

**WASHINGTON STATE CORRECTIONAL INDUSTRIES:
AN OUTCOME EVALUATION OF ITS EFFECT ON
INSTITUTIONAL BEHAVIOR, EMPLOYMENT, AND
RECIDIVISM**

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ABSTRACT

Correctional Industries (CI) employs large numbers of inmates to work in businesses that simulate companies in the community that produce goods and services for sale. CI programs often hire inmates for positions that require reliable individuals who are willing to develop vocational skills and work with others to produce a quality product. Nationally, research shows mixed findings concerning whether inmates who participate in CI are more likely to become employed after release and less likely to recidivate. This study examines CI in Washington State and provides an outcome evaluation. The results show that CI significantly reduces recidivism, improves institutional behavior, and increases employment after release.

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EXECUTIVE SUMMARY

This study examines the effect of Correctional Industries on criminal justice, institutional, and community oriented outcomes. A quasi-experimental research design coupled with propensity score matching (PSM) was implemented. This design compares the outcomes for inmates who worked for CI (n=703) with a statistically matched group of inmates (n=627) who did not work for CI for a follow-up period of at least 3 years post release from prison.

Criminal Justice Outcomes

New Convictions:

Correctional Industries (CI) inmates were significantly:

- Less likely to commit a new offense leading to a conviction (35% vs. 43%).
- Less likely to commit a felony when recidivism occurs (19% vs. 25%).
- Increases the time spent in the community without committing a new offense.
- Less likely to commit a new offense the longer they spent working in CI.

Technical Violations:

The results for technical violation (TV) are mixed.

- CI inmates were significantly more likely to receive a TV (21% vs. 17%).
 - These bivariate differences did not remain significant in the survival analyses.
- No differences were found between groups for time to receiving the first TV.
- CI inmates received significantly fewer TVs over time (3 vs. 4).

Readmission to Prison:

Correctional Industries inmates did not significantly differ from the non-CI group:

- For readmissions to prison (6% vs. 7%).
- For time in the community before being readmitted to prison.

Institutional Outcomes

Infractions:

The results for the commission of an infraction while in prison are mixed:

- No differences were found between groups for the overall number of infractions committed (CI 3.6 vs. 3.9).
- Although violent infractions are rare, CI inmates were significantly less likely to commit a violent infraction (.44 vs. .59).
- CI inmates were significantly less likely to commit any type of infraction during the period they worked in CI and were less likely to commit a violent infraction during the period of incarceration after working in CI.

Program Completions with Certificates:

- CI inmates were significantly more likely to complete a program receiving a certificate than non-CI inmates. This difference was small (9.8 vs. 9.3).

Community Outcomes

Post-Prison Employment and Wages (aggregated)

Correctional Industries inmates were:

- More likely to be employed at the end of year 1 (31% vs. 25%) and year 4 (33% vs. 20).
- More likely to earn higher wages at the end of year one (\$14.07 vs. \$13.04) and earn similar wages to non-CI offenders during year four (\$17.32 vs. \$16.98).

Post-Prison Legal Income Earnings Community Supervision (individual)

- Correctional Industries inmates were significantly more likely to have income from any legal source (61% vs 56%).

Homelessness:

- No significant differences were found between CI and non-CI inmates (7.0 vs. 7.8).

WASHINGTON STATE CORRECTIONAL INDUSTRIES

Work is considered an essential component of prisons important to both institutional management and offender change. Although work takes many forms within prison, Correctional Industries (CI) is structured as a business and purposefully attempts to create work environments that replicate employment expectations in the community by teaching *technical skills* that qualify offenders for jobs and cognitive-behavioral *soft skills* that help offenders keep jobs by knowing how to interact and communicate with supervisors, co-workers, and clients (Colwell, 2009; National Correctional Industries Association, 2015). As a correctional intervention CI is aimed at promoting prosocial work-life routines that translates into positive institutional and post release outcomes.

CI is utilized in nearly every correctional facility in Washington State and employs roughly 2,700 offenders annually (CI Fact Sheet, 2014). In 2014, offenders in Washington State correctional facilities collectively worked approximately 2.3 million hours within CI producing a wide range of goods including eye glasses, office furniture, and clothing as well as services such as system wide commissary distribution and food services. The WA DOC estimates that in 2014 CI contributed approximately \$32.2 million to Washington's economy through sales, while also reducing the financial burden placed on tax payers by criminal justice spending. Though the economic impact of CI on Washington State seems to be positive, the criminogenic impact, particularly with regard to institutional behavior, community supervision, readmission to prison, and recidivism has not been fully explored.

Prior research conducted on WA State Correctional Industries shows significant reductions in recidivism and increases in post-release employment. Evans (2011) reports that

inmates who participated in CI were significantly less likely than the comparison group to recidivate one year (34.5% vs. 45.0%) and three years (47.2% vs. 61.4%) post release. Evans (2011) indicates that his research offers a starting point for future research to help DOC manage and understand program needs by providing greater details about how various types of work assignments may deliver added value when combined with other types of offender change programs and individual level characteristics of inmates. Thus, this study builds upon prior research (Evans, 2011) by improving upon the methodological design through the use of propensity score matching (PSM) to statistically balance the CI and non-CI groups, the use of a larger sample, and the inclusion of both institutional and post-release outcome measures.

Research Questions

The current study assesses the effect of correctional industries (CI) on inmate institutional and post-release behavior. This research answers three primary questions:

- 1. Does correctional industries enhance offender change initiatives and promote positive outcomes within the institution and in the community?*
- 2. Does the type and duration of CI work influence institutional and post release outcomes?*
- 3. Of the inmates who participate in CI, which are most likely to experience success and which are most likely to encounter ongoing challenges?*

This report is organized into four sections. *Part One: Research Design* provides an overview of the methodology and a description of the inmate sample included in the study. *Part Two: Outcome Evaluation* provides a summary of the results in response to each of the primary research questions. *Part Three: Interpretation of the Results* provides context and perspective about the strengths and weaknesses of the current study and how the results may be used to

inform policy. Finally, the *Appendix* includes the full propensity score matching (PSM) table in which the descriptive and core findings reported in the main text of the report are based.

PART ONE: RESEARCH DESIGN

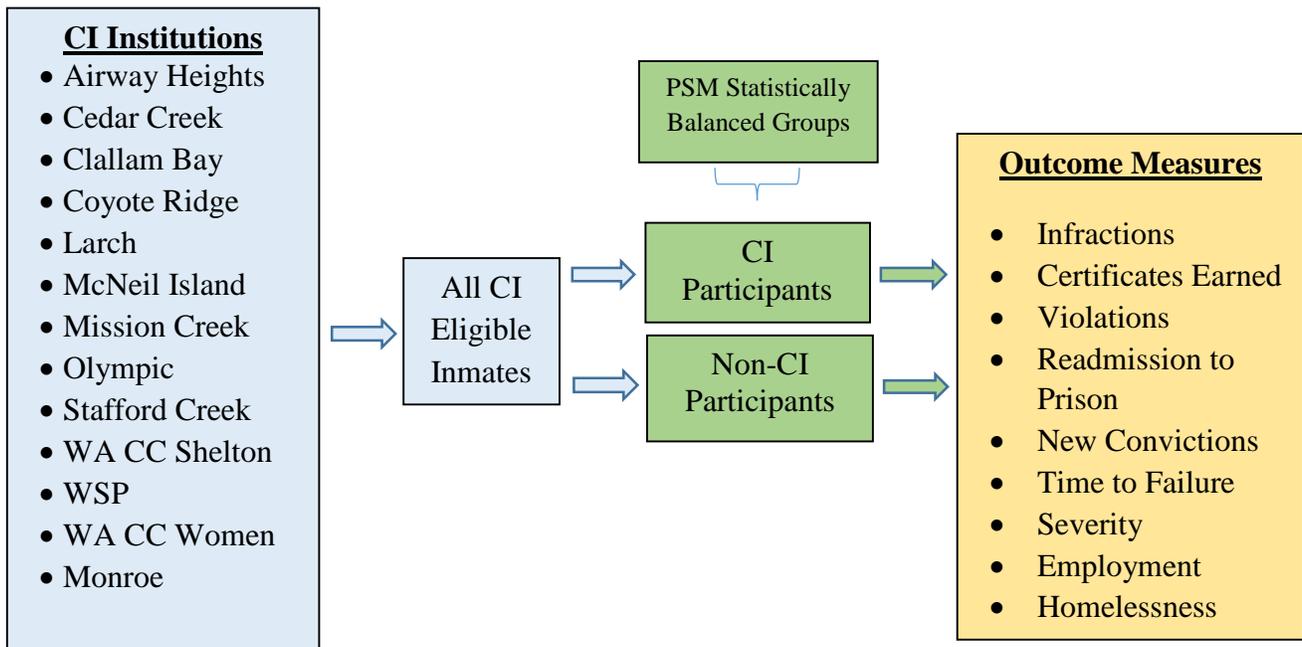
To answer the research questions, a quasi-experimental research design coupled with propensity score matching (PSM) was implemented. This design compares the outcomes for inmates who worked for CI with a statistically matched group of inmates who did not work for CI. The statistical analyses are based on data provided by the Washington State Department of Corrections (DOC) and the Washington State Administrative Office of the Courts (AOC).

Sampling Frame

Our research population includes all inmates assessed eligible for CI work at their point of entry into any prison where Correctional Industries is located. To assess the effects of contemporary CI operations and to allow for a minimum of a three year follow-up period to assess outcomes, the sample was further refined by selecting subjects who were released from prison to community supervision during the years 2010, 2011, and 2012 and who were serving their most recent prison sentence due to a new crime.¹ The CI participant group consisted of all inmates who were employed in CI for at least 30 days during their most recent incarceration (908) and the comparison group consists of all inmates assessed eligible for CI but did not work for CI (8,831).

¹ A large portion of our sample had an incarceration history spanning several decades within the WADOC. Multiple admissions to prison over time were due to both technical violations and/or new crimes. In an attempt to isolate the effect of contemporary CI operations on contemporary inmates we limited our analyses to those offenders currently serving time for a new crime and released during the years 2010-2012.

FIGURE 1. BASIC RESEARCH DESIGN



To reduce the potential for selection bias in the comparison group, propensity score matching (PSM) was used to statistically balance the differences between groups on all theoretically relevant pre-intervention characteristics (see Appendix). The advantage of PSM is that it allows for the selection of a comparison group based on the statistical likelihood of a research participant to be in the treatment or experimental group based on statistically significant variables (i.e. race, age, risk score) (see Dehejia & Wahba, 2002). The resulting comparison group allows for the isolation or exclusion of potential spurious variables as the two groups are highly similar with the exception of the treatment received (i.e. CI participation). The PSM approach attempts to replicate the group variance created by random assignment.

For the current study, a nearest neighbor matching strategy was used in which the CI subjects were matched to a comparison subject with the closest propensity score. Comparison subjects were selected without replacement and the distance of each match was restricted to the

commonly applied caliper of less than .02 standard deviation units. Those subjects not selected were removed from the comparison subject pool. This process resulted in 703 CI subjects and 627 non-CI subjects in the comparison group.² Upon completion of the PSM the sample was further reduced based on theoretical considerations (age greater than 70) and data limitations (event date inconsistencies) resulting in a final sample of 703 subjects in the CI group and 627 subjects in the comparison group for a final sample of 1,330.³ Post hoc analyses comparing those cases removed from the sample with those remaining in the sample post-PSM showed no statistically significant differences within or between groups. Table 1. presents a summary of the descriptive statistics for both the CI and the statistically matched comparison group (see Appendix for full PSM results).

² Prior to performing the PSM the Area Under the Curve (AUC) estimate was .063 showing that the variables included in the match were relatively strong indicators of group prediction. However, the AUC estimate after the PSM was completed was .051 which suggest that the variables for the post matched sample more accurately predicted group assignment.

³ On a theoretical bases, offenders who were seventy years old or older at the time of release were excluded from the study. These theoretical consideration stem from a decreased likelihood of re-offending and/or a decreased likelihood of engaging in long-term post incarceration employment. The elimination of these offenders from the sample resulted in a total sample size of 1,428 offenders, with 727 offender in the treatment group, and 701 offenders in the comparison group. Following this round of elimination, a second group of offenders were eliminated from the study due to data limitations, specific event date inconsistence resulting in negative date expression. Consequently, the final sample is comprised of 703 offenders in the treatment or CI group, and 627 offenders in the comparison or Non-CI group resulting in a total of 1,330 offenders in the total sample.

Table 1. Sample Descriptive Statistics Summary for CI and non-CI Group

Variable	CI Group n = 703		Non-CI Group n = 627		Total Sample N = 1330	
	%/M	(SD)	%/M	(SD)	%/M	(SD)
Age at Release	39.63	(11.41)	40.63	(13.31)	40.10	(12.35)
Male	98.40		97.90		98.20	
White	75.00		70.70		72.90	
Days in Prion	1844.25	(1878.19)	1762.88	(1794.56)	1805.89	(1839.00)
Education: GED+	78.90		76.60		77.80	
Risk Scores						
Felony Risk Score	66.10	(24.80)	68.90	(24.43)	67.42	(24.66)
Nonviolent Risk Score	50.31	(19.31)	51.99	(18.15)	51.10	(18.78)
Violent Risk Score	33.06	(11.06)	34.18	(10.52)	33.59	(10.82)
Current Offense						
Violent	43.66		37.48		42.63	
Nonviolent	56.34		62.52		57.37	
Certificates Earned	9.82	(6.18)	9.27	(5.77)	9.56	(5.99)
Hours Worked						
CI Jobs Only ¹	2030.41	(2208.56)	----		2030.41	(2208.56)
Missing					627	
Non CI Jobs Only ²	5216.66	(3975.37)	6623.94	(4470.38)	5799.22	(4240.96)
Missing	342		372		714	

Note: The risk scores utilized in this report come from the first administrations of the static risk assessment (SRA) for the offenders in the sample.

¹Non-CI group have no values for CI hours worked as they did not participate in CI.

²Not all CI inmates worked in non-CI jobs during their incarceration.

Measures

Several measures are used to determine the effect of inmates' participation in Correctional Industries (CI) and their likelihood to engage in various certificate-achievement institutional programs, commit institutional infractions, commit a technical violation during community supervision, be readmitted to prison, be convicted of a new offense, or experience homelessness.

Independent variables. The independent measures were collected from WA DOC record data and include demographic characteristics, completion of offender change programs, and work assignments. The *demographic characteristics* include age at release from prison, race/ethnicity, sex, education prior to incarceration, offender needs assessment scores, current

offense (violent or nonviolent), current prison time served, and risk classification (high violent, high nonviolent, moderate, and low).

Institutional program participation comprises education, vocational, and offender change programs. The program data provided for this study does not have a reliable measure of time spent in programs or why an inmate was terminated from participation. Therefore, the most reliable measure of programs is the number of certificates awarded for completing a program of any type. Certificate Completion is measured as the cumulative total of certificates received while in prison and after completing CI.

Work is measured by assignment, type of work, and time working. Work assignment is a dichotomous variable indicating whether an inmate was assigned to work within CI or to a non-CI work duty. Type of work includes the different types of labor inmates may participate such as laborer, machine operator, office clerk, or skilled trades. Time working is measured in days working (6 hour days) within CI, in non-CI positions, and overall hours of work throughout an inmate's sentence.

Dependent variables. Several dependent measures are used to determine the effectiveness of CI on outcomes. Criminal justice system outcomes include measures of technical violations, new convictions, and readmission to prison. Institutional behavior outcomes include infractions and number of program certificate completions. Community outcome measures include employment, earnings, and homelessness.

Institutional infractions are measured in several ways. Type of infraction is categorized as violent or nonviolent. Number of infractions is measured by two continuous variable. Infraction count is the overall number of infractions no matter what type. Infraction timing indicates whether the infraction occurred before, during, or after participation in CI.

Community supervision violations is measured by occurrence, count, and time to violation. The occurrence of at least one technical violation is measured dichotomously to allow for the utilization of statistical analyses to assess group-based difference. The count of technical violations allows for the average number of violations to be compared between groups. Time to violation is measured in the number of days from the prison release date to the violation data.

Recidivism is measured as readmission to prison and new convictions. Readmission to prison is measured as a dichotomous variable indicating whether an offender was readmitted to a WA DOC facility. Time to readmission to prison is measured as the time in days from the offenders release date to their return to prison date. New crime is measured as any new offense leading to a conviction post release. Time to new offense is measured in days from prison release date to the new offense date. Time to new conviction is measured as the number of days from prison release date to a new conviction date.

PART TWO: OUTCOME EVALUATION

The outcome evaluation shows inmates who participate in Correctional Industries experience many positive outcomes. In general, the following analyses indicate that correctional industries significantly reduces recidivism, works in coordination with other offender change programs to influence positive outcomes, and tends to provide greater benefit to those who engage in Correctional Industries for a longer period of time. The analyses are organized to (1) compare CI inmates with the non-CI comparison group, (2) determine which inmates are most likely to experience successful outcomes due to their participation in CI, and (3) evaluate the effects of different types of work and the duration of CI participation on outcomes. Each section begins with basic descriptive statistics followed by multivariate analyses where appropriate.

Comparison of CI Inmates to non-CI Inmates

Inmates who participated in CI were compared to non-CI inmates on the outcomes of new convictions, prison readmissions, technical violations, prison infractions, certificates earned, post-prison employment, and homelessness (see Table 2).

Criminal justice system outcomes. The bi-variate analyses show that CI inmates when compared to non-CI inmates were significantly less likely ($p < .01$) to be convicted of a new crime (35% vs. 43%) and were significantly more likely ($p = .097$) to remain in the community longer without being convicted of a new offense (41 vs. 39 months). For those who committed a new offense, there were no significant differences between the CI and non-CI groups for the time to committing a new offense (5.3 vs. 6.1 months) or time to a new conviction (20 months). Of those who recidivated, the majority in both groups tended to commit a non-violent offense (CI 73% vs NCI 63%), CI inmates were significantly less likely to commit a violent offence (19% vs. 25%) or

to commit a drug offense (8% vs. 13%). There were no significant differences between groups for readmission to prison (6% vs. 7%) or the time to failure between groups.

For the commission of technical violations (see Table 2 and Figure 2), the CI group was significantly more likely to have committed a technical violation (21% vs. 17%), but committed on average significantly fewer technical violations (3 vs. 4). There were no significant differences between groups for time to first technical violation. It is important to note that these data were collected before Swift and Certain was implemented and may not reflect recent changes made to supervision decision-making related to technical violations.

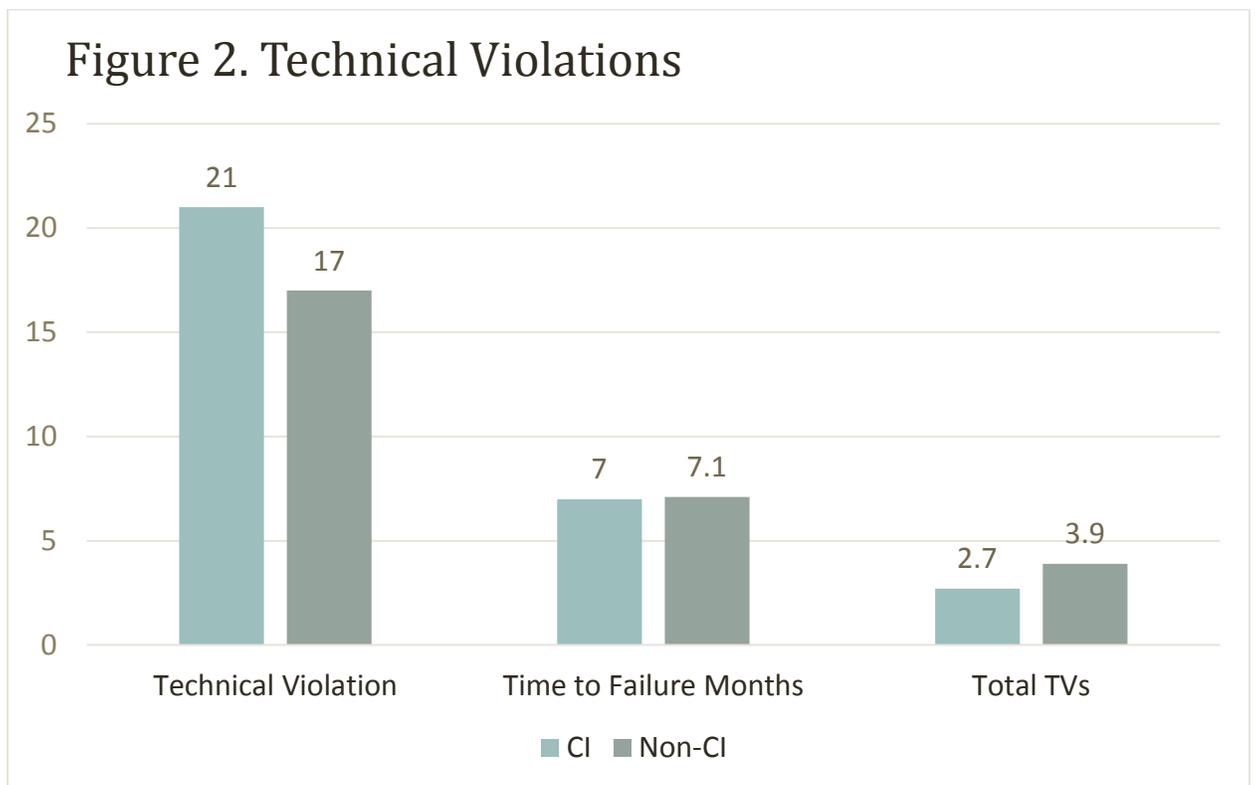


Table 2. Bivariate Outcomes Comparing CI Inmates with non-CI Inmates

	CI Group n = 703		Non-CI Group n = 627		Total Sample N = 1,330		Sig.*
	%/M	(SD)	%/M	(SD)	%/M	(SD)	
Criminal Justice Outcomes							
New Conviction (%)	35.4		42.9		38.9		.006
Days to New Conviction (F)	608.72	(373.41)	608.14	(397.26)			.986
Days to New Conviction (T)	1215.32	(561.68)	1162.55	(597.28)			.097
Days to New Offense	160.29	(303.11)	183.01	(308.83)			.176
Offense Severity							.046
Violent	19.0		24.8		21.7		
Nonviolent	72.9		62.6		68.2		
Drug	8.1		12.6		10.1		
Prison Readmission (%)	5.7		6.9		6.20		.427
Days to Prison Readmit	771.45	(368.48)	932.14	(519.50)	854.70	(457.53)	.110
Technical Violations (%)	20.8		17.1		19.0		.093
Days to Tech Violation	214.28	(268.07)	201.06	(163.44)	208.69	(133.00)	.652
Total Tech Violations #	2.74	(7.69)	3.94	(10.17)	3.31	(8.96)	.015
Institutional Outcomes							
Prison Infractions	3.61	(7.56)	3.92	(6.49)	3.76	(7.08)	.421
Infraction Type							
Violent	.44	(1.49)	.59	(1.38)	.51	(1.44)	.050
Nonviolent	7.03	(12.53)	7.39	(10.51)	7.2	(11.62)	.574
Infractions Timing: Violent							
Before CI	.290	(1.35)	.363	(.894)	.324	(1.15)	.249
During CI	.024	(.153)	.057	(.309)	.039	(.240)	.012
After CI	.129	(.454)	.178	(.703)	.152	(.585)	.126
Infraction Timing: Nonviolent							
Before CI	3.085	(10.60)	3.94	(5.56)	3.49	(8.61)	.068
During CI	.893	(1.55)	.510	(1.31)	.712	(1.45)	.000
After CI	3.061	(5.28)	2.94	(6.79)	3.00	(6.04)	.717
Certificate Completion	9.82	(6.18)	9.27	(6.18)	9.52	(5.99)	.095
Community Outcomes							
Post Release Monthly Income							.011
\$4,000 or More	2.9		2.7		2.9		
\$2,000 to \$3,900	9.3		7.1		9.2		
\$1,000 to \$1,999	24.3		16.2		24.2		
\$1,000 or Less	24.3		29.9		26.9		
No Legal Income	39.2		44.1		36.8		
Post Release Employment							.022
Never Employed	5.6		10.9		8.1		
Less Than 6 Months	27.2		22.8		25.1		
6 to 12 Months	13.1		14.9		13.9		
1 to 3 Years	39.2		35.3		37.3		
More than 3 Years	14.9		16.2		15.5		
Homelessness	7.0		7.8		7.4		.556

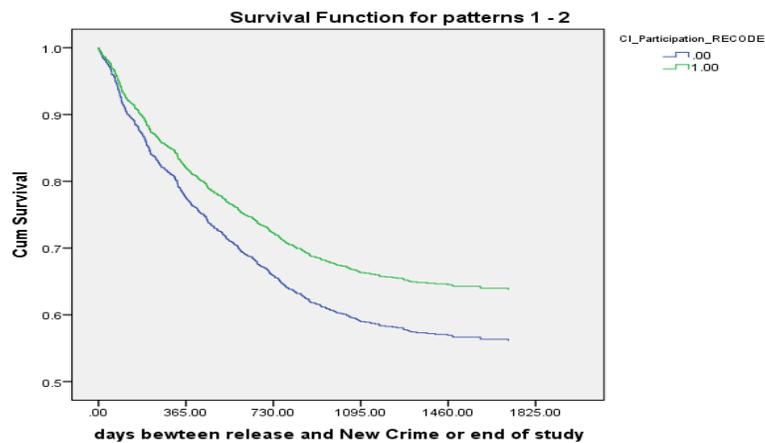
*Significance based on X² or Independent Sample T-tests.

Notes: (F) Days to failure for failures only group. (T) Days to failure until end of study for all subjects. Days to Tech Violation are Com Supervision only. Employment Data From Offender Needs Assessment n = 960 (CI = 564/Non CI = 396). Before/During/After CI refers to a timeframe not participation

Cox Regression and Kaplan-Meier Survival Analyses were used to determine how the CI and non-CI groups compared overtime for new convictions, technical violations, and readmissions to prison (see Table 3 and Figure 3). Those in the CI group (coded 1.00) committed significantly fewer new offenses leading to a conviction than the non-CI group and these differences remained significant over a four year period of time. No significant differences were found between groups for technical violations or readmission to prison between groups over time (see Table 3).

Table 3: Time to New Offense

Time	CI %	Non-CI %
3 Months	5	6
6 Months	10	12
1 Year	18	23
1.5 Years	23	30
2 Years	27	35
2.5 Years	31	38
3 Years	33	41
4 Years	35	43
Kaplan-Meier Survival Analyses		



When considering demographic characteristics and successful outcomes for CI, the new convictions and the technical violations models were significant (see Table 4). The new convictions model shows no significant differences for race/ethnicity or education on the commission of a crime leading to a new convictions. Age was found to be significant—as age increases the likelihood to commit a new offense resulting in a conviction significantly decreases. For technical violations, younger offenders and non-white offenders who participated in CI had a greater likelihood of committing a technical violation. The Cox Regression analyses comparing the relationship between demographic characteristics and readmissions to prison were not significant showing a weak relationship between demographic characteristics and CI outcomes (see Table 4).

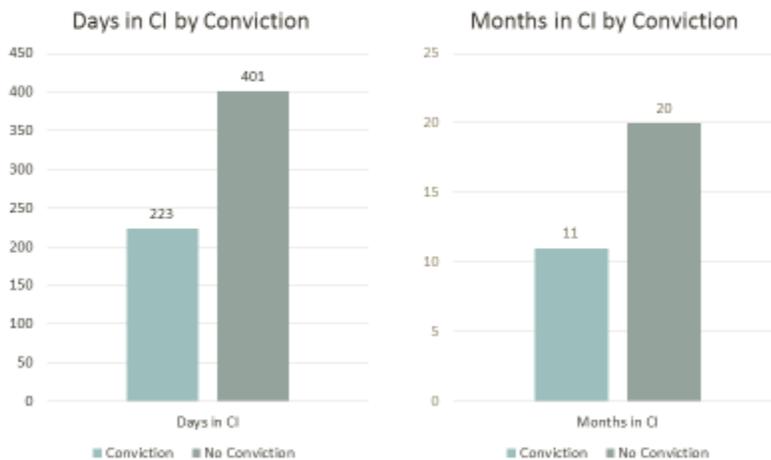
Table 4: Cox Regression Models for Criminal Justice Outcomes Over Time⁴

Variable	New Convictions				Technical Violations				Readmissions			
	β	SE	p value	Ratio	β	SE	p value	Ratio	β	SE	p value	Ratio
CI w/ non-CI	.240	.088	.006	1.27	-.136	.127	.285	.873	.150	.220	.428	1.162
	$\chi^2=7.51$; df=1; p=.006				$\chi^2=1.146$; df=1; p=.284				$\chi^2=.469$; df=1; p=.494			
CI Only Group												
Non-White	.090	.143	.527	1.095	.344	.180	.056	1.411	-.350	.397	.378	.705
Age	-.035	.006	.000	.966	-.019	.008	.015	.981	-.033	.015	.029	.967
Education	.031	.040	.439	1.031	.056	.056	.310	1.058	-.048	.094	.607	.953
	$\chi^2=36.525$; df =3; p<.001				$\chi^2=13.102$; df=3; p=.004				$\chi^2=5.474$; df=3; p=.140			

⁴ Note: Education is reversed coded in these models.

The results for time spent working in correctional industries (dosage) show that the more time an inmate worked in a CI job (401 vs. 223 days / 20 vs. 11 months) the less likely they were to be convicted of a new crime (see Figure 4; $t=6.30$; $df=701$; $p<.001$). Days are measured as a 6 hour work day and months are based on a five day work week. Those who work in CI for less than a year are significantly more likely to experience a new conviction, but it is unknown why inmates leave CI prior to one year. For example, inmates who work less than one year in CI may be released from prison, transferred to another institution, experience health problems, be terminated due to poor performance or disciplinary infractions, or chose to participate in another non-CI work assignment. Thus, greater amounts of time in CI appears to be important to success after release, but it is unclear from these data why inmates leave CI and how these reasons may be important to success or failure post-release.

Figure 4. Time Working in CI



Institutional behavior outcomes. CI inmates were compared to non-CI inmates on infractions and program completions (see Table 2). There were no significant differences between groups on the mean number of infractions committed during their most recent incarceration with most offenders approaching four infractions, however, there were significant differences between groups on the mean number of violent infractions. Although both groups averaged less than one violent infraction, CI inmates committed significantly fewer violent infractions than non-CI inmates (mean = .44 vs. .59). These data also indicate that participation in CI significantly reduced violent infractions while individuals worked in a CI job and post CI employment in comparison to their time prior to working in a CI job. In addition, the CI group was significantly more likely than the non-CI group to have completed a certificate of some type.⁵

Post-Prison Employment and Housing Security

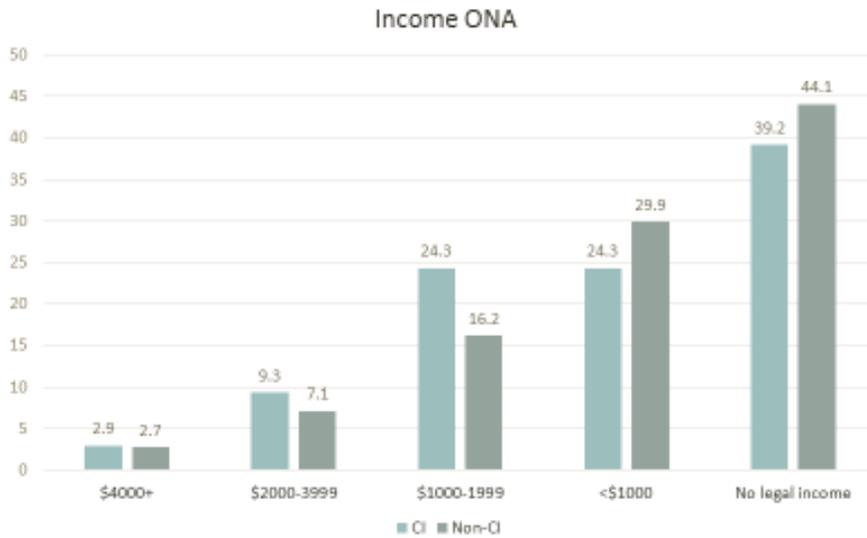
CI inmates were compared to non-CI inmates for post-prison employment and their likelihood to experience homelessness at the time of release. Individual level data for post-prison employment measures were collected from the offender needs assessments (ONA) and aggregated data for each group for post-prison employment immediately upon release and at three years for both groups.

Employment. Based on the last ONA administered to an offender while on community supervision (see Table 2), CI inmates were significantly less likely to have never been employed (6% vs. 11%) and more likely to have been employed for 1 or more years (54% vs. 51%). The CI

⁵ We were unable to determine what type of certificate of program completion was earned by inmates, but hope to provide greater details related to program types in the future. The data for time spent in treatment programs and completion of programs were unreliable.

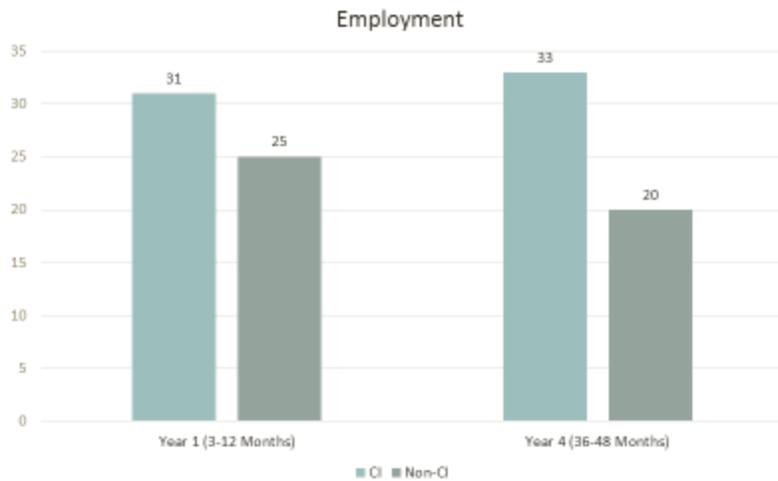
group was also significantly more likely to have some source of legal income (61% vs. 56%) and to earn at least \$1,000 to \$2,000 per month (24% vs. 16%) (see Figure 5) .

Figure 5. Legal Income All Sources



In addition to the ONA data, aggregated labor data provided by the WA DOC shows that CI inmates are more likely to be employed during the first year of their release (31% vs. 25%) and three years or more after release (33% vs. 20%) (see Figure 6).

Figure 6. Post-Prison Employment



In addition, the CI group’s hourly wages are higher than the non-CI group during the first year (see Table 5). Both groups’ hourly wages increase over time and do not differ from each other during year three/four.

Table 5. Average Hourly Wage 2010 and 2014

Group	Oct-Dec 2010	Oct-Dec 2014	Difference
CI	\$14.07	\$17.32	\$3.25
Non-CI	\$13.04	\$16.98	\$3.94
Difference	\$1.03	\$0.34	

Housing security. In addition to employment, the findings show no significant difference between the CI and non-CI participants (7% vs. 7.8%) in their likelihood to experience homelessness after release from prison.

PART THREE: CONCLUSION

This study confirms the findings of Evans (2011) in showing that Correctional Industries significantly reduces recidivism and increases the likelihood of gaining employment after release from prison. The current study builds upon Evans' research by showing that when CI offenders do reoffend they are less likely to commit a violent or a drug related offense than the comparison group and the longer an inmate participates in CI the less likely they are to be convicted for a new offense. In addition the current study shows that CI inmates were more likely than the comparison group to commit a technical violation, yet they committed fewer technical violations overall. There were no differences between groups in their likelihood to be returned to prison or to become homeless after release. Finally, CI inmates were as likely as the comparison group to commit an infraction during incarceration, but were significantly less likely to commit a violent infraction than the comparison group.

Limitations of the study. Although this study is the result of a rigorous quasi-experimental research design utilizing propensity score matching to statistically balance the treatment group (CI inmates) with the comparison group (non-CI inmates), there are several limitations that may be remedied through future research.

Dynamic vs. static measures of work. In the current study work was primarily measured as a static variable describing whether an inmate participated in CI, the length of time an inmate participated in CI, and a general description of what type of job an inmate participated. This was also true for the comparison group's participation in work while incarcerated. We were unable to measure whether an inmate advanced or was promoted during their CI tenure, whether they

worked in skilled or unskilled labor to any meaningful degree, and whether the job had utility in achieving the inmate's financial goals such as paying for court costs, restitution, and other financial obligations, or providing enough income to begin a saving account and pay for basic needs while in prison. Future research of CI would benefit from considering work as a dynamic measure that changes over time with inmates moving into and out of work during incarceration and after release. It would be beneficial to the DOC to know the quality of all types of jobs inmates participate while incarcerated, both CI and non-CI jobs, and how these may influence institutional and post prison behavior.

In addition, the current study was conducted on inmates who participated in CI prior to 2012 in order to have a long enough follow-up period (minimum of 3 years) to determine the long-term effects of work on inmates' post prison outcomes. Although this approach made for a strong study design, it does not allow for the evaluation of current efforts by CI to implement cognitive behavioral programs, job training, and educational programs that improve the "soft skills" necessary for ex-offenders to be successful in the workplace interacting with colleagues and superiors. Relatedly, the current study was unable to measure an inmate's participation in offender change programs other than work. Thus, it is unknown how CI may work to enhance other evidence-based programs being implemented in prison to increase the likelihood of success upon release.

Safe prison environments. Although this study showed that CI inmates were less likely to commit a violent infraction in comparison to the non-CI group, we do not know what it is about CI that would result in fewer violent infractions. Thus, we do not know how CI may qualitatively differ from other programs or areas of the prison in a way that appears to increase safety for both inmates and staff. Future research should consider the experiences of both inmates and staff to

determine if the work environment within CI changes the interaction between individuals in a manner that promotes civility and greater safety.

Technical violations and community supervision. The current study was purposefully censured to avoid the historical effects of a new community supervision policy, *Swift and Certain*, introduced in 2014. *Swift and Certain* is designed to swiftly sanction offenders for violating the conditions of their community supervision while limiting the number of days they may serve in jail as a sanction. Thus, it is unknown whether *Swift and Certain* may influence outcomes related to ex-offenders likelihood to sustain employment over time while on supervision or to recidivate.

Motivation for change. Finally, it is unknown how inmates are selected into CI jobs. Of the inmates who had been released from prison during the study period (2010-2012) and prior to our propensity score matching procedure, over 8,000 inmates were assessed as eligible for CI work through the assessment process at each prison inmates were admitted. Although inmates are expected to apply for CI jobs through their unit counselor, it is uncertain how inmates are selected, if there is a waiting list, or if inmates are assigned to non-CI jobs before being considered for CI positions based on institutional needs. It is also unknown how inmates are selected for CI jobs once they interview for a position within CI. Therefore, short of random assignment or a survey of inmates' motivation to work, it is not possible to know whether there is an informal self-selection process where highly motivated inmates are more likely to join CI and therefore more likely to be successful after release or if there is a selection bias via the unit counselors and CI supervisors who serve as gatekeepers to CI and non-CI job assignments.

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APPENDIX

Correctional Industries Evaluation Propensity Score Matching

Measure	Before Propensity Score Matching				After Propensity Score Matching			
	n	Comparison %/M(SD)	CI %/M(SD)	STD % Diff	n	Comparison %/M(SD)	CI %/M(SD)	STD % Diff
	9,858	n = 8,950	n = 908		1,457	n = 722	n = 735	
Age		41.58 (14.18)	39.99 (11.63)***	10.40		41.62 (14.31)	39.88 (11.92)	8.80
Male		92.5	98.9***	31.90		97.8	98.5	5.20
White		73.00	74.9	4.30		72.1	74.7	5.90
Incarceration Length		581.58 (884.60)	193.28 (1826.71)	20.10		1801.97 (2005.32)	1855.62 (1882.35)	2.3
Highest Grade Completed			***					
Graduate Studies		0.3	0.1	4.5		0.4	0.1	6.00
College 4 Year Degree		1.4	1.4	0.00		1.5	1.4	.80
College 2 Year Degree		1.0	1.0	0.00		1.1	1.1	0.00
Some College		11.1	13.2	6.40		12.2	12.7	1.5
Vocational Certificate		2.0	3.9	42.60		3.9	3.7	1.00
High School Diploma		33.1	37.7	1.30		33.10	36.7	7.60
GED		15.7	21.4	14.70		14.4	21.6	18.80
11 th Grade or Less		32.8	19.2	31.40		23.4	21.0	5.80
Property Offenses		.24 (.517)	.19 (.468)*	8.10		.21 (.484)	.20 (.482)	1.70
Drug Offenses		.15 (.470)	.09 (.350)**	12.4		.11 (.400)	.10 (.375)	2.10
Sex Offenses		.10 (.329)	.12 (.356)	4.7		.10 (.325)	.11 (.343)	2.40
Assaults		.15 (.387)	.11 (.326)	9.4		.14 (.370)	.12 (.341)	4.70
Robberies		.06 (.224)	.06 (.235)	0.00		.06 (.242)	.05 (.224)	3.50
Manslaughters		.004 (.066)	<.001 (.047)	0.00		.01 (.074)	<.01 (.025)	0.00

Murder	.08 (.093)	.01 (.114)	52.30	.01 (.098)	.01 (.104)	0.00
Other Offenses	.06 (.269)	.02 (.140)***	16.90	.04 (.200)	.02 (.155)	9.50
Risk Class						
Low	8.8	9.5	2.4	8.8	16.9*	24.40
Moderate	17.2	9.6	22.5	14.8	16.2	3.90
High Non-Violent	23.8	25.4	3.7	31.2	25.4	12.90
High Violent	50.2	39.7	21.2	45.2	41.4	7.70
Felony Risk Score	74.84 (33.08)	40.84 (42.37)	70.30	46.66 (42.57)	45.29 (40.01)	2.70
Nonviolent Score	56.75 (25.59)	31.23 (32.68)***	55.40	35.51 (32.66)	34.55 (33.16)	2.40
Violent Score	36.21 (16.44)	20.13 (32.68)***	46.40	22.86 (21.14)	22.20 (20.84)	2.6
Education Need Score	1.81 (2.61)	.80 (1.95)***	37.60	.90 (1.98)	.93 (2.09)	1.2
Aggression Needs Score	3.28 (2.64)	1.88 (2.77)***	41.90	2.13 (2.70)	2.16 (2.87)	.90
Attitude Needs Score	5.26 (3.36)	2.93 (3.76)***	52.40	3.38 (3.71)	3.28 (3.81)	2.20
Coping Needs Score	2.27 (2.93)	1.05 (2.23)***	40.10	1.34 (2.47)	1.25 (2.49)	3.00
Drug Needs Score	4.92 (3.65)	2.63 (3.86)***	35.70	3.01 (3.65)	3.05 (4.03)	.80
Employment Needs Score	8.64 (5.50)	4.27 (5.81)***	62.5	5.30 (6.05)	4.93 (2.09)	8.00
Employment Protective Score	7.80 (5.83)	5.53 (7.08)***	27.70	5.39 (6.34)	4.92 (6.04)	6.20
Family Needs Score	.609 (1.22)	.27 (.96)***	26.30	.30 (.915)	.32 (1.05)	1.60
Peer Needs Score	2.65 (2.38)	1.36 (2.17)***	47.00	1.62 (2.31)	1.56 (2.27)	2.10
Residential Needs Score	3.73 (4.12)	1.63 (3.12)***	49.20	1.99 (3.38)	1.91 (3.33)	2.00
Mental Health Needs Score	1.40 (2.93)	.37 (1.39)***	41.3	.43 (1.37)	.46 (1.56)	1.60

Longest Employment Pre-Incarceration	72.66 (42.77)	91.29 (26.09)***	46.60	88.24 (30.30)	89.47 (28.70)	3.30
Homeless Pre-incarceration	2.9	1.1***	12.90	1.1	1.4	2.70
Military Service	7.3	8.7	5.20	7.3	8.8	5.50

NOTE: X^2 /T-Test Significance: * = .05, ** = .01, *** = .001

AUC Before Propensity Score Matching = 0.63

AUC After Propensity Score Matching = 0.51