



## Postsecondary Education Programs in Washington Prisons: *An Analysis of Post-Release Education Outcomes*

The Washington State Department of Corrections (DOC) and the Washington State Board for Community and Technical Colleges (SBCTC) collaborate to provide education programming, including workforce certificate and academic degree programs, to incarcerated individuals.

In 2021, the Washington State Legislature directed the Washington State Institute for Public Policy (WSIPP) to examine how participation in postsecondary education while incarcerated affects individuals' post-release outcomes. WSIPP is required to produce two reports for the legislature. This first report examines the association between participation in education programs during confinement and individuals' enrollment and degree completion at community and technical colleges after release. A final report, due in October 2027, will explore expanded programming, post-release education outcomes, and recidivism.

In [Section I](#), we describe the research questions and provide an overview of what's included in this report. In [Section II](#), we provide background information about educational programming in prisons. In [Section III](#), we describe the methodology we used to conduct analyses. In [Section IV](#), we present results, and in [Section V](#), we discuss key takeaways.

### Summary

In 2021, the state legislature directed WSIPP to produce a series of reports to examine the relationship between postsecondary education (PSE) in prison and post-release outcomes.

In this report, we examine the association between participation in PSE programs in adult prisons and enrollment and completion in community and technical colleges (CTCs) after release. We define PSE programs as workforce training or academic programs that lead to a vocational certificate, workforce associate degree, direct transfer associate degree, or bachelor's degree.

We find that participation in PSE in prison is associated with a higher probability of enrolling in a CTC after release. However, among PSE participants and non-participants who went on to enroll in a CTC after release from prison, there were no differences between retention rates, GPAs, accumulated credits, or probability of credential receipt. When considering overall credential receipt during and after incarceration, PSE participants were more likely to hold a credential than non-participants.

A final report in 2027 will examine how program expansion has influenced post-release educational outcomes and recidivism.

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## I. Introduction

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In 2021, the Washington State Legislature expanded education programming in DOC facilities.<sup>1</sup> As part of this legislation, WSIPP was directed to complete two reports for the legislature to “understand whether participation in postsecondary education (PSE) while incarcerated contributes to greater enrollment and completion of postsecondary education and reduced recidivism post release.”<sup>2</sup>

This first report examines the relationship between participating in PSE programs (while incarcerated) and post-release educational enrollment and completion outcomes in community and technical colleges (CTCs) in Washington. See [Exhibit 1](#) for the assignment language.

In this report, we answer the following research questions:

- 1) Are individuals who participate in PSE while incarcerated more likely than non-participants to enroll in CTCs after release?
- 2) Are individuals who participate in PSE while incarcerated more likely than non-participants to have positive academic outcomes after release?
- 3) Are individuals who participate in PSE while incarcerated more likely than non-participants to complete a credential after release?

In 2027, WSIPP will complete a final report focusing on legislation that has expanded education programming in prisons and potential impacts on education outcomes and recidivism after release.

### **Exhibit 1**

#### Legislative Assignment

*For the preliminary report [WSIPP shall study]:*

*Patterns and any effects on post-release enrollment and participation in the community and technical college system by individuals who, while incarcerated, participated in postsecondary education programs, including those individuals that completed some coursework but did not earn a degree or certificate; and*

*Differential outcomes for individuals participating in different types of postsecondary education courses, certificate programs, and degree programs.*

*Second Substitute House Bill 1044, Chapter 200, Laws of 2021.*

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<sup>1</sup> Second Substitute House Bill 1044, Chapter 200, Laws of 2021.

<sup>2</sup> Ibid.

## II. Background

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In this section, we provide information on correctional education programs at a national and state level. In 2021, WSIPP published a report describing PSE program participation and completion among individuals in Washington State prisons.<sup>3</sup> That report provides additional detail on the background of correctional education programs.

On average, incarcerated individuals have lower rates of educational attainment than the general population, with notable differences in rates of postsecondary attainment. According to the most recent data available, about 16% of individuals in federal and state prisons have enrolled in college or achieved a college degree (before or during confinement), compared to about 60% of individuals in the general population.<sup>4</sup> The proportion of individuals receiving postsecondary education while incarcerated has slowly increased over the past two decades. For example, the proportion of individuals in state prisons with some college or degree increased from 12% in 2004 to 15% in 2016.<sup>5</sup>

### Correctional Education in the United States

Correctional education in prisons encompasses a wide range of programs, including basic skills like high school equivalency and General Educational Development (GED) programming, test preparation, English as a second language, college preparatory courses, workforce training, and college-level academic programs. These programs are a portion of the total rehabilitative services available to incarcerated individuals and aim to increase knowledge and skills to prepare them to reintegrate after release successfully.

According to the most recent data, 95% of state and federal prisons in the country offer correctional education programs. The vast majority include high school equivalency and GED programs.<sup>6</sup> About 50% of state and federal prisons offer college courses.<sup>7</sup>

A nationally representative survey shows that 42% of individuals complete some form of education while incarcerated.<sup>8</sup> About 20% of incarcerated individuals enroll in postsecondary education programs, and 9% earn a credential, usually a certificate. In the same survey, 70% of incarcerated individuals expressed interest in enrolling in postsecondary degree or certificate programs if given the option.

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<sup>3</sup> Knoth, L., & Fumia, D. (2021). *Postsecondary program participation and completion patterns among individuals incarcerated in Washington State prisons* (Doc. No. 21-06-1901). Olympia: Washington State Institute for Public Policy.

<sup>4</sup> Beatty, L., & Snell, T. (2021). *Survey of prison inmates: Profile of prison inmates, 2016*. U.S. Department of Justice, Office of Justice Programs, Bureau of Justice Statistics; American Community Survey. *2016 5-year estimates, educational attainment*. United States Census Bureau.

<sup>5</sup> Beatty & Snell (2021).

<sup>6</sup> Maruschak, L., & Buehler, E. (2021). *Census of state and federal adult correctional facilities, 2019*. U.S. Department of Justice, Office of Justice Programs, Bureau of Justice Statistics

<sup>7</sup> 58% of prisoners nationwide are in a facility offering college courses.

<sup>8</sup> Rampsey, B., & Keiper, S. (2016). *Highlights from the U.S. PIAAC Survey of Incarcerated Adults: Their skills, work experience, education, and training*. U.S. Department of Education.

## Correctional Education in Washington

In Washington, DOC and SBCTC have long collaborated to provide correctional education to incarcerated students.<sup>9</sup> As of 2023, eight CTCs provide programming across DOC's 11 prisons. Compared to national figures, a slightly higher proportion of incarcerated individuals in Washington (43% vs 42%) participate in correctional education and (23% vs 20%) participate in postsecondary education programs specifically.<sup>10</sup>

Correctional education program options have expanded over time. Prior to 2017, DOC and SBCTC contracted to provide adult basic education, GED, English language acquisition, college prep, and workforce training programs in prisons. In 2017, the Washington State Legislature began allowing DOC to use state appropriations to provide workforce degree programs.<sup>11</sup> In 2021, the legislature expanded programming to include bachelor's degree programs.<sup>12</sup>

In FY 2019, about 7,500 incarcerated students participated in DOC-SBCTC contracted programs.<sup>13</sup> During the pandemic, enrollments declined as DOC facilities took steps to reduce the spread of the virus, like limiting class sizes. In FY 2023, about 5,200 students enrolled.<sup>14</sup> Most students participate in basic skills programs.

In addition to DOC-SBCTC contracted programs, which constitute the majority of education programs in prisons, other entities like the Freedom Education Project Puget Sound (FEPPS), Clover Park Technical College, and The Evergreen State College provide college courses in prisons.<sup>15</sup>

As directed by the legislature, we focus on PSE programs, defined as workforce training or academic programs in adult prisons ([Exhibit 2](#)).<sup>16</sup>

### **Exhibit 2**

#### Definition of PSE Programs

##### **Professional/technical programs**

Certificate or workforce associate degree programs intended to prepare students for employment in a particular sector.

##### Examples:

- Programs that lead to certificates like an HVAC Technology Certificate.
- Workforce associate degree programs that lead to degrees like an Associate of Applied Science (AAS) in business management, or AAS in welding.

##### **Academic programs**

Programs that lead to degrees that can be transferred toward a bachelor's degree at Washington public colleges or universities, and bachelor's degree programs.

##### Examples:

- Direct Transfer, Associate of Arts degree
- Bachelor of Arts, Liberal Arts

<sup>9</sup> DOC and SBCTC's interagency agreement has existed since the early 2000s. K. Morgan, Education Services Administrator, DOC, (personal communication, August 2024).

<sup>10</sup> SBCTC. (2022). [Corrections education annual report 2022-2023](#). Olympia, WA: State Board of Community and Technical Colleges; DOC. (2023). [Creating prison-to-postsecondary education pathways: 2023 report to the legislature](#). Olympia, WA: Department of Corrections.

<sup>11</sup> This legislation did not provide additional funding for these programs but allowed DOC to use existing funds. [Substitute Senate Bill 5069, Chapter 120, Laws of 2017](#).

<sup>12</sup> [2SHB 1044](#).

<sup>13</sup> SBCTC. (2019). [Corrections education annual report 2018-2019](#). Olympia, WA: State Board of Community and Technical Colleges

<sup>14</sup> [SBCTC. \(2022\)](#).

<sup>15</sup> [DOC. \(2023\)](#).

<sup>16</sup> This definition is in line with the one used in Washington and the literature including Gorgol, L.E., & Sponsler, B.A. (2011). [Unlocking potential: Results of a national survey of postsecondary education in state prisons](#); DOC Policy 500. [Education and Vocational Programs in Prisons](#).

These include programs that offer professional-technical certificates, workforce associate degrees, and academic degrees like associate and bachelor's degrees.<sup>17</sup>

### Correctional Education Funding

Next, we summarize information about the main federal and state funding sources for correctional education.<sup>18</sup>

Prior to 1994, postsecondary education programs were widely available in state and federal prisons. In 1994, Congress amended the Higher Education Act (HEA) and eliminated incarcerated individuals' eligibility to receive Pell Grants, a grant program for low-income students.<sup>19</sup>

The ban on Pell Grants for incarcerated students eliminated a significant funding stream, leading to fewer programs and reduced participation. For example, the proportion of incarcerated individuals in college courses in prisons fell from 14% to 7% between 1991 and 2004.<sup>20</sup>

In 2015, the federal government experimented with reinstating Pell Grants through the Second Chance Pell pilot program, which restored grant eligibility for incarcerated students at some facilities in partnership with colleges.<sup>21</sup> In 2016, Centralia College, Seattle Community College, and Tacoma Community College were granted the ability to offer Second Chance Pell grants to incarcerated students in several DOC facilities. In 2020, Walla Walla Community College also began awarding the grants.<sup>22</sup>

In 2020, the federal government lifted the ban on Pell eligibility for incarcerated individuals altogether. Since then, corrections agencies and colleges in states, including Washington, have been working to reinstate the program in line with federal requirements.<sup>23</sup>

[Exhibit 3](#) provides a timeline of key federal and state policy and funding changes to correctional education.

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<sup>17</sup> Basic education, GED, English as a second language, and pre-college programs are not included.

<sup>18</sup> See [Knoth & Fumia \(2021\)](#) for additional information.

<sup>19</sup> Davis, L. (2019). *Higher education programs in prisons: What we know now and what we should focus on*. Santa Monica, CA: RAND Corporation.

<sup>20</sup> Ibid.

<sup>21</sup> Delaney, R., & Montagnet, C. (2020). *Second Chance Pell: A snapshot of the first three years*. Vera Institute of Justice.

<sup>22</sup> SBCTC. (2020). *Corrections education annual report 2019-2020*. Olympia, WA: State Board of Community and Technical Colleges; Currently, Centralia College and Walla Walla Community College offer Second Chance Pell grant, [DOC \(2023\)](#).

<sup>23</sup> Burke, L. (2021). *After the ban*. Inside Higher Education. The federal government also provides a small portion of funds to correctional education programs through the Carl D. Perkins Career and Technical Education Act (Perkins IV) and the Workforce Innovation and Opportunity Act (WIOA).

## Funding in Washington

In Washington, the largest funding stream for correctional education comes from state appropriations provided to DOC, which contracts with SBCTC to provide most correctional education programming in prisons.

Incarcerated individuals can also use personal or private funds to participate in PSE programs. Further, with the reinstatement of Pell Grants, individuals will soon be able to access federal funds to pay for postsecondary courses not covered by DOC-SBCTC contracts. Additionally, legislation passed in 2024 allows DOC to require incarcerated individuals to apply for state or federal financial aid to cover a portion of program costs if the program is aid-eligible.<sup>24</sup> Some students may be able to use state aid, but restrictions and funding structures can limit access.<sup>25</sup>

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<sup>24</sup> [Substitute Senate Bill 5953, Chapter 272, Laws of 2024.](#)

<sup>25</sup> Incarcerated individuals are eligible for the Washington College Grant, but grants are used to pay tuition at a Washington college or university. Programs funded through DOC contracts are not tuition-funded programs and incarcerated students participating in DOC-SBCTC contracted programs cannot use the grant to pay for their education. Washington's College Bound Scholarship program is not available to anyone with a felony conviction.

<sup>26</sup> [2SHB 1044.](#)

<sup>27</sup> Before 2021, individuals had to meet the same requirements, but priority was given to those with fewer than

## Program Eligibility and Prioritization

In 2021, the legislature expanded PSE programming in prisons, which affected eligibility and prioritization criteria.<sup>26</sup> Currently, incarcerated individuals are prioritized for enrollment in PSE if:

- They do not already have a postsecondary degree, and
- They have a reentry plan that allows for participation in a PSE program that is offered at their facility, approved by DOC, and is limited to a bachelor's degree or certificate program.<sup>27</sup>

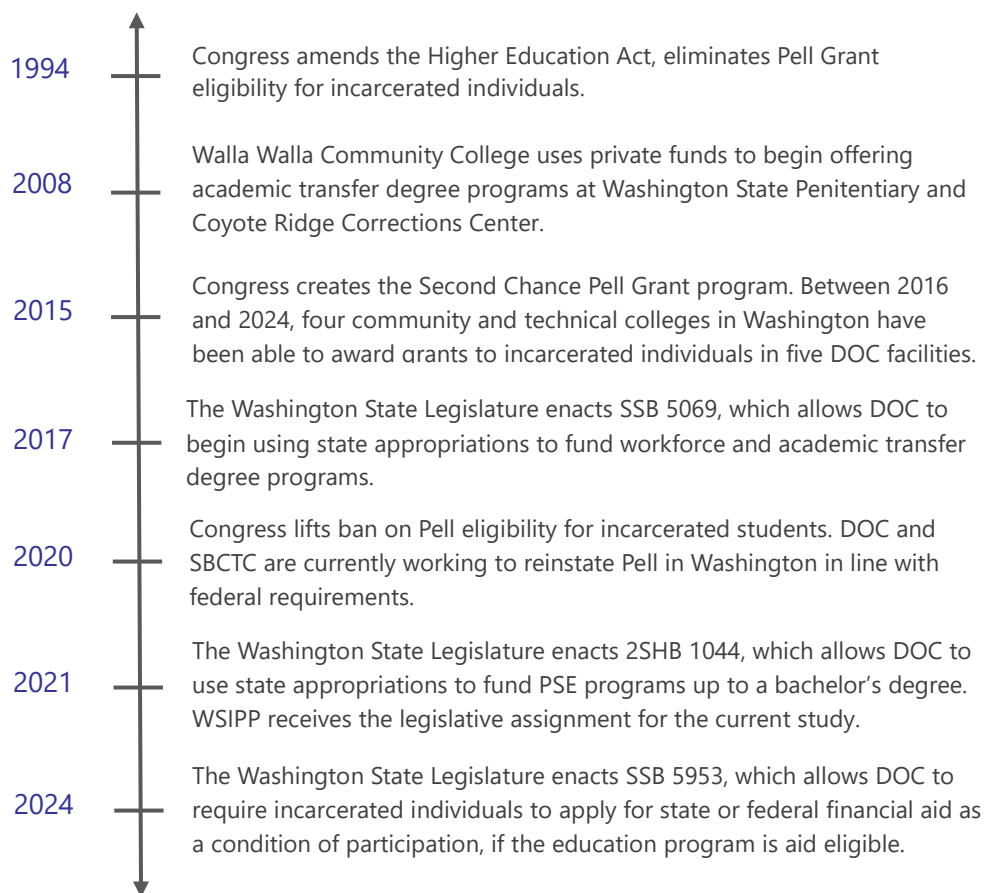
Additional requirements set by individual DOC facilities can also influence program eligibility (e.g., an individual's infraction history, Pell eligibility), though we were unable to identify consistent rules across facilities.<sup>28</sup> Further, incarcerated individuals are subject to eligibility requirements set by the community and technical colleges (e.g., individuals must have a high school diploma or GED, meet minimum placement scores, and be proficient in English).

five years left on their sentence. Those not meeting the criteria were required to pay for programs themselves or through third parties. Individuals sentenced to life without parole, the death penalty (prior to removal in 2018), or subject to deportation were ineligible. Today there is no priority consideration based on sentence length and individuals sentenced to life without parole or subject to deportation are eligible but must fund programs themselves or through third parties.

<sup>28</sup> Infraction history only impacts access to education if infraction occurred in educational setting. DOC Policy 500. [Education and Vocational Programs in Prisons.](#)

### Exhibit 3

#### Timeline of Policy and Funding Changes Influencing Postsecondary Education Programs in Prisons



#### Research on Correctional Education

There is a large body of research on the effectiveness of correctional education programs, including adult basic education, GED, vocational, and academic programs. Most research has focused on recidivism and employment outcomes. In general, participation in correctional education programs is associated with a decrease in recidivism and an increase in the likelihood of employment upon release.

#### Recidivism Effects

A meta-analysis published in 2023 aggregated results across 79 papers and examined effects by study quality and program type (i.e., adult basic education, secondary, vocational, and college).<sup>29</sup> The authors found that, based on the highest quality studies, on average, participation in correctional education programs was associated with a decrease in the odds of recidivism by about 19%. Vocational and college programs had the largest impact on recidivism.

<sup>29</sup> Stickle, B., & Schuster, S.S. (2023). *Are schools in prison worth it? The effects and economic returns of prison education*. *American Journal of Criminal Justice*, 48, 1263-1294.

### Labor Market Effects

Study authors also found that participation in correctional education increased the odds of post-release employment by about 13%, an effect mostly influenced by participation in vocational programs.<sup>30</sup>

A recent study conducted in Washington focused on labor market returns to correctional education credentials. Authors found that receipt of a certificate while incarcerated is associated with an increase in post-release earnings by about \$250 per quarter, an effect influenced mainly by certificates in construction and manufacturing fields.<sup>31</sup>

### Education Effects

We found several studies that examined academic outcomes among individuals who participated in correctional education, but outcomes were measured while individuals were incarcerated, not after release. A synthesis of these studies found that individuals who participated in correctional education programs generally experienced higher test scores and course credits than non-participants or individuals who received other education programs.<sup>32</sup> However, it is important to note that most of the programs in these studies are basic skills programs, not vocational or academic programs. Further, the synthesis did not separate effects by study quality. Therefore, findings may be biased due to differences between study group participants that researchers do not statistically control for.

As a result, we consider these findings on academic outcomes with caution. Our study helps fill a gap in this literature by examining post-release education outcomes.

### Other WSIPP Analyses

Finally, WSIPP has conducted evidence reviews and benefit-cost analyses on PSE and vocational programs in prisons and found that, on average, programs reduce recidivism and result in monetary benefits that outweigh program costs.<sup>33</sup>

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<sup>30</sup> Ibid.

<sup>31</sup> Cowan, J., Goldhaber, D., & Gautam, S. (2024). *Course corrections? The labor market returns to correctional education credentials*. CALDER.

<sup>32</sup> Reed, D.K. (2015). *A synthesis of the effects of correctional education on the academic outcomes of incarcerated adults*. *Educational Psychology Review*, 27, 537-558.

<sup>33</sup> WSIPP Benefit-Cost Results: [Adult Criminal Justice](#).



## III. Methodology

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This section describes our approach to examining college enrollment, academic progress, and credential achievement outcomes for formerly incarcerated individuals.

### Data

We received administrative data from DOC and the Education Research and Data Center (ERDC) to complete this assignment.

From DOC, we received data on individuals released from Washington State prisons between 2013 and 2022. This data included information on individuals' demographics, confinement periods, risk assessments, and participation in education programs during confinement. WSIPP added additional criminal history information using its internal Criminal History Database. We then sent this data to ERDC, which linked postsecondary education enrollment and completion data, anonymized the records, and sent the data back to WSIPP for analysis. This allowed us to track individuals' pathways from prison to community and technical colleges after release. [Appendix I](#) provides more information on data sources and outcomes.

### Outcomes

We examine three categories of post-release outcomes, including CTC enrollment, academic progress, and credential achievement, to understand how formerly incarcerated individuals engage with and move through the CTC system after release from prison.

Specifically, we examine:

- **Enrollment** in a CTC within one, two, and three years of release;
- **Academic progress** for individuals who enroll in CTCs within one year of release, including first-year retention, GPA, and credit accumulation; and
- **Credential achievement** for individuals who enroll in CTCs within one year of release, specifically degree or certificate receipt within one, two, and three years of enrollment.

It is important to note that academic progress and credential achievement outcomes are only measured for individuals who enroll in a CTC after release. As a result, our estimates for these outcomes are limited as they use a comparison group of individuals who also enrolled in CTCs.

### Sample

Our analytic sample includes 38,917 individuals released from DOC facilities between 2013 and 2020. Of these, 14,575 individuals (37%) participated in PSE programs while confined. We refer to this group as PSE participants or treatment individuals throughout the report. We refer to the 24,342 individuals (63%) who did not participate in PSE while confined as non-participants or comparison individuals. See [Appendix II](#) for information about how we created the analytic sample.

Exhibit 4 describes pre-release characteristics for PSE participants and non-participants. Though overall differences were small, those in the PSE treatment group were, on average, younger, more likely to be male, more likely to be Black, less likely to be Hispanic, had higher educational attainment, and had a lower risk class than non-participants. We minimize these differences using the methodological approach described next.

### Research Design

Ideally, to evaluate the effect of postsecondary education programs on post-release outcomes, we would randomly assign some incarcerated individuals to receive programming and others not to. Individuals in both groups would have the same compositional makeup before treatment, and any differences in post-release outcomes between groups could be attributed to the program’s effect.

Since we are taking a retrospective approach, we cannot randomly assign individuals and must consider alternative methods of analysis.

Eligible incarcerated individuals choose whether to participate in postsecondary education. Because of this, incarcerated individuals who enroll in postsecondary education while confined may be systematically different from individuals who do not enroll. Exhibit 4 shows some differences exist between PSE participants and non-participants in our sample.

**Exhibit 4**  
Pre-Release Characteristics

	PSE	Non-PSE
Average age at admission	33	36
<b>Gender</b>		
Male	91%	85%
Female	9%	15%
<b>Race &amp; ethnicity</b>		
AIAN	5%	6%
AS/PI	3%	3%
Black	18%	14%
White	73%	76%
Other	1%	1%
Hispanic	9%	12%
<b>Education</b>		
HS diploma/GED	52%	47%
Certificate	4%	3%
Some college	25%	17%
AA degree	3%	0%
BA+ degree	0.3%	0.3%
<b>Other</b>		
Risk class: High	78%	83%
Prior adult convictions	8.6	9.4
<b>Release year</b>		
2013	18%	17%
2014	18%	16%
2015	15%	15%
2016	13%	13%
2017	12%	11%
2018	11%	12%
2019	9%	11%
2020	4%	5%
<b># of observations</b>	14,575	24,342

Notes:

AIAN: American Indian/Alaska Native

AS/PI: Asian/Pacific Islander.

Prior adult convictions include misdemeanors and felonies.

Unobserved differences between groups may predict college enrollment and completion outcomes after release. For example, incarcerated individuals who choose to enroll in PSE programs while confined may be more motivated to secure employment after release than individuals who do not participate. This motivation, not the program itself, may influence college enrollment after release.

Further, prison administrative staff have some discretion in choosing who enrolls in PSE programs among individuals who are eligible and want to participate. Prison staff may systematically choose individuals who are more or less likely to succeed in PSE programming, consciously or unconsciously.

Similar concerns exist regarding our academic progress and credential analyses, which are based on a subsample of individuals who enrolled in CTCs. There may have been different paths to CTC enrollment for PSE participants and non-participants, leading to further unobserved differences between the two groups. For example, formerly incarcerated students may have enrolled in a CTC because of the PSE program. On the other hand, individuals who did not participate in PSE while confined may be highly motivated to enroll in a CTC on their own. Since we cannot measure all factors like motivation, we are unable to verify that the groups are similar on all dimensions.

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<sup>34</sup> Some individuals earn a certificate and degree while confined. For these individuals we examined the highest credential earned (i.e., a degree over a certificate).

To address these challenges, we use a statistical method called entropy balancing, which reweights comparison observations so that the treatment and comparison groups are similar in observable characteristics like age, gender, race, risk class, and criminal history. After weighting, the summary statistics for the comparison group will be identical to the treatment group (i.e., both columns of [Exhibit 4](#) will have the same numbers). See [Exhibit A3](#) for these statistics after balancing. Using this weighted sample, we conduct regression analyses to estimate post-release outcomes between similar treatment and comparison group individuals.

We also performed subgroup analyses to examine the associations by gender, age, race, ethnicity, credential type, and program type. For credential type, we were interested to see if post-release outcomes differ depending on whether individuals earned a certificate or a degree while confined.<sup>34</sup> For program type, we examined if outcomes differ depending on whether an individual participated in vocational, academic, or both types of programs while confined.

Due to missing data, we did not examine associations based on the courses or study areas PSE participants focused on while confined. Among participants, the majority (65%) participated in vocational programs but not academic programs while confined.<sup>35</sup> Of the data available, the largest proportion of enrollments were concentrated in study areas related to construction and trades, business management and marketing, and mechanic repair and technician.

<sup>35</sup> 13% of PSE participants enrolled in academic but not vocational programs while confined, and 22% participated in both vocational and academic programs while in prison.

See [Appendices III](#) and [VI](#) for details about our empirical approach and other analyses.

### Limitations

Though we use entropy balancing to create similar treatment and comparison groups, this method does not account for unobserved differences that may exist between groups. For example, we do not have good data on individuals' income or employment status prior to confinement. Both income and employment before entering prison may influence individuals' decisions to enroll in PSE programs while confined and may also influence their decisions to enroll in a CTC after release.

Because we cannot account for all factors influencing post-release outcomes, our results represent associations between PSE participation during confinement and college enrollment and completion outcomes after release. We cannot be certain whether the program caused the differences we measure.

Further, our data only covers CTC enrollments and completions in Washington. If individuals were released from prison and enrolled in a four-year institution in Washington or another state, we are unable to observe this. As a result, actual enrollments and completions (in and outside of Washington) may be higher than what we report.

## IV. Results

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This section describes postsecondary enrollment, academic progress, and achievement outcomes between individuals who participated in PSE programs while confined and those who did not participate.

### Enrollment

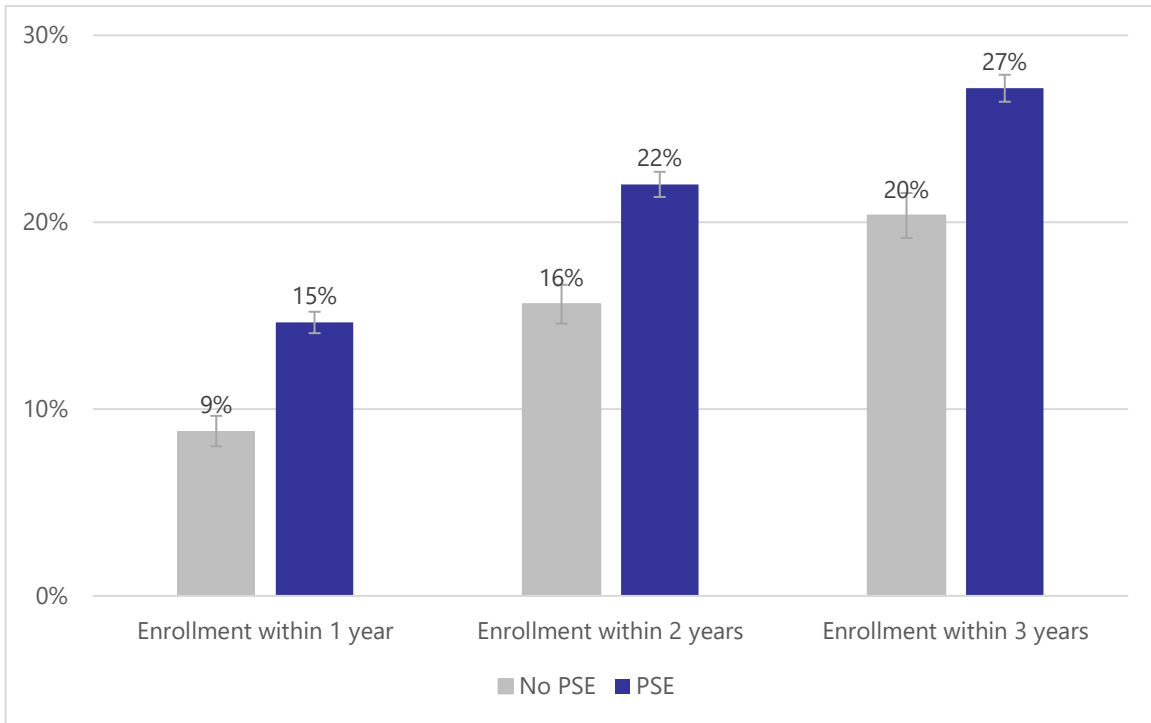
First, we examined CTC enrollment in Washington after individuals were released from prison. Overall, we found that individuals who participated in PSE programs while confined were more likely than non-participants to enroll in CTCs after release. [Exhibit 5](#) shows both groups' predicted probability of enrolling in a CTC within one, two, and three years of release.

Depending on the follow-up period, we estimate that PSE participants are between six and seven percentage points more likely than non-participants to enroll in a CTC after release. For example, our model predicts that within one year of release, PSE participants have a 15% probability of enrolling in a CTC, compared to a 9% probability among non-participants. This is equivalent to a 66% higher probability of enrollment among PSE participants.

After release, we observed that a larger proportion of PSE participants enrolled in vocational and academic programs than non-participants and a larger proportion of non-participants enrolled in non-credit-bearing programs than participants.

### Exhibit 5

Predicted Probability of Enrolling in a CTC Within One, Two, and Three Years of Release



**Notes:**

N=38,917.

PSE participants have a 66%, 41% and 33% higher probability of enrolling in a CTC within one, two, and three years of release, respectively, compared to non-participants.

The vertical lines extending from each bar represent 95% confidence intervals, a range that we would expect to contain the true value of what we are measuring (95% of the time) if we repeated the experiment or survey many times. These were estimated using Stata's "margins" command.

Next, we conducted subgroup analyses to examine how the relationship between PSE participation in prison and CTC enrollment after release varies across groups. Since we were specifically directed to examine differential effects by completion status and program type, we discuss those results in detail. For all other groups, we describe notable findings and direct readers to [Appendix V](#) for more information. Also, for simplicity, we report results for enrollment within one year of release measure only.<sup>36</sup>

Overall, we found a positive relationship between participating in PSE while confined and enrolling in a CTC within one year of release for all subgroups.

*Credential Type:* We examined how credential receipt during incarceration influenced post-release enrollment. Among those who participated in PSE while confined, 37% achieved a credential while incarcerated. Of those who earned a credential, 96% earned a certificate, and 4% earned a degree.

<sup>36</sup> We also examined all outcomes for subgroups and report results in [Appendix V](#).

Individuals who earned a degree while confined were 11 percentage points more likely than non-participants to enroll in a CTC within one year of release.<sup>37</sup> Individuals who earned a certificate or started a PSE program but did not earn a credential while confined were about six percentage points more likely than non-participants to enroll in a CTC within one year of release ([Exhibit 6](#)).<sup>38</sup>

*Program Type.* We also examined how the type of PSE program an individual participated in while confined influenced enrollment. Among PSE participants, 65% enrolled in vocational programs while confined, 13% in academic programs, and 22% in both.

Individuals who participated in both program types while confined were about ten percentage points more likely than non-participants to enroll in a CTC within the first year of release ([Exhibit 7](#)).<sup>39</sup> Individuals who enrolled in either vocational or academic programs while confined were between four and five percentage points more likely than non-participants to enroll in a CTC after release.<sup>40</sup>

*Age.* PSE participation increased the probability of enrolling in a CTC for all age categories, though we found a slightly larger estimate among participants between the ages of 25 and 44.

*Gender.* We estimate that PSE participation increased the probability of enrolling in a CTC after release for both male and female participants, though we found a larger estimate among female participants.

*Race & Ethnicity.* Participation in PSE while confined, increased the probability of enrolling in a CTC within one year of release among most racial and ethnic groups. Estimates were largest for individuals who identified as Hispanic, Black, and American Indian/Alaska Native. Estimates were slightly lower but comparable for White and non-Hispanic individuals.

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<sup>37</sup> Equivalent to a 129% higher probability of enrollment among PSE participants, relative to non-participants. Of degree earners, 60% enrolled in vocational programs and 40% enrolled in academic programs after release.

<sup>38</sup> Equivalent to about a 65% higher probability of enrollment among PSE participants, relative to non-participants. Of these groups, about 60% enrolled in vocational programs,

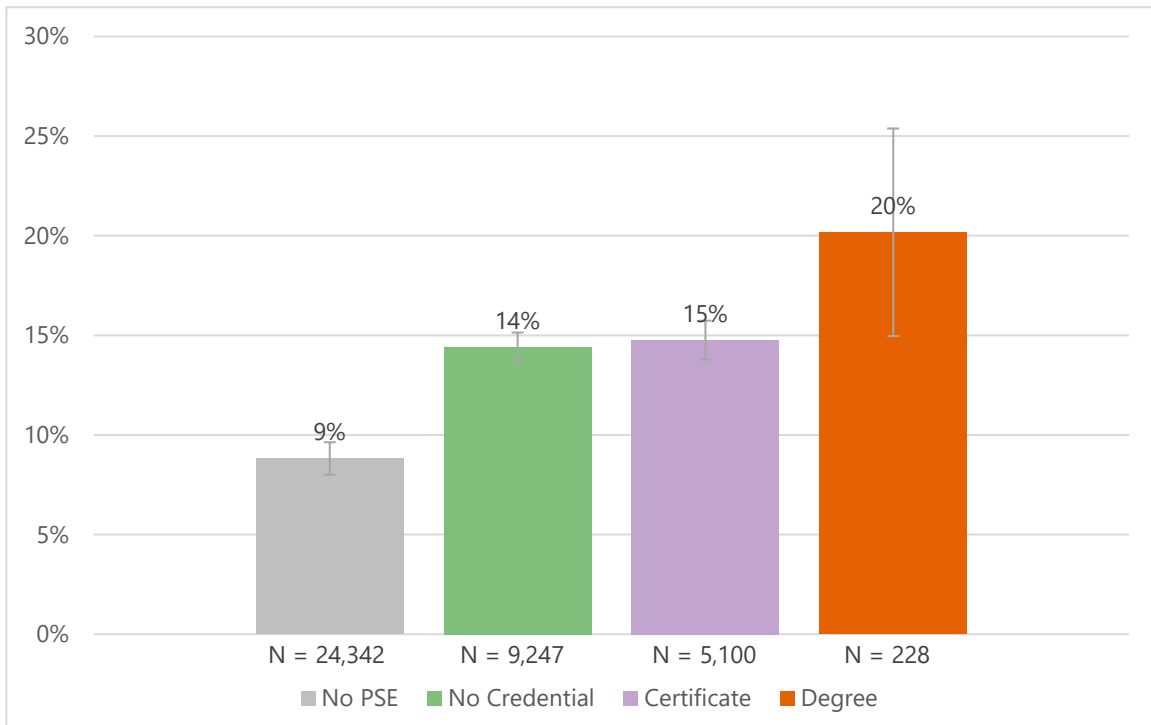
25% enrolled in academic programs, and 15% enrolled in other non-credit bearing programs after release.

<sup>39</sup> Equivalent to a 111% higher probability of enrollment among PSE participants, relative to non-participants.

<sup>40</sup> Equivalent to about a 50% higher probability of enrollment among PSE participants, relative to non-participants.

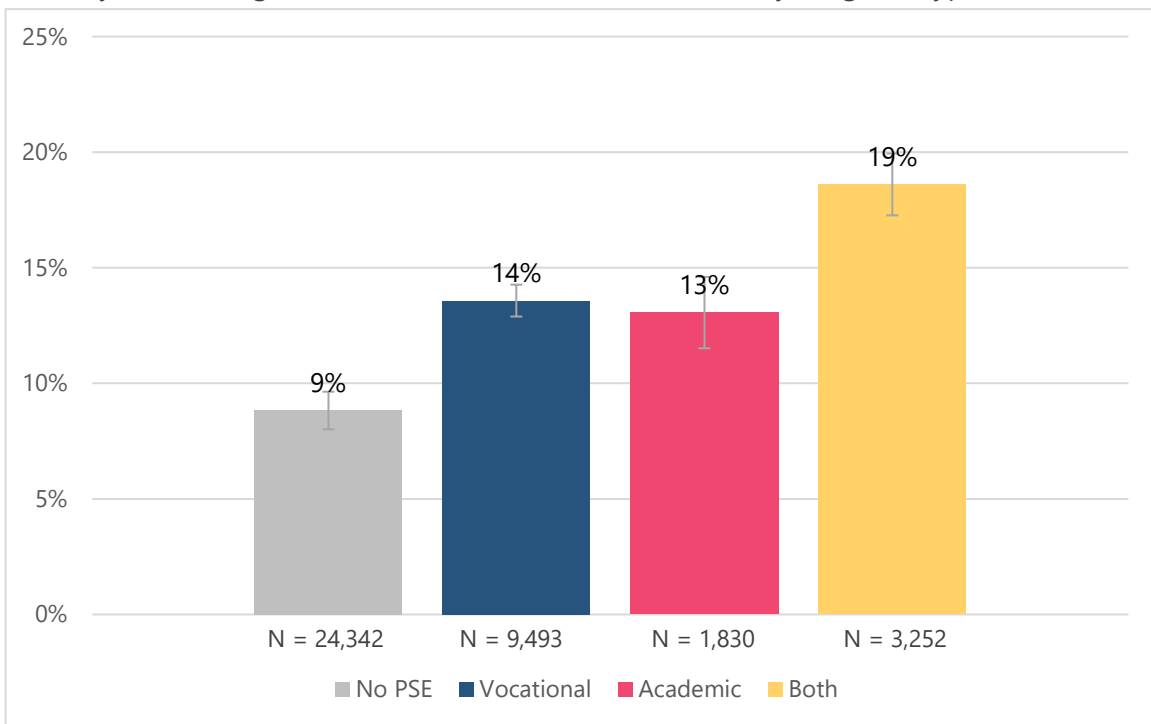
### Exhibit 6

Probability of Enrolling in a CTC Within One Year of Release:  
By Credential Achieved While Confined



### Exhibit 7

Probability of Enrolling in a CTC Within One Year of Release: By Program Type While Confined





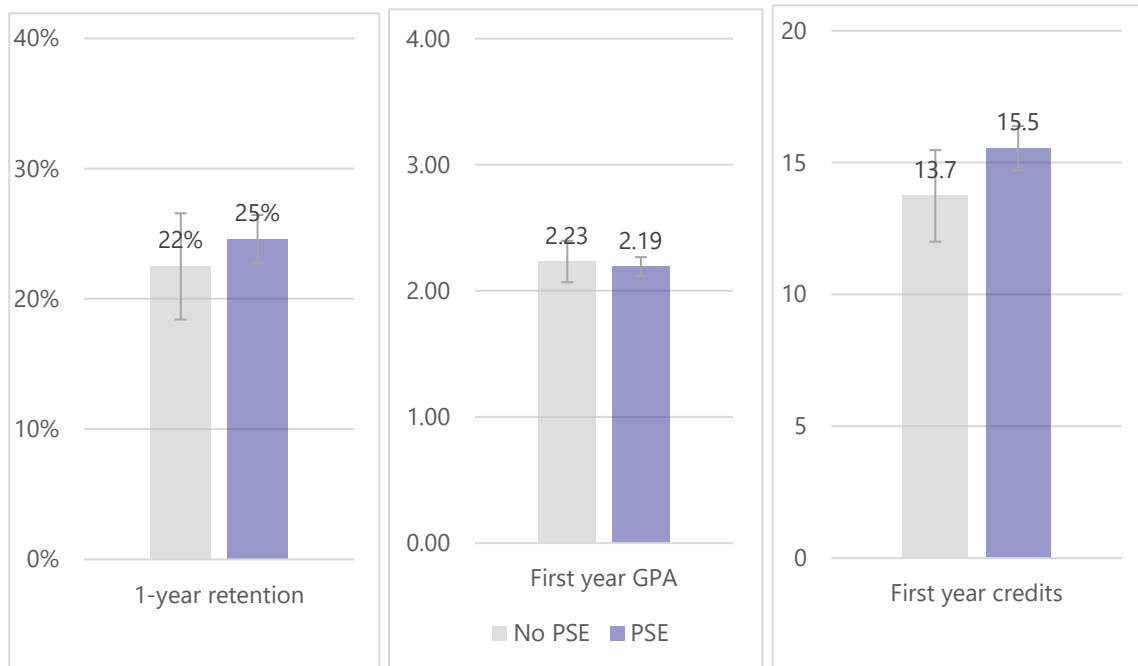
## Academic Progress

Next, we compare measures of academic progress during post-release enrollments between PSE participants and non-participants. To do this, we analyze a subset of our original sample, which includes individuals who enrolled in a CTC within one year of release from prison. Our results compare the individuals in the PSE group to others who decided to enroll in a CTC after release, even though they did not participate in PSE in prison.

We observed that PSE participants had higher rates of retention (25% vs. 22%), lower GPAs (2.19 vs. 2.23), and accumulated more credits (15.5 vs. 13.7) in their first year of enrollment than non-participants. However, the differences in outcomes between PSE participants and non-participants are not statistically significant.<sup>41</sup> Exhibit 8 illustrates the predicted outcomes for PSE participants and non-participants; the bars are transparent to represent non-significance.

### Exhibit 8

Academic Progress During the First Year of Post-Release Enrollment



**Notes:**

Retention (N=4,192); GPA (N=2,442), Credits (N=4,192)

Estimates are not statistically significant at the 95% level.

The vertical lines extending from each bar represent 95% confidence intervals, a range that we would expect to contain the true value of what we are measuring (95% of the time) if we repeated the experiment or survey many times. These were estimated using Stata's "margins" command.

<sup>41</sup> At the 95% confidence level.

We also examined these measures by subgroups. We discuss the most notable findings below and direct readers to [Appendix V](#) for more detailed subgroup results.<sup>42</sup>

**Retention:** PSE participation was associated with higher retention rates for individuals who were 45 years and older and for individuals who identified as a person of color (POC).<sup>43</sup>

**Credit Accumulation:** We found that PSE participation was associated with higher first-year credit accumulation for individuals who had obtained a certificate or degree while confined and for individuals who enrolled in both academic and vocational education programs while confined.

### Credential Achievement

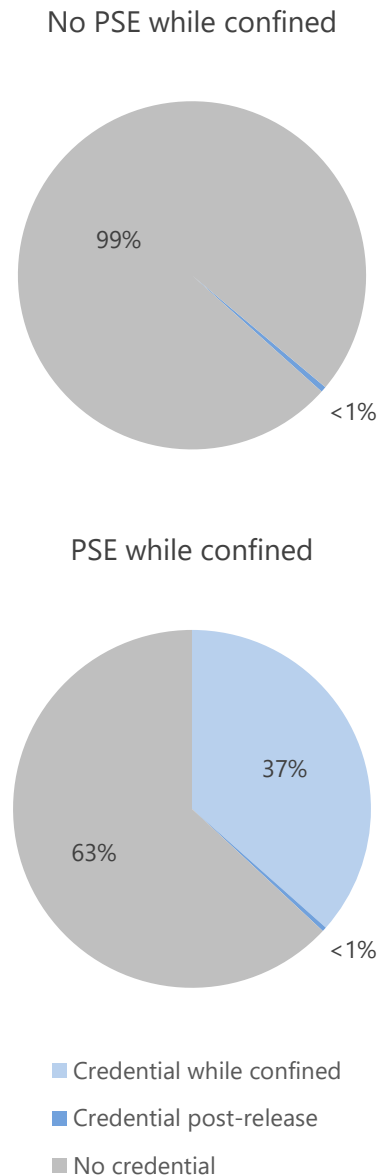
Finally, we examine credential achievement at Washington CTCs. While we focus primarily on post-release achievements, we briefly discuss achievements more broadly.

As mentioned, 37% of PSE participants earned a credential while incarcerated. An additional 0.4% of PSE participants earned a credential after release. By contrast, 0.5% of non-participants earned a credential after release. The overall rate of credential achievement is thus substantially higher for individuals who participated in PSE programs while incarcerated ([Exhibit 9](#)).

<sup>42</sup> Notable means associations were statistically significant at the 95% level.

<sup>43</sup> For these academic progress outcomes, in order to conduct subgroup analyses with small samples, we

**Exhibit 9**  
CTC Credential Achievement



**Note:**  
Post-release achievements include credentials earned within three years of release

categorized individuals who identified as American Indian/Alaska Native, Asian/Pacific Islander, Black, and other as a group labeled "person of color."

To explore how achievement rates differ between PSE participants and non-participants after release, we restrict our analysis to individuals enrolled in a Washington CTC within one year of release.

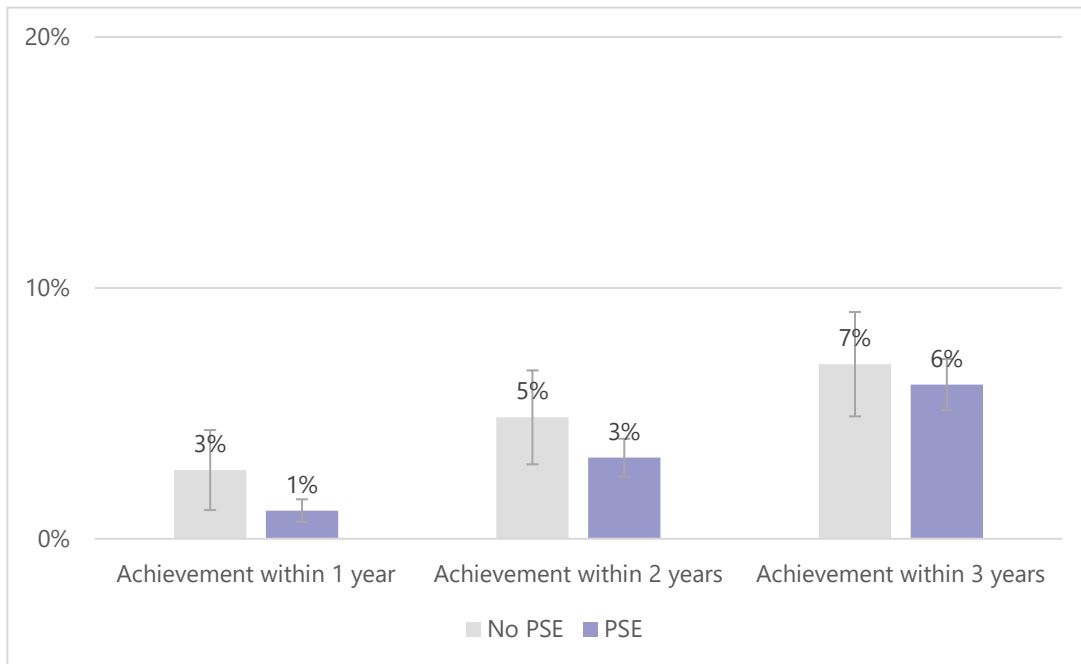
Among this group, we observed that PSE participants were about two percentage points less likely than non-participants to obtain a credential after release. However, **the differences between PSE participants and non-participants are not statistically significant.**<sup>44</sup> Exhibit 10 shows the predicted probability of achieving a credential within one, two, and three years of enrollment after release for both groups. Bars are transparent to represent non-significance.

Among PSE participants who earned a credential after release, 86% earned certificates, and 14% earned associate degrees. Among non-participants, 81% earned certificates, 7% earned associate degrees, and 13% earned other credentials like a GED.<sup>45</sup>

As illustrated in Exhibit 9, many PSE participants earned credentials while confined. Therefore, they may not need to pursue a certificate or degree after release.

### Exhibit 10

Probability of Achieving a Credential Within One, Two, and Three Years of CTC Enrollment



**Notes:**

N=4,192.

Estimates are not statistically significant at the 95% level.

The vertical lines extending from each bar represent 95% confidence intervals, a range that we would expect to contain the true value of what we are measuring (95% of the time) if we repeated the experiment or survey many times. These were estimated using Stata's "margins" command.

<sup>44</sup> At the 95% confidence level.

<sup>45</sup> These figures represent averages across a three-year period after first enrollment.

*Credential Type:* We find that individuals who earned a degree or certificate while confined were between three and five percentage points less likely than non-participants to obtain a credential after release.<sup>46</sup> [Exhibit 11](#) presents more information on these groups.

*Program Type:* When examining program type, we found that individuals who participated in both academic and vocational programs or academic programs alone while confined were about three percentage points less likely than non-participants to obtain a credential after release (see [Exhibit 12](#)).<sup>47</sup>

We conducted analyses of post-release credential achievement for subgroups including by age, gender, race, and ethnicity but did not find significant differences between PSE participants and non-participants in these groups.<sup>48</sup>

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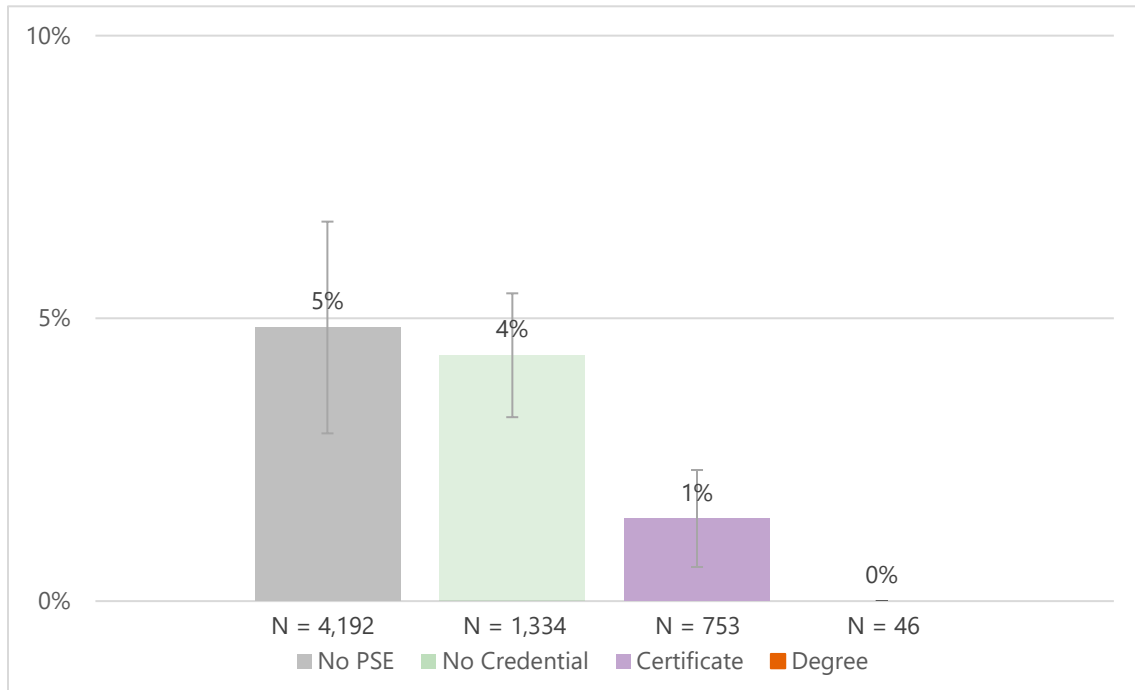
<sup>46</sup> Equivalent to between a 70% and 100% lower probability of achievement among PSE participants, relative to non-participants.

<sup>47</sup> Equivalent to about a 60% lower probability of achievement among PSE participants, relative to non-participants.

<sup>48</sup> To allow individuals a more reasonable amount of time to earn a credential after enrolling in a CTC, we examined the “credential within two years of enrollment” measure. We examined all outcomes for subgroups and report results in [Appendix V](#).

### Exhibit 11

Probability of Achieving a Credential Within Two Years of Enrollment:  
By Credential Achieved While Confined

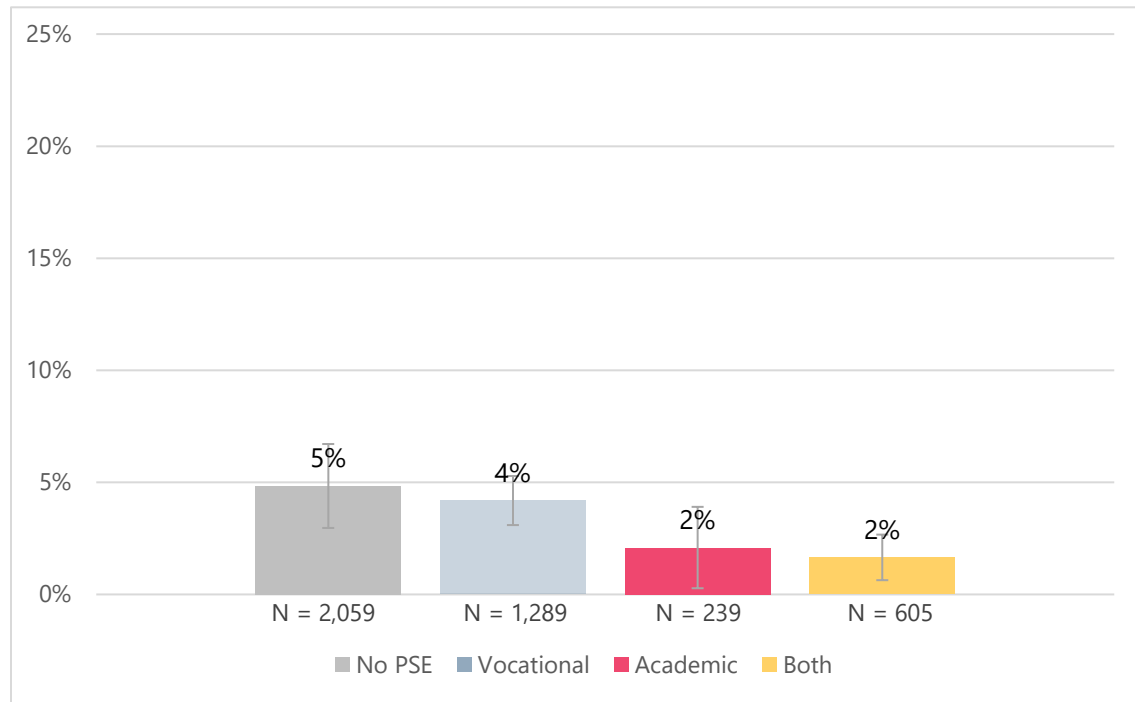


**Note:**

Compared to non-participants, estimates for the "No Credential" group are not statistically significant at the 95% level.

### Exhibit 12

Probability of Achieving a Credential Within 2 Years of Enrollment:  
By Program Type While Confined



**Note:**

Compared to non-participants, estimates for the "Vocational" group are not statistically significant at the 95% level.

## V. Conclusion

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In 2021, the Washington State Legislature directed WSIPP to conduct a series of reports examining how participation in PSE programs while incarcerated affects individuals' post-release education and recidivism outcomes.<sup>49</sup>

This first report analyzes the association between PSE participation in adult prisons and enrollment and completion outcomes in community and technical colleges after release. Here, we summarize our main research questions and findings.

### [Are individuals who participate in PSE while incarcerated more likely than non-participants to enroll in CTCs after release?](#)

We found that participation in PSE was associated with an increased probability of enrolling in a CTC after release from prison. Depending on the follow-up period, PSE participants were between six and seven percentage points more likely than non-participants to enroll in a CTC after release from prison. **This is equivalent to PSE participants having a 66% higher probability, relative to non-participants, of enrolling in a CTC within one year of release.**

Next, we examined academic progress and credential achievement outcomes among PSE participants and non-participants who enrolled in a CTC within the first year of release from prison.

### [Are individuals who participate in PSE while incarcerated more likely than non-participants to have positive academic outcomes after release?](#)

We found that PSE participants and non-participants did not have different retention rates, GPAs, or accumulated credits during their first enrollment year.

### [Are individuals who participate in PSE while incarcerated more likely than non-participants to complete a credential after release?](#)

PSE participants were no more or less likely than non-participants to obtain a credential after release from prison. However, when considering overall credential receipt, including credentials obtained during and after confinement, 37% of PSE participants in our sample earned a credential, compared to 1% of non-participants. In other words, participating in PSE in prison is associated with an overall increase in credential receipt, which mostly occurs during confinement.

Our findings fill a gap in the research literature by examining the relationship between PSE participation in prisons and post-release education outcomes. While we control for individual-level selection factors that may influence outcomes, we cannot account for unobserved factors. As a result, our findings should be considered associations between PSE programs and outcomes, not the causal impact of PSE programs.

In our final report, due in October 2027, we will expand upon this report using several more years of release data to examine how legislative changes to PSE programs in prisons in recent years have influenced post-release education outcomes and recidivism.

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<sup>49</sup> 2SHB 1044.



# Appendices

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## I. Data Sources and Outcomes

To complete this assignment, we requested data from multiple agencies, including the Washington State Department of Corrections (DOC) and the Education Research and Data Center (ERDC).

From DOC, we requested information for individuals released from Washington State prisons between 1/1/2013 and 12/31/2022, including:

- Demographic information (e.g., age, race, ethnicity, gender);
- Program participation information, including education programs like adult basic education, vocational, and academic programs. DOC also provided education program enrollments for five years prior to each individual’s release;
- Risk assessment information; and,
- Prison admission history.

DOC sent this sample to WSIPP, which included 54,562 individuals.<sup>50</sup> About 27% of individuals in the sample had multiple confinement periods. For these individuals, we kept information related to their first and last confinements so we could examine whether first or last confinement periods influenced post-release outcomes. Next, we added criminal history information from WSIPP’s internal Criminal History Database and additional risk assessment information. WSIPP then sent this sample to ERDC. ERDC linked the following information for individuals in the sample:

- Community and technical college (CTC) enrollment information<sup>51</sup> (e.g., institution name, enrollment dates, credits earned, GPA, student’s purpose for attending).
- CTC completion information (e.g., achievement date, type of credential received, institution where credential was completed).
- Student information (e.g., demographics, an indicator of whether students graduated high school or earned a GED).

<sup>50</sup> Prior to sending to WSIPP, DOC omitted individuals from the sample who had same day admissions and releases.

<sup>51</sup> The assignment language specifies “post-release enrollment and completion trends in the community and technical college sector,” so we only requested enrollment

and completion data for two-year institutions from ERDC. The Washington State Board for Community and Technical Colleges (SBCTC) are data owners for 2-year institution data and provide this data to ERDC.

After linking postsecondary education data, ERDC sent WSIPP de-identified data files for analysis. See [Appendix II](#) for information about how we created an analytic sample.

## Outcomes

In this first report, WSIPP examined postsecondary enrollment and completion outcomes for formerly incarcerated individuals. We also examine academic progress outcomes to understand how individuals fare academically once enrolled in a CTC after release from prison. We wanted to understand not only whether individuals who participated in postsecondary education while confined were more likely to enroll in college after release but also how their rates of retention, GPAs, credit accumulation, and credential achievements compared to those of their peers. Below, we describe how we measured each outcome.

For enrollment outcomes, we measure whether individuals enroll in a CTC within one, two, or three years after release from prison. While we found that the probability of enrolling in a CTC for both PSE participants and non-participants increased over time, overall, the prison population, population of incarcerated students, and population of CTC enrollees has been decreasing, particularly during the COVID-19 pandemic. Between 2017 and 2023, the prison population in Washington decreased by 24%, incarcerated individuals in correctional education programs decreased by 40%, and the number of students enrolling in CTCs decreased by 23%.<sup>52</sup>

We measure academic progress and achievement outcomes based on a subset of our sample, which includes 4,192 individuals who enrolled in a Washington State CTC within one year of release. These outcomes are based on the first enrollment within the first year an individual is released from prison. By making this limitation, the follow-up period is consistent for all individuals and is long enough to observe the outcomes.

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<sup>52</sup> Office of Financial Management, [Prison Inmate Population](#) website; DOC. (2023); SBCTC. (2022); [Enrollment Data | SBCTC](#)



## II. Analytic Sample Construction

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After receiving data from ERDC, we had a final sample of 54,536 individuals who had been released from DOC facilities between 1/1/2013 and 12/31/2022.

*PSE Participants (Treatment Group):* Using enrollment data from DOC and ERDC sources, we identified individuals who participated in PSE programming while confined, which included enrollments in vocational and academic programs. We did not include individuals enrolled in basic education, ESL, college prep, or GED programs. We were able to identify PSE enrollments for five years prior to each person's release. However, if individuals participated in PSE before this five-year period, we were unable to identify them. Overall, 33% (17,991) of individuals released between 2013 and 2022 participated in PSE programming while confined.

*PSE Non-Participants (Comparison Group):* 36,545 individuals (67%) released between 2013 and 2022 had not participated in PSE programming while confined. This group includes individuals who participated in basic education or GED programs while confined. Also included in this group are 366 individuals who had participated in PSE programming while confined through private organizations like Freedom Education Project Puget Sound (FEPPS), Black Prisoner's Caucus Taking Education and Creating History (T.E.A.C.H), and University Beyond Bars (UBB). We did not include these individuals in the treatment group because we wanted to focus specifically on DOC-SBCTC contracted PSE programs, which make up the majority of PSE programming in prisons in Washington. However, in [Appendix VI](#), we present results from additional analyses in which we include these individuals in the treatment group.

After data processing and identifying individuals in treatment and comparison groups, we made several sample restrictions before conducting analyses. Key restrictions are listed below:

- We omitted 3,261 individuals who did not have a high school diploma or GED since it is a prerequisite to participate in DOC-SBCTC contracted PSE programs in prisons.
- We omitted 1,722 individuals who obtained a postsecondary degree before confinement since they are typically not prioritized to participate in DOC-SBCTC contracted PSE programs.
- We omitted 1,720 individuals whose primary language was not English since English proficiency is a prerequisite to participate in DOC-SBCTC contracted PSE programs in prisons.
- We omitted 6,972 individuals who had a release date after June 2020 to allow for a consistent three-year follow-up period for all individuals in the sample.
- We omitted 1,944 individuals with missing information for outcomes or control variables.

After restrictions, our final analytic sample included 38,917 individuals released from DOC facilities between 2013 and 2020. We classified 14,575 individuals (37%) as the treatment group and 24,342 individuals (63%) as the comparison group.

When we received the initial sample from DOC, we observed multiple confinement periods for about 14,000 individuals. For these individuals, we saved information related to their first and last confinement period. Our primary analytic sample includes their first confinement period. In [Appendix VI](#), we run sensitivity checks, including an analysis using a sample that includes individuals' last confinement periods. We also run tests to examine results when excluding some of the restrictions described above.

### III. Empirical Approach

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To estimate an unbiased effect of PSE programming on individuals' post-release outcomes, ideally, we would randomly assign some incarcerated individuals to receive PSE and some individuals not to receive programming. By randomly assigning individuals, we could attribute differences in outcomes to the effect of PSE in prison and not to systematic differences between participants and non-participants.

Since we are taking a retrospective approach, we cannot randomly assign individuals to experimental groups. Instead, we use an alternative method called entropy balancing to approximate the conditions of randomization as best as possible. Entropy balancing is a statistical technique that reweights observations so that the distributions of user-selected characteristics are balanced between treatment and comparison groups.<sup>53</sup> In other words, this approach allows us to minimize differences between treatment and comparison group individuals on observable characteristics that may predict treatment and outcomes.

In our analysis, we balance on several pre-release covariates that may predict enrollment into PSE during confinement and post-release outcomes, including:<sup>54</sup>

- Gender
- Age at admission to DOC facility
- Race and ethnicity
- Highest education level
- Risk class
- Current offense
- Criminal history information
- Indicator of whether the individual is motivated to pursue education<sup>55</sup>
- Indicator of whether the individual has a drug or alcohol problem<sup>56</sup>
- Indicator of whether the individual has a mental health problem<sup>57</sup>
- Indicator of whether the individual has a job in prison
- Release year
- Length of confinement

Exhibit A1 shows the distribution of covariates for treated and comparison group individuals in our sample before and after weighting. Column (1) shows balance results for the unweighted sample, and column (2) shows balance results for the entropy-weighted sample. After weighting, characteristics in the comparison group match those of the treatment group on average.

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<sup>53</sup> Hainmueller, J. (2012). [Entropy balancing for causal effects: A multivariate reweighting method to produce balanced samples in observational studies](#). *Political Analysis*, 25-46.

<sup>54</sup> We chose to balance covariates based on first and second moments for each variable (i.e., mean and variance, respectively).

<sup>55</sup> Hispanic is a separate variable than race and includes non-Hispanic and Hispanic of any race.

<sup>56</sup> This information was collected based on incarcerated individuals' responses to several risk assessments, including the Offender Needs Assessment (ONA), Static Risk Assessment (SRA), and the Washington Offender Needs Evaluation (Washington ONE). Incarcerated individuals are assessed periodically during confinement, we used information from assessments conducted closest to release. We examined the consistency of responses across multiple assessments and found that generally, individuals' responses to these items were consistent over time; Incarcerated individuals were asked about their motivation for additional academic or vocational education at time of assessment.

<sup>57</sup> Ibid. Individuals were asked if they had a drug or alcohol problem at the time of assessment.

<sup>58</sup> Ibid. Individuals were asked if they had a mental health problem during their lifetime.

**Exhibit A1**

Covariate Distributions With and Without Entropy Weights

Variable	(1) Unweighted sample				(2) Weighted Sample	
	Treatment		Comparison		Comparison	
	Mean	Variance	Mean	Variance	Mean	Variance
Male	91%	8%	85%	13%	91%	8%
Age: 25-44	64%	23%	64%	23%	64%	23%
Age: 45+	15%	13%	22%	17%	15%	13%
Education: HS graduate	10%	9%	13%	11%	10%	9%
Education: GED	42%	24%	34%	22%	42%	24%
Education: Certificate	4%	4%	3%	3%	4%	4%
Education: Some college	25%	19%	17%	14%	25%	19%
Education: AA	3%	3%	0%	0%	3%	3%
Education: BA+	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%
Hispanic	9%	8%	12%	10%	9%	8%
Race: AAPI	3%	3%	3%	3%	3%	3%
Race: Black	18%	15%	14%	12%	18%	15%
Race: White	73%	20%	76%	18%	73%	20%
Race: Other	1%	1%	1%	1%	1%	1%
Risk class: Moderate	10%	9%	9%	8%	10%	9%
Risk class: High non-violent	19%	15%	28%	20%	19%	15%
Risk class: High violent	59%	24%	55%	25%	59%	24%
Total adult convictions	8.6	73.2	9.4	76.4	8.6	73.2
Current offense: Other	3%	3%	4%	4%	3%	3%
Current offense: Drug	9%	8%	16%	13%	9%	8%
Current offense: Weapon	7%	7%	6%	6%	7%	7%
Current offense: Violent	46%	25%	34%	23%	46%	25%
Current offense: Sex	14%	12%	7%	7%	14%	12%
Prior felony: Drug	31%	21%	36%	23%	31%	21%
Prior felony: Property	56%	25%	56%	25%	56%	25%
Prior felony: Weapon	10%	9%	9%	8%	10%	9%
Prior felony: Violent	36%	23%	34%	22%	36%	23%
Prior felony: Person	40%	24%	38%	24%	40%	24%
Prior felony: Sex	6%	6%	5%	5%	6%	6%
Prior juvenile conviction	51%	25%	47%	25%	51%	25%
Prison length (6-12 months)	14%	12%	39%	24%	14%	12%
Prison length (1-2 years)	24%	18%	25%	19%	24%	18%
Prison length (2-4 years)	29%	21%	12%	11%	29%	21%
Prison length (4+years)	31%	21%	5%	5%	31%	21%

### Exhibit A1 (Continued)

#### Covariate Distributions With and Without Entropy Weights

Variable	(1) Unweighted sample				(2) Weighted sample	
	Treatment		Comparison		Comparison	
	Mean	Variance	Mean	Variance	Mean	Variance
Education motivated	77%	18%	69%	21%	77%	18%
Drug or alcohol problem	80%	16%	82%	15%	80%	16%
Mental health problem	23%	18%	23%	18%	23%	18%
Release year: 2014	18%	15%	16%	13%	18%	15%
Release year: 2015	16%	13%	15%	13%	16%	13%
Release year: 2016	13%	11%	13%	11%	13%	11%
Release year: 2017	12%	10%	12%	10%	12%	10%
Release year: 2018	11%	10%	12%	10%	11%	10%
Release year: 2019	9%	8%	11%	10%	9%	8%
Release year: 2020	4%	4%	5%	5%	4%	4%

Note:

Some groups like *Race: American Indian/Alaska Native* and *Risk class: Low* are not shown in table since Stata's "ebalance" command omits because of collinearity. These groups receive entropy weights and are included in our analyses.

### Regression Analysis

After performing entropy balancing to ensure balanced treatment and comparison groups, we perform regression analysis on the weighted sample. Our main model specification is:

$$Outcome_i = \beta_0 + \beta_1(Treat_i) + \varepsilon_i$$

Where  $Outcome_i$  represents post-release enrollment, academic progress, and credential achievement outcomes for individual  $i$ .

- **Enrollment:**  $Outcome_i$  equals one if the individual enrolls in a CTC within one, two, or three years of release and zero otherwise.
- **Retention:**  $Outcome_i$  equals one if the individual has enrolled in a CTC within the first year of release and has remained enrolled during the same term in the following academic year, and zero otherwise.
- **GPA:**  $Outcome_i$  equals the average first-year GPA for an individual.
- **Credit accumulation:**  $Outcome_i$  equals the number of credits accumulated in an individual's first enrollment year.
- **Credential achievement:**  $Outcome_i$  equals one if the individual has enrolled in a CTC within the first year of release and achieves a credential within one, two, or three years of this enrollment period, and zero otherwise

$Treat_i$  equals one if an individual participated in PSE programming while confined and zero otherwise. The main parameter of interest is  $\beta_1$ . Since treatment is binary, this parameter is interpreted as the estimated difference in the outcome for the treatment group relative to the comparison group. For example, when analyzing enrollment, a coefficient estimate of 0.05 indicates a five percentage point increase in the probability of CTC enrollment after release associated with treatment.

$\varepsilon_i$  is a random error term. We estimate robust standard errors to account for heteroskedasticity.

Note that the model specification does not include individual-level control variables because we have already accounted for them in the entropy balancing stage.<sup>58</sup>

To estimate the association with academic progress and credential achievement outcomes, we focus on a subset of our original analytic sample, which includes only individuals who enroll in a CTC within one year of release. Because this is a different sample, we first rerun entropy balance weights so that covariate distributions are matched for the subset of enrollees. We then rerun the regression model described above on the subset of enrollees.

### Subgroup Analyses

To examine subgroups, we repeat our main analysis by gender, age, race and ethnicity, credential type, and program type. Credential type indicates whether an individual who participated in PSE while confined received a certificate or degree while confined or earned no credential. Program type indicates whether an individual who participated in PSE while confined participated in vocational programming, academic programming, or both.

For each analysis, we first re-estimate entropy balance weights for the subgroup.<sup>59</sup> Some racial categories (e.g., American Indian/Alaska Native, Asian/Pacific Islander, and other) are small, and as a result, we could not achieve convergence when estimating entropy balance weights. To address this, we combine American Indian/Alaska Native, Asian/Pacific Islander, Black, and other categories into a broader category called “persons of color” (POC).

After reweighting samples, we estimate the effect of the program using the regression model as described above. Because of the number of outcomes and groups, we only report subgroup results for the following outcomes:

- Enrollment in a CTC within one year of release,
- First-year retention,
- First-year GPA,
- First-year credits accumulated, and
- Credential achieved within two years of enrollment in a CTC (within the first year of release).

### Limitations

Though entropy balance weights help us alleviate some selection bias concerns by constructing treatment and comparison groups that are balanced on observable characteristics, we cannot eliminate all selection bias because we cannot balance on unobservable characteristics.

Individual-level selection bias may still exist because we do not have adequate data on characteristics like motivation, pre-confinement employment, or income status, which are factors that likely predict an individual’s decision to participate in PSE while confined and whether to enroll in college after release.

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<sup>59</sup> Hainmueller (2012), p. 34.

<sup>60</sup> Entropy balance weights are not re-estimated for the credential and program type analyses because they use the full sample.

Additionally, administrative staff at individual DOC facilities have some discretion to prioritize and enroll individuals into PSE programs. Since we do not have good data on what factors staff use to determine program placement, we cannot account for site-level selection bias that might also predict program enrollment and potentially post-release outcomes. In [Appendix VI](#), we run additional analyses controlling for prison-level fixed effects to try and account for some of this potential variation.

Further, we examined academic progress (e.g., retention, GPA, credit accumulation) and credential achievement outcomes for a subset of our full sample, which includes only PSE participants and non-participants who enrolled in a CTC after release from prison. It may be that compositional differences between these groups of enrollees, not PSE participation itself, influence academic progress and credential achievement outcomes. For example, individuals who did not participate in PSE while confined but choose to enroll in a CTC after release from prison may be more motivated to succeed in college and earn a credential than individuals who already have had exposure to college courses and earned a credential while confined.

As a result, our estimates do not represent the causal effect of participation in PSE while confined to post-release outcomes but rather the association between PSE participation and outcomes after release.

Further, our data only includes community and technical college enrollments and completions in Washington. If individuals were released from prison and enrolled in a four-year institution in Washington or institutions in another state, we cannot observe their enrollments or credential completions. Because of this, our results may represent an underestimate of actual enrollments and completions that occur.

## IV. Main Analysis Results

Exhibit A2 shows the main results for each outcome:

- Enroll 1 Yr. - Enrollment in a CTC within one year of release
- Enroll 2 Yr. - Enrollment in a CTC within two years of release
- Enroll 3 Yr. - Enrollment in a CTC within three years of release
- Retention - First-year retention
- GPA - First-year GPA
- Credits - First-year credits accumulated
- Credential 1 Yr. - Receives credential within one year of enrollment
- Credential 2 Yr. - Receives credential within two years of enrollment
- Credential 3 Yr. - Receives credential within three years of enrollment

**Exhibit A2**  
Main Results

	Enroll 1 Yr	Enroll 2 Yr	Enroll 3 Yr	Retention	GPA	Credits	Credential 1 Yr	Credential 2 Yr	Credential 3 Yr
Coefficient	0.058***	0.064***	0.068***	0.021	-0.040	1.80*	-0.016*	-0.016	-0.008
SE	0.005	0.006	0.007	0.023	0.092	0.985	0.008	0.010	0.012
# Observations	38,917	38,917	38,917	4,192	2,442	4,192	4,192	4,192	4,192
Pr. Outcome (Tx)	15%	22%	27%	25%	2.19	15.5	1%	3%	6%
Pr. Outcome (Cn)	9%	16%	20%	22%	2.23	13.7	3%	5%	7%
% Change	66%	41%	33%	9%	-2%	13%	-59%	-33%	-12%

**Notes:**  
Coefficient derived from the main model (e.g., treatment individuals have a 5.7 percentage point higher probability of enrolling in a CTC within one year of release than comparison individuals).

\*\*\* p < 0.001, \*\* p < 0.05, \* p < 0.10.

SE = Robust standard errors.

Pr. Outcome = Predicted outcomes estimated from the main model for treatment (Tx) and comparison groups (Cn). For example, treatment individuals have a 15% probability of enrolling in a CTC within one year of release.

% Change = Percent difference between treatment and comparison groups (e.g., treatment individuals have a 65% higher likelihood of enrolling in a CTC within one year of release than comparison group individuals).

## V. Subgroup Results

Exhibits A3 through A7 show subgroup results for key enrollment, academic progress, and credential achievement outcomes. For each outcome, we examined how the main results differed by age, gender, race, and ethnicity. We also examined if results were influenced by the type of credential a PSE participant obtained while incarcerated (i.e., no credential, certificate, degree) and the type of program they enrolled in while confined (i.e., vocational program, academic program, or both).

Exhibit A3 shows subgroup results for enrollment in a CTC within one year of release.

### Exhibit A3

Subgroup Results: Enrollment in CTC Within One Year of Release

Subgroup	Coefficient	SE	# Obs.	Pr. Outcome (treat)	Pr. Outcome (comp.)	% Change
Age: <25	0.040***	0.016	6,478	16%	12%	34%
Age: 25-44	0.067***	0.006	24,882	15%	8%	80%
Age: 45+	0.047***	0.009	7,557	10%	5%	88%
Female	0.089***	0.020	4,986	19%	10%	87%
Male	0.053***	0.005	33,931	14%	9%	60%
Race: Am. Indian/Alaska Native	0.059***	0.017	2,238	13%	7%	83%
Race: Asian/Pacific Is.	0.046	0.032	1,151	16%	11%	40%
Race: Black	0.071***	0.013	6,025	18%	11%	65%
Race: White	0.055***	0.006	29,074	14%	8%	68%
Race: Other	n/a	n/a	n/a	n/a	n/a	n/a
Hispanic/Latino	0.082***	0.015	4,134	15%	9%	61%
Not Hispanic/Latino	0.055***	0.005	34,783	14%	6%	139%
Credential earned while confined: None	0.056***	0.006	38,917	14%	9%	64%
Credential earned while confined: Certificate	0.059***	0.006	38,917	15%	9%	67%
Credential earned while confined: Degree	0.113***	0.027	38,917	20%	9%	129%
Program type while confined: Vocational	0.047***	0.005	38,917	14%	9%	54%
Program type while confined: Academic	0.042***	0.009	38,917	13%	9%	48%
Program type while confined: Both	0.097***	0.008	38,917	19%	9%	111%

#### Notes:

Coefficient derived from the main model.

\*\*\* p < 0.001, \*\* p < 0.05, \* p < 0.10.

SE = Robust standard errors.

Pr. Outcome = Predicted probabilities estimated from the main model for treatment and comparison groups.

% Change = Percent difference between treatment and comparison groups.

n/a = We could not estimate due to small sample size.



Exhibit A4 shows subgroup results for first-year retention.

**Exhibit A4**

Subgroup Results: First-Year Retention After Release

Subgroup	Coefficient	SE	# Obs.	Pr. Outcome (treat)	Pr. Outcome (comp.)	% Change
Age: <25	0.090*	0.052	937	23%	14%	62%
Age: 25-44	-0.005	0.029	2769	25%	25%	-2%
Age: 45+	0.113**	0.043	486	25%	14%	83%
Female	n/a	n/a	n/a	n/a	n/a	n/a
Male	0.031	0.024	3597	24%	21%	15%
Race: Person of color	0.084**	0.031	1266	20%	12%	70%
Race: White	0.000	0.029	2926	27%	27%	0%
Hispanic/Latino	n/a	n/a	n/a	n/a	n/a	n/a
Not Hispanic/Latino	0.020	0.023	3780	24%	22%	9%
Credential earned while confined: None	0.000	0.024	4192	22%	22%	0%
Credential earned while confined: Certificate	0.051*	0.026	4192	28%	22%	23%
Credential earned while confined: Degree	0.144*	0.074	4192	37%	22%	64%
Program type while confined: Vocational	0.013	0.024	4192	24%	22%	6%
Program type while confined: Academic	-0.003	0.034	4192	22%	22%	-1%
Program type while confined: Both	0.046*	0.028	4192	27%	22%	20%

Notes:

Coefficient derived from the main model.

\*\*\* p < 0.001, \*\* p < 0.05, \* p < 0.10.

SE = Robust standard errors.

Pr. Outcome = Predicted probabilities estimated from the main model for treatment and comparison groups.

% Change = Percent difference between treatment and comparison groups.

The person of color category includes individuals who identify as American Indian/Alaska Native, Asian/Pacific Islander, Black, or other.

n/a = We could not estimate due to small sample size.

Exhibit A5 shows subgroup results for first-year GPA.

**Exhibit A5**  
Subgroup Results: First-Year GPA

Subgroup	Coefficient	SE	# Obs.	Pr. Outcome (treat)	Pr. Outcome (comp.)	% Change
Age: <25	-0.386*	0.223	528	2.08	2.46	-16%
Age: 25-44	0.009	0.117	1630	2.23	2.22	0%
Age: 45+	-0.076	0.238	284	2.21	2.28	-3%
Female	n/a	n/a	n/a	n/a	n/a	n/a
Male	0.004	0.100	2071	2.17	2.18	0%
Race: Person of color	-0.002	0.188	669	2.00	2.00	0%
Race: White	-0.095	0.104	1773	2.37	2.27	4%
Hispanic/Latino	n/a	n/a	n/a	n/a	n/a	n/a
Not Hispanic/Latino	-0.072	0.093	2233	2.26	2.19	3%
Credential earned while confined: None	-0.145	0.097	2442	2.23	2.09	7%
Credential earned while confined: Certificate	0.103	0.104	2442	2.23	2.34	-4%
Credential earned while confined: Degree	0.383	0.235	2442	2.23	2.62	-15%
Program type while confined: Vocational	-0.063	0.098	2442	2.23	2.17	3%
Program type while confined: Academic	-0.265*	0.142	2442	2.23	1.97	13%
Program type while confined: Both	0.083	0.108	2442	2.23	2.32	-4%

**Notes:**

Coefficient derived from the main model.

\*\*\* p < 0.001, \*\* p < 0.05, \* p < 0.10.

SE = Robust standard errors.

Pr. Outcome = Predicted probabilities estimated from the main model for treatment and comparison groups.

% Change = Percent difference between treatment and comparison groups.

The person of color category includes individuals who identify as American Indian/Alaska Native, Asian/Pacific Islander, Black, or other.

n/a = We could not estimate due to small sample size.

Exhibit A6 shows subgroup results for first-year credits accumulated.

### Exhibit A6

#### Subgroup Results: First-Year Credit Accumulation

Subgroup	Coefficient	SE	# Obs.	Pr. Outcome (treat)	Pr. Outcome (comp.)	% Change
Age: <25	-4.36	3.716	937	13.4	17.8	-25%
Age: 25-44	2.32*	1.198	2769	16.1	13.8	17%
Age: 45+	4.36*	2.093	486	16.6	12.2	36%
Female	n/a	n/a	n/a	n/a	n/a	n/a
Male	2.20*	1.049	3597	15.3	13.1	17%
Race: Person of Color	2.30	1.680	1266	13.4	11.1	21%
Race: White	2.29*	1.123	2926	16.5	14.2	16%
Hispanic/Latino	n/a	n/a	n/a	n/a	n/a	n/a
Not Hispanic/Latino	1.33	1.027	3780	15.6	14.2	9%
Credential earned while confined: None	0.69	1.033	4192	14.4	13.7	5%
Credential earned while confined: Certificate	3.23**	1.154	4192	17.0	13.7	24%
Credential earned while confined: Degree	10.68***	3.242	4192	24.4	13.7	78%
Program type while confined: Vocational	0.89	1.041	4192	14.6	13.7	7%
Program type while confined: Academic	0.72	1.519	4192	14.5	13.7	5%
Program type while confined: Both	4.16***	1.215	4192	17.9	13.7	30%

**Notes:**

Coefficient derived from the main model.

\*\*\* p < 0.001, \*\* p < 0.05, \* p < 0.10.

SE = Robust standard errors.

Pr. Outcome = Predicted probabilities estimated from the main model for treatment and comparison groups.

% Change = Percent difference between treatment and comparison groups.

The person of color category includes individuals who identify as American Indian/Alaska Native, Asian/Pacific Islander, Black, or other.

n/a = We could not estimate due to small sample size.

Exhibit A7 shows subgroup results for credential achievement within two years of CTC enrollment.

**Exhibit A7**

Subgroup Results: Credential Achievement Within Two Years of CTC Enrollment

Subgroup	Coefficient	SE	# Obs.	Pr. Outcome (treat)	Pr. Outcome (comp.)	% Change
Age: <25	-0.007	0.013	937	1%	2%	-39%
Age: 25-44	-0.029*	0.017	2769	4%	7%	-43%
Age: 45+	-0.016	0.023	486	4%	6%	-29%
Female	n/a	n/a	n/a	n/a	n/a	n/a
Male	-0.016	0.011	3597	3%	5%	-33%
Race: Person of color	-0.006	0.010	1266	2%	3%	-23%
Race: White	-0.022	0.014	2926	4%	6%	-38%
Hispanic/Latino	n/a	n/a	n/a	n/a	n/a	n/a
Not Hispanic/Latino	-0.020*	0.012	3780	3%	5%	-38%
Credential earned while confined: None	-0.004	0.011	4192	4%	5%	-10%
Credential earned while confined: Certificate	-0.033***	0.011	4192	1%	5%	-70%
Credential earned while confined: Degree	-0.048***	0.010	4192	0%	5%	-100%
Program type while confined: Vocational	-0.006	0.011	4192	4%	5%	-13%
Program type while confined: Academic	-0.027**	0.013	4192	2%	5%	-57%
Program type while confined: Both	-0.031**	0.011	4192	2%	5%	-66%

**Notes:**

Coefficient derived from the main model.

\*\*\* p < 0.001, \*\* p < 0.05, \* p < 0.10.

SE = Robust standard errors.

Pr. Outcome = Predicted probabilities estimated from the main model for treatment and comparison groups.

% Change = Percent difference between treatment and comparison groups.

The person of color category includes individuals who identify as American Indian/Alaska Native, Asian/Pacific Islander, Black, or other.

n/a = We could not estimate due to small sample size.

## VI. Sensitivity Tests

We estimated models with and without control variables and with and without entropy balance weights and found that the results were robust across specifications. We also conducted additional sensitivity checks and present those results below ([Exhibit A8](#)). We included primary outcomes, including enrollment in a CTC within one year of release (Enroll 1 Yr.); receipt of a credential within two years of first enrollment (Credential 2 Yr.); First-year retention (Retention); First-year average GPA (GPA); and first-year credit accumulation (Credits).

**Column 1:** Results from the main model as described in [Appendix III](#).

**Column 2:** Results when excluding eligibility restrictions as described in [Appendix II](#).

**Column 3:** Results from a logit model. Estimates represent average marginal effects.

**Column 4:** Results when excluding individuals who participated in private PSE programs from the comparison group.

**Column 5:** Results when including individuals who participated in private PSE programs in the treatment group.

**Column 6:** Results when including site-level fixed effects.

**Column 7:** Results when using a different sample that includes individuals' last confinement periods (as opposed to our primary sample, which includes first confinement periods for individuals with multiple confinement periods).

**Exhibit A8**  
Sensitivity Analysis Results

	1	2	3	4	5	6	7
<b>Enroll 1 Yr.</b>							
Coefficient	0.058***	0.056***	0.058***	0.056***	0.056***	0.058***	<b>0.029</b>
SE	0.005	0.004	0.006	0.004	0.004	0.005	0.023
<b>Credential 2 Yr.</b>							
Coefficient	-0.016	-0.014	-0.006	-0.013	-0.013	-0.015	a
SE	0.01	0.010	0.011	0.010	0.010	0.011	a
<b>Retention</b>							
Coefficient	0.021	0.025	0.029	0.024	0.025	0.016	a
SE	0.023	0.022	0.026	0.023	0.023	0.024	a
<b>GPA</b>							
Coefficient	-0.040	-0.044	b	-0.071	-0.074	-0.054	a
SE	0.092	0.091	b	0.094	0.094	0.100	a
<b>Credits</b>							
Coefficient	1.80*	1.83*	b	1.83*	1.83*	<b>1.62</b>	a
SE	0.985	0.96	b	1.03	1.03	1.1	a

**Notes:**

\*\*\* p < 0.001, \*\* p < 0.05, \* p < 0.10.

SE = Robust standard errors.

Bold figures indicate results that are different from the main model results (in column 1).

a = We could not estimate due to small sample size.

b = Continuous outcome variable, so the test with logit is not applicable.

Results remain robust across most sensitivity checks. When testing results using an analytic sample that includes the last confinement periods (for individuals with multiple confinement periods) (column 7), the results for the enrollment outcome are similar to our main model but no longer statistically significant. This is likely partly due to a smaller sample size. Five thousand five hundred more individuals were dropped from the sample because they were released after our follow-up window cutoff. When testing results with the inclusion of site-level fixed effects (column 6), results for the credit accumulation outcome are similar to our main model results but no longer statistically significant.

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