



INCREASED EARNED RELEASE FROM PRISON: IMPACTS OF A 2003 LAW ON RECIDIVISM AND CRIME COSTS, REVISED

Revised April 2009.

The 2003 Washington State Legislature passed a bill that increased “earned release time” for certain types of adult offenders.¹ The law authorizes the Washington State Department of Corrections (DOC) to release eligible offenders earlier if they have demonstrated good behavior in prison.

The increased earned release provision of the 2003 law sunsets for offenders convicted after July 1, 2010.

The average eligible offender spent 63 fewer days in prison as a result of the law. As of 2008, the aggregate effect of the law reduced Washington’s average daily prison population by about 160 beds.²

The legislation directed the Washington State Institute for Public Policy (Institute) to evaluate whether the enacted changes in earned release have affected recidivism rates. This report is divided into five sections: background, evaluation design, recidivism findings, incapacitation effect, and cost-benefit analysis.

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An earlier version of this paper was published in November 2008; we updated and extended the analysis in this report.

Summary

The Washington legislature has established laws that enable certain offenders under the jurisdiction of the Department of Corrections (DOC) to leave prison prior to the end of their sentence. DOC is authorized to grant “earned release time” if an offender demonstrates good behavior and participates in treatment programs in prison.

The 2003 Legislature increased earned release time for eligible non-violent property and drug offenders from a maximum of 33 percent of the total sentence to a maximum of 50 percent. Since the passage of the law, approximately 20 percent of all offenders who released from prison were eligible for this 50 percent earned release time. The 2003 law sunsets July 1, 2010.

The Legislature directed the Institute to evaluate the law. While the immediate effect of shorter stays in prison lowers costs, the relevant research question is whether the law affects crime rates.

We find that the law affects crime rates in two ways. First, the law shortens prison length of stay by 63 days, during which time we estimate an increase in property crimes. Second, over the three year follow-up, the felony recidivism rate of the early release offenders is decreased by 3.5 percent compared with similar offenders who stayed in prison 63 days longer. We conducted a cost-benefit analysis to calculate a bottom line for these opposing effects.

On the benefit side, we estimate \$15,359 in benefits per offender from: (1) reduced three-year recidivism, (2) lowered prison costs from the reduced sentence, and (3) increased labor market earnings. On the cost side, we estimate \$8,179 in costs per offender due to the increase in crimes during the 63-day period of reduced incapacitation. Thus, the bottom line estimate is \$1.88 in benefits per dollar of cost. We also checked the uncertainty of this estimate; we find that benefits are likely to exceed costs 91 percent of the time.

¹ ESSB 5990, Chapter 379, Laws of 2003.

² This estimate is based on data from the Caseload Forecast Council. Correspondence, via email October, 2008.

Section I: Background

The 2003 earned early release law is part of Washington's overall sentencing system.³ Each of the 50 states has developed its own approach for sentencing adults and juveniles convicted of felonies. Two sentencing decisions that must be made in each state include determining which offenders will be incarcerated and for how long.

In more than half the states, judges have wide flexibility in making these decisions. Also, executive branch agencies (parole boards and correctional agencies) in these states typically have considerable influence over how long offenders remain incarcerated.

In contrast, the Washington state legislature has asserted the primary role in determining these decisions for felony offenses. As a result of bills passed in 1977 for juveniles and 1981 for adults, Washington has a "determinate" sentencing system.

Under this system, the Washington legislature enacts legislation with statewide adult and juvenile "sentencing grids" that judges must use to sentence convicted offenders. Judges can make case-by-case exceptions to the legislature's juvenile and adult grids, but the law presumes that the grids will determine the sentences received for nearly all offenders.

Since passage of the 1977 and 1981 laws, the legislature has periodically returned some discretion to the judicial and executive branches. The subject of this evaluation is an example of the legislature returning some discretion to the executive branch.

Washington's basic sentencing statute for adult offenders is the Sentencing Reform Act (SRA) of 1981. Under the SRA, judges determine an offender's sentence using the legislatively adopted "sentencing grid."⁴ The sentencing grid is based on two basic factors: the severity of an offender's current offense, and the offender's prior criminal history.

Once this information is determined, a "presumptive standard sentence range" can be ascertained. This provides a range within which a judge can sentence an offender.⁵ For example, for an offender whose conviction and offender history falls within the grid's range of a 13- to 17-month sentence, a judge might impose a sentence of 14 months. This sentence becomes the "maximum term" for which an offender can legally be confined within the DOC.

Earned Release Time

Offenders may not leave confinement prior to the expiration of their maximum sentence unless they have acquired "earned release time."⁶ Earned release time can be attained by an eligible offender if DOC has determined that the offender has exhibited good conduct and has participated in work, education, treatment, or other approved programs while incarcerated at DOC.⁷ Earned release time can be lost as a disciplinary sanction.

³ For a full history of Washington's juvenile and adult sentencing systems, see D. Boerner & R. Lieb (2001). *Sentencing reform in the other Washington*. Olympia: Washington State Institute for Public Policy, Document No. 01-00-1201.

⁴ The sentencing grid was modified by 2SHB 2338, Chapter 290, Laws of 2002. Drug offenses were removed from the original sentencing grid and a separate drug offense sentencing grid was created.

⁵ The court may impose an "exceptional sentence" outside the standard range if there are documented, compelling facts.

⁶ Earned release time begins when an offender is confined in jail, prior to time served in prison.

⁷ Offenders are not penalized with a loss of earned time if programs are not available.

Under the SRA, maximum amounts of earned release time are set in statute. In 2003, maximum earned release time was modified by the passage of Engrossed Substitute Senate Bill 5990 (ESSB 5990).⁸ As a result, earned release time for some offenders increased from one-third to 50 percent of the total sentence.

Eligibility Criteria for 50 Percent Earned Release Time

Not all offenders are eligible for the increased earned release time. The 2003 law specifies that it will not apply to offenders who have a current or prior conviction for the following:⁹

- Violent offense
- Sex offense
- Crime against a person
- Domestic violence offense
- Residential burglary
- Manufacture or delivery of methamphetamine
- Delivery of a controlled substance to a minor
- Additionally, offenders must be classified as one of the two lowest risk categories as defined by DOC's risk assessment tool.

An offender's "minimum term" is calculated by subtracting any possible earned release time from the maximum term imposed by the judge.¹⁰ Continuing with our example of an offender sentenced to 14 months, the minimum term that must be served is seven months if

the offender is determined to be eligible for 50 percent earned release time. It is important to note that the amount of earned release time actually received ranges from zero to 50 percent of the total sentence depending on the offender's behavior while incarcerated.

ESSB 5990 was applied retroactively to eligible offenders confined in DOC as of July 1, 2003, as well as to eligible offenders sentenced on or after July 1, 2003. The section of the law pertaining to 50 percent earned release time is scheduled to expire (that is, to "sunset") and will not apply to offenders convicted after July 1, 2010.

Section II: Evaluation Design

The 2003 Legislature asked the Institute to determine whether the changes to earned release affect recidivism. The best way to determine the effectiveness of a program or law is to compare the outcomes of offenders who were eligible with similar offenders who would have been eligible, but did not receive the program. In an ideal research setting, offenders would be randomly assigned to either a study or a comparison group and any differences in recidivism rates could be readily observed.

We did not have that option for the evaluation of 50 percent earned release time since the law affected the potential sentencing of all offenders. Therefore, we used statistical techniques to construct a comparison group of offenders sentenced prior to implementation of the 2003 law.

⁸ The passage of ESSB 5990 also changed earned release time for offenders convicted of serious violent or sex offenses who, previously, could not earn more than 15 percent of the total sentence in earned time. This was reduced under the new law to 10 percent of the sentence for offenses committed after July 1, 2003. We could not evaluate this portion of the law because only a small number of these offenders have been released from prison.

⁹ All offenders who are not eligible for 50 or 10 percent earned release time can receive up to 33 percent of the total sentence in earned release time.

¹⁰ RCW 9.94A.540, however, states that some offense types require a mandatory minimum term.

Selecting the Study Groups

When an offender enters prison, criminal history data in DOC's operational database are automatically searched to determine eligibility for 50 percent earned release time. If an offender is not eligible, no further investigation is done and a flag in DOC's database indicates the offender is not eligible. If an offender is potentially eligible, DOC staff further investigate an offender's criminal history using the "Triple I," a comprehensive interstate exchange of criminal history maintained by the Federal Bureau of Investigation. If criminal history obtained from the Triple I eliminates the offender from 50 percent earned release time, DOC flags the offender as not eligible.

In order to select a comparison group for our evaluation, the Institute developed an algorithm (statistical formula) to determine which offenders would have been eligible for 50 percent earned release time had the law existed for offenders released from prison prior to July 1, 2003. This algorithm was created using the Institute's criminal history database and the eligibility criteria described on the previous page.¹¹ Additionally, historical DOC risk assessment data were used to identify offenders assigned to the two lowest risk categories.

There were 9,596 offenders released from a DOC facility between July 1, 2003, and August 1, 2004, after the implementation of ESSB 5990. **Exhibit 1** displays information on the accuracy of the Institute's eligibility algorithm compared with the eligibility flag in DOC's database for that cohort of offenders. Of the 2,365 offenders DOC identified as eligible, we correctly identified 2,227. We identified an additional 387 as eligible but they were not, and we identified 138 as not being eligible who were according to DOC.

Exhibit 1
**Validity of Institute's Algorithm:
Offenders Released From Prison Between
July 1, 2003 and August 1, 2004**

	Institute Eligibility		
	No	Yes	Total
DOC Eligibility			
No	6,844	387	7,231
Yes	138	2,227	2,365
Total	6,982	2,614	9,596

We tested the Institute's algorithm to determine if it accurately predicted DOC's eligibility flag. We used logistic regression analysis on a cohort of offenders who released from prison since the implementation of ESSB 5990. A statistic called the area under the receiver operating characteristic (AUC) indicates that the Institute's algorithm could predict, with very high accuracy, who was eligible for 50 percent earned release time (AUC = .944).

Because this high AUC indicates a high level of accuracy in the algorithm, we used it to identify "the 5990 group" (those released under the 2003 law) as well as the comparison group. For our analysis, of the 9,596 offenders who released from a DOC facility from July 1, 2003, through August 1, 2004, we estimate that 23 percent, or 2,614 offenders, were eligible for 50 percent earned release time.¹² The remaining 6,982 offenders released in that time period were excluded from our analysis.

¹¹ The Institute's database does not include out-of-state criminal history, which is a limitation of this study.

¹² The 5990 group was selected from those released from prison as recently as possible, while allowing sufficient time for a 36-month recidivism follow-up period. From the data available to the Institute, we were only able to determine if an offender was eligible for early release, not the percentage of earned release time awarded.

For the comparison group, 16,756 offenders were released from a DOC facility from January 1, 2001, through June 30, 2003.¹³ Of these, we estimate that 29 percent, or 4,840 offenders, would have been eligible for 50 percent earned release time had it existed during that time period. This group of offenders was our initial comparison study group for this evaluation.

Differences Between the Two Study Groups

We then compared the 5990 and comparison groups to determine if the two groups were similar on key characteristics and risk factors associated with recidivism such as criminal history, offense seriousness, sentence length, and demographics (see Exhibit A in the Technical Appendix). Our analyses show that the comparison group had some significantly higher risk factors for recidivism, such as the non-drug risk score, violent felony risk score, and SRA seriousness level.

Since there were some systematic differences between the 5990 and comparison groups on factors related to recidivism, we created three additional comparison groups to provide further tests of whether the 5990 law affects recidivism. Specifically, in addition to analyzing the overall 5990 and comparison

groups, we performed a series of matching procedures. From the overall study groups, we selected three additional sets of study groups:

- **Risk variable matched groups.** For this alternative, we only selected offenders who were closely matched on variables and demographics related to risk for recidivism.
- **Risk variable matched groups where Institute and DOC eligibility agree.** For this alternative, we used the same method as above; however, we only selected offenders in the 5990 period who were identified as eligible for 5990 by both DOC's and the Institute's eligibility algorithm.
- **SRA matched groups.** Finally, we selected offenders by matching on three SRA characteristics: offender score, offense severity level, and length of sentence.¹⁴

Details of our matching procedures, comparison groups, and differences between the groups are found in the Technical Appendix.

After the four study groups were selected, we then performed multivariate analyses shown in the Technical Appendix. Together, these procedures allowed four separate tests of the effect of ESSB 5990 on recidivism rates. As we show in the next section, all four methods produced similar results.

¹³ Offenders must meet offense and risk classification criteria to be eligible for 50 percent earned release. DOC's risk assessment tool, at that time, was implemented in 2001. Thus, we went back as early as possible to select the comparison group.

¹⁴ Calculated as the midpoint of the standard range.

Section III: Recidivism Findings

As with all criminal justice studies conducted by the Institute, recidivism is defined as any offense committed after release to the community that results in a Washington State conviction.¹⁵

Three types of recidivism were analyzed:

- Violent felony convictions;
- Felony convictions, including violent felonies; and
- Total recidivism, including misdemeanors, felonies, and violent felony convictions.

We used regression analyses to adjust for observed differences that exist between the study groups.¹⁶ Controlling for these differences enabled us to calculate adjusted recidivism rates within three years of release from prison.¹⁷

Exhibit 2 displays multivariate-adjusted recidivism rates for felony, violent felony, and total recidivism at the three-year follow-up. The exhibit shows the recidivism results for the 5990 group and the four matched comparison groups. As noted in the previous section, we employed four separate procedures to test the robustness of our estimates.

Felony recidivism. Offenders in the 5990 group had a lower felony recidivism rate than the comparison group, regardless of the matching procedure utilized. Depending on the matching procedure, for example, we found that between 38 and 41 percent of offenders in the 5990 group had a new felony conviction within three years. The comparison group felony recidivism rate was between 41 and 45 percent, depending on the matching procedure. All of these differences were statistically significant reductions favoring the 5990 group.

Exhibit 2
Three-Year Adjusted Recidivism Rates for 5990 and Comparison Groups for Each Matching Procedure

Type of Recidivism	Study Groups for Each Matching Procedure							
	All 5990 offenders and eligible offenders prior to 5990 law		Risk variable matched groups		Risk variable matched groups where Institute and DOC eligibility agree		SRA matched groups	
	5990 Group	Comparison Group	5990 Group	Comparison Group	5990 Group	Comparison Group	5990 Group	Comparison Group
Number in Group	2,614	4,840	2,210	2,210	1,887	1,887	2,284	2,284
Felony	39%**	42%**	38%**	41%**	38%*	41%*	41%**	45%**
Violent	7%	8%	7%	6%	6%	6%	7%	8%
Total	49%**	53%**	48%*	51%*	48%	51%	50%**	56%**

* Statistically significant difference at p <= .1

** Statistically significant difference at p <= .05

¹⁵ R. Barnoski. (1997). *Standards for improving research effectiveness in adult and juvenile justice*. Olympia: Washington State Institute for Public Policy, Document No. 97-12-1201, pg. 2.

¹⁶ Specifically, we used logistic regression and included the independent variables listed in the Appendix, Exhibits B through D.

¹⁷ The actual recidivism rate for the 5990 group was adjusted using the odds ratio from the logistic regression. For example, using the actual recidivism rate of the full comparison group (42 percent) and the regression coefficient (-0.141), we do the following calculation to obtain a recidivism rate of 39 percent for the full 5990 group: $(.42/(1-.42))*EXP(-.141)/(1+(.42/(1-.42))*EXP(-.1413))$.

Violent felony recidivism. There were no statistically significant differences between the study groups for violent felony recidivism for any of the matching procedures. That is, violent recidivism for these offenders has not changed as a result of the implementation of ESSB 5990.

Total recidivism. Offenders in the 5990 group had a lower total recidivism rate (felony and misdemeanor) than the comparison group for each matching procedure. Most of these differences were statistically significant. Depending on the matching procedure, we calculated that offenders in the 5990 group recidivated between 48 and 50 percent within three years. Without 50 percent earned release, between 51 and 56 percent were reconvicted for any new offense within three years.

In summary, our estimates indicate that there has not been an increase in criminal recidivism due to the changes in earned release time. In fact, we found that felony recidivism is reduced by 3.5 percent, while there has been no effect on violent criminal recidivism rates.¹⁸

Section IV: Incapacitation Effect

The results of the study thus far provide an estimate of how the earned early release law affects recidivism (after three years) compared with similar offenders sentenced prior to the law's passage. In addition to this specific deterrent effect, however, the earned release law can also affect crime rates in Washington by what criminologists call an "incapacitation effect."

Empirical research indicates that statewide crime rates are affected by statewide incarceration rates.¹⁹ For example, if everyone in Washington was in prison (a 100 percent incarceration rate) then the crime rate as it is typically measured would drop to zero. On the other extreme, if no one was in prison (a zero percent incarceration rate), then the crime rate would be higher than it is today.²⁰

Since the effect of Washington's earned early release law has been to lower the statewide incarceration rate for certain types of offenders,²¹ then the law could affect crime in Washington through an incapacitation effect. The empirical task is to calculate this incapacitation effect by estimating how changes in the incarceration rate affect the crime rate.

¹⁸ Our estimated 3.5 percent is the average result from the four regressions shown in Exhibit B, after adjusting the effect downward for the less-than-randomized research design of this study.

¹⁹ W. Spelman (2002). What recent studies do (and don't) tell us about imprisonment and crime, in *Crime and Justice: A Review of Research*, Volume 27, ed. Michael Tonry, Chicago: University of Chicago Press, p. 422. See also, S. Aos (2003). *The criminal justice system in Washington State: Incarceration rates, taxpayer costs, crime rates, and prison economics*. Olympia: Washington State Institute for Public Policy, Document No. 03-01-1202. See also, R. Johnson & S. Raphael (2006). *How much crime reduction does the marginal prisoner buy?* <http://imio.haas.berkeley.edu/WilliamsonSeminar/raphael090408.pdf>.

²⁰ The Institute has published a number of studies on the recidivism rates of adult and juvenile offenders. See, for example, E. K. Drake & R. Barnoski (2009). *New risk instrument for offenders improves classification decisions*. Olympia: Washington State Institute for Public Policy, Document No. 09-03-1201.

²¹ See footnote 2.

To gauge the effect of incarceration rates on crime rates, we updated the results of an econometric study we conducted for Washington in 2003.²² For the overall relationship between incarceration and felony crime, we find that a 10 percent decrease in the prison incarceration rate leads to a statistically significant 3.3 percent increase in crime rates, or vice versa. The estimated elasticity from our study is consistent with the findings from other well-researched studies.²³

In addition to this overall incarceration-crime relationship, we also estimate how different types of incarceration rates (for violent offenders, property offenders, and drug offenders) affect different types of reported felony crimes (violent crimes, property crimes, and motor vehicle theft). This additional step is particularly important for this study since the 5990 law only applies to certain property and drug offenders; that is, by design the law excludes violent offenders.

For the average drug and property offender eligible for 50 percent earned release, we estimate that 4.7 property crimes per offender²⁴ are incurred in Washington as a result of the decreased incarceration rate.^{25, 26} We use this information in our cost-benefit analysis.²⁷

²² S. Aos, 2003. The statistical model uses county-level crime data from 1982 to 2004 (n=897, 39 counties for 23 years) and state incarceration rates. In this model, we also control for changes in police levels, local jail rates, statistical measures of the economy, age and ethnic demographics, population density, crime reporting rates, and county fixed effects. We also adjust results for the simultaneity that is inherent in prison-crime relationship.

²³ Spelman, 2002.

²⁴ Property crimes in this analysis include burglary and theft; motor vehicle theft is estimated separately.

²⁵ We found that the incarceration-crime relationship is best estimated with a log-log functional form implying diminishing returns as the incarceration rate is increased. Our estimate of 4.7 property crimes incurred is based on Washington's 2006 incarceration rate for property and drug offenders.

²⁶ The 5990 group spent, on average, 63 fewer days in prison than the comparison group, which is about 17 percent of an annual prison bed.

²⁷ We checked the reasonableness of the estimated 4.7 property crimes incurred by calculating the actual number of felony property offenses adjudicated per 5990 offender during the first 63 days after release from prison. That number is 0.448 property offenses per 5990 offender. We also estimate that, in Washington, the number of felony property convictions per felony property crime is .16. Thus, an estimate of the actual property crimes per offender is 2.9 during the first 63 days, which is consistent with our econometric estimate of 4.7 crimes incurred.

Section V: Cost-Benefit Analysis

Laws or programs that reduce crime produce benefits to both taxpayers and crime victims. On the other hand, laws that increase crime produce costs to taxpayers and victims. For this analysis of the 50 percent earned release law, we found both effects. The first effect is a slight lowering of the three-year felony recidivism rate of offenders who are released under the law. The second effect is an increase in crime because the shortened sentences (63 days) lead to an increase in crime via the incapacitation effect. We used our economic model to calculate a monetary value associated with these two opposing effects.²⁸

Exhibit 3 provides the components of our cost-benefit analysis. We estimate that long-run felony recidivism is reduced by about 3.5 percent as a result of the law. This reduction in crime is expected to produce benefits to crime victims of \$5,096 and benefits to taxpayers of \$2,968 per offender.²⁹

We also calculated two other sources of benefits for the 50 percent earned release law. First, we estimate that \$5,501 in prison costs are saved per offender as a result of the reduced length of stay.³⁰ Second, we calculate an additional \$1,785 per offender in expected labor market earnings as a result of the reduced length of stay.³¹ Summing these three sources of benefits yields total benefits from ESSB 5990 are \$15,359 per offender.

²⁸ For details on the statistical procedures we used to estimate costs and benefits, see: S. Aos, M. Miller, & E. Drake (2006). *Evidence-based public policy options to reduce future prison construction, criminal justice costs, and crime rates*. Olympia: Washington State Institute for Public Policy, Document No. 06-10-1201.

²⁹ These sums are present-value savings associated with multi-year recidivism savings.

³⁰ The 5990 group spent, on average, 63 fewer days in prison than the comparison group. We estimate that each day in prison costs an expected value of \$87.46 for operating and capital costs.

³¹ There is a developing research literature on the degree to which incarceration affects outcomes other than crime. Most of the empirical literature to date has focused on the labor market performance of offenders sent to prison versus those retained in the community. For a review, see: H. J. Holzer (2008). Collateral costs: The effects of incarceration on employment and earnings of young men. In S. Raphael and M. Stoll eds. *Volume on Costs of Mass Incarceration*. New York: Russell Sage Foundation, 2008. This literature is not relevant for this study since the 50 percent earned release law only affects length of stay, not whether an offender goes to prison or not. For this analysis, we only include an estimate of the gained labor market earnings for the 63-day period of reduced prison length of stay.

Next, we estimated the costs of ESSB 5990. As discussed in the previous section of this report, we find that the law reduces incarceration rates, which results in an increase in crime via the incapacitation effect. Applying the same economic model we used to estimate recidivism benefits, we calculate that these additional crimes cost taxpayers and crime victims \$8,179 per offender, as a result of the lowered incarceration rate.

Exhibit 3 shows our bottom line. After subtracting the costs from the benefits, we find the law has an overall net benefit of \$7,179 per offender. Expressed as a benefit-to-cost ratio, we find that the law produces \$1.88 in benefits per dollar of cost.

We also conducted a sensitivity analysis of this bottom line estimate to calculate the probability that our model would produce a finding where costs exceed benefits; that is, where the law would be counterproductive. To do this, we performed a “Monte Carlo” simulation to test the uncertainty in the model.³²

After analyzing the riskiness of this estimate, we find that 91 percent of the time benefits will exceed costs. Conversely, we estimate that 9 percent of the time costs will exceed benefits. This sensitivity analysis provides an assessment of the riskiness in the expected outcomes.

In summary, our best single-point estimate is that the 2003 law generates \$1.88 in benefits per dollar of cost. After checking the uncertainty in this estimate, we find that benefits are likely to at least exceed costs 91 percent of the time.

**Exhibit 3
Cost-Benefit Analysis**

Benefits	
Recidivism effect:	
Future crime victim costs avoided	\$5,096
Future taxpayer costs avoided	\$2,968
Prison costs saved from reduced length of stay	\$5,501
Increased labor market earnings	\$1,785
Total benefits	\$15,359
Costs	
Incapacitation effect:	
Total increase in crime costs due to non-confinement	\$8,179
Bottom Line	
Total net benefits per participant	\$7,179
Benefit-to-cost ratio	\$1.88

³² See the Technical Appendix for details.

Technical Appendix

Matching Procedures for Study Groups

Four samples were created, and analyses conducted, to examine the impact of ESSB 5990 on recidivism using separate multivariate logistic regressions. The four approaches we tested include the following:

- 1) **Overall groups:** Includes all 4,840 offenders who would have been eligible for 50 percent earned release prior to the implementation of the law and 2,614 offenders who were eligible and released under ESSB 5990. Analysis indicated some statistically significant differences between the two groups (See Exhibit A).
- 2) **Risk variable matched groups:** We matched eligible offenders after the implementation of ESSB 5990 to eligible comparison group offenders on variables and demographics related to risk for recidivism (see variables in Exhibit A). By conducting a “one-to-one” matched sample, we matched 86 percent of the offenders in the 5990 group resulting in 2,210 offenders in each of the study groups. Analysis of the matched groups indicated no statistically significant differences between the two groups on the characteristics displayed in Exhibit A ($p <= .1$).
- 3) **Risk variable matched groups (Institute and DOC eligibility algorithms agree):** We used the same method as in selection process (2); however, we only selected offenders in the 5990 period who were identified as eligible for 5990 by both DOC’s and the Institute’s eligibility algorithm. The result was a sample of 1,887 offenders in each of the study groups. Analysis of the matched groups indicated no statistically significant differences between the two groups on the characteristics displayed in Exhibit A ($p <= .1$).
- 4) **SRA-matched groups:** Comparison-group offenders were matched to 5990 offenders on SRA characteristics: offender score, offense severity level, and number of days at the mid-point of the sentencing grid. The result was a sample of 2,284 in each of the study groups. Analysis of the matched groups indicated some statistically significant differences between the two groups on the characteristics displayed in Exhibit A ($p <= .1$).

Exhibit A displays the characteristics of 5990 groups versus the comparison groups for each matching procedure. Exhibits B, C, and D display the logistic regression models for felony, violent felony, and total recidivism at the three-year follow-up for each of our sampling methodologies.

Sensitivity Analysis for the Cost-Benefit Estimates

On Exhibit 3, we estimate a base case where the 50 percent earned release law generates \$1.88 in benefits per dollar of cost. We conducted a sensitivity analysis of this estimate to calculate a probability that our model would produce a finding where costs exceed benefits. To do this, we performed a “Monte Carlo” simulation using Palisade Corporation’s @RISK[®] software, testing different levels of uncertainty of key factors in our model.

The sensitivity model simultaneously varied each of the following factors in the cost-benefit analysis shown in Exhibit 3:

- 1) We varied the mean recidivism benefits (\$5,096 in victim benefits and \$2,968 in taxpayer benefits, for total recidivism benefits of \$8,064) by applying the standard error in the underlying regression equation, shown in Exhibit B in the Technical Appendix. In the simulation, this was modeled as a normal distribution with a mean of \$8,064 and a standard deviation of \$3,244.
- 2) Prison cost savings are a product of the average price per day and the number of days of reduced prison sentence. Marginal operating and capital taxpayer costs per day of incarceration were modeled as a triangular distribution with a mean and high estimate of \$93.71 per day and low estimate of \$74.97 (20% lower than the mean). We included a lower cost per day estimate because these offenders are lower risk and may be housed in lower cost facilities. We also varied the estimated prison days reduced from a mean of 63 plus or minus 3 days; this was also modeled with a triangular distribution.
- 3) The expected benefit associated with mean labor market earnings from the reduced length of stay is \$2,142. We varied this mean from a low of zero earnings (assuming an offender did not work during the 63 days) to a high of \$3,212 (1.5 times higher than the mean), resulting in an expected earnings of \$1,785. The distribution was modeled with a triangular distribution.
- 4) The incapacitation effect is the product of the number of crimes incurred as a result of the reduced incarceration rate and the average cost of those crimes to taxpayers and crime victims. The mean number of crimes was modeled with a normal distribution (mean of 4.7, from our econometric model, and an assumed standard deviation of 1.5). The cost per crime was modeled with a triangular distribution with a low of \$250 (the minimum property loss for a felony in Washington), a midpoint of \$1,727 (the result from our economic model), and a high of \$3,204 (twice the midpoint minus \$250), resulting in an expected cost per crime of \$1,727.

With these assumptions we ran the simulation model 10,000 times. Across these 10,000 runs, the mean net present value (benefits minus costs) was \$7,179 per offender. In 91 percent of the runs, benefits exceeded costs; in 9 percent of runs, costs exceeded benefits.

Exhibit A
Characteristics of 5990 Groups versus Comparison Groups

	Overall groups: All 5990 offenders and eligible offenders prior to 5990 law			Risk variable matched groups			Risk variable matched groups where Institute and DOC eligibility agree			SRA matched groups		
	Comparison Group	5990 Group	p value	Comparison Group	5990 Group	p value	Comparison Group	5990 Group	p value	Comparison Group	5990 Group	p value
Number in Study Group	4,840	2,614		2,210	2,210		1,887	1,887		2,284	2,284	
Means												
Felony risk score ^a	69.1	68.6	0.24	68.4	68.5	0.80	67.8	68.0	0.72	70.5	69.8	0.21
Non-drug risk score ^a	46.2	45.3	0.02	45.4	45.2	0.71	44.8	44.7	0.80	47.7	46.4	0.00
Violent risk score ^a	27.1	26.7	0.02	26.6	26.8	0.33	26.3	26.4	0.68	27.7	27.0	0.00
Total adult felony adjudications	3.9	3.8	0.57	3.7	3.7	0.84	3.6	3.7	0.60	4.1	4.0	0.17
SRA offender score ^b	4.8	4.9	0.64	4.6	4.6	0.70	4.5	4.6	0.64	5.1	5.1	1.00
SRA seriousness level ^b	4.7	4.4	0.00	4.5	4.4	0.17	4.6	4.4	0.16	4.2	4.2	1.00
Sentence grid mid-point days ^b	999	997	0.90	935.6	937.8	0.92	944.2	946.2	0.94	994.0	994.0	1.00
Age at release	34	34	0.73	33.7	33.7	0.96	33.5	33.6	0.92	34.7	34.6	0.79
Age at sentence	33	33	0.33	32.3	32.5	0.56	32.2	32.4	0.47	33.2	33.2	0.81
Percentages												
Male	80%	78%	0.05	81%	81%	1.00	79%	79%	1.00	80%	78%	0.13
Black	23%	19%	0.00	17%	17%	1.00	17%	17%	1.00	22%	19%	0.01
White	71%	74%	0.00	79%	79%	1.00	80%	80%	1.00	73%	75%	0.09
Hispanic	17%	19%	0.01	17%	17%	1.00	18%	18%	1.00	14%	16%	0.10

^a The risk scores are calculated using DOC's static risk instrument. For more information, see:

R. Barnoski & E. Drake (2007). *Washington's Offender Accountability Act: Department of Corrections' static risk instrument*. Olympia: Washington State Institute for Public Policy, Document No. 07-03-1201.

^b The Sentencing Reform Act (SRA) of 1981 established a "sentencing grid," which is based upon the offender score and offense seriousness level. The offender score is calculated primarily on prior convictions (0 to 9 plus) and the seriousness level is reflective of the current offense of conviction and ranges from a low of 1 to a high of 16.

Exhibit B

Logistic Regression Results for Three-Year Felony Recidivism for Each Matching Procedure

Variable	Overall groups: All 5990 offenders and eligible offenders prior to 5990 law		Risk variable matched groups		Risk variable matched groups where Institute and DOC eligibility agree		SRA matched groups	
	Parameter Estimate	p value	Parameter Estimate	p value	Parameter Estimate	p value	Parameter Estimate	p value
5990 Group	-0.141	0.01	-0.140	0.04	-0.133	0.07	-0.155	0.02
Intercept	-2.156	0.00	-2.036	0.00	-2.123	0.00	-2.345	0.00
Felony risk score ^a	0.028	0.00	0.030	0.00	0.033	0.00	0.031	0.00
Non-drug risk score ^a	-0.002	0.55	-0.001	0.79	-0.002	0.75	-0.002	0.63
Violent risk score ^a	0.025	0.00	0.018	0.08	0.019	0.13	0.020	0.03
Total adult felony adjudications	0.044	0.02	0.022	0.41	0.030	0.30	0.022	0.36
SRA offender score ^b	0.026	0.07	0.030	0.24	0.023	0.42	0.052	0.02
SRA seriousness level ^b	-0.032	0.10	-0.048	0.11	-0.055	0.10	-0.013	0.65
Sentence grid mid-point days ^b	0.000	0.01	0.000	0.48	0.000	0.80	0.000	0.04
Current DOSA sentence ^c	0.129	0.03	0.083	0.28	0.097	0.25	0.062	0.41
Age at release	-0.019	0.00	-0.017	0.00	-0.017	0.00	-0.016	0.00
Male	0.207	0.00	0.249	0.01	0.257	0.02	0.235	0.01
Black	0.122	0.31	0.032	0.87	-0.119	0.59	-0.009	0.96
White	-0.290	0.01	-0.349	0.05	-0.467	0.02	-0.315	0.02
Hispanic	-0.875	0.00	-1.073	0.00	-1.066	0.00	-0.802	0.00
5990 Group N	2,614		2,210		1,887		2,284	
Comparison N	4,840		2,210		1,887		2,284	

^a The risk scores shown are calculated based upon the scoring methods of DOC's static risk instrument. For more information, see: R. Barnoski & E. Drake (2007). *Washington's Offender Accountability Act: Department of Corrections' static risk instrument*. Olympia: Washington State Institute for Public Policy, Document No. 07-03-1201.

^b The Sentencing Reform Act (SRA) of 1981 established a "sentencing grid," which is based upon the offender score and offense seriousness level. The offender score is calculated primarily on prior convictions (0 to 9 plus) and the seriousness level is reflective of the current offense of conviction and ranges from a low of 1 to a high of 16.

^c The Drug Offender Sentencing Alternative (DOSA) allows certain offenders to receive reduced prison terms in exchange for completing chemical dependency treatment while incarcerated. There was an increased use of DOSA sentences during Fiscal Years 2000 through 2002, but this number has decreased each year since that time. For more information, see: *Statistical summary of adult felony sentencing*. Fiscal Years 2000 through 2004. Olympia: Washington State Sentencing Guidelines Commission <<http://www.sgc.wa.gov/>>. Approximately 25 percent of all 5990 eligible offenders after the implementation of the law had a DOSA sentence compared with 37 percent of all offenders who were eligible prior to the implementation of ESSB 5990. Thus, we included this variable in our regression models to control for these statistically significant differences between the groups.

Exhibit C

Logistic Regression Results for Three-Year Violent Felony Recidivism for Each Matching Procedure

Variable	Overall groups: All 5990 offenders and eligible offenders prior to 5990 law		Risk variable matched groups		Risk variable matched groups where Institute and DOC eligibility agree		SRA matched groups	
	Parameter Estimate	p value	Parameter Estimate	p value	Parameter Estimate	p value	Parameter Estimate	p value
5990 Group	-0.084	0.40	0.070	0.58	0.026	0.85	-0.092	0.44
Intercept	-3.243	0.00	-3.276	0.00	-3.171	0.00	-3.716	0.00
Felony risk score ^a	-0.011	0.09	0.006	0.54	0.006	0.59	-0.002	0.77
Non-drug risk score ^a	0.018	0.00	0.014	0.11	0.012	0.19	0.016	0.03
Violent risk score ^a	0.057	0.00	0.033	0.05	0.029	0.13	0.058	0.00
Total adult felony adjudications	0.034	0.28	-0.013	0.79	-0.010	0.85	-0.023	0.58
SRA offender score ^b	-0.025	0.37	-0.030	0.56	0.011	0.84	0.026	0.52
SRA seriousness level ^b	-0.020	0.58	-0.005	0.93	0.011	0.86	0.020	0.71
Sentence grid mid-point days ^b	0.000	0.93	0.000	0.87	0.000	0.73	0.000	0.45
Current DOSA sentence ^c	-0.077	0.47	-0.080	0.60	-0.047	0.77	-0.273	0.06
Age at release	-0.043	0.00	-0.056	0.00	-0.056	0.00	-0.041	0.00
Male	0.736	0.00	0.953	0.00	1.003	0.00	0.551	0.01
Black	0.221	0.28	-0.067	0.83	-0.091	0.79	0.191	0.48
White	-0.215	0.25	-0.345	0.22	-0.422	0.18	-0.198	0.42
Hispanic	-0.546	0.00	-1.047	0.00	-1.162	0.00	-0.526	0.02
5990 Group N	2,614		2,210		1,887		2,284	
Comparison N	4,840		2,210		1,887		2,284	

^a The risk scores shown are calculated based upon the scoring methods of DOC's static risk instrument. For more information, see: R. Barnoski & E. Drake (2007). *Washington's Offender Accountability Act: Department of Corrections' static risk instrument*. Olympia: Washington State Institute for Public Policy, Document No. 07-03-1201.

^b The Sentencing Reform Act (SRA) of 1981 established a "sentencing grid," which is based upon the offender score and offense seriousness level. The offender score is calculated primarily on prior convictions (0 to 9 plus) and the seriousness level is reflective of the current offense of conviction and ranges from a low of 1 to a high of 16.

^c The Drug Offender Sentencing Alternative (DOSA) allows certain offenders to receive reduced prison terms in exchange for completing chemical dependency treatment while incarcerated. There was an increased use of DOSA sentences during Fiscal Years 2000 through 2002, but this number has decreased each year since that time. For more information, see: *Statistical summary of adult felony sentencing. Fiscal Years 2000 through 2004*. Olympia: Washington State Sentencing Guidelines Commission. Approximately 25 percent of all 5990 eligible offenders after the implementation of the law had a DOSA sentence compared with 37 percent of all offenders who were eligible prior to the implementation of ESSB 5990. Thus, we included this variable in our regression models to control for these statistically significant differences between the groups.

Exhibit D

Logistic Regression Results for Three-Year Total Recidivism for Each Matching Procedure

Variable	Overall groups: All 5990 offenders and eligible offenders prior to 5990 law		Risk variable matched groups		Risk variable matched groups where Institute and DOC eligibility agree		SRA matched groups	
	Parameter Estimate	p value	Parameter Estimate	p value	Parameter Estimate	p value	Parameter Estimate	p value
5990 Group	-0.178	0.00	-0.128	0.06	-0.117	0.12	-0.211	0.00
Intercept	-2.568	0.00	-2.682	0.00	-2.590	0.00	-2.512	0.00
Felony risk score ^a	0.037	0.00	0.037	0.00	0.040	0.00	0.037	0.00
Non-drug risk score ^a	0.002	0.51	0.005	0.27	0.007	0.20	0.001	0.86
Violent risk score ^a	0.030	0.00	0.023	0.04	0.016	0.24	0.028	0.00
Total adult felony adjudications	0.018	0.35	0.011	0.69	0.025	0.44	0.029	0.25
SRA offender score ^b	0.018	0.21	0.024	0.36	0.021	0.49	0.038	0.09
SRA seriousness level ^b	-0.018	0.36	-0.008	0.79	-0.010	0.76	0.000	0.99
Sentence grid mid-point days ^b	0.000	0.00	0.000	0.06	0.000	0.20	0.000	0.00
Current DOSA sentence ^c	0.172	0.00	0.135	0.09	0.151	0.08	0.074	0.34
Age at release	-0.008	0.02	-0.005	0.28	-0.005	0.35	-0.008	0.08
Male	0.049	0.50	0.102	0.31	0.140	0.19	0.124	0.18
Black	0.122	0.33	0.117	0.56	-0.212	0.37	-0.145	0.37
White	-0.385	0.00	-0.397	0.03	-0.664	0.00	-0.522	0.00
Hispanic	-1.017	0.00	-1.161	0.00	-1.199	0.00	-0.906	0.00
5990 Group N	2,614		2,210		1,887		2,284	
Comparison N	4,840		2,210		1,887		2,284	

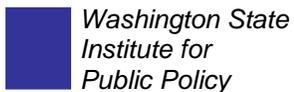
^a The risk scores shown are calculated based upon the scoring methods of DOC's static risk instrument. For more information, see: R. Barnoski & E. Drake (2007). *Washington's Offender Accountability Act: Department of Corrections' static risk instrument*. Olympia: Washington State Institute for Public Policy, Document No. 07-03-1201.

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^c The Drug Offender Sentencing Alternative (DOSA) allows certain offenders to receive reduced prison terms in exchange for completing chemical dependency treatment while incarcerated. There was an increased use of DOSA sentences during Fiscal Years 2000 through 2002, but this number has decreased each year since that time. For more information, see: *Statistical summary of adult felony sentencing. Fiscal Years 2000 through 2004*. Olympia: Washington State Sentencing Guidelines Commission. Approximately 25 percent of all 5990 eligible offenders after the implementation of the law had a DOSA sentence compared with 37 percent of all offenders who were eligible prior to the implementation of ESSB 5990. Thus, we included this variable in our regression models to control for these statistically significant differences between the groups.

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