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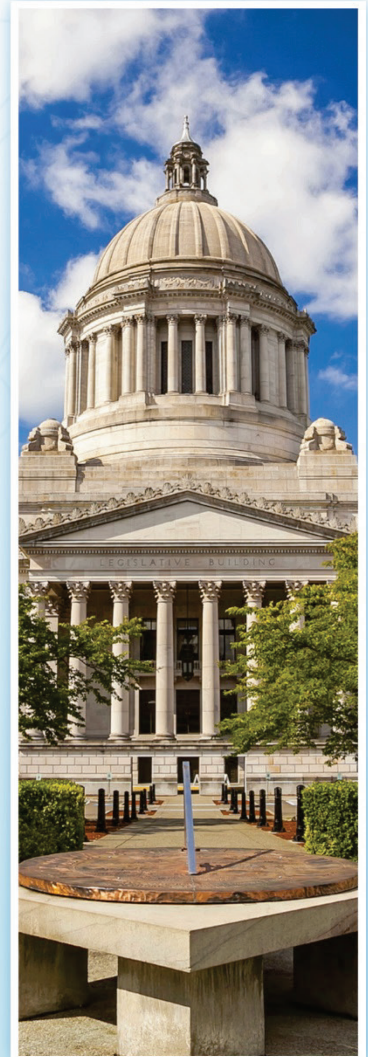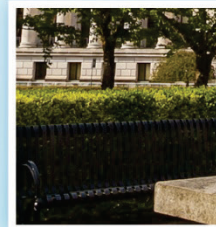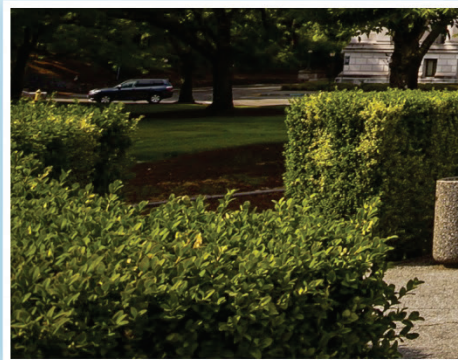
Correcting Course
Effects of Education in a Correctional Setting

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Contents

Executive Summary

In 2013, RAND Corporation, sponsored by the Bureau of Justice Statistics, conducted a meta-analysis of studies on correctional education (Davis et al., 2013). Their findings showed a notable average 43 percent reduction in recidivism and 13 percent increase in employment for offenders participating in programs, but they noted that very few of the studies included in their analysis utilized strong statistical designs. The primary goal of this study is to provide input on the differences in outcomes between offenders who receive correctional education and those who do not. Second, and of equal importance, this study aims to use robust methods that will minimize the selection bias inherent in correctional education and provide valid results for the use of interested parties in Washington.

The sample for this study was based on offenders in the Department of Corrections' database between the years 2000 and 2015. Education Research and Data Center and Unemployment Insurance data from the same time frame were linked on personal identifiers to match this sample. Due to the study's focus on post-release outcomes, all offenders who were not released prior to 2010 were excluded from the study, although Department of Corrections (DOC) data was still tracked until 2015 for the purpose of observing recidivism. By necessity, this also excluded any offenders with life sentences. After removing cases that did not fit these criteria, the final sample consisted of 304,813 offenders.

Those offenders who obtained a GED were noticeably more likely to recidivate by returning to DOC, with much higher differences in means observed among those with lower propensity scores. Offenders who obtained a GED were also much more likely to be employed, but have lower average wages. These mixed results may be due to the absence of high school diplomas as a measure, confounding the assessment of the treatment and comparison groups. Because GEDs are unlikely to be a criminogenic factor and no theory accounts for higher employment and higher recidivism, it is likely that the findings around GEDs require further study.

Offenders completing a higher education degree were shown to have decreased recidivism, increased employment, and increased wages. Interestingly, the differences among those most likely to obtain a higher education degree mirrored almost exactly the 43 percent reduction in recidivism and 13 percent increase in employment found by the RAND study. Further investigation of clusters through propensity score matching reveals that these effects are even larger for groups who are less likely to be a part of the treatment group. While the findings around GEDs are unclear in this study, analyses of higher education provide strong support for its resultant reductions in recidivism and improved economic outcomes, particularly for offender groups that are underrepresented in these programs.

Introduction

According to recent estimates from the U.S. Department of Justice, over 650,000 inmates are released from federal and state prisons every year. In many cases, these former inmates may struggle to find housing and employment and according to the Bureau of Justice Statistics, up to two thirds of them may return to prison within a few years of their release. The commonality of recidivism poses a challenge for the entire field of criminal justice nationwide; without reduction in recidivism, prison populations will continue to grow and the funding required to run prisons will grow along with it. On a purely economic level, governments across the U.S. must seek answers to combat the revolving door of prison and effectively reintegrate offenders to their communities.

As it is elsewhere, the effort to reduce recidivism is a concern in Washington. In April 2016 Governor Jay Inslee issued Executive Order 16-05, "Building Safe and Strong Communities through Successful Reentry," instructing state agencies to improve employment and assistance opportunities for newly released offenders. One aspect of this order specifically addresses improvements for post-secondary education in correctional settings. Those specific outcomes are stated as a decrease in recidivism and increases of post-release employment for those exiting Washington's prisons. Thus far, research has shown that participation in correctional education programs is indeed associated with improved post-release outcomes.

In 2013, RAND Corporation, sponsored by the Bureau of Justice Statistics, conducted a meta-analysis of studies on correctional education (Davis et al., 2013). Their findings showed a notable average 43 percent reduction in recidivism and 13 percent increase in employment for offenders participating in programs, but they noted that very few of the studies included in their analysis utilized strong statistical designs. This calls the validity of those average effects into question, a point underscored in a meta-analysis by Chappell (2004), which showed that studies on correctional education using control groups showed drastically lower effect sizes in reducing recidivism. RAND's follow up report sought to examine new paths forward and renewed their call for more robust research designs (Davies et al., 2014). Specifically, they highlighted propensity score matching and other quasi-experimental methods as being desirable when randomized control trials are not feasible, and called for more regular inclusion of demographic information on those sampled.

Present Study

The objectives of this study are twofold. The primary goal of this study is to provide input on the differences in outcomes between offenders who receive correctional education and those who do not. Second, and of equal importance, this study aims to use robust methods that will minimize the selection bias inherent in correctional education and provide valid results for the use of interested parties in Washington. While randomized control trials are traditionally the gold standard of experimental rigor, they aren't easily applicable in the case of correctional education. Therefore to achieve this second goal, this study will make use of propensity score matching to create a treatment and comparison group.

Relevant Literature

Prior to delving into the specifics of this study's methodology, it is important to acknowledge some of the literature used in making the decision to ultimately select propensity score matching, and in guiding decisions about matching the treatment and comparison groups. While moving forward on research ultimately requires well-founded decisions, it should be noted that there is ongoing academic discussion as to which propensity methods work best and whether the method itself should be used at all (King & Nielson, 2016). However, a significant body of literature provides a strong case for its use, particularly for assessing correctional education.

The basis of using propensity score methods rather than random control trials can be traced in part to Rosenbaum and Rubin (1983), who demonstrated mathematically that it is possible to get unbiased estimates of treatment effects when using a balancing score on nonrandom groupings. In effect, this allows for the "ignorable treatment assignment," or that assignment to treatment is based only on observable variables that can be accounted for. Dehejia and Wahba (1999) acknowledge this, but add further proof that propensity score methods are informative to the eventual outcome. Thus it is vital to select pre-treatment variables with as much depth and information as possible.

Pre-treatment variables, or those that occur or exist prior to the treatment observed in the study, are best selected for matching based on both their chances to alter selection into the treatment and the chances they may continue to bias outcomes afterwards. Case and Fasenfest (2004) conducting focus groups with offenders who had taken post-secondary education courses while in prison. They found that while white males maintained the most confidence in the use of their new education, black males had more faith in vocational training and females reported limited options. This might imply gender and race as particularly important demographic factors to consider to reduce selection bias.

Gender also appeared to play a role in a study conducted by Mears and Cochran (2012). In a sample of 10,000 male inmates and the population of 7,550 females released from Florida prisons between 1994 and 2002, males appeared to increase in drug recidivism in response to prison while females increased in property offense recidivism. Overall recidivism for both groups also increased when they were in prison as compared to on parole or probation. Variables related to prison stay were also relevant to offender outcomes in the Washington Statistical Analysis Center's (SAC) study on property offenders (Landon, 2016). These same variables are likely to be relevant factors in valid matching.

While much of the literature on correctional education focuses on post-secondary degrees, some studies have shown positive effects for the completion of General Education Development tests (GEDs). A study of 320 males released in West Virginia from 1999-2000 showed that the addition of a GED to a vocational program lowered recidivism to 6.71 percent against a general recidivism rate of 26 percent (Gordon & Weldon, 2003). Nuttal, Hollmen, and Staley (2003) also tracked a drop in recidivism rates from 37percent to 32 percent after receiving a GED while in prison, and noted that the largest effects were seen for offenders under 21. For that group, the recidivism rate dropped from 54 percent to 40 percent. Given these studies, it may be important to not only consider the impact of GEDs in addition to post-secondary education, but also to account for age at release during the matching process.

Many prior studies on correctional education have done little to eliminate selection bias, but there are some that have. One such study comes from the Urban Institute, which through use of propensity score matching demonstrated the change in predicted probability for recidivism in Indiana (-3.4 percent), Massachusetts (-14.19 percent) and New Mexico (-24.61 percent) following correctional education courses. Their matching variables included factors such as race, gender, age, offense of conviction and elements of prison stay. Unfortunately, as they also noted, their matching was complicated by missing data on prior educational attainment and some missing data on criminal history.

Another study of note that used propensity score matching was conducted by Kim and Clark (2013). They examined a sample of 31,815 initial cases to form a treatment group of 340 offenders who had obtained a degree in prison and a matched group of those who had not. When using propensity score matching, their study showed a recidivism rate of 9.4 percent for the treatment group compared to 17.1 percent in the comparison group. Without matching however, the comparison group's recidivism rate jumps to 35.9 percent while the treatment group remains relatively unchanged. While the need for rigorous statistical methods is not in serious doubt, the radical difference in the stated effect size when matching methods were removed underscores the importance of reducing selection bias.

Methodology

Design
The Washington Statistical Analysis Center, through partnership with the Education Research and Data Center, has access to a rich base of administrative data on which subjects can be matched. This data source links together years of education records with DOC and post-release employment information from the Unemployment Insurance (UI) database to create a longitudinal view of education's interaction with incarceration, recidivism and employment. Access to this wealth of variables allows a wide latitude in selecting variables to be used in the creation of a propensity score, and a greater understanding of post-release outcomes. The variables selected for generating propensity scores for this study were based in part on the Urban Institute study discussed above (Winterfield et al., 2009).

Propensity scores were calculated using a logit model, as is standard when assessing the probabilistic relationship between a dichotomous variable (participation in correctional education programs) and other factors. Linear regression is insufficient to fully account for probabilities in dichotomous variables whereas logistic regressions more accurately portray these odds. The combination of the individual weighted probabilities generated the propensity score for each offender included in the study, and those were used to match the treated population with a comparison sample of untreated offenders.

The sample for this study was based on offenders in DOC's database between the years 2000 and 2015. The Education and Research Data Center (ERDC) and UI data from the same time frame were linked on personal identifiers to match this sample. Due to the study's focus on post-release outcomes, all offenders who were not released prior to 2010 were excluded from the study, although DOC data was still tracked until 2015 for the purpose of observing recidivism. By necessity, this also excluded any offenders with life sentences. After removing cases that did not fit these criteria, the final sample consisted of 304,813 offenders.

Variables

The variables selected for use in this study represent a range of factors in the backgrounds and demographics of offenders, along with their involvement in correctional education and their outcomes post-release. Table 1 provides the frequencies for variables associated with the offenders' personal demographics. For the purpose of analyses in this study, race was coded as white and non-white to avoid the issues inherent in creating a ranked variable or losing statistical power when analyzing categories with few entries. Because measures of propensity require binary or ranked variables, offense was sorted into ranked categories based on average severity. This ranking placed violent crimes such as murder first, with property and drug crimes then "outranking" entries of other and unknown.

Table 1: Demographic Variables of Offenders

Variable	Frequency	Percent
Race		
White	237,396	77.88%
Non-white	67,417	22.12%
Gender		
Female	63,386	20.80%
Male	241,427	79.20%
Age at Release		
18-25	56,137	18.42%
25-35	99,214	32.56%
35-45	82,670	27.13%
45-55	49,966	16.40%
55+	16,724	5.49%
Offense Type		
Assault	49,367	16.20%
Drug	63,851	20.95%
Manslaughter	1,715	0.56%
Murder	2,736	0.90%
Other	44,897	14.73%
Property	74,602	24.47%
Robbery	12,081	3.96%
Sex	18,470	6.06%
Unknown	37,094	12.17%

DOC data also contained information on each offender's time in prison and supervision, referred to in this study as "DOC custody," which are variables that were of substantial interest in prior SAC studies. These are shown in Table 2 in the ordered rankings that were used during propensity score generation. The sample discussed in this study generally served sentences of intermediate length, and a significant majority spent more time in the field than in prison facilities. Including these variables in the generation of propensity scores acted as a control for the differences in availability of educational programming between the field and physical DOC locations.

Table 2: Aspects of Time in Custody

Variable	Frequency	Percent
Time in Custody		
Less than 1 Year	54,339	17.83%
1-2 Years	64,159	21.05%
2-5 Years	79,643	26.13%
5+ Years	106,672	35.00%
Percent of Time Behind Bars		
0%	191,372	62.78%
1-24%	51,726	16.97%
25-49%	23,974	7.87%
50-74%	14,092	4.62%
75-99%	9,987	3.28%
100%	13,661	4.48%

Education variables were included based on an offender's completion of a program within a certain time frame, as shown in Table 3. Completions of apprenticeships, GEDs or higher education degrees prior to entry into DOC custody were recorded as Pre-Entry variables, while those attained during the period of custody acted as the treatment variables in this study. For the purposes of coding, any degree from a post-secondary educational institution was coded as "Higher Ed," including certificates, associates degrees, bachelor's degrees and more. GEDs only represent those offenders who attained a high school equivalency through testing. The current study does not account for those who obtained high school diplomas through graduation. While apprenticeships were considered as a third treatment group for this study, their rarity made propensity score generation and any further analyses statistically unviable.

Table 3 also shows the overall frequencies and averages for the outcome variables measured in this study. Recidivism was defined as a return to DOC custody within five years, and only captured the first return to custody within the study period. Due to this somewhat restrictive definition, the overall rate of 20 percent may appear slightly low. Employment and wage statistics were drawn from the UI database, which does not account for self-employment or any earnings that do not come through employers. Therefore these figures may also be understated in comparison to more comprehensive measures.

Table 3: Education and Outcome Variables

Variable	Frequency	Percent	Average	Standard Deviation
Pre-Entry				
Apprenticeship	322	0.11%	-	-
GED	8,172	2.68%	-	-
Higher Ed	1,424	0.47%	-	-
In Custody				
Apprenticeship	168	0.06%	-	-
GED	11,211	3.68%	-	-
Higher Ed	5,279	1.73%	-	-
Post-Release				
Recidivism	60,920	19.99%	-	-
Time to Recidivism	-	-	1,009.24	977
Employment	159,753	52.41%	-	-
Wage per Hour	-	-	$15.03	$9.59

Results

Both treatment groups in this study required logistic regressions to establish propensity scores. The results in Table 4 show the influence of each variable on the likelihood of completing a GED while in DOC custody. Older offenders, those with less serious offenses, females and non-whites were all less likely to complete GED courses. As may be expected, those who had previously completed a GED or higher education course were extremely unlikely to be included in the treatment group. Those who spent a greater percentage of their time behind bars were much more likely to complete a GED. Interestingly, the amount of time spent with DOC appeared to have no statistical relationship to an offender's likelihood to be part of this treatment group.

Table 4: Logistic Regression for GEDs Completed in DOC

Parameter	Degrees of Freedom	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept	1	-0.948	0.0551	296.0243	<.0001
Age at Release	1	-0.0649	0.00125	2,705.2319	<.0001
Offense	1	-0.1529	0.00604	640.2992	<.0001
Female	1	-0.1494	0.0299	24.9278	<.0001
Non-white	1	-0.1598	0.0241	43.9958	<.0001
Prior Apprenticeship	1	-0.3773	0.3924	0.9245	0.3363
Prior GED	1	-1.7992	0.092	382.3677	<.0001
Prior Higher Ed	1	-1.0592	0.2118	25.0182	<.0001
Percent in Bars	1	2.4945	0.0265	8,884.4381	<.0001
Time in Custody	1	0.000096	5.74E-06	278.4214	<.0001

The regression for higher education degrees showed similar results to that of GEDs with a few notable exceptions. As seen in Table 5, older inmates, females and those with less serious offenses are less likely to complete a higher education degree while in DOC custody. Race does not appear to have any significant association with an offender's likelihood to complete a higher education degree, which differs from the GED regression in Table 4. Prior acquisition of a GED or a higher education degree was associated with an increased likelihood of involvement in this treatment group, as was a higher amount of time spent behind bars. Once again, the length of time spent in custody appeared to have no significant predictive power in this regression.

Table 5: Logistic Regression for Higher Education Degrees Completed in DOC

Parameter	Degrees of Freedom	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept	1	-3.3141	0.079	1,759.8828	<.0001
Age at Release	1	-0.0322	0.00164	385.2288	<.0001
Offense	1	-0.1973	0.00827	569.1431	<.0001
Female	1	-0.1539	0.0479	10.3306	0.0013
Non-white	1	-0.00519	0.0331	0.0246	0.8754
Prior Apprenticeship	1	0.4364	0.4287	1.0363	0.3087
Prior GED	1	0.8146	0.057	204.376	<.0001
Prior Higher Ed	1	0.8197	0.1475	30.8997	<.0001
Percent in Bars	1	3.0743	0.0401	5,868.8975	<.0001
Time in Custody	1	0.00017	6.79E-06	629.8607	<.0001

Using the propensity scores generated from the regressions shown above, offenders were sorted into groups based on their likelihood to have obtained an educational degree in DOC custody. While this match-method is somewhat imprecise, it allows for a closer inspection of treatment effects based on lower or higher propensities, and increases the odds that similar offenders will land in the same statistical comparison. In Table 6, Cluster 1 contains those least likely to obtain a GED based on their propensity score while Cluster 6 contains those calculated to be most likely. These groups are then separated by their actual involvement in the treatment group, and the differences in means are shown for each outcome variable, along with the statistical probability that there is no statistical difference between the means. For purposes of discussion in this study, any probability less than 5 percent will be considered sufficient for reporting.

As is shown in Table 6, offenders who obtained a GED were noticeably more likely to recidivate, with much higher differences in means observed among those with lower propensity scores. While Cluster 1 recorded a somewhat lower rate, the very small number of offenders in that category (n=41) means that the true result for that group may range much higher or lower. Results related to the time between release and re-offense also suffered from small group sizes, with statistically significant results predicting an overall decrease in the number of days prior to recidivism. All clusters showed noticeable increases in employment rates against the comparison group, with lower propensity scores showing greatly increased effect sizes. Wages for all clusters were observed to be lower than the comparison group, with greater effects observed for groups with lower propensity scores.

Table 6: Comparison of Outcomes by Propensity and GED Completion

Matched Cluster	Offenders in Cluster	No GED	GED	Difference in Means	Pr > ltl
Recidivism					
Cluster 1	41	22.72%	26.83%	4.11%	0.5309
Cluster 2	183	22.09%	46.45%	24.36%	<.0001
Cluster 3	757	23.14%	43.59%	20.45%	<.0001
Cluster 4	1,711	17.51%	35.53%	18.02%	<.0001
Cluster 5	3,261	16.78%	30.94%	14.16%	<.0001
Cluster 6	5,258	13.54%	16.36%	2.82%	<.0001
Time to Recidivism					
Cluster 1	11	1,077.90	945.30	-132.60	0.6910
Cluster 2	84	1,130.80	1,223.40	92.60	0.4297
Cluster 3	330	1,118.90	1,132.10	13.20	0.8216
Cluster 4	606	936.30	951.20	14.90	0.6793
Cluster 5	1,007	829.50	761.20	-68.30	0.0094
Cluster 6	859	764.40	673.20	-91.20	0.0005
Employment					
Cluster 1	41	39.38%	73.17%	33.79%	<.0001
Cluster 2	183	49.20%	73.77%	24.57%	<.0001
Cluster 3	757	53.15%	70.41%	17.26%	<.0001
Cluster 4	1,711	58.03%	74.63%	16.60%	<.0001
Cluster 5	3,261	56.91%	68.75%	11.84%	<.0001
Cluster 6	5,258	42.38%	56.54%	14.16%	<.0001
Wage Per Hour					
Cluster 1	30	$15.70	$12.11	-$3.59	0.0910
Cluster 2	135	$15.67	$13.70	-$1.97	0.0342
Cluster 3	533	$15.26	$13.81	-$1.45	0.0009
Cluster 4	1,277	$14.88	$13.84	-$1.04	<.0001
Cluster 5	2,242	$14.51	$13.99	-$0.52	0.0105
Cluster 6	2,973	$14.62	$13.80	-$0.82	<.0001

Table 7 displays the differences in means separated by the general propensity to have obtained a higher education degree in DOC and actual inclusion in that treatment group. Recidivism rates among those who obtained a degree were observed to be notably lower, particularly for groups with lower propensity scores. Propensity for inclusion in this treatment group appears to be inversely associated with recidivism for both those who do not ultimately obtain a higher education degree, and for those that do. Employment and wages both show positive differences in means where those variables are statistically significant, with diminishing effects as

propensity for inclusion increases. The amount of time between release and a return to DOC suffers from particularly small group sizes in these comparisons, but ultimately predicts a shorter time until recidivism for Clusters 5 and 6. This suggests that while those who obtain a higher education degree are less likely to recidivate overall, those that do are more likely to do so in a shorter time-span.

Table 7: Comparison of Outcomes by Propensity and Higher Ed Completion

Matched Cluster		No Higher Ed	Higher Ed	Difference in Means	Pr > ltl
Recidivism					
Cluster 1	41	24.87%	9.76%	-15.11%	0.0253
Cluster 2	77	23.03%	5.19%	-17.84%	0.0002
Cluster 3	206	18.22%	7.77%	-10.45%	<.0001
Cluster 4	277	16.95%	11.91%	-5.04%	0.0257
Cluster 5	1,249	24.82%	21.30%	-3.52%	0.0045
Cluster 6	3,429	16.69%	7.35%	-9.34%	<.0001
Time to Recidivism					
Cluster 1	4	1009.80	1,291.00	281.20	0.6062
Cluster 2	4	1065.70	1,130.30	64.60	0.9041
Cluster 3	16	1101.90	895.20	-206.70	0.4156
Cluster 4	33	1025.90	1,002.10	-23.80	0.8839
Cluster 5	266	917.10	727.30	-189.80	0.0004
Cluster 6	252	806.90	692.80	-114.10	0.0150
Employment					
Cluster 1	41	44.27%	87.80%	43.53%	<.0001
Cluster 2	77	54.24%	80.52%	26.28%	<.0001
Cluster 3	206	56.64%	78.64%	22.00%	<.0001
Cluster 4	277	53.68%	71.84%	18.16%	<.0001
Cluster 5	1,249	52.80%	63.09%	10.29%	<.0001
Cluster 6	3,429	41.96%	48.12%	6.16%	<.0001
Wage Per Hour					
Cluster 1	36	$16.38	$14.39	-$1.99	0.3430
Cluster 2	62	$15.48	$16.31	$0.83	0.5299
Cluster 3	162	$15.01	$18.09	$3.08	<.0001
Cluster 4	199	$14.86	$16.78	$1.92	0.0032
Cluster 5	788	$14.46	$15.30	$0.84	0.0092
Cluster 6	1,650	$14.07	$15.53	$1.46	<.0001

Discussion

Limitations

Before discussing the meanings of this study's results, it is important to acknowledge some significant limitations. Perhaps the most notable limitation to this study is the absence of data on which offenders already have high school diplomas. Without the ability to control for that variable, it is difficult to assess whether those obtaining GEDs represent a population that is catching up to other offenders or surpassing them. The absence or presence of a high school diploma may also be an important piece of propensity score generation, given the large effect sizes observed for prior GEDs and higher education degrees. Future studies should seek to include a measure on high school completions, as its absence leaves some results open to interpretation.

The propensity score matching used in this study required some demographic variables to be grouped or ranked, which may reduce their explanatory power or mask differences that exist between groups. Future studies might consider looking at a more detailed picture of race, particularly around the acquisition of higher education degrees where the white/non-white binary in this study showed no significant differences. The ranking of offenses in this study might also be reconsidered as a series of binary variables in order to better analyze offenders with multiple offense categories.

As in other SAC studies using UI data, the employment percentages and hourly wages calculated do not include self-employment or alternative sources of income. The underreporting of these variables may result in greater or reduced differences in means, depending on the likelihood of those in the treatment group to obtain income without an employer. The definition of recidivism for this study was also fairly restrictive. While it does not present a statistical threat to the findings, other researchers may be interested in determining whether the effects observed in this study also apply to rearrests or reconviction.

Conclusions

The logistic regressions used to generate propensity scores for this study produced a number of significant findings regarding the likelihood of offenders to complete a GED or higher education degree while in DOC custody. Older offenders, female offenders, and those with less serious offenses are all less likely to complete either a GED or higher education degree. While non-whites are less likely to complete a GED, they appear no less likely to complete a higher education degree than whites. While this non-finding may be due in part to its simplification into a binary variable, it is notable for its contrast against the difference in likelihood for GED completion. Prior educational attainment is also predictive for higher education completion and predictive against GEDs, indicating that the GED treatment group may be more likely to represent those catching up to the comparison group rather than those getting more education.

Perhaps the most surprising finding in this study is the connection between obtaining a GED while in DOC custody and higher recidivism rates post-release. As has been mentioned previously, it is possible that this relationship could be explained by controlling for high school completions. Obtaining a GED is unlikely to be a criminogenic factor, and thus the increased recidivism rates may be a result of comparing those with GEDs to those with unobserved high school diplomas rather than those without one. This could similarly explain the observed

decrease in wages associated with obtaining a GED while serving time, but it does less to explain the higher rates of employment. The mixed results obtained here indicate a need for further inquiry rather than the acceptance of these findings at face value, as they do not align with any theoretical framework.

Results for higher education are less likely to be confounded by the lack of high school data, due to the fact that those with prior higher education degrees are accounted for in the comparison group. In accordance with the prior RAND study (Davis et al., 2013), offenders completing a higher education degree were shown to have decreased recidivism, increased employment and increased wages. Interestingly, the differences among those most likely to obtain a higher education degree mirrored almost exactly the 43 percent reduction in recidivism and 13 percent increase in employment found by the RAND study. Further investigation of clusters through propensity score matching reveals that these effects are even larger for groups who are less likely to be a part of the treatment group. While the findings around GEDs are unclear in this study, analyses of higher education provide strong support for its resultant reductions in recidivism and improved economic outcomes, particularly for offender groups that are underrepresented in these programs.

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