RANDOMIZED CONTROLLED TRIAL OF A DIVERSION PROGRAM FOR INDIVIDUALS WITH A HISTORY OF REPEAT FELONY PROPERTY CRIME AND SUBSTANCE USE

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Executive Summary

This summary reports findings from a randomized controlled trial (RCT) of a front-end diversion program for non-violent, repeat felony property offenders who have a substance use problem and motivation to change their behavior. Oregon's Senate Bill 416 (SB416) program was developed by state leaders seeking an alternative to prison for individuals who were committing property crimes, at least in part, to support their use of illicit substances. Guidelines for repeat felony property offenses mandate a prison sentence. However, SB416 assumes this population would be better served by community resources, and that diversion from prison would yield cost savings.

Since the dispositional departure from a presumptive prison sentence requires endorsement by a county's District Attorney (DA), but the assessment of motivation would need to be conducted by Community Corrections (CC), SB416 requires partnership to be developed between the DA and CC in a county, as well as other key system-level collaborators. Oregon's Criminal Justice Commission (CJC) provided initial seed funding to pilot SB416 in a single county that had a history of such partnering. Results were promising, and the CJC subsequently obtained funding from the Bureau of Justice Assistance to evaluate SB416 in a full-scale RCT. The DA of a second county requested that SB416 be brought there and agreed to be part of the study.

SB416 Elements. Participants receive supervision from a probation officer (PO) with specialized training. SB416 PO caseloads are capped at 60 to allow for regular contact with participants. The SB416 PO communicates regularly with the DA about participants' progress so rapid decisions can be made about rewards/sanctions. SB416 participants also receive substance use treatment. The treatment provider works with the PO to collaboratively address problems, such as missed appointments. SB416 participants also are assigned a certified recovery mentor who is in frequent communication with the treatment provider and PO. The mentor encourages substance abstinence while helping address participants' basic needs (housing, transportation, etc.)**.**

Study Design. Across the two participating counties ("County A" and "County B"), the RCT compared SB416 to probation as usual (PAU) for medium/high risk offenders, with randomization at the participant level. Archival arrest, conviction, and incarceration records for approximately 3 years post-randomization were obtained from state databases for 272 participants (County A n = 172; County B n = 100). Participants were aged 18-58 years (M = 32.7), and 67.6% were male. Race/ethnicity was 77.9% White, 14.0% Latinx, 5.5% Black/African American, 1.8% Native American, and 0.7% Asian. SB416 was expected to yield reduced arrest, conviction, and incarceration recidivism[1] relative to PAU.

Data Analysis. Arrest, conviction, and incarceration recidivism in SB416 and PAU are compared in 3 ways: The first model tested for a difference in the *likelihood* of each recidivism outcome. The second tested for a difference in the *count* of each recidivism outcome. The third tested for a difference in the *time* to each recidivism outcome. For the first 2 models, it was important to adjust for participants having different lengths of time at risk for recidivism, and to do that, 2 adjustments were applied. One considered the amount of time between each participant's randomization date and the date of data retrieval (with a maximum of 3 years), and the other adjusted for the amount of time the participant was incarcerated during follow-up. For incarceration, one version included all prison admissions that followed randomization, regardless of whether the associated crime date predated randomization (All). The other version only included prison admissions for crimes that followed randomization (New Crime). This was important as the rate of incarceration recidivism was 57% when based on *all* prison admissions, but when limited only to *new crimes following randomization*, the rate of recidivism decreased to 32%.

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[1] In accordance with SB 366 Section 1 (2015; codified in Oregon Revised Statutes [ORS] 423.557), recidivism refers to arrest, conviction, or incarceration for a new crime within three years of prison release or diversion from prison.

Results. Across counties, there was limited evidence of an effect of SB416 on arrest, conviction, or incarceration recidivism, and in County A, SB416 did not outperform PAU on any recidivism outcome. However, for County B, multiple intervention effects were observed. Specifically, when adjusting for length of follow-up and time incarcerated, SB416 participants in County B were less likely to exhibit any arrest, conviction, or incarceration (New Crime) recidivism compared to PAU participants (see Figure). In addition to being less likely to exhibit any recidivism, SB416 participants in County B were more
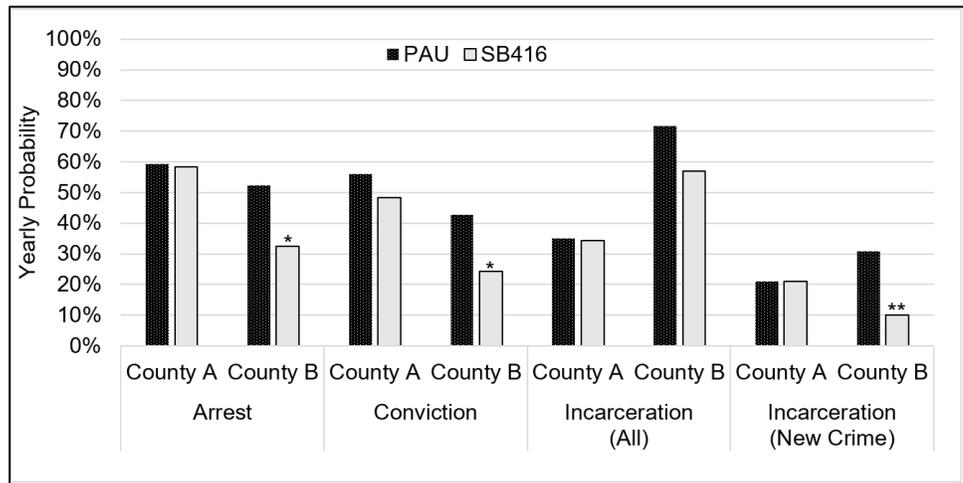

Figure. *Yearly Probability of Recidivism by County and Condition (Adjusted for Length of Follow-Up & Time Incarcerated).* *Indicates a significant effect; *p <.05. **p < .01.

likely to exhibit fewer instances of convictions and incarcerations (New Crime when adjusting for length of follow-up, New Crime and All when also adjusting for time incarcerated) compared to PAU participants. There were no statistically significant differences between SB416 and PAU in time to arrest or conviction recidivism, either across or within counties. For Incarceration (New Crime) recidivism, however, SB416 was associated with a decrease in the rate of incarceration recidivism for a crime date following randomization—but only for County B.

Discussion. County-specific characteristics may explain why SB416 intervention effects were observed in County B, but not in County A. First, County A's CC department had more financial resources and personnel relative to County B. As a result, CC in County A set a maximum caseload of 60 probationers for *all* of its POs, and this applied to POs delivering both SB416 and PAU. In contrast, CC in County B did not have a caseload maximum. When the RCT began, the CC Director in County B made an exception to cap the SB416 PO caseload at 60 cases (to match SB416 in County A), but all other POs delivering PAU in County B supervised over 100 cases. High caseloads jeopardize a PO's ability to provide regular supervision and increase the chances of cases "falling through the cracks." Thus, perhaps the intervention effect in County B is partly driven by the caseload size difference across the SB416 (60 cases) and PAU (100+ cases) conditions, whereas in County A the caseloads were low and the same for both conditions.

A second potential explanation pertains to a critical element of SB416: collaboration between the DA and CC. When the RCT began, County A already had a well-established history of cross-system collaboration, whereas County B did not. County B's participation in the RCT brought about a condition specific change, fostering collaboration in the SB416 condition, whereas DAs and POs working with PAU cases in County B rarely communicated. Perhaps the intervention effect in County B is partly due to differences in DA and PO collaboration across the SB416 and PAU conditions, whereas in County A collaboration was high and similar for both conditions.

Conclusion. The SB416 program can yield reduced recidivism when implemented in a setting characterized by low justice system resources and a limited history of cross-system collaboration. Future research should examine SB416's key mechanisms of change and its cost-effectiveness relative to standard criminal justice system processing.

Introduction

This report describes results from a randomized controlled trial (RCT) of a front-end diversion program for prison-bound individuals with prior property crime convictions, concurrent substance use problems, and no prior violent crime convictions. Over the past two decades in the United States, front-end diversion initiatives for specialized populations have become increasingly common. The popularity of these programs stems from concerns about burgeoning incarceration costs, prison overcrowding, and a growing emphasis on rehabilitative efforts within justice-system programming. In front-end diversion initiatives, individuals plead guilty to a charge and agree to engage in community-based services (e.g., intensive supervision, substance use treatment) in lieu of incarceration (Porter, 2010). Individuals with histories of non-violent property crime are a common target of these initiatives for two reasons. First, this group represents one-fifth to one-quarter of all individuals currently incarcerated in the United States (Carson, 2020). Second, data indicate that most criminal behavior exhibited by non-violent property offenders is related to substance use, such as seeking illicit drugs or obtaining resources illegally (i.e., via burglary or theft) to fund their use of drugs (Bronson et al., 2017; Hayhurst et al., 2017; Vaughn, 2011; White & Gorman, 2000). Therefore, it is hypothesized that the most effective method of reducing criminal recidivism in this group is via delivery of effective substance use treatment. Further, it is assumed that such treatment might be best delivered in the offenders' natural environment, so it is positioned to address the individual-, family-, peer-, and neighborhood-related factors contributing to their use of illicit drugs. This assumption is supported by research linking community drug treatment engagement with reductions in crime (Bukten et al., 2011; Cox & Comiskey, 2011; Gossop et al., 2000). Further, by decreasing reliance on incarceration as a punishment, such diversion programs have potential to decrease justice system costs (diversion programs typically cost less than incarceration) while also reducing prison overcrowding (Porter, 2010).

Comprehensive literature reviews indicate that diversion programs are generally effective at reducing substance use and/or recidivism relative to standard criminal justice system processing (Harvey et al., 2007; Hayhurst et al., 2019; Lange et al., 2011; Marlowe, 2010). At the same time, these reviews note that almost all studies of diversion programs lack strong methodological rigor. Indeed, existing studies are characterized by: (1) quasi-experimental or no control group designs, (2) small sample sizes, (3) high attrition rates, (4) lack of objective data on key outcomes, (5) relatively brief follow-up periods, and/or (6) reliance on completer versus intention-to-treat analyses (Harvey et al., 2007; Hayhurst et al., 2019; Lange et al., 2011). Thus, to enhance the rigor of work in this area, reviewers have called for randomized controlled evaluations of diversion programs with sound methodological features. Consistent with that call, the authors of this paper completed an RCT of Oregon's Senate Bill (SB) 416 diversion program, which addresses all of the abovementioned methodological weaknesses. The details of SB416, and the genesis of the RCT, are described next.

Oregon's SB416 program is a front-end prison diversion initiative for non-violent, repeat felony property offenders who have a substance use problem and motivation to change their behavior. SB416 was developed by state leaders seeking an alternative to prison for individuals who were committing property crimes, at least in part, to support their use of substances. In Oregon, guidelines for repeat felony property offenses mandate a prison sentence (i.e., presumptive prison). However, SB416 assumes that this population would be better served by resources in their local community, and that such diversion from prison would yield cost savings to the state. At the same time, state leaders believed that diversion should be reserved for individuals who demonstrate motivation to eliminate their substance use and offending behavior. Since the dispositional departure from a presumptive prison sentence would need to include a

recommendation by a county's District Attorney (DA), but the assessment of motivation would need to be conducted by Community Corrections (CC), SB416 requires a partnership to be developed between the DA and CC in a county, as well as other key system-level collaborators. Oregon's Criminal Justice Commission (CJC) provided initial seed funding to develop and pilot SB416 in a single county that had a history of such partnering and was seeking to implement the diversion program. Results from that pilot were promising, and the CJC subsequently obtained funding from the Bureau of Justice Assistance to evaluate SB416 in a full-scale RCT. The DA of a second county requested that SB416 be brought there and agreed to be part of the study. The CJC contracted with the authors to conduct the RCT. To ensure consistent delivery of SB416 across the two counties, the authors first collaborated with the program developers to create an SB416 protocol manual, with a specified list of key stakeholders, clear program mission, detailed description of program delivery procedures, and well-defined outcomes.

SB416 Stakeholders and Mission

SB416 stakeholders include the Office of the DA, CC (known in some counties as Parole and Probation), the Courts, substance use treatment providers, and peer recovery mentoring services. The mission of SB416 is to reduce recidivism and protect the public by holding non-violent property offenders accountable to engage in intensive community supervision and case management, substance use treatment programming, and peer mentoring services, as well as providing direct access to employment services, housing, education, and transportation. This mission is driven by four core principles. (1) Stakeholders approach program participants with cross-system collaborative procedures to promote accountability and rehabilitation, within the legal limits of each stakeholder's purview, working together to keep participants engaged in programming. (2) Stakeholders prioritize evidence-based decision making and programming. (3) Stakeholders establish clear roles and expectations, with the aim of building mutual trust that the other stakeholders in SB416 will execute their roles effectively. (4) Stakeholders communicate frequently to stay informed of each participant's progress and collaborate on making decisions regarding each participant.

SB416 Delivery

The process by which SB416 participants are identified by the DA, assessed for eligibility by CC, sentenced by the Court, and ultimately provided with program-level services is illustrated in Figure 1 and summarized below.

Initial Eligibility Determination and Case Referral

The DA's Office plays the role of gatekeeper by identifying candidates who satisfy the program's inclusion and exclusion criteria (see Table 1). Once the DA's Office deems an individual as potentially eligible, a referral is sent to an SB416 probation supervisor to coordinate an eligibility assessment. If the candidate is in custody and agrees (with legal counsel) to be considered for SB416, s/he is designated as ineligible for capacity-based release while assessment and determination of eligibility is conducted, and CC's assessment is commenced as quickly as possible. In addition, the DA sends a letter to the victim(s) in the case notifying them about the candidate's consideration for SB416.

Figure 1. *Oregon Senate Bill (SB) 416 Program: Flow Diagram*
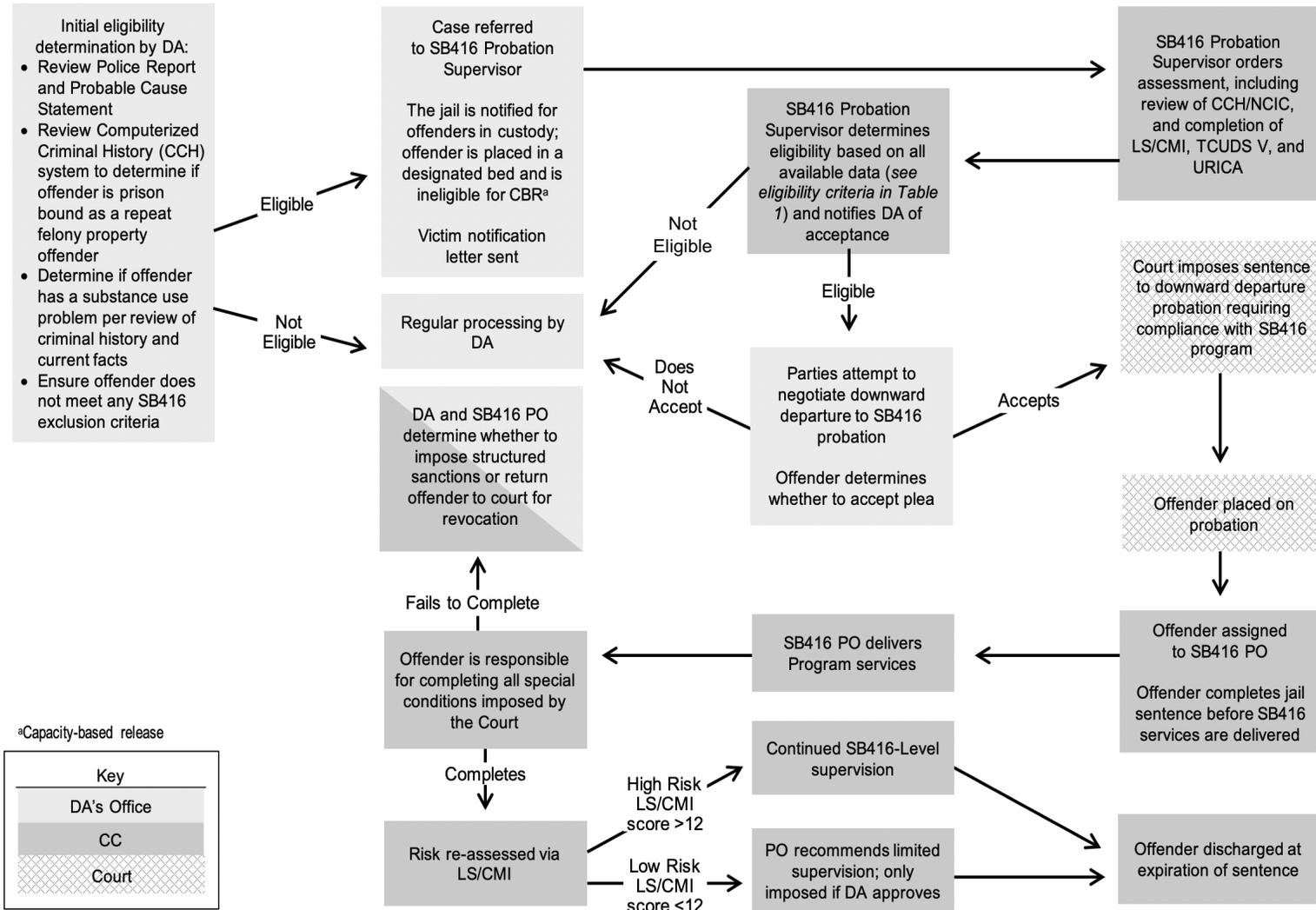
Note. DA = District Attorney, CC = Community Corrections, PO = Probation Officer, NCIC = National Crime Information Center, ISIS = Integrated Supervision Information System, LS/CMI = Level of Service/Case Management Inventory, TCUDS V = Texas Christian University Drug Screen V, URICA = University of Rhode Island Change Assessment.

Table 1. Oregon Senate Bill (SB) 416 Program Eligibility Criteria

Inclusion Criteria
- Resident of county
- Prison-bound repeat felony property offender
- Substance abuse problems are present (Note: the individual may or may not have a drug offense, but some evidence of problematic substance use is required)
- Medium or high risk, as identified by the Level of Services/Case Management Inventory (LS/CMI) or a similar assessment tool

Automatic Exclusion Criteria
- Prior sexual offense convictions
- Domestic violence convictions in the past 10 years
- Felony person crime convictions within the past 10 years (Robbery III does not necessarily disqualify if District Attorney deems the use of force to be minimal)
- Individuals in need of a higher level of mental health care than can be provided with standard clinic-based services
- Crimes that have a vulnerable victim and/or involve a violation of trust (e.g., elder abuse, embezzlement/employee fraud, organized ID theft/forgery/check fraud ring [i.e., racketeering])

Other Considerations in Determining Ineligibility (Note: The following are not "rule outs" but, if present, are considered carefully before deeming an individual eligible)
- Repeated violence convictions (i.e., repeated felony or misdemeanor person convictions)
- Domestic violence convictions or felony person crime convictions from more than 10 years ago that raise enough concern to exclude the candidate (e.g., multiple prior such convictions; not completing terms successfully)
- Excessive arrest cycles (e.g., 30 and above)
- Pattern of repeated (i.e., 5+) instances of Failure to Appear (FTA)
- Significant amount of other crimes associated with the targeted crime
- Multiple assaultive arrest cycles
- Other person-to-person crimes (i.e., endangering, tampering with witness, etc.)
- Other high-risk concerns (i.e., restraining/stalking orders, outstanding warrants including municipal/out-of-state)
- Objection by victim that cannot be addressed by the District Attorney's Office or relevant new information provided by victim (e.g., unreported crimes committed by the individual)
- Combination of High to Very High risk in multiple areas (LS/CMI, etc.)
- Motivation level (e.g., pre-contemplation stage) based on the University of Rhode Island Change Assessment (URICA) or comments made by client during interview process
- Pattern of poor performance on current/prior supervision (i.e., multiple sanctions /warrants)
- Other reasons indicating low likelihood of success or extensive history demonstrating lack of success (e.g., has already obtained a substantial amount of programming; does not take responsibility for the crime)

CC Eligibility Assessment

An intake coordinator at CC assesses candidates to determine their appropriateness. These assessments are completed within seven days of DA referral and include the following: (a) review of the candidate's Computerized Criminal History (CCH)/National Crime Information Center (NCIC) file for statewide and out-of-state crimes; (b) Level of Service/Case Management Inventory (LS/CMI; Andrews et al., 2004) to determine criminogenic risk factors; (c) University of

Rhode Island Change Assessment (URICA; McConnaughy et al., 1983) to determine motivation for behavior change; and the (d) Texas Christian University Drug Screen V (TCUDS V; Institute for Behavioral Research, 2020) to determine severity of the candidate's substance use. Based on all available information, the SB416 probation supervisor makes the final determination on whether the candidate is eligible for SB416 and conveys this decision to the DA.

Plea Negotiations

When a candidate is deemed eligible for SB416, this determination is communicated to the individual's defense attorney. The parties attempt to negotiate a downward departure to probation rather than prison time. If an agreement is reached, the individual pleads guilty to the charges s/he is required to plead to pursuant to the offer and proceeds to sentencing by the Court. Following sentencing, the individual completes his/her jail sentence, which begins at the point of arrest and initial booking at the jail, before SB416 services are initiated.

Supervision

All SB416 participants receive enhanced supervision from a dedicated probation officer (PO) with specialized training in the Effective Practices in Community Supervision (EPICS) model (Smith et al., 2012). This nationally disseminated supervision approach, developed by the University of Cincinnati Corrections Institute, targets the needs of offenders using highly structured social learning and cognitive behavioral techniques. Thus, the SB416 PO must undergo training (generally 3 days), followed by a coaching period (generally 6 months) and ongoing quality assurance checks (i.e., audiotape reviews and feedback) to ensure s/he delivers EPICS with high fidelity.

Immediately after a participant is accepted into the SB416 program, the SB416 PO makes contact and holds a session. Like with all contacts, the EPICS model is used, and the focus is on identifying the criminogenic risk factors for the individual and methods for effectively addressing those factors. Besides the mandatory substance abuse treatment and the work of the SB416 mentor (described below), any employment, housing, education, and transportation needs are addressed using a case management approach. As such, and consistent with recommendations from experts (e.g., Caudy et al., 2015; Taxman et al., 2013), SB416 services are tailored to the participant's specific criminogenic needs. This is preferred over a more rigid approach, where everyone receives the exact same intervention.

The SB416 PO's caseload is capped at 60 cases to allow for regular contact with participants. The minimum number of contacts follows the requirement for probation services for medium/high risk offenders, which is 7 in-person contacts/6 months for medium-risk offenders and 15 in-person contacts/6 months for high-risk offenders. Periodic home visits also are required for medium and high-risk offenders, as well as when there are community complaints. Contacts never go below policy minimums; however, the SB416 PO often has more frequent contact initially, sometimes even daily contact for cases with high criminogenic risk factors. Participants sometimes ask for greater accountability or contact, and that is always accommodated. Frequency is reduced (but not below policy minimums) as SB416 participants demonstrate that they are compliant with all aspects of treatment, obtain and maintain employment, and sustain drug abstinence.

Throughout supervision, the SB416 PO actively collaborates with the DA's Office. This includes providing updates on SB416 cases when problems arise or when information is requested. Email communication is the most frequent mode of contact, although in-person meetings and phone calls occur. As described below, the SB416 PO communicates weekly or more frequently with the

treatment provider and mentors, so the PO has detailed information about each participant's progress and special circumstances. This information is used by the DA to make appropriate decisions for ensuring community safety and participant accountability, while promoting participant rehabilitation.

Probation violations by SB416 participants are sanctioned swiftly following a structured sanctions grid that is used by all POs in Oregon. For example, 3-5 days in custody might be recommended for repeated substance use. The PO relies on administrative warrants to address minor violations. Other sanctions typically used are increasing frequency of PO contact and writing essays. In the event of a new law violation, the PO and DA collaborate to determine next steps. The decision to file an Order to Show Cause and return the case to Court is decided by the DA. Typically, this decision is based on the severity of the new crime, repeating the same crimes as prior to SB416 enrollment, the participant not taking accountability, and/or the participant's motivation to change. The decision to revoke is ultimately decided by the Court. Conversely, when SB416 participants successfully complete all conditions imposed by the court, they might be moved to limited supervision (pending DA approval and a "low risk" score on the LS/CMI) until expiration of their probation sentence.

Treatment

All SB416 participants receive treatment from a substance use provider in their community. Treatment costs are paid through insurance or contracted by CC. The provider is not required to implement a specific intervention; however, services must be classified as evidence-based by a reputable professional organization (e.g., Substance Abuse and Mental Health Services Administration, National Institute on Drug Abuse) and focus on both substance use and criminogenic risks. Treatment begins within 5-7 days of program start (or for participants in custody, 5-7 days after their release). Each treatment plan is developed in accordance with criteria established by the American Society of Addiction Medicine (ASAM; Rastegar & Fingerhood, 2020), and also includes consideration of Risk-Need-Responsivity (RNR; Andrews et al., 2011) and LS/CMI factors. Occasionally, SB416 participants require partial hospitalization (ASAM level 2.5) or placement in an inpatient/residential facility (ASAM level 3.5 or higher), although this is rare. More commonly, participants qualify for intensive outpatient treatment (ASAM level 2.1), with a typical service consisting of 3 group sessions per week; at least 1 individual session per month; and regular urine drug testing, with the frequency of testing ranging from 2-4 times per month to multiple times per week depending on the participant's use history and substance(s) of choice.

The PO and treatment provider communicate weekly via phone, email, and/or in-person. In addition, the provider submits a written summary on each SB416 participant on a monthly basis. The goal of these communications is to provide updates on case progress and to allow the PO and provider to collaboratively address problems, such as missed appointments or positive urine drug screens. SB416 participants complete treatment once they have met the goals on their treatment plan. Although those goals will vary across clients, participants must generally meet the following: (a) attendance at a minimum of 80% of treatment appointments (individual and group) during the last 90 days of treatment; (b) completion of all treatment assignments; (c) abstinence as documented by observed drug screens for a minimum of the last 90 days of treatment; (d) completion of a relapse prevention plan; and (e) confirmation by the PO that the participant has demonstrated improved behavioral functioning as evidenced by no probation violations and engagement in school, work, and/or other prosocial activities.

Mentoring

SB416 participants are assigned a mentor of the same gender. These are paraprofessionals who, at a minimum, have a high school diploma/GED and have been designated as a Certified Recovery Mentor by the Addiction Counselor Certification Board of Oregon. Mentors might be employed by the substance abuse treatment provider or by another agency in the community. The mentor makes initial contact with the SB416 participant 1-2 days after program entry to establish rapport and identify the participant's needs in key domains (e.g., housing, food, clothing, transportation, employment, health care). After the primary needs are identified, the mentor meets regularly with the participant (often 2-3 times per week at first) to address those needs through informational resources and community referrals. In addition, once the participant initiates substance use treatment, the mentor engages in activities aimed at enhancing the likelihood of positive outcomes. Specifically, the mentor transports the participant to the initial clinic intake appointment, attends regular staffing meetings with the clinical team, and assists the team in developing treatment plans and intervention strategies. The mentor ensures participants attend all treatment sessions and provides access to transportation to those sessions as needed. In addition, the mentor supports the work of the treatment provider by continuously encouraging participants to utilize their drug avoidance and refusal skills, and also by finding opportunities to model pro-social thinking and behavior. Of importance, the mentor is in frequent communication with the treatment provider and SB416 PO. These communications occur weekly via phone, email, and/or in-person, and can also take place more frequently as needed. SB416 mentoring concludes at the end of treatment.

Targeted Outcomes

The primary goal of SB416 is reduced recidivism, defined in accordance with SB 366 Section 1 (2015) (codified in Oregon Revised Statutes [ORS] 423.557). As used in that section, recidivism refers to any arrest, conviction, or incarceration for a new crime within three years of prison release or the point of diversion from prison.

Current Study

An RCT of SB416 was conducted by researchers independent of SB416 developers and the individuals delivering the program. As noted, two Oregon counties participated, hereafter referred to as "County A" and "County B." Across both counties, the RCT compared SB416 to probation as usual (PAU) for medium/high risk offenders, with randomization at the participant level. Archival arrest, conviction, and incarceration records for approximately three years post-randomization were obtained from state databases. Study hypotheses were as follows:
1. Participants receiving SB416 will exhibit a lower *likelihood* of arrest, conviction, and incarceration relative to participants receiving PAU.
2. Participants receiving SB416 will exhibit a lower *count* of arrests, convictions, and convictions leading to incarceration relative to participants receiving PAU.
3. Participants receiving SB416 will exhibit greater *time to* arrest, conviction, and incarceration relative to participants receiving PAU.

Methods

Participants and Recruitment

Study procedures were approved by the Institutional Review Board at the Oregon Social Learning Center. Recruitment for the RCT began in November 2015 and ended in November 2019. To prevent coercion, recruitment occurred after the participant had been provided a downward departure sentence and was placed on probation (i.e., the candidate also had already been deemed eligible for possible participation in SB416 [see Table 1 and Figure 1]). Staff working within CC at Counties A and B were trained in research ethics and learned how to explain the RCT and solicit informed consent. The CC staff described the study in detail, emphasized the voluntary nature of participation, and indicated that participants could terminate involvement in the study at any time. Specifically, individuals were consenting (a) to be randomized to SB416 or standard PAU for medium/high risk offenders and (b) to allow their justice-related records to be used in the study. Importantly, participation or refusal to participate did not affect the individual's sentence; the downward departure sentence had already been implemented and was not contingent on study participation.

Figure 2 depicts the flow from participant recruitment through data analysis. Of 433 individuals referred by the DA, 129 were found not eligible by CC's assessment (see above description of SB416 process). Of the 304 eligible, 32 declined and 272 were enrolled (89.5% recruitment rate). All 272 participants were included in the data analysis.

Overall, study participants were 18-58 years of age (M = 32.7, SD = 9.1), and 67.6% were reported to be male. Race/ethnicity was reported as 77.9% White, 14.0% Latinx, 5.5% Black/African American, 1.8% Native American, and 0.7% Asian. County A participants (n = 172) were 18-58 years of age (M = 32.9, SD = 9.3), and 70.3% were reported to be male. Race/ethnicity in County A was reported as 69.8% White, 19.2% Latinx, 7.0% Black/African American, 2.9% Native American, and 1.2% Asian. County B participants (n = 100) were 19-58 years of age (M = 32.3, SD = 8.9), and 63.0% were reported to be male. Race/ethnicity in County B was reported as 92.0% White, 5.0% Latinx, and 3.0% Black/African American.

In Oregon, the Public Safety Checklist (PSC; https://risktool.ocjc.state.or.us/psc/) is used to assess the probability that an offender will be re-convicted of a felony within three years of prison release or the point of diversion from prison. This actuarial risk assessment tool, developed via a collaboration between the Oregon Department of Corrections and the Oregon CJC, uses offender characteristics (e.g., age, sex, severity of current crime, number of prior arrests) to predict recidivism. In a large validation study involving 350,000 offenders in Oregon, the PSC yielded an area under the curve score of 0.70, indicating high predictive validity. PSC scores can range from 0% to 100% and cut-points are specified for individuals at low (0%-24%), medium (25%-37%), and high (38%-100%) recidivism risk. For the 272 individuals participating in this RCT, the overall mean PSC score was 42% (SD = 16), reflecting high risk for recidivism. For County A participants, the mean PSC score was 43% (SD = 15), and for County B participants, the mean PSC score was 41% (SD = 16).

Figure 2. CONSORT Participant Flow Diagram
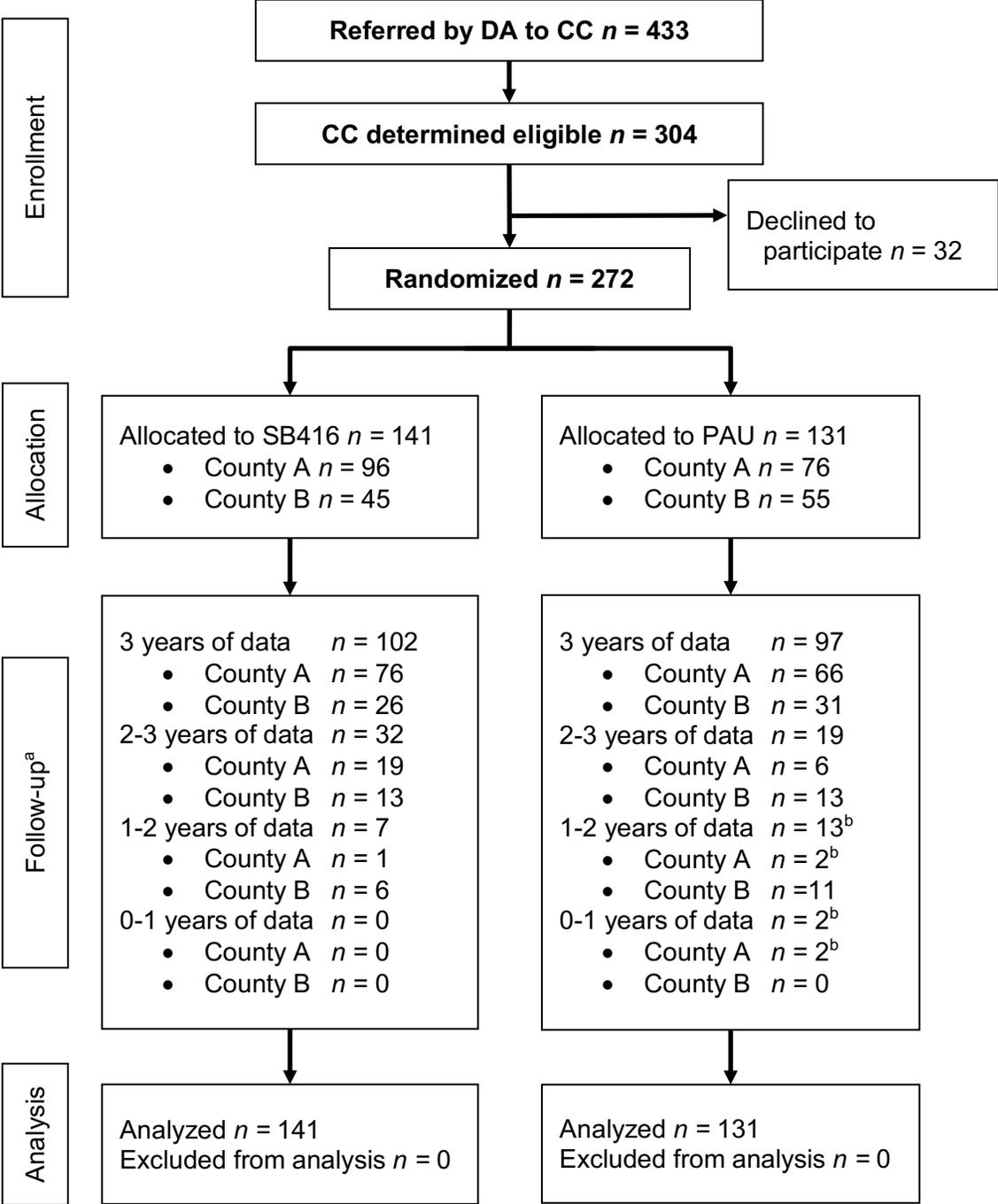
Note. SB416 = Oregon Senate Bill (SB) 416 Program. PAU = Probation as Usual. DA = District Attorney. CC = Community Corrections.
[a]Follow-up length for arrest data is reported; due to a slight difference in retrieval date for conviction and incarceration data, the 1-2 year, 2-3 year, and 3 year numbers differ slightly (i.e., by a range of 1-6 participants). [b]Participants with less than 3 years follow-up data due to death: 1-2 years, $n = 1$; 0-1 years, $n = 2$.

Randomization Procedure

Participants were allocated to SB416 or PAU via urn randomization. The urn ensured balance across the intervention conditions on key factors: 1) sex (male v. female); 2) age (18-26 v. 27+); and 3) LS/CMI score (medium v. high). Following informed consent, CC staff remotely accessed the randomization utility via VPN, entered the participant's status on each factor, and ran the program to determine condition assignment. Participants were informed of condition at that time and subsequently assigned to a PO in the corresponding condition. Access of the randomization utility, randomization results, and CC records were audited by the authors regularly to ensure adherence to procedures.

Intervention Conditions

The SB416 program was described previously, and a manual is available from the authors. The control condition was PAU for medium/high risk offenders. That is, the control condition was typical probation services that would be delivered to individuals deemed by CC to be at medium or high risk for recidivism. As with SB416, this risk level requires a minimum of 7 in-person contacts/6 months for medium-risk offenders and 15 in-person contacts/6 months for high-risk offenders and periodic home visits. The SB416 PO did not supervise PAU participants, and vice versa. In both counties, PAU participants had access to the same treatment services as SB416 participants, but the PAU participants' POs provided less coordination for attendance and treatment participation. Control participants in the two counties also had access to mentoring, but it was not mandatory, and the mentors were not specialized SB416 mentors. For PAU, POs have access to the same sanctions grid, but often have less information to guide decisions than SB416 POs, because they are not in regular communication with mentors and treatment staff.

Outcomes

Study data were not collected directly from participants. Instead, archival records of recidivism were provided by the Oregon CJC. The recidivism outcome was evaluated independently for arrests, convictions, and incarcerations, and for each of these, there were three versions of the outcome: (1) a dichotomous recidivism status (0 = No Recidivism, 1 = Recidivism), (2) a count of recidivism events, and (3) time to the first occurrence of the event (scaled in months). Of note, the data retrieval date varied slightly across data sources, which meant that the time at risk for recidivism also varied (see Data Analysis Strategy). However, for all outcomes, the maximum time at risk was limited to three years in accordance with the state definition. Described next are the three data sources for the recidivism outcomes.

Arrests

Arrest data were retrieved from the Oregon Law Enforcement Data System (LEDS). The data included the number of days to each arrest following randomization. Also included was the pre-randomization, lifetime count of arrests.

Convictions

Conviction data were retrieved from the Oregon Circuit Court data system. Recidivism was defined as a misdemeanor or felony conviction for a new crime. Pre- and post-randomization convictions were identified using the offense date associated with each conviction.

Incarcerations

Incarceration data were retrieved from the Oregon Department of Corrections. Because SB416 is a prison diversion program, recidivism could include incarceration for a new crime or for a revocation. Pre- and post-randomization incarcerations were identified based on the prison admission date. Only two participants had more than one prison admission during follow-up, and because of this, the count outcome for incarceration reflects the number of convictions associated with the incarceration. Additionally, the incarceration data included the crime date(s) and conviction date(s) associated with each prison admission. From this, two versions of incarceration outcomes were created, one for *all* prison admissions post-randomization (regardless of crime date), and the other limited to prison admissions for crime dates that were post-randomization (i.e., for new crimes committed post-randomization). This was important because a subset of participants recruited into the study were subsequently incarcerated for crimes that had been committed prior to study entry and randomization; typically, these were historical crimes that had been committed outside of Counties A and B. To illustrate this, the rate of incarceration recidivism was 57% when based on *all* prison admissions, but when limited only to *new crimes that followed randomization*, the rate of recidivism decreased to 32%.

Data Analysis Strategy

Primary Analyses

Data Structure and Model Formulation. The data were structured with 272 participants nested in one of two counties (County A, County B). All participants were randomized to PAU or SB416. Intention-to-treat analyses were performed, with each participant retained in the randomly allocated condition regardless of participation in the condition. Related to this, with the outcome data retrieved from archival sources, there was no loss to follow-up (see Figure 2). For the primary analyses, each outcome had two versions: dichotomous (i.e., *Did it occur*?) and count (i.e., *How many times did it occur*?). Dichotomous outcomes were analyzed according to a binary logistic distribution (logit link), and the estimated effects included odds ratios (ORs; i.e., exp[β]) and predicted probabilities (i.e., OR/[1 + OR]). Count outcomes were analyzed according to a negative binomial distribution (log link), and the estimated effects included event rate ratios (ERs; i.e., exp[β]). The analyses were implemented as generalized linear models using SPSS software (IBM Corp., 2017).

For each outcome, two models were performed to test for: (1) an overall effect of SB416 *across* the two counties and (2) an effect of SB416 *within* each county. The first model included a dummy-coded indicator for intervention condition (0 = PAU, 1 = SB416). The second included the condition indicator, county indicator (0 = County A, 1 = County B), and the interaction of condition and county. In this model, the effect of SB416 in County A was estimated by the condition term (main effect), and the effect for County B was obtained as a pairwise comparison of estimated marginal means (EMMs). Finally, it is important to note that this model formulation provides a direct comparison of the two counties; however, this was not of primary interest and the corresponding results (i.e., interaction term) should not be interpreted without considerable supporting context.

Adjusting for Each Participant's Time at Risk for Recidivism. Participants varied in their time at risk—or their "opportunity"—for recidivism, and this was important to consider in the statistical analyses. This variability came from two sources. *First*, because participants were recruited on a rolling basis, those recruited later in the RCT had a follow-up that was shorter than the intended three-year recidivism period (see Figure 2). Specifically, across outcomes, 69% to 73% of the

sample had the full three-year follow-up (which varied due to different data retrieval dates), and of those with less than three years of data, the median follow-up was 2.3 years (*SD* = 0.6). *Second*, participants who were incarcerated at some point during follow-up had reduced opportunity for further recidivism. For instance, after removing time incarcerated, the median duration of the follow-up period decreased from 3.0 years (*SD* = 0.5) to 2.0 years (*SD* = 0.9). Because of this variability, it was important to adjust the statistical models for each participant's total time at risk for recidivism—this provides a more accurate overall estimate of recidivism. Two versions of the exposure adjustment (i.e., "offset") were computed. The first version was the number of years (natural log transformed) between each participant's randomization date and the data retrieval date for each outcome (with a maximum of three years). The second version started with the participant's length of follow-up but also removed the duration of incarceration for participants who were incarcerated. For each outcome, a separate model was performed with the two exposure variables. The exposure terms have two effects on interpretation. First, they align participants with respect to their risk of recidivism (e.g., a participant arrested two times in *one year* of follow-up would not be assumed to be the same as a participant arrested two times in *three years* of follow-up). Second, the exposure terms rescale model estimates so that, instead of reflecting the entire three-year recidivism period, the estimates reflect a yearly log-odds (dichotomous) or log rate (count) of recidivism. This is a commonly used, and highly flexible, method for accommodating variability in time at risk.

Secondary Analyses

Secondary analyses evaluated the effect of SB416 on *time to* recidivism, specifically, time to the first occurrence of an arrest, conviction, incarceration, or incarceration for a new crime committed post-randomization. The analyses were implemented as Cox regression models in SPSS. For each type of recidivism, the time variable was defined as the number of months from randomization to the first recidivism event or, for participants without recidivism, the number of months in the follow-up period. The event variable was a dummy-coded indicator for each participant's recidivism status (0 = No, 1 = Yes). The initial model included the dummy-coded condition indicator (0 = PAU, 1 = SB416), and the next model added a dummy-coded indicator for county (0 = County A, 1 = County B), as well as the interaction between county and condition. As with the primary analyses, the interaction term was not the main focus and should not be interpreted without additional context. Instead, the main focus was the effect of SB416 relative to PAU *within* each of the two counties. To obtain the statistical significance test for the effect of SB416 in County B (i.e., the non-reference county), the model was re-estimated with the reference group reverse coded (i.e., 0 = County B, 1 = County A). The effect of SB416 was estimated by the log hazard rate, and statistical significance was based on the Wald test statistic. The hazard ratio (HR; i.e., exp[β]) was used to characterize the monthly difference in the rate of recidivism for SB416 relative to PAU, with HRs below 1.0 indicating the percentage reduction in recidivism for the SB416 group (i.e., 100 × [HR − 1]).

Summary of the Data Analysis Strategy

The analyses focus on three types of recidivism outcomes—arrests, convictions, and incarcerations—and for each, SB416 and PAU are compared in three ways: The first model tests for a difference in the likelihood of recidivism occurring (i.e., a dichotomous outcome, analyzed using binary logistic regression). The second model tests for a difference in the number of times the recidivism outcome occurred (i.e., a count outcome, analyzed using negative binomial regression). The third model tests for a difference in the time to recidivism (i.e., a time-to-event outcome, analyzed using Cox regression models). For the first two models, it was important to adjust for participants having different lengths of time at risk for recidivism, and to do that, two

adjustments were applied. One considered the actual amount of time between each participant's randomization date and the date of data retrieval (with a maximum of 3 years), and the other also adjusted for the amount of time the participant was incarcerated during follow-up. For the incarceration outcome, there was one additional consideration. One version of the outcome included all prison admissions that followed randomization, regardless of the associated crime date and conviction date. The other version only included prison admissions for crime dates that followed randomization. Across the arrest, conviction, and incarceration outcomes, the analyses focused on comparing SB416 and PAU *within* each of the two counties, and direct comparison of the two counties is not appropriate with the current data.

Results

Table 2 reports the descriptive statistics for recidivism outcomes by county.

Table 2. Descriptive Statistics for Recidivism Outcomes by County and Condition

Outcome by County	Any Recidivism		Count of Recidivism Events									
	PAU	SB416	PAU					SB416				
	%	%	*M*	*Mdn*	*SD*	Min	Max	*M*	*Mdn*	*SD*	Min	Max
Arrest												
County A	71	73	1.68	1.00	1.66	0	6	1.80	1.50	1.65	0	7
County B	55	42	0.89	1.00	1.07	0	5	0.69	0.00	1.06	0	5
Conviction												
County A	68	65	1.66	1.00	1.66	0	7	1.99	1.00	2.35	0	10
County B	45	33	1.25	0.00	1.96	0	8	0.58	0.00	1.01	0	4
Incarceration (All)												
County A	50	51	1.55	0.50	2.13	0	9	1.70	1.00	2.69	0	19
County B	71	64	2.73	2.00	3.37	0	19	1.89	1.00	2.89	0	13
Incarceration (New Crime)												
County A	34	35	0.49	0.00	0.77	0	3	0.68	1.00	1.16	0	6
County B	35	16	0.75	0.00	1.48	0	7	0.27	0.00	0.75	0	4

Note. SB416 = Oregon Senate Bill (SB) 416 Program. PAU = Probation as Usual. The Incarceration (All) outcome is based on all incarceration dates that followed randomization, regardless of the associated crime date (i.e., crimes could have been committed prior to randomization). The Incarceration (New Crime) outcome is based on incarcerations for crime dates that followed randomization.

Likelihood and Count of Recidivism

The primary analyses address the effect of SB416 on the likelihood of recidivism and the number of times it occurred. This answers the questions: *Was SB416 associated with a lower likelihood of arrest, conviction, or incarceration within 3 years of randomization? Was SB416 associated with fewer arrests, convictions, or incarcerations (i.e., convictions leading to an incarceration) within 3 years of randomization?* To address these questions, the analyses considered participants' time at risk for recidivism in two ways. In the first, the model adjusted for the length of each participant's follow-up period, and in the second, it also adjusted for the amount of time each participant was incarcerated.

Arrest Recidivism

Adjusted for Length of Follow-Up. Results are reported in the top section of Table 3. Overall (i.e., when not considering the effect of county), SB416 and PAU did not differ significantly on the likelihood of arrest or count of arrests during the follow-up period. Similarly, within County A and within County B, SB416 and PAU did not differ significantly.

Adjusted for Length of Follow-Up and Time Incarcerated. Results are reported in the bottom section of Table 3. Overall, SB416 and PAU did not differ significantly on the likelihood or count

of arrests during follow-up. The same was true within County A. For County B, SB416 had a significantly lower likelihood of arrest recidivism, with a yearly probability of 32%, versus 52% for PAU (OR = 0.44). The two groups did not differ on the count of arrests.

Arrest Summary. When only adjusting for each participant's length of follow-up, SB416 did not have a significant effect on arrest recidivism, and with one exception, the same was true when also adjusting for time incarcerated. The exception was for County B, and when adjusting for time incarcerated, SB416 had a significantly lower likelihood of arrest recidivism compared to PAU. The outcomes for SB416 and PAU within each county are illustrated in Figures 3-6.

Table 3. Regression Estimates for the Effect of SB416 on Arrest Recidivism

	Any Arrest [a]					Count of Arrests [b]				
	Est.	*SE*	*p*	OR	95% CI$_{OR}$	Est.	*SE*	*p*	ER	95% CI$_{ER}$
Adjusted for Length of Follow-Up [c]										
Overall Effect										
Intercept	-0.382	0.185	.039	0.68	[0.48, 0.98]	-0.707	0.116	<.001	0.49	[0.39, 0.62]
SB416	-0.109	0.255	.668	0.90	[0.54, 1.48]	0.025	0.160	.875	1.03	[0.75, 1.40]
Effect by County										
Intercept	-0.087	0.260	.737	0.92	[0.55, 1.52]	-0.534	0.146	<.001	0.59	[0.44, 0.78]
SB416	0.020	0.347	.955	1.02	[0.52, 2.01]	0.057	0.194	.768	1.06	[0.72, 1.55]
County B	-0.648	0.377	.085	0.52	[0.25, 1.09]	-0.497	0.246	.043	0.61	[0.38, 0.98]
SB416×County B	-0.570	0.536	.287	0.57	[0.20, 1.62]	-0.401	0.363	.269	0.67	[0.33, 1.36]
EMM: County B [d]										
SB416 vs. PAU	-0.107	0.079	.173	0.58	[e]	-0.104	0.092	.260	0.71	[e]
Adjusted for Length of Follow-Up and Time Incarcerated [f]										
Overall Effect										
Intercept	0.249	0.195	.200	1.28	[0.88, 1.88]	-0.103	0.121	.393	0.90	[0.71, 1.14]
SB416	-0.279	0.266	.294	0.76	[0.45, 1.27]	-0.081	0.166	.627	0.92	[0.67, 1.28]
Effect by County										
Intercept	0.379	0.268	.157	1.46	[0.86, 2.47]	-0.034	0.151	.822	0.97	[0.72, 1.30]
SB416	-0.037	0.357	.918	0.96	[0.48, 1.94]	0.011	0.200	.956	1.01	[0.68, 1.50]
County B	-0.284	0.394	.470	0.75	[0.35, 1.63]	-0.201	0.256	.433	0.82	[0.50, 1.35]
SB416×County B	-0.794	0.556	.154	0.45	[0.15, 1.35]	-0.515	0.376	.170	0.60	[0.29, 1.25]
EMM: County B [d]										
SB416 vs. PAU	-0.200	0.100	.045	0.44	[e]	-0.313	0.200	.117	0.60	[e]

Note. SB416 = Oregon Senate Bill (SB) 416 Program. PAU = Probation as Usual. For Overall Effect, SB416 is the estimated intervention effect across both counties. For Effect by County, SB416 is the estimated effect within County A. Within County B, the effect of SB416 is provided by the Estimated Marginal Mean (EMM). [a] Binary logistic regression model (logit link). [b] Negative binomial regression model (log link). [c] Natural log transformed exposure term for length of follow-up. [d] EMM = Estimated Marginal Mean; the difference in probability/count between SB416 and PAU in County B. [e] 95% CIs for OR/ER could not be computed; the formulation did not estimate the *SE* for the between-group difference in log odds/log event rate. [f] Natural log transformed exposure term that removes time incarcerated from length of follow-up.

Figure 3. Yearly Probability of Recidivism by County and Condition (Adjusted for Length of Follow-up)
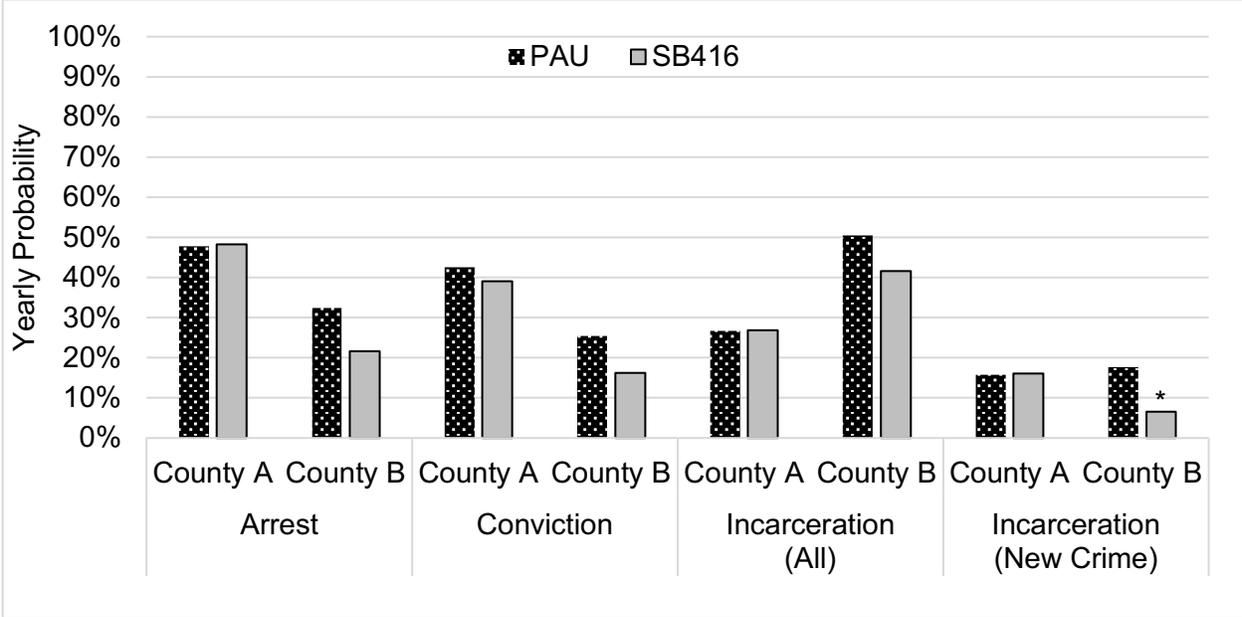
Note. SB416 = Oregon Senate Bill (SB) 416 Program. PAU = Probation as Usual. The figure displays predicted yearly probabilities of recidivism by county and intervention condition. The estimates are based on a binary logistic regression model (logit link) with a natural log transformed exposure term to adjust for each participant's length of follow-up. The Incarceration (All) outcome is based on all incarceration dates that followed randomization, regardless of the associated crime date. The Incarceration (New Crime) outcome is based on incarcerations for crime dates that followed randomization.
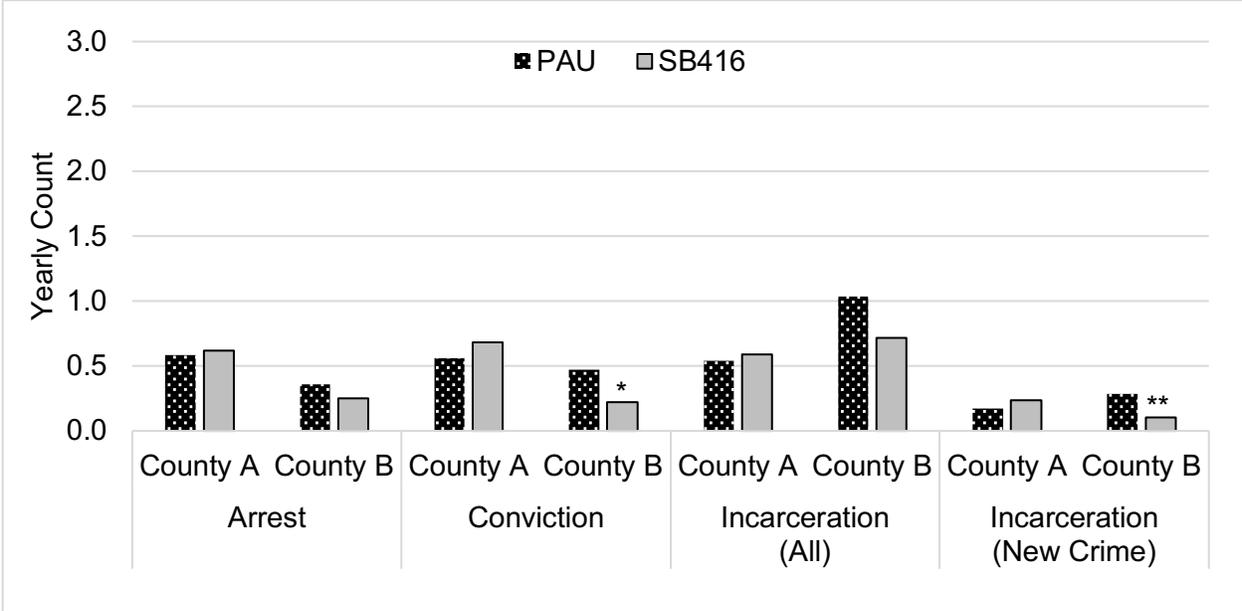*p < .05. **p < .01. ***p < .001.

Figure 4. Yearly Count of Recidivism Events by County and Condition (Adjusted for Length of Follow-Up)

Note. SB416 = Oregon Senate Bill (SB) 416 Program. PAU = Probation as Usual. The figure displays predicted yearly count of recidivism by county and intervention condition. The estimates are based on a negative binomial regression model (log link) with a natural log transformed exposure term to adjust for each participant's length of follow-up. The incarceration outcomes reflect the count of convictions associated with the incarceration. The Incarceration (All) outcome is based on all incarceration dates that followed randomization, regardless of the associated crime date. The Incarceration (New Crime) outcome is based on incarcerations for crime dates that followed randomization.
*p <.05. **p < .01. ***p < .001.

Figure 5. Yearly Probability of Recidivism by County and Condition (Adjusted for Length of Follow-Up and Time Incarcerated)

Note. SB416 = Oregon Senate Bill (SB) 416 Program. PAU = Probation as Usual. The figure displays predicted yearly count of recidivism by county and intervention condition. The estimates are based on a binary logistic regression model (logit link) with a natural log transformed exposure term to adjust for each participant's length of follow-up and time incarcerated. The Incarceration (All) outcome is based on all incarceration dates that followed randomization, regardless of the associated crime date. The Incarceration (New Crime) outcome is based on incarcerations for crime dates that followed randomization.
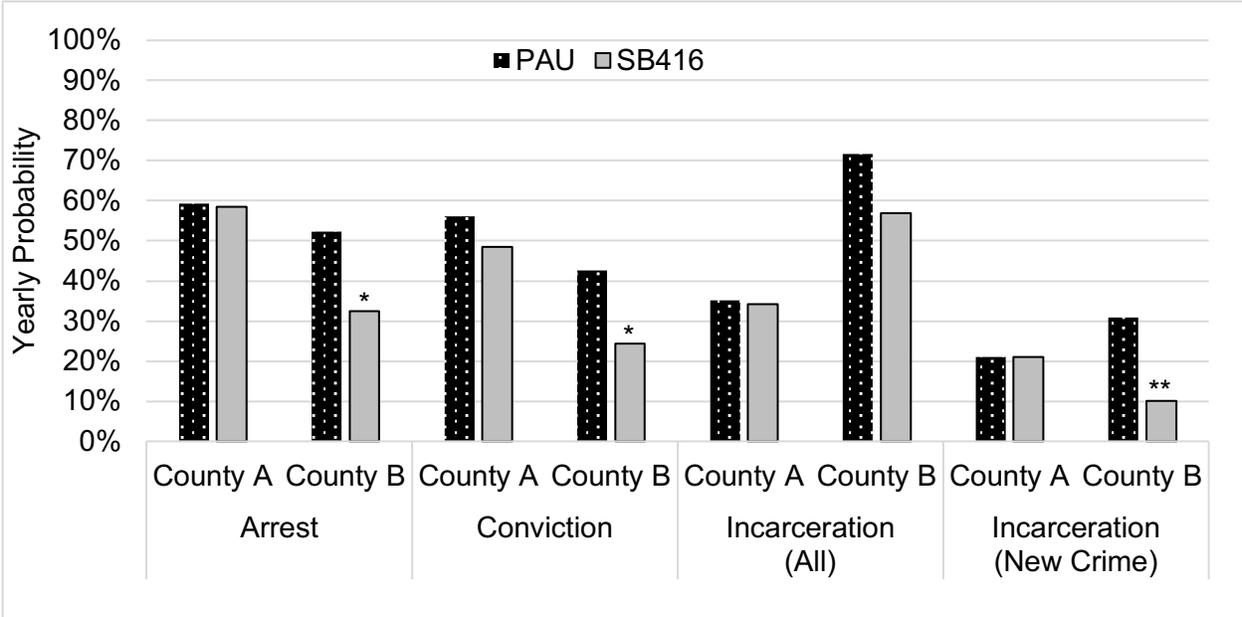
*p <.05. **p < .01. ***p < .001.

Figure 6. Yearly Count of Recidivism Events by County and Condition (Adjusted for Length of Follow-Up and Time Incarcerated)

Note. SB416 = Oregon Senate Bill (SB) 416 Program. PAU = Probation as Usual. The figure displays predicted yearly count of recidivism by county and intervention condition. The estimates are based on a negative binomial regression model (log link) with a natural log transformed exposure term to adjust for each participant's length of follow-up and time incarcerated. The incarceration outcomes reflect the count of convictions associated with the incarceration. The Incarceration (All) outcome is based on all incarceration dates that followed randomization, regardless of the associated crime date. The Incarceration (New Crime) outcome is based on incarcerations for crime dates that followed randomization.
*p <.05. **p < .01. ***p < .001.

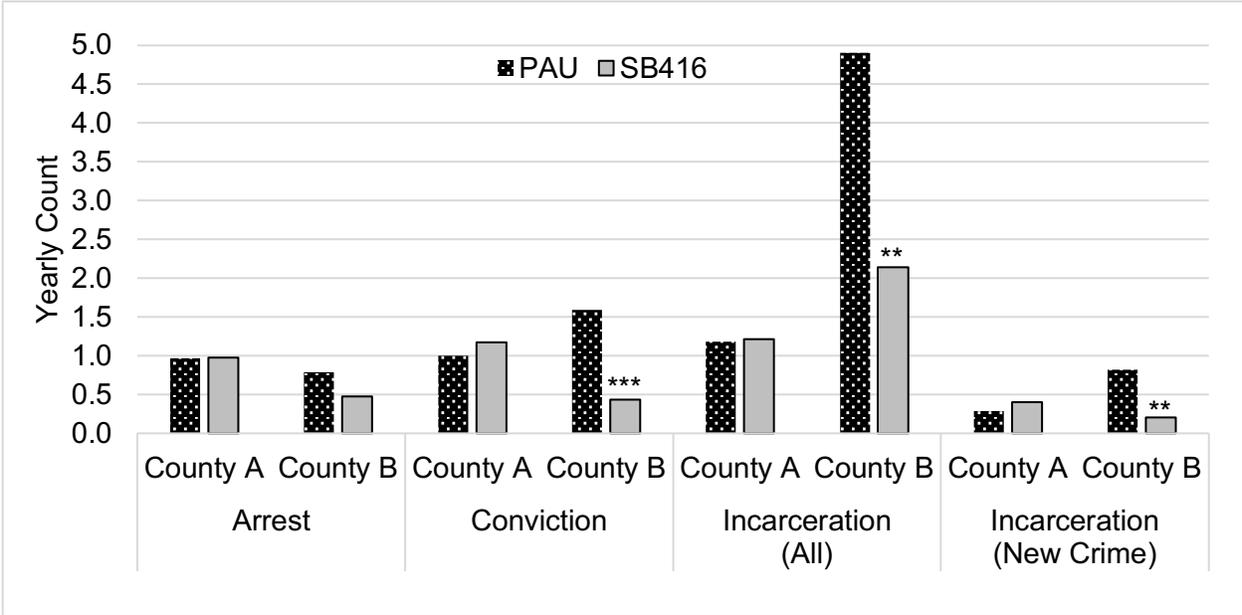### Conviction Recidivism

Adjusted for Length of Follow-Up. Results are reported in the top section of Table 4. Overall, SB416 and PAU did not differ significantly on the likelihood or count of convictions during the follow-up period, and the same was true within County A. Within County B, the groups did not differ on the likelihood of recidivism, but SB416 had a significantly lower count of convictions, with a predicted yearly count of 0.22, versus 0.47 for PAU (ER = 0.47).

Adjusted for Length of Follow-Up and Time Incarcerated. Results are reported in the bottom section of Table 4. Overall, SB416 and PAU did not differ significantly on the likelihood or count of convictions during the follow-up period, which was also true within County A. However, within County B, SB416 and PAU differed significantly on both outcomes. For SB416, the predicted yearly probability was 24%, versus 43% for PAU (OR = 0.43), and SB416 had a predicted yearly count of 0.43 convictions, versus 1.59 for PAU (ER = 0.27).

Conviction Summary. In County A, SB416 and PAU did not differ significantly on conviction recidivism. However, in County B, SB416 had a significantly lower count of convictions, which held for both types of adjustments. Further, when adjusting for length of follow-up and time incarcerated, SB416 had a significantly lower likelihood of conviction recidivism (see Figures 3-6).

Table 4. Regression Estimates for the Effect of SB416 on Conviction Recidivism

	Any Conviction [a]					Count of Convictions [b]				
	Est.	*SE*	*p*	OR	95% CI$_{OR}$	Est.	*SE*	*p*	ER	95% CI$_{ER}$
Adjusted for Length of Follow-Up [c]										
Overall Effect										
Intercept	-0.638	0.179	<.001	0.53	[0.37, 0.75]	-0.644	0.113	<.001	0.53	[0.42, 0.66]
SB416	-0.191	0.246	.439	0.83	[0.51, 1.34]	0.025	0.157	.871	1.03	[0.75, 1.39]
Effect by County										
Intercept	-0.298	0.247	.227	0.74	[0.46, 1.20]	-0.578	0.145	<.001	0.56	[0.42, 0.75]
SB416	-0.148	0.327	.651	0.86	[0.45, 1.64]	0.193	0.192	.315	1.21	[0.83, 1.77]
County B	-0.779	0.368	.035	0.46	[0.22, 0.94]	-0.172	0.233	.460	0.84	[0.53, 1.33]
SB416×County B	-0.421	0.532	.428	0.66	[0.23, 1.86]	-0.957	0.362	.008	0.38	[0.19, 0.78]
EMM: County B [d]										
SB416 vs. PAU	-0.092	0.067	.170	0.57	e	-0.250	0.102	.013	0.47	e
Adjusted for Length of Follow-Up and Time Incarcerated [f]										
Overall Effect										
Intercept	0.003	0.190	.985	1.00	[0.69, 1.45]	0.176	0.122	.151	1.19	[0.94, 1.51]
SB416	-0.404	0.258	.117	0.67	[0.40, 1.11]	-0.216	0.166	.193	0.81	[0.58, 1.12]
Effect by County										
Intercept	0.243	0.261	.353	1.27	[0.76, 2.13]	-0.002	0.152	.988	1.00	[0.74, 1.34]
SB416	-0.306	0.341	.371	0.74	[0.38, 1.44]	0.159	0.199	.424	1.17	[0.79, 1.73]
County B	-0.539	0.388	.165	0.58	[0.27, 1.25]	0.470	0.250	.060	1.60	[0.98, 2.61]
SB416×County B	-0.533	0.553	.335	0.59	[0.20, 1.74]	-1.461	0.382	<.001	0.23	[0.11, 0.49]
EMM: County B [d]										
SB416 vs. PAU	-0.180	0.093	.048	0.43	e	-1.160	0.336	<.001	0.27	e

Note. SB416 = Oregon Senate Bill (SB) 416 Program. PAU = Probation as Usual. For Overall Effect, SB416 is the estimated intervention effect across both counties. For Effect by County, SB416 is the estimated effect within County A. Within County B, the effect of SB416 is provided by the Estimated Marginal Mean (EMM). [a] Binary logistic regression model (logit link). [b] Negative binomial regression model (log link). [c] Natural log transformed exposure term for length of follow-up. [d] EMM = Estimated Marginal Mean; the difference in probability/count between SB416 and PAU in County B. [e] 95% CIs for OR/ER could not be computed; the formulation did not estimate the *SE* for the between-group difference in log odds/log event rate. [f] Natural log transformed exposure term that removes time incarcerated from length of follow-up.

Incarceration Recidivism

There were two versions of each incarceration outcome, one that was based on *all* prison admissions post-randomization and one that focused on prison admissions for *new crimes* committed post-randomization. For each of these, separate models adjusted for length of follow-up and for time incarcerated.

Adjusted for Length of Follow-Up.

All Prison Admissions Post-Randomization. Results are reported in the top section of Table 5. Overall, SB416 and PAU did not differ significantly on the likelihood of incarceration or the count of convictions leading to an incarceration. Similarly, within each county, SB416 and PAU did not differ significantly.

Prison Admissions for New Crimes Post-Randomization. Results are reported in the top section of Table 6. Overall, SB416 and PAU did not differ significantly on incarceration outcomes, and the same was true within County A. Within County B, SB416 had a significantly lower likelihood of incarceration and count of convictions leading to an incarceration. Specifically, for SB416, the predicted yearly probability of incarceration was 7%, versus 18% for PAU (OR = 0.33), and the yearly count of convictions leading to an incarceration was 0.10, versus 0.28 for PAU (ER = 0.36).

Adjusted for Length of Follow-Up and Time Incarcerated.

All Prison Admissions Post-Randomization. Results are reported in the bottom section of Table 5. Overall, SB416 and PAU did not differ significantly on the likelihood of incarceration. However, the groups differed significantly on the count of convictions leading to an incarceration, with SB416 having a predicted yearly count of 1.46, and PAU having a count of 2.42 (ER = 0.60). Within County A, the groups did not differ significantly on the likelihood of incarceration or count of convictions leading to an incarceration. Within County B, the groups did not differ significantly on the likelihood of incarceration, but they did differ significantly on the count of convictions leading to an incarceration. The predicted yearly count for SB416 was 2.14, and for PAU, it was 4.9 (ER = 0.44).

Prison Admissions for New Crimes Post-Randomization. Results are reported in the bottom section of Table 6. Overall, SB416 and PAU did not differ significantly on the likelihood of incarceration or count of convictions leading to an incarceration, and the same was true within County A. Within County B, SB416 had a significantly lower likelihood of incarceration and count of convictions leading to an incarceration. Specifically, for SB416, the predicted yearly probability of incarceration was 10%, versus 31% for PAU (OR = 0.25), and the count of convictions leading to an incarceration was 0.20, versus 0.82 for PAU (ER = 0.25).

Incarceration Summary. There was an overall effect of SB416 (i.e., not considering county) when adjusting for time incarcerated, with the count of all convictions leading to an incarceration (regardless of crime date) being significantly lower for SB416 compared to PAU. Within County B, SB416 had a lower likelihood of incarceration and count of convictions leading to an incarceration when based on new crimes following randomization, whether adjusting for the length of follow-up or adjusting for time incarcerated (see Figures 3-6). When the outcome was based on all incarcerations (i.e., even if the associated crime date preceded randomization), there was one effect in County B, with SB416 having a lower count of convictions leading to an incarceration.

Table 5. Regression Estimates for the Effect of SB416 on Incarceration Recidivism (All Incarcerations Following Randomization)

	Any Incarceration [a]					Count of Convictions per Incarceration [b]				
	Est.	*SE*	*p*	OR	95% CI$_{OR}$	Est.	*SE*	*p*	ER	95% CI$_{ER}$
Adjusted for Length of Follow-Up [c]										
Overall Effect										
Intercept	-0.596	0.180	<.001	0.55	[0.39, 0.78]	-0.294	0.107	.006	0.75	[0.60, 0.92]
SB416	-0.203	0.248	.413	0.82	[0.50, 1.33]	-0.171	0.151	.256	0.84	[0.63, 1.13]
Effect by County										
Intercept	-1.014	0.232	<.001	0.36	[0.23, 0.57]	-0.613	0.148	<.001	0.54	[0.41, 0.72]
SB416	0.008	0.310	.980	1.01	[0.55, 1.85]	0.084	0.196	.667	1.09	[0.74, 1.60]
County B	1.035	0.379	.006	2.82	[1.34, 5.92]	0.647	0.217	.003	1.91	[1.25, 2.92]
SB416×County B	-0.366	0.533	.492	0.69	[0.24, 1.97]	-0.454	0.313	.147	0.63	[0.34, 1.17]
EMM: County B [d]										
SB416 vs. PAU	-0.089	0.107	.406	0.70	e	-0.320	0.211	.129	0.69	e
Adjusted for Length of Follow-Up and Time Incarcerated [f]										
Overall Effect										
Intercept	0.005	0.190	.980	1.00	[0.69, 1.46]	0.885	0.116	<.001	2.42	[1.93, 3.04]
SB416	-0.374	0.258	.148	0.69	[0.41, 1.14]	-0.505	0.161	.002	0.60	[0.44, 0.83]
Effect by County										
Intercept	-0.615	0.240	.010	0.54	[0.34, 0.87]	0.170	0.155	.273	1.19	[0.87, 1.61]
SB416	-0.038	0.319	.904	0.96	[0.52, 1.80]	0.027	0.205	.897	1.03	[0.69, 1.53]
County B	1.546	0.398	<.001	4.69	[2.15, 10.24]	1.420	0.230	<.001	4.14	[2.64, 6.50]
SB416×County B	-0.615	0.557	.270	0.54	[0.18, 1.61]	-0.855	0.332	.010	0.43	[0.22, 0.82]
EMM: County B [d]										
SB416 vs. PAU	-0.148	0.103	.151	0.52	e	-2.760	0.936	.003	0.44	e

Note. SB416 = Oregon Senate Bill (SB) 416 Program. PAU = Probation as Usual. For Overall Effect, SB416 is the estimated intervention effect across both counties. For Effect by County, SB416 is the estimated effect within County A. Within County B, the effect of SB416 is provided by the Estimated Marginal Mean (EMM). [a] Binary logistic regression model (logit link). [b] Negative binomial regression model (log link). [c] Natural log transformed exposure term for length of follow-up. [d] EMM = Estimated Marginal Mean; the difference in probability/count between SB416 and PAU in County B. [e] 95% CIs for OR/ER could not be computed; the formulation did not estimate the *SE* for the between-group difference in log odds/log event rate. [f] Natural log transformed exposure term that removes time incarcerated from length of follow-

Table 6. Regression Estimates for the Effect of SB416 on Incarceration Recidivism (Incarcerations for Crimes Following Randomization)

	Any Incarceration [a]					Count of Convictions per Incarceration [b]				
	Est.	*SE*	*p*	OR	95% CI$_{OR}$	Est.	*SE*	*p*	ER	95% CI$_{ER}$
Adjusted for Length of Follow-Up [c]										
Overall Effect										
Intercept	-1.622	0.186	<.001	0.20	[0.14, 0.28]	-1.530	0.144	<.001	0.22	[0.16, 0.29]
SB416	-0.289	0.263	.271	0.75	[0.45, 1.25]	-0.104	0.202	.608	0.90	[0.61, 1.34]
Effect by County										
Intercept	-1.681	0.244	<.001	0.19	[0.12, 0.30]	-1.770	0.201	<.001	0.17	[0.11, 0.25]
SB416	0.031	0.324	.925	1.03	[0.55, 1.95]	0.320	0.258	.214	1.38	[0.83, 2.28]
County B	0.142	0.376	.705	1.15	[0.55, 2.41]	0.510	0.289	.078	1.67	[0.94, 2.94]
SB416×County B	-1.142	0.597	.056	0.32	[0.10, 1.03]	-1.330	0.465	.004	0.26	[0.11, 0.66]
EMM: County B [d]										
SB416 vs. PAU	-0.110	0.049	.023	0.33	[e]	-0.180	0.068	.008	0.36	[e]
Adjusted for Length of Follow-Up and Time Incarcerated [f]										
Overall Effect										
Intercept	-1.115	0.192	<.001	0.33	[0.22, 0.48]	-0.780	0.152	<.001	0.46	[0.34, 0.62]
SB416	-0.428	0.270	.113	0.65	[0.38, 1.11]	-0.286	0.211	.176	0.75	[0.50, 1.14]
Effect by County										
Intercept	-1.321	0.250	<.001	0.27	[0.16, 0.44]	-1.242	0.208	<.001	0.29	[0.19, 0.43]
SB416	-0.005	0.331	.987	0.99	[0.52, 1.90]	0.321	0.266	.227	1.38	[0.82, 2.32]
County B	0.518	0.388	.183	1.68	[0.78, 3.59]	1.047	0.305	<.001	2.85	[1.57, 5.18]
SB416×County B	-1.379	0.611	.024	0.25	[0.08, 0.84]	-1.727	0.485	<.001	0.18	[0.07, 0.46]
EMM: County B [d]										
SB416 vs. PAU	-0.210	0.074	.005	0.25	[e]	-0.620	0.196	.002	0.25	[e]

Note. SB416 = Oregon Senate Bill (SB) 416 Program. PAU = Probation as Usual. For Overall Effect, SB416 is the estimated intervention effect across both counties. For Effect by County, SB416 is the estimated effect within County A. Within County B, the effect of SB416 is provided by the Estimated Marginal Mean (EMM). [a] Binary logistic regression model (logit link). [b] Negative binomial regression model (log link). [c] Natural log transformed exposure term for length of follow-up. [d] EMM = Estimated Marginal Mean; the difference in probability/count between SB416 and PAU in County B. [e] 95% CIs for OR/ER could not be computed; the formulation did not estimate the *SE* for the between-group difference in log odds/log event rate. [f] Natural log transformed exposure term that removes time incarcerated from length of follow-up.

Time to Recidivism

The secondary analyses focus on *time to* recidivism, answering the question: *Was SB416 associated with a decrease in the rate of recidivism for arrests, convictions, or incarcerations?*

Arrest Recidivism

In the Cox proportional hazards model for time to arrest recidivism, across models, there were no statistically significant differences between SB416 and PAU. Overall, SB416 was associated with a 5% decrease in the rate of arrest recidivism, β = -0.055, *SE* = 0.152, Wald = 0.133, *p* = .716, HR = 0.95, 95% CI_{HR} = [0.70, 1.28]. When comparing SB416 and PAU within each county, SB416 in County A was associated with a 1% decrease in the rate of arrest recidivism, β = -0.012, *SE* = 0.181, Wald = 0.004, *p* = .948, HR = 0.99, 95% CI_{HR} = [0.69, 1.41]. In County B, SB416 was associated with a 30% decrease in the rate of arrest recidivism, β = -0.356, *SE* = 0.293, Wald = 1.476, *p* = .224, HR = 0.70, 95% CI_{HR} = [0.39, 1.24].

Conviction Recidivism

There were no statistically significant differences between SB416 and PAU in the time to conviction recidivism. Overall, SB416 was associated with a 9% decrease in the rate of conviction recidivism, β = -0.098, *SE* = 0.161, Wald = 0.372, *p* = .542, HR = 0.91, 95% CI_{HR} = [0.66, 1.24]. When comparing the groups within each county, SB416 in County A was associated with a 6% decrease in the rate of conviction recidivism, β = -0.065, *SE* = 0.188, Wald = .118, *p* = .731, HR = 0.94, 95% CI_{HR} = [0.65, 1.36]. In County B, SB416 was associated with a 34% decrease in the rate of conviction recidivism, β = -0.412, *SE* = 0.327, Wald = 1.593, *p* = .207, HR = 0.66, 95% CI_{HR} = [0.35, 1.26].

Incarceration Recidivism

All Prison Admissions Post-Randomization. There were no statistically significant differences between SB416 and PAU in the time to any incarceration post-randomization (i.e., for crimes committed *either* before or after randomization). Overall, SB416 was associated with a 13% decrease in the rate of incarceration recidivism, β = -0.140, *SE* = 0.161, Wald = 0.757, *p* = .384, HR = 0.87, 95% CI_{HR} = [0.63, 1.19]. When comparing SB416 and PAU within each county, SB416 in County A was associated with a 1% decrease in the rate of incarceration recidivism, β = -0.006, *SE* = 0.216, Wald = .001, *p* = .979, HR = 0.99, 95% CI_{HR} = [0.65, 1.52]. In County B, SB416 was associated with a 16% decrease in the rate of incarceration recidivism, β = -0.175, *SE* = 0.246, Wald = 0.508, *p* = .476, HR = 0.84, 95% CI_{HR} = [0.52, 1.36].

Prison Admissions for New Crimes Post-Randomization. Overall, SB416 and PAU did not differ significantly on the time to incarceration for crime dates following randomization, β = -0.305, *SE* = 0.216, Wald = 1.992, *p* = .158, HR = 0.74, 95% CI_{HR} = [0.48, 1.13]. When comparing the two groups within each county, the difference between SB416 and PAU in County A was not statistically significant, with SB416 associated with a 2% decrease in the rate of incarceration recidivism, β = -0.006, *SE* = 0.261, Wald = 0.001, *p* = .981, HR = 0.99, 95% CI_{HR} = [0.60, 1.66]. In County B, there was a statistically significant difference between SB416 and PAU. Specifically, SB416 was associated with a 66% decrease in the rate of incarceration recidivism for a crime date following randomization, β = -1.070, *SE* = 0.443, Wald = 5.844, *p* = .016, HR = 0.34, 95% CI_{HR} = [0.14, 0.82].

Discussion

This report summarizes findings from an RCT of a front-end diversion program for prison-bound individuals with prior property crime convictions, concurrent substance use problems, and no prior violent crime convictions. The results from this trial provide partial support for the study hypotheses. There was limited evidence of an overall SB416 intervention effect, and in County A, SB416 did not outperform PAU on any of the recidivism outcomes. However, for County B, multiple intervention effects were observed. That is, for County B and when adjustments were made for participants' time at risk, SB416 yielded significantly greater improvements across various configurations of the arrest, conviction, and incarceration outcomes, relative to PAU. These findings add to the existing evidence base on the effectiveness of diversion programming compared to more typical justice system processing (Harvey et al., 2007; Hayhurst et al., 2019; Lange et al., 2011).

Potential explanations were considered for the differential impact of SB416 in Counties A and B. Study participants from the two counties were similar with regard to demographic characteristics and PSC scores (i.e., risk for recidivism). Thus, offender-specific variables did not appear to play a role in the differential findings. However, a few county-specific variables seem relevant. First, although County A had fewer residents than County B when this trial began in 2015 (i.e., 284,834 vs. 322,959, respectively), County A had a much greater resourced CC department. Indeed, in Fiscal Year (FY) 2015-2016, County A had a CC operating budget of $15,103,223 and 79 full-time positions. In that same FY, County B had a CC operating budget of $8,888,380 and 50 full-time positions. This difference had direct implications for PO caseload size in the two counties. With more resources and personnel, CC in County A was able to set a maximum caseload size of 60 probationers for *all* of its POs, and this applied to POs delivering both SB416 and PAU in the present trial. In contrast, CC in County B did not have a caseload maximum. When this RCT began, the CC Director in County B made a special exception to cap the SB416 PO caseload at 60 cases (to match SB416 in County A), but all other POs delivering PAU in County B routinely supervised over 100 cases. Exceedingly high caseloads jeopardize a PO's ability to provide regular support and supervision to probationers and increase the chances of cases "falling through the cracks." This raises questions about the potential relevance of caseload size for observing an SB416 intervention effect in County B, but not in County A. Perhaps the intervention effect in County B is at least partly driven by the caseload size difference across the SB416 (60 cases) and PAU (100+ cases) conditions in that particular county, whereas in County A the caseloads were low and the same for both conditions.

A second potential explanation pertains to the investigators' observation of a difference in how the DA and CC stakeholders in Counties A and B worked with one another. A critical element of SB416 involves close collaboration between the DA and CC departments. Ideally, this takes the form of regular communication between DAs and POs regarding offender progress so that decisions can be made rapidly about rewards/sanctions or other interventions. When this trial began, County A already had a long and well-established history of such cross-system collaboration. In fact, this style of partnership appeared to be the norm in County A, and it was applied to all cases on supervision, not just those participating in the SB416 program. In contrast, County B did not have a history of effective collaboration between its DA and CC departments prior to the start of this trial. To the contrary, the departments had a strained relationship characterized by mistrust and limited communication. Admittedly, the DA department for County A was well-resourced (84 full-time positions) compared to County B (64 full-time positions); combined with a more resourced CC department and a lower population (see above), County A DAs and POs were potentially afforded more availability for collaborating compared to County B.

County B's participation in the RCT brought about a large change in this regard, but that change was condition specific. That is, in County B, oversight on all SB416 cases was concentrated under a single DA (to replicate the SB416 program procedures in County A), and that DA communicated regularly (via phone, email, and in-person) with the SB416 PO (again, to replicate the SB416 program procedures). Over the first 6-12 months of the trial, the SB416 procedures generated a strong working relationship between the SB416 DA and PO in County B, bolstered by shared goals (community safety and offender rehabilitation), mutual respect, and transparent communication. However, the same cannot be said for the DAs and POs working with the PAU cases in County B; those DAs and POs rarely communicated with one another, and a degree of mistrust persisted. This was likely due to County B being under-resourced for effective collaboration to occur. This collaboration difference might have contributed to the detection of an intervention effect in County B, but not in County A. Perhaps the intervention effect in County B is partly due to the marked difference in DA and PO collaboration across the SB416 and PAU conditions in that county, whereas in County A collaboration was high and similar for both conditions. In sum, these considerations suggest that reduced caseload size and enhanced collaboration between the DA and PO, even in the face of a department being under-resourced, might be key ingredients for achieving SB416 intervention effects.

Past studies of diversion programs are characterized by varied methodological weaknesses (Harvey et al., 2007; Hayhurst et al., 2019; Lange et al., 2011). The current study enhances the rigor of research in this area via its (1) RCT design, (2) moderately large sample size, (3) high participant recruitment rate, (4) manualized intervention protocol, (5) well-defined and objective outcome variables, (6) lengthy follow up period, and (7) use of intention-to-treat analyses. Nevertheless, the study also has some limitations. First, to ensure strong fidelity of SB416 implementation, the intervention was manualized, with structured decision trees, checklists, and forms. However, the use of more objective and ongoing fidelity monitoring methods was beyond the budget for this trial. A stronger approach would have included regular and direct observation of program delivery via coding of taped interactions between SB416 participants and program staff (i.e., POs, treatment providers, and mentors). Second, although appropriate and sophisticated analytic methods were used to accommodate variability in each participant's time at risk for recidivism, the study would have been stronger if all participants had a full three-year follow-up window.

Conclusion and Recommendations

In conclusion, evidence from this trial indicates that the SB416 program can yield desired outcomes (i.e., reduced recidivism) when implemented in a setting characterized by low justice system resources and limited history of cross-system collaboration. The successful completion of this trial speaks to the feasibility of conducting RCTs of diversion programs in partnership with real-world justice systems and in community-based settings. Thus, this study might serve as a model for others aiming to apply rigorous RCT methodology to the evaluation of other similar diversion initiatives. At the same time, more research on the SB416 program is needed. Specifically, SB416 is a large, multicomponent intervention, and it was not possible in this trial to pinpoint which components are responsible for intervention effects. The considerations noted previously suggest that capped caseloads and strong collaboration between the DA and PO stakeholders might be key. Nevertheless, future randomized dismantling studies would be needed to truly isolate the relative effectiveness of these and other program characteristics and components. In addition, as one central aim of diversion initiatives is a reduction in costs incurred by the criminal justice system, the cost-effectiveness of SB416 (relative to incarceration) would be critically important to examine. Finally, outcomes for this RCT relied on system-level data, but the measurement of individual success for this population also would be of great interest, such as the impact of SB416 on individuals' abstinence from drugs and alcohol, employment, housing stability, and relationship functioning.

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