Does Community Supervision Lead to More Substance Use Treatment Engagement? A Case Study from Los Angeles

Introduction

As local jurisdictions across the country attempt to reduce their reliance on incarceration, one popular approach is to use the justice system to increase receipt of treatment for problem behaviors that are associated with crime, such as substance use disorders (SUDs). A major motivation for SUD treatment as a means to reduce crime and incarceration is the evidence that there is a strong connection between criminal behavior, particularly for drug- and property-related crimes, and SUDs (Bronson et al., 2017; Harrison, 2001). And clinical trials of SUD treatment programs have been demonstrated to reduce recidivism (Gottfredson, Najaka, & Kearley, 2003; Mitchell, Wilson, & MacKenzie, 2007). Moreover, the justice system holds the power of legal pressure that can induce individuals into treatment, an important component for a population that is difficult to engage (Dennis & Scott, 2012; Marlowe, 2002). Legal pressure, accomplished through mechanisms such as imposing a condition of supervision that an individual follow-through on a referral to SUD treatment, with the threat of sanction, can serve as a “stick” to keep clients engaged with services. The result is that the criminal justice system plays a large part in the take-up of SUD treatment within local public health systems, making up about one-third of all referrals in treatment admissions (Substance Abuse and Mental Health Services Administration 2016). And the largest component of the justice system performing this role is community supervision (i.e. probation or parole) (Kaeble & Cowhig, 2018; Substance Abuse and Mental Health Services Administration 2016).

Studies have long-examined the use of community supervision (CS) to retain clients in SUD treatment, but less is known about the role CS plays in providing the type of engagement required to treat SUD as a chronic disease. Most studies examining the role of legal pressure and SUD treatment utilize a prospective sample of SUD treatment participants that have self-identified as being referred by the justice system, allowing these studies to only measure retention and other outcomes associated to that episode (Coviello et al., 2013; S. M. Kelly et al., 2013; Kiluk et al., 2015; Wild et al., 2016). This single-episode process, though, does not reflect the recovery trajectory, or “treatment career,” experienced by many people afflicted by addiction, who frequently drop out of treatment and relapse (Anglin, Hser, & Grella, 1997; Dennis, Scott, Funk, & Foss, 2005). The actual process of recovery more closely resembles that of a chronic disease, requiring a model of care composed of monitoring and quick re-engagement (Dennis & Scott, 2012; Institute of Medicine, 2006).

A management model of care requires programming that facilitates quickly engaging individuals with treatment on an ongoing basis (Martin, O'Connell, Paternoster, & Bachman,
2011; Scott, Grella, Dennis, & Nicholson, 2018), and there is reason to believe that CS may be able to fulfill the requirements of such a model (Scott, Dennis, & Lurigio, 2017). CS agencies have frequent contact with their clients and the responsibility to help their clients reintegrate to the community (Clear et al., 2009). By using the power of the “stick,” these agencies can require individuals to re-enter treatment if they relapse (or commit a new crime associated with their drug use) and maintain the individual in treatment while needed. While CS does not provide medical expertise for a client that has relapsed, it is viable that through a referral enforceable by sanctions, CS may be sufficient to increase the probability that an individual that needs treatment gets it.

Research has explored the effectiveness of various interventions to engage justice-involved individuals with SUD treatment, but these commonly use an entity other than CS to act as the case manager. One type of program, the most common example being Treatment Accountability for Safer Communities, has utilized CS to link clients to case management interventions (Heaps, Lurigio, Rodriguez, Lyons, & Brookes, 2009; Longshore, Turner, & Fain, 2005). But in these cases, a case manager that is separate from CS is responsible to link those clients to SUD programming. More recently, drug courts have gained prominence as an alternative to incarceration because of findings that they induce SUD treatment provision and reduce recidivism (Gottfredson et al., 2003; Rempel & Destefano, 2001; Wilson, Mitchell, & MacKenzie, 2006). Drug courts, though, have a strong judicial monitoring component that does not exist in CS where the supervision agencies are responsible for monitoring a much larger group of people and don’t require frequent hearings in front of a judge.

Other policies and programs have specifically diverted justice-involved individuals to community-based treatment enforced by CS, which has allowed researchers to test the stick mechanism of CS. Policies such as Proposition 36 in California and Proposition 200 in Arizona, and interventions such as the Breaking the Cycle, have attempted to integrate CS with public health agencies (Harrell, Mitchell, Merrill, & Marlowe, 2004; Marlowe, 2003). But these interventions, which have been found to induce participation in SUD treatment, have focused on pretrial diversion for first- and second-time offenders. There is room for research on how to engage a population that has been in treatment before and likely entrenched in the justice system for many years (H. Pollack, Reuter, & Sevigny, 2011).

In this paper, I employ a case study to test the effectiveness of the stick mechanism used by CS to maintain individuals engaged to SUD treatment, where I define engagement as taking up and staying enrolled in SUD treatment services for at least 30 days. I take advantage of a specific community-supervised group created by a state policy in a large, urban jurisdiction where there was an explicit process by the jurisdiction to improve SUD treatment provision for this group. Moreover, the group is composed of individuals with histories of drug use and criminal behavior much longer than the typical justice-involved individual. A policy shock three years later that led some members within the group to be released from supervision allows me to estimate the supervision’s effect on engagement for this group.
Public Safety Realignment (aka “Realignment”), set off by the enactment of AB 109 on October 2011, created a group of justice-involved individuals (herein referred to as the “realigned” population) that would be supervised by counties. The policy required counties to supervise individuals convicted of nonviolent, nonserious, and nonsex crimes (“non-non-nons”), which used to be supervised by state agencies, within their own jurisdictions. Prior work has described that the goal of creating the realigned population was to incentivize counties to provide services as an alternative to incarcerating individuals convicted of drug and property crimes, whose criminal behavior is commonly a result of problematic drug use (Weinberger, 2018). One way counties could fulfill this goal was to integrate their justice systems with other social service agencies to provide services, particularly SUD treatment, to the realigned population (Weinberger, 2018).

In this study, I focus on one subgroup created within the realigned population: individuals being released from prison for an AB 109-eligible crime to Post-Release Community Supervision (PRCS), a group that would be supervised by county probation departments. More specifically, the case study makes use of the PRCS group that was supervised by the Los Angeles County (LAC) Department of Probation (herein “Probation”). A product of Realignment in LAC was the implementation of a plan to use Probation as a hub that connected the PRCS population to needed services (Community Corrections Partnership, 2011; Weinberger, 2018). The creation of this well-defined group, which I will show had long criminal histories associated to drug use that made SUD treatment provision a priority for LAC, allows me to study a population with relatively similar problems affected by a similar supervision process.

The method used to identify the effectiveness of the stick mechanism used by CS as a mechanism to increase receipt of SUD treatment engagement is to exploit a policy shock introduced by Proposition 47. Proposition 47, enacted in California on November 2014, affected a subset of the realigned population and threw a wrench into the work counties, such as LAC, were doing to implement Realignment (Weinberger, 2018). Proposition 47 reclassified nine offenses from felony to misdemeanor, providing “relief” for individuals convicted of these crimes. One of the consequences of the law was that it affected the mechanisms that the county justice systems were using to funnel people into services (Weinberger, 2018). Misdemeanor charges bring about a more limited choice set for actors within the justice system, reducing the system’s leverage to connect this individual with services. In LAC, this concern has been stressed consistently by the committee created to oversee the implementation of Realignment (Countywide Criminal Justice Coordination Committee, 2015a, 2015b). For example, the committee was concerned that some individuals who were released from CS as a consequence of Proposition 47 subsequently stopped attending SUD and/or mental health treatment (Countywide Criminal Justice Coordination Committee, 2015a).

The specific component of Proposition 47 used as the policy shock is the resentencing clause. Resentencing, in the context of Proposition 47, is a process of having a conviction for an
open case,\(^1\) that was adjudicated before Proposition 47 was enacted, reduced from a felony to a misdemeanor if the conviction would have qualified for a misdemeanor under the new law. A reduced conviction of an active case where the individual is being supervised, either in a correctional facility or community supervision, leads to the adjudication of a new sentence based on the reduced conviction (Couzens & Bigelow, 2016). Resentencing applied to active PRCS cases in LAC and led to early terminations of supervision for the individuals receiving Proposition 47 relief. I exploit the fact that the adjudication of resentences, and thus sudden early supervision terminations, in LAC were concentrated over a one-year period after the enactment of Proposition 47, leading to variation in the timing when individuals in PRCS received the “intervention” (i.e. the early termination). In making the case that the effect I estimate is causal, I will demonstrate that the timing of the adjudications was unpredictable to the people that got relief, effectively creating a plausibly exogenous shock whereby PRCS is removed. Moreover, because resentencing occurred based on crimes that were carried out, policed, and adjudicated before the policy was even on the ballot, the group being studied could not have selected itself into the sample.

I utilized the unpredictable variation by analyzing a novel dataset of all publicly-administered SUD treatment episodes for a cohort of active PRCS cases being supervised by LAC Probation that received an early termination at some point during the sample period. Because the sample period covered both the cohort’s time under PRCS once Proposition 47 was enacted as well as after their supervision had ended, I was able to compare pre- and post-supervision periods. Moreover, the variation in the unpredictable timing of the adjudications of the resentenced PRCS cases during this period allowed me to use later-occurring adjudications as control groups to estimate a causal effect of using CS as mechanism to increase the likelihood of maintaining individuals engaged in SUD treatment.

This study makes three important contributions. First, it describes an important population that as of this writing has not been described with regards to SUD problems and treatment histories. I use descriptive data to show the differences between the general criminal justice, PRCS, and Proposition 47 resentenced groups in LAC. Second, the study estimates the effect of the early supervision terminations for those on PRCS on total SUD treatment engagement in the largest county in California. A descriptive analysis of the PRCS population that received a resentencing in LAC showed that this group did not have a higher proportion of individuals discharged with negative compliance, but that they did have shorter stays in SUD treatment, compared to the average justice-referred client (Hunter et al., 2017). The hypothesis that resentencing led to a reduction in service provision (measured here by SUD treatment) among the PRCS population, an important component of Proposition 47, has never been

---

\(^1\) A “case” is used to refer to specific series of interventions taken by the criminal justice system pertaining to an arrest and subsequent charge of a crime. Active cases are those where the individual is still serving some type of sanction resulting from the case. An individual may have multiple cases at once.
formally tested in LAC or in other jurisdictions. Generalizable to the broader literature that explores using CS as a mechanism to increase receipt of SUD treatment, this study will also contribute by estimating the effect of PRCS on total treatment engagement. Data on both treatment and supervision (i.e. PRCS) spells\(^2\) for individuals in a comparable cohort allows me to investigate dynamic changes in treatment engagement while under CS and after the supervision has ended.

Background

**PRCS and SUD treatment provision in Los Angeles**

One of the most significant parts of AB 109 was the creation of Post-Release Community Supervision (PRCS), a type of CS administered by county probation departments as opposed to state parole ("Postrelease Community Supervision Act," 2011). Eligibility for PRCS is determined based on the current charge upon release from prison. The applicable current charges are generalized as nonviolent, nonserious, nonsex-related offenses and they have been frequently categorized in the literature as drug and property offenses (Lofstrom et al., 2014). It is widely accepted that, among people incarcerated for these types of offenses, previous drug use is highly prevalent (Mumola, 1999; Zhang, 2004). Moreover, individuals on PRCS (labeled the “PRCS group” in this paper) present much more serious behavioral problems than the traditional probation population because this group was released from prison and criminal history was not a factor in PRCS eligibility. An individual that is released from prison has either been convicted of a serious enough crime to warrant a prison term or a criminal history extensive enough to warrant one, both of which are associated to more serious behavioral problems (Evans et al., 2012; Gerlinger & Turner, 2015).\(^3\) Weinberger (2018) shows that to incentivize counties to treat these problem behaviors, AB 109 provided a number of ways for counties to improve service provision for the PRCS population, with probation departments at the center of this system acting as the intermediary between enforcement and social service agencies.

Individuals who received PRCS must be supervised for one year if the individual commits no further violations,\(^4\) but the clock on supervision is reset after an individual incurs another violation in many cases.\(^5\) On the other hand, the PRCS group must also be released within three years regardless of the number of violations. An important caveat to this supervision

---

\(^2\) A spell is a term used to designate the time-period between a start and end date under CS.

\(^3\) The composition of criminal history among PSPs changes slightly based on whether the PSP entered prison before or after the enactment of AB 109 because the likelihood of being admitted to prison is reduced after Realignment. In my analysis, I will control for whether the PSP was on PRCS for an offense adjudicated before or after AB 109.

\(^4\) The law allowed for counties to release people within six months based on discretion of the probation officer, but this provision was not used in LAC.

\(^5\) A violation means to break a rule agreed upon as part of the supervision, and is not necessarily a new crime.
policy is a process called “tolling,” where the clock is paused when an individual in the PRCS group absconds. This may extend a PRCS spell beyond three years, something that I will show is fairly common in my sample. Any revocation of PRCS, which may be a result of a new crime or simply a result of breaking agreed-upon supervision rules, must be served in county jail (as opposed to prison) and counts towards the three-year maximum time-period allowed on PRCS (a thorough description of the rules applied to PRCS can be found in Weinberger (2018)).

Similarly to other counties, as a result of AB 109, Los Angeles County (LAC) created a system in which the AB 109 bureau of the LAC Probation Department (referred to henceforth as Probation) acts as a hub for the PRCS population, whom they refer to as Post-released Supervised Persons (PSPs) (Weinberger, 2018). The most significant part of the system was the development of an innovative mechanism whereby Probation administered “Hubs” (these are physical locations with representatives from different County service agencies) to connect PSPs to services immediately upon release from prison (Community Corrections Partnership, 2011). PSPs are required to attend a Hub within two days of their release, where they are assessed for various service needs. As Probation does not provide any services itself, referrals are given for the service needs that are determined to be required at the Hub assessment. Throughout the PRCS spell, probation officers are also allowed to refer their clients to services, such as SUD treatment, at any time. Because PSPs are mandated to check-in with their probation officer as frequently as twice a month, depending on their risk-level, Probation is best suited to act as a de-facto case manager (see Weinberger (2018) for a detailed description of Probation’s role in supervising the PRCS population).

In the case of SUD treatment needs, PSPs are referred to the Department of Public Health-Substance Abuse Prevention and Control (DPH-SAPC) (Community Corrections Partnership, 2011). DPH-SAPC provides assessments of SUD problems and administers the provision of SUD treatment. To provide assessments and link individuals to the appropriate treatment program, they operate Community Assessment Service Centers (CASCs) funded by AB 109 in sites across the county (including some Probation-run offices). Individuals deemed in need of SUD treatment are referred to a private SUD treatment provider under contract with DPH-SAPC to provide services. These providers are reimbursed through a variety

---

6 Absconded is the term used by LAC Probation to refer to clients whose whereabouts are unknown and therefore are not being actively supervised.

7 This mandate is in the AB 109 implementation document. Whether PSPs are held accountable to regularly check-in with their DPO has not been evaluated to the knowledge of the author.

8 Risk-level is determined by administering the Level of Service/Case Management Inventory (LS/CMI) every six months (Community Corrections Partnership, 2011).

9 There are a few CASCs “co-located” within Probation-run Hubs and offices where PSPs report. Little information is available regarding their operations (see Weinberger (2018) for a more detailed explanation).
of funding streams available to DPH-SAPC, and services for PSPs are billed to AB 109 funds (Community Corrections Partnership, 2011).

Although Realignment made both DPH-SAPC and Probation a stakeholder in the success of a PSP, the agencies to a large part are operating independently. DPH-SAPC periodically receives a list from Probation of PSPs that have received a referral from Probation after being identified as needing to complete a SUD treatment plan at the Hub assessment. A treatment plan refers to getting an assessment at a CASC and may lead to either a referral to a SUD treatment provider or a determination that treatment is not required. Regardless of whether the assessment identifies a need for treatment, DPH-SAPC does not have any enforcement power to retain a PSP in SUD treatment. DPH-SAPC may provide a case manager through their own independent process, but they do not coordinate with Probation in this regard. On the other side of the coin, section 42 CFR Part II prevents DPH-SAPC from sharing their administrative data with Probation, making it more difficult for Probation to monitor receipt of SUD treatment by a PSP. There is, though, a communication tool, the Treatment Court Probation Exchange (TCPX), where Probation can log-in to a webpage to check whether the PSP has been assigned to a treatment program by DPH-SAPC and whether the PSP is currently enrolled in a SUD treatment program (Viernes, 2011).

The mechanism to pressure a PSP to enroll in and attend SUD treatment services must come from Probation, which has enforcement mechanisms at its disposal. Probation has the power to add and enforce conditions of supervision, which are enforceable rules set out to regulate conduct by the supervising agency (Clear et al., 2009, p. 400). A PSP that is referred to SUD treatment services will also have a condition placed on their supervision (aka an “X88 condition”) that stipulates that a PSP follow a SUD treatment plan (Bingham, 2016). If the treatment plan (i.e. the assessment conducted at the CASC) determines that treatment is not required, or the PSP declines treatment, the probation officer will be alerted to this (through TCPX). The condition of supervision should pressure the PSP to get assessed by the CASC and follow the treatment plan (as opposed to declining treatment) because Probation has the right to sanction a PSP that does not abide by a condition of supervision.

Using sanctions that adequately addressed a PSP’s behavioral problems were an important part of the implementation of Realignment (Community Corrections Partnership, 2011). The instrument for probation officers in LAC to assess the adequate sanction that should be used to enforce conditions of supervision is the gradual sanctions tool (Bingham, 2016). Gradual sanctions are “structured, incremental responses to noncompliant behavior of probationers while they are under supervision…designed to respond quickly to noncompliant acts through a series of actions” (Taxman, Soule, & Gelb, 1999). By providing probation officers with incremental and quicker responses to sanction noncompliance or new arrests, as opposed to

---

10 Payment mechanisms have changed since DMC-ODS (part of California’s Medicaid expansion) began being implemented in July 2017, but this is after the time period in this study.
only possessing the threat of revocation, the gradual sanctions choice set allows a probation officer to get a PSP into treatment as an alternative to incarceration. Under the gradual sanctions protocol, even after a PSP has entered treatment and subsequently been discharged (or been deemed not to require treatment), any PSP that has had a history of drug use continues to be drug tested when they report for periodic check-ins (as well as in random check-ins if the PSP is designated “high-risk”) through another condition of supervision (Community Corrections Partnership, 2011). Upon a failed drug test, according to the gradual sanctions manual, the probation officer may enforce a treatment referral by re-instating an X88 condition instead of sending the PSP to jail (Bingham, 2016). Another avenue for referring a PSP to SUD treatment services is at the county jail after an arrest. There are structures in place at the jail, specifically for PSPs, to induce the individual to SUD treatment upon release or even as an alternative to incarceration (Weinberger, 2018). It is important to note, though, that as of this writing, there are no publicly available studies or reports available regarding how probation officers in LAC are utilizing the gradual sanctions tool in practice.

The Theory of Coercion

The role played by LAC Probation in connecting PSPs to SUD treatment through a referral is consistent with the role of community supervision (CS) agencies (i.e. probation and parole) across the nation dating back to the 1970s (Farabee et al., 1998). Given that these agencies are tasked with reintegrating individuals back to society and have the power of the “stick” (through sanctioning violations) to induce participation, using them as a tool to increase rehabilitation appears to be a worthy goal. Studies have found that individuals self-identifying as entering treatment because of a mandate from a criminal justice entity get at least as much dosage of SUD treatment as is experienced by the population that enters voluntarily (Coviello et al., 2013; Hough, 2002; J. F. Kelly et al., 2005; Stevens et al., 2005). While studies have been inconsistent and unspecific in their terminology (Farabee et al., 1998; Klag, O'Callaghan, & Creed, 2005), I will use “legal coercion” to reference the use of referrals from CS (probation or parole) to induce individuals into treatment (Seddon, 2007). This definition, as opposed to including other methods such as drug courts or pre-trial diversion, is the most applicable to the specific case of LAC Probation supervising the PRCS population. The distinction is important because the lumping of all criminal justice entities into one group may have produced inconsistent results in previous studies (Klag et al., 2005).

Studies that have examined the effectiveness of legal coercion on treatment are typically prospective, identifying the sample from an index treatment episode and measuring criminal justice referral through self-reporting at baseline. Thus, most studies have tested the effect of

---

11 The reasoning for the potential importance of this tool is that it was common before Realignment for SUD treatment (and other services) to be interrupted by a revocation that sent an individual back to prison (Grattet et al., 2009).
coercion on treatment retention for the index episode (Coviello et al., 2013; Hiller, Knight, Broome, & Simpson, 1998; S. M. Kelly et al., 2013; Kiluk et al., 2015; Perron & Bright, 2008). Some studies have been able to extend the time horizon beyond the index episode, typically measuring longer-term outcomes such as drug use or recidivism (J. F. Kelly et al., 2005; Kiluk et al., 2015). But because these studies start with a sample already in treatment and do not have information on the timing of the CS spell, they do not attempt to analyze the role of CS in inducing treatment. Using administrative data of SUD treatment episodes linked to spell data from LAC Probation, my study will be able to explore SUD treatment as a process over a defined time-period instead of an index episode. I show in the next subsection why this is important.

Moreover, there is a significant problem of selection bias when analyzing the effect of legal coercion without randomizing admission into CS. Admission into probation or parole is part of the criminal justice landscape, determined by sentencing laws and actors within the system such as judges and district attorneys. Therefore, it is not common for a study to randomize the admission into CS itself. Studies that have examined clients in treatment through direct referrals from CS must deal with selection bias issues of comparing the CS-referred clients to either those that enter voluntarily or through different types of referrals, who may demonstrate differences in motivation and extent of drug use (Farabee et al., 1998). In this study, I avoid the problem of selecting into a treatment referral by identifying changes in treatment take-up as a function of an unexpected change in CS status.

Studies that have randomized individuals into specific justice system-referred programs have measured effects from different types of programming than this study. Interventions that randomize CS clients into case management, such as Treatment Accountability for Safer Communities, are measuring an effect where the service provider does not have the power to enforce participation. (Heaps et al., 2009; Longshore et al., 2005; Martin & Inciardi, 1993). Studies of other interventions using CS agencies, such as Breaking The Cycle, focus on first- and second-time offenders so as to intervene early in a criminal career (Harrell et al., 2004). But it is not common for interventions within the criminal justice system to target, with services, groups that have been entrenched in the justice system for many years (H. Pollack et al., 2011). In this study, I explore a unique population of justice-involved individuals that LAC targeted for providing services as a way to end a persistent cycle of incarceration.

Addiction as a Chronic Disease

Since the late 1990s, the literature on substance use disorders (SUDs) has moved towards the “career perspective,” as research has shown that recovery is a process lasting multiple episodes and should be viewed holistically (Hser, Anglin, Grella, Longshore, & Prendergast, 1997). This research on treatment careers has shown that SUD treatment episodes over many years follow a pattern that exemplifies a cyclic process, with incremental gains and longer lengths of stay in subsequent episodes (Hser, Grella, Chou, & Anglin, 1998). And even in cases where treatment is shown to have been effective, relapses are likely (Dennis & Scott, 2012;
Dennis et al., 2005). Due to these findings, addiction is no longer viewed as an acute case, but as a chronic illness requiring long-term management care strategies (Institute of Medicine, 2006; McLellan, Lewis, O'Brien, & Kleber, 2000).

The outcomes for the PSP population measured in this study will be based on three ideas that follow from the treatment careers literature: 1) longer treatments are more beneficial than shorter ones, 2) treatment retention and re-engagement is extremely challenging, and 3) treatment usually does not resolve the identified drug problem, but over time each subsequent treatment episode increases the odds of future success. Together, these ideas imply that to accomplish long-term reduction in drug use among people with SUDs, it is imperative to maintain SUD treatment engagement. In this context, I have defined engagement as having exposure to treatment services for at least 30 days, an essential element to long-term recovery (Dennis & Scott, 2012).

Given the importance of engagement, it is crucial to study ways in which individuals that have entered SUD treatment continue to engage in it even after exiting from an initial index episode. One way to provide this type of management that increases engagement is through CS. CS lasts for a relatively long period of time in comparison to a treatment episode and incorporates constant check-ins. A recent study found that women exiting jail and randomized into a recovery management checkup program had similar improvements in SUD treatment participation as those that were not in the program but randomized into a specialized probationary supervision instead (Scott et al., 2017). This probationary program, like LAC Probation in its implementation of PRCS, incorporates probation officers with specialized caseloads that refer women exiting custody to community-based services and provide motivation through a cognitive behavioral curriculum. Testing the effect that Probation had on treatment engagement for the PRCS population will shed light on a promising tool for increasing service provision among the justice-involved population.

**Proposition 47 Relief**

This study will test the effect that Probation had on treatment engagement by taking advantage of a form of relief for justice-involved individuals brought about by Proposition 47. Proposition 47 relief meant having an eligible felony conviction, where the eligible crimes have been categorized as petty theft and possession of (almost all) drugs, reduced to a misdemeanor (Weinberger, 2018). Relief could manifest in three different ways: new arrests, reclassification of old convictions, and resentencing of active cases. The benefit applicable to this study is that of resentenced active PRCS cases, where the primary charge in the original conviction is reduced

---

12 Although not described here, Probation incorporates an evidence-based cognitive behavioral program called Cognitive Behavioral Therapy for its PRCS cases (Community Corrections Partnership, 2011).

13 An active case refers to a case where the individual is currently serving any part of a sentence, whether it be in an institution or in the community.
from a felony to a misdemeanor and thus a new sentence is adjudicated (i.e. “resentenced”). In cases where the individual was under PRCS pursuant to the resentenced offense, he/she would most likely have the PRCS case terminated upon receiving Proposition 47 relief (Couzens & Bigelow, 2016, p. 77). The termination would occur immediately, meaning the individual was no longer under PRCS, regardless of the amount of days remaining in the individual’s resentenced case. Therefore, resentencing had a large effect on the PRCS population, who were already under the auspices of the justice system based on crimes committed before Proposition 47 was enacted.

The possibility of a case being resentenced, and subsequent PRCS termination, could not have been expected by the beneficiaries when the offense leading to the resentenced case was committed. Proposition 47 was passed by a ballot initiative and wasn’t officially announced to be on the ballot until June 2014, when the initiatives with sufficient valid signatures were announced. This means that for the group getting cases resentenced in the months following the initiative passing, the crime leading to the prison sentence was committed well before any news of the forthcoming policy.

Proposition 47 resentencing petition process

For an individual under PRCS to get a case resented, there is a process that affects the timing of the final adjudication, and thus a termination of PRCS for that individual. As shown in Figure 1, the timing of when individuals experienced case resentencing was staggered over time in my sample. The terminations start to appear in January, 2015, 80% occur in that first year, and they mostly stop by halfway through 2016. The petition process that leads to this timing is important because it incorporates some self-selection and is an event we do not observe in this study, which could lead to potential bias in the estimated effect of the outcome studied.

---

14 Days remaining in a case refers to the number of days before the criminal case is closed because the individual has fulfilled all the requirements in a sentence.
16 All individuals under PRCS are serving the community supervision part of a prison sentence. By rule, they cannot be exiting a short revocation sentence because revocations are served in county jail post-Realignment.
17 Note that this includes only individuals on PRCS and not those that were presently incarcerated.
I argue that the variation in timing of PRCS terminations is not driven by factors correlated with the outcome because a variety of stakeholders and factors were involved in getting a petition for Proposition 47 relief filed and processed. Community organizations, public defenders, and the Superior Court all play important parts in this process, as does the judge who is the final person to decide the case. In Appendix A.1, I explain that conversations with three organizations that were on the ground during the implementation of Proposition 47 resentencing (Drug Policy Alliance, LA Regional Reentry Partnership, and A New Way of Life Reentry Project) and data from the LAC Superior Court all demonstrate that many external factors were involved in determining when an individual had a case heard for resentencing. When the resentencing case was finally heard by the Court after it made its way through the process, it was adjudicated immediately and if the petition was successful, the individual’s PRCS case was terminated. It was not common for the defendant to appear in court, though, as the public defender would usually contact the defendant regarding their probationary supervision being terminated (Archie, 2018). Therefore, it is likely that most defendants were not actively anticipating their release from PRCS. The details of the process demonstrate that the staggered timing observed in Figure 1 was not determined by how connected a PSP was to social services offered by County agencies (such as help with petitioning and/or SUD treatment).

To receive relief from Proposition 47, the petition must demonstrate that the current primary conviction charge in the individual’s active case is eligible\textsuperscript{18} and that the individual meets the criminal history criteria. The criteria excludes individuals from Proposition 47 relief

\textsuperscript{18} This is not straightforward in the cases involving theft because the petition must show that the value stolen was lower than $950.
that have designated violent offenses\textsuperscript{19} or crimes that require registering as a sex offender (Couzens & Bigelow, 2016, p. 51). In addition to meeting criminal history criteria, the judge must decide that the petitioner does not present an “unreasonable risk” to commit a new serious violent felony (Couzens & Bigelow, 2016, p. 55). These requirements mean that some cases, regardless of the current primary charge, are restricted from receiving resentences. It should be noted that quite serious violent histories are required for one to be excluded from benefits, though, as even robbery and gang crimes are not included as a designated violent crime (see Appendix II in Couzens & Bigelow for a complete list).

Data

Sample

The study incorporates a novel dataset of realigned individuals in Los Angeles County (LAC) that entered a substance use disorder (SUD) treatment service administered by DPH-SAPC after being referred through PRCS, and who received a resentencing through Proposition 47 relief. Data on SUD treatment episodes came from the Los Angeles County Participant Reporting System (LACPRS), the system used by DPH-SAPC to track all clients that have entered a treatment program that is publicly funded (including the use of AB 109 funds). This system records information on the treatment provided at intake (as well as discharge) for administrative purposes, making it a reliable census of all (publicly-funded) treatment provision. It also includes responses to a lengthy questionnaire at admission that yields information on primary drug use, severity of drug use, mental health, and demographics. Data is available through the 2017 calendar year, well after all the individuals being studied had been affected by the policy change.

To identify which of the treatment episodes are PRCS cases, information from individual episodes in LACPRS were matched to the list of PSPs that were referred to treatment at LAC Probation’s Hub assessment described above. Because a unique individual identifier that can be matched across agencies does not exist in the County, probabilistic matching was used based on name (first and last), gender and date of birth.\textsuperscript{20} All matches of individuals with treatment episodes beginning after the individual was released to Probation are considered a PRCS case and included in the sample.\textsuperscript{21} Importantly, based on this match, we can also observe all other

\textsuperscript{19} These are termed “super-strikes” and are offenses considered more serious than the “violent” offenses eligible for AB 109.

\textsuperscript{20} SAPC staff performed this match. Any PSP that was referred to treatment by Probation but did not match to an episode in LACPRS was further checked to find whether a match existed, as SAPC used this data to inform Probation on the number of PSPs that enrolled in treatment. SAPC is confident that they matched close to 100% of the PSPs that have enrolled in treatment (Kim, 2017)

\textsuperscript{21} These procedures are consistent with previous studies on legal coercion that match treatment admission histories to criminal justice databases (Evans, Li, Urada, & Anglin, 2014; Hser & Evans, 2008).
treatment episodes that exist in LACPRS for the matched individual through a unique individual identifier in the dataset.

Additionally, there is important information regarding each individual’s PRCS case. Probation shares a termination list with DPH-SAPC that provides the reason for a termination, thus allowing for identifying the PSPs that were released from PRCS supervision through resentencing. Furthermore, the study incorporates criminal-justice related data regarding the current offense on PSPs from Probation, the Superior Court system, and the Sheriff’s Department attained though the Justice Automated Information Management System (JAIMS)\(^{22}\) and the Enterprise Linkage Project (ELP).\(^{23}\) These databases were created by the County to match records from different justice systems (and in the case of ELP, other service agencies) through common identifiers. Through the JAIMS database, I identified precise dates for the conviction associated to the PRCS case and the dates in which the PSP entered/exited PRCS. I also obtained information on bookings into county jail through the ELP.\(^{24}\) Unfortunately, criminal history information for the individuals in the sample was not available.

To test the role of CS to keep individuals engaged in SUD treatment using Proposition 47 resentencing as the policy shock, I used the data described above to create a retrospective cohort based on a few rules. Important dates used to create the cohort are outlined in Figure 2 below.

The sample I started with included PSPs that had been released to PRCS between October, 2011, and September, 2017. First, the sample was limited to PSPs entering PRCS between the dates that AB 109 (October 2011) and Proposition 47 (November 2014) were enacted. Additionally, the PSP must have entered a SUD treatment episode (I will refer to this as the “index” episode) throughout this same time-period. Since my sample frame consisted of individuals that have been admitted to a treatment episode, I had to create my analysis sample through an index episode beginning before the policy of interest was enacted so that the policy itself did not correlate with the composition of the analysis sample. Second, the PSP had to have been under PRCS when Proposition 47 was enacted, making it possible that they were affected by the policy. Finally, the cohort created included PSPs released from PRCS at some point after Proposition 47 was enacted, November 2014, until December 2015. I cut off the sample on December 2015 because Figure 1 shows that terminations per month after this date are much lower, and later cohorts are more likely to have had self-selected factors determining the timing of their termination.\(^{25}\) One will note that on November 2014, the sample would have been under PRCS for any length of time up to three years (PRCS was first implemented on October 2011) and a good portion of this

\(^{22}\) For more information, see (Countywide Criminal Justice Coordination Committee, 2016).

\(^{23}\) For more information, see (Byrne et al., 2012).

\(^{24}\) This data only goes back to 2006 when the ELP was created. Charge codes are not available before 2015, so I only measure times an individual was booked into a county jail.

\(^{25}\) Individuals that were resentenced after 2015 went through the process when much fewer other people were doing so. This means they were most likely not part of the initial group of individuals that were affected by all of the external factors that created the variation in resentencing during 2015.
cohort would have been on PRCS longer than the one-year minimum. Additionally, some would have eclipsed the three years maximum (see previous section) at some point in the post-Proposition 47 enactment period (“analysis period”). This is possible because the one-year clock resets after a violation and one can even be under PRCS longer than 3 years due to tolling. More detailed information for this sample is provided in Appendix A.2.

Figure 2: Important Dates for Creating of Retrospective Cohort

Outcome

Engagement in SUD treatment, the outcome, was measured as being enrolled in treatment for 30 days or longer during the analysis period. The widely adopted definition for engagement (as opposed to mere initiation) in the field is 30 days in treatment receiving at least two services. The LACPRS data does not incorporate information regarding the intensity of services provided while in treatment, but DPH-SAPC uses the 30-day definition arguing that internal research showed that over 90% of clients in treatment for that long will have received at least two services (Kim, 2018).

26 In tests conducted by the author, the time on PRCS preceding November 2014 is not predictive of the date a PSP eventually received a resentencing.

27 Definition is established in the Healthcare Effectiveness Data and Information Set (HEDIS) created by the National Committee for Quality Assurance (https://www.ncqa.org/hedis/measures/initiation-and-engagement-of-alcohol-and-other-drug-abuse-or-dependence-treatment/).
I argue that observing someone in my sample as engaging in treatment, even though they have already (at least) initiated an earlier episode, is an important and positive outcome. In the literature on treatment careers, studies with different samples have found that the average number of prior episodes for someone entering treatment is almost three (Anglin et al., 1997) and that “treatment careers typically involve” three to four episodes before being abstinent for one year (Dennis et al., 2005). Moreover, these estimates are most likely in the low-end given that the Proposition 47-eligible population demonstrate the characteristics associated with individuals in the right side of the distribution of treatment careers. As I will show below, this group has a higher rate of mental health diagnoses, more drug-related arrests, and is more likely to have had a prior treatment episode, all of which are associated with longer treatment careers (Anglin et al., 1997; Dennis et al., 2005). Finally, studies that have explored the length of treatment careers have defined as a desired stable state, abstinence from use for at least 30 days at treatment discharge (Dennis et al., 2005; Frimpong, Guerrero, Kong, & Kim, 2016). The analysis sample in this study is limited to those that had not yet fulfilled this goal, meaning their treatment career was ongoing.

I used engagement as an outcome, as opposed to treatment completion, because it sufficiently captures the first step required to treat a SUD, including a relapse. It is the outcome one would expect to observe if CS is in fact an adequate mechanism for recovery management (Dennis & Scott, 2012). Moreover, even though most studies examine treatment completion, engagement has also been shown to correlate with a decreased likelihood of arrest or incarceration in the following year (Garnick et al., 2014) and other factors that lead to better criminal justice outcomes in the long term, such as higher rates of employment (Dunigan et al., 2014) and a legal composite score (Harris, Humphreys, Bowe, Tiet, & Finney, 2010). Treatment episodes that last longer than 90 days, the widely accepted length for a “successful” episode, are also quite rare during the analysis period for the sample I analyze.

Empirical Strategy

Analysis Sample

Before estimating anything, I first limit the sample to those that received the intervention (i.e. resentencing). The reason for doing this can be explained as follows. On the day that Proposition 47 went into effect, each individual active on PRCS had some probability that they remain on PRCS for a given number of days, represented by the function \( f(X, U, e) \). In this function, \( X \) captures the observed characteristics that determine length in supervision (e.g. Whether the current charge is drug-related or number of previous arrests for drug-related crimes), \( U \) are factors that are unobserved (i.e. how the individual heard about Proposition 47 relief and when he/she petitioned for relief), and \( e \) represents idiosyncratic variation. Ideally, if \( U \) could be removed from the function, \( f \), then PSPs with similar characteristics but not receiving an
early termination could be used to model the days that the individuals receiving the intervention would have been on PRCS in the absence of an early termination. I describe in Appendix A.3 the specifics of Proposition 47 rules that make it unlikely that we could model the counterfactual of the group that received a Proposition 47 resentencing using observable data. Thus, the analysis can only be done on the population who would eventually receive a termination of their PRCS case through a resentencing. In order to provide some perspective regarding the sample analyzed, and because there is very little published information on the population that received Proposition 47 relief, I begin the analysis by comparing the characteristics of this population to the rest of the PRCS population and to the rest of criminal justice population that has received SUD treatment in LAC.

Identification Strategy

The goal of this analysis was to estimate the total amount of engagement in SUD treatment, conditional upon the length of a supervision period. Therefore, it was essential that the length of a supervision period was not related to other factors that affect SUD treatment engagement. I exploited the plausibly exogenous variation (shown in Figure 1) in the timing of early terminations of PRCS cases (individuals under PRCS that would receive an early termination are referred to thereafter as “ET_PRCS”), within the analysis group and time-period described, to identify the effect of PRCS on engagement to SUD treatment. I call these early terminations because the resentencing and subsequent PRCS termination leads to fewer total days under supervision once Proposition 47 went into effect. While the actualized outcome of the counterfactual ET_PRCS spell, determined by \( f(X,U,e) \), is unobserved for the treatment sample, a resentencing creates an outcome \( f' \) where \( f' < f \). I argue that the difference between \( f' \) and \( f \) is exogenous and that the early termination is unpredictable, meaning that the effect being analyzed is not biased by pre-trends (Borusyak & Jaravel, 2016).

The identifying assumption is that, conditional on the controls, the timing of the early termination is uncorrelated with the outcome or factors correlated to both (Dobkin, Finkelstein, Kluender, & Notowidigdo, 2018). For example, if the cohort that are first to receive an early termination also exhibit less serious problem behaviors that are correlated with engaging in treatment, then shorter probation spells would correlate with a higher likelihood of entering treatment, biasing the estimated effect of probationary supervision on treatment downwards. A subsequent assumption in this study is that the relapse rates among the analysis sample are not determined by the timing of the early termination. Following the previous example, if the cohorts that are first to receive an early termination are also less likely to relapse because they exhibit less serious problems, then we may observe that group engaging less frequently with SUD treatment. This would bias the effect of probationary supervision on treatment upwards.

28 A spell, in the CS context, refers to the time-period that an individual is under supervision.
There are reasons to believe that the identifying assumption holds. The background to the implementation of Proposition 47 resentencing described above demonstrates that very few of the individuals who got relief through resentencing were aware of the policy benefits when the policy went into effect, negating possible pre-trends. Moreover, the timing of when the resentences happened was highly affected by external factors, which makes it unlikely the timing was correlated to the outcome being investigated. The exogeneity of the timing becomes less plausible for ET_PRCS individuals that were resentenced later in the analysis period, as it becomes more likely these individuals were less engaged in their rehabilitation. I account for this potential problem by limiting the analysis to the sample that was resentenced in 2015, which accounts for 80% of the ET_PRCS group. In Appendix A.1, I further show results from regressions of individual characteristics on the timing of the ET_PRCS terminations, and argue that this is evidence against the type of selection bias that would bias the identifying assumption.

**Empirical Model**

The purpose of this analysis was to determine whether being under PRCS affected an individual’s willingness to engage in SUD treatment. The variation in timing of ET_PRCS terminations described above provides a plausibly exogenous variation in the explanatory variable of interest (i.e. PRCS status). In this section I describe why a conditional logit model, which uses panel data, was the most adequate model for this analysis. The disadvantage of using a cross-sectional model to describe the choice-making procedure of engaging in treatment is that it could not account for the timing of the decision as a function of the current PRCS status because the explanatory variable would have to be measured as the total days in PRCS from the enactment of Proposition 47. To explore the hypothesis that PRCS status increases the likelihood that one engages in treatment (either to stay engaged, or to enter a new episode, or to not leave a current episode), one would want to model the decision of engaging in treatment as a function of the PRCS status at the time this decision was made. A longitudinal model would be more adept at modeling this decision by taking advantage of precise dates available in the data regarding both ET_PRCS spells and SUD treatment episodes. Before discussing the specific longitudinal empirical model used to model the individual’s behavior, I explain the panel dataset created to conduct this analysis.

**Panel Data**

As described in the Data section, the sample is a retrospective cohort for which I can identify precise dates of the ET_PRCS case (i.e. start and termination dates) and all SUD treatment episodes. To capture the longitudinal structure of the intervention and outcome (ET_PRCS and SUD treatment, respectively), a monthly panel dataset was created where observations are delineated into person-calendar months. The period of months, for each individual, runs from November 2014 to December 2016 (the analysis period). Variables in the dataset identify whether the individual, each month, is enrolled in SUD treatment and the
individual’s ET_PRCS status. ET_PRCS status is identified by an indicator variable that was
defined as “1” in the months an individual is under PRCS (and the month in which the
termination is granted) and “0” for all months subsequent to the PRCS termination.29 For
example, if the resentencing and subsequent termination is adjudicated on March 10, 2015, this
variable will turn to “0” in April and every subsequent month in the panel. Turning to the
indicator for SUD treatment, an indicator variable was created that was defined as “1” for a
given month if the individual was admitted to treatment at any point during the calendar month
and were not discharged until at least the following month. An individual will not be considered
enrolled in SUD treatment for the month in which the individual was discharged. For example,
for an episode starting on March 10, 2015 and ending April 15, 2015, the monthly indicator
variable will be identified as “1” in March and “0” in April.30 This method was developed to get
as close to the 30-day definition of engagement given the complication of treatment episodes
beginning and starting mid-month.31 Another complicating factor created by the panel data that I
will discuss going forward is the duration-dependence nature of a treatment episode. The
duration of an episode is dependent on the prior time already spent in treatment, and it is
problematic to assume that the choice to be in SUD treatment is independent in each cell. As I
have shown in the Background section, though, treatment episodes are frequently short-lived and
constant supervision is required not only to induce treatment, but also to continue a treatment
episode. Moreover, the intent of this analysis was to estimate the total time in treatment and not
to disentangle the effect of inducing a new treatment episode from maintaining retention in an
ongoing episode. The empirical model described below further addresses the duration-
dependence problem.

Figure 3 shows the overall rates for the analysis sample, over time, of the two main
variables of interest. The histogram shows the percentage of the sample that has received an
ET_PRCS termination by a given month and the solid line tracks the percentage of the
population enrolled in SUD treatment in that month. One important note is that the percentage of
individuals in treatment is likely highest at the start of the analysis period because the sample
was created such that one’s index episode had to begin before the start of the analysis period but
this episode did not have to end (i.e. discharged) at this time. This is an adequate approach given
I am not trying to disentangle the mechanism by which PRCS affects total engagement (i.e.
inducing a treatment admission or retention of an episode). Moreover, my empirical model will

29 This is counterintuitive in the sense that commonly an indicator turns to “1” when the treatment or policy being
studied is adopted. I use this approach to make the coefficients consistent with the research question of the effect of
probation supervision (since the policy ends supervision).
30 In the case of an episode with the same starting date but with a discharge on March 28, 2015, the individual will
not be identified as being engaged in treatment in any month, as treatment duration is less than 30 days.
31 One could consider creating this variable by not counting the month in which an individual enrolled but counting
the month of discharge. Any difference from using this method should be random, and I check for using this method
as a sensitivity analysis.
account for secular trends.\textsuperscript{32} It appears in Figure 3 like the trend in overall SUD treatment engagement continues to decrease while more individuals in the sample receive ET_PRCS terminations. One last observation from Figure 3 is that the overall rate of treatment engagement is low, as 15% of the sample is in treatment during the peak month.

\textit{Figure 3: Percent of Individuals Enrolled in Treatment and under ET_PRCS, Over Time}

\begin{figure}
\centering
\includegraphics[width=\textwidth]{figure3}
\caption{Percent of Individuals Enrolled in Treatment and under ET_PRCS, Over Time}
\end{figure}

Conditional Logit Model

My analysis incorporated a conditional logit model to model the overall likelihood of choosing to engage in SUD treatment. In a conditional logit model, an individual, \textit{i}, is said to choose from a set of options, \textit{J}, based on the attributes, \textit{Z}, that maximize the individual’s utility (McFadden, 1973). The model requires repeated observations within the individual making the decision to identify whether a change in attributes affect the likelihood of choosing a distinct alternative. Thus, by clearly defining the distinct alternatives, in this case whether to engage in SUD treatment, and by assuming the individual is repeatedly making this distinct choice, I can test whether the choice is affected by a specific attribute in \textit{Z} (i.e. current ET_PRCS status), conditional on other attributes. I used the conditional logit model to test the hypothesis that being under ET_PRCS leads to a greater probability of choosing to engage in SUD treatment. It has been shown that the model I describe can be estimated by the following (Terry Long, 2004):

\textsuperscript{32} A sensitivity analysis will show that results are not affected by only including individuals that had been discharged from a treatment episode by the start of the analysis period.

Weinberger 20
\[
\text{Prob}(y_{it} = 1) = \beta Z_{it} + \nu_i
\]

Where \(y_{it}\) is a distinct decision within \(J\) that indicates that individual, \(i\), chose to engage in SUD treatment during month, \(t\). \(\nu_i\) represents the intrinsic tastes of the individual. \(Z_{it}\) is a vector of choice attributes for individual, \(i\), in month, \(t\), and in the context of my empirical framework, the components of \(Z\) yield the following reduced form model that I estimate:

\[
\text{Prob}(y_{it} = 1) = \delta CS_{it} + \beta X_{it} + \tau Time_t + \nu_i + \epsilon_{it}
\]

Where \(y_{it}\) is the same as above. It has been shown that a maximum likelihood estimation with a logit link function can be used to estimate the probability of choosing a distinct alternative (Chintagunta, Jain, & Vilcassim, 1991). This model has the same empirical characteristics as a fixed effects logit model where \(y_{it}\) is a binary variable, in this case representing whether the individual decided to engage in SUD treatment. The conditional logistic framework controls for \(\nu_i\) by using repeated choices made by the individual, which controls for unobservable characteristics that are fixed for an individual over time. \(CS_{it}\) indicates whether individual, \(i\), in month, \(t\), is still under ET_PRCS (as described earlier in this section), so \(\delta\) is the coefficient of interest because it represents the estimated effect of community supervision’s role in inducing SUD treatment for this sample. I use \(X_{it}\) to represent other time-varying attributes that may affect the decision to engage in SUD treatment. While not all variables will be shown in the results, I use variables measuring the number of bookings into county jail since the beginning of the analysis period and whether the individual is currently in jail, at month \(t\), respectively. It is likely that arrests over this time period may affect PRCS status and engagement in SUD treatment\(^3\) while having been booked into jail may also affect one’s ability to engage in SUD treatment.\(^4\)

To further account for possible duration-dependence, I also show a specification with a lag of the outcome variable. \(Time_t\) represents the continuous calendar time trend, starting on the first month of the analysis period, and controls for secular trends.\(^5\) This is important because it is likely that there are trends, which are a function of unobserved variables such as the changing supply of treatment beds, in SUD treatment over time that affect the entire sample. Finally, the random nature of the ET_PRCS terminations over time, as described in the identification strategy, minimizes the risk that the main variable of interest, \(CS\), is biased by unobserved variables in \(\epsilon_{it}\). Because individual-specific attributes, such as the probability of a relapse, are not related to the timing of the ET_PRCS terminations, I can be confident that \(CS_{it}\) is

\(^3\) Weinberger (2018) shows that LAC has a system in place to persuade individuals currently under PRCS into SUD treatment when they are booked into county jail for a new arrest. So new arrests may actually induce SUD treatment.

\(^4\) One may note that supply-side variables, such as treatment beds available in time, \(t\) may also be important. I do not have measures of supply but it is important to note that individuals seeking treatment through AB 109 received preference and thus waiting periods were extremely short (descriptive information on waiting periods for treatment episodes, by referral group, can be provided by the author upon request).

\(^5\) I explored models that included only a linear time trend and ones that add a second order variable. The results are similar but I use the model with a second order term because the overall trend does not appear linear.
independent of other attributes that, in this model, are part of $\epsilon_{it}$. Finally, I accounted for standard errors that are robust to clustering within individuals.

One of the characteristics of the conditional logit model is that it requires variation in the outcome variable within the panel group. This was an advantage in modelling the choice to engage in SUD treatment because it accounts for unobserved heterogeneity across individuals. The disadvantage with regards to my analysis is that there was not a lot of variation in the outcome for the individuals in my sample. I show in Table 1 below that of the 129 individuals in my analysis sample, only 38 ever engaged in SUD treatment within the analysis period. To account for the small effective sample size in the conditional logit model, I also show results using a cross-sectional model that estimated the linear relationship between the number of days under PRCS (since the enactment of Proposition 47) and two measures of engagement. While this cross-sectional model cannot identify changes over time, it provides an estimation using the entire sample.

Table 1. Descriptive Measures of the Outcome Variable in Conditional Logit Model

<table>
<thead>
<tr>
<th>Sample of Resentenced Individuals (i.e. N for ET_PRCS)</th>
<th>129</th>
</tr>
</thead>
<tbody>
<tr>
<td># (%) At least one month in treatment</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td>(30%)</td>
</tr>
<tr>
<td>Median/Avg. total months in treatment, conditional on treatment</td>
<td>3/3</td>
</tr>
</tbody>
</table>

Results

Population Comparisons

Table 2 below compares the demographic and substance use characteristics of treatment admissions of the individuals in the ET_PRCS group to the general PRCS population and the rest of the population referred by criminal justice agencies (referred to as “CJ-general”). The table incorporates the data assembled for this analysis, which includes data in LACPRS for all treatment admissions between October 2011 and November 2014. The first clear interpretation from Table 1 is that the PRCS group created by Realignment was older and had been dealing

36 This population is a mixture of the parole and probation populations, which if supervised in LAC will also get SUD treatment from DPH-SAPC.
37 This is the “baseline” period, when individuals that would eventually receive a resentencing were admitted to at least one SUD treatment episode and can be compared to other individuals that were admitted SUD treatment during this time-period.
with SUD issues for longer than the CJ-general population. They are also entering treatment for more serious drugs, as a higher proportion entered for heroin, methamphetamine, or cocaine as the primary drug whereas the general criminal justice group is more likely to enter for marijuana. There are a few notable differences within the PRCS groups. The group that received a resentencing (ET_PRCS) is even older than the rest of the PRCS population, having been using the substance for longer and more likely to have enrolled in treatment before. They were also more likely to have reported a prior mental health diagnosis or treatment and are more likely to be homeless when they entered treatment. Given these differences in characteristics that are important in the context of SUD treatment involvement and contact with the justice system, it appears the treatment sample in this study presents unique issues for public social services provision.
Table 2: Characteristics of Treatment Admissions for the Criminal Justice Population in LAC

<table>
<thead>
<tr>
<th></th>
<th>CJ-general</th>
<th>PRCS</th>
<th>ET_PRCS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>21%</td>
<td>26%</td>
<td>28%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>54%</td>
<td>50%</td>
<td>43%</td>
</tr>
<tr>
<td>Employed</td>
<td>10%</td>
<td>14%</td>
<td>13%</td>
</tr>
<tr>
<td>Age</td>
<td>30.0</td>
<td>38.6</td>
<td>40.6</td>
</tr>
<tr>
<td>Homeless</td>
<td>21%</td>
<td>21%</td>
<td>28%</td>
</tr>
<tr>
<td>Mental health</td>
<td>27%</td>
<td>16%</td>
<td>25%</td>
</tr>
<tr>
<td>Days used substance 30 days pre-admission</td>
<td>7.3</td>
<td>6.6</td>
<td>8.1</td>
</tr>
<tr>
<td>Primary substance at admission</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heroin</td>
<td>10%</td>
<td>15%</td>
<td>18%</td>
</tr>
<tr>
<td>Meth</td>
<td>32%</td>
<td>39%</td>
<td>45%</td>
</tr>
<tr>
<td>Cocaine</td>
<td>9%</td>
<td>15%</td>
<td>14%</td>
</tr>
<tr>
<td>Alcohol</td>
<td>12%</td>
<td>11%</td>
<td>10%</td>
</tr>
<tr>
<td>Marijuana</td>
<td>35%</td>
<td>18%</td>
<td>13%</td>
</tr>
<tr>
<td>Other</td>
<td>1%</td>
<td>2%</td>
<td>1%</td>
</tr>
<tr>
<td>Prior episode to index</td>
<td>52%</td>
<td>56%</td>
<td>64%</td>
</tr>
<tr>
<td>Years used primary substance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>12.6</td>
<td>19.2</td>
<td>20.7</td>
</tr>
<tr>
<td>Total observations (N)</td>
<td>5,172</td>
<td>3,013</td>
<td>240</td>
</tr>
</tbody>
</table>

Notes: P-values for statistical significance aren’t shown because there are three samples. Values represent responses at admission for all SUD treatment admissions between October 2011 and November 2014. Because the data represents admissions and not unique individuals, the number of total observations for the ET_PRCS column is higher than the PSPs in the sample as shown in Table 1. Mental health represents whether individual was ever identified with mental health disorder.

Cross-Sectional Model Results

In Table 3 I show the results of OLS cross-section regressions that examine the impact of the number of days in CS on two measures of engagement in SUD treatment. The first measure, for which results are shown in specifications (1) and (2), identified whether the individual engaged with treatment (i.e. spent 30 days in a treatment episode) at any time during the analysis period. Specifications (3) and (4) show results of specifications where the outcome was measured by the total days spent in SUD treatment by the individual throughout the analysis period.38 This measure of the outcome variable allows for more variation because I included anyone that has engaged in treatment during the analysis period. For the explanatory variable of interest in these models, the continuous variable measuring the number of days under CS, the variation was generated by the random timing of ET_PRCS terminations because individuals receiving an earlier termination had fewer days in CS. Finally, it should be noted that the analysis sample is slightly different than that described for the longitudinal model. Due to the

38 The total time may expand over multiple episodes, though in this sample few individuals entered treatment more than once during the analysis period.
stationary nature of the cross-sectional model, I had to limit the sample to those who were discharged from their index episode by the start of the analysis period.

The results in Table 3 are shown for two specifications. I first show the model with no other covariates, specifications (1) and (3), to check whether the explanatory variable was correlated to the outcome before other variables are introduced. I show a model with no covariates because given the small number of observations, the number of degrees of freedom could factor into a null finding for the variable of interest. Next, I show results using a model with other covariates, specifications (2) and (4). Variables available for the model with covariates are the same that were used to test the identifying assumption and are discussed in Appendix A.1. In Table 3, I chose a sparse model to focus on the variable of interest.39

There appears to be no relationship between number of days spent on CS after the enactment of Proposition 47 and either measure of SUD treatment engagement. Note that the coefficients should be interpreted differently in the two sets of specifications, as the outcome variable is binary in the first set and continuous in the second. While adding covariates does not appear to affect this coefficient of interest across the different models, there are a number of coefficients that are associated to the outcome. The most important variables are race, primary substance of abuse, prior mental health diagnosis, and homeless status. Hispanic individuals are less likely to engage in treatment than White individuals, as is the case with those with a previous mental health diagnosis. Individuals whose primary drug problem is methamphetamine or cocaine engage in treatment for less time compared to heroin users. Having been homeless during the index episode increases both the likelihood of subsequent engagement and the length one is in treatment. The lack of relationship found between the main explanatory variable and the outcome may be due to the small sample and low rate of SUD treatment engagement shown in Table 1. But it may also be the case that total days under CS is not an adequate measure to compare the difference in how one makes a decision when under CS and when one is not supervised.

39 The variables used in specifications (2) and (4), shown in Table 3, were chosen using the square root lasso method to find the most sparse regression model available (Belloni, Chernozhukov, & Wang, 2011).
### Table 3. OLS Regression Estimates for the Effect of PRCS on Engagement in Treatment, Using Cross-Sectional Data

<table>
<thead>
<tr>
<th></th>
<th>(1) Engaged in treatment</th>
<th>(2) Length in Treatment Post-P47</th>
<th>(3) Length in Treatment Post-P47</th>
<th>(4) Length in Treatment Post-P47</th>
</tr>
</thead>
<tbody>
<tr>
<td>Days in CS post-Prop47</td>
<td>0.00038</td>
<td>0.027</td>
<td>0.021</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.00040)</td>
<td>(0.041)</td>
<td>(0.042)</td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>-0.14</td>
<td></td>
<td></td>
<td>-8.24</td>
</tr>
<tr>
<td></td>
<td>(0.11)</td>
<td></td>
<td></td>
<td>(11.4)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>-0.19*</td>
<td></td>
<td></td>
<td>-5.48</td>
</tr>
<tr>
<td></td>
<td>(0.094)</td>
<td></td>
<td></td>
<td>(9.83)</td>
</tr>
<tr>
<td>Other</td>
<td>0.11</td>
<td></td>
<td></td>
<td>-5.32</td>
</tr>
<tr>
<td></td>
<td>(0.23)</td>
<td></td>
<td></td>
<td>(23.5)</td>
</tr>
<tr>
<td>Meth primary substance</td>
<td>-0.15</td>
<td></td>
<td>-30.8*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.13)</td>
<td></td>
<td>(14.0)</td>
<td></td>
</tr>
<tr>
<td>Cocaine primary substance</td>
<td>-0.22</td>
<td></td>
<td>-33.9*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.16)</td>
<td></td>
<td>(16.2)</td>
<td></td>
</tr>
<tr>
<td>Other primary substance</td>
<td>0.030</td>
<td></td>
<td></td>
<td>-13.2</td>
</tr>
<tr>
<td></td>
<td>(0.12)</td>
<td></td>
<td></td>
<td>(12.5)</td>
</tr>
<tr>
<td>Homeless</td>
<td>0.17*</td>
<td></td>
<td>19.3*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.082)</td>
<td></td>
<td>(8.52)</td>
<td></td>
</tr>
<tr>
<td>Mental health</td>
<td>-0.19*</td>
<td></td>
<td>-15.6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.090)</td>
<td></td>
<td>(9.40)</td>
<td></td>
</tr>
<tr>
<td>Sentenced pre-AB 109</td>
<td>-0.093</td>
<td></td>
<td>-12.4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.088)</td>
<td></td>
<td>(9.16)</td>
<td></td>
</tr>
<tr>
<td>Total jail bookings</td>
<td>-0.0093</td>
<td></td>
<td>-0.67</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0071)</td>
<td></td>
<td>(0.74)</td>
<td></td>
</tr>
<tr>
<td>2011-2012 sub-cohort</td>
<td>0.20</td>
<td></td>
<td>14.6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.11)</td>
<td></td>
<td>(11.3)</td>
<td></td>
</tr>
<tr>
<td>2012-2013 sub-cohort</td>
<td>0.052</td>
<td></td>
<td>4.60</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.099)</td>
<td></td>
<td>(10.3)</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.096</td>
<td>0.28</td>
<td>10.9</td>
<td>39.6*</td>
</tr>
<tr>
<td></td>
<td>(0.085)</td>
<td>(0.18)</td>
<td>(8.72)</td>
<td>(18.4)</td>
</tr>
<tr>
<td>(R^2)</td>
<td>0.008</td>
<td>0.222</td>
<td>0.004</td>
<td>0.188</td>
</tr>
<tr>
<td>(Observations)</td>
<td>113</td>
<td>113</td>
<td>113</td>
<td>113</td>
</tr>
</tbody>
</table>

Standard errors in parentheses; * \(p < 0.05\), ** \(p < 0.01\), *** \(p < 0.001\)
Mental health represents whether individual was ever identified with a mental health disorder. White, non-Hispanic is the baseline variable for race. Sub-cohorts correspond to the date PSP enters PRCS, as shown in Figure 2 (2013-2014 cohort is the baseline). Heroin is the omitted category for primary substance. “Other” substance category includes marijuana and alcohol (as well as other substances) together because they are not common primary substances among this population. Variables not included in specifications (2) and (4) are those listed in Appendix A.1 but not shown here. More detailed information on variables presented in Appendix A.1.

**Conditional Logit Model Results**

In Table 4 I show how CS impacts the likelihood of engaging in SUD treatment, conditional on having engaged in SUD treatment during the analysis period. This is my preferred
model because it accounts for changes to the decision to engage in SUD treatment, conditional on a change in attributes. I show two specifications of the conditional logit model, where the coefficients are shown in odds ratios. The first specification did not include a lag of the outcome variable. In the second specification, I added variables of the lagged outcome to check for duration-dependence. Overall, there appears to be a significant positive effect from CS on the likelihood of choosing to engage in SUD treatment. While adding a lag of the outcome diminishes the magnitude of the effect, the result is still marginally significant. Moreover, it appears that the effect of previous choices to engage in treatment are only present for the immediate preceding month. In the first specification, the results show that being on CS increases the odds by more than 3.5.

Table 4. Estimated Effects of PRCS on the Likelihood to Engage in Treatment, Using a Conditional Logit Model

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No Lagged Outcome</td>
<td>Lagged Outcome</td>
</tr>
<tr>
<td>CS Effect</td>
<td>3.54* (1.78)</td>
<td>2.20* (0.90)</td>
</tr>
<tr>
<td>Booked Indicator</td>
<td>0.41 (0.26)</td>
<td>0.47 (0.30)</td>
</tr>
<tr>
<td>Times Arrested</td>
<td>1.46 (0.99)</td>
<td>1.27 (0.68)</td>
</tr>
<tr>
<td>Lag of Outcome</td>
<td>10.7* (3.56)</td>
<td></td>
</tr>
</tbody>
</table>

Coefficients shown as odds ratios; Standard errors in parentheses; * p < 0.10, ** p < 0.05
Panel: 38 individuals
Second specification includes the lag of the outcome variable as a control. Booked indicator measures whether individual was booked in a given month. Arrested variable measures number of times one has been booked to county jail since start of analysis period, in a given month. All models include a continuous time trend (not shown). Another variable, number of months in which the individual had spent in jail during the analysis period, was available but not included in the specifications because it did not add any new information and was correlated to the covariates in these models. All models account for clustered standard errors within individuals.

Sensitivity Analyses

Table 5 shows the results of a few sensitivity analyses that I summarize in this section (see Appendix A.4 for sensitivity analysis using a fixed effects OLS regression). Each row represents a new analysis and the coefficients shown are associated to the variable indicating CS status. The first sensitivity analysis further limits the analysis sample. I restrict those in the

---

40 Another specification that included lagged variables of the outcome from the two previous months was also run but not included in Table 4 because the results were qualitative similar to the specification with one lag.
analysis sample to individuals that had already been discharged from a treatment episode at the time the analysis period begins. This should mitigate the possibility that the results are driven by the sample of individuals that were currently in treatment when the analysis period begins.

The subsequent two analyses slightly change how the SUD treatment indicator variable is defined in the panel data. First, for the analysis in the second row, an indicator variable was created that was defined as “1” for a given month if the individual was discharged from treatment at any point during the calendar month. For example, for an episode starting on March 10, 2015 and ending April 15, 2015, the monthly indicator variable will be identified as “0” in March and “1” in April. In the third row, the analysis was conducted defining the SUD treatment indicator variable more strictly. In this case, for the SUD treatment indicator variable to be defined as “1,” the individual must have been enrolled in treatment for the entire month.

The results of the sensitivity analyses shown in Table 5 demonstrate very similar findings to the main analysis. One will note that while the coefficient in the first row of specification (1) is now only partially significant, the magnitude is similar to that of the main analysis. Because the panel of individuals identified in the conditional logit model is reduced to 28 when we limit the sample to those having been discharged from a treatment episode before the beginning of the analysis period, it is likely that the coefficient is now partially significant because of fewer degrees of freedom. In the subsequent two rows, the coefficient is at times larger and at times smaller than the main analysis, but the qualitative findings remain similar.

---

41 On the other hand, if the episode were to begin on the same date but the discharge occurs on March 28, 2015, then the individual will not have engaged in treatment in any month.

42 Again, these sensitivity analysis models were attempted with a specification that included variables of the log of the outcome from the previous two months. Results are not shown because they are qualitatively similar to the specification with only one lag.
Table 5. Sensitivity Analyses to the Conditional Logit Model, Examining Coefficients for PRCS Status Indicator

<table>
<thead>
<tr>
<th></th>
<th>(1) No Lagged Outcome</th>
<th>(2) Lagged Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Only discharged</strong></td>
<td>3.39^</td>
<td>2.22</td>
</tr>
<tr>
<td>Panel: 28 individuals</td>
<td>(2.15)</td>
<td>(1.10)</td>
</tr>
<tr>
<td><strong>Discharge Month</strong></td>
<td>5.03^</td>
<td>2.94^</td>
</tr>
<tr>
<td>Panel: 44 individuals</td>
<td>(2.69)</td>
<td>(1.37)</td>
</tr>
<tr>
<td><strong>Full Engagement Month</strong></td>
<td>2.66^</td>
<td>1.49</td>
</tr>
<tr>
<td>Panel: 28 individuals</td>
<td>(1.56)</td>
<td>(0.75)</td>
</tr>
</tbody>
</table>

Coefficients shown as odds ratios; Standard errors in parentheses
^p < 0.10, ^* p < 0.05
Each row shows coefficients for the CS status variable for a separate analysis. Specifications include the same covariates as the main analysis but not shown here. All models include a continuous time trend (not shown). All models account for clustered standard errors within individuals.

Discussion

The criminal justice system, particularly community supervision (CS), plays a major role in local public health systems’ provision of substance use disorder (SUD) treatment. By using law enforcement’s power of the stick, justice agencies can pressure into treatment a population that is very difficult to engage. But as most jurisdictions across the nation attempt to decarcerate, a common strategy is to reduce sanctions for drug-related crimes (Pew Charitable Trusts 2018). After California enacted Proposition 47, four more states enacted laws that reclassified drug possession from a felony to a misdemeanor (Elderbroom & Durnan, 2018). Ohio had a referendum on the ballot for the 2018 midterm elections that would apply a reclassification of drug possession retroactively (Nichanian, 2018). Within California, Proposition 64, legalizing the use of marijuana, also applied retroactively and a few counties have expunged previous crimes without even requiring a formal petition.43 What is not yet known is how these new lenient drug policies will affect the role of the justice system being a major referral source for community-based SUD treatment.

43 District attorneys in the counties of San Francisco, Alameda, San Diego, Sonoma, and Yolo have all announced they will proactively vacate past marijuana convictions. See: https://norml.org/news/2018/03/22/more-california-counties-move-to-expunge-past-marijuana-convictions.
In this case study, I explored this question by analyzing engagement to SUD treatment for a group in community supervision that unexpectedly had their supervision terminated at different times over the span of a year. I took advantage of a novel dataset matching administrative data of SUD treatment histories with CS case information that included dates of entry and termination. Information at such a fine level allowed for examining the role that CS can play in generating engagement to treatment, compared to the time-period immediately following supervision. Additionally, the case study approach took advantage of an easily identifiable population, and by analyzing within a single jurisdiction it mitigated problems associated with heterogeneity in how a policy was implemented across jurisdictions (Rabinowitz & Davaran, 2017). Moreover, by comparing outcomes within a cohort during the same time-period, it limited the probability that a subset of the sample experienced other concurring policies or programming. Finally, the study used institutional knowledge to exploit plausibly exogenous variation that allowed the author to estimate a causal effect of the role supervision played in maintaining engagement to SUD treatment.

In the first set of results, I compared the PRCS group and the subset that received a resentencing as part of Proposition 47 relief (ET_PRCS), to the general community supervision-referred population. Among those that have entered a SUD treatment episode in LAC, there were significant differences across the groups. The PRCS groups are older and demonstrate characteristics of people that have been entrenched in the justice system for longer. The PRCS group had been admitted to SUD treatment for more serious drugs and were more likely to have been in treatment before. These results are consistent with qualitative evidence from treatment providers regarding the PRCS population (Chavira et al., 2016) and an analysis of criminal history among the AB 109-target population (Gerlinger & Turner, 2015). Within the PRCS group, the group that received a resentencing demonstrated even more extreme drug-use severity characteristics. Given that Proposition 47-eligible crimes are relatively minor, it is likely this population is made up of individuals that have long criminal histories associated to severe drug use, but these individuals are not committing serious crimes.

With regards to SUD treatment engagement, I found that termination from CS does appear to diminish the likelihood of engaging in treatment. While the cross-sectional analysis found null results, it is likely not the correct model to assess total engagement in treatment. The hypothesis motivating this analysis was that the decision to engage in treatment is continuously being made by individuals based on several attributes, including whether they are currently being supervised by the criminal justice system. My preferred model that incorporated decisions made over time while attributes were changing as well, found a positive effect on treatment engagement from being under CS. The results are consistent with previous findings on the use of legal pressure to induce SUD treatment participation. Studies have generally shown that individuals under CS can be induced to treatment (Hser, Maglione, Polinsky, & Anglin, 1998) and those in treatment while under CS stay at least as long as those who enter voluntarily (Hiller et al., 1998; S. M. Kelly et al., 2013; Kiluk et al., 2015; Perron & Bright, 2008).
In interpreting these results, a short discussion of the analysis sample is required. There are reasons to believe this sample suffers from substantial behavioral problems. The group that was resentenced demonstrated severe drug use characteristics and most of the analysis sample had been in PRCS for longer than the one year that is intended for successful supervision spells. Moreover, the data only captures individuals that had at least been admitted to a SUD treatment program before the time-period analyzed, which is a subset of all people in PRCS that LAC Probation referred to treatment. These are individuals that have successfully navigated the various steps between referral and treatment intake (Weinberger, 2018). This may be an indicator of engagement to the county’s system of services or, on the other hand, seriousness of needs that landed them in treatment. Nevertheless, this is an important sample to study because of their high needs and the possibility for an intensive margin effect. As a group who LAC Probation had already been able to pressure into treatment once (but had not yet been discharged from an episode that they completed successfully), more treatment should increase the probability of improving drug use outcomes. Moreover, since this is a group that Probation had identified criminal behavior related to their substance use, it is especially important, given the ultimate goal of reducing recidivism, to provide them with SUD treatment.

There are a few limitations to the study that are worth addressing. The first set deal with the empirical model. The conditional logit model used in the main analysis suffered from limited variation in the outcome variable. This led to only 29 panels of individuals being used for analysis, which severely restricts the power. Moreover, the use of panel data was complicated by the difficulty in measuring the duration-dependence of a treatment episode. I try to account for this problem in a couple ways. First, by using a conditional logit model, I relax the assumption that each individual-month observation is independent. Second, I explored specifications in my model that added a lag of the outcome as a covariate. I found similar results in these analyses.

Another limitation is the lack of information regarding an individual’s intermediate outcomes or life changes (such as experiencing homelessness) while under PRCS makes it more difficult to assess if other factors played a role in determining the likelihood of SUD treatment engagement. The empirical strategy was based on the assumption that the timing of resentencing adjudications was not correlated to the outcome. It is possible that PSPs that were more engaged to social services being provided by the County also were quicker to apply for resentencing under Proposition 47. It should be noted that if this particular case were true, it would bias the estimate of the role of CS towards zero, as those receiving an earlier termination would be expected to continue using services such as SUD treatment. I also provided evidence that the identifying assumption holds, using both data on the analysis sample as well as institutional knowledge of the implementation of the Proposition 47 resentencing process in LAC. There was no evidence that baseline demographic characteristics were correlated with the

---

44 Intermediate outcomes refers to outcomes within a supervision spell that don’t lead to a termination or the end of a successful spell. Examples include sanctions, completion of a required program, or a revocation of supervision.
timing of receiving an early termination, suggesting that changes in these characteristics may not have had effects on the timing either.

This analysis also suffers from a lack of detailed information regarding Probation’s implementation of PRCS. While Probation’s “Implementation Plan” provides details on the structures in place for an individual in PRCS (see Weinberger (2018)), it is possible that the fidelity to the implementation plan is low. In a thorough review of Probation practices by a consulting firm, the auditors found that Probation was lacking in a number of evidence-based practices, such as how it utilized risk assessment tools and in its over-use of flash incarcerations (Resource Development Associates 2018). Of course, no organization will be able to perfectly implement its plan, so fidelity should be interpreted as part of the context of this study. Information of the Implementation Plan was also supplemented by the author’s internship at LAC Probation and numerous site visits. Further research should focus on better understanding the implementation of Realignment by LAC Probation, which would help to contextualize the results of this study.

While this paper has dealt primarily with mechanisms on the demand side to explore the effect on SUD treatment provision, the supply of treatment is also important for understanding enrollment. It may be the case that SUD treatment provider capacity was changing throughout the analysis period, affecting enrollment rates. This is highly unlikely. A recent report has found that the number of SUD treatment episodes referred by criminal justice agencies funded by DPH-SAPC has been dropping consistently since before the implementation of AB 109 (Hunter et al., 2017). Unless provider capacity was decreasing at the same rate at which referrals have been decreasing, and there is no reason to believe that it has been, it would not be the case that observed decreases in treatment engagement are a result of changes in provider capacity.

This study paves the road for research on longer-term outcomes of reducing community supervision, such as drug use and recidivism. While the most common type of Proposition 47 relief came from new arrests, which get the bulk of the attention, the unexpected relief from case resentencing created a scenario more conducive to research that allows policymakers to learn about the potential impacts from Proposition 47. Resentenced cases provide the advantage that the crime was committed and adjudicated before Proposition 47, which is important because the policy changed how actors within the justice system behaved (Weinberger, 2018). And just like a new arrest, a resentenced case decreases the contact one has with the justice system compared to having committed the same crime in the pre-Proposition 47 context. Therefore, future research in Los Angeles and other counties should use the sample that received Proposition 47 relief to explore whether the relief affected the medium- and long-term outcomes of individuals.

Policymakers should not interpret the findings as reason to widen the net of community supervision. While providing SUD treatment is a positive outcome of supervision, further research must dig into the costs and benefits of using CS (or other criminal justice agents) to provide or link to social services. In terms of benefits, the next step of this research is to explore the moderating effect that a decrease in SUD treatment had on recidivism. And there are many
costs to take into consideration. For example, research on intensive supervision practices has found that these practices usually lead to an increase in recidivism due to the added layer of contact with the justice system (Grattet, Lin, & Petersilia, 2011; Marlowe, 2003; Petersilia & Turner, 1991). A re-incarceration, even for a short time, can prevent recovery. Before Realignment, high recidivism rates for individuals under CS in California meant that rehabilitation would constantly be interrupted (Grattet et al., 2009). More research is needed to assess whether an increase in the likelihood of engaging in SUD treatment is worth the cost of likely increasing the number of incarcerations.

There are other ways to engage people in treatment that do not involve increasing our reliance on incarceration. Recovery Management Checkups, as well as other services that provide case management, are also effective mechanisms to re-engage individuals with SUD treatment when needed (Dennis & Scott, 2012; Scott et al., 2017). Treatment take-up can also be induced through contact points other than the justice system for individuals in need, such as primary care (Scott et al., 2018). In Los Angeles, for example, the enactment of Medicaid expansion led the County to implement a new system of coordinated care in August 2017, which provides other mechanisms to link individuals to SUD treatment (Los Angeles County Department of Public Health, 2016). Finally, jurisdictions should increase funding for social services that meet other needs that are correlated with engaging in SUD treatment, particularly housing (Chavira et al., 2016).

Finally, it is also important to better understand the overall effect for a community of a policy that reduces contact with the justice system such as Proposition 47. Part of the text of Proposition 47 called for savings from supervising fewer people to be diverted to increase social services in communities. In the last year, savings from Proposition 47 were used to provide grants for jurisdictions to implement public health approaches to deal with problem behaviors (Mooney et al., 2018). It remains to be seen if this money is used more effectively to rehabilitate members in the community than using CS or custodial sanctions. It may be the case that even though people that exited community supervision were less likely to engage in SUD treatment afterwards, Proposition 47 led to other programs that increased overall participation in SUD treatment in the community. Research has shown that an increase in overall use of SUD treatment leads to a reduction in crime (Vogler, 2017; Wen et al., 2017).

Appendices

Appendix A.1: Evidence that timing of resentencing adjudications was exogenous

This appendix provides more details to show that the timing of the resentencing petitions was not correlated to an individual’s engagement in services, such as SUD treatment. I describe both the institutional reasons and correlations that show that the timing was not related to variables we might expect to be correlated to engagement.
Institutional factors

Conversations with associates from the Drug Policy Alliance (DPA), LA Regional Reentry Partnership, and A New Way of Life Reentry Project (organizations that were working on the ground in LAC during the implementation of Proposition 47) made it clear that a number of organizations impacted Proposition 47 resentencing. According to these organizations, most beneficiaries of resentencing were not aware of the policy when Proposition 47 was enacted (Archie, 2018; Hernandez, 2018; Petitt, 2018). Moreover, the petition process is difficult to navigate and any small mistake in the form will lead to long delays, which forced the Public Defender’s (PD) office to play a large role (Harvis, 2018). To raise awareness and recruit possible beneficiaries, the PD office, in conjunction with community-based organizations, ran a number of outreach efforts across the County promoting Proposition 47 petition filing (P. Anderson, 2018). As of March 2016, the PD (and Alternate PD) offices filed almost 72% of all Proposition 47 petitions (including both resentences and reclassifications) that were submitted in the County, demonstrating their importance to the process (County of Los Angeles, 2016).

Moreover, the randomness in the timing of when PSPs experienced Proposition relief was accentuated by the process of case resentencing in the first year as implemented by the Superior Court. The Court took up to six months to hear resentencing cases in a process that has been said, by members of organizations that were helping in the outreach efforts, to be idiosyncratic in terms of which cases were heard first (Hernandez, 2018; Petitt, 2018). Organizations that were involved with resentencing in the first year mentioned a variety of factors that determined timing: case jurisdiction within the county, specific court factors, judge discretion, and the complexities of a particular case (Hernandez, 2018; Johnson, 2018; Petitt, 2018). Moreover, a state-level report shows there was a heavy backlog of resentencing petitions across the state and processing times varied highly across courts (Judicial Council of California 2016). It is very likely this variation in processing was present within a county as large as Los Angeles, which would affect the timing of adjudications for those on PRCS. Data on resentencing petitions received by LAC Superior Court shows a similar change over time to that of the resentencing adjudications, but with the resentences occurring with a three-month lag. While it is likely that the time in which a petition was filed (which itself was determined by many external forces as described in the previous paragraph) is predictive of the timing in which it was adjudicated, the three-month lag as well as the other case-specific factors noted above leave room for random variation to play a part in the date the individual experienced Proposition 47 relief through a resentenced case. Variation occurring as a result of these factors is especially likely in the first

---

45 This was calculated by the author by taking the 50,306 applications that the Superior Court has processed and dividing it by the 36,145 applications the Public Defender and Alternate Public Defender offices (30,748 and 5,397, respectively) have filed according to the cited County report. Given that these offices prioritized active cases over reclassification applications from the outset, it is likely more than 72% of the PRCS petitions were filed by the PD or APD as opposed to by individuals.

46 Data was submitted to the author by the Judicial Council as part of a request for administrative records.
year after the policy was enacted, when 80% of resentences occurred, because that is when the Court was struggling to implement the new policy.

Data analysis

One check on the identifying assumption is to test whether factors that should affect the outcome (engagement in treatment) and may be correlated with factors that determine the length of probation spells (i.e. those in f(X,U)), absent the resentencing, are correlated to the actual observed timing of the early terminations. I check whether the following characteristics that research has found to be correlated with treatment retention are correlated to the timing: employment at time of admission, education, age, ethnicity, prior treatment, primary drug, severity of drug use, treatment type, homeless at time of admission, mental health diagnosis, number of previous bookings, prison stay preceding PRCS, and outcome of in index episode (see Evans and, Li, & Hser for a summary of the literature). More specifically, Table A.1 defines each variable that I use to measure these characteristics. In Table A.2, I show results from univariate regressions of each of these variables related to the timing of CS termination\(^\text{47}\), for each sub-cohort (Figure 2 describes the sub-cohorts).\(^\text{48}\) I find only very few significant correlations and never for all three sub-cohorts. This is evidence that, at least on observed characteristics, the termination timing appears to be random within the analysis group assessed.

Table A.1. Definitions of Variables Used to Measure Characteristics of Individuals in Sample

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>30+ days to index episode</td>
<td>Indicator for not entering treatment within 30 days of Hub referral</td>
</tr>
<tr>
<td>Black</td>
<td>Indicator for black, non-Hispanic</td>
</tr>
<tr>
<td>Hispanic</td>
<td>Indicator for Hispanic ethnicity</td>
</tr>
<tr>
<td>Outpatient treatment</td>
<td>Index episode was an outpatient type</td>
</tr>
<tr>
<td>Residential treatment</td>
<td>Index episode was an residential type</td>
</tr>
<tr>
<td>Mental health</td>
<td>Previous mental health diagnosis</td>
</tr>
<tr>
<td>Arrests 1yr post-prison</td>
<td>Times PSP was arrested in the one year after PRCS spell started</td>
</tr>
<tr>
<td>Days in prison</td>
<td>Number of days PSP spent in prison for sentence that is associated to current PRCS case</td>
</tr>
<tr>
<td>Sentenced pre-AB 109</td>
<td>Indicator for PSP having been sentenced in current PRCS case before AB 109 went into effect</td>
</tr>
</tbody>
</table>

\(^{47}\) These variables come from LACPRS, which requires this data to be taken at initiation of a treatment episode. I use the responses at admission to the first treatment episode, which by design in this sample occurred before Proposition 47, and thus they can be used as baseline characteristics.

\(^{48}\) One would expect that these variables may affect an individual’s length in probation differently depending on how long they have already been on probation at the time Proposition 47 was enacted.
Days used drug last 30 | Days used primary substance at admission of index episode
Heroin primary substance | Primary substance is heroin at admission of index episode
Meth primary substance | Primary substance is methamphetamine at admission of index episode
Cocaine primary substance | Primary substance is cocaine (in any form) at admission of index episode
Alcohol primary substance | Primary substance is alcohol at admission of index episode
Prior episode to index | Indicator for having been admitted to treatment before index episode
Homeless | Homeless status at time of admission to index episode
Years used drug | Years having used primary substance
Employed | Employed at time of admission at index episode
High School grad | Graduated from High School (including GED)
Age | Age
Length of index episode (days) | Length of days in which PSP was enrolled in treatment for index episode

Table A.2. Coefficients Results for Univariate Regressions, Where the Outcome is the Days under PRCS from Enactment of Proposition 47

<table>
<thead>
<tr>
<th></th>
<th>Cohort 11-12</th>
<th>Cohort 12-13</th>
<th>Cohort 13-14</th>
</tr>
</thead>
<tbody>
<tr>
<td>30+ days to index episode</td>
<td>-58.42</td>
<td>8.625</td>
<td>-37.97</td>
</tr>
<tr>
<td>Black</td>
<td>-35.51</td>
<td>6.397</td>
<td>41.04</td>
</tr>
<tr>
<td>Hispanic</td>
<td>17.63</td>
<td>5.904</td>
<td>-3.951</td>
</tr>
<tr>
<td>Residential treatment</td>
<td>-22.9</td>
<td>7.472</td>
<td>10.13</td>
</tr>
<tr>
<td>Mental health</td>
<td>-34.12</td>
<td>-19.24</td>
<td>-7.134</td>
</tr>
<tr>
<td>Arrest 1yr post-prison</td>
<td>-0.574</td>
<td>1.397</td>
<td>0.874</td>
</tr>
<tr>
<td>Days in prison</td>
<td>-0.00636</td>
<td>-0.0201</td>
<td>0.00052</td>
</tr>
<tr>
<td>Sentenced pre-AB 109</td>
<td>-42.16</td>
<td>-7.529</td>
<td>-11.49</td>
</tr>
<tr>
<td>Days used drug last 30</td>
<td>0.917</td>
<td>-1.299</td>
<td>-0.0593</td>
</tr>
<tr>
<td>Heroin primary substance</td>
<td>-31.6</td>
<td>111.5*</td>
<td>-7.540</td>
</tr>
<tr>
<td>Meth primary substance</td>
<td>17.28</td>
<td>-28.91</td>
<td>75.73</td>
</tr>
<tr>
<td>Cocaine primary substance</td>
<td>26.02</td>
<td>-30.4</td>
<td>-56.68</td>
</tr>
<tr>
<td>Alcohol primary substance</td>
<td>-56.48</td>
<td>-28.9</td>
<td>45.33</td>
</tr>
<tr>
<td>Prior episode to index</td>
<td>-26.79</td>
<td>25.15</td>
<td>-3.333</td>
</tr>
<tr>
<td>Homeless</td>
<td>-40.75</td>
<td>-70.19*</td>
<td>76.21</td>
</tr>
<tr>
<td>Years used drug</td>
<td>-0.0714</td>
<td>0.0952</td>
<td>0.622</td>
</tr>
<tr>
<td>Employed</td>
<td>76.26*</td>
<td>39.19</td>
<td>31.17</td>
</tr>
<tr>
<td>High School grad</td>
<td>3.815</td>
<td>6.357</td>
<td>10.63</td>
</tr>
<tr>
<td>Age</td>
<td>-0.98</td>
<td>1.406</td>
<td>-1.097</td>
</tr>
<tr>
<td>Length of index episode (days)</td>
<td>-0.0653</td>
<td>0.094</td>
<td>-0.445*</td>
</tr>
<tr>
<td>Total Observations</td>
<td>48</td>
<td>52</td>
<td>32</td>
</tr>
</tbody>
</table>

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
The cohorts refer to the sub-cohorts defined in Figure 2, where “Cohort 11-12” are the group from ET_PRCS that started their PRCS spell between October 2011 – November 2012.

Moreover, a proxy variable that represents the type of churning within the system that should be correlated to engagement with services is the number of days the PSP has been under PRCS before the enactment of Proposition 47.\(^{49}\) This is a type of compositional effect, as longer probation spells are an indicator of suffering from more problems that lead to violations and revocations, extending a probation spell. If the timing of early terminations was correlated with the number of days one has already been on PRCS, this would be an indicator of bias. I find that this variable is not correlated with the timing of an early termination.

Appendix A.2: More information on the retrospective cohort created

This appendix goes into more detail on a few characteristics of the retrospective cohort that was created for this analysis.

The sub-cohorts labeled in Figure 2, which represent the date in which the PRCS spell started, are important because of the compositional effects that may exists within the analysis sample. For example, at the date of the policy enactment, an individual that began PRCS on January 2013 will have been on supervision for one year longer than someone that started on January 2014. Because rules state that PSPs must be under supervision for at least one year, but that violations or having been absconded will move the clock back, we can infer that the PSP that started in 2013 did not successfully complete (without violations) the first year under supervision. The same is not true for the PSP released from prison in 2014, who may (or may not) be close to successful termination when Proposition 47 was enacted. It can be presumed that, on average, the composition of PSPs with longer probationary periods are more “serious” (higher likelihood of exhibiting factors that correlate with not achieving one year without violations).

There is another compositional effect based on the date that the PSP originally began the PRCS spell. Individuals on PRCS may have committed a crime before or after AB 109 was enacted, and this distinction changes the composition of the possible criminal histories among this population. Based on AB 109 sentencing rules, a PSP that was sentenced to prison after AB 109 was enacted must exhibit a criminal history with at least one of the criteria excluding one from serving felony time in county jail. Otherwise, this individual would have been sentenced to county jail and thus not been eligible for PRCS upon release. This is an important distinction from a PSP released from prison whose case was adjudicated before AB 109. In this case, because the individual’s sentence was not adjudicated under 1170(h) guidelines, the PSP may or may not have a criminal history excluding him/her from jail sentencing.

\(^{49}\) Separate tests (not shown) demonstrate this variable does in fact correlate with the social character presented in Table A.2.
I make a few other restrictions from the sample not discussed in the text. First, I exclude PSPs whose treatment during their PRCS stint before the passage of Proposition 47 involved medication-assisted treatment (MAT). This group is expected to have different treatment trajectories because a successful episode is expected to last much longer than other modalities (Simpson, Joe, & Brown, 1997). Individuals in MAT also have disproportionately more treatment episodes and a longer treatment career compared to other modalities (Anglin et al., 1997). I also remove from the sample any individual whose treatment episode before the analysis period resulted in 30 days of abstinence at discharge. This is a very small number and it is likely a PSP that has remained abstinent during a previous treatment episode is further along in their treatment career.

The sample of SUD treatment episodes also has a few explicit omissions that deserve mention. First, treatment episodes for detox are removed because these are very short and entering such an episode involves different mechanisms that other types of treatment. If someone entered into a residential (or outpatient) treatment through detox, LACPRS identifies these as two separate treatment episodes and I capture the non-detox episode. Second, the sample of treatment episodes does not include those with a missing discharge status (and corresponding survey questions performed at discharge). The reason for this is that there is no information on the date of discharge for these episodes, making it impossible to identify the length of the episode.

Appendix A.3: Proposition 47

Based on Proposition 47 eligibility criteria and what criminal history can tell us according to the literature, there is evidence to suggest that the group receiving a Proposition 47 resentencing is different than the rest of the PRCS population. Prior research has shown that individuals being released from prison with drug-related crimes (including property crimes, usually attributed to drug abuse) experience more arrests and technical violations (but for less serious offenses) (Grattet et al., 2009), are more likely to fail treatment (Huebner & Cobbina, 2007), and are admitted to more treatment episodes over their treatment career (Anglin et al., 1997). This implies that in the context of criminal justice coercion into services, the population that benefited from Proposition 47 likely had unique trajectories we can’t account for with observed data. As of this writing, though, the author is not aware of any published detailed demographic or criminal history information regarding the Proposition 47-eligible population.

Appendix A.4: Fixed Effects OLS Regression

I estimate an average treatment effect of CS on engaging in SUD treatment, using the panel data described in the main analysis, by conducting the following fixed effects OLS regression model:

\[ Y_{it} = \beta_0 + \delta_j C S_{jt} + I_t + \beta Time_t + \epsilon_{it} \]
Where $y_{it}$ represents individual, $i$, having engaged in SUD treatment for at least 30 days during month, $t$. $CS_{it}$ is an indicator variable defining whether individual, $i$, in month, $t$, is under PRCS. $Time_t$ represents the continuous calendar time trend, starting on the first month of the analysis period (I discuss the specific month below). $I_i$ represents individual fixed effects, or time invariant factors that may be correlated with the outcome. Finally, the standard errors are robust to clustering within individuals. Unfortunately, the dataset does not include individual-level variables that change over time, which may be problematic for meeting the identifying parallel trends assumption.

Results are shown in Table A.4 below. Similar to the main analysis, PRCS appears to predict a statistically significant increase in the likelihood to engage in SUD treatment.

**Table A.4. Results for the Effect of PRCS on SUD Treatment Engagement, Using a Fixed Effects OLS Model**

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRCS Effect</td>
<td>0.0561**</td>
</tr>
<tr>
<td></td>
<td>(0.0171)</td>
</tr>
<tr>
<td>Booked Indicator</td>
<td>-0.0344*</td>
</tr>
<tr>
<td></td>
<td>(0.0143)</td>
</tr>
<tr>
<td>Times Arrested</td>
<td>0.00505</td>
</tr>
<tr>
<td></td>
<td>(0.0175)</td>
</tr>
</tbody>
</table>

Standard errors in parentheses
Observations: 129 individuals
All models include only the sample resentenced in the first year. All models account for clustered standard errors within individuals. All models include a continuous time trend (not shown).

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$