LENGTH OF INCARCERATION AND RECIDIVISM

UNITED STATES SENTENCING COMMISSION

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INTRODUCTION

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The United States Sentencing Commission ("the Commission") began studying recidivism shortly after the enactment of the Sentencing Reform Act (SRA) of 1984.[1] Understanding federal offender recidivism was central to the Commission's initial work. The Commission's various studies on recidivism advance its mission of conducting research on sentencing issues related to the purposes of sentencing set forth in the SRA.[2] Exemplifying this, the criminal history provisions in the *Guidelines Manual* were developed, in part, based on information regarding federal offenders' risk of recidivism.[3] Information about recidivism is also relevant to the Commission's obligation to formulate sentencing policy that "reflect[s], to the extent practicable, advancement[s] in knowledge of human behavior as it relates to the criminal justice process."[4]

In 2021, the Commission began its second multi-publication recidivism series.[5] The first publication, *Recidivism of Federal Offenders Released in 2010*, provides a broad overview of recidivism amongst 32,135 federal offenders either released from federal prison or sentenced to a term of probation in 2010.[6] The Commission also released three reports that examined recidivism among specific groups of federal offenders: *Recidivism of Federal Firearms Offenders Released in 2010*, *Recidivism of Federal Drug Trafficking Offenders Released in 2010*, and *Recidivism of Federal Violent Offenders Released in 2010*.[7] The fifth and sixth publications in the series examine the recidivism of federal offenders receiving Federal Bureau of Prisons programming while incarcerated, *Recidivism and Federal Bureau of Prisons Programs: Drug Program Participants Released in 2010*, and *Recidivism and Federal Bureau of Prisons Programs: Vocational Program Participants Released in 2010*.[8]

This study, the seventh in the recidivism series, examines the relationship between length of incarceration and recidivism. In 2020, the Commission published its initial comprehensive study on length of incarceration and recidivism. In that study, which examined offenders released in 2005, the Commission found that federal offenders receiving sentences of more than 60 months were less likely to recidivate compared to a similar group of offenders receiving shorter sentences.[9] This study replicates the prior analysis, however, it examines a more current cohort of federal offenders released in 2010.

This study empirically explores three potential relationships that may exist between length of incarceration and recidivism:

Relationship	Description
Incarceration is preventative.	As the length of incarceration increases the likelihood of recidivism decreases.
Incarceration is criminogenic.	As the length of incarceration increases the likelihood of recidivism increases.
No relationship between incarceration and recidivism.	No statistically significant relationship between length of incarceration and recidivism is identified.[10]

Empirical research on the relationship between length of incarceration and recidivism is limited and presents mixed results.[11] Of the studies that have been published, many are dated (*e.g.*, conducted prior to 2000), use less rigorous research designs, or present results on the relationship between incarceration and recidivism as a sub-analysis within a broader study.[12] Further, a number of the prior studies have methodological deficiencies relating to not appropriately controlling for offender age and, therefore, are not considered valid.[13]

Most studies examining the association between length of incarceration and recidivism examine state offenders.[14] Of the thirteen relevant studies identified (Appendix A), only two focused on the federal offender population.[15] The first study, Rhodes et al. (2018) found that longer prison terms modestly reduce recidivism.[16] Specifically, the likelihood of recidivism was reduced by approximately one percent for every 7.5-month increase in sentence length.[17] In the second study, the Commission found that federal offenders receiving sentences of more than 60 months incarceration had lower odds of recidivism when compared to similar offenders receiving shorter sentences.[18] Specifically, the odds of recidivism were approximately 30 percent lower for offenders incarcerated for more than 120 months and approximately 17 percent lower for offenders incarcerated for more than 60 months up to 120 months.[19] The Commission did not find any statistically significant relationship between length of incarceration and recidivism for offenders incarcerated for less than 60 months.[20]

The purpose of this report is to expand on the limited research examining length of incarceration and recidivism in the federal offender population and, thereby, inform policymakers.[21]

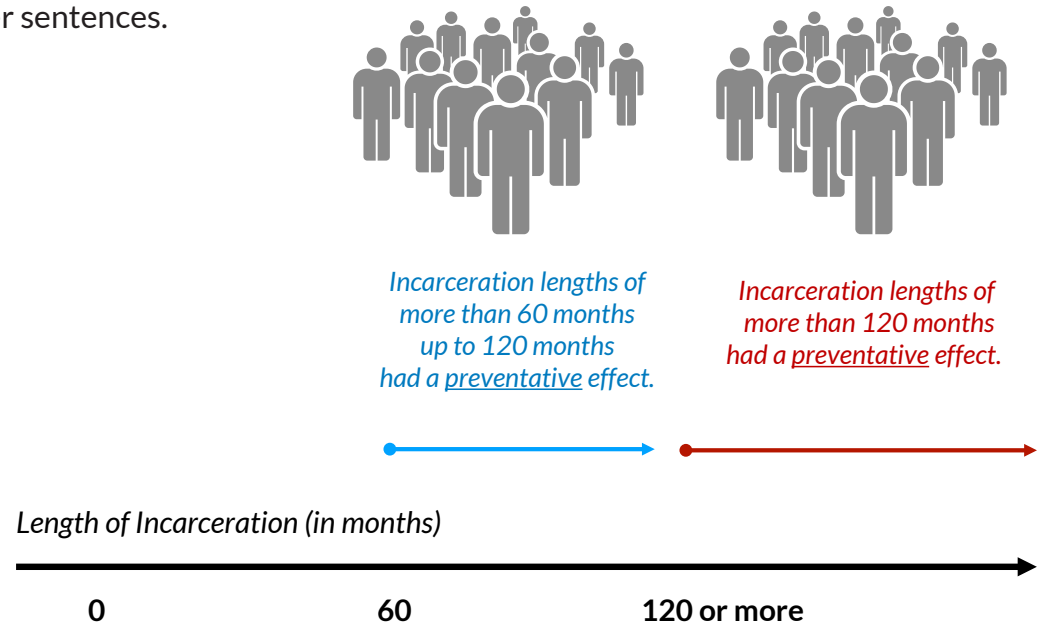
KEY FINDINGS

1 The results of this study, examining federal offenders released in 2010, are almost identical to the findings established in prior Commission research examining federal offenders released in 2005. In both studies, the odds of recidivism were lower for federal offenders sentenced to more than 60 months incarceration compared to a matched group of offenders receiving shorter sentences.

2 The odds of recidivism were approximately 29 percent lower for federal offenders sentenced to more than 120 months incarceration compared to a matched group of federal offenders receiving shorter sentences.

3 The odds of recidivism were approximately 18 percent lower for offenders sentenced to more than 60 months up to 120 months incarceration compared to a matched group of federal offenders receiving shorter sentences.

4 For federal offenders sentenced to 60 months or less incarceration, the Commission did not find any statistically significant differences in recidivism.



SCOPE OF ANALYSIS

This report uses data from the Commission, Federal Bureau of Investigation (FBI), Federal Bureau of Prisons (BOP), and the Administrative Office of the United States Courts (AO) to analyze the recidivism of federal offenders released from federal prison or sentenced to probation in 2010. The offenders in the study cohort were identified in cooperation with the BOP and the AO. The BOP provided identifying information, release dates, and other pertinent information for the Commission to identify offenders released from prison. The AO provided identifying information, some revocation information, and other pertinent information for offenders sentenced to probation. The Commission compiled the identifying information for these offenders to obtain criminal records in partnership with the FBI.

The data used in this report combines data regularly collected by the Commission[22] with data compiled as part of a data sharing agreement with the FBI's Criminal Justice Information Services Division.[23] 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.[24] The Commission then combined the criminal history record data with offender and offense related data collected by the Commission.

Study Cohort

This study examines 32,135 federal offenders who satisfied the following criteria:

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

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."[25] Recidivism measures can provide policymakers 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.[26] 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.[27]

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.[28] The Commission used rearrest for this study for several reasons. Rearrest is the most common measure of recidivism used by federal agencies in recent recidivism studies.[29] Federal agencies are using rearrest as the primary measure because it is a more reliable measure than reconviction or reincarceration due to the incomplete nature of disposition data.[30] Criminal records often fail to include information pertaining to reconviction

or reincarceration because jurisdictions inconsistently report them. The records compiled for this study reflect this inconsistency. For example, records for 44.1 percent of rearrest charges had no associated disposition information.

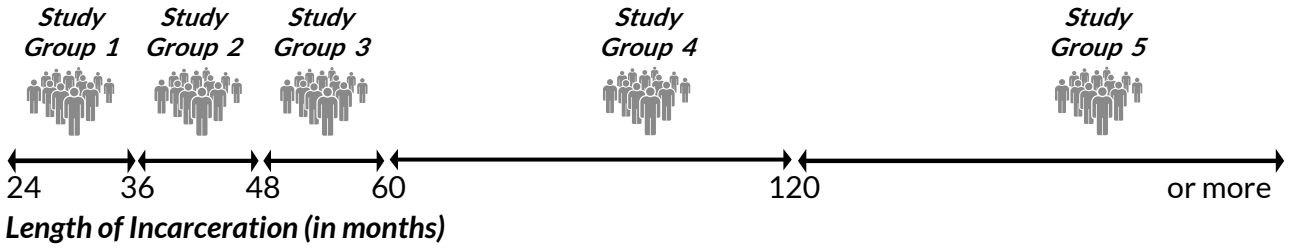
Using rearrest does result in higher recidivism rates than reconviction or reincarceration. Not only are rearrests more consistently reported, but also the evidentiary standard for an arrest (probable cause) is less stringent than the evidentiary standard for a conviction and, therefore, incarceration (beyond a reasonable doubt). Because not all arrests result in conviction or incarceration, rearrests can overstate recidivism.[31]

The second component of measuring recidivism is the *follow-up period*; the period of time over which events are counted following re-entry into the community. After a starting event—in this study, release from prison into the community or placement on probation—recidivism events are documented through the end of the follow-up period. The length of the follow-up period varies across recidivism studies. 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.[32] For this study, the Commission used an eight-year follow-up period.

METHODOLOGY

This study analyzes five ordered study groups receiving different lengths of incarceration (Figure 1). The Commission determined the length of incarceration interval for each study group based on natural timeframes and available sample size. The first three study groups are composed of offenders sentenced within one-year intervals: more than 24 months up to 36 months; more than 36 months up to 48 months; and more than 48 months up to 60 months. The fourth and fifth groups required larger timeframes due to a smaller number of offenders in each group. This study used five-to-ten and greater than ten years as the boundaries to align with five-year clustering often seen in federal mandatory minimum sentences.[33]

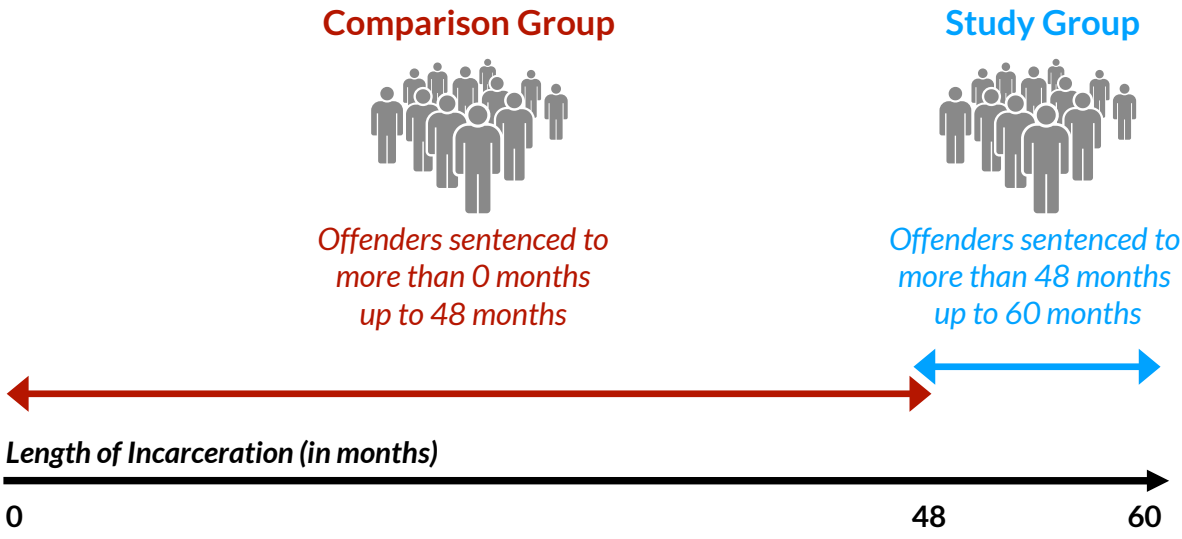
FIGURE 1.



Study Group	Length of Incarceration
1	>24-36 months
2	>36-48 months
3	>48-60 months
4	>60-120 months
5	>120 months

The Commission compared the recidivism rate of offenders in each study group to the recidivism rate of a similar group of offenders receiving shorter lengths of incarceration. For example, this study compared the recidivism rate of offenders incarcerated for more than 48 months up to 60 months to the recidivism rate of a similar group of offenders incarcerated for 48 months or less (Figure 2). This process was replicated for each of the five study groups (Figure 1).

FIGURE 2.



Doubly Robust Estimation

This study utilized a two-stage research process to analyze the relationship between length of incarceration and recidivism. In the first stage, the Commission created a comparison group for each study group through matching and weighting. In the second stage, the Commission used an outcome regression model—in this case multiple logistic regression—to estimate the effect of length of incarceration on recidivism. This two-stage process of creating comparison groups and then utilizing regression modeling results in a *doubly robust estimation*, which is particularly powerful in that only one of the two models needs to be correctly specified to obtain unbiased estimates.[34]

Creating Comparison Groups Using Matching and Weighting

The first stage of the analysis focused on creating a similar comparison group for each study group (Figure 1). When creating a comparison group, researchers must consider two important factors: the necessary degree of similarity between study and comparison groups, and sample size. The study group and comparison group must be sufficiently similar on select attributes to isolate the effect of the variable of interest (*i.e.*, length of incarceration) on the outcome variable (*i.e.*, recidivism). Colloquially, this is often described as comparing *apples-to-apples*. The attributes selected by the researcher, called control variables, are generally important variables that are perceived to influence the outcome. For example, if the study and comparison groups have similar proportions of males, any difference in recidivism rates observed would not be attributed to gender. Here, the researcher would have *controlled* for gender in their model. Ideally, groups being compared would be identical on all attributes except for the variable of interest.

Sample size is also important because statistical tests require sufficiently large sample sizes to detect existing relationships. This is referred to as *power* in statistics. Larger unbiased samples provide better estimates of how similar individuals not involved in the study will perform (*i.e.*, generalize results). Therefore, in addition to similarity between groups, researchers must be cognizant of ensuring sufficient sample size exists to detect a relationship between the variables of interest and the outcome variable.

In this study, the Commission used *propensity score matching* to create

comparison groups. Matching creates a comparison group by identifying individuals who are similar on key attributes determined by the researcher. The researcher specifies the level of precision for matches. As the level of precision increases, it becomes more difficult to identify matches and, therefore, the sample size shrinks. Thus, researchers must balance the level of precision in matching with the subsequent sample size. With weighting, generally, individuals in the comparison group who are similar to individuals in the study group are given more weight than individuals who are dissimilar. As the level of similarity between matches increases, the weights increase.[35] One advantage of weighting, as compared to matching with a high degree of precision (*e.g.*, exact matching), is that it often results in a larger sample size because individuals with some dissimilarity will remain in the study but receive less weight.

The Commission chose to determine the length of incarceration for each study group and then create a matched comparison group for each study group. By determining the study groups' length of incarceration first and then developing comparison groups second, this study preserves the natural characteristics of offenders serving various lengths of incarceration. For example, in general, fraud offenders receive shorter sentences than drug trafficking offenders. This means the composition of offenders serving sentences longer than 120 months will, understandably, be different than the composition of offenders serving sentences of 24 to 36 months of incarceration. While there will be some variation in the characteristics of offenders in each study group (*i.e.*, at various lengths of incarceration), the differences between study groups and comparison groups will be minimal due to matching and weighting.

With either matching or weighting, the first step is to determine which attributes must be controlled for. Researchers have identified five principal attributes that studies on length of incarceration and recidivism should address: age, gender, race, prior criminal history, and instant offense type.[36] These prior research studies have principally examined the recidivism of offenders sentenced in state courts.[37] In prior studies, the Commission has confirmed that these factors are also associated with the recidivism of federal offenders. Specifically, as offenders' age-at-release increases recidivism decreases;[38] male offenders have higher recidivism rates than female offenders;[39] as an offender's criminal history category increases their recidivism rate increases;[40] and the type

of instant offense is associated with recidivism (*e.g.*, drug trafficking offenders have higher recidivism rates than fraud offenders).[41]

Additionally, prior Commission research has identified associations between education level, violence, and weapons offenses, with recidivism. The Commission found that offenders with higher levels of education have lower recidivism rates than offenders with lower levels of education.[42] The Commission has also found that offenders who used violence in conjunction with the instant offense or in prior offenses have higher rates of recidivism than offenders who have never used violence in connection with an offense.[43] Additionally, the Commission has found that offenders who commit weapons offenses have higher recidivism rates than offenders who commit other offenses.[44] Based on the Commission's prior research, and that conducted by other researchers, this report controls for the attributes listed in Table 1.

As noted, the research design utilized a combination of matching and weighting to create comparison groups. This study used exact matching to balance the following principal attributes: age-at-release, gender, race, criminal history category, and primary sentencing guideline. Therefore, the study group and comparison group were identical

TABLE 1.

Control Attributes and Variables

Exact Match	Weighted
Age-at-release	High school completion
Gender	Violent offense
Race	Weapons offense
Criminal history category (CHC)	Received substantial assistance departure
Instant offense type (sentencing guideline)	Received safety valve adjustment

on these attributes. Weighting was used to balance the remaining attributes: high school completion, violent offense, weapons offense, received substantial assistance, and received safety valve adjustment.[45]

After matching and weighting, the study and comparison groups were assessed to confirm the groups were sufficiently similar. To assess the similarity between study and comparison group, the Commission confirmed the Standardized Mean Difference (SMD) between each study and comparison group was less than the conventional 0.1 threshold.[46] The overall SMD between study and comparison groups for each analysis ranged from 0.02 to 0.08. Therefore, with respect to the attributes in Table 1, the study and comparison groups were extremely similar.

Regression Modeling

After establishing the comparison groups, the Commission used multiple logistic regression to estimate the relationship between length of incarceration and recidivism. Logistic regression is a modeling technique used to analyze the relationship between attributes (*e.g.*, length of incarceration, age, gender, etc.) and a binary response variable (*e.g.*, recidivism).[47] In this study, logistic regression was used to analyze the relationship between length of incarceration and recidivism while controlling for the attributes listed in Table 1.

Logistic regression estimates are often reported as an *odds ratio*. In this study, the odds ratio represents the odds of recidivism for the study group as compared to the odds of recidivism for the comparison group. An odds ratio of one indicates no difference in recidivism between the groups. An odds

The Commission's research design utilized a combination of matching and weighting to create comparison groups.

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.[48]

In addition to producing an estimate, each estimate is tested for statistical significance. Testing estimates for statistical significance can be analogized to the burden of proof consideration in a criminal trial. The significance test begins with the premise that there is no relationship between the variables being tested, in this study length of incarceration and recidivism, similar to the premise that a defendant is innocent until proven guilty. In statistics, this presumption of innocence is referred to as the null hypothesis. The researcher collects data, or evidence, which is then judged to determine if the results of the analysis could have happened by random chance. In statistics, the threshold of beyond a reasonable doubt is usually numerically defined with a *p-value*. The p-value numerically defines the degree of evidence required to reject the null hypothesis (*i.e.*, no relationship exists between length of incarceration and recidivism). In this study, the Commission used the conventional threshold of 0.05 to denote statistical significance. Thus, if the p-value is less than 0.05 we reject the null hypothesis and consider the results to be indirect evidence that a relationship between the variable of interest and outcome—length of incarceration and recidivism in this study—exists.

RESEARCH FINDINGS

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As noted, the Commission identified the study groups first and then created comparison groups to preserve the natural composition of offenders sentenced to various lengths of incarceration. The comparison groups were composed of offenders who were similar, based on matching and weighting, and had a shorter length of incarceration.[49]

In addition to achieving extremely similar study and comparison groups through matching and weighting, this study retained a large sample size. When creating matched comparison groups, it is natural to lose some portion of the study group. Overall, a large proportion, between 75.4 and 92.2 percent, of the study group was retained after matching for each analysis.

The sample size for individual analysis ranged from 2,598 to 8,578 offenders and the total sample size for the study was 22,928 (Figure 3).

FIGURE 3.

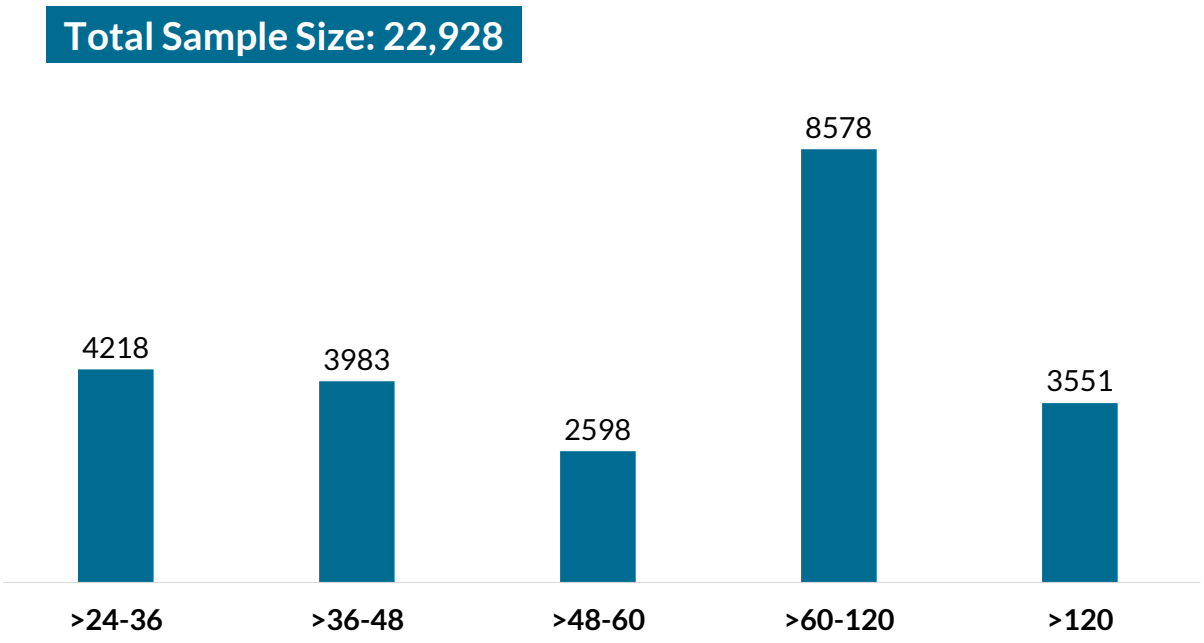


Table 2 provides information on the median length of incarceration for each study and comparison group. Differences in the median length of incarceration range from 13.0 to 76.0 months. As the length of incarceration for the study group increased, the difference in median sentences increased. For example, the differences in median sentence for the first study and comparison group (>24 to 36 months) was 13.0 months, while the difference in median sentence imposed for the last study group (>120 months) was 76.0 months.

Table 3 provides information on the five principal offender characteristics that are exactly matched between the study and comparison groups. Prior research examining sentence length and offender recidivism identified a minimum set of control variables: age, gender, race, prior criminal history, and instant offense type.[50] Due to the importance of these attributes, the Commission used exact matching for these control variables. Consequently, the study group and comparison groups were identical on each of these attributes. For example, for the >24 to 36 months analysis, offenders in the study and comparison groups had average ages of 35.8 years, 86.7 percent of each group was male, 65.5 percent of each group was White, etc.

As expected, the composition of offenders varied between the study groups with different lengths of incarceration. As the length of incarceration increased, the proportion of males increased, the proportion of Black offenders increased, the severity of CHC increased, and the proportion of §2D1.1 offenders increased (Table 3).

TABLE 2.

Median Incarceration Length of Study and Comparison Groups

Group	Study Group	Comparison Group
>24 to 36 Months	28.0	15.0
>36 to 48 Months	40.0	24.0
>48 to 60 Months	51.0	33.0
>60 to 120 Months	78.0	39.0
>120 Months	160.0	84.0

TABLE 3.

Exact Matched Characteristics

Attributes	Length Of Incarceration >24-36 Months	>36-48 Months	>48-60 Months	>60-120 Months	>120 Months
Age (years)					
Mean Age	35.8	36.0	36.4	37.3	41.0
Gender (%)					
Male	86.7	88.8	90.7	92.6	96.5
Race (%)					
White	65.5	59.5	56.3	52.1	33.2
Black	30.6	36.6	40.6	45.9	66.0
Other	4.0	3.8	3.1	2.0	0.8
Criminal History Category (%)					
CHC I	53.5	47.8	37.8	29.6	16.1
CHC II	10.4	8.5	10.2	13.8	11.1
CHC III	18.4	16.6	15.9	20.4	19.0
CHC IV	10.3	13.0	12.4	11.8	14.0
CHC V	3.0	6.4	10.5	8.6	8.2
CHC VI	4.4	7.6	13.3	15.8	31.6
Principal Guidelines (%)					
§2D1.1	41.2	48.2	50.5	71.7	81.6
§2B1.1	18.8	12.1	8.3	2.7	0.0
§2B3.1	0.4	2.1	2.4	3.0	8.7
§2K2.1	20.0	25.9	31.1	15.9	6.8
§2L1.1	4.9	1.5	0.5	0.1	0.0
Other	14.6	10.2	7.3	6.6	2.8

The Commission used a multiple weighted logistic regression to estimate the effect of length of incarceration on recidivism. The results were mixed across the various study groups (Table 4). For offenders sentenced to 60 months or less, there was no statistically significant effect. For offenders sentenced to more than 60 months, there was a statistically significant preventative effect.

Offenders incarcerated for more than 60 months up to 120 months had a statistically significant preventative relationship between length of incarceration and recidivism. Specifically, the regression model estimated the odds of recidivism for offenders incarcerated for more than 60 months up to 120 months was approximately 18 percent lower than the odds of recidivism for the comparison group receiving shorter sentences (Figure 4). In addition to estimating the likelihood of recidivism, the Commission analyzed time-to-rearrest. The average time-to-rearrest for the study group was 861 days while the average time-to-rearrest for the comparison group was 807 days.[51] Thus, offenders serving longer sentences had a lower likelihood of recidivism and took longer to recidivate.

TABLE 4.

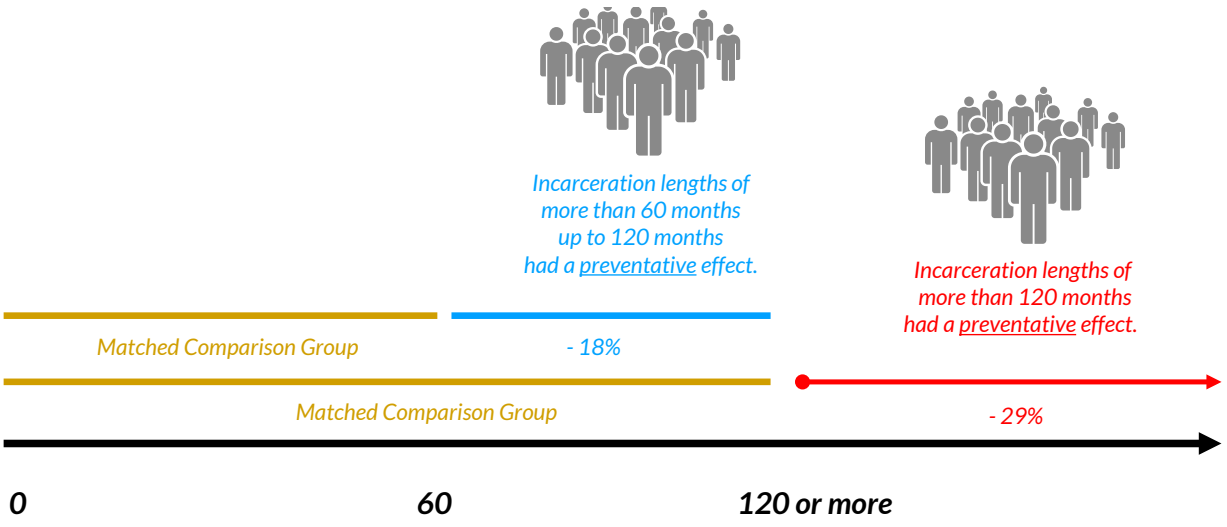
Weighted Multiple Logistic Regression Results

	Likelihood of Recidivism
>24 to 36 Months	+ 7%
>36 to 48 Months	- 2%
>48 to 60 Months	- 1%
>60 to 120 Months	- 18% ***
>120 Months	- 29% ***

p-values: * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

Offenders incarcerated for more than 120 months had a statistically significant preventative relationship between length of incarceration and recidivism. Specifically, the regression model estimated the odds of recidivism for individuals incarcerated for more than 120 months was approximately 29 percent lower than the odds of recidivism for the comparison group receiving shorter sentences (Figure 4).[52] In addition to estimating the likelihood of recidivism, the Commission analyzed time-to-rearrest. The average time-to-rearrest for the study group was 915 days while the average time-to-rearrest for the comparison group was 852 days.[53] Thus, offenders serving longer sentences had a lower likelihood of recidivism and took longer to recidivate.

FIGURE 4.



COMPARISON OF 2010 AND 2005 RELEASE COHORTS

COMPARISON OF 2010 AND 2005 RELEASE COHORTS

In 2020, the Commission published *Length of Incarceration and Recidivism*, which examined the relationship between length of incarceration and recidivism for offenders released in 2005.[54] The 2020 study included two research designs: (1) a design using propensity score matching and weighted multiple logistic regression, and (2) a design using non-bipartite matching and multiple logistic regression.

For this study, the Commission replicated the first research design—propensity score matching and weighted multiple logistic regression—examining offenders released in 2010. Using this research design, the findings were almost identical for both the 2010 cohort studied in this publication and the 2005 cohort studied in the Commission's previous publication. Specifically, findings were only statistically significant for offenders sentenced to more than 60 months incarceration, and those effect sizes were identical (Table 5). In both studies, offenders sentenced to more than 60 months up to 120 months were approximately 18 percent less likely to recidivate relative to a comparison group receiving shorter lengths of incarceration. Offenders sentenced to more than 120 months were approximately 29 percent less likely to recidivate relative to a comparison group receiving a shorter sentence of incarceration.

TABLE 5.

Weighted Multiple Logistic Regression Results

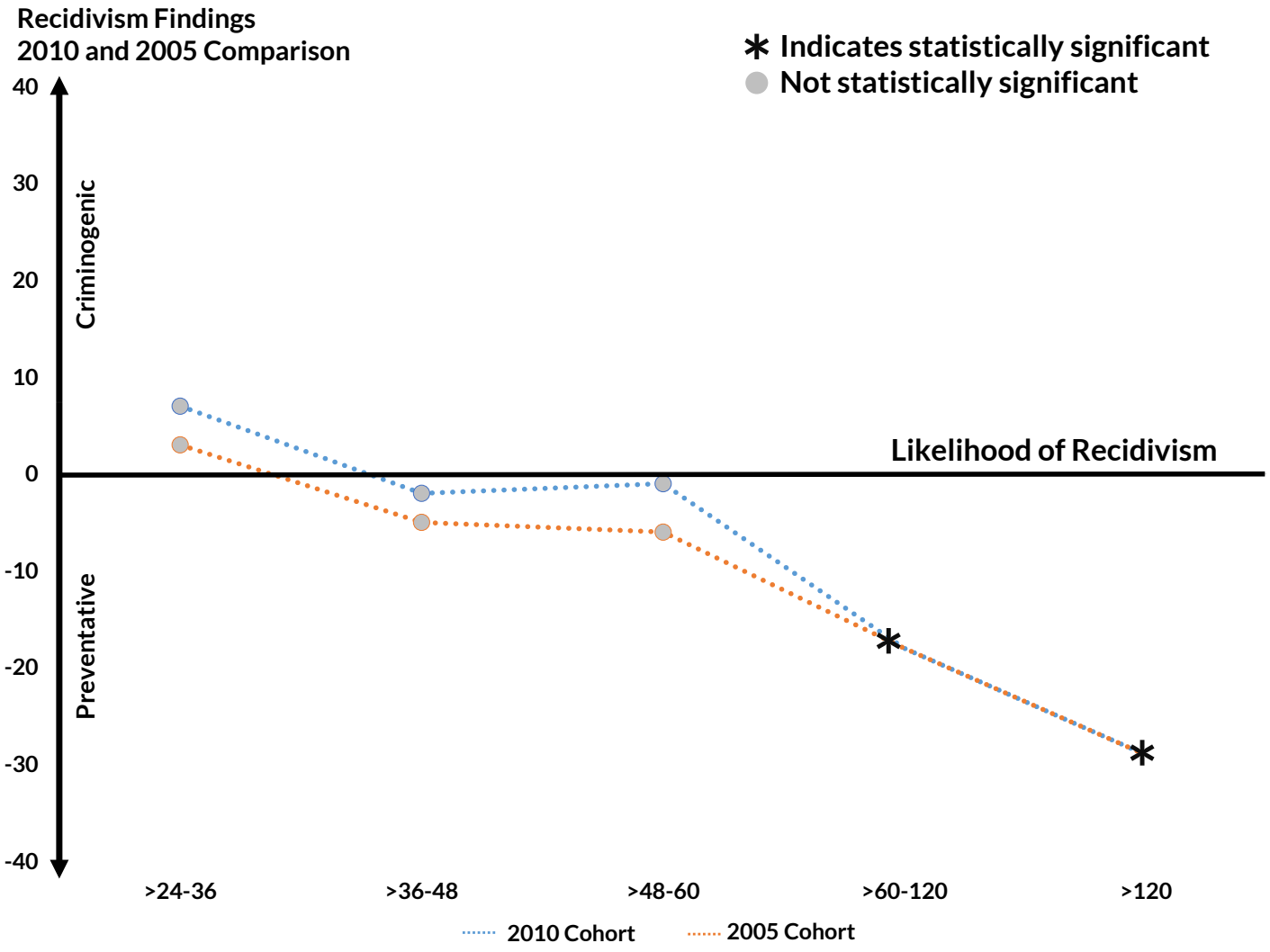
	Likelihood of Recidivism	
	2010 Cohort	2005 Cohort
>24 to 36 Months	+ 7%	+ 3%
>36 to 48 Months	- 2%	- 5%
>48 to 60 Months	- 1%	- 6%
>60 to 120 Months	- 18% ***	- 18% **
>120 Months	- 29% ***	- 29% ***

p-values: * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

Figure 5 graphs the model estimates for federal offenders released in 2005—the original study—and 2010. The plot shows the similarity in model estimates for all study groups and denotes the statistically significant estimates, represented by asterisks, for offenders sentenced to more than 60 months incarceration. Thus, the findings remain stable between the two studies analyzing the 2005 and 2010 release cohorts.

As noted, the Commission also used an alternative research design in its previous study released in 2020. The alternative research design used non-bipartite matching to create comparison groups that exactly matched all characteristics in Table 1, except for age-at-release which could vary by one year, then used multiple logistic regression to estimate the effect of sentence length on recidivism.[55] While these alternative designs are not described in this publication, the Commission did confirm that analysis of the 2010 offender cohort using the same alternative research design yielded similar results.[56]

FIGURE 5.


Recidivism Findings
2010 and 2005 Comparison
* Indicates statistically significant
Not statistically significant
40
30
20
10
0
-10
-20
-30
-40
Criminogenic
Preventative
Likelihood of Recidivism
>24-36
>36-48
>48-60
>60-120
>120
2010 Cohort
2005 Cohort

CONCLUSION

CONCLUSION

This study examined offenders released from federal prison or sentenced to probation in 2010. The study used a combination of matching, weighting, and multiple logistic regression to estimate the effect of length of incarceration on recidivism.

The Commission found a statistically significant preventative effect for offenders sentenced to more than 60 months incarceration. Specifically, offenders sentenced to more than 60 months incarceration had lower odds of recidivism as compared to similar offenders receiving shorter sentences. The odds of recidivism were approximately 18 percent lower for offenders sentenced to more than 60 months up to 120 months incarceration compared to a matched group of federal offenders receiving shorter sentences. The odds of recidivism were approximately 29 percent lower for federal offenders sentenced to more than 120 months incarceration compared to a matched group of federal offenders receiving shorter sentences. In the 2010 release cohort, approximately 41 percent of offenders received sentences of more than 60 months incarceration.

The Commission found no statistically significant effect for offenders sentenced to 60 months, or less, incarceration. Consequently, the Commission has no basis to conclude that incarceration for 60 months or less has a criminogenic or preventative effect. In the 2010 release cohort, approximately 59 percent of offenders received sentences of 60 months or less incarceration.

The current research findings were similar to the findings established in the original study, *Length of Incarceration and Recidivism*, which examined offenders released in 2005. In the original study, using a comparable research design, offenders sentenced to more than 60 months incarceration had a statistically significant preventative effect.

In conclusion, this study found that offenders confined for longer periods of incarceration had lower odds of recidivism, however, those odds were only substantively lower for offenders sentenced to lengthy incarceration terms. The findings suggest the preventative effect of length of incarceration on recidivism was only realized for offenders sentenced to more than 60 months incarceration.

APPENDICES

APPENDIX A

Appendix A provides a review of published literature on the relationship between length of incarceration and recidivism.

Literature Review

There have been numerous studies, and two comprehensive literature reviews, examining the association between length of incarceration and recidivism.

In 2009, Nagin et al. completed a thorough review of existing literature on the relationship between incarceration length and recidivism.[57] The review examined two experimental studies and 17 nonexperimental studies (three matched studies and 14 regression studies).[58] Conclusions were not drawn from the 14 regression studies due to fundamental analytical flaws in the study design, specifically, sensitivity in the regression-based studies related to specification errors in modeling the relationship between age and offending.[59] Nagin and his co-authors concluded "there [was] little convincing evidence on the dose-response relationship between time spent in confinement and reoffending rate."[60]

Following that review, only a small number of methodologically rigorous studies examining the relationship between length of incarceration and recidivism have been conducted. In 2021, Berger et al. completed an updated literature review and concluded that the literature on length of incarceration and recidivism continues to be somewhat inconsistent, with some studies finding no effect on recidivism, while other studies indicating increased prison length reduces recidivism, albeit in some studies only slightly.[61] These mixed results may be explained, in part, by the use of varying methodologies (*e.g.*, propensity score matching, regression discontinuity design, etc.) and the examination of varying research populations (*e.g.*, juvenile, state, or federal offender populations).

A brief synopsis of the primary studies examining the association between length of incarceration and recidivism are presented here.

Jaman et al. (1972) examined the recidivism rate of male burglars who received sentences longer than 25 months with a similar group of burglars who served 24 months or less.[62] The study used by-variable matching to control for a number of offender attributes.[63] The authors followed offenders for 6, 12, and 24 months post-release.[64] They found that offenders who served longer sentences

had a higher recidivism rate, however, the difference was only statistically significant for a 24-month post-release follow-up period.[65]

Kraus (1981) examined juvenile offenders serving varying incarceration lengths.[66] Juvenile offenders were separated into three distinct age groupings: 9-12, 13, and 14-15.[67] The study matched on a variety of offender attributes (*e.g.*, age, sex, offense, and prior record).[68] Kraus found longer confinement was associated with higher recidivism for two age groups and lower recidivism for the third age group. None of the study findings were statistically significant.[69]

Berecochea et al. (1981) examined a sample of felony male offenders in California who had their incarceration sentences reduced by six months.[70] The recidivism rate of the offenders receiving the six-month reduction was higher than the recidivism rate of offenders not benefiting from a sentence reduction.[71] Thus, offenders receiving longer prison sentences had lower recidivism rates. However, this effect was not statistically significant.[72]

Deschenes et al. (1995) compared the recidivism rates of incarcerated offenders serving their full sentence to offenders receiving a reduction in incarceration time due to placement on Intensive Community Supervision (ICS).[73] While all study offenders were originally incarcerated, the comparison group had a reduced incarceration period due to placement on ICS. The study found "similar rates of rearrest among those who were diverted from prison and those who remained in prison . . . [the] rates were not significantly different".[74]

Loughran et al. (2009) used longitudinal data from a sample of serious juvenile offenders to explore the relationship between length of stay in institutional placement and future rearrests.[75] The study used propensity score matching to balance several offender attributes across treatment and comparison groups.[76] The study found no evidence that varying doses of length of stay affect future rearrests in either a criminogenic or preventative direction.[77]

Green et al. (2010) examined more than 1,000 defendants sentenced in the District of Columbia Superior Court.[78] They exploited a pseudo-randomization strategy between nine judges and argued that variation in judicial discretion resulted in random variation in sentence lengths. Offenders were tracked for four years post-release.[79] The study found that "incarceration seems to have little net effect on the likelihood of subsequent rearrest".[80]

Snodgrass et al. (2011) examined the felony reconviction rate of more than 4,500 prisoners in the Netherlands.[81] The study used propensity score matching to create balanced groups on a variety of offender attributes.[82] The majority of

the offenders in the study, 86 percent, were sentenced to less than one year of incarceration.[83] Offenders were grouped into two categories, *low-dose* and *high-dose*, for comparison. Overall, *low-dose* offenders were convicted of .033 more felonies per year as compared to similar *high-dose* offenders.[84] However, the observed preventative effect was not statistically significant.[85]

Kuziemko (2012) examined the impact of length of incarceration on recidivism for more than 17,000 parolees in Georgia.[86] The author used an instrumental variable to account for imbalance on several attributes (*e.g.*, prior incarceration, offense severity, etc.).[87] Offenders were tracked for a three-year follow-up period to determine if they returned to prison for a new crime. The study found that lengthier sentences were associated with a decrease in recidivism of 1.3 percent per additional month of incarceration served.[88] Further, Kuziemko analyzed a subgroup of 519 offenders released early to curb prison overcrowding. In this subgroup, lengthier sentences were associated with a 3.2 percent decrease in return to prison for each additional month served.[89] In a later reexamination of the data, Roodman (2017) found a trivial impact of length of incarceration on recidivism.[90]

Meade et al. (2012) estimated the dose-response relationship between time served in prison and odds of recidivism for 1,989 offenders released from prison in Ohio.[91] The study used propensity score matching to create balanced groups of offenders serving various lengths of incarceration.[92] The study found that offenders confined for lengthier terms of incarceration had lower odds of recidivism. The authors note, the findings suggest an inverse effect of length of incarceration on recidivism which was realized after offenders were incarcerated for at least 60 months.[93] Offenders serving at least 60 months had statistically significant lower odds of recidivism as compared to similar offenders serving less time.[94]

Roach et al. (2015) examined between 7,700 and 8,780 felony offenders sentenced in Seattle.[95] Offenders committed lower-level felony offenses as indicated by an overall average sentence length of nine months.[96] The authors argued that variation in judicial discretion would result in random variation in sentence lengths.[97] Offenders were tracked for three years post-release and recidivism was defined as being resentenced for a new felony offense.[98] Roach et al. found that increased sentence

length was associated with a decrease in recidivism rates. Specifically, three-year felony recidivism rates decreased by approximately one percent for each additional month of incarceration imposed.[99]

Mears et al. (2016) examined the felony reconviction rates of more than 90,000 inmates released from Florida prisons.[100] The authors used propensity scores to balance various offender attributes.[101] The average length of incarceration in the cohort was 24 months.[102] The effect of incarceration length on recidivism varied across different incarceration lengths. Specifically, incarceration lengths of less than one year were associated with increased recidivism but the effect plateaued after one year post-release; incarceration lengths of one to two years were associated with a slight decrease in recidivism rates compared to offenders serving between six and twelve months incarceration which plateaued after two years post-release; incarceration lengths of three to five years had no effect on recidivism; and incarceration lengths of six years or more were associated with a slow consistent decline in recidivism (however, this model had issues with larger standard errors).[103]

Rhodes et al. (2018) used a regression discontinuity design and instrumental variable identification strategy to examine the dose-response relationship between prison length of stay and recidivism for a large sample of federal offenders.[104] The study found that longer prison terms were associated with a slight decrease in recidivism during a three-year follow-up period. Specifically, Rhodes and his co-authors found that a 7.5-month increase in incarceration length was associated with a one percent decrease in recidivism.[105]

Cotter (2020) examined the dose-response relationship between sentence length and rearrest for a large cohort of offenders released from federal prison in 2005.[106] The study used several different matching approaches (*e.g.*, propensity score matching) and multiple logistic regression to estimate the relationship between length of incarceration and recidivism.[107] The study found that incarceration lengths of more than 60 months were associated with a reduction in recidivism. Specifically, offenders sentenced to more than 60 months of incarceration had lower odds of recidivism relative to a comparable group of offenders receiving shorter sentences.[108]

APPENDIX B

Appendix B provides information on the process utilized to create the foundational analytical data for this study.

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.

A. 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 Federal Bureau of Prisons (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.

B. 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.

C. 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 research[110] 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 B-1.

Table B-1. Rearrest Offense Categories and Charges

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

Larceny	*Motor vehicle theft* *Grand/felony larceny* *Petty/misdemeanor larceny* *Larceny unspecified* *Receiving stolen property* *Trafficking stolen property* *Unauthorized use of vehicle*
Fraud	*Fraud/forgery* *Identity theft* *Embezzlement* *Bribery*
Other Property	*Destruction of property* *Hit and run with property damage* *Trespassing* *Possession of burglary tools* *Other property offense*
Drug Possession	*Possession of cocaine/crack* *Possession of heroin* *Possession of marijuana* *Possession of methamphetamine* *Possession of other/unspecified controlled substance*
Other Drug	*Unspecified cocaine/crack offense* *Unspecified heroin offense* *Unspecified marijuana offense* *Unspecified methamphetamine offense* *Unspecified other/unspecified drug offense*
Weapon	*Weapon offense*
Other Sex Offense	*Morals offense* *Indecent exposure* *Commercialized vice* *Contributing to the delinquency of a minor*
DUI/DWI	*Driving while intoxicated/under the influence, substance unspecified* *Driving while intoxicated/under the influence, alcohol* *Driving while intoxicated/under the influence, drugs*
Immigration	*Immigration offense*

Administration of Justice Offenses	*Escape from custody* *Flight to avoid prosecution* *Warrant* *Contempt of court* *Failure to appear* *Violation of restraining order* *Other court offense* *Prison contraband offense* *Sex offender registry offense* *Obstruction of justice*
Probation/Parole/ Supervised Release Violation	*Parole violation* *Unspecified probation/parole violation* *Probation violation*
Public Order Offenses	*Family-related offense* *Drunkenness/vagrancy/disorderly conduct* *Invasion of privacy* *Liquor law violation* *Other public order offense* *Curfew violation*
Other/Unspecified Offenses	*Vehicular manslaughter/homicide* *Negligent (involuntary) manslaughter/homicide* *Habitual offender* *Runaway* *Truancy* *Ungovernability* *Status liquor law violation* *Miscellaneous status offense* *Other offense* *Unspecified inchoate offense* *Military offense* *Not applicable* *Unspecified offense*

APPENDIX C

Regression Model Tables

Appendix C provides information on the regression models for each study group, including: estimate, standard error, odds ratio, and 95-percent confidence interval.

TABLE C-1.

Study Cohort: >24-36 Months						
Term	**Estimate**	**S.E.**	**Odds Ratio Exp(B)**		**95% CI**	
					Lower	**Upper**
(Intercept)	1.819	0.455				
Research Group						
Study vs. Comparison	0.064	0.076	1.07		0.92	1.24
Age-at-Release						
Age	-0.068	0.024	0.93	**	0.89	0.98
Age^2	0.000	0.000	1.00		1.00	1.00
Gender						
Female vs. Male	-0.332	0.110	0.72	**	0.58	0.89
Race						
Black vs. White	0.191	0.083	1.21	*	1.03	1.43
Other vs. White	0.245	0.197	1.28		0.87	1.88
High School Completion						
Yes vs. No	-0.578	0.078	0.56	***	0.48	0.65
Criminal History Category						
CHC II vs. CHC I	0.902	0.128	2.47	***	1.92	3.17
CHC III vs. CHC I	1.162	0.115	3.20	***	2.55	4.00
CHC IV vs. CHC I	1.770	0.147	5.87	***	4.40	7.83
CHC V vs. CHC I	1.834	0.238	6.26	***	3.93	9.98
CHC VI vs. CHC I	2.569	0.227	13.06	***	8.37	20.36
Guideline						
§2B1.1 vs. §2D1.1	-0.132	0.131	0.88		0.68	1.13
§2B3.1 vs. §2D1.1	-0.394	0.545	0.67		0.23	1.96
§2K2.1 vs. §2D1.1	0.248	0.122	1.28	*	1.01	1.63
§2L1.1 vs. §2D1.1	0.675	0.198	1.96	***	1.33	2.89
Other vs. §2D1.1	0.028	0.139	1.03		0.78	1.35
Violence						
Yes vs. No	0.626	0.216	1.87	**	1.22	2.86
Weapons Adjustment						
Yes vs. No	-0.141	0.180	0.87		0.61	1.23
Substantial Assistance						
Yes vs. No	-0.269	0.095	0.76	**	0.63	0.92
Safety Valve						
Yes vs. No	0.090	0.129	1.09		0.85	1.41
-2 Log Likelihood	-2557					
McFadden Pseudo R^2	0.209					
N	4,218					

Response Variable: recidivism (rearrest)

p-values: * p ≤ .05; ** p ≤ .01; *** p ≤ .001

TABLE C-2.

Study Cohort: >36-48 Months					
			Odds Ratio	95% CI	
Term	**Estimate**	**S.E.**	**Exp(B)**	**Lower**	**Upper**
(Intercept)	2.631	0.500			
Research Group					
Study vs. Comparison	-0.015	0.077	0.98	0.85	1.14
Age-at-Release					
Age	-0.114	0.026	0.89 ***	0.85	0.94
Age^2	0.001	0.000	1.00 **	1.00	1.00
Gender					
Female vs. Male	-0.381	0.121	0.68 **	0.54	0.87
Race					
Black vs. White	0.240	0.083	1.27 **	1.08	1.50
Other vs. White	0.187	0.190	1.21	0.83	1.75
High School Completion					
Yes vs. No	-0.338	0.081	0.71 ***	0.61	0.83
Criminal History Category					
CHC II vs. CHC I	0.600	0.149	1.82 ***	1.36	2.44
CHC III vs. CHC I	1.166	0.132	3.21 ***	2.48	4.16
CHC IV vs. CHC I	1.518	0.159	4.56 ***	3.34	6.24
CHC V vs. CHC I	1.641	0.198	5.16 ***	3.50	7.62
CHC VI vs. CHC I	2.268	0.190	9.66 ***	6.65	14.03
Guideline					
§2B1.1 vs. §2D1.1	-0.231	0.143	0.79	0.60	1.05
§2B3.1 vs. §2D1.1	0.315	0.352	1.37	0.69	2.73
§2K2.1 vs. §2D1.1	0.357	0.129	1.43 **	1.11	1.84
§2L1.1 vs. §2D1.1	0.104	0.326	1.11	0.59	2.10
Other vs. §2D1.1	0.072	0.154	1.07	0.79	1.45
Violence					
Yes vs. No	0.349	0.249	1.42	0.87	2.31
Weapons Adjustment					
Yes vs. No	-0.212	0.169	0.81	0.58	1.13
Substantial Assistance					
Yes vs. No	-0.112	0.094	0.89	0.74	1.08
Safety Valve					
Yes vs. No	-0.140	0.135	0.87	0.67	1.13
-2 Log Likelihood	-2409				
McFadden Pseudo R^2	0.197				
N	3,983				

Response Variable: recidivism (rearrest)

p-values: * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

TABLE C-3.

Study Cohort: >48-60 Months						
			Odds Ratio		95% CI	
Term	**Estimate**	**S.E.**	**Exp(B)**		**Lower**	**Upper**
(Intercept)	3.390	0.706				
Research Group						
Study vs. Comparison	-0.009	0.095	0.99		0.82	1.19
Age-at-Release						
Age	-0.148	0.036	0.86	***	0.80	0.93
Age^2	0.001	0.000	1.00	**	1.00	1.00
Gender						
Female vs. Male	-0.618	0.169	0.54	***	0.39	0.75
Race						
Black vs. White	0.114	0.102	1.12		0.92	1.37
Other vs. White	0.237	0.259	1.27		0.76	2.10
High School Completion						
Yes vs. No	-0.526	0.100	0.59	***	0.49	0.72
Criminal History Category						
CHC II vs. CHC I	0.487	0.189	1.63	**	1.12	2.35
CHC III vs. CHC I	1.142	0.178	3.13	***	2.21	4.44
CHC IV vs. CHC I	1.788	0.213	5.98	***	3.94	9.07
CHC V vs. CHC I	2.300	0.243	9.98	***	6.19	16.07
CHC VI vs. CHC I	2.642	0.221	14.03	***	9.10	21.64
Guideline						
§2B1.1 vs. §2D1.1	-0.500	0.200	0.61	*	0.41	0.90
§2B3.1 vs. §2D1.1	0.226	0.396	1.25		0.58	2.73
§2K2.1 vs. §2D1.1	0.000	0.151	1.00		0.74	1.34
§2L1.1 vs. §2D1.1	0.207	0.713	1.23		0.30	4.98
Other vs. §2D1.1	0.145	0.208	1.16		0.77	1.74
Violence						
Yes vs. No	0.188	0.269	1.21		0.71	2.04
Weapons Adjustment						
Yes vs. No	-0.076	0.192	0.93		0.64	1.35
Substantial Assistance						
Yes vs. No	-0.253	0.117	0.78	*	0.62	0.98
Safety Valve						
Yes vs. No	-0.041	0.184	0.96		0.67	1.38
-2 Log Likelihood	-1482					
McFadden Pseudo R^2	0.213					
N	2,598					

Response Variable: recidivism (rearrest)

p-values: * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

TABLE C-4.

Study Cohort: >60-120 Months						
Term	Estimate	S.E.	Odds Ratio Exp(B)		95% CI Lower	95% CI Upper
(Intercept)	3.100	0.403				
Research Group						
Study vs. Comparison	-0.203	0.056	0.82	***	0.73	0.91
Age-at-Release						
Age	-0.137	0.020	0.87	***	0.84	0.91
Age^2	0.001	0.000	1.00	***	1.00	1.00
Gender						
Female vs. Male	-0.294	0.094	0.75	**	0.62	0.90
Race						
Black vs. White	0.154	0.052	1.17	**	1.05	1.29
Other vs. White	0.013	0.172	1.01		0.72	1.42
High School Completion						
Yes vs. No	-0.332	0.051	0.72	***	0.65	0.79
Criminal History Category						
CHC II vs. CHC I	0.602	0.086	1.83	***	1.54	2.16
CHC III vs. CHC I	1.021	0.080	2.78	***	2.37	3.25
CHC IV vs. CHC I	1.396	0.096	4.04	***	3.35	4.87
CHC V vs. CHC I	1.674	0.114	5.33	***	4.26	6.67
CHC VI vs. CHC I	2.093	0.100	8.11	***	6.66	9.88
Guideline						
§2B1.1 vs. §2D1.1	-0.081	0.157	0.92		0.68	1.25
§2B3.1 vs. §2D1.1	0.481	0.229	1.62	*	1.03	2.54
§2K2.1 vs. §2D1.1	0.542	0.086	1.72	***	1.45	2.04
§2L1.1 vs. §2D1.1	1.090	0.754	2.98		0.68	13.05
Other vs. §2D1.1	0.317	0.105	1.37	**	1.12	1.69
Violence						
Yes vs. No	0.138	0.180	1.15		0.81	1.63
Weapons Adjustment						
Yes vs. No	0.061	0.070	1.06		0.93	1.22
Substantial Assistance						
Yes vs. No	-0.171	0.065	0.84	**	0.74	0.96
Safety Valve						
Yes vs. No	-0.006	0.097	0.99		0.82	1.20
-2 Log Likelihood	-4832					
McFadden Pseudo R^2	0.215					
N	8,578					

Response Variable: recidivism (rearrest)

p-values: * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

TABLE C-5.

Study Cohort: >120 Months					
			Odds Ratio	95% CI	
Term	Estimate	S.E.	Exp(B)	Lower	Upper
(Intercept)	4.065	0.777			
Research Group					
Study vs. Comparison	-0.340	0.082	0.71 ***	0.61	0.84
Age-at-Release					
Age	-0.187	0.036	0.83 ***	0.77	0.89
Age^2	0.001	0.000	1.00 ***	1.00	1.00
Gender					
Female vs. Male	-0.251	0.210	0.78	0.52	1.17
Race					
Black vs. White	0.100	0.082	1.11	0.94	1.30
Other vs. White	0.183	0.440	1.20	0.51	2.85
High School Completion					
Yes vs. No	-0.055	0.075	0.95	0.82	1.10
Criminal History Category					
CHC II vs. CHC I	0.948	0.154	2.58 ***	1.91	3.49
CHC III vs. CHC I	1.156	0.138	3.18 ***	2.43	4.16
CHC IV vs. CHC I	1.358	0.147	3.89 ***	2.91	5.19
CHC V vs. CHC I	1.732	0.172	5.65 ***	4.03	7.93
CHC VI vs. CHC I	2.133	0.137	8.44 ***	6.45	11.04
Guideline					
§2B1.1 vs. §2D1.1	-0.106	0.262	0.98	0.39	1.41
§2B3.1 vs. §2D1.1	0.337	0.323	1.40	0.74	2.64
§2K2.1 vs. §2D1.1	0.758	0.170	2.13 ***	1.53	2.98
Other vs. §2D1.1	0.230	0.241	1.26	0.78	2.02
Violence					
Yes vs. No	-0.139	0.301	0.87	0.48	1.57
Weapons Adjustment					
Yes vs. No	0.165	0.087	1.18	1.00	1.40
Substantial Assistance					
Yes vs. No	0.218	0.306	1.24	0.68	2.26
Safety Valve					
Yes vs. No	0.231	0.325	1.26	0.67	2.38
-2 Log Likelihood	-2032				
McFadden Pseudo R^2	0.213				
N	3,551				

Response Variable: recidivism (rearrest)

p-values: * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

ENDNOTES

ENDNOTES

1 *See, e.g.*, U.S. Sent'g Comm'n, Supplementary Report on the Initial Sentencing Guidelines and Policy Statements (1987); Kim Steven Hunt & Andrew Peterson, U.S. Sent'g Comm'n, Recidivism Among Offenders Receiving Retroactive Sentence Reductions: The 2007 Crack Cocaine Amendment (2014); U.S. Sent'g Comm'n, Report to the Congress: Federal Child Pornography Offenses 293–310 (2012); Linda Drazga Maxfield, Miles Harer, Timothy Drisko, Christine Kitchens, Sara Meacham & Matthew Iaconetti, U.S. Sent'g Comm'n, A Comparison of the Federal Sentencing Guidelines Criminal History Category and the U.S. Parole Commission Salient Factor Score (2005); Linda Drazga Maxfield, Miles Harer, Timothy Drisko, Christine Kitchens & Sara Meacham, U.S. Sent'g Comm'n, Recidivism and the "First Offender" (2004); Linda Drazga Maxfield, Miles Harer, Timothy Drisko, Christine Kitchens & Sara Meacham, U.S. Sent'g Comm'n, Measuring Recidivism: The Criminal History Computation of the Federal Sentencing Guidelines (2004). Commission materials cited herein are available on the Commission's website at www.ussc.gov.

2 *See* Sentencing Reform Act of 1984, Pub. L. No. 98–473, § 212(a), 98 Stat. 1837, 1987 (codified as amended in 18 U.S.C. § 3553(a)).

3 *See* U.S. Sent'g Comm'n, *Guidelines Manual*, Ch.4, Pt.A, intro. comment. (Nov. 2021) [hereinafter USSG].

4 28 U.S.C. § 991(b)(1)(C).

5 In 2016, the Commission began its first multi-publication recidivism series which culminated with seven publications. *See* Kim Steven Hunt & Robert Dumville, U.S. Sent'g Comm'n, Recidivism Among Federal Offenders: A Comprehensive Overview (2016) [hereinafter 2016 Recidivism Overview Report]; Tracey Kyckelhahn & Trishia Cooper, U.S. Sent'g Comm'n, The Past Predicts the Future: Criminal History and Recidivism of Federal Offenders (2017) [hereinafter 2017 Recidivism Criminal History Report]; Kim Steven Hunt & Billy Easley II, U.S. Sent'g Comm'n, The Effects of Aging on Recidivism Among Federal Offenders (2017) [hereinafter 2017 Recidivism Age Report]; 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); Kim Steven Hunt, Matthew J. Iaconetti & Kevin T. Maass, U.S. Sent'g Comm'n, Recidivism Among Federal Violent Offenders (2019) [hereinafter 2019 Recidivism Violence Report]; Matthew J. Iaconetti, Tracey Kyckelhahn & Mari McGilton, U.S. Sent'g Comm'n, Recidivism Among Federal Firearms Offenders (2019) [hereinafter 2019 Recidivism Firearms Report]; Ryan Cotter, U.S. Sent'g Comm'n, Length of Incarceration and Recidivism (2020) [hereinafter 2020 Recidivism Incarceration Report].

6 Ryan Cotter, Courtney Semisch & David Rutter, U.S. Sent'g Comm'n, Recidivism of Federal Offenders Released in 2010 (2021).

7 Tracey Kyckelhahn, Kristen Sharpe & Amanda Kerbel, U.S. Sent'g Comm'n, Recidivism of Federal Firearms Offenders Released in 2010 (2021); 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).

8 Kristin M. Tennyson, Ross Thomas, Tessa Guiton & Alyssa Purdy, U.S. Sent'g Comm'n, Recidivism and Federal Bureau of Prisons Programs: Drug Program Participants Released in 2010 (2022); Kristin M. Tennyson, Ross Thomas, Tessa Guiton & Alyssa Purdy, U.S. Sent'g Comm'n, Recidivism and Federal Bureau of Prisons Programs: Vocational Program Participants Released in 2010 (2022).

9 2020 Recidivism Incarceration Report, *supra* note 5, at 30.

10 While various statistical models may predict either a preventative or criminogenic relationship between length of incarceration and recidivism, those relationships may not be statistically significant.

Statistical significance indicates that the relationship observed, preventative or criminogenic, is unlikely to be a false positive (*i.e.*, indicating there is a relationship when, in fact, there is not). Statistical significance is important in that it provides a degree of certainty that an observed relationship is, in fact, not a false positive. Thus, it is possible that no statistically significant relationship between length of incarceration and recidivism is identified.

11 See Appendix A for a review of the literature on length of incarceration and recidivism.

12 *See*, *e.g.*, Daniel S. Nagin, Francis T. Cullen & Cheryl Lero Jonson, *Imprisonment and Reoffending*, 38 Crime & Just. 115, 169 (2009). A number of the regression studies examining length of incarceration and recidivism were designed to answer a different research question; time served was included only as a control variable, rather than explanatory variable. *Id.* at 168–69.

13 *Imprisonment and Reoffending* notes that conclusions regarding the relationship between length of incarceration and recidivism cannot be drawn from a number of the regression studies because of fundamental analytical flaws. Specifically, the regression studies are flawed in their model specification of the relationship between age and reoffending. *Id.* at 175.

14 See Appendix A for a review of the literature on length of incarceration and recidivism. Only two studies focusing on federal offenders were identified.

15 *See supra* note 14.

16 *See* William Rhodes, Gerald G. Gaes, Ryan Kling & Christopher Cutler, *Relationship Between Prison Length of Stay and Recidivism: A Study Using Regression Discontinuity and Instrumental Variables with Multiple Break Points*, 17 Criminology & Pub. Pol'y 731, 758 (2018).

17 *Id.*

18 *See* 2020 Recidivism Incarceration Report, *supra* note 5, at 30.

19 *Id.*

20 *Id.*

21 *See* Nagin et al., *supra* note 12, at 121 (concluding that "existing research [on the impact of imprisonment on subsequent recidivism] is not nearly sufficient for making firm evidence-based conclusions for either science or public policy").

22 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.

23 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.

24 Appendix B provides a detailed description of the data collection methodology.

25 Nat'l Inst. of Just., U.S. Dep't of Just., *Recidivism*, https://nij.ojp.gov/topics/corrections/recidivism (last visited Mar. 3, 2022); *see also* Michael D. Maltz, Recidivism 1, 54 (2001) [hereinafter Maltz].

26 *See* Maltz, *supra* note 25, at 7–20; *see also* Ryan King & Brian Elderbroom, Urb. Inst., Improving Recidivism as a Performance Measure (2014).

27 *See*, *e.g.*, Christopher T. Lowenkamp, Marie VanNostrand & Alexander Holsinger, Investigating the Impact of Pretrial Detention on Sentencing Outcomes (2013).

28 *See* Maltz, *supra* note 25, at 61–64; s*ee 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.

29 *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#chart1; William Rhodes, Christina Dyous, Ryan Kling, Dana Hunt & Jeremy Luallen, Abt Assocs., Recidivism of Offenders on Federal Community Supervision (2012).

30 *See* Maltz, *supra* note 25, at 55–60.

31 *See id.* at 56–58.

32 *See* Alper, *supra* note 29, at 14.

33 *See*, *e.g.*, 18 U.S.C. § 924(c)(1)(A)(i) (providing a five-year mandatory minimum for offenders convicted of using or carrying a firearm during and in relation to, or possessing a firearm in furtherance of, a crime of violence or drug trafficking crime); 18 U.S.C. § 2252(b)(1) (providing a five-year mandatory minimum for offenders convicted of receipt, distribution, and possession with the intent to distribute or sell child pornography); *see also* U.S. Sent'g Comm'n, An Overview of Mandatory Minimum Penalties in the Federal Criminal Justice System (2017).

34 *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).

35 Weights were created using a logistic link function with linear propensity score.

36 *See* Nagin et al., *supra* note 12, at 136, 142 (identifying five principal attributes that studies examining length of incarceration and recidivism should control for: age, sex, race, conviction offense, and prior record).

37 *See supra* note 14.

38 *See* 2017 Recidivism Age Report, *supra* note 5, at 3; 2016 Recidivism Overview Report, *supra* note 5, at A-1.

39 *See* 2016 Recidivism Overview Report, *supra* note 5, at A-1.

40 *See* 2017 Recidivism Criminal History Report, *supra* note 5, at 7; 2016 Recidivism Overview Report, *supra* note 5, at A-1.

41 *See* 2016 Recidivism Overview Report, *supra* note 5, at A-1.

42 *See id.*

43 *See* 2019 Recidivism Violence Report, *supra* note 5, at 3.

44 *See* 2019 Recidivism Firearms Report, *supra* note 5, at 4; 2016 Recidivism Overview Report, *supra* note 5, at A-1.

45 *See* USSG §§5C1.2, 5K1.1 (guidelines defining both safety valve and substantial assistance).

46 *See* Peter C. Austin, *An Introduction to Propensity Score Methods for Reducing the Effects of Confounding in Observational Studies*, 46 Multivariate Behav. Rsch. 399, 412 (2011). The threshold for weighting balance is 0.1 standardized mean differences. *Id.* This means the study and comparison groups should not have a standardized mean difference greater than 0.1 after matching and weighting.

47 *See* Daniel L. Rubinfeld, *Reference Guide on Multiple Regression*, *in* Reference Manual on Scientific Evidence 303 (3d ed. 2011) (providing an overview of regression modeling).

48 Appendix C provides the Odds Ratios for each research model.

49 For each of the study cohorts, balance was achieved between the study and comparison groups. The standardized mean differences between study and comparison groups ranged from 0.02 to 0.08; all below the conventional threshold of 0.1. See *supra* note 46 and accompanying text for discussion on the conventional 0.1 threshold.

50 *See supra* note 36 and accompanying text.

51 The difference in average time to rearrest was statistically significant. Welch's two sample t-test was used to test for statistical significance: t = -2.00, df = 2091, p = 0.03.

52 For the full regression models, including estimates for all study cohorts, see Appendix C.

53 The difference in average time to rearrest was not statistically significant. Welch's two sample t-test was used to test for statistical significance: t = -2.00, df = 1139, p = 0.09.

54 2020 Recidivism Incarceration Report, *supra* note 5.

55 *See id.* at 16-23

56 Employing the first variation of the alternative research design on the 2010 cohort, the Commission found a preventative effect for offenders sentenced to more than 120 months, however, that effect was not statistically significant. For offenders sentenced to more than 120 months, the unstandardized Beta weight for the study group was: B = -0.245, SE = 0.202, p = 0.225, [Exp(B) = 0.78, 95% CI (0.53, 1.16)]. In the second variation, the Commission found a statistically significant preventative effect for offenders sentenced to more than 60 months incarceration. For offenders sentenced to more than 60 up to 120 months, the unstandardized Beta weight for the study group was: B = -0.151, SE = 0.065, p < 0.05, [Exp(B) = 0.86, 95% CI (0.76, 0.98)]. For offenders sentenced to more than 120 months, the unstandardized Beta weight for the study group was: B = -0.294, SE = 0.081, p < 0.001, [Exp(B) = 0.75, 95% CI (0.64, 0.87)].

57 *See* Nagin et al., *supra* note 12.

58 *Id.* at 169.

59 *Id.* at 175.

60 *Id.* at 183.

61 Elizabeth Berger & Kent S. Scheidegger, Crim. Just. Legal Found., Sentence Length and Recidivism: A Review of the Research 27 (2021).

62 Dorothy R. Jaman, Robert M. Dickover & Lawrence A. Bennett, *Parole Outcome as a Function of Time Served*, 12 Brit. J. Criminology 5 (1972).

63 *Id.* at 6.

64 *Id.* at 29.

65 *Id.* at 19.

66 J. Kraus, *The Effects of Committal to a Special School for Truants*, 25 Int'l J. Offender Therapy & Compar. Criminology 130 (1981).

67 *Id.* at 133 tbl.2.

68 *Id.* at 131–32.

69 *Id.* at 133–34.

70 John E. Berecochea & Dorothy R. Jaman, Rsch. Div., Cal. Dep't of Corr., Time Served in Prison and Parole Outcome: An Experimental Study (1981).

71 *See* Nagin et al., *supra* note 12, at 167–69.

72 *Id.* at 169.

73 Elizabeth Piper Deschenes, Susan Turner & Joan Petersilia, *A Dual Experiment in Intensive Community Supervision: Minnesota's Prison Diversion and Enhanced Supervised Release Programs*, 75 Prison J. 330 (1995).

74 *Id.* at 352.

75 Thomas A. Loughran, Edward P. Mulvey, Carol A. Schubert, Jeffrey Fagan, Alex R. Piquero & Sandra H. Losoya, *Estimating a Dose-Response Relationship Between Length of Stay and Future Recidivism in Serious Juvenile Offenders*, 47 Criminology 699 (2009).

76 *Id.* at 716.

77 *Id.* at 726–29.

78 Donald P. Green & Daniel Winik, *Using Random Judge Assignment to Estimate the Effects of Incarceration and Probation on Recidivism Among Drug Offenders*, 48 Criminology 357 (2010).

79 *Id.* at 363.

80 *Id.* at 381.

81 G. Matthew Snodgrass, Arjan A. J. Blokland, Amelia Haviland, Paul Nieuwbeerta & Daniel S. Nagin, *Does the Time Cause the Crime? An Examination of the Relationship Between Time Served and Reoffending in the Netherlands*, 49 Criminology 1149 (2011).

82 *Id.* at 1162–67.

83 *Id.* at 1179.

84 *Id.* at 1166, 1173.

85 *Id.* at 1178–79.

86 Ilyana Kuziemko, *How Should Inmates Be Released From Prison? An Assessment of Parole Versus Fixed-Sentence Regimes*, 128 Q.J. Econ. 371 (2013).

87 *Id.* at 391 tbl.II, 392.

88 *Id.* at 393.

89 *Id.* at 394–95.

90 David Roodman, Open Philanthropy Project, The Impacts of Incarceration on Crime 101–15 (2017).

91 Benjamin Meade, Benjamin Steiner, Matthew Makarios & Lawrence Travis, *Estimating a Dose-Response Relationship Between Time Served in Prison and Recidivism*, 50 J. Rsch. Crime & Delinq. 525 (2012).

92 *Id.* at 534–35.

93 *Id.* at 539–42.

94 *Id.*

95 Michael Roach & Max Schanzenbach, The Effect of Prison Sentence Length on Recidivism: Evidence from Random Judicial Assignment (2015).

96 *Id.* at 2.

97 *Id.* at 1.

98 *Id.* at 6.

99 *Id.* at 11–12.

100 Daniel P. Mears, Joshua C. Cochran, William D. Bales & Avinash S. Bhati, *Recidivism and Time Served in Prison*, 106 J. Crim. L. & Criminology 83 (2016).

101 *Id.* at 102.

102 *Id.* at 101.

103 *Id.* at 118–23.

104 Rhodes et al., *supra* note 16, at 758.

105 *Id.*

106 2020 Recidivism Incarceration Report, *supra* note 5.

107 *Id.* at 8–9.

108 *Id.* at 30.

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 5, 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/supervised release violation, other public order offense, and other unspecified offense. *See infra* Table B-1.

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