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Concordance Evaluation:

Quasi-Experimental Analysis of the Concordance Re-Entry Program

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Presented to:
Concordance
Executive Committee of the
Board of Directors

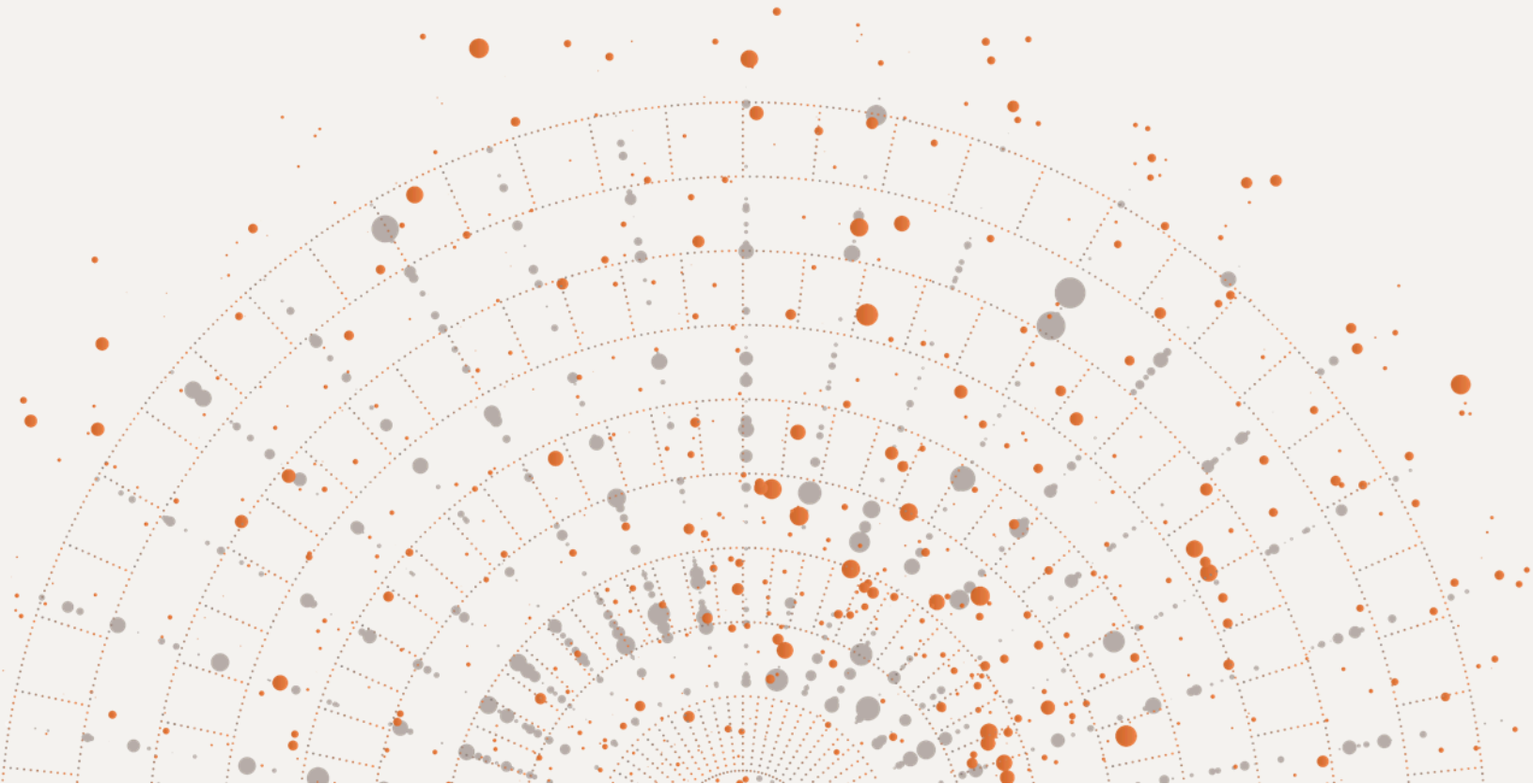

Table of Contents

List of Figures

List of Tables

Acknowledgements

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Introduction

This paper presents the results of a retrospective, quasi-experimental evaluation of the effectiveness of prisoner reentry programming at Concordance, a prisoner reentry program serving the greater St. Louis, MO area. This evaluation compares the effectiveness of Concordance programming in reducing recidivism among a sample of Missouri Department of Corrections prisoners invited to participate in the program versus those who received "treatment as usual" parole supervision upon release from prison. Concordance programming is a comprehensive, wraparound prisoner reentry model that blends best practices identified in prior research, including transitional and post-release services.

Study participants were recruited from the Missouri Department of Corrections prison system and were eligible for the treatment group in this study if they had board approved release dates within an approved window (between 1/1/2023 and 3/31/2024), were sentenced to return to St. Louis City, St. Louis County, St. Charles County, Franklin County or Jefferson County (the "Concordance catchment area"), were 18 years or older, did not require registration as a sex offender, required at least 3 months of formal parole supervision upon release, and did not have serious mental or medical health issues. The research team hypothesized that the treatment cohort (those invited to participate in the Concordance program) would experience lower rates of recidivism than the comparison cohort (those engaged in treatment as usual upon being paroled from prison) as measured by the likelihood of reincarceration, time to reincarceration, likelihood of parole violation, number of parole violations, likelihood of incarceration, and time to first return to prison in the year following release from prison.

This study used a two-group quasi-experimental design in which enrollment-offered Concordance-eligible participants (treatment) were compared with a group of Concordance-eligible participants (comparison) who were not offered enrollment in the program but were released from prison during the same period as the enrollment-offered participants and met other eligibility requirements. The study tested whether the treatment and comparison groups would differ in post-program outcomes, specifically, new post-release contact with the criminal justice system. In total, outcomes for 5,424 released prisoners were studied (754 participants who were offered enrollment in the Concordance programming and 4,670 participants selected for the comparison group).

While prisoner reentry programs have been studied for three decades and are a staple of most correctional and community supervision systems, there is little consensus about what works in prisoner reentry. Although some effective practices have emerged from a large body of research, the central question remains unanswered: when all the elements of prisoner reentry programming are brought together in a real-world setting, are these programs effective at reducing recidivism? In particular, while several efficacy studies show promising effects of prisoner reentry programs, few effectiveness studies find similar results. Efficacy studies test whether an intervention works under ideal, highly controlled conditions, whereas effectiveness studies test whether it works in real-world settings with typical implementation and populations. This suggests that researcher involvement has been critical to the programs' success.

The Concordance program and this quasi-experimental evaluation are *a priori* distinguished from other programs in three ways. First, as is detailed in prior reports[1], Concordance was developed from the ground up using evidence-based practices to structure the program; most prisoner reentry programs build upon existing community-based programs and adapt practices as they evolve. Second, Concordance was intentionally designed to be scalable, with its core program structure developed from the outset to be replicated in its entirety rather than modified to fit new environments. Third, no researchers were involved during the study period. While this research team collaborated with Concordance on earlier evaluations,[2] and a team of researchers helped design the study before the program launch in 2017. In the period under study, Concordance operated organically. Thus, this study represents a true effectiveness study.

Methodology

Study Design

The evaluation employs a quasi-experimental comparison between individuals who engaged in the Concordance program and a set of eligible individuals who did not ultimately participate. The comparison group included those who were not offered enrollment, declined participation, or enrolled but did not engage after enrollment. Comparison cases were drawn from the same prison release window as treatment cases and satisfied the program's eligibility criteria

The research team used a quasi-experimental approach that matched the two groups on observable covariates available prior to the treatment enrollment decision (e.g., criminal history and demographic characteristics) as well as covariates relevant to post-enrollment decisions about whether to participate in programming (e.g., vocational training). In other words, the treatment group consists of participants who actually participated in the Concordance programming rather than those who were offered programming or enrolled and never showed up. The control group consists of all otherwise-eligible cases released in the same time period.

To estimate the effect of Concordance for people who actually participated, we used propensity score weighting in R[3] to make the comparison group similar to the treatment group on key baseline characteristics. After confirming that the groups were well balanced on these measures, we applied the weights to regression models appropriate for each outcome (yes/no outcomes, counts, and time-to-event measures such as time to reincarceration). For time-to-event outcomes, follow-up began at each person's release date and ended at the event date or November 30, 2025 (with non-events treated as censored), and analyses were capped at two years post-release due to limited longer-term follow-up.

[1] Roman, John K., Anthony Washburn, and Emily White. 2021. The Concordance Academy Evaluation: A Quasi-Experimental Test of Recidivism. Chicago: NORC at the University of Chicago. 1-20

[2] ibid.

[3] Ridgeway, G., McCaffrey, D., Morral, A., Griffin, B. A., & Burgette, L. (2024). *twang: Toolkit for weighting and analysis of nonequivalent groups* (R package version 2.6.1). https://CRAN.R-project.org/package=twang

Sample

Participants were recruited from the Missouri Department of Corrections prison system and were eligible for the treatment group in this study if they had board approved release dates within an approved window (between 1/1/2023 and 8/31/2024), were sentenced to return to St. Louis City, St. Louis County, St. Charles County, Franklin County or Jefferson County (the "Concordance catchment area"), were 18 years or older, did not require registration as a sex offender, required at least 3 months of formal parole supervision upon release, and did not have serious mental or medical health issues. The list of participants meeting these eligibility requirements was provided to Concordance staff, who then interviewed these potential participants to explain the program and offer the treatment. Once an inmate accepted the Concordance offer, enrolled in the program, and began participation, they remained in the treatment cohort for the duration of the study.

Participants eligible for the comparison group in this study met the same criteria as those eligible for the treatment group, with one exception: comparison group participants returned to any of the top 15 most populous counties in Missouri, except the Concordance catchment area. Because all eligible participants returning to the greater St. Louis area are contacted by Concordance, the comparison group must consist of similar cases that are returning to the rest of the state. To create a more comparable sample, only the top 15 counties were considered, so that the comparison group would consist of participants returning to similar contexts (e.g., larger metro/urban areas in the state, such as Kansas City, MO) that are more similar to the St. Louis Metro area. Comparison cohort participants could have never been contacted by Concordance staff, could have refused enrollment, or could have enrolled but never participated in programming.

All participants who met the criteria for either the treatment group or control group and were released from prison between 1/1/2023 and 8/31/2024 from a Missouri State Prison were considered a part of this study. Of the 754 participants offered enrollment in the Concordance program, 462 enrolled. Finally, of those who enrolled, 274 participated in programming and were in the treatment group for this study. 4,670 participants were selected for the control group. The start date of 1/1/2023 was selected by Concordance staff as a milestone marking when the program is considered mature and ongoing. The end date of 8/31/2024 was selected because it provided the maximum window to observe a one-year follow-up period for all participants.

Measures

The relevant outcome measures for this study were various recidivism-related measures, including:

- Whether or not participants violated parole (binary)
- Number of parole violations (count)
- Whether or not participants were reincarcerated (binary)
- Time until reincarceration (continuous/binary)
- Whether or not participants committed a new infraction, citation or conviction (binary)

- Number of new infractions (count)
- Time until first new infraction (continuous/binary)

The quasi-experimental matching procedure relies on covariates measured across both study groups, covering a reasonable range of characteristics that might be associated with different recidivism outcomes. Although not every potential covariate can be measured, the Missouri Department of Corrections keeps extensive records of various demographic, institutional behavior, and risk, and other assessment data that were used to match the treatment and comparison groups. These covariates include the following:

- Number of violations that occurred while in prison (count)
- Last classification custody level (categorical)
- Length of incarceration in months (continuous)
- Level of institutional risk (continuous)
- Institutional needs assessment (continuous)
- Substance abuse needs screening assessment (continuous)
- Whether or not participants failed one or more programs in prison (binary)
- Education (categorical)
- Number of days on work release (count)
- Race (categorical)
- Number of major violations that occurred while in prison (count)
- Number of days in Missouri Vocational Enterprises programming (count)
- Whether or not participants were in cognitive programming (binary)
- Whether or not participants committed a violent offense (binary)
- Criminal code (categorical)
- Age (continuous)
- Whether or not participants were in institutional drug treatment (binary)
- Whether or not participants committed a drug offense (binary)
- Marital status (categorical)
- Admission type (categorical)

Analysis Approach

To estimate the average treatment effect on the treated (ATT) of Concordance program participation, the research team conducted a propensity score weighting analysis using the twang package in R (Ridgeway et al., 2024). This analytic method combines nonparametric propensity score modeling with weighted regression to estimate the average treatment effect among treated participants, or the effect of programming for those who were actually offered the Concordance programming. First, the

propensity score (or the likelihood that a particular case would be assigned to the treatment condition) was estimated using gradient boosted models that automatically incorporate nonlinearity and interactions between covariates in the propensity score model. Propensity scores were calculated from the covariates listed in the previous section. For ATT, only cases in the control group are weighted to match the number of cases observed in the treatment group. Then, the balance of covariates across the treatment comparison groups was evaluated via a balance table. As can be seen in Appendix Table A1, an appropriate balance was achieved between the treatment and control groups across the covariates used in the matching.

The propensity score weights were then extracted and used in weighted regression analyses comparing the treatment group across our selected outcome measures. For each outcome measure of interest, weighted regression analysis was conducted, with the outcome measure regressed on the treatment variable and each observation weighted by the assigned propensity score. For binary outcome variables (e.g., whether or not participants violated parole), logistic regression was used to compare the treatment and comparison groups. For count variables (e.g., number of parole violations), Poisson regression was used to compare the treatment and comparison groups on the outcome measure. For time-until-event outcome variables (e.g., time until reincarceration), survival analysis and Cox proportional hazard models were used to compare the treatment and comparison groups.

For the survival analysis models, the time frame began when the participant was released from prison and ended on the date that the event occurred (e.g., the date of infraction or return to prison). Because not all participants in the sample were released from prison on the same date, it is necessary to have a time frame starting at the release date rather than a fixed point in time. If a case did not experience an event before the end of the follow-up period (i.e., 11/30/2025), those cases were considered censored, with a time-to-event measure defined as the time from release until 11/30/2025. Because there are so few cases with more than two years of follow-up data, we cut off the analyses at the two-year mark for all cases.

Results

Parole Violations

We measure parole violations in two ways: whether any violations occurred and the number of violations. These two analyses yield inconsistent results. There was a statistically significant 10% reduction in the likelihood of any parole violation for the Concordance sample compared with the comparison sample. However, among those who violated parole, the Concordance sample, on average, had more violations than the comparison sample (see Table 1).

Table 1. Parole Violations by Group

Outcome	Concordance	Comparison	Significance
Violated Parole %	45.5%	51.8%	$p = 0.059$
Average # of Violations[1]	2.78	2.36	$p = 0.015$

[1]*Conditional on having violated parole.*

Reincarceration

Figure 1 shows the results of the hazard models, which estimate the likelihood of returning to prison over time. Throughout the time series, the comparison group has a higher trend line, meaning that on each day, a larger proportion of the comparison group returned to prison. Put another way, a significantly smaller percentage of the Concordance sample returned to prison than the comparison sample. Over the course of the full study period, the Concordance sample's probability of returning to prison was significantly lower than the comparison sample (see Figure 1).

Figure 1. Probability of Reincarceration Over Time by Group

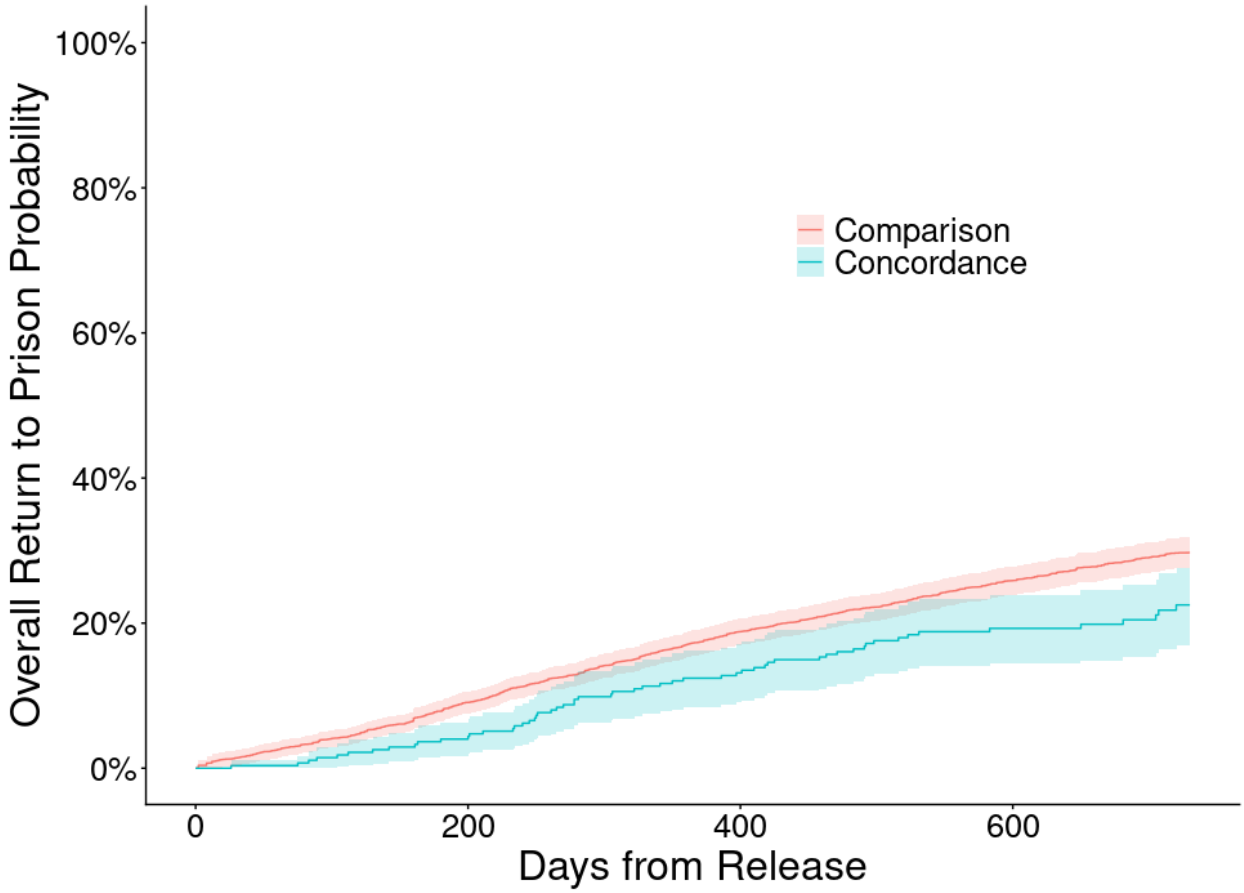


Table 2 describes the same data in tabular form. At each of the three outcome time points (6-, 12-, and 24- months), a smaller proportion of the Concordance sample had been returned to prison than the comparison group, and the difference was statistically significant at each time point. In the first six months, the reduction in return-to-prison rate was greater than 50% for the Concordance sample. At 12 months, Concordance had a 28% lower risk of a return to prison and a 24% reduction at 24 months.

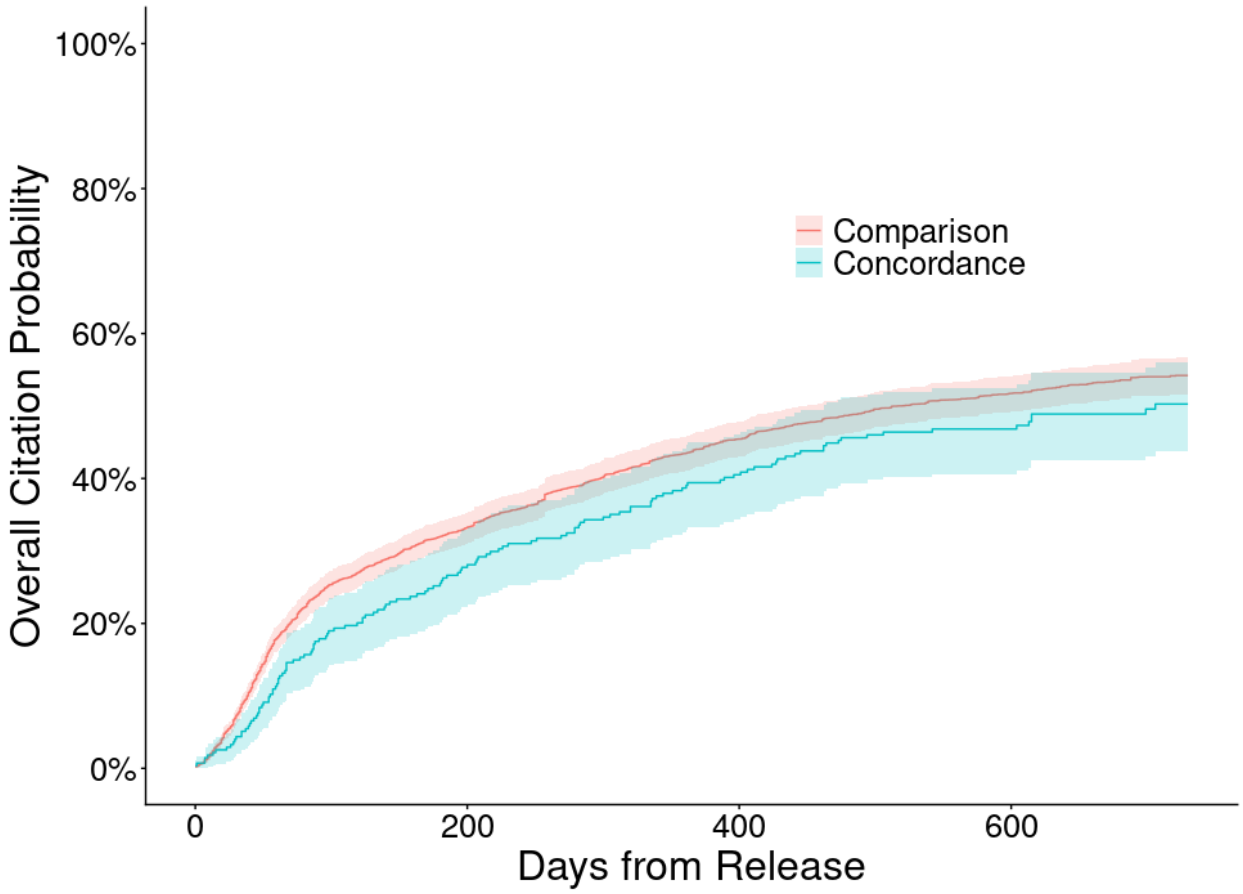
Table 2. Return to Prison Probability at Specific Time Intervals by Group

Outcome	Concordance	Comparison	Significance
6 Months	4.0%	8.2%	$p = 0.003$
12 Months	12.4%	17.3%	$p = 0.026$
24 Months	22.5%	29.7%	$p = 0.013$

New Infractions

Figure 2 describes the results of a second set of hazard models that estimate the likelihood of receiving a new infraction over time. Throughout the time series, the comparison group again has a higher trend line, meaning that on each day, a larger proportion of the comparison group had received a new infraction. Here too, a significantly smaller percentage of the Concordance sample received a notification than the comparison sample throughout the two-year period of observation. Over the course of the full study period, the Concordance sample's probability of committing a new infraction was significantly lower than the comparison sample.

Figure 2. Probability of Citation Over Time by Group



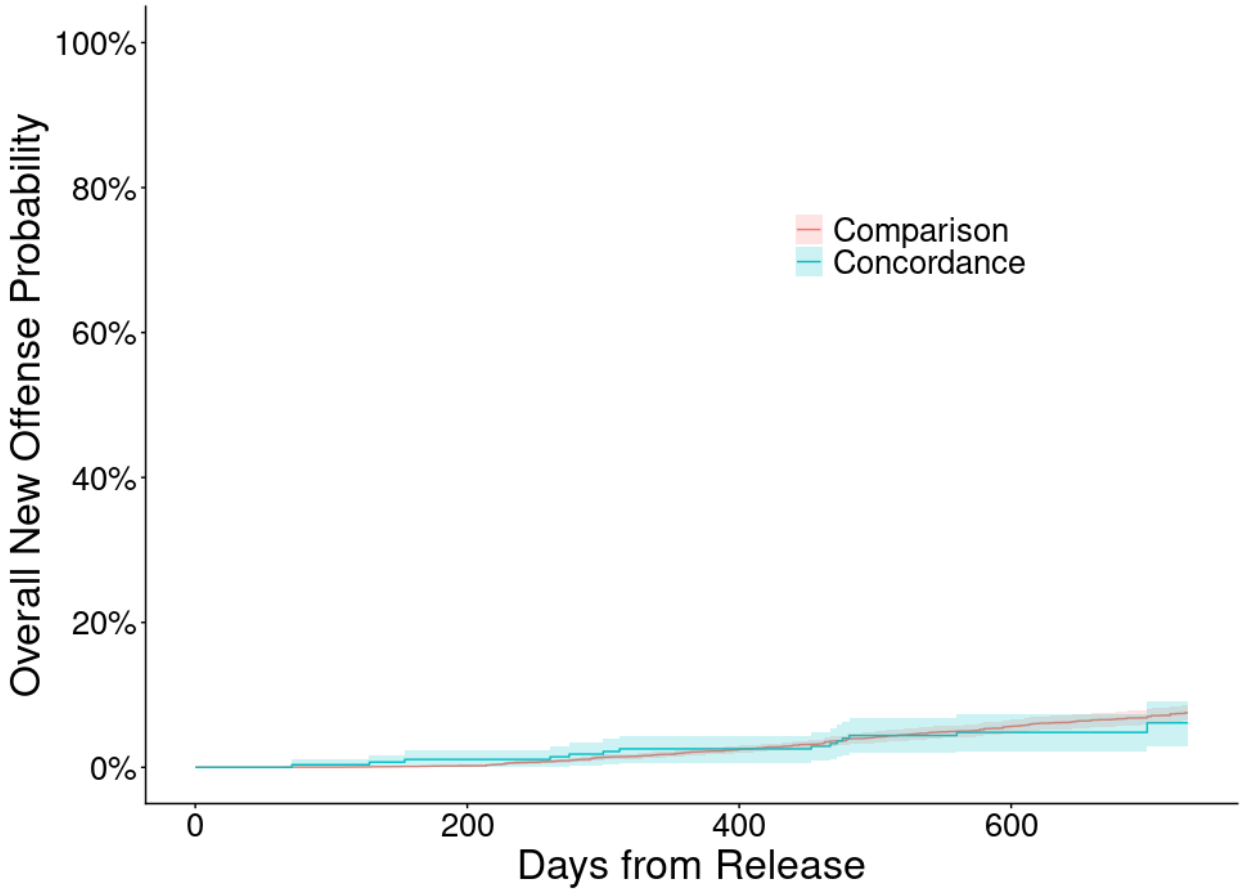
The Concordance sample had significantly fewer new infractions than the comparison group during the first six months of observation, with a statistically significant 18% reduction in the likelihood of receiving a new infraction. In later periods, the Concordance sample had a lower likelihood of receiving an infraction, though those differences were not significant (Table 3).

Table 3. Citation Probability at Specific Time Intervals by Group

Outcome	Concordance	Comparison	Significance
6 Months	26.3%	32.2%	$p = 0.040$
12 Months	39.4%	43.7%	$p = 0.181$
24 Months	50.3%	54.2%	$p = 0.245$

Few people in either the Concordance sample or the treatment group were convicted of a new offense during the 24-month follow-up period. As a result, there was no difference in the probability of being convicted for a new offense between the Concordance group and comparison group (see Figure 3).

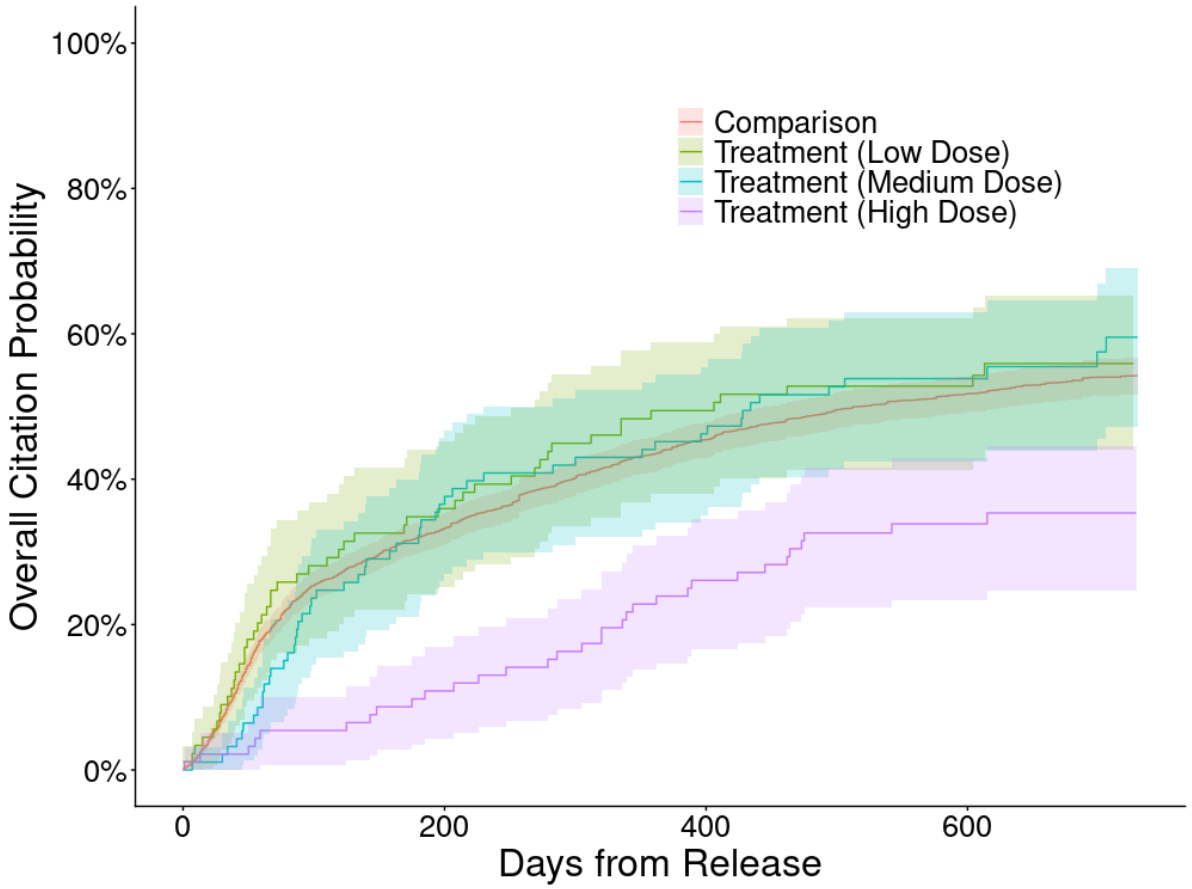
Figure 3. Probability of New Offense Over Time by Group



Additional Analyses

The effect of Concordance programming on reincarceration provides strong evidence for recidivism reduction for major parole violations since those in the treatment group were significantly less likely to engage in behaviors that would result in them returning to prison. The effect on the less serious citations, however, was smaller than the reincarceration effect. Therefore, we wanted to examine whether the number of treatment services received was more instrumental in reducing the number of new citations that treatment participants received in the follow-up period. As can be seen in Figure 4, there was an effect of dosage on citations such that those who received a higher dose of Concordance treatment (e.g., were in the top tercile of hours of programming received) were significantly less likely to receive new citations compared to those who engaged in a smaller dose of programming.

Figure 4. Probability of New Offense Over Time by Group and Dose



Discussion

Overall, we find strong effects of the Concordance program on post-release outcomes. Across outcomes, the pattern is straightforward: Concordance is most consistently associated with reductions in the most serious post-release outcomes, while effects on lower-level supervision outcomes are smaller and sometimes mixed. For parole violations, results point in different directions depending on how violations are measured. Participants were somewhat less likely to have *any* violation, but among those who violated, Concordance participants averaged *more* violations than the comparison group. In contrast, the findings for reincarceration are clear and consistent over time: Concordance participants were less likely to return to prison throughout the follow-up period, with the largest gap emerging early and remaining evident at later checkpoints.

New infractions show a similar but weaker pattern. Concordance participants were less likely to receive a new citation overall, with the clearest difference occurring in the first six months; later differences were smaller and not statistically significant. Convictions for new offenses were rare in both groups during the two-year window, and there was no detectable difference between groups on that outcome. Finally, additional analyses suggest that “dosage” matters for lower-level infractions: participants with

higher exposure to services were less likely to receive citations than those with lower exposure, which helps explain why the overall citation effect was more modest than the reincarceration effect.

While there is a substantial literature on prisoner reentry programs in the US, including a large body of scholarship describing evaluation results, few programs have shown effect sizes as large as those we find in this study. Typically, in this literature, the more rigorous the analysis, the smaller the effect sizes. Here, we employ sophisticated propensity score matching techniques and find strong results. In addition, where large effects have been found, it is typically the case that the results occurred under 'lab' conditions. That is, it is typically the case that a strong evaluation partner was involved with the program during the study period. Here, the program operated organically during the period where outcomes were observed, and there was little, if any, contamination from the research process.

Appendix

Table A1. Synthetic Control Weighting Balance Table

Covariate	Concordance	Comparison (weighted)	Comparison (unweighted)
SEX: Female	21.9%	20.4%	17.5%
SEX: Male	78.1%	79.6%	82.5%
RACE: Asian/Pacific Islander	0.0%	0.3%	0.4%
RACE: Black	60.6%	56.0%	28.4%
RACE: Hispanic	2.6%	2.6%	2.8%
RACE: Nat Am/Alaskan	0.4%	0.3%	0.4%
RACE: Unknown	0.0%	0.0%	0.0%
RACE: White	36.5%	40.8%	67.9%
MARITAL STATUS: COMMON LAW	0.4%	0.1%	0.0%
MARITAL STATUS: DIVORCED	9.9%	11.1%	15.7%
MARITAL STATUS: DIVORCED & REMARRIED	0.0%	0.2%	0.4%
MARITAL STATUS: MARRIED	15.7%	15.7%	19.0%
MARITAL STATUS: NEVER MARRIED	69.0%	67.4%	58.7%
MARITAL STATUS: SEPARATED	4.0%	4.1%	4.1%
MARITAL STATUS: UNKNOWN	0.7%	0.7%	0.3%
MARITAL STATUS: WIDOWED	0.4%	0.8%	1.7%
STAY_MTHS	53.4	49.5	28.8
Age	39.5	38.9	38.5
ADMIT TYPE: NEW_COURT	42.3%	40.0%	29.5%
ADMIT TYPE: PROBATION	33.9%	36.6%	43.4%
ADMIT TYPE: 120DAY	1.5%	1.3%	0.2%
ADMIT TYPE: LT DRUG	0.7%	0.0%	0.0%
ADMIT TYPE: PAROLE_RET	20.4%	20.4%	19.8%
ADMIT TYPE: PAROLE_CONT	1.1%	1.6%	7.1%
GD TYPE: DRUGS	22.3%	23.7%	31.6%
GD TYPE: DWI	1.8%	2.0%	2.4%
GD TYPE: NONVIOLENT	23.7%	28.2%	40.6%
GD TYPE: SEX	1.8%	1.6%	1.1%

Covariate	Concordance	Comparison (weighted)	Comparison (unweighted)
GD TYPE: VIOLENT	50.4%	44.5%	24.2%
LST CUST LVL: C-1	69.0%	69.9%	68.0%
LST CUST LVL: C-2	17.9%	17.5%	17.3%
LST CUST LVL: C-5	11.3%	10.7%	8.2%
LST ECODE: 1	72.3%	70.8%	65.5%
LST ECODE: 2	5.8%	4.8%	3.1%
LST ECODE: 3	10.9%	11.2%	10.5%
LST ECODE: 4	6.9%	8.6%	10.6%
LST ECODE: 5	2.2%	2.8%	3.8%
LST ICODE: 1	76.6%	77.4%	75.2%
LST ICODE: 2	11.3%	11.2%	10.8%
LST ICODE: 5	10.2%	9.6%	7.4%
LST MCODE: 1	48.2%	50.7%	55.4%
LST MCODE: 2	46.0%	44.6%	36.5%
LST MCODE: 3	2.9%	2.7%	1.5%
LST MCODE: 4	1.1%	0.1%	0.1%
LST PCODE: 1	86.5%	85.9%	81.8%
LST PCODE: 2	8.8%	9.7%	9.6%
LST PCODE: 5	2.9%	2.6%	2.1%
LST VCODE: 1	33.6%	31.1%	29.0%
LST VCODE: 2	21.2%	22.7%	25.2%
LST VCODE: 3	20.8%	21.7%	20.9%
LST VCODE: 4	19.3%	19.1%	16.3%
LST VCODE: 5	3.3%	3.6%	2.1%
LST MHCODE: 1	51.1%	53.8%	55.8%
LST MHCODE: 2	27.7%	25.3%	18.4%
LST MHCODE: 3	19.3%	19.1%	19.3%
VIOL	13.7	12.1	7.1
MV	40.1%	30.2%	20.5%
MVE: 0	84.3%	87.8%	94.5%
MVE: 1	15.7%	12.2%	5.5%

Covariate	Concordance	Comparison (weighted)	Comparison (unweighted)
INSTRUCTOR: 0	94.9%	94.7%	96.3%
INSTRUCTOR: 1	5.1%	5.3%	3.7%
WORK RELEASE: 0	90.9%	92.4%	92.0%
WORK RELEASE: 1	9.1%	7.6%	8.0%
EDUCATION: 0	62.8%	66.7%	72.3%
EDUCATION: 1	37.2%	33.3%	27.7%
VOCATIONAL: 0	80.3%	82.5%	90.1%
VOCATIONAL: 1	19.7%	17.5%	9.9%
COGNITIVE: 0	69.3%	72.7%	86.4%
COGNITIVE: 1	30.7%	27.3%	13.6%
RE ENTRY: 0	97.1%	96.9%	97.5%
RE ENTRY: 1	2.9%	3.1%	2.5%
LIFE SKILLS: 0	82.5%	85.0%	90.6%
LIFE SKILLS: 1	17.5%	15.0%	9.4%
FAITH BASED: 0	96.0%	98.8%	99.4%
FAITH BASED: 1	4.0%	1.2%	0.6%
INSTITUTIONAL TREATMENT: 0	77.4%	75.9%	72.9%
INSTITUTIONAL TREATMENT: 1	22.6%	24.1%	27.1%
SEX OFFENDER: 0	100.0%	99.8%	99.9%
SEX OFFENDER: 1	0.0%	0.2%	0.1%
SHOCK: 0	99.6%	99.3%	99.9%
SHOCK: 1	0.4%	0.7%	0.1%
ANGER: 0	89.8%	92.2%	95.0%
ANGER: 1	10.2%	7.8%	5.0%
PARENTING: 0	95.3%	95.7%	97.2%
PARENTING: 1	4.7%	4.3%	2.8%
FAIL	38.7%	34.7%	21.0%
NEED: LOW	65.7%	63.9%	58.6%
NEED: MED	11.7%	12.0%	9.9%
NEED: HIGH	22.3%	23.0%	28.6%
RISK LEVEL: High	19.3%	17.9%	18.4%

Covariate	Concordance	Comparison (weighted)	Comparison (unweighted)
RISK LEVEL: Low	22.3%	24.2%	21.3%
RISK LEVEL: Low/Moderate	9.1%	7.8%	6.5%
RISK LEVEL: Moderate	48.9%	49.2%	51.0%
RISK LEVEL: Very High	0.4%	0.7%	1.2%