



RECIDIVISM AND FEDERAL BUREAU OF PRISONS PROGRAMS

VOCATIONAL PROGRAM PARTICIPANTS RELEASED IN 2010

UNITED STATES SENTENCING COMMISSION
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TABLE OF CONTENTS

1

INTRODUCTION

- 1 Introduction
- 5 Key Findings
- 6 Scope of Analysis

9

OCCUPATIONAL EDUCATION PROGRAMS

- 12 Offender Characteristics
- 20 Recidivism Findings
- 27 Summary

29

FEDERAL PRISON INDUSTRIES

- 32 Offender Characteristics
- 38 Recidivism Findings
- 44 Summary

45

CONCLUSION

47

APPENDICES

65

ENDNOTES

INTRODUCTION

INTRODUCTION

This report is the sixth in a series continuing the United States Sentencing Commission’s study of the recidivism of federal offenders released in 2010.¹ In this report, the Commission provides an analysis of data on the recidivism of federal offenders who participated in Federal Bureau of Prisons (BOP) vocational and work programming while incarcerated. This report combines data regularly collected by the Commission, Federal Bureau of Investigation (FBI) criminal history records, and data on program completion and participation provided by the BOP.²

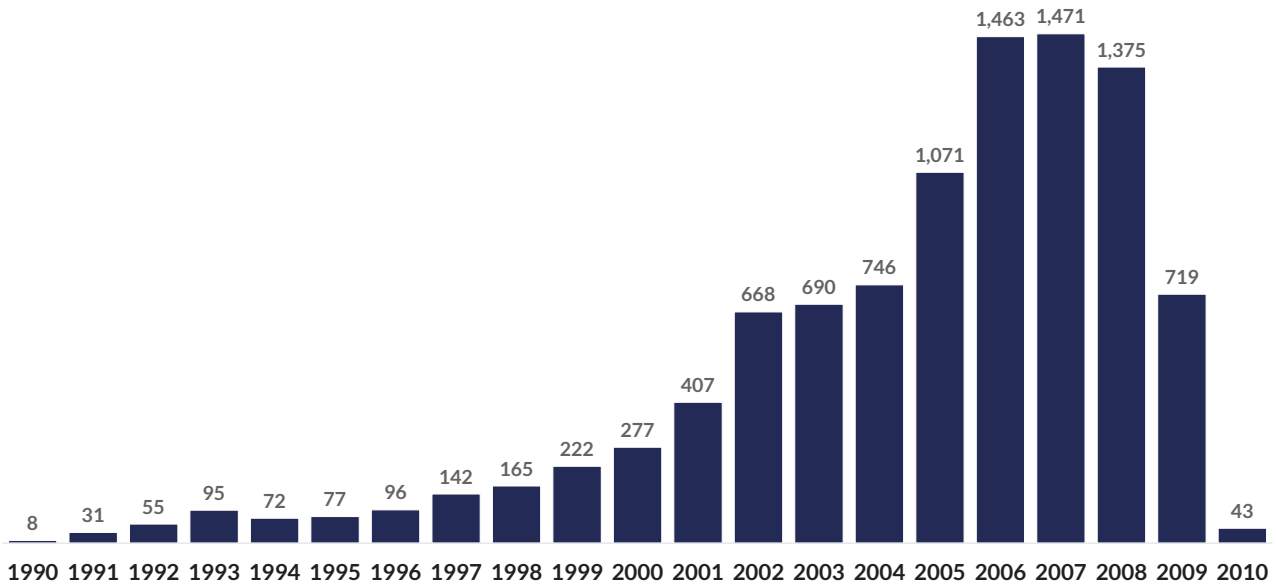
The Commission routinely studies recidivism among federal offenders as part of its duty to collect, analyze, and report sentencing data.³ In 2016, it began publishing a series of reports on the recidivism of federal offenders released in 2005.⁴ Since 2021, the Commission has published five reports on the recidivism of federal offenders released in 2010.⁵

Recidivism Among Federal BOP Work Program Participants

Congress requires the BOP to provide federal offenders with information on employment, education, and literacy to facilitate reentry into the community.⁶ The BOP does so by offering several different programs and services in these areas. This report focuses on two BOP work programs: Occupational Education Programs (OEP) and Federal Prison Industries (FPI). The National Institute of Justice notes that these programs are designed to foster employability upon release and enable successful reintegration into society.⁷ In a study published 25 years ago, the BOP found that OEP and FPI achieved these goals by increasing employment opportunities and decreasing recidivism.⁸

The Commission selected these two work programs for several reasons. First, these widely recognizable programs are specifically aimed at reducing recidivism. Second, thousands of offenders participate in these programs which allows for a robust analysis of the programs’ effects on recidivism. Third, the BOP collects sufficient data on these programs to track relevant information on offender eligibility, participation, and completion. Finally, the BOP made data on these programs available to the Commission for the purposes of this report.

Figure 1. Calendar Year of Original Federal Sentencing for BOP Work Program Participants Released in 2010



This study examines whether completion or participation in BOP work programs impacted recidivism among a cohort of federal offenders who were released from prison in calendar year 2010 (Figure 1).

In this report, Work Program Participants were offenders who participated in the following programs:

1 Occupational Education Programs (OEP)

The first group comprises 7,310 offenders who participated in at least one OEP vocational or technical training course. OEP offers a variety of programs where participants can take courses in vocational and occupationally oriented areas⁹ for the purpose of obtaining marketable skills.¹⁰

2 Federal Prison Industries (FPI)

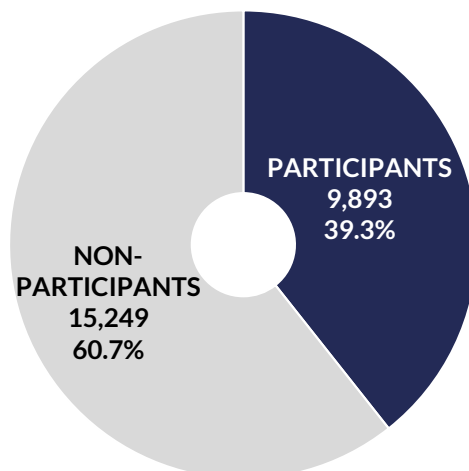
The second group comprises 5,082 offenders who participated in FPI. FPI provides offenders with work simulation programs and training opportunities through the factories it operates at BOP facilities.¹¹

“ Many of the stated program objectives—reduction in prison misconduct, reduction in substance abuse, or an increased stake in societal norms—are outside the scope of this report. This study focuses solely on recidivism reduction and is not meant to analyze whether other program goals were achieved.

This analysis provides an opportunity to examine recidivism in conjunction with offender participation in the most recognizable BOP work programs and to provide some insight into the possible impact of these interventions on recidivism. This study was not designed to measure the effectiveness of BOP treatment modalities or serve as a process evaluation of program implementation. Finally, the BOP work programs in effect on or before 2010 may not be comparable with current programs; therefore, any analysis may not be reflective of ongoing BOP programming.

As shown in Figure 2, the 9,893 offenders who participated in OEP or FPI (*Work Program Participants*) are analyzed in comparison to the 15,249 offenders released in the same year who did not participate in these programs (*Work Program Non-Participants*). *Work Program Participants* analyzed in this report were sentenced¹² between fiscal year 1991 and the first quarter of fiscal year 2011, while *Work Program Non-Participants* were sentenced between fiscal year 1991 and the first quarter of fiscal year 2011.¹³ All of the offenders in this report were released from federal custody in calendar year 2010.

Figure 2. Rate of BOP Work Program Participation for Offenders Released from Custody in 2010



KEY FINDINGS

This chapter summarizes key findings from the study and explains the scope of the analysis and how recidivism is defined and measured. The second chapter of this report provides an overview of OEP and contains the Commission's analysis of OEP. The third chapter discusses FPI and the differences in offender and offense characteristics and recidivism rates between FPI participants and non-participants. Finally, the fourth chapter concludes with a review of the report's findings.

This study focuses solely on recidivism reduction and is not meant to analyze whether other program goals—such as a reduction in violations during incarceration and increased post-release employment—were achieved.

1 Occupational Education Programs (OEP)

Although the recidivism rate for offenders who completed an OEP course was lower than that of offenders who did not participate in an OEP course (48.3% compared to 54.1%), the difference in their recidivism rates was not statistically significant after controlling for key offender and offense characteristics such as criminal history category, age at release, gender, and crime type.

2 Federal Prison Industries (FPI)

Although the recidivism rate for offenders who participated in FPI was higher than that of offenders who did not participate in FPI (55.0% compared to 52.0%), the difference in recidivism rates was not statistically significant after controlling for key offender and offense characteristics, such as criminal history category, age at release, gender, and crime type.

SCOPE OF ANALYSIS

Offender Cohort

This report uses data from the Commission's ongoing recidivism studies to provide a comprehensive analysis of the recidivism of all federal offenders who were released from federal prison in 2010. The offenders in the study cohort were identified in cooperation with the Federal Bureau of Prisons (BOP) and the Administrative Office of the United States Courts (AO).

The data used in this report combines data regularly collected by the Commission¹⁴ with data compiled as part of a data sharing agreement with the FBI's Criminal Justice Information Services Division.¹⁵ Through an agreement with the FBI, the Commission collected and processed criminal history records from all state and federal agencies for the offenders in the study. **The Commission then provided the BOP with 32,135 unique numeric offender identifiers to match with BOP data** on program participation, and the **BOP returned data for 26,083 of their inmates who were in their records as released in calendar year 2010.** The BOP provided program participation information for Occupational Education Programs (OEP) and Federal Prison Industries (FPI).

The Commission combined the FBI's criminal record data and BOP program data with data routinely collected about these offenders when they were originally sentenced. The final study group was comprised of **25,142 offenders who satisfied the following criteria:**

- United States citizens;
- Served at least one day of incarceration in the BOP;
- Re-entered the community during 2010 after discharging their sentence of incarceration;
- Not reported dead, escaped, or detained;¹⁶
- Have valid FBI numbers which could be located in criminal history repositories (in at least one state, the District of Columbia, or federal records); and
- Have matching BOP records.

SUMMARY OF ANALYSIS

2010

YEAR OF RELEASE

25,142

OFFENDERS

8

YEAR FOLLOW-UP

This report examines the recidivism rates during the **eight-year follow-up period** for BOP work program participants identified for this study.¹⁷ For offenders who recidivated during the study period, the analysis examines the elapsed time from release to rearrest as well as the types of offenses at rearrest.

Defining and Measuring Recidivism

Recidivism “refers to a person’s relapse into criminal behavior, often after the person receives sanctions or undergoes intervention for a previous crime.”¹⁸ Recidivism measures can provide policy makers with information regarding the relative threat to public safety posed by various types of offenders and the effectiveness of some public safety initiatives in deterring crime and rehabilitating offenders.¹⁹ Recidivism

measures are used by numerous public safety agencies to measure program performance and inform policy decisions on issues such as pretrial detention, prisoner classification and programming, and offender supervision in the community.²⁰

Two measures are foundational to recidivism research, both of which can impact the outcomes of recidivism analyses. The first measure is the type of event used to indicate a relapse into criminal behavior. Recidivism is typically measured by criminal acts that resulted in the rearrest, reconviction, or reincarceration of an offender.²¹ The second measure is the “follow-up period,” the period of time over which events are counted following release into the community. Recidivism analysis begins with a starting event, such as release from prison into the community, following which recidivism events, such as arrests, are documented through the end of the follow-up period.

The Commission used rearrest for this study for several reasons. Rearrest is the measure of recidivism used most by federal agencies in recent recidivism studies,²² because it is a more reliable measure than reconviction and reincarceration.²³ Criminal records often fail to include reconvictions and reincarcerations because jurisdictions inconsistently report them. As such, the incomplete nature of disposition data used to identify reconviction and

reincarceration events makes them unreliable measures of recidivism.

It should be noted that using rearrest as a measure of recidivism results in higher recidivism rates than reconviction or reincarceration. Not only are rearrests reported more consistently than reconviction or reincarceration, but not all arrests result in conviction or incarceration.²⁴ The Commission's rearrest measure includes arrests for alleged violations (or revocations) of probation or state parole, which also can contribute to increased overall recidivism rates. However, rearrests for minor traffic offenses were excluded.

The second component of measuring recidivism is the “follow-up period,” the period of time over which events are counted following an offender's release into the community. After a starting event—in this case, release from prison into the community—recidivism events are documented through the end of the follow-up period. The length of follow-up periods varies across recidivism studies. Often, due to limitations on available data, some studies follow offenders for as little as six months. Other studies follow offenders for several years. Tracking offenders for a longer duration provides a more accurate estimate of recidivism or desistance from crime.²⁵ The Commission used an eight-year follow-up period for the offenders identified for this study. For offenders who recidivated during the study period, the analysis examines the elapsed time from release to rearrest as well as the types of offenses at rearrest.



Federal agencies most commonly use rearrest as the primary recidivism measure because it is a more reliable measure than reconviction and reincarceration due to the incomplete nature of disposition data.

OCCUPATIONAL EDUCATION PROGRAMS

OCCUPATIONAL EDUCATION PROGRAMS

This chapter discusses the Occupational Education Programs (OEP) offered through the Federal Bureau of Prisons (BOP), the program’s eligibility and availability, incentives and penalties for participants, and previous recidivism research on BOP “vocational and apprenticeship training” programs. It contains an analysis of the differences in offender and offense characteristics and recidivism rates between the 7,310 offenders who participated in an OEP course, comparing offenders who successfully completed a course to those who participated but did not complete a course, and those who did not participate in a course.

OEP training is voluntary and the offenders who chose to participate in OEP are noticeably different than non-participants on key factors that are relevant to recidivism. To account for these differences, the Commission used a quasi-experimental design to analyze recidivism rates in addition to a traditional descriptive analysis. The Commission used a matching design to ensure an “apples-to-apples” comparison and then performed a regression analysis to confirm all observed recidivism outcomes.

Each BOP facility offers occupational education courses in the form of technical or vocational training²⁶ as part of its statutory authority.²⁷ Vocational education is a key component of reentry success, and the BOP provides OEP to help federal offenders obtain job skills that enhance their post-release employment opportunities.²⁸ OEP contains a variety of programs where participants can learn about and work in many fields, including

building and grounds clearing; business and finance; construction and extraction; education, training, and library services; food preparation and service; installation, maintenance, and repair; production; office and administrative support; and personal care and service.²⁹ Some of these programs offer certificates, associate degrees,³⁰ or a “live work component.”³¹

OEP Eligibility and Availability

All federal inmates are eligible to apply for occupational education courses.³² Interested offenders apply through their unit team which determines “whether the occupational education course is appropriate for the [offender’s] apparent needs.”³³ For some courses offenders must have previously met the academic requirements or be concurrently enrolled in a General Educational Development (GED) course.³⁴ Offenders who are under orders of deportation, exclusion, or removal also may participate, if resources permit.³⁵

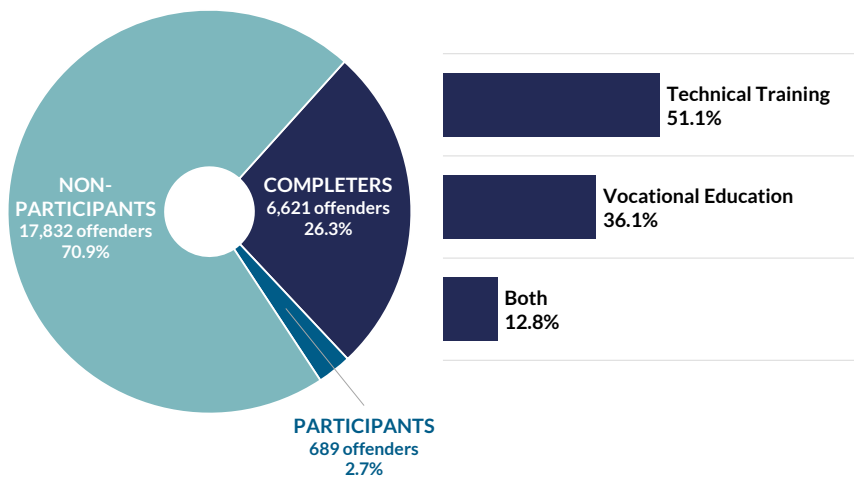
Although all BOP facilities provide OEP courses,³⁶ programming varies by institution.³⁷ The BOP’s Program Statement on OEP does not identify any penalties or incentives for participating in OEP programming.³⁸ However, as previously mentioned, offenders can earn trade certifications or an associate degree through the program.³⁹

OEP and Recidivism

A 1997 study published by BOP researchers found that male participants in BOP vocational or apprenticeship training “were 33 percent less likely to recidivate” in an 8-to-12 year follow-up period.⁴⁰ This study also concluded that offenders participating in a BOP work program, either through vocational instruction, apprenticeship training, or FPI, were less likely to receive prison misconduct reports⁴¹ and more likely to be employed a year after release.⁴² In a follow-up study conducted in 2001, BOP researchers reported that minority groups benefitted more from vocational or apprenticeship training than their nonminority counterparts over multi-year follow-up periods.⁴³

OFFENDER AND OFFENSE CHARACTERISTICS

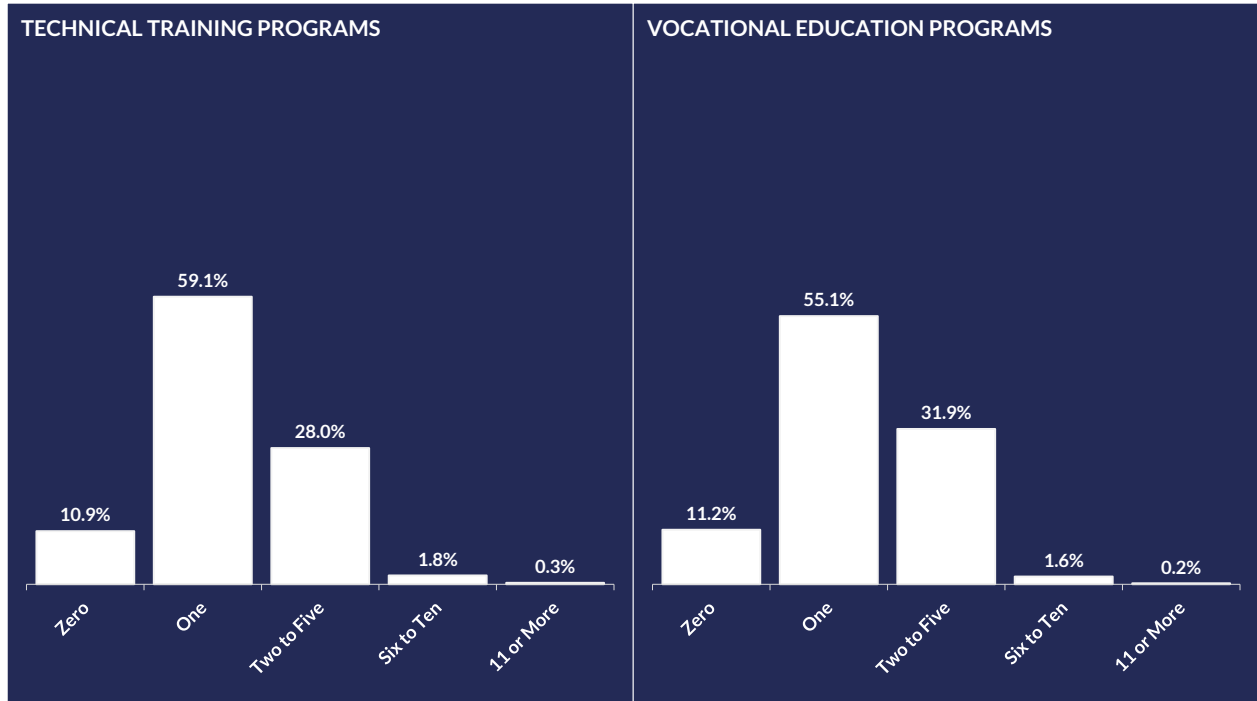
Figure 3. Rate of OEP Participation for BOP Offenders Released in 2010



The greatest proportion of offenders (70.9%; n=17,832) in this study did not participate in any OEP vocational or technical course. Fewer than one-third (29.0%; n=7,310) of offenders in this study completed or participated in at least one OEP course (Figure 3), with slightly more than a quarter (26.3%; n=6,621) completing at least one OEP course. The remaining *OEP Participants* (2.7%; n=689) received some portion of a vocational or technical training but did not successfully complete the course.⁴⁴

Among *OEP Completers* (n=6,621)—offenders who successfully satisfied all requirements of at least one OEP course—more than half (51.1%) completed a technical training and more than one-third (36.1%) completed a vocational education training. A smaller percentage (12.8%) of offenders completed both technical and vocational trainings. The majority of *OEP Completers* finished just one OEP course while in BOP custody (Figure 4).

Figure 4. Number of Technical and Vocational Trainings Completed



All BOP training is voluntary, and there is no eligibility designation for offenders who participate in OEP courses.⁴⁵ Therefore, offenders who volunteer for an OEP course may be considerably different than those who do not. Those differences will be discussed in this chapter.

Demographics

The demographic characteristics of the *OEP Completers*, *OEP Participants*, and *OEP Non-Participants* varied slightly (Table 1). Black offenders constituted the largest group of *OEP Completers* (41.0%), followed by White offenders (37.8%) and Hispanic offenders (17.1%). Black offenders also constituted the largest proportion of *OEP Participants* (41.7%), followed closely by White offenders (39.5%) and Hispanic offenders (14.7%). Nearly an equal number

Table 1. Demographic Characteristics by OEP Participation Status

	Completers (n=6,621)		Participants (n=689)		Non-Participants (n=17,832)	
	N	%	N	%	N	%
Race/Ethnicity¹						
White	2,499	37.8%	272	39.5%	7,075	39.7%
Black	2,712	41.0%	287	41.7%	6,603	37.1%
Hispanic	1,131	17.1%	101	14.7%	3,240	18.2%
Other	275	4.2%	29	4.2%	890	5.0%
Gender²						
Male	5,770	87.1%	605	87.8%	15,468	86.8%
Female	851	12.9%	84	12.2%	2,362	13.2%
Age³						
Median Age at Sentencing	31 years		31 years		32 years	
Median Age at Release	37 years		36 years		36 years	

¹ Race was missing for four OEP Completers and 24 OEP Non-Participants.
² Gender was missing for two OEP Non-Participants.
³ Age at Sentencing and Release were missing for five OEP Completers and 13 OEP Non-Participants.

of OEP Non-Participants were White (39.7%) as were Black (37.1%), while just under 20 percent (18.2%) of OEP Non-Participants were Hispanic. Male offenders comprised the overwhelming majority of OEP Completers (87.1%), OEP Participants (87.8%), and OEP Non-Participants (86.8%). The Commission’s previous research on recidivism found that male offenders are more likely to recidivate, compared to their female counterparts.⁴⁶

All three groups had a similar median age at sentencing and release. The median age at sentencing was 31 years for both OEP Completers and OEP Participants and 32 years for OEP Non-Participants. The median age at release was 37 years for OEP Completers and 36 years for both OEP Participants and OEP Non-Participants.



All three groups were similar ages, both at sentencing and release—a factor strongly associated with recidivism.

Table 2. Facility Level by OEP Participation Status

	Completers (n=6,621)	Participants (n=689)	Non-Participants (n=17,832)
Security Level (Median)¹			
Initial Facility Level	Low (2)	Low (2)	Low (2)
Final Facility Level	Low (2)	Low (2)	Low (2)
Medical Care Level (Median)			
Initial Facility Level	No significant care required (1)	No significant care required (1)	No significant care required (1)
Final Facility Level	No significant care required (1)	No significant care required (1)	No significant care required (1)
Mental Health Care Level (Median)			
Initial Facility Level	No significant care required (1)	No significant care required (1)	No significant care required (1)
Final Facility Level	No significant care required (1)	No significant care required (1)	No significant care required (1)

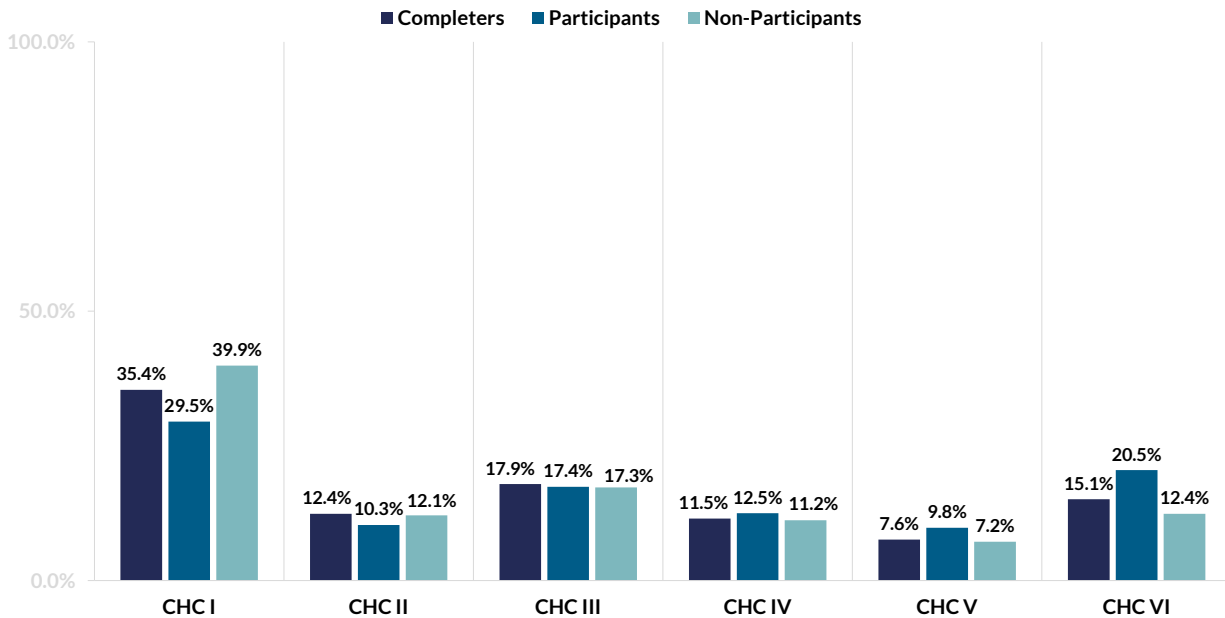
¹ Initial security level was missing for 12 OEP Completers, one OEP Participant, and 15 OEP Non-Participants. Final security level was missing for one OEP Non-Participant.

Facility Level

The Commission also examined offenders’ facility security level and mental and medical health care facility level to ensure that there were no significant differences among the groups (Table 2). There were no differences in initial or final security level for *OEP Completers*, *OEP Participants*, and *OEP Non-Participants*. Offenders in all three groups initially were assigned a median facility security level of low (2). Offenders in all three groups also had a low (2) median final security level.

There were no differences in the median medical care level or mental health care level among *OEP Completers*, *OEP Participants*, or *OEP Non-Participants*. All groups had a median medical care level and median mental health care level of one—meaning no significant medical care was required—at both the start and end of their term of incarceration.

Figure 5. Criminal History Category by OEP Participation Status



Criminal history category was missing for 65 OEP Completers, seven OEP Participants, and 91 OEP Non-Participants.

Criminal History

The Commission’s previous research on recidivism found that criminal history is one of the strongest predictors of recidivism.⁴⁷ In this study, *OEP Completers* and *OEP Participants* had more extensive criminal histories than *OEP Non-Participants* (Figure 5). *OEP Completers* had an average of 5.4 criminal history points (median 4 points); *OEP Participants* had an average of 6.6 points (median 5 points); and *OEP Non-Participants* had an average of 5.0 criminal history points (median 3 points). Roughly a quarter (26.7%) of *OEP Completers* accrued zero criminal history points, compared to 21.8 percent of *OEP Participants* who accrued zero criminal history points. *OEP Non-Participants* had the largest percentage

of offenders with zero criminal history points at just over thirty percent (30.4%). Conversely, only 9.5 percent of *OEP Completers* accrued more than 13 criminal history points, compared to 13.0 percent of *OEP Participants* and only 8.9 percent of *OEP Non-Participants*.

A smaller percentage of either *OEP Completers* or *OEP Participants* were placed in lower CHCs than *OEP Non-Participants*. Fewer *OEP Completers* (35.4%) and *OEP Participants* (29.5%) were in CHC I than *OEP Non-Participants* (39.9%). There were also fewer *OEP Completers* in CHC VI (15.1%) compared to *OEP Participants* (20.5%). *OEP Non-Participants* had the smallest proportion of offenders in CHC VI (12.4%).

Original Type of Crime

The Commission’s previous research has shown that the crime type of an instant offense impacts the likelihood of an offender’s recidivism.⁴⁸ A majority (58.1%) of *OEP Completers* and just over half of *OEP Participants* (53.3%) were sentenced for a drug trafficking offense. Fewer *OEP Non-Participants* (45.9%) were drug trafficking offenders (Figure 6).

The second most common crime type for all three groups was a firearms offense. However, fewer *OEP Completers* (14.4%) and *OEP Non-Participants* (17.9%) were firearms offenders compared to *OEP Participants* (18.1%). Firearms offenders have higher rates of recidivism post-release, compared to all other federal offenders.⁴⁹



Fewer *OEP Completers* were firearms offenders compared to *OEP Participants* and *Non-Participants*.

The Commission’s previous work on recidivism indicates that firearms offenders have higher recidivism rates, compared to all other federal offenders.

Figure 6. Crime Type by OEP Participation Status

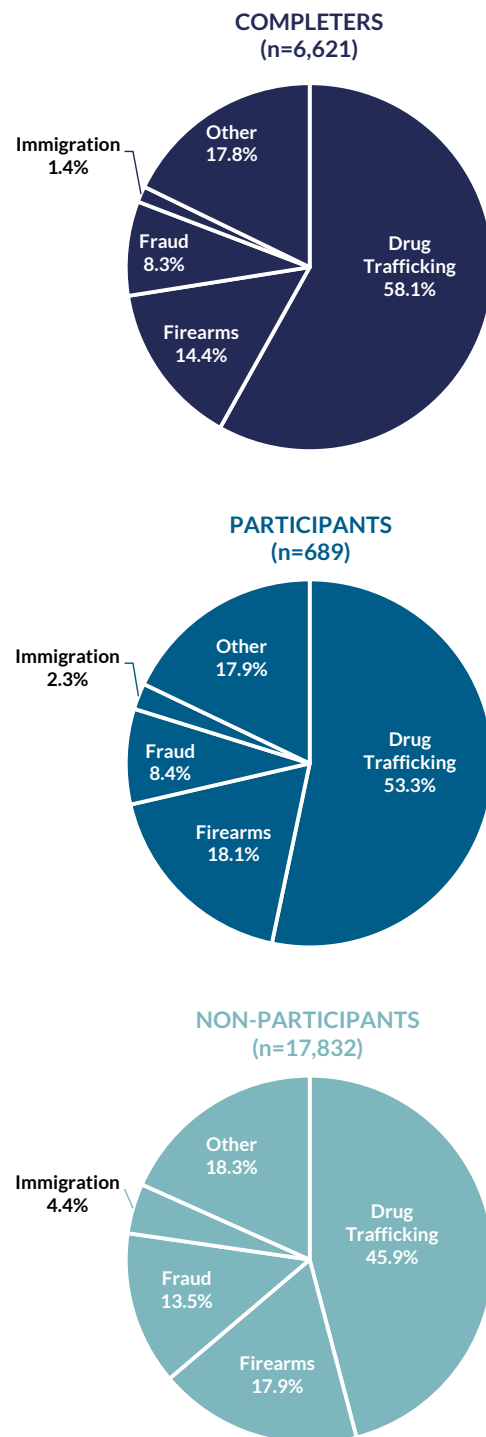
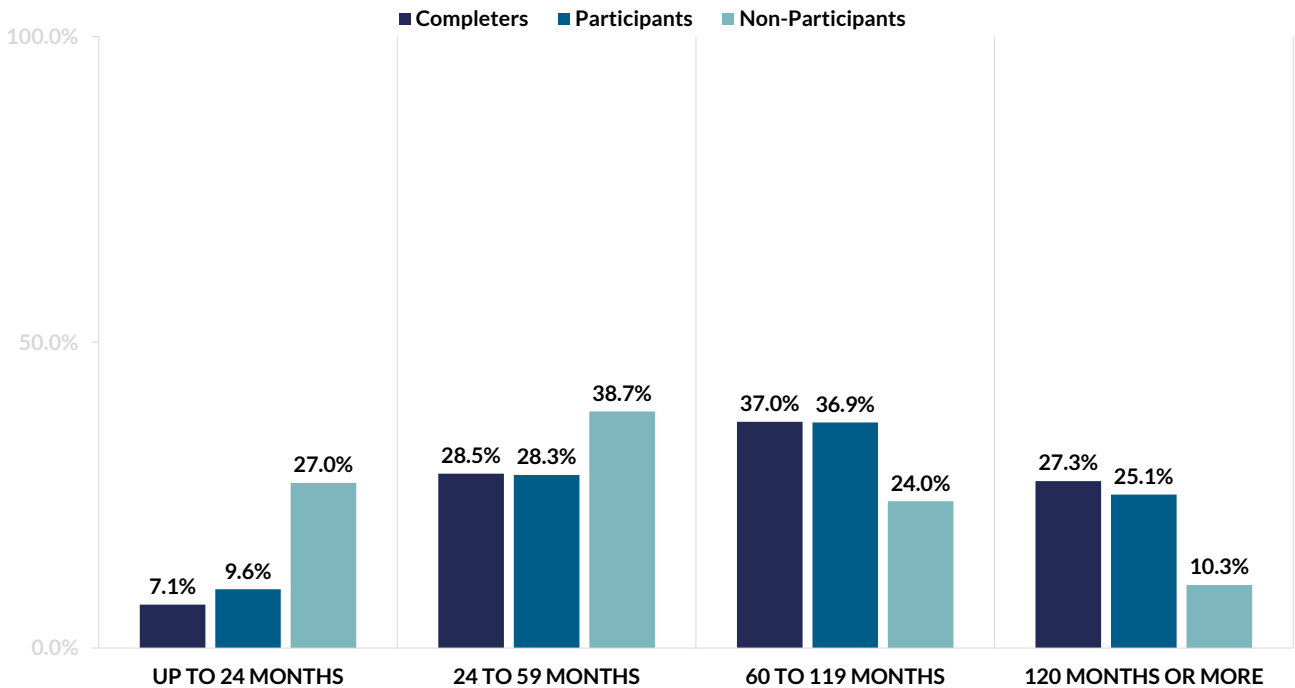


Figure 7. Sentence Length by OEP Participation Status

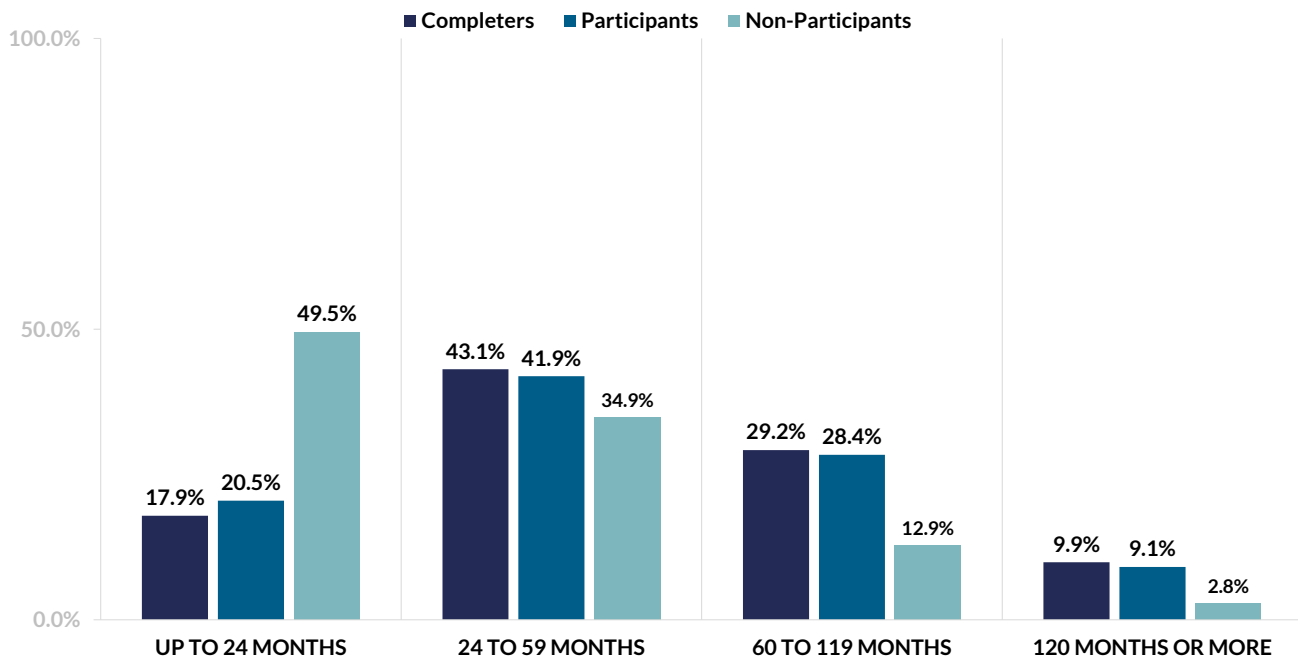


Sentence Length and Time Served in BOP Custody

Commission research has previously shown that offenders serving longer terms of incarceration have lower rates of recidivism, compared to similarly situated offenders serving shorter sentences.⁵⁰ For this report, the Commission looked at two measures of length of incarceration: the length of imprisonment given at sentencing (sentence length) and the actual time an offender served in BOP custody

(time served). Sentence length varied considerably for the three groups. The median sentence for *OEP Completers* and *OEP Participants* (70 months each) was nearly twice that of *OEP Non-Participants* (37 months). Fewer *OEP Completers* (7.1%) and *OEP Participants* (9.6%) were sentenced to less than 24 months compared to *OEP Non-Participants* (27.0%) (Figure 7). A majority of *OEP Completers* (64.3%) and *OEP Participants* (62.0%) were sentenced to more than 60 months.

Figure 8. Time Served by OEP Participation Status



The median time served for OEP *Completers* (49 months) and OEP *Participants* (48 months) was roughly two years longer than OEP *Non-Participants* (24 months). Roughly one-in-five OEP *Completers* (17.9%) and OEP *Participants* (20.5%) served less than 24 months in BOP custody, compared to nearly half (49.5%)

of OEP *Non-Participants*. A plurality of OEP *Completers* (43.1%) and OEP *Participants* (41.9%) served between 24 and 59 months in BOP custody, compared to roughly one-third (34.9%) of OEP *Non-Participants* (Figure 8).

RECIDIVISM FINDINGS

Table 3. Recidivism Rates by OEP Participation Status

	Completers (n=6,621)	Participants (n=689)	Non-Participants (n=17,832)
Percent Rearrested	48.3%	57.5%	54.1%
Median Time to Rearrest	22 months	20 months	18 months
Median Number of Rearrests	2	3	3
Most Common Post-Release Event	Assault (20.4%)	Assault (20.2%)	Assault (21.8%)

During the eight-year follow-up period, *OEP Completers* recidivated at a lower rate than either *OEP Participants* or *OEP Non-Participants*. Less than half (48.3%) of *OEP Completers* were rearrested during the eight-year follow-up period, compared to a majority of both *OEP Participants* (57.5%) and *OEP Non-Participants* (54.1%).

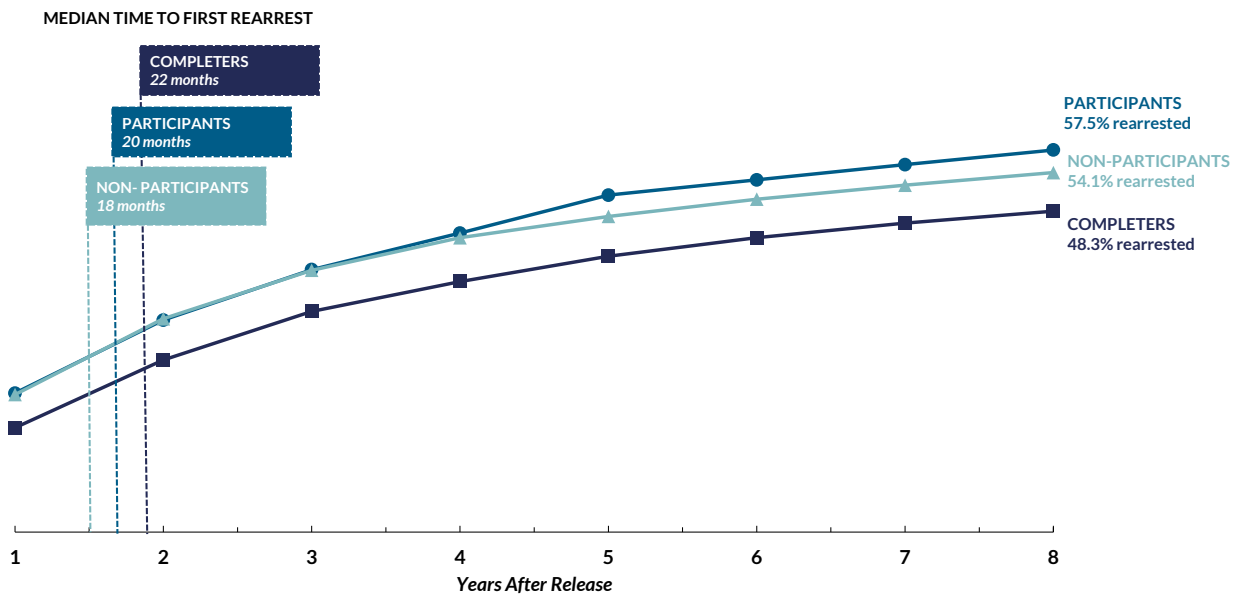
Among offenders who recidivated, *OEP Completers* had fewer median recidivism events (2), compared to *OEP Participants* (3) and *OEP Non-Participants* (3). The most common post-release recidivism event for all three groups was assault. Approximately one-in-five offenders in each category were rearrested for assault as their most serious offense following release from incarceration (Table 3).

Time to Rearrest

In addition to reporting recidivism rates, the Commission analyzed time to rearrest. Among recidivist offenders, *OEP Non-Participants* recidivated two months sooner than *OEP Participants* and four months sooner than *OEP Completers*. The median time to rearrest was 22 months for *OEP Completers*, compared to 20 months for *OEP Participants* and 18 months for *OEP Non-Participants* (Figure 9).

OEP Completers had the lowest recidivism rate in the first two years following release from BOP custody. Over fifteen percent (15.7%) of *OEP Completers* recidivated for the first time during the first year following release. This rate fell to 10.2 percent in the second year and 7.3 percent in the third year. Less than two percent (1.8%) of *OEP Completers* recidivated for the first time in the eighth year.

Figure 9. Time to Rearrest by OEP Participation Status



OEP Participants followed a similar pattern of declining recidivism but recidivated at a higher rate than OEP Completers two years after release (Table 4). During the first year following release, 20.9 percent of OEP Participants recidivated for the first time. This rate fell to 11.0 percent in the second year and 7.5 percent in the third year. Roughly two percent (2.2%) of OEP Participants recidivated for the first time in the eighth year.

During the first year following release, roughly 20 percent (20.7%) of OEP Non-Participants recidivated for the first time. Rearrest rates declined to 11.4 percent in the second year, while 7.3 percent of OEP Non-Participants were rearrested for the first time in the third year. Only 1.9 percent of OEP Non-Participants recidivated for the first time in the eighth year.

Table 4. Time to Rearrest by OEP Participation Status

Years After Release	Completers (n=6,621)			Participants (n=689)			Non-Participants (n=17,832)		
	N	%	Cumulative %	N	%	Cumulative %	N	%	Cumulative %
1	1,041	15.7%	15.7%	144	20.9%	20.9%	3,692	20.7%	20.7%
2	673	10.2%	25.9%	76	11.0%	31.9%	2,040	11.4%	32.1%
3	484	7.3%	33.2%	52	7.5%	39.5%	1,297	7.3%	39.4%
4	295	4.5%	37.7%	38	5.5%	45.0%	866	4.9%	44.3%
5	253	3.8%	41.5%	39	5.7%	50.7%	583	3.3%	47.5%
6	187	2.8%	44.3%	16	2.3%	53.0%	463	2.6%	50.1%
7	144	2.2%	46.5%	16	2.3%	55.3%	367	2.1%	52.2%
8	118	1.8%	48.3%	15	2.2%	57.5%	336	1.9%	54.1%

Rearrests and Federal Supervision Status

To further explore the issue of timing of rearrest, the Commission also examined rearrests relative to federal supervision status. While the data for this study included the length of supervision terms originally imposed, it did not include supervision status at the time of arrest.⁵¹ Therefore, for each rearrested offender, the Commission compared the length of the supervision term imposed to the elapsed time before rearrest as a proxy for the offender’s supervision status at the time of rearrest.

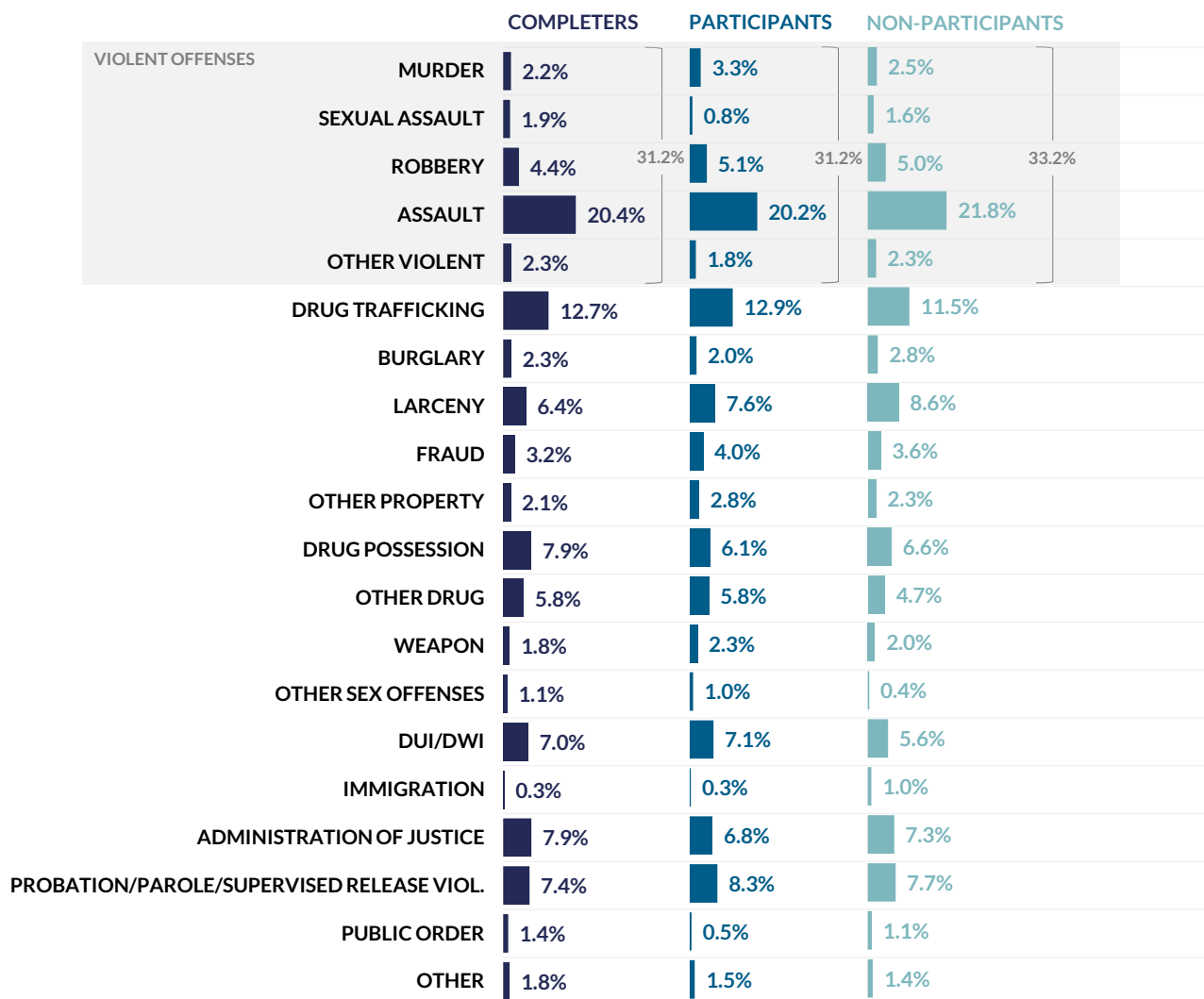
Nearly all *OEP Completers* (99.7%), *OEP Participants* (99.7%), and *OEP Non-Participants* (99.5%) were sentenced to a term of supervision, with an average length of 53 months for *OEP Completers* (median 48 months), 48 months for *OEP Participants*, and 46 months for *OEP Non-Participants* (median 36 months for both groups).

Among those offenders who were sentenced to a term of supervision and rearrested, *OEP Completers* had the lowest rearrest rate before the expiration of their originally imposed supervision term, compared to *OEP Participants* and *OEP Non-Participants*. Roughly forty percent (37.4%) of *OEP Completers* were rearrested during their originally imposed supervision term. Forty-five percent (45.1%) of *OEP Participants* and roughly forty percent (41.2%) of *OEP Non-Participants* recidivated before the expiration of their originally imposed supervision term.

Most Serious Recidivism Event

The types of crimes for which *OEP Completers*, *OEP Participants*, and *OEP Non-Participants* were rearrested were similar, with assault being the most common recidivism event for all three groups (Figure 10). Among offenders who recidivated, roughly one-in-five *OEP Completers* (20.4%), *OEP Participants* (20.2%), and *OEP Non-*

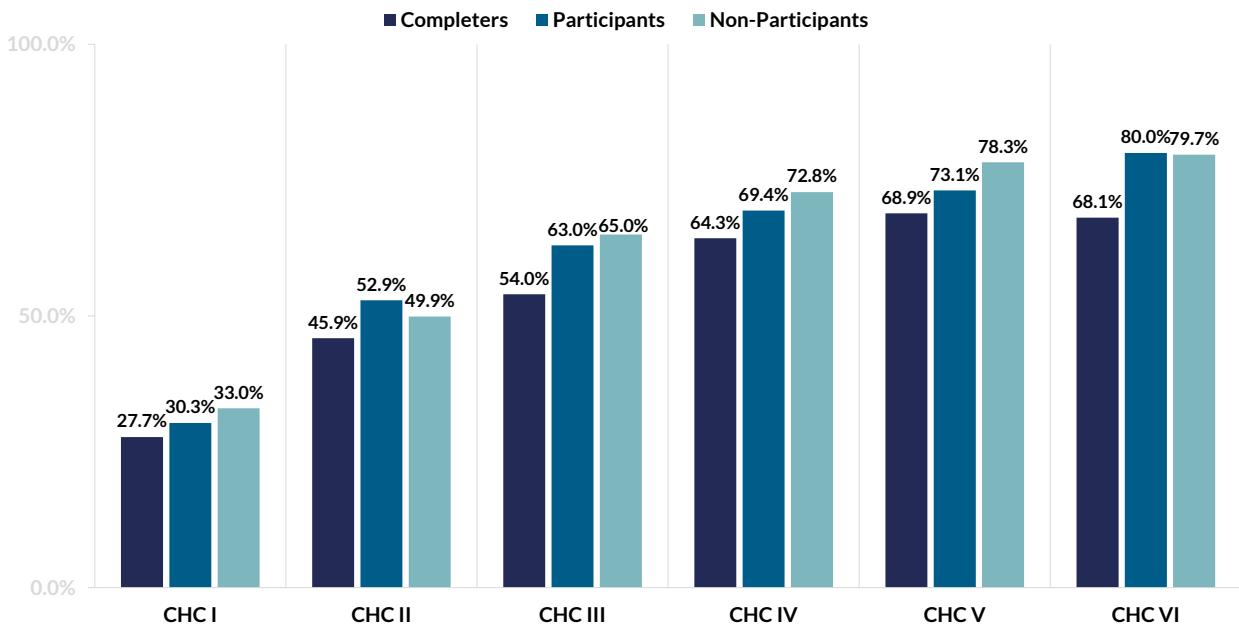
Figure 10. Most Serious Offense at Rearrest by OEP Participation Status



Participants (21.8%) were rearrested for an assault as their most serious post-release event. OEP Completers also had similar rates of overall violent recidivism (31.2%), compared to OEP Participants (31.2%) and OEP Non-Participants (33.2%) (Figure 10).

The second most common recidivism event for all three groups was drug trafficking. Approximately 12 percent of OEP Completers (12.7%), OEP Participants (12.9%), and OEP Non-Participants (11.5%) were rearrested for a drug trafficking offense during the eight-year follow-up period.

Figure 11. Rearrest Rates by OEP Participation Status and Criminal History Category

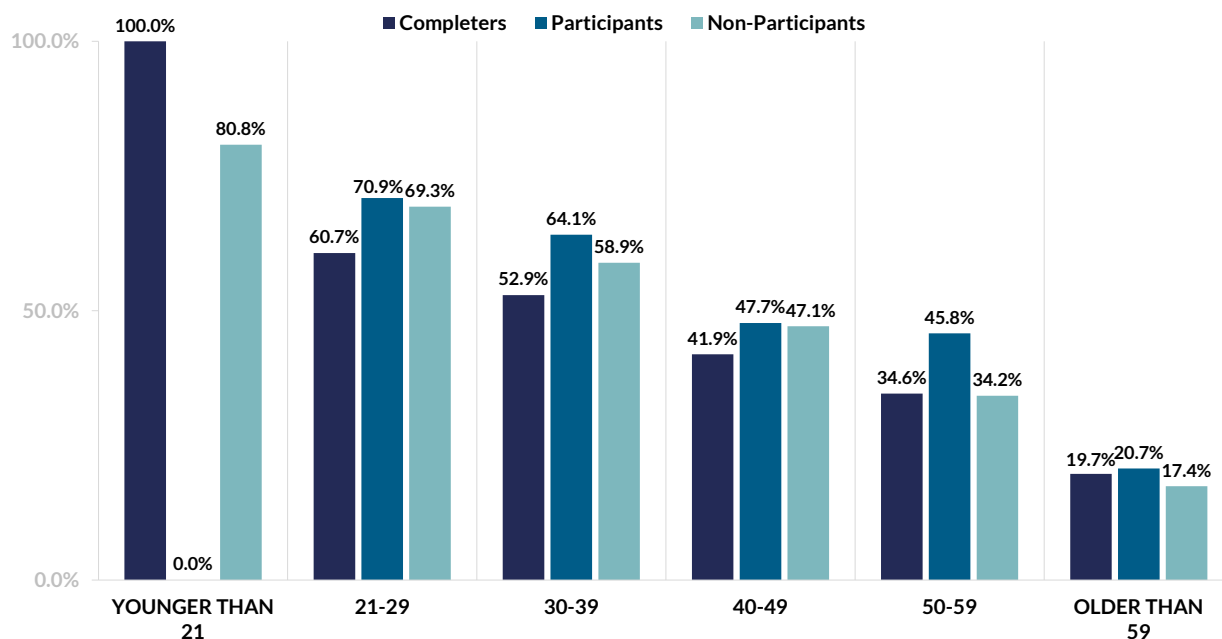


Recidivism and Criminal History

As criminal history category increased for *OEP Completers*, *OEP Participants*, and *OEP Non-Participants*, so did recidivism rates (Figure 11). Recidivism rates among *OEP Completers* ranged from a low of 27.7 percent for those in CHC I to a high of just under 70 percent for those in CHC V (68.9%) and CHC VI (68.1%). Recidivism rates among *OEP Participants* ranged from 30.3 percent for offenders assigned CHC I to 80.0 percent for those assigned CHC VI. Recidivism rates were highest among *OEP Non-Participants* at CHC I (33.0%) and rose to roughly 80 percent for offenders assigned to CHC VI (79.7%).

OEP Completers had lower recidivism rates across all criminal history categories, compared to both *OEP Participants* and *OEP Non-Participants*. Similarly, *OEP Participants* had lower recidivism rates than *OEP Non-Participants* across most criminal history categories, apart from CHC II and CHC VI.

Figure 12. Rearrest Rates by OEP Participation Status and Age at Release

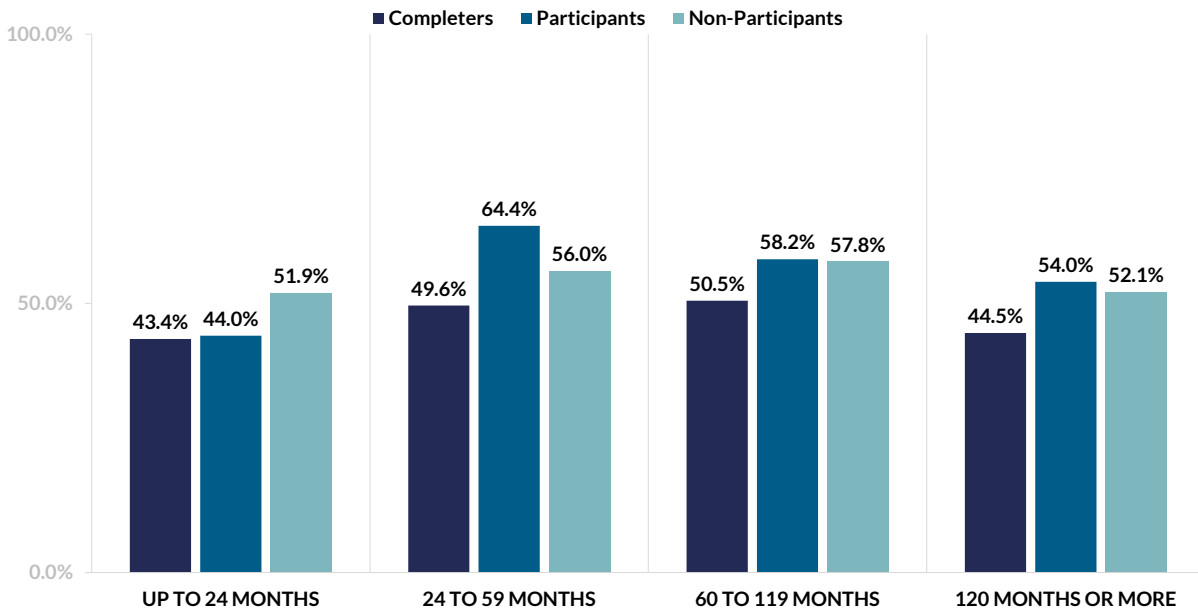


Recidivism and Age

As age increased, recidivism rates fell for all three groups. *OEP Completers* recidivated at a lower rate than both *OEP Participants* and *OEP Non-Participants* in all age groups, except for offenders in the youngest age group, where there were too few offenders to draw any meaningful conclusions. In the two oldest age categories, recidivism rates were nearly identical for *OEP Completers* and *OEP Non-Participants* (Figure 12).

Approximately sixty percent (60.7%) of *OEP Completers* and seventy percent of both *OEP Participants* (70.9%) and *OEP Non-Participants* (69.3%) ages 21 to 29 recidivated during the follow-up period. About half (52.9%) of *OEP Completers* ages 30 to 39 recidivated during the eight-year study period. Comparatively, roughly six-in-ten (64.1%) *OEP Participants* and *OEP Non-Participants* (58.9%) released between ages 30 to 39 recidivated during that same time frame. Recidivism rates were lowest among the relatively few offenders released after the age of 59. In each group, approximately one-in-five offenders over the age of 59 recidivated.

Figure 13. Rearrest Rates by OEP Participation Status and Time Served in BOP Custody



Recidivism and Time Served in BOP Custody

OEP Completers recidivated at a lower rate than both OEP Participants and OEP Non-Participants regardless of the length of time served (Figure 13). Recidivism rates were lowest among OEP Completers (43.4%), OEP Participants (44.0%), and OEP Non-Participants (51.9%) serving less than 24 months. OEP Completers (49.6%) who served between 24 and 59 months in BOP custody had lower recidivism rates than either OEP Participants (64.4%) or OEP Non-Participants (56.0%) who served the same amount of time. Recidivism rates fell for OEP Completers (44.5%), OEP Participants (54.0%), and OEP Non-Participants (52.1%) serving 120 months or more in BOP custody.

Matched Comparison and Logistic Regression Analysis

There were notable differences between OEP Completers and OEP Non-Participants, which could account for the observed differences in their recidivism rates. To ensure that the Commission was comparing “apples to apples,” or similarly situated offenders, the Commission used matching to create a comparison group for OEP Completers. Offenders were matched on key offender and offense characteristics, such as criminal history category, age at release, gender, and crime type, to isolate the impact of OEP completion on recidivism.⁵²



By conducting a logistic regression analysis, the Commission can control for key offender and offense characteristics. This helps ensure that the observed differences in recidivism rates between *OEP Completers* and *OEP Non-Participants* are due to program completion and not attributable to those differences.

After matching *OEP Completers* to a similarly situated group of *OEP Non-Participants*, the Commission performed a logistic regression analysis to examine the relationship between OEP completion and recidivism while ensuring that the observed differences in recidivism rates are due to program completion and not attributable to any differences in key offender or offense characteristics.

Results of this analysis did not show a statistically significant difference in recidivism based on *OEP Completion*.⁵³ In other words, completing at least one OEP course did not affect the likelihood that an offender would recidivate, compared to offenders who did not participate in OEP.

SUMMARY

Despite the results of the descriptive analysis, a doubly robust methodology⁵⁴ using both matching and regression analysis found insufficient evidence to determine if OEP completion had any impact on recidivism. In the matched sample, *OEP Completers* had a lower recidivism rate than *OEP Non-Participants*, but the difference was not statistically significant in a regression analysis.

FEDERAL PRISON INDUSTRIES

FEDERAL PRISON INDUSTRIES

This chapter discusses the Federal Bureau of Prisons' (BOP) Federal Prison Industries (FPI) program eligibility and availability, incentives and penalties for participants, and previous FPI-related recidivism research. It contains an analysis of the differences in offender and offense characteristics and recidivism rates between the 5,082 offenders who participated in FPI, comparing offenders who worked at least one day in FPI training to those who did not.

Work in Federal Prison Industries is voluntary and only available at BOP institutions with a designated UNICOR facility. Therefore, not all offenders have an opportunity to participate in FPI. As a result, the offenders who participate in FPI are notably different than those who do not. For this reason, the Commission chose to use a quasi-experimental research design in addition to a descriptive analysis. The research design allows the Commission to compare the impact of FPI participation across groups of similarly situated offenders.

Federal Prison Industries (FPI) was established in 1934 after Congress authorized the President to create a government corporation for the purpose of selling prisoner-made goods and services.⁵⁵ President Franklin D. Roosevelt issued an executive order later that year creating FPI,⁵⁶ which continues to operate today under the trade name "UNICOR."⁵⁷ FPI's mission "is to protect society and reduce crime by preparing inmates for successful reentry through job training."⁵⁸ As such, an FPI outcome prioritized by the BOP is recidivism reduction. FPI is designed to offer participants the opportunity to acquire the knowledge, skills, and work habits that will be useful for their transition back into the community.⁵⁹

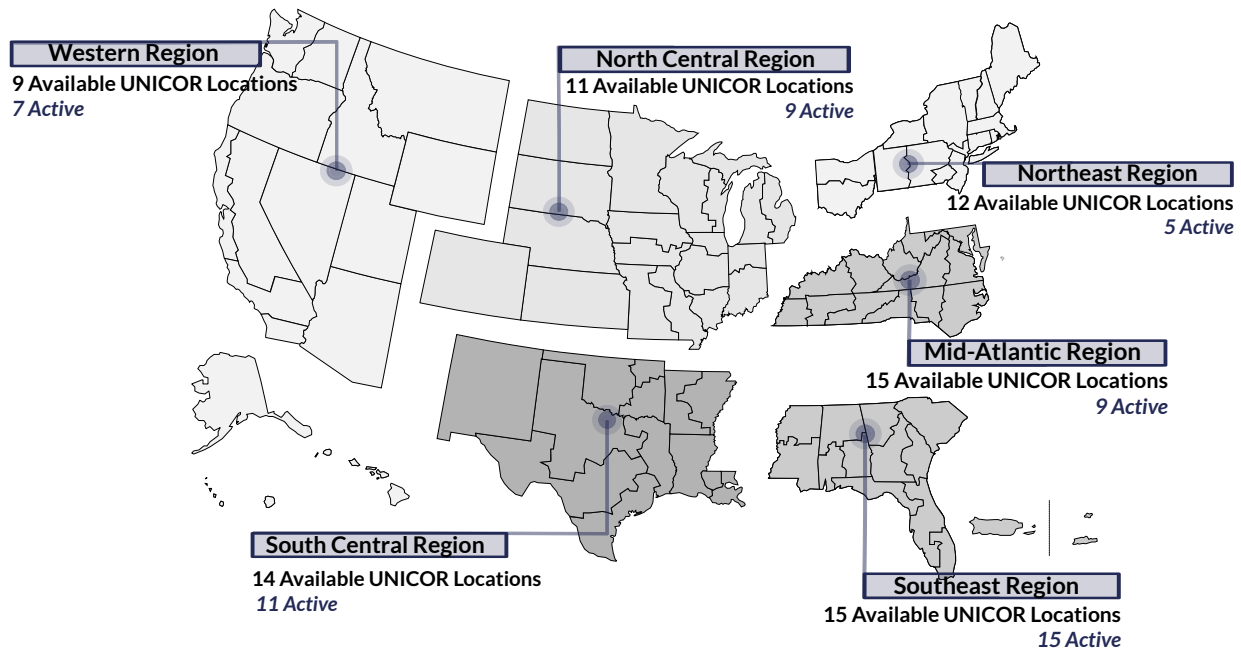
FPI provides inmates with work simulation programs and training opportunities⁶⁰ through the factories

it operates at BOP facilities.⁶¹ These factories operate in several different industries, including clothing and textiles, electronics and fleet solutions, office furniture, services, and recycling activities.⁶² FPI primarily sells its products to the Federal Government,⁶³ with over 50 percent of its sales derived from the Department of Defense.⁶⁴

FPI Eligibility and Availability

Only offenders under an order of deportation, exclusion, or removal are prohibited from participating in FPI.⁶⁵ As such, all offenders in this study were eligible to participate in FPI. FPI maintains the authority to reject a person who "would constitute a serious threat to the orderly and safe operation of the FPI factory."⁶⁶ In addition, those offenders seeking higher-grade assignments must possess a high school diploma, GED, or be satisfactorily enrolled in a literacy program.⁶⁷

Figure 14. Federal UNICOR Locations, April 2021



FPI is only available at select BOP facilities (Figure 14).⁶⁸ As a result, only eight percent of work-eligible offenders currently participate in the program.⁶⁹ New FPI participants are ordinarily hired through a waiting list, which currently consists of about 25,000 offenders.⁷⁰ However, UNICOR may also directly recruit individuals with needed skills.⁷¹

FPI Incentives and Penalties

UNICOR is not congressionally mandated to compensate FPI participants for their labor.⁷² However, FPI does pay inmates⁷³ based on a 1999 pay scale that is graded from \$0.23 to \$1.15 per hour, which is generally higher than the pay rate for BOP jobs.⁷⁴ Participants are also eligible for overtime or premium pay, depending on their grade.⁷⁵ Lastly, FPI provides incentive awards, including cash bonuses, and some participants are eligible for FPI-funded training programs.⁷⁶

FPI may remove participants who:

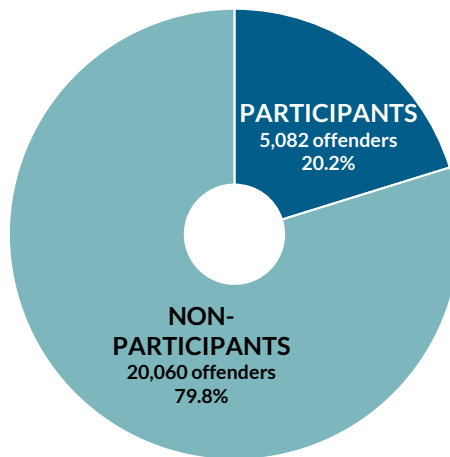
- (1) violate the conditions of employment;
- (2) fail to comply with any court-mandated financial responsibility; or
- (3) are found to have committed any prohibited act resulting in segregation or disciplinary transfer.⁷⁷

FPI and Recidivism

A 1997 study conducted by BOP researchers found that FPI partly achieves its stated goals and reduces the likelihood of recidivism for male FPI participants by 24 percent.⁷⁸ As discussed, participating in either vocational and apprenticeship training or FPI was found to decrease prison incident reports and increase the likelihood that participants would be employed a year after release from prison.⁷⁹ A 2001 study determined that minority groups benefitted more from BOP work opportunities, compared to their nonminority counterparts, over multi-year follow-up periods.⁸⁰

OFFENDER AND OFFENSE CHARACTERISTICS

Figure 15. Rate of FPI Participation for BOP Offenders Released in 2010



One-in-five (20.2%; n=5,082) offenders in this study worked in Federal Prison Industries (Figure 15). Like Occupational Education Programs, FPI has few eligibility requirements and is voluntary.⁸¹ However, unlike OEP, FPI is not available at all BOP facilities, and there is a waiting list of offenders who wish to participate.⁸² As a result, offenders in this study who participated in FPI are dissimilar in several ways from the majority of offenders (79.8%) in this study who did not participate in FPI. Those differences are discussed in this chapter.

The *FPI Participants* (n=5,082) are offenders who worked at least one day in BOP's Federal Prison Industries work program. *FPI Non-Participants* are those offenders who did not work for FPI during their incarceration.

Table 5. Demographic Characteristics by FPI Participation Status

	Participants (n=5,082)		Non-Participants (n=20,060)	
	N	%	N	%
Race/Ethnicity¹				
White	1,830	36.0%	8,016	40.0%
Black	2,328	45.8%	7,274	36.3%
Hispanic	758	14.9%	3,714	18.5%
Other	165	3.2%	1,029	5.1%
Gender²				
Male	4,157	81.8%	17,686	88.2%
Female	925	18.2%	2,372	11.8%
Age³				
Median Age at Sentencing	31 years		33 years	
Median Age at Release	37 years		36 years	

¹ Race was missing for one FPI Participant and 27 FPI Non-Participants.

² Gender was missing for two FPI Non-Participants.

³ Age at Sentencing and Release were missing for seven FPI Participants and 11 FPI Non-Participants.

Demographics

The demographic characteristics of the *FPI Participants* and *FPI Non-Participants* varied slightly (Table 5). Black offenders constituted the largest group of *FPI Participants* (45.8%), followed by White offenders (36.0%) and Hispanic offenders (14.9%). By comparison, White offenders (40.0%) constituted the largest portion of *FPI Non-Participants*. Black offenders (36.3%) and Hispanic offenders (18.5%) were the next most common demographic groups.

Male offenders comprised the overwhelming majority of *FPI Participants* (81.8%) and *FPI Non-Participants* (88.2%); however, there was a higher percentage of female offenders among *FPI Participants*. As discussed, female offenders are far less likely to recidivate compared to male offenders.⁸³

FPI Participants and *FPI Non-Participants* had a similar median age at sentencing and release. The median age at sentencing was 31 years for *FPI Participants* and 33 years for *FPI Non-Participants*. The median age at release was 37 years for *FPI Participants* and 36 years for *FPI Non-Participants*.

Table 6. Facility Level by FPI Participation Status

	Participants (n=5,082)	Non-Participants (n=20,060)
Security Level (Median)¹		
Initial Facility Level	Medium (3)	Low (2)
Final Facility Level	Low (2)	Low (2)
Medical Care Level (Median)		
Initial Facility Level	No significant care required (1)	No significant care required (1)
Final Facility Level	No significant care required (1)	No significant care required (1)
Mental Health Care Level (Median)		
Initial Facility Level	No significant care required (1)	No significant care required (1)
Final Facility Level	No significant care required (1)	No significant care required (1)

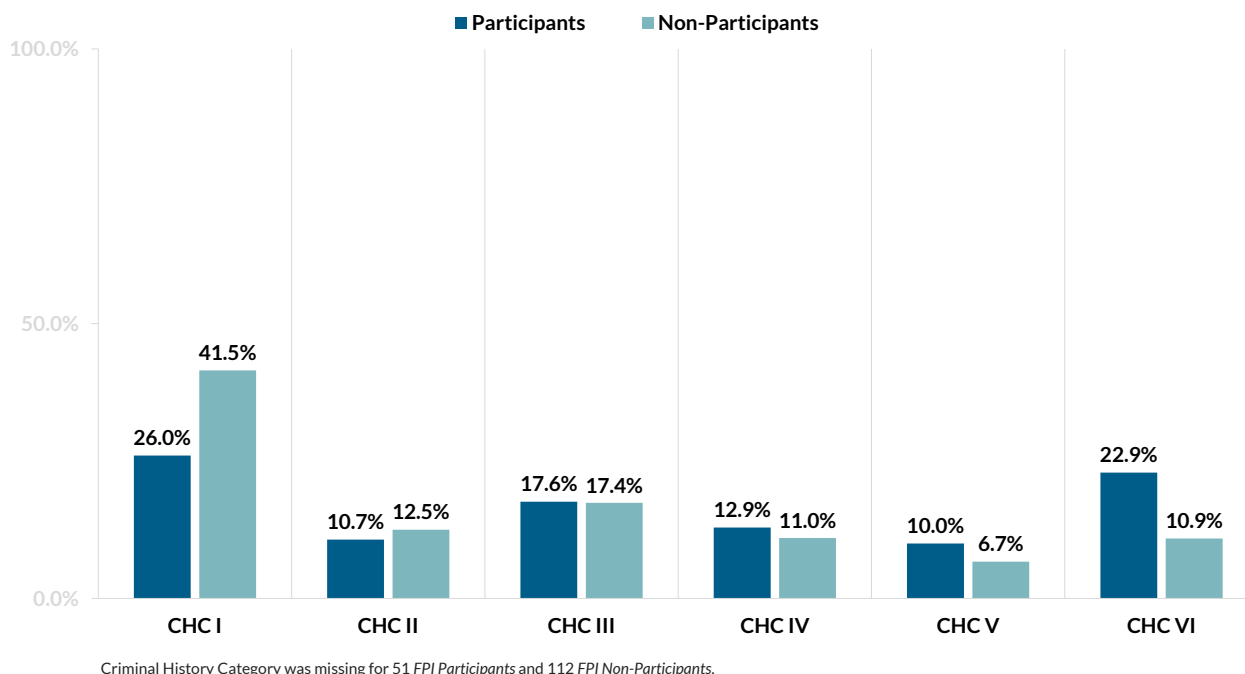
¹ Initial security level was missing for eight *FPI Participants* and 20 *FPI Non-Participants*. Final security level was missing for one *FPI Non-Participant*.

Facility Level

As noted, the Commission reviewed offenders’ facility level and mental and medical health care level to determine if these factors affected offenders’ ability to participate in FPI. *FPI Participants* started out at a higher initial security level of medium (3) than *FPI Non-Participants*, who initially were assigned a median facility security level of low (2) (Table 6). Both *FPI Participants* and *FPI Non-Participants* had a low (2) median final security level.

There were no differences in the median medical care level or mental health care level among *FPI Participants* or *FPI Non-Participants*. Both groups had a median medical care level and median mental health care level of one—meaning no significant medical or mental health care was required—at both the start and end of their term of incarceration.

Figure 16. Criminal History Category by FPI Participation Status



Criminal History

As noted earlier, criminal history is a strong predictor of recidivism and therefore differentiates the two groups.⁸⁴ In this study, *FPI Participants* had more extensive criminal histories than *FPI Non-Participants* (Figure 16). *FPI Participants* had an average of 7.0 criminal history points (median 6 points), and *FPI Non-Participants* had an average of 4.7 criminal history points (median 3 points). Less than 20 percent (18.9%) of *FPI Participants* accrued zero criminal history points, compared to nearly a third (31.7%) of *FPI Non-Participants*. Conversely, 15.1 percent of *FPI Participants* accrued more than 13 criminal history points, nearly double the rate of *FPI Non-Participants* with more than 13 criminal history points (7.7%).

It follows that a smaller percentage of *FPI Participants* were placed in lower CHCs than *FPI Non-Participants*. Only about a third (36.7%) of *FPI Participants* were in the two lowest criminal history categories, compared to about half (54.0%) of *FPI Non-Participants*. Roughly a third of *FPI Participants* (32.9%) were also in the two highest criminal history categories, CHC V and VI, compared to 17.6 percent of *FPI Non-Participants*.

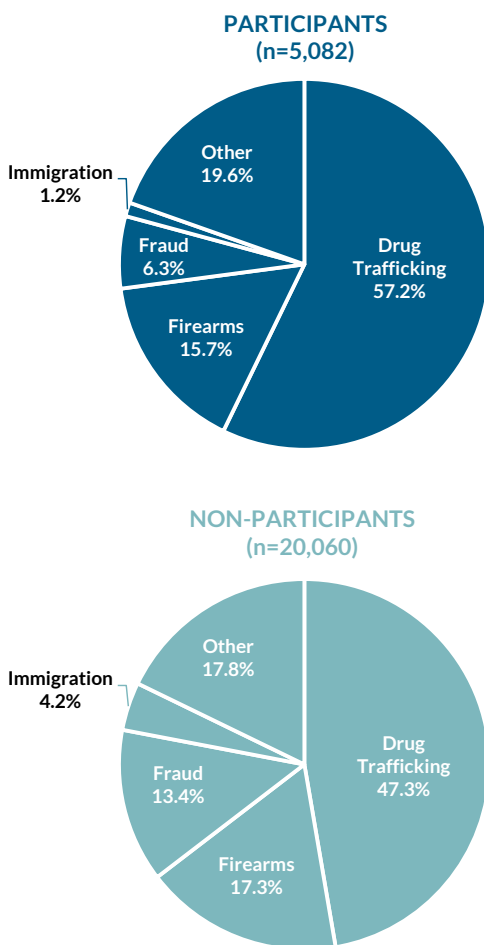


Criminal history is one of the strongest predictors of future offending. In this study, *FPI Participants* and *FPI Non-Participants* had varied criminal histories.

Original Type of Crime

The crime types for *FPI Participants* and *FPI Non-Participants* varied. A greater proportion of *FPI Participants* (57.2%) were drug trafficking offenders, compared to *FPI Non-Participants* (47.3%). Conversely, a smaller proportion of *FPI Participants* (15.7%) were firearms offenders compared to *FPI Non-Participants* (17.3%) (Figure 17). The greater proportion of firearms offenders among *FPI Non-Participants* is notable because these offenders have higher rates of recidivism post-release, compared to all other federal offenders.⁸⁵

Figure 17. Crime Type by FPI Participation Status



Sentence Length and Time Served in BOP Custody

In a previous study, the Commission has found that offenders serving longer sentences were less likely to recidivate, compared to offenders with shorter sentences.⁸⁶ *FPI Participants* were sentenced to a median of 87 months, which is more than twice the sentence length of *FPI Non-Participants* (median 37 months). More than three-quarters (76.4%) of *FPI Participants* were sentenced to at least 60 months or more. By comparison, nearly two-thirds (65.5%) of *FPI Non-Participants* were sentenced to less than 60 months (Figure 18).

FPI Participants served considerably longer time in BOP custody (median 63 months) compared to *FPI Non-Participants* (median 25 months). Nearly half (48.1%) of *FPI Non-Participants* served less than two years in BOP custody, compared to roughly one-in-ten *FPI Participants* (9.5%) (Figure 19). A plurality of *FPI Participants* (37.9%) served 24-to-59 months; nearly the same proportion (37.1%) of *FPI Non-Participants* served that length of time. More than 16 percent (16.1%) of *FPI Participants* served 120 months or more. Few (1.9%) *FPI Non-Participants*, by comparison, served the longest time in BOP custody, ten years or more.

Figure 18. Sentence Length by FPI Participation Status

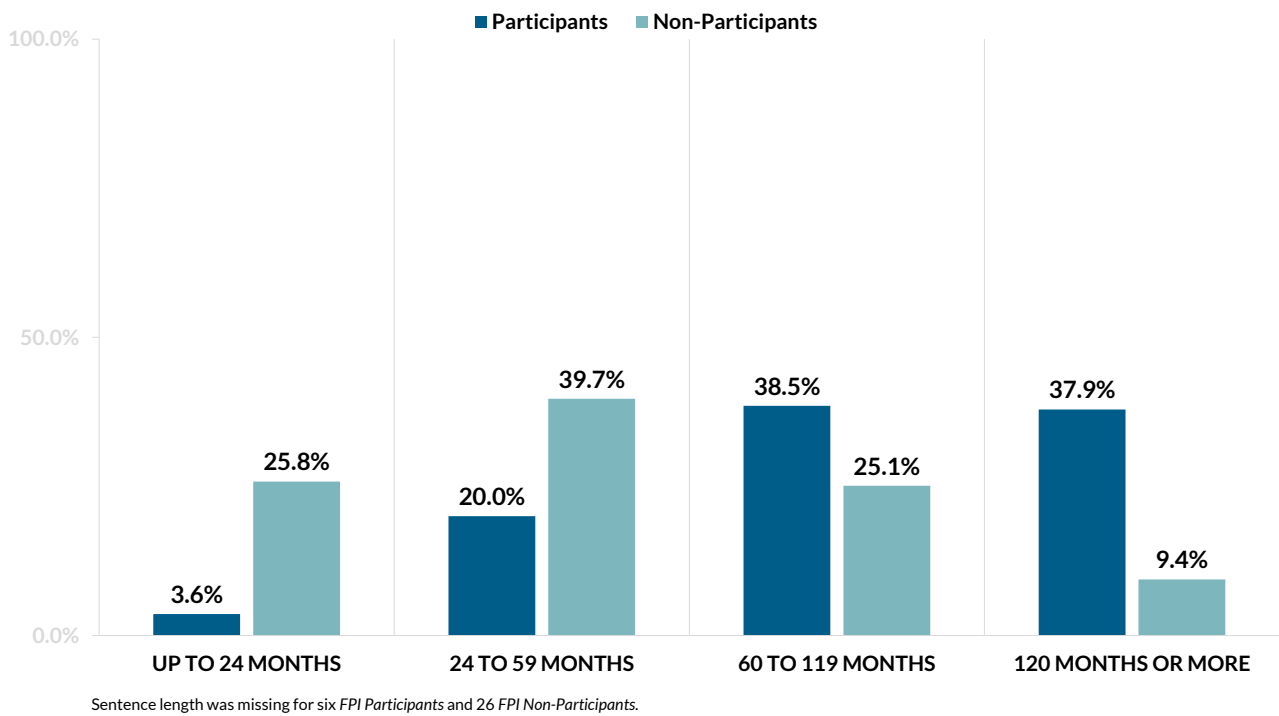
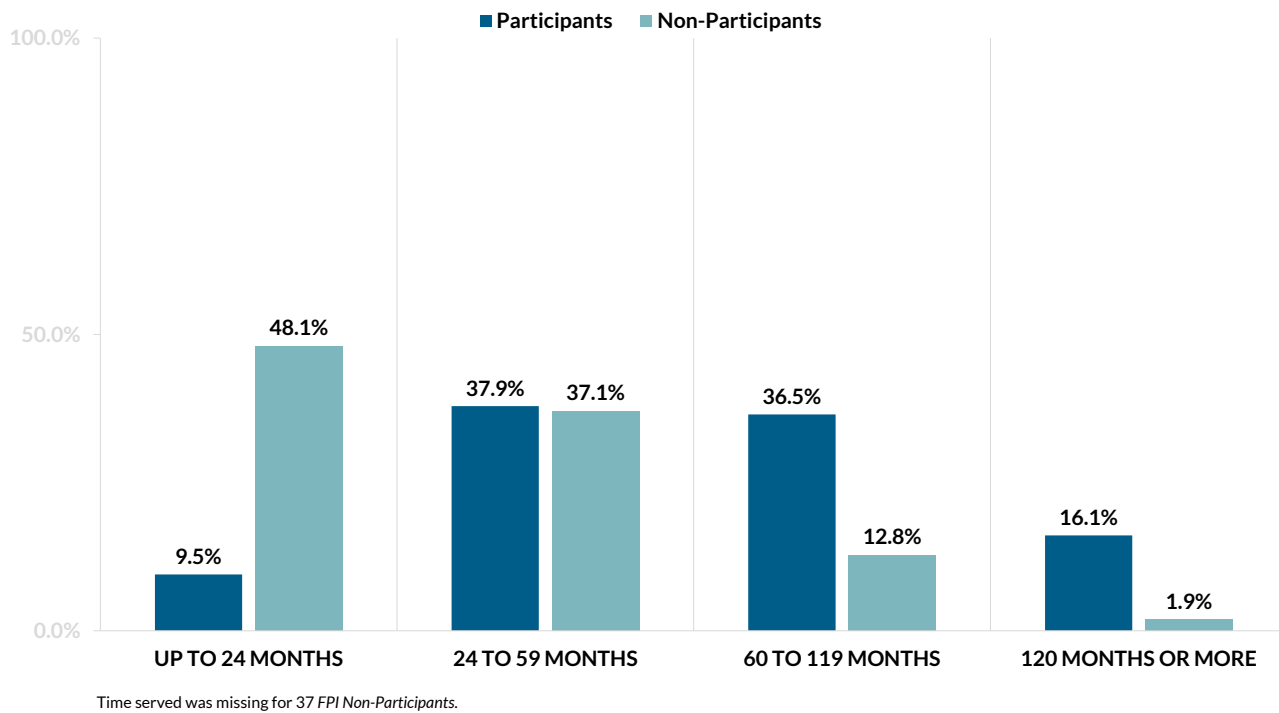


Figure 19. Time Served in BOP Custody by FPI Participation Status



RECIDIVISM FINDINGS

Table 7. Recidivism Rates by FPI Participation Status

	Participants (n=5,082)	Non-Participants (n=20,060)
Percent Rearrested	55.0%	52.0%
Median Time to Rearrest	20 months	18 months
Median Number of Rearrests	3	3
Most Common Post-Release Event	Assault (19.7%)	Assault (21.9%)

During the eight-year follow-up period, *FPI Participants* recidivated at a higher rate than *FPI Non-Participants* (Table 7). More than half (55.0%) of *FPI Participants* recidivated, compared to 52.0 percent of *FPI Non-Participants*. *FPI Participants* had the same median number of recidivism events (3) as *FPI Non-Participants* (3). Roughly one-in-five *FPI Participants* (19.7%) and *FPI Non-Participants* (21.9%) had assault as their most serious post-release recidivism event.

Time to Rearrest

In addition to reporting recidivism rates, the Commission analyzed time to rearrest. *FPI Non-Participants* recidivated two months sooner than *FPI Participants*, on average. Among recidivist offenders, the median time to rearrest was slightly longer for *FPI Participants* (20 months), compared to *FPI Non-Participants* (18 months) (Figure 20).

FPI Participants and *FPI Non-Participants* had nearly the same recidivism pattern in the first two years following release (Table 8). In the first year following release, nearly equal proportions of *FPI Participants* (19.6%) and *FPI Non-Participants* (19.4%) recidivated for the first time. The proportion of *FPI Participants* (11.5%) and *FPI Non-Participants* (11.0%) who recidivated in the second year was also comparable. The final year of the study period, identical proportions of *FPI Participants* and *FPI Non-Participants* recidivated for the first time (1.9% for each group).

Rearrests and Federal Supervision Status

The Commission analyzed rearrest relative to an offender’s supervision status. Nearly all *FPI Participants* (99.8%) and *FPI Non-Participants* (99.5%) were sentenced to a term of supervision, with an average length of 52 months for *FPI Participants* (median 48 months) and 47 months for *FPI Non-Participants* (median 36 months).⁸⁷

Figure 20. Time to Rearrest by FPI Participation Status

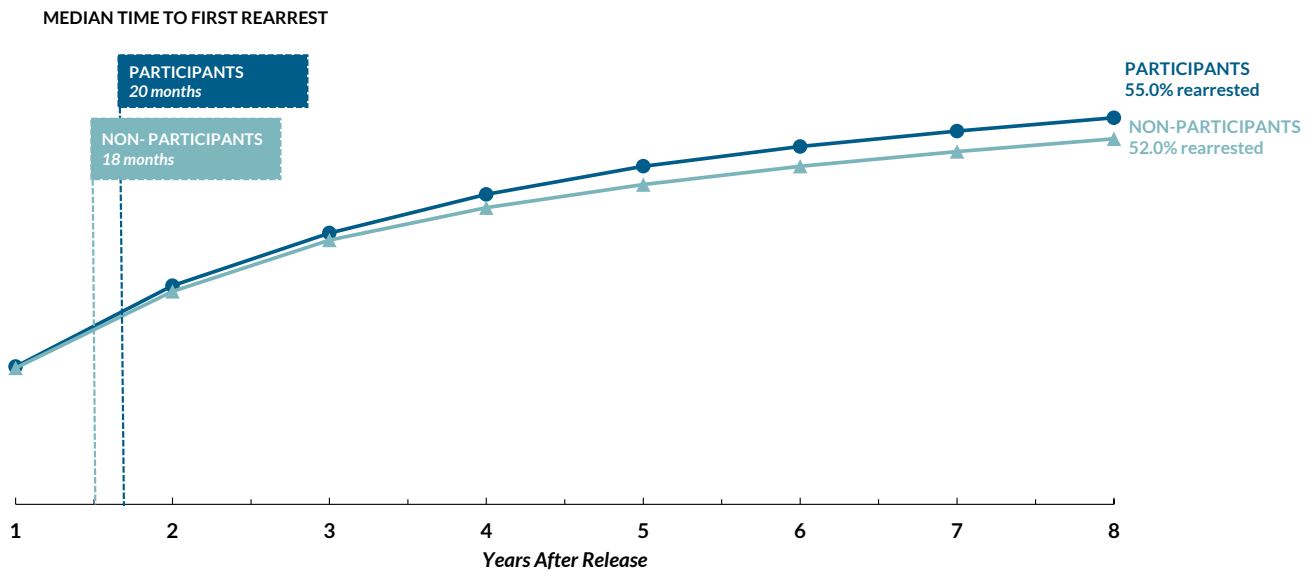


Table 8. Time to Rearrest by FPI Participation Status

Years After Release	Participants (n=5,082)			Non-Participants (n=20,060)		
	N	%	Cumulative %	N	%	Cumulative %
1	995	19.6%	19.6%	3,882	19.4%	19.4%
2	584	11.5%	31.1%	2,205	11.0%	30.3%
3	382	7.5%	38.6%	1,451	7.2%	37.6%
4	281	5.5%	44.1%	918	4.6%	42.2%
5	204	4.0%	48.1%	671	3.3%	45.5%
6	143	2.8%	50.9%	523	2.6%	48.1%
7	111	2.2%	53.1%	416	2.1%	50.2%
8	95	1.9%	55.0%	374	1.9%	52.0%

Among those offenders who were sentenced to a term of supervision and rearrested, *FPI Participants* had a higher rearrest rate before the end of their originally imposed supervision term compared to *FPI Non-Participants*. More than forty percent (43.6%) of *FPI Participants* were rearrested during their originally imposed supervision term compared to just under forty percent (39.5%) of *FPI Non-Participants*.

Most Serious Recidivism Event

Assault was the most common, most serious recidivism event for *FPI Participants* and *FPI Non-Participants* (Figure 21). Among offenders who recidivated, roughly one-in-five *FPI Participants* (19.7%) and *FPI Non-Participants* (21.9%) were rearrested for an assault as their most serious post-release offense. *FPI Participants* (32.8%) and *FPI Non-Participants* (32.7%) also had similar rates of violent recidivism (Figure 22).

Figure 21. Most Serious Offense at Rearrest by FPI Participation Status

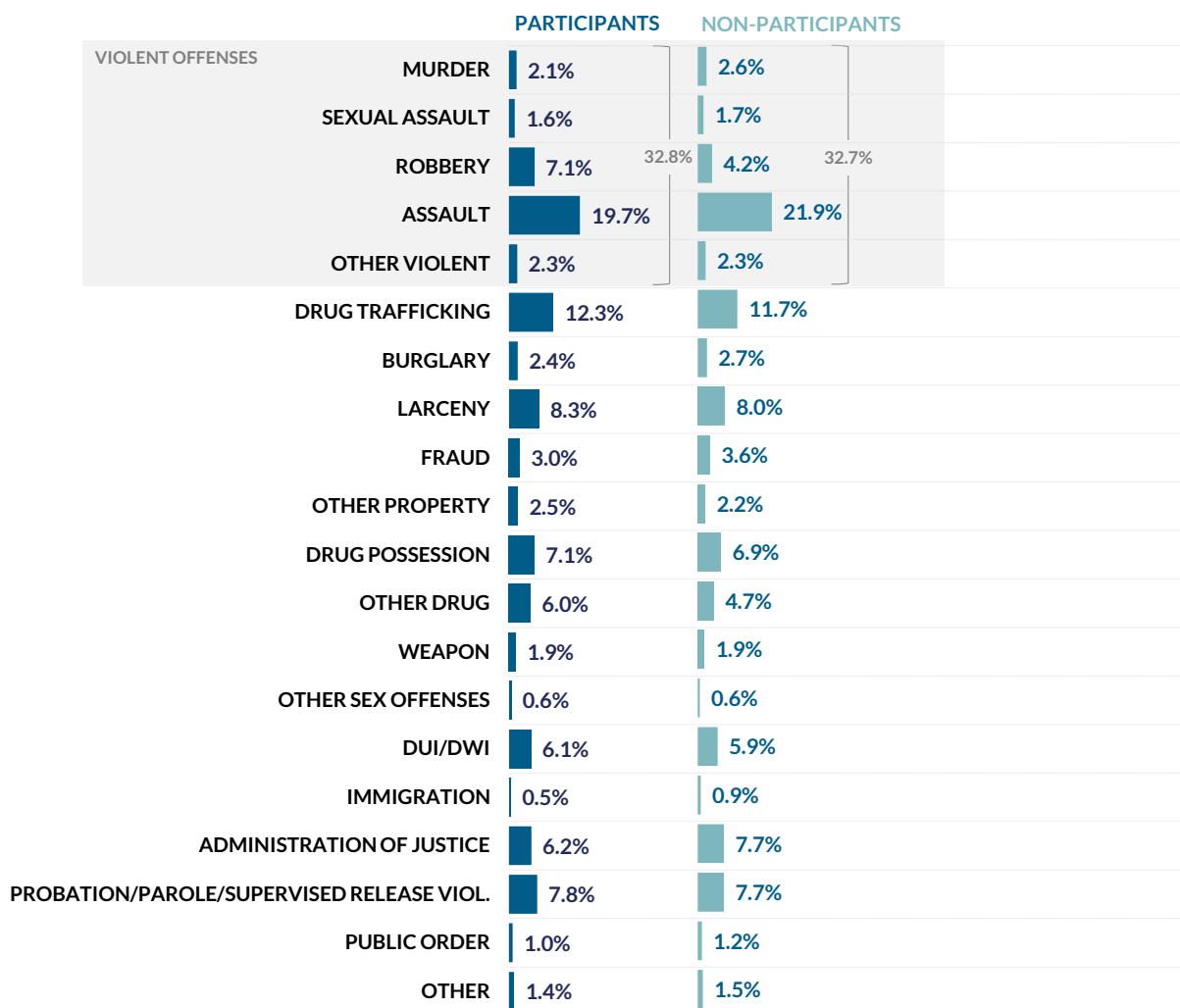
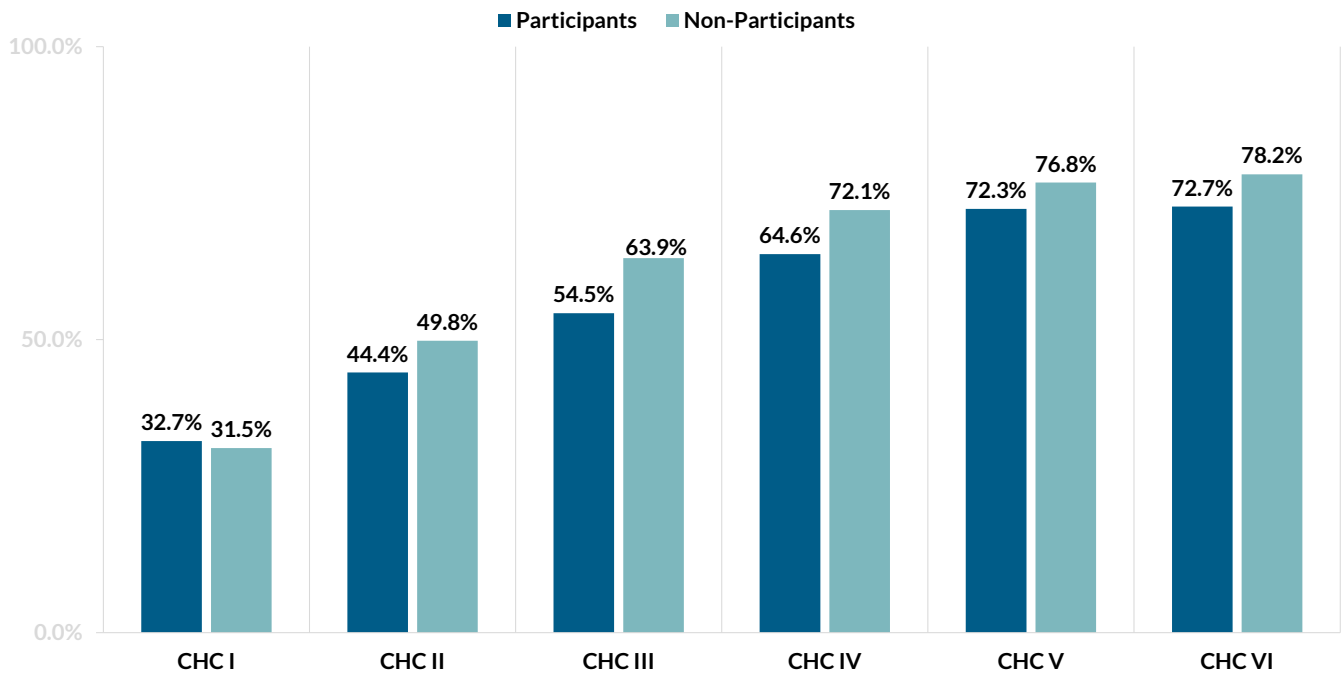


Figure 22. Rearrest Rates by FPI Participation Status and Criminal History Category



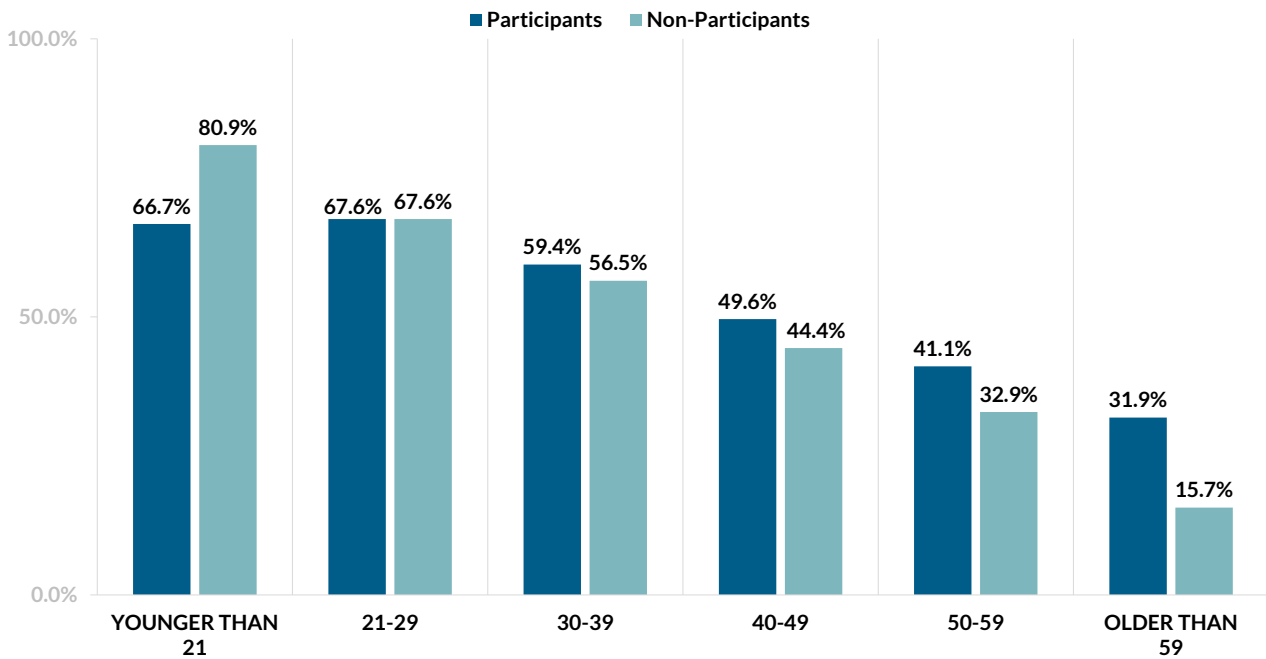
The second most common recidivism event for both groups was drug trafficking. Approximately 12 percent of *FPI Participants* (12.3%) and *FPI Non-Participants* (11.7%) were rearrested for a drug trafficking offense during the eight-year follow-up period.

Recidivism and Criminal History

As criminal history category increased for *FPI Participants* and *FPI Non-Participants*, so did recidivism rates (Figure 24). Recidivism rates among *FPI Participants* ranged from a low of 32.7 percent for those in CHC I to a high of over 70 percent for those in CHC V (72.3%) and CHC VI (72.7%). Recidivism rates were similar for *FPI Non-Participants*, ranging from 31.5 percent for offenders assigned CHC I to just under 80 percent (78.2%) for those in CHC VI.

FPI Participants had a higher recidivism rate than *FPI Non-Participants* at the lowest CHC (I); however, *FPI Participants* had lower recidivism rates than *FPI Non-Participants* across all other criminal history categories. Nearly two-thirds (64.6%) of *FPI Participants* in CHC IV were rearrested following release from incarceration, compared to 72.1 percent of *FPI Non-Participants*. Recidivism rates in the highest two criminal history categories were similar, with roughly three-quarters of offenders in each group recidivating. In CHC V, 72.3 percent of *FPI Participants* recidivated, compared to 76.8 percent of *FPI Non-Participants*. Similarly, 72.7 percent of *FPI Participants* in CHC VI were rearrested within the follow-up period, compared to 78.2 percent of *FPI Non-Participants*.

Figure 23. Rearrest Rates by FPI Participation Status and Age at Release

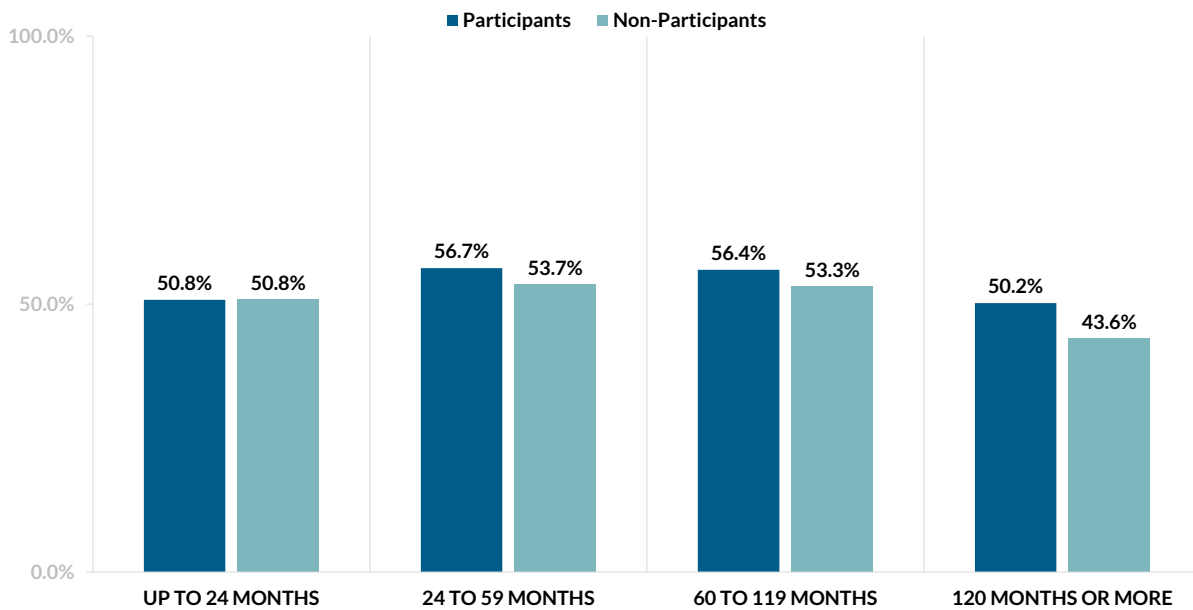


Recidivism and Age

As age increased, recidivism rates decreased for both *FPI Participants* and *FPI Non-Participants*. Excluding offenders under the age of 21, which had too few participants to draw any meaningful conclusions, *FPI Participants* recidivated at an equal or higher rate across all age groups compared to *FPI Non-Participants* (Figure 23). An identical proportion of *FPI Participants* (67.6%) and *FPI Non-Participants* (67.6%) who were released between the ages of 21 and 29 recidivated during the eight-year

follow-up period. Nearly sixty percent (59.4%) of *FPI Participants* between ages 30 to 39 recidivated during the follow-up period. Slightly fewer *FPI Non-Participants* (56.5%) in that age group recidivated during that same time frame. Recidivism rates were lowest among the oldest offenders, those who were released after the age of 59. Just over thirty percent (31.9%) of *FPI Participants* released after the age of 59 recidivated, twice the rate of *FPI Non-Participants* in that age group (15.7%).

Figure 24. Rearrest Rates by FPI Participation Status and Time in BOP Custody



Recidivism and Time Served in BOP Custody

FPI Participants recidivated at a higher rate than *FPI Non-Participants* regardless of the length of time served, except for offenders serving less than 24 months who had identical recidivism rates (50.8%) (Figure 24). *FPI Participants* who served between 24 and 59 months in BOP custody had slightly higher rates of recidivism (56.7%) than *FPI Non-Participants* (53.7%) serving that length of time. *FPI Participants*

(56.4%) serving between 60 and 119 months also recidivated at a slightly higher rate than *FPI Non-Participants* (53.3%). Recidivism rates were lowest for offenders serving 120 months or more in BOP custody. Among those offenders, more *FPI Participants* (50.2%) recidivated than *FPI Non-Participants* (43.6%).



A logistic regression analysis ensures that the observed differences in recidivism rates between *FPI Participants* and *FPI Non-Participants* are due to program participation and not attributable to the differences in key offender and offense characteristics which the Commission observed.

Matched Comparison & Logistic Regression Analysis

There were notable differences between *FPI Participants* and *FPI Non-Participants*, which could account for the observed differences in their recidivism rates. To ensure that the Commission was comparing “apples to apples,” or similarly situated offenders, the Commission used matching to create a comparison group for *FPI Participants*. Offenders were matched on key offender and offense characteristics, such as criminal history category, age at release, gender, and crime type, to isolate the impact of FPI participation on recidivism.⁸⁸

After matching *FPI Participants* to a similarly situated group of *FPI Non-Participants*, the Commission performed a regression analysis controlling for key offender and offense characteristics. A logistic regression examines the relationship between FPI participation and recidivism while ensuring that the observed differences in recidivism rates between *FPI Participants* and the comparison group

are due to program completion and not attributable to any differences in key offender and offense characteristics.

Results of this analysis did not show a statistically significant difference in recidivism based on FPI participation. In other words, participating in FPI did not affect the likelihood that an offender would recidivate, compared to offenders who did not participate in FPI.⁸⁹

SUMMARY

Despite the results of the descriptive analysis, a doubly robust methodology⁹⁰ using matching and regression indicated that there is insufficient evidence to find that participation in FPI had any impact on recidivism. In the matched sample *FPI Participants* had a higher recidivism rate than *FPI Non-Participants*, but the difference was not statistically significant in a regression analysis.

CONCLUSION

CONCLUSION

This report analyzed recidivism rates for Federal Bureau of Prisons (BOP) work program participants released from incarceration in calendar year 2010. It specifically examined offenders who completed an Occupational Education Program (OEP) course or participated in Federal Prison Industries (FPI). In a study published 25 years ago, the BOP found that these widely recognized programs enabled successful reintegration into society by reducing recidivism.⁹¹ The Commission, however, used a doubly robust estimation to determine each work program's impact on recidivism and did not find sufficient evidence to suggest that either program impacted recidivism. Nonetheless, these work programs have other goals and aims, such as a reduction in violations during incarceration and increased post-release employment, which are outside the scope of this study.

APPENDICES

APPENDIX A: STUDY METHODOLOGY

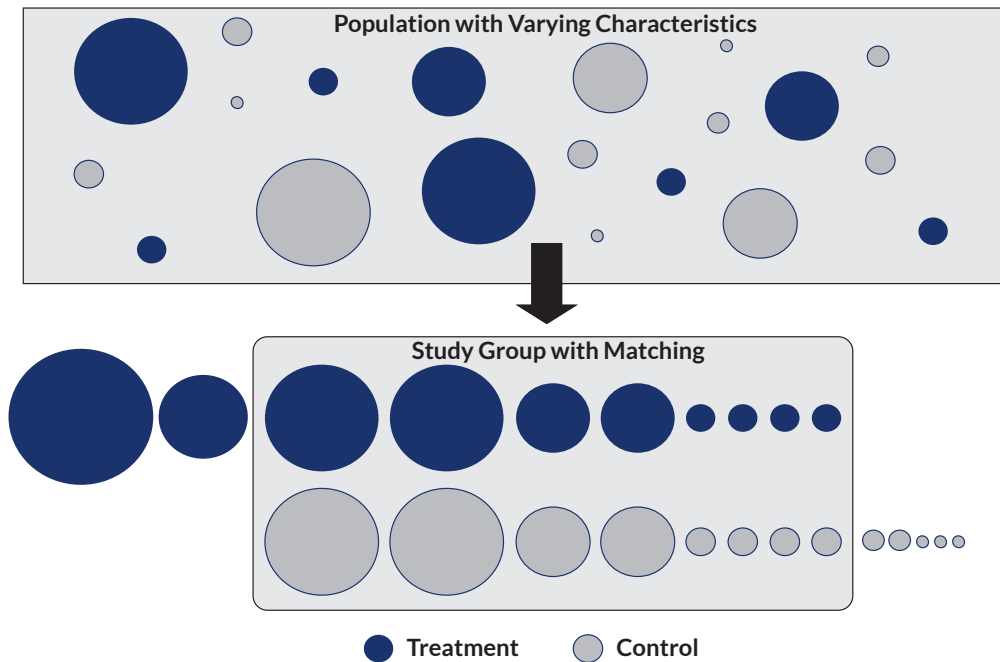
Two-Stage Analysis

The Commission used a two-stage process to analyze the effect of BOP work programs on recidivism. As detailed below, the first stage focuses on developing similar comparison groups for the two treatment groups in this study: *OEP Completers* and *FPI Participants*. The second stage involves a regression model—in this case logistic regression—to estimate the effect of the BOP work program on recidivism.⁹² It is recommended practice to perform a regression on the matched sample, to reduce or eliminate any correlation between matched pairs and make the result from the analysis less dependent on modeling choices.⁹³ This two-stage process of creating comparison groups and then utilizing regression modeling is “similar to the idea of ‘double robustness,’ ... where the regression adjustment is used to ‘clean up’ small residual covariate imbalance between the groups.”⁹⁴

Comparison Group Matching Methodology

Randomized controlled trials are considered the gold standard approach for assessing the effects of treatments (in this study, BOP work programs) on outcomes (in this study, recidivism). Randomly assigning treatment allows researchers to evaluate the effect of a treatment directly and ensure that it is not related to some other characteristic. Matching approximates some of the characteristics of a randomized controlled trial and allows researchers to directly compare the outcomes between a treated and untreated group—in this case, offenders who completed an OEP course (treatment) and those who did not (comparison group) or offenders who participated in FPI (treatment) and those who did not (comparison group).

Figure A-1. Quasi-Experimental Matching Design



Statistical Matching

For that reason, the Commission used statistical matching to create a comparison group and help isolate the relationship between OEP completion and recidivism (Figure A-1). When creating a comparison group, researchers must consider two important factors: the similarity between treatment and comparison groups and sample size. Researchers must ensure that they are comparing “apples to apples” when they create a matched sample. To do this, the treatment group and comparison group must be sufficiently similar on select attributes to isolate the effect of the variable of interest (in this study, completion of OEP or participation in FPI) on the outcome variable (in this study, recidivism). Ideally matched groups would be identical on all attributes, except

for the variable of interest. Researchers generally choose attributes for matching because they are perceived to influence the outcome. For example, if the treatment and comparison groups have similar proportions of males, any difference in recidivism rates observed would not be attributed to gender.

In addition to similarity between groups, researchers must ensure that a sufficient sample size exists to detect a relationship between the variables of interest and outcome variable. Sample size is of concern when creating a comparison group because statistical tests require sample sizes with enough statistical power—i.e., the groups are large enough to detect existing relationships. Larger unbiased samples provide more generalizable results.

In this study, the Commission used a combination of exact matching and propensity score matching to create a comparison group. Matching creates a comparison group by identifying individuals who are similar on the key attributes at a level of precision determined by the researcher.⁹⁵ As the level of precision increases, it becomes harder to identify matches and the sample size shrinks. For that reason, researchers must balance precision in matching with the resulting sample size.

The Commission’s prior research has identified that education level, violence, weapons offenses, criminal history, and length of incarceration are associated with recidivism.⁹⁶ Based on the Commission’s prior research, this report controls for these attributes (Table A-1) by ensuring the study and comparison groups are similar via matching and controlling for these attributes in the logistic regression model.⁹⁷ As a result, any identified differences in recidivism rates between the study and comparison groups would not be attributed to the characteristics listed in the table below.

Table A-1. Logistic Regression Control Variables

MATCHING ATTRIBUTES/LOGISTIC REGRESSION VARIABLES		
Age at Release	Criminal History Category (CHC)	Violent Offense
Gender	Safety Valve Adjustment	Weapons Enhancement
Race	Substantial Assistance Departure	Firearms Offense
High School Completion/GED ⁹⁸	Time in BOP Custody	Drug Trafficking Offense

Logistic Regression Model

After creating the matched sample, the Commission used a logistic regression model to estimate the effects of each BOP work program on recidivism. These models controlled for variables after matching to increase precision in the effect estimate, reduce the bias due to residual imbalance, and make the effect estimate “doubly robust.”⁹⁹ In this study, the regression results were reported as an odds ratio, which represents the odds of recidivism for each treatment group as compared to the odds of recidivism for the comparison group. An odds ratio of one indicates that there is no difference in recidivism between the groups. An odds ratio less than one indicates the study group had *lower* odds of recidivism than the comparison group. An odds ratio greater than one indicates the study group had *greater* odds of recidivism than the comparison group. In addition to producing an estimate, each estimate is tested for statistical significance.

Statistical Significance

In research, statistical significance is analogous to the burden of proof consideration in a criminal trial. The researcher collects data which is then “judged” to determine if the results of the analysis happened by random chance or if the evidence suggests the relationship observed exists “beyond a reasonable doubt.”

In social science research, the threshold of “beyond reasonable doubt” is commonly defined with a p-value. In this study, the Commission used the conventional threshold of 0.05 to denote statistical significance.

The Commission considers findings that do not achieve a p-value of at least 0.05 to be unreliable for policy making. Therefore, the Commission will not rely on findings if the p-value is greater than 0.05.

APPENDIX B: OEP MATCHED SAMPLE AND REGRESSION RESULTS

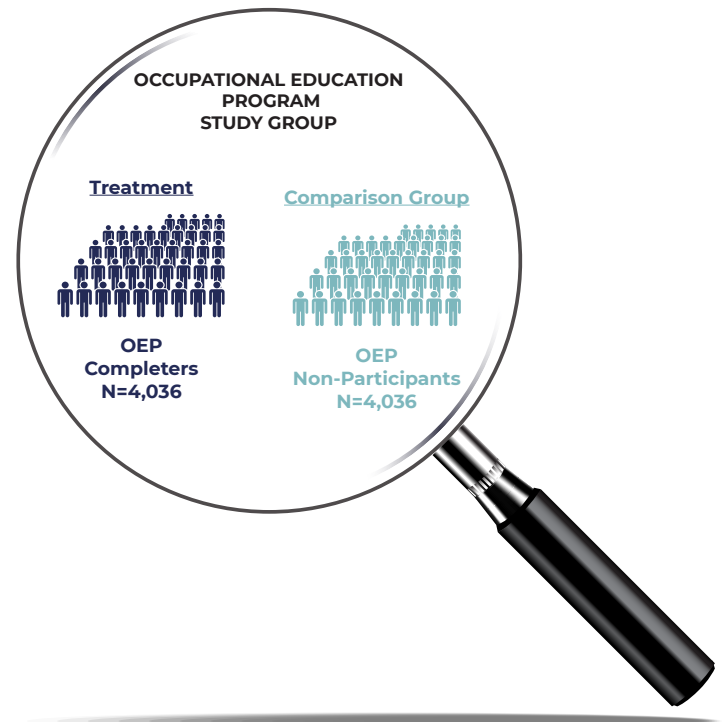
OEP Matched Samples

OEP is available to the general inmate population on a voluntary basis. This means that any offender may participate. As a result, there is not an eligible non-participant group of offenders to use as a comparison group. The Commission matched *OEP Completers* to a sample of offenders who did not participate in OEP while incarcerated, using the comparison group attributes discussed in Appendix A. Exact matching was performed on gender, race, crime type,¹⁰⁰ criminal history category, age at release, violent offending, and weapons enhancement. Close matching was performed on sentence length, time in BOP custody, safety valve, and substantial assistance.¹⁰¹ The resulting sample contained 8,072 offenders: 4,036 *OEP Completers*¹⁰² and 4,036 *OEP Non-Participants* (Figure B-1).

Matched Sample Characteristics

In the study group sample, *OEP Completers* and *OEP Non-Participants* were predominately male (90.7%) (Table B-1). The median age at release was 36 for both *OEP Completers* and *OEP Non-Participants*. Just under half of each sample had Black offenders (44.6%), followed by White (37.7%) and then Hispanic (16.0%) offenders. The median sentence length for *OEP Completers* and their comparison group was 60 months, and the median time

Figure B-1. OEP Study Group



in BOP custody was 41 months for the *OEP Completers* and 38 months for the *OEP Non-Participants*.

Offenders in each group were matched evenly on their rate of violent offending (5.3%) and weapons offenses (12.2%) and closely matched on safety valve application and substantial assistance (Table B-1). Offenders in the *OEP Completers* sample and comparison group were evenly matched on criminal history category. In both groups, forty percent (40.0%) of offenders were in CHC I.

Table B-1. Offender and Offense Characteristics of OEP Sample and Comparison Groups

	Completers (n=4,036)	Non-Participants (n=4,036)
Gender		
Male	90.7%	90.7%
Age		
Median Age at Release	36 years	36 years
Education		
Has GED/HS Diploma	88.8%	70.3%
Race/Ethnicity		
White	37.7%	37.7%
Black	44.6%	44.6%
Hispanic	16.0%	16.0%
Other	1.7%	1.7%
Sentence Length		
Median Sentence	60 months	60 months
Median Time in BOP Custody	41 months	38 months
Violent Offenders	5.3%	5.3%
Weapon Offenders	12.2%	12.2%
Safety Valve	25.9%	26.2%
Substantial Assistance	16.2%	16.1%
Crime Type		
Drug Trafficking	60.9%	60.9%
Immigration	1.8%	2.2%
Firearms	14.6%	14.6%
Fraud	9.8%	9.4%
Sex Offenses	4.2%	3.0%
Robbery	3.3%	3.3%
Other	5.4%	6.6%
Criminal History Category		
Category I	40.0%	40.0%
Category II	10.6%	10.6%
Category III	17.3%	17.3%
Category IV	11.0%	11.0%
Category V	6.4%	6.4%
Category VI	14.7%	14.7%

OEP Participants and *OEP Non-Participants* were matched on crime type for their instant offense. Nearly two-thirds of offenders (60.9%) in each sample were drug trafficking offenders, followed by firearms offenders (14.6%). Just under ten percent of *OEP Completers* (9.8%) and *OEP Non-Participants* (9.4%) were fraud offenders (Table B-1).

Results from the matched samples demonstrated that *OEP Completers* had a lower overall recidivism rate (47.6%) than the *OEP comparison group* (49.1%) (Table B-2). The Commission performed a regression analysis to confirm the observed finding.

Table B-2. Recidivism Rate of OEP Completers Sample and OEP Comparison Group

	Completers (n=4,036)	Non-Participants (n=4,036)
Percent Rearrested	47.6%	49.1%
Median Time to Rearrest	22 months	20 months
Median Number of Rearrests	2	3
Most Common Post-Release Event	Assault (20.3%)	Assault (23.1%)

Logistic Regression Results

The Commission used binary logistic regression to analyze the relationship between OEP completion and recidivism¹⁰³ while controlling for the attributes in Table A-1. The results of the regression model using the OEP study group demonstrated that there was no statistically significant relationship between OEP completion and recidivism (Table B-3). In other words, in this study OEP completion did not have an impact on recidivism.

The Commission used an additional binary logistic regression to analyze the relationship between the number of OEP courses completed and recidivism, while controlling for the attributes in Table A-1 (Table B-3). The results of the regression model demonstrated that there was no statistically significant relationship between the number of OEP courses completed and recidivism. This study does not find that the number of OEP courses completed impacted an offender’s likelihood of recidivism.

Table B-3. Logistic Regression Model of Matched OEP Sample Groups

OEP COMPLETION							
Response Variable: Recidivism (rearrest)	B	S.E.	Wald	p-value	Exp(B)	95% CI for EXP(B)	
						Lower	Upper
Constant	1.589	0.211	56.883	0.000	4.901		
Research Group							
<i>OEP Completion</i>	-0.076	0.063	1.480	0.224	0.927	0.820	1.048
Demographics							
<i>Age at Release</i>	-0.059	0.004	171.657	0.000	0.943	0.935	0.951
Gender							
<i>Female vs. Male</i>	-0.195	0.115	2.905	0.088	0.823	0.657	1.030
Race							
<i>Black vs. White</i>	0.093	0.077	1.454	0.228	1.097	0.944	1.275
<i>Hispanic vs. White</i>	-0.009	0.092	0.009	0.923	0.991	0.828	1.187
<i>Other Races vs. White</i>	0.724	0.285	6.457	0.011	2.063	1.180	3.608
GED/High School Diploma							
<i>Yes vs. No</i>	-0.183	0.079	5.356	0.021	0.833	0.714	0.972
Criminal History							
<i>CHC II vs. CHC I</i>	0.602	0.118	26.041	0.000	1.825	1.449	2.299
<i>CHC III vs. CHC I</i>	1.043	0.110	89.891	0.000	2.837	2.287	3.520
<i>CHC IV vs. CHC I</i>	1.279	0.131	95.269	0.000	3.593	2.779	4.646
<i>CHC V vs. CHC I</i>	1.591	0.165	93.187	0.000	4.909	3.554	6.780
<i>CHC VI vs. CHC I</i>	1.996	0.135	219.998	0.000	7.359	5.653	9.580
Violence							
<i>Yes vs. No</i>	-0.319	0.353	0.817	0.366	0.727	0.364	1.452
Weapons Enhancement							
<i>Yes vs. No</i>	0.141	0.091	2.392	0.122	1.151	0.963	1.376
Safety Valve							
<i>Yes vs. No</i>	-0.063	0.110	0.324	0.569	0.939	0.757	1.165
Substantial Assistance							
<i>Yes vs. No</i>	-0.201	0.080	6.348	0.012	0.818	0.700	0.956
Time in BOP Custody							
<i>Months</i>	-0.003	0.001	8.830	0.003	0.997	0.995	0.999
Model Summary							
-2 Log likelihood	6187.798 ^a		(df = 17)				
Nagelkerke R Square	0.179						
N=5,002							

NUMBER OF OEP COURSES COMPLETED							
Response Variable: Recidivism (rearrest)	B	S.E.	Wald	p-value	Exp(B)	95% CI for EXP(B)	
						Lower	Upper
Constant	1.585	0.210	56.725	0.000	4.879		
Research Group							
<i>Number of OEP Courses Completed</i>	-0.063	0.040	2.488	0.115	0.939	0.868	1.015
Demographics							
<i>Age at Release</i>	-0.059	0.004	171.619	0.000	0.943	0.935	0.951
Gender							
<i>Female vs. Male</i>	-0.196	0.115	2.931	0.087	0.822	0.657	1.029
Race							
<i>Black vs. White</i>	0.094	0.077	1.493	0.222	1.098	0.945	1.277
<i>Hispanic vs. White</i>	-0.007	0.092	0.006	0.938	0.993	0.829	1.189
<i>Other Races vs. White</i>	0.728	0.285	6.526	0.011	2.071	1.185	3.622
GED/High School Diploma							
<i>Yes vs. No</i>	-0.178	0.079	5.120	0.024	0.837	0.717	0.976
Criminal History							
<i>CHC II vs. CHC I</i>	0.604	0.118	26.260	0.000	1.830	1.452	2.306
<i>CHC III vs. CHC I</i>	1.045	0.110	90.250	0.000	2.844	2.292	3.529
<i>CHC IV vs. CHC I</i>	1.283	0.131	95.742	0.000	3.607	2.789	4.663
<i>CHC V vs. CHC I</i>	1.596	0.165	93.679	0.000	4.933	3.571	6.815
<i>CHC VI vs. CHC I</i>	1.999	0.135	220.540	0.000	7.380	5.669	9.608
Violence							
<i>Yes vs. No</i>	-0.318	0.353	0.813	0.367	0.727	0.364	1.453
Weapons Enhancement							
<i>Yes vs. No</i>	0.141	0.091	2.400	0.121	1.152	0.963	1.377
Safety Valve							
<i>Yes vs. No</i>	-0.063	0.110	0.328	0.567	0.939	0.757	1.165
Substantial Assistance							
<i>Yes vs. No</i>	-0.202	0.080	6.425	0.011	0.817	0.699	0.955
Time in BOP Custody							
<i>Months</i>	-0.003	0.001	8.407	0.004	0.997	0.995	0.999
Model Summary							
-2 Log likelihood	6186.788 ^a		(df = 17)				
Nagelkerke R Square	0.18						
N=5,002							

APPENDIX C: FPI MATCHED SAMPLE AND REGRESSION RESULTS

FPI Matched Samples

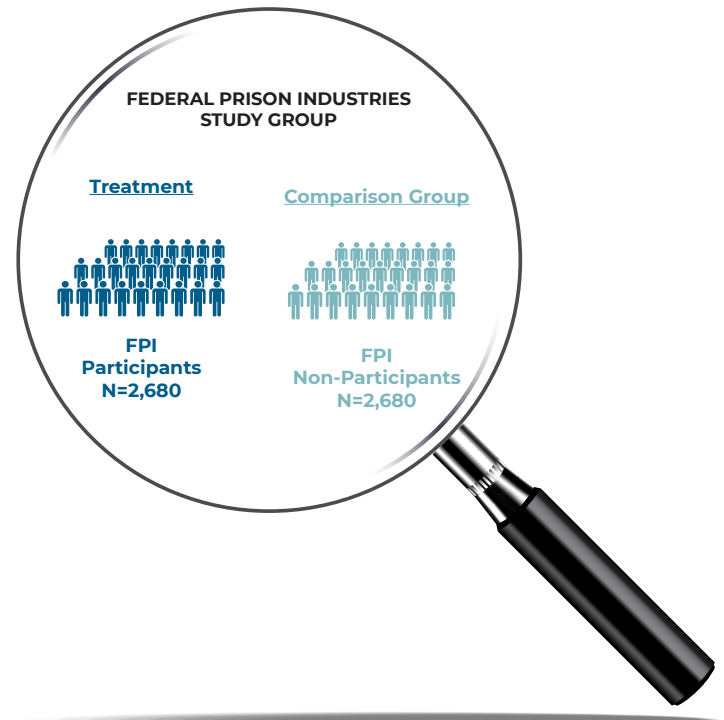
Federal Prison Industries (FPI) is available to the general inmate population at select facilities and on a voluntary basis. The program also has a few eligibility requirements, but those requirements do not apply to any offenders in the study group,¹⁰⁴ and the BOP does not record eligibility.¹⁰⁵ As a result, there is not an eligible non-participant group of offenders to use as a comparison group.

The Commission matched *FPI Participants* to a sample of offenders who did not participate in FPI while incarcerated using the comparison group attributes discussed in Appendix A. Exact matching was performed on gender, race, crime type,¹⁰⁶ criminal history category, age at release, violent offending, and weapons enhancement. Close matching was performed on sentence length, time in BOP custody, safety valve, and substantial assistance.¹⁰⁷ The resulting sample contained 5,360 offenders: 2,680 *FPI Participants*¹⁰⁸ and 2,680 *FPI Non-Participants* (Figure C-1).

Matched Sample Characteristics

Each sample was predominately male (87.1%) (Table C-1). The median age at release was 36 for both groups. Just over half of each sample had Black offenders (51.0%), followed by White (33.8%) and then Hispanic (13.9%) offenders. The

Figure C-1. FPI Study Group



median sentence length for *FPI Participants* was 77 months, compared to 70 months for *FPI Non-Participants*. The median time in BOP custody was 51 months for *FPI Participants* and 46 months for *FPI Non-Participants*.

Offenders in each group were matched on their rate of violent offending (7.5%) and weapons offenses (16.2%) and closely matched on safety valve application and substantial assistance (Table C-1). Offenders in the *FPI Participant* sample and *FPI comparison group* were evenly matched on criminal history category: 31.3 percent of offenders in both groups were in CHC I.

Table C-1. Offender and Offense Characteristics of FPI Sample and Comparison Groups

	Participants (n=2,680)	Non-Participants (n=2,680)
Gender		
Male	87.1%	87.1%
Age		
Median Age at Release	36 years	36 years
Education		
Has GED/HS Diploma	81.0%	70.6%
Race/Ethnicity		
White	33.8%	33.8%
Black	51.0%	51.0%
Hispanic	13.9%	13.9%
Other	1.2%	1.2%
Sentence Length		
Median Sentence	77 months	70 months
Median Time in BOP Custody	51 months	46 months
Violent Offenders	7.5%	7.5%
Weapon Offenders	16.2%	16.2%
Safety Valve	20.2%	21.1%
Substantial Assistance	12.4%	14.3%
Crime Type		
Drug Trafficking	63.1%	63.1%
Immigration	1.3%	1.4%
Firearms	16.9%	16.9%
Fraud	7.6%	6.6%
Sex Offenses	1.9%	2.0%
Robbery	5.1%	5.0%
Other	4.1%	5.0%
Criminal History Category		
Category I	31.3%	31.3%
Category II	9.1%	9.1%
Category III	18.0%	18.0%
Category IV	12.2%	12.2%
Category V	8.4%	8.4%
Category VI	21.0%	21.0%

FPI Participants and the *FPI* comparison group were also matched on crime type for their instant offense (Table C-1). Roughly two-thirds of offenders (63.1%) in each sample were drug trafficking offenders, followed by firearms offenders

(16.9%). Just under eight percent (7.6%) of *FPI Participants* were fraud offenders, compared to 6.6 percent of *FPI Non-Participants*.

Table C-2. Recidivism Rate of FPI Participants Sample and FPI Non-Participants Comparison Group

	Participants (n=2,680)	Non-Participants (n=2,680)
Percent Rearrested	56.6%	54.0%
Median Time to Rearrest	20 months	21 months
Median Number of Rearrests	3	3
Most Common Post-Release Event	Assault (21.0%)	Assault (23.0%)

Results from the FPI matched samples showed that *FPI Participants* had a higher overall recidivism rate than the comparison group (Table C-2). The Commission performed a regression analysis to confirm the observed finding.

Logistic Regression Results

The results of the logistic regression model conducted by the Commission demonstrated no significant relationship between FPI participation and recidivism (Table C-3). In other words, participating in Federal Prison Industries did not impact an offender’s likelihood of recidivism.

The Commission used an additional binary logistic regression to analyze the relationship between the length of FPI participation (months) and recidivism, while controlling for the attributes in Table A-1. The results of the regression model demonstrated that there was no statistically significant relationship between length of time that an offender participated in FPI and recidivism (Table C-3). In other words, the length of time that an offender worked in FPI did not have an impact on the likelihood of recidivism.

Table C-3. Logistic Regression Model of Matched FPI Sample Groups

FPI PARTICIPATION							
Response Variable: Recidivism (rearrest)	B	S.E.	Wald	p-value	Exp(B)	95% CI for EXP(B)	
						Lower	Upper
Constant	1.646	0.260	40.090	0.000	5.184		
Research Group							
<i>FPI Participation</i>	0.118	0.074	2.567	0.109	1.125	0.974	1.300
Demographics							
<i>Age at Release</i>	-0.056	0.006	102.986	0.000	0.945	0.935	0.956
Gender							
<i>Female vs. Male</i>	-0.193	0.125	2.383	0.123	0.824	0.645	1.053
Race							
<i>Black vs. White</i>	0.066	0.093	0.506	0.477	1.068	0.891	1.281
<i>Hispanic vs. White</i>	-0.215	0.115	3.471	0.062	0.807	0.643	1.011
<i>Other Races vs. White</i>	0.046	0.442	0.011	0.917	1.047	0.440	2.492
GED/High School Diploma							
<i>Yes vs. No</i>	-0.309	0.089	11.912	0.001	0.734	0.616	0.875
Criminal History							
<i>CHC II vs. CHC I</i>	0.404	0.147	7.532	0.006	1.498	1.123	2.000
<i>CHC III vs. CHC I</i>	0.992	0.131	57.365	0.000	2.697	2.086	3.486
<i>CHC IV vs. CHC I</i>	1.158	0.153	57.226	0.000	3.183	2.358	4.296
<i>CHC V vs. CHC I</i>	1.646	0.189	76.005	0.000	5.184	3.581	7.505
<i>CHC VI vs. CHC I</i>	1.748	0.150	135.850	0.000	5.744	4.281	7.706
Violence							
<i>Yes vs. No</i>	0.141	0.367	0.149	0.700	1.152	0.561	2.363
Weapons Enhancement							
<i>Yes vs. No</i>	0.258	0.101	6.474	0.011	1.294	1.061	1.578
Safety Valve	-0.028	0.139	0.042	0.837	0.972	0.741	1.275
Substantial Assistance	-0.099	0.105	0.903	0.342	0.905	0.738	1.111
Time in BOP Custody							
<i>Months</i>	-0.003	0.001	4.963	0.026	0.997	0.995	1.000
Model Summary							
-2 Log likelihood	4312.505 ^a		(df = 17)				
Nagelkerke R Square	0.168						
N=3,445							
LENGTH OF FPI PARTICIPATION							
Response Variable: Recidivism (rearrest)	B	S.E.	Wald	p-value	Exp(B)	95% CI for EXP(B)	
						Lower	Upper
Constant	1.673	0.259	41.618	0.000	5.327		
Research Group							
<i>Length of FPI Participation Months</i>	-0.002	0.002	0.695	0.404	0.998	0.994	1.002
Demographics							
<i>Age at Release</i>	-0.056	0.006	102.123	0.000	0.945	0.935	0.956
Gender							
<i>Female vs. Male</i>	-0.185	0.125	2.178	0.140	0.831	0.650	1.063
Race							
<i>Black vs. White</i>	0.065	0.093	0.499	0.480	1.068	0.890	1.280
<i>Hispanic vs. White</i>	-0.211	0.115	3.352	0.067	0.810	0.646	1.015
<i>Other Races vs. White</i>	0.041	0.443	0.009	0.925	1.042	0.438	2.481
GED/High School Diploma							
<i>Yes vs. No</i>	-0.284	0.089	10.105	0.001	0.753	0.632	0.897
Criminal History							
<i>CHC II vs. CHC I</i>	0.402	0.147	7.435	0.006	1.494	1.120	1.994
<i>CHC III vs. CHC I</i>	0.988	0.131	56.937	0.000	2.686	2.078	3.471
<i>CHC IV vs. CHC I</i>	1.154	0.153	56.879	0.000	3.170	2.349	4.278
<i>CHC V vs. CHC I</i>	1.644	0.189	75.913	0.000	5.177	3.576	7.494
<i>CHC VI vs. CHC I</i>	1.744	0.150	135.268	0.000	5.719	4.263	7.672
Violence							
<i>Yes vs. No</i>	0.114	0.367	0.096	0.757	1.120	0.546	2.300
Weapons Enhancement							
<i>Yes vs. No</i>	0.256	0.101	6.414	0.011	1.292	1.060	1.576
Safety Valve	-0.032	0.139	0.053	0.818	0.969	0.738	1.271
Substantial Assistance	-0.103	0.104	0.978	0.323	0.902	0.735	1.107
Time in BOP Custody							
<i>Months</i>	-0.002	0.001	3.360	0.067	0.998	0.995	1.000
Model Summary							
-2 Log likelihood	4314.378 ^a		(df = 17)				
Nagelkerke R Square	0.167						
N=3,445							

APPENDIX D: DATAFILE CREATION METHODOLOGY

The Commission entered into a data sharing agreement with the FBI's Criminal Justice Information Services (CJIS) Division and the Administrative Office of the United States Courts (AO) to provide the Commission with secure electronic access to criminal history records through CJIS's Interstate Identification Index (III) and International Justice and Public Safety Network (NLETS). Results received using this system provide an individual's Criminal History Record Information (CHRI) maintained by all U.S. states, the District of Columbia, U.S. territories, and federal agencies. Once the raw CHRI was obtained, the Commission organized and standardized the arrest and court disposition information into an analytical dataset. The resulting data contained CHRI for 32,135 offenders with valid identifying information who were released in 2010.

Identifying the Study Cohort

The study cohort included all federal offenders who were U.S. citizens and released from federal prison after serving a sentence of imprisonment or placed on probation in 2010. For offenders released from prison, the BOP provided release dates and identifying information for all offenders released in 2010. The Commission identified offenders placed on probation in 2010 and, with the assistance of the AO, identified and removed

offenders who died while on supervised release during the recidivism follow-up period.

Processing the Criminal History Record Information

The Commission entered into a data sharing agreement with the FBI's CJIS Division and the AO to acquire electronic records of offender CHRI. The AO extracted offender CHRI through its Access to Law Enforcement System (ATLAS), which provides an interface to III and NLETS. The III allows authorized agencies to determine whether any federal or state repository has CHRI on an individual. Agencies can then securely access specific state CHRI through NLETS. As a result, ATLAS collects CHRI from all state and federal agencies.

The ATLAS system returns the literal text in the RAP sheets in the format in which the original records appear: dates of criminal justice system actions (e.g., arrests); offense categories which indicate the charges in the terminology used by that agency (e.g., text strings or numeric categories); subsequent action tied to arrest charges (e.g., charges filed by prosecutors, court findings of guilt, etc.); and sentencing and corrections information. All of these records are subject to availability from the originating source.

The ATLAS system also “parses” records from RAP sheets received from all 50 states, the District of Columbia, and federal agencies. Parsing records involves organizing key data elements into logical components, for example: arrest, court, and correctional events. Key data elements include offender identifiers, dates of key actions (e.g., arrests and convictions), the criminal charges, and outcomes such as convictions and sentencing information when provided by the courts. The parsing process collates the multi-state records into a uniform structure, regardless of the state, for all individuals with a valid FBI number who were found in one or more repositories across the country.

Standardizing the Criminal Records

After acquiring offender CHRI, the Commission contracted with Integrity One Partners (IOP) to consolidate records for each offender and remove duplicative or extraneous material.¹⁰⁹ Following this preliminary process, IOP utilized a crosswalk created for the Commission’s prior recidivism research¹¹⁰ to standardize offense codes across states and federal agencies. The crosswalk was updated to standardize new offense codes not mapped in the original crosswalk. The crosswalk standardizes arrest and court codes, regardless of originating sources, into a common framework for analysis. This step was needed because criminal records repositories are primarily designed

to store records in ways that accurately reflect the requirements of each state or federal repository, such as the criminal code for that jurisdiction. As a result, any two repositories are likely to use many unique text strings to indicate the nature of the criminal charges and actions taken in response to those charges. Thus, standardizing the offense information was necessary for cross-jurisdictional analysis.

Within each arrest cycle, arrest charges were categorized using standardized codes. A charge severity index was created which incorporates both criminal law classification (e.g., felony or misdemeanor) and offense severity. Offenses were first classified into one of 98 standardized subcategories. These categories were then further grouped for analytical purposes into one of 20 major crime categories in ranking order by severity.¹¹¹ For each offender, the most severe major crime category was identified in their arrest information. The rearrest categories and their underlying subcategories are provided in Table D-1.

Table D-1. Rearrest Offense Categories and Charges

MURDER	<i>Murder of public officer</i>
	<i>Murder</i>
	<i>Attempted murder</i>
	<i>Unspecified manslaughter/homicide</i>
	<i>Nonnegligent manslaughter/homicide</i>
SEXUAL ASSAULT	<i>Rape</i>
	<i>Forcible sodomy</i>
	<i>Fondling</i>
	<i>Statutory rape</i>
	<i>Luring minor by computer</i>
	<i>Other sexual assault</i>
	<i>Sexual assault unspecified</i>
ROBBERY	<i>Armed robbery</i>
	<i>Robbery unspecified</i>
	<i>Unarmed robbery</i>
ASSAULT	<i>Aggravated/felony assault</i>
	<i>Simple/misdemeanor assault</i>
	<i>Assault unspecified</i>
	<i>Assault of public officer</i>
	<i>Intimidation</i>
	<i>Hit and run driving with bodily injury</i>
	<i>Intimidating a witness</i>
OTHER VIOLENT	<i>Kidnapping</i>
	<i>Blackmail/Extortion</i>
	<i>Rioting</i>
	<i>Child abuse</i>
	<i>Other violent offense</i>
	<i>Arson</i>
DRUG TRAFFICKING	<i>Trafficking cocaine/crack</i>
	<i>Trafficking heroin</i>
	<i>Trafficking marijuana</i>
	<i>Trafficking methamphetamine</i>
	<i>Trafficking other/unspecified controlled substance</i>
BURGLARY	<i>Burglary</i>

LARCENY	<ul style="list-style-type: none"> Motor vehicle theft Grand/felony larceny Petty/misdemeanor larceny Larceny unspecified Receiving stolen property Trafficking stolen property Unauthorized use of vehicle
FRAUD	<ul style="list-style-type: none"> Fraud/forgery Identity theft Embezzlement Bribery
OTHER PROPERTY	<ul style="list-style-type: none"> Destruction of property Hit and run with property damage Trespassing Possession of burglary tools Other property offense
DRUG POSSESSION	<ul style="list-style-type: none"> Possession of cocaine/crack Possession of heroin Possession of marijuana Possession of methamphetamine Possession of other/unspecified controlled substance
OTHER DRUG	<ul style="list-style-type: none"> Unspecified cocaine/crack offense Unspecified heroin offense Unspecified marijuana offense Unspecified methamphetamine offense Unspecified other/unspecified drug offense
WEAPON	<ul style="list-style-type: none"> Weapon offense
OTHER SEX OFFENSE	<ul style="list-style-type: none"> Morals offense Indecent exposure Commercialized vice Contributing to the delinquency of a minor
DUI/DWI	<ul style="list-style-type: none"> Driving while intoxicated/under the influence, Substance unspecified Driving while intoxicated/under the influence, alcohol Driving while intoxicated/under the influence, drugs
IMMIGRATION	<ul style="list-style-type: none"> Immigration offense

	<i>Escape from custody</i>
	<i>Flight to avoid prosecution</i>
	<i>Warrant</i>
	<i>Contempt of court</i>
ADMINISTRATION OF JUSTICE OFFENSES	<i>Failure to appear</i>
	<i>Violation of restraining order</i>
	<i>Other court offense</i>
	<i>Prison contraband offense</i>
	<i>Sex offender registry offense</i>
	<i>Obstruction of justice</i>
PROBATION/PAROLE/ SUPERVISED RELEASE VIOLATION	<i>Parole violation</i>
	<i>Unspecified probation/parole violation</i>
	<i>Probation violation</i>
	<i>Family-related offense</i>
	<i>Drunkenness/vagrancy/disorderly conduct</i>
PUBLIC ORDER OFFENSES	<i>Invasion of privacy</i>
	<i>Liquor law violation</i>
	<i>Other public order offense</i>
	<i>Curfew violation</i>
OTHER/UNSPECIFIED OFFENSES	<i>Vehicular manslaughter/homicide</i>
	<i>Negligent (involuntary) manslaughter/homicide</i>
	<i>Habitual offender</i>
	<i>Runaway</i>
	<i>Truancy</i>
	<i>Ungovernability</i>
	<i>Status liquor law violation</i>
	<i>Miscellaneous status offense</i>
	<i>Other offense</i>
	<i>Unspecified inchoate offense</i>
	<i>Military offense</i>
	<i>Not applicable</i>
	<i>Unspecified offense</i>

ENDNOTES

ENDNOTES

- 1 This report follows *Recidivism of Federal Offenders Released in 2010*, which was released in September of 2021. See RYAN COTTER, COURTNEY SEMISCH & DAVID RUTTER, U.S. SENT'G COMM'N, *RECIDIVISM OF FEDERAL OFFENDERS RELEASED IN 2010 (2021)* [hereinafter *2021 RECIDIVISM OVERVIEW REPORT*]. Commission materials cited herein are available on the Commission's website at www.ussc.gov.
- 2 As discussed below, the FBI criminal history records were collected pursuant to a data sharing agreement with the FBI's Criminal Justice Information Services Division. See *infra* Appendix D.
- 3 28 U.S.C. § 995(a)(12)–(16). The United States Sentencing Commission is an independent agency in the judicial branch of government. Established by the Sentencing Reform Act of 1984, its principal purposes are (1) to establish sentencing policies and practices for the federal courts, including guidelines regarding the appropriate form and severity of punishment for offenders convicted of federal crimes, (2) to advise and assist Congress, the federal judiciary, and the executive branch in the development of effective and efficient crime policy, and (3) to collect, analyze, research, and distribute a broad array of information on federal crime and sentencing issues. See 28 U.S.C. §§ 994, 995.
- 4 See, e.g., KIM STEVEN HUNT & ROBERT DUMVILLE, U.S. SENT'G COMM'N, *RECIDIVISM AMONG FEDERAL OFFENDERS: A COMPREHENSIVE OVERVIEW (2016)* [hereinafter *2016 RECIDIVISM OVERVIEW REPORT*]; KIM STEVEN HUNT & BILLY EASLEY II, U.S. SENT'G COMM'N, *THE EFFECTS OF AGING ON RECIDIVISM AMONG FEDERAL OFFENDERS (2017)*; LOUIS REEDT, KIM STEVEN HUNT, JAMES L. PARKER, MELISSA K. REIMER & KEVIN T. MAASS, U.S. SENT'G COMM'N, *RECIDIVISM AMONG FEDERAL DRUG TRAFFICKING OFFENDERS (2017)*.
- 5 See *2021 RECIDIVISM OVERVIEW REPORT*, *supra* note 1; TRACEY KYCKELHAHN, KRISTEN SHARPE & AMANDA KERBEL, U.S. SENT'G COMM'N, *RECIDIVISM OF FEDERAL FIREARMS OFFENDERS RELEASED IN 2010 (2021)* [hereinafter *2021 RECIDIVISM FIREARMS REPORT*]; VERA M. KACHNOWSKI, MELISSA K. REIMER, KEVIN T. MAASS, CHRISTINE KITCHENS & KEVIN BLACKWELL, U.S. SENT'G COMM'N, *RECIDIVISM OF FEDERAL DRUG TRAFFICKING OFFENDERS RELEASED IN 2010 (2022)*; COURTNEY R. SEMISCH, CASSANDRA SYCKES & LANDYN ROOKARD, U.S. SENT'G COMM'N, *RECIDIVISM OF FEDERAL VIOLENT OFFENDERS RELEASED IN 2010 (2022)* [hereinafter *2022 VIOLENT RECIDIVISM REPORT*]; KRISTIN M. TENNYSON, ROSS THOMAS, TESSA GUITON & ALYSSA PURDY, U.S. SENT'G COMM'N, *RECIDIVISM AND FEDERAL BUREAU OF PRISON PROGRAMS: DRUG PROGRAM PARTICIPANTS RELEASED IN 2010 (2022)*.
- 6 See, e.g., 18 U.S.C. §§ 3621(h)(6) (requiring “evidence-based recidivism reduction programs or productive activities”); 4042(a)(7)(B), (C) (requiring “reentry planning procedures that include providing Federal prisoners with information” on employment and education). Congress added the first requirement as part of the First Step Act of 2018, see Pub. L. No. 115-391, § 102, 132 Stat. 5194, 5209–10 (2018), and the second statutory requirement as part of the Second Chance Act of 2007, see Pub. L. No. 110–199, § 231(d)(1), 122 Stat. 657, 685 (2008). However, as discussed in this report, both OEP and FPI predate the First Step and Second Chance Acts. See *infra* note 27 and accompanying text.
- 7 See DAVID B. MUHLHAUSEN & HUGH J. HURWITZ, NAT'L INST. OF JUST., *FIRST STEP ACT: BEST PRACTICES FOR ACADEMIC AND VOCATIONAL EDUCATION FOR OFFENDERS 2 (2019)*.
- 8 William G. Saylor & Gerald G. Gaes, *Training Inmates Through Industrial Work Participation and Vocational and Apprenticeship Instruction*, 1 CORR. MGMT. Q. 32, 42 (1997) [hereinafter *Training Inmates Through Industrial Work*].
- 9 Fed. Bureau of Prisons, *Education Programs*, https://www.bop.gov/inmates/custody_and_care/education.jsp (last visited Apr. 13, 2022).

Recidivism and Federal Bureau of Prisons Programs: Vocational Program Participants Released in 2010

10 *Id.*; see also 28 C.F.R. § 544.50. Unless otherwise stated, any citation to the Code of Federal Regulations refers to the version in effect in 2010.

11 28 C.F.R. § 345.11(a); see also Fed. Bureau of Prisons, *UNICOR Program Details*, https://www.bop.gov/inmates/custody_and_care/unicor_about.jsp (last visited Apr. 13, 2022).

12 For purposes of this report, the term “sentence” refers to the original sentence imposed.

13 Each fiscal year begins October 1st of the preceding calendar year. For example, fiscal year 2011 began on October 1, 2010, and ended on September 30, 2011.

14 The Commission collects and analyzes data on federal sentences to carry out its various statutory responsibilities. As authorized by Congress, the Commission’s numerous research responsibilities include: (1) the establishment of a research and development program to serve as a clearinghouse and information center for the collection, preparation, and dissemination of information on federal sentencing practices; (2) the publication of data concerning the sentencing process; (3) the systematic collection and dissemination of information concerning sentences actually imposed and the relationship of such sentences to the sentencing factors in 18 U.S.C. § 3553(a); and (4) the systematic collection and dissemination of information regarding the effectiveness of sentences imposed. See 28 U.S.C. § 995(a)(12), (14)–(16). The Commission collects information for every federal felony and Class A misdemeanor offense sentenced each year. Sentencing courts are statutorily required to submit five sentencing documents to the Commission within 30 days of entry of judgment in a criminal case, including: (1) the charging document; (2) the plea agreement; (3) the Presentence Report; (4) the Judgment and Commitment Order; and (5) the Statement of Reasons form. See 28 U.S.C. § 994(w)(1). For each case in its Individual Offender Datafile, the Commission routinely collects case identifiers, sentencing data, demographic variables, statutory information, the complete range of court guideline application decisions, and departure and variance information from these documents.

15 The data used to conduct the analyses in this report includes information obtained pursuant to an interagency agreement with the FBI, which prohibits the Commission from releasing the dataset.

16 This includes any offenders released from the BOP on detainer, which ordinarily indicates transfer of custody to state court or to a state correctional facility following completion of their federal sentence.

17 Offenders were excluded from various analyses in this report due to missing information for the variables required for those analyses.

18 Nat’l Inst. of Just., U.S. Dep’t of Just., *Recidivism*, <https://nij.ojp.gov/topics/corrections/recidivism> (last visited Apr. 13, 2022); see also MICHAEL D. MALTZ, *RECIDIVISM* 1, 54 (2001) [hereinafter MALTZ].

19 See MALTZ, *supra* note 18, at 7–20; see also RYAN KING & BRIAN ELDERBROOM, *URB. INST., IMPROVING RECIDIVISM AS A PERFORMANCE MEASURE* (2014).

20 See, e.g., CHRISTOPHER T. LOWENKAMP, MARIE VANNOSTRAND & ALEXANDER HOLSINGER, *INVESTIGATING THE IMPACT OF PRETRIAL DETENTION ON SENTENCING OUTCOMES* (2013).

21 See MALTZ, *supra* note 18, at 61–64; see also Nat’l Inst. of Just., U.S. Dep’t of Just., *Measuring Recidivism* (Feb. 20, 2008), <https://nij.ojp.gov/topics/articles/measuring-recidivism>.

22 See, e.g., MARIEL ALPER, MATTHEW R. DUROSE & JOSHUA MARKMAN, *BUREAU OF JUST. STAT., U.S. DEP’T OF JUST., UPDATE ON PRISONER RECIDIVISM: A 9-YEAR FOLLOW-UP PERIOD (2005–2014)* (2018) [hereinafter ALPER]; Admin. Off. of the U.S. Cts., *Just the Facts: Post-Conviction Supervision and Recidivism* (Oct. 22, 2018), <https://www.uscourts.gov/news/2018/10/22/just-facts-post-conviction-supervision-and-recidivism>; WILLIAM RHODES, CHRISTINA DYOUS, RYAN KLING, DANA HUNT & JEREMY LUALLAN, *ABT ASSOCS., RECIDIVISM OF OFFENDERS ON FEDERAL COMMUNITY SUPERVISION* (2012).

23 See MALTZ, *supra* note 18, at 55–60.

United States Sentencing Commission

24 *See id.* at 56–58.

25 *See* ALPER, *supra* note 22, at 14.

26 BOP Program Statement 5353.01, Occupational Education Programs § 6 (Dec. 17, 2003) [hereinafter Occupational Education Programs Statement]. This program statement is available online, and the BOP confirmed that it applied to offenders participating in technical and vocational training from 2003 until 2010. E-mail from Diane Strote, Acting Dir., Off. of Rsch. & Evaluation, Fed. Bureau of Prisons, to Kristin Tennyson, Deputy Dir., Off. of Rsch. & Data, U.S. Sent’g Comm’n (Nov. 22, 2021, 14:57 EST) (on file with the Commission).

27 28 C.F.R. §§ 544.50-52 (2022) (providing background and listing statutory authority for the establishment of OEP).

28 28 C.F.R. § 544.50.

29 *See* FED. BUREAU OF PRISONS, U.S. DEP’T OF JUST., INMATE OCCUPATIONAL TRAINING DIRECTORY (2017) (providing a full list of available OEP courses by institution).

30 Occupational Education Programs Statement, *supra* note 26, § 8.

31 *Id.* § 11.

32 28 C.F.R. § 544.51(a).

33 *Id.*; *see also* Occupational Education Programs Statement, *supra* note 26, § 7 (requiring an offender to “request initial enrollment through the Supervisor of Education [and that] Education Staff will determine an inmate’s academic eligibility for enrollment”).

34 Occupational Education Programs Statement, *supra* note 26, § 9 (stating offenders “with documented special learning” may be exempted).

35 28 C.F.R. § 544.51(b)(1).

36 Exceptions include detention centers, the federal transportation center, and administrative maximum facilities. *See* Occupational Education Programs Statement, *supra* note 26, § 6.

37 *See* FED. BUREAU OF PRISONS, DIRECTORY OF NATIONAL PROGRAMS (2017) (providing a directory of programs offered at various BOP facilities).

38 *See* Occupational Education Programs Statement, *supra* note 26.

39 *Id.* § 8.

40 *Training Inmates Through Industrial Work*, *supra* note 8, at 42.

41 *Id.* at 39.

42 *Id.* at 40.

43 William G. Saylor & Gerald G. Gaes, *The Differential Effect of Industries and Vocational Training on Postrelease Outcomes for Ethnic and Racial Groups: Research Note*, 5 CORR. MGMT. Q. 17, 23 (2001) [hereinafter *Differential Effect of Industries*].

44 BOP policy does not substantively differentiate between vocational and educational training;

therefore, the Commission is treating both types of programs as one for the purposes of studying their impact on recidivism.

45 See *supra* notes 32–35 and accompanying text.

46 2021 RECIDIVISM OVERVIEW REPORT, *supra* note 1, at 31.

47 2021 RECIDIVISM OVERVIEW REPORT, *supra* note 1, at 25–29.

48 See, e.g., *supra* note 5 (listing examples of Commission research reports on crime types that impact recidivism).

49 2021 RECIDIVISM FIREARMS REPORT, *supra* note 5, at 23.

50 RYAN COTTER, U.S. SENT'G COMM'N, LENGTH OF INCARCERATION AND RECIDIVISM 30 (2020) [hereinafter RECIDIVISM INCARCERATION REPORT].

51 For example, if a court terminated an offender's supervision before the expiration of the term initially imposed, that offender would still be considered under supervision for this analysis. Alternatively, if a court extended an offender's supervision beyond the term originally imposed, that offender would be considered to have completed the supervision term for purposes of this analysis.

52 See Appendix A for a full discussion of the methodology employed in this study.

53 The Commission ran a logistic regression model on the matched sample to assess the relationship between completion of at least *one* OEP course and recidivism; there was no statistically significant relationship found in the model. For a description of the matched sample and full regression results, see Appendix B.

54 See Appendix A for a full discussion on doubly robust methodology.

55 Act of June 23, 1934, ch. 736, 48 Stat. 1211.

56 Exec. Order No. 6917 (1934).

57 28 C.F.R. § 345.11(a) (2022); see also 18 U.S.C. § 4121 (current enabling statute).

58 UNICOR Program Details, *supra* note 11.

59 28 C.F.R. § 345.10.

60 28 C.F.R. § 345.11(a).

61 UNICOR Program Details, *supra* note 11.

62 *Id.*

63 *Id.*; see also 18 U.S.C. § 4130 (describing additional markets for FPI products).

64 UNICOR Program Details, *supra* note 11.

65 28 C.F.R. § 345.35(a) ("An inmate or detainee may be considered for assignment with FPI unless the inmate is a pretrial inmate or is currently under an order of deportation, exclusion, or removal.").

66 *Id.*; see also BOP Program Statement 8120.02, Work Programs for Inmates – FPI § 3(4)(a) (July 15, 1999) [hereinafter Work Programs for Inmates Statement]. The BOP provided the Commission with a copy of this Program Statement, which is not available on the BOP's website, and confirmed that the Program

United States Sentencing Commission

Statement applied to offenders participating in FPI from 1999 until 2010. E-mail from Diane Strote, Acting Dir., Off. of Rsch. & Evaluation, Fed. Bureau of Prisons, to Kristin Tennyson, Deputy Dir., Off. of Rsch. & Data, U.S. Sent'g Comm'n (Nov. 22, 2021, 14:57 EST) (on file with the Commission).

67 Work Programs for Inmates Statement, *supra* note 66, § 5(3)(b)(5).

68 UNICOR Program Details, *supra* note 11.

69 *Id.*

70 *Id.*

71 Work Programs for Inmates Statement, *supra* note 66, § 3(1)(b).

72 18 U.S.C. § 4126(c)(4) ("The corporation . . . is authorized to employ the fund, and any earnings that may accrue to the corporation . . . in paying . . . compensation to inmates . . .").

73 28 C.F.R. § 345.50 ("It is the policy of FPI to provide compensation to FPI inmate workers through various conditions of pay and benefits . . .").

74 Compare Work Programs for Inmates Statement, *supra* note 66, § 5(3)(a) (listing the hourly compensation rates by grade), with BOP Program Statement 8120.03, Work Programs for Inmates, FPI § 5(3)(a) (Feb. 23, 2017) (listing the same hourly compensation rates by grade as in 1999).

75 28 C.F.R. §§ 345.52 (Premium pay), 345.54 (Overtime compensation); *see also* Work Programs for Inmates Statement, *supra* note 66, §§ 5(4) (Premium pay), 5(7) (Overtime compensation).

76 Work Programs for Inmates Statement, *supra* note 66, §§ 6, 7.

77 28 C.F.R. § 345.42.

78 *Training Inmates Through Industrial Work*, *supra* note 8, at 42.

79 *Id.* at 39–40.

80 *Differential Effect of Industries*, *supra* note 43, at 23.

81 28 C.F.R. § 345.35(a) ("An inmate or detainee may be considered for assignment with FPI unless the inmate is a pretrial inmate or is currently under an order of deportation, exclusion, or removal."). The study, however, excluded these individuals because it included only U.S. citizens convicted of a federal crime.

82 UNICOR Program Details, *supra* note 11.

83 2021 RECIDIVISM OVERVIEW REPORT, *supra* note 1, at 31.

84 *Id.* at 25–29.

85 2021 RECIDIVISM FIREARMS REPORT, *supra* note 5, at 23.

86 RECIDIVISM INCARCERATION REPORT, *supra* note 50, at 30.

87 This measurement is based on the supervision term imposed at the time of original sentencing and does not account for any changes in supervision status following release. Such information was not available in the data used for this study. Therefore, if a court terminated an offender's supervision before the expiration of the term initially imposed, that offender would still be considered under supervision for this analysis. Alternatively,

if a court extended an offender's supervision beyond the term originally imposed, that offender would be considered to have completed the supervision term for purposes of this analysis.

88 See Appendix A for a full discussion of the study methodology.

89 See Appendix C for the matched sample characteristics and full logistic regression model results.

90 See Appendix A for a full discussion on doubly robust methodology.

91 *Training Inmates Through Industrial Work*, *supra* note 8, at 42.

92 This two-stage process of creating comparison groups and then utilizing regression modeling results in a “doubly robust” estimation. Doubly robust estimation is particularly powerful in that only one of the two models needs to be correctly specified to obtain unbiased estimates. See Michele Jonsson Funk, Daniel Westreich, Chris Wiesen, Til Sturmer, M. Alan Brookhart & Marie Davidian, *Doubly Robust Estimation of Causal Effects*, 173 AM. J. EPIDEMIOLOGY 761, 761–67 (2011).

93 See Daniel E. Ho, Kosuke Imai, Gary King & Elizabeth A. Stuart, *Matching as Nonparametric Preprocessing for Reducing Model Dependence in Parametric Causal Inference*, 15 POL. ANALYSIS 199, 200–03 (2007); see also Donald B. Rubin, *The Use of Matched Sampling and Regression Adjustment to Remove Bias in Observational Studies*, 29 BIOMETRICS 185, 185–03 (1973); Donald B. Rubin & Neal Thomas, *Combining Propensity Score Matching with Additional Adjustments for Prognostic Covariates*, 95 J. AM. STAT. ASSOC. 573, 573–85 (2000).

94 Elizabeth A. Stuart, *Matching Methods for Causal Inference: A Review and a Look Forward*, 25 STAT. SCI. 1, 13 (2010).

95 The level of precision in matches can be specified by the researcher through a distance caliper. The distance caliper acts as a threshold, or match tolerance, defining the degree of matching precision. In this study, the Statistical Package for Social Sciences (SPSS) was used to conduct propensity score matching with a match tolerance of 0.1. This means that on variables used for close matching, the treatment group offender is matched to a comparison group offender who is within 0.1 standard deviation from the offender on that variable.

96 See *supra* note 5 (listing examples of Commission's prior research reports on recidivism); see also RECIDIVISM INCARCERATION REPORT, *supra* note 50.

97 The Commission also controlled for these attributes in a subsequent regression model.

98 High school completion or GED status at release was used as a control variable in the model but was not part of the matching methodology.

99 Tri-Long Nguyen, Gary S. Collins, Jessica Spence, Jean-Pierre Daurès, P. J. Devereaux, Paul Landais & Yannick Le Manach. *Double-Adjustment in Propensity Score Matching Analysis: Choosing a Threshold for Considering Residual Imbalance*, 17 BMC MED. RSCH. METHODOLOGY (2017).

100 The Commission matched exactly on drug trafficking crimes and firearms offenses and did close matching on all other crime types.

101 See U.S. SENT'G COMM'N, *Guidelines Manual*, §§5C1.2, 5K1.1 (Nov. 2021) (guidelines defining both safety valve and substantial assistance).

102 The Commission was able to retain 61.0% of OEP Completers in this matched sample.

103 Daniel L. Rubinfeld, *Reference Guide on Multiple Regression*, in REFERENCE MANUAL ON SCIENTIFIC EVIDENCE 303 (3rd ed. 2011) (providing an overview of regression modeling).

United States Sentencing Commission

104 Offenders under an order of deportation, exclusion, or removal, and pretrial detainees were not eligible to participate in Federal Prison Industries. *See supra* note 81.

105 E-mail from Diane Strote, Acting Dir., Off. of Rsch. & Evaluation, Fed. Bureau of Prisons, to Kristin Tennyson, Deputy Dir., Off. of Rsch. & Data, U.S. Sent'g Comm'n (Feb. 1, 2022, 16:06 EST) (on file with the Commission).

106 The Commission matched exactly on drug trafficking crimes and firearms offenses and did close matching on all other crime types.

107 *See supra* note 101.

108 The Commission was able to retain 52.7% of *FPI Participants* in this matched sample.

109 Instances of arrest or sentencing that appeared to be duplicates of existing events were removed by IOP. Minor offenses (*e.g.*, speeding) and arrest entries occurring outside of the eight-year follow-up period were removed and, therefore, not used to ascertain recidivism.

110 *See* 2016 RECIDIVISM OVERVIEW REPORT, *supra* note 4, Appendix B.

111 The major crime categories, as ranked by the Commission, beginning with the most serious were: murder, violent sexual assault/rape, robbery, assault, other violent offense, drug trafficking, burglary, larceny, fraud, other property offense, drug possession, other drug offense, weapons offense, other sex offense, driving under the influence, immigration, administration of justice offense, probation/parole/supervision release violation, other public order offense, and other unspecified offense. *See infra* Table D-1.



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