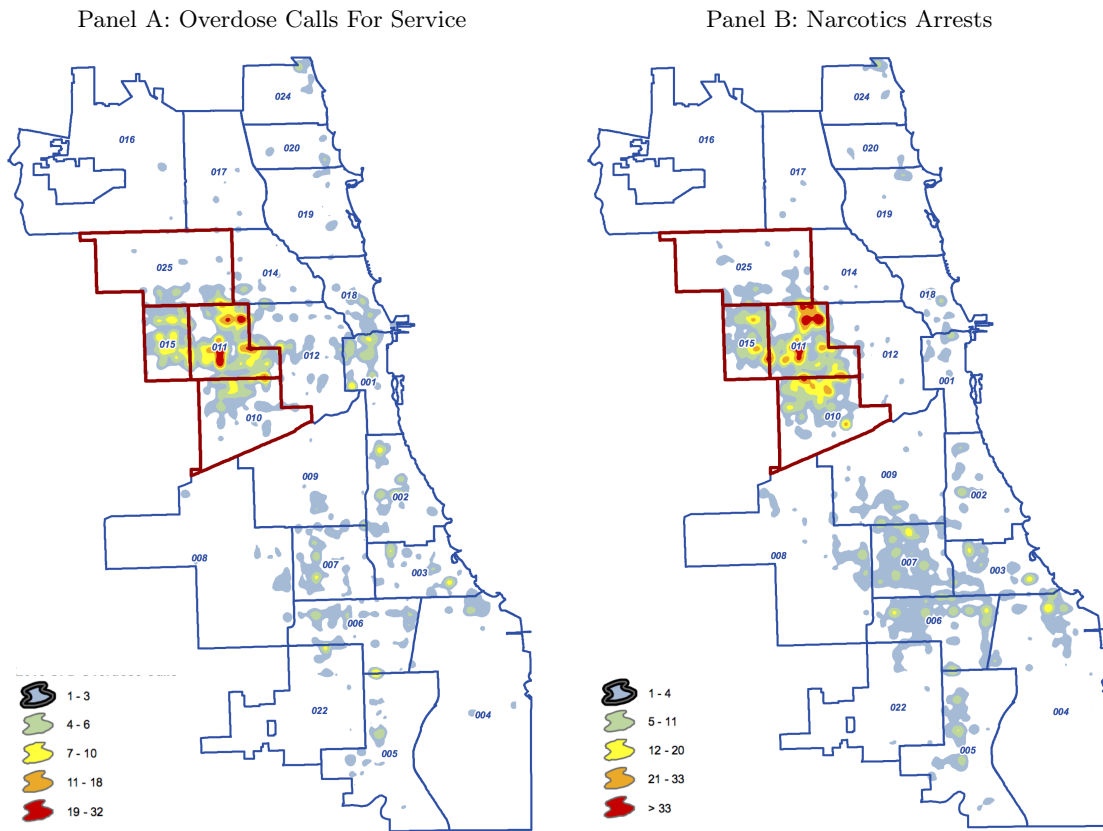
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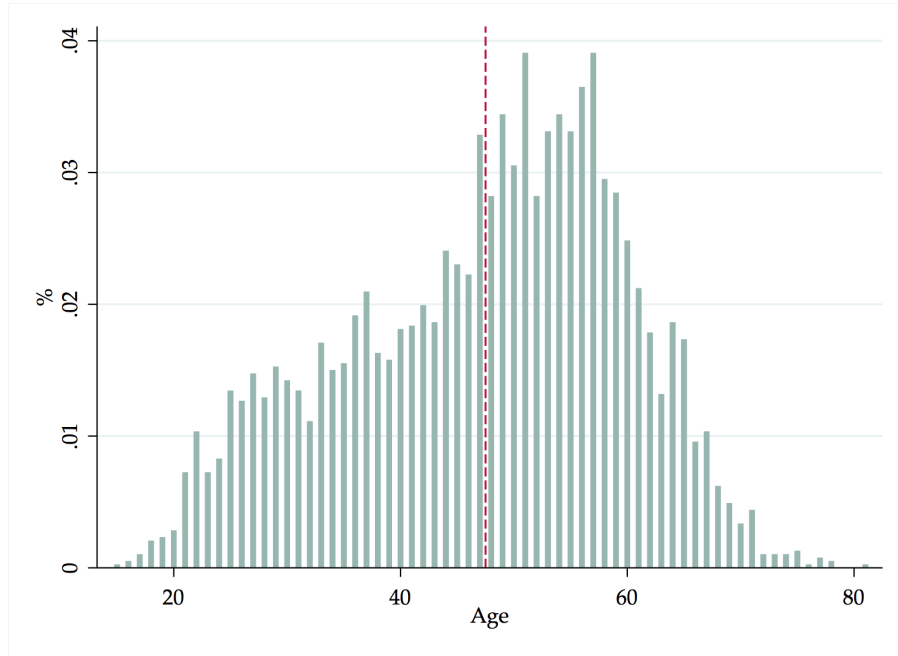
Appendix

Figure A1: Overdose Calls for Service and Arrests in Chicago in 2018



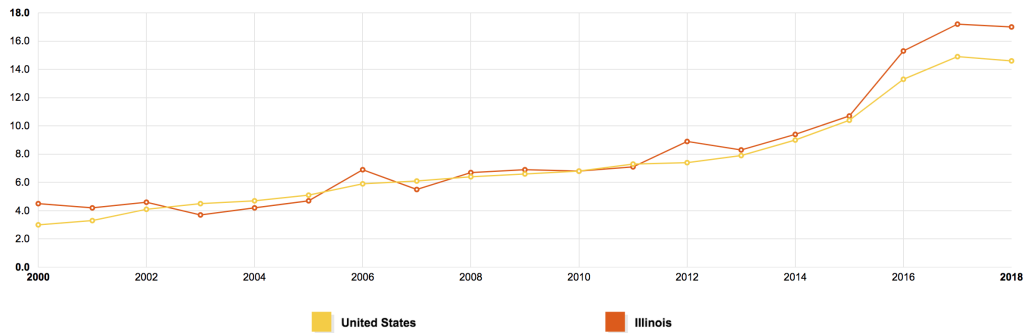
Source: Chicago Police Department CLEAR Data Warehouse, Office of Emergency Management and Communications Bureau of Technical Services PSIT GIS Print Date: 04-JUN-2019. Westside districts in red.

Figure A2: Age Distribution of Opioid Deaths Chicago 2015-19



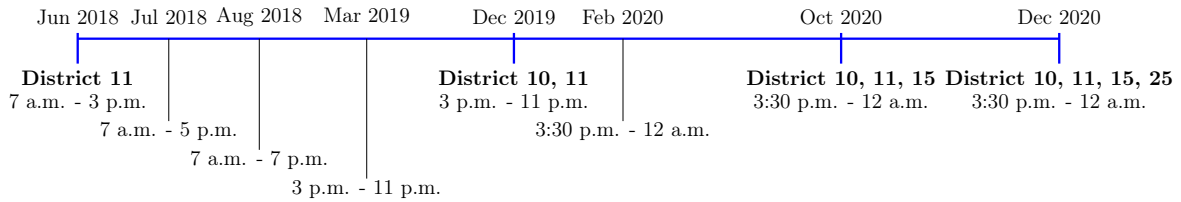
Source: Cook County Medical Examiner Case Archives. Dashed line marks the average age (47.3).

Figure A3: Opioid Overdose (Age-Adjusted) Death Rates: Illinois and the United States



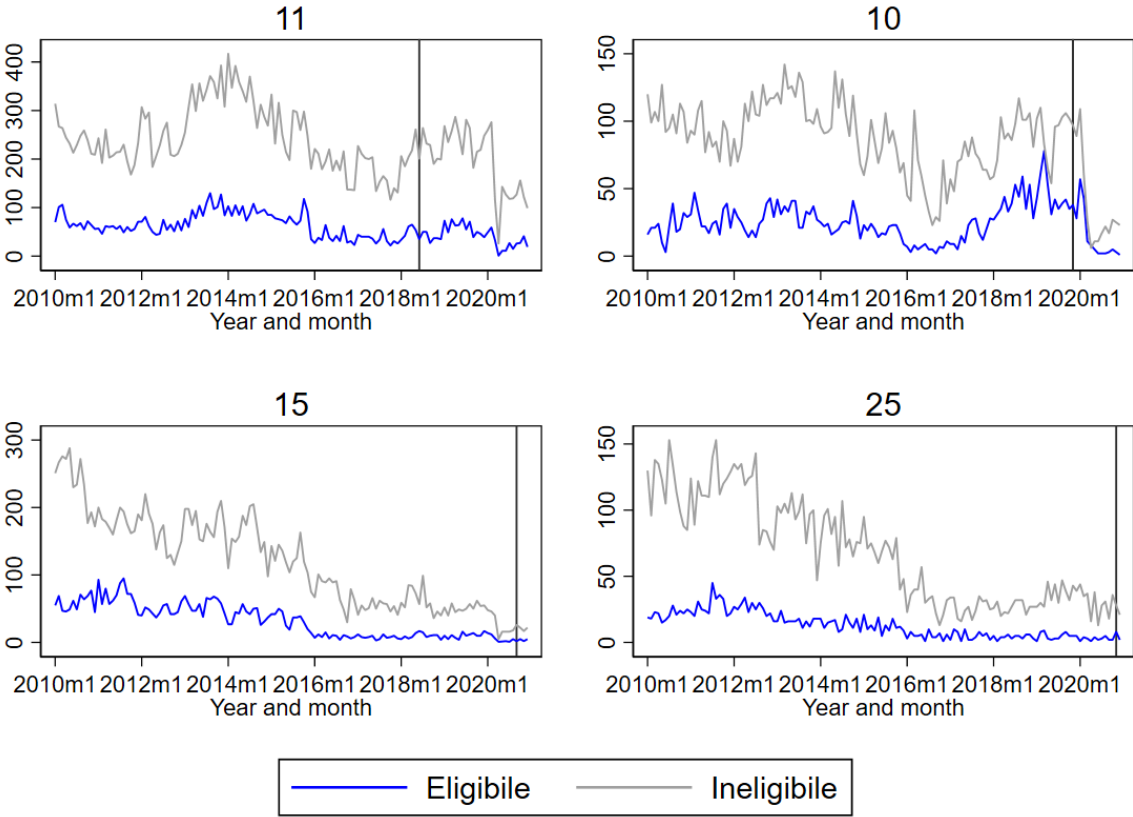
Source: Opioid Overdose Death Rates, State Health Facts, Kaiser Family Foundation.

Figure A4: Implementation



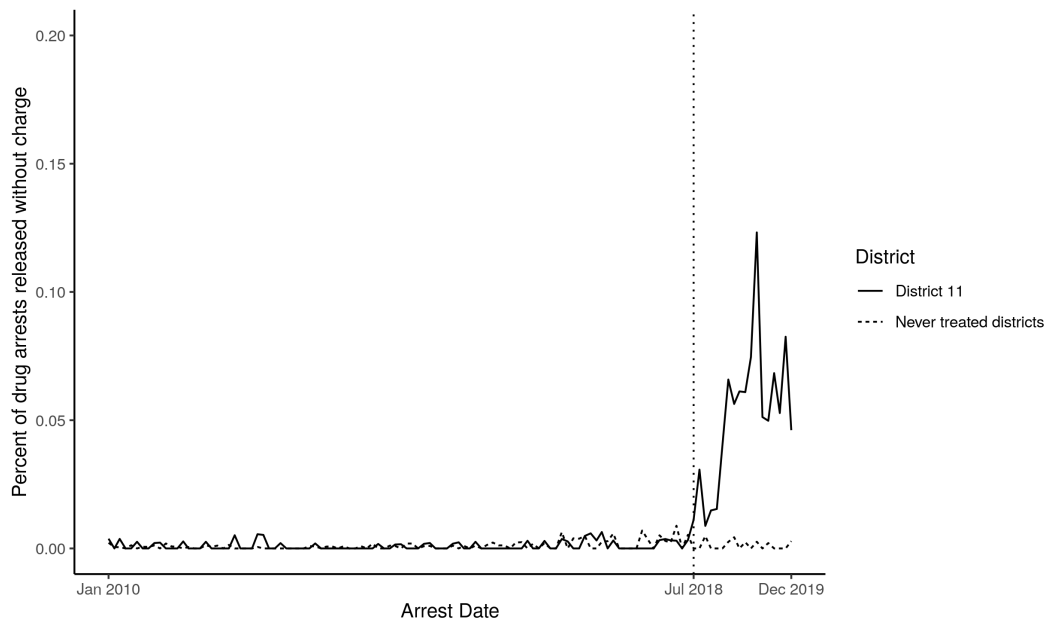
Notes: This figure depicts the expansion of the Narcotics Arrest Diversion Program across Chicago Police Department (CPD) districts between 2018 and 2020. CPD officers were trained on how to identify arrestees eligible for diversion in District 11, 10 and 15 during June 2018, December 2019, and October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

Figure A5: Eligible and ineligible narcotics arrests in the four NADP districts (2010-2020)



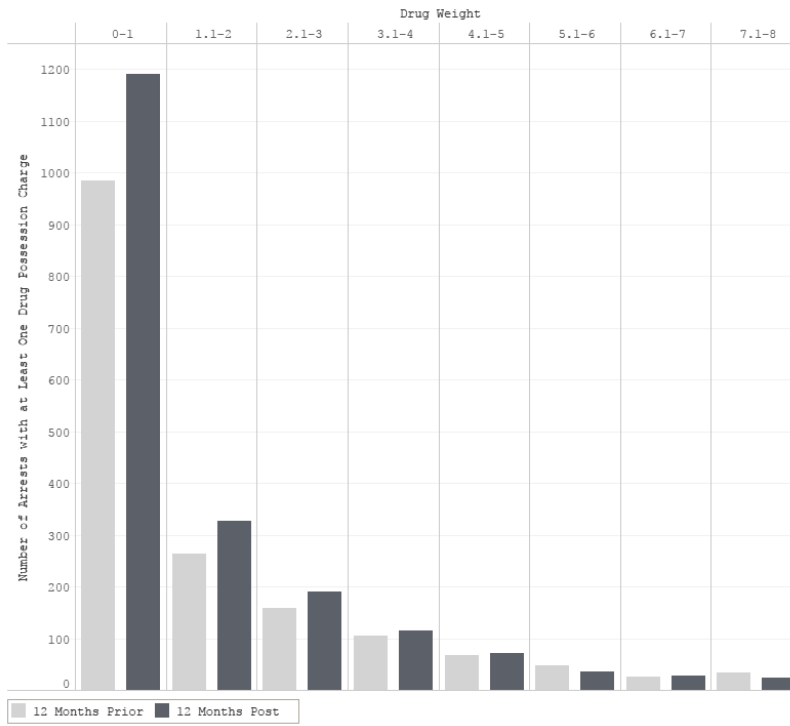
Note: Vertical line at the district-specific implementation date. Source: Chicago Police Department.

Figure A6: Drug arrests released without charge



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

Figure A7: Distribution of the Weight of Narcotics for Arrests in District 11



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

Table A1: Direct Impact of the Narcotics Arrest Diversion Program — Imputation

	(1)	(2)	(3)	(4)
	<i>Dependent Variable:</i> <i>Connected with On-Site Counselor</i>		<i>Dependent Variable:</i> <i>Released Without Charge</i>	
Estimate	0.109*** (0.007)	0.157*** (0.010)	0.162*** (0.008)	0.223*** (0.011)
Mean	0.002	0.002	0.004	0.005
Untreated Eligible Mean	0.000	0.000	0.001	0.001
N	162,640	123,194	168,465	127,815
Districts Excluded	None	10, 15, 25	None	10, 15, 25

Notes: This table displays the estimated impact of the NADP using (Borusyak *et al.*, 2021)'s robust DDD estimator. Columns (2) and (4) use drug arrests between 2010-2020 in District 11 and eighteen control districts; columns (1) and (3) use drug arrests between 2010-2020 in all twenty-two districts. Regressions include district-year, year-eligibility, and eligibility-district fixed effects, and standard errors are clustered at the individual level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Source: Chicago Police Department, Thresholds.

Table A2: Impact of the Narcotics Arrest Diversion Program on Re-arrest Rates — Subsamples

	(1)	(2)	(3)	(4)	(5)
<i>Re-arrest charges:</i>	<i>All</i>	<i>Drug</i>	<i>Violent</i>	<i>Property</i>	<i>Other</i>
<i>Panel A</i>		<i>Drug arrests for narcotics possession</i>			
Estimate	-0.087*** (0.022)	-0.054** (0.020)	-0.009 (0.011)	-0.003 (0.013)	-0.060*** (0.021)
Mean	0.584	0.393	0.149	0.131	0.418
Untreated Eligible Mean	0.60	0.423	0.127	0.149	0.423
N	56,427	56,427	56,427	56,427	56,427
Districts Excluded	10, 15, 25	10, 15, 25	10, 15, 25	10, 15, 25	10, 15, 25
<i>Panel B</i>		<i>Drug arrests for narcotics possession where those ineligible were ineligible for exactly one reason</i>			
Estimate	-0.077*** (0.025)	-0.052** (0.022)	-0.002 (0.012)	-0.010 (0.015)	-0.045** (0.023)
Mean	0.587	0.403	0.136	0.141	0.414
Untreated Eligible Mean	0.606	0.423	0.127	0.149	0.423
N	38,707	38,707	38,707	38,707	38,707
Districts Excluded	10, 15, 25	10, 15, 25	10, 15, 25	10, 15, 25	10, 15, 25

Notes: This table displays the estimated impact of the NADP using drug arrests between 2010-2020 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. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Source: Chicago Police Department, Thresholds.

Table A3: Impact of the Narcotics Arrest Diversion Program on Re-arrest Rates

Outcome	DDD		DDD Imputation	
	(1)	(2)	(3)	(4)
<i>Dependent Variable: Re-arrest Incl. Felony Charges</i>				
Estimate	-0.054*** (0.017)	-0.066*** (0.019)	-0.059*** (0.016)	-0.068*** (0.020)
Mean	0.433	0.421	0.433	0.421
Untreated Eligible Mean	0.473	0.461	0.490	0.477
<i>Dependent Variable: Re-arrest Incl. Misdemeanor Charges</i>				
Estimate	-0.078*** (0.017)	-0.093*** (0.020)	-0.080*** (0.017)	-0.091*** (0.021)
Mean	0.522	0.519	0.522	0.519
Untreated Eligible Mean	0.465	0.469	0.640	0.635
N	168,465	127,815	168,465	127,815
Districts Excluded	None	10, 15, 25	None	10, 15, 25

Notes: This table displays the estimated impact of the NADP using the full sample of arrests in columns (1) and (3); columns (2) and (4) only use drug arrests 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. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Data Source: Chicago Police Department.