

January 2007

## THE DANGEROUS MENTALLY ILL OFFENDER PROGRAM: COST EFFECTIVENESS 2.5 YEARS AFTER PARTICIPANTS' PRISON RELEASE

Reductions in criminal recidivism attributed to the "Dangerous Mentally Ill Offender" (DMIO) program in the previous Washington State Institute for Public Policy (Institute) evaluation are sustained at the 2.5-year mark. The subsequent reduction in felonies associated with the program is valued, by taxpayers and crime victims, at approximately \$820 per participant minus program costs; this represents a return of about \$1.03 for every public dollar spent on the program. Approximately 165 clients are enrolled in the program in a given month.

In 1999, legislation was passed to better identify and provide additional mental health treatment for mentally ill offenders released from prison, who pose a threat to public safety, and agree to participate in the program.<sup>1</sup> A "Dangerous Mentally Ill Offender" is defined by the legislation as a person with a mental disorder who has been determined to be dangerous to self or others. Through interagency collaboration and state-funded mental health treatment and support services, the legislation intends to promote the safe transition of these individuals to the community.

The original legislation directed the Institute and the Washington Institute for Mental Illness Research and Training to evaluate the program. The 2005 evaluation compared 1.5-year outcomes of DMIO participants admitted to the program during its first two years with outcomes of a similar comparison group of offenders from the Community Transition Study (CTS) who were released in 1996 and 1997.<sup>2</sup> Subsequently, the legislature budgeted funds for the Institute to continue the evaluation. The DMIO program is intended to serve participants up to five years after prison release; this analysis re-examines criminal recidivism outcomes 2.5 years post-release. A detailed report on program costs and implementation is also available.<sup>3</sup>

<sup>1</sup> Chapter 214, Laws of 1999.

<sup>2</sup> D. Lovell, G. Gagliardi, & P. Phipps. (2005). *Washington's Dangerous Mentally Ill Offender Law: Was community safety increased?* Olympia: Washington State Institute for Public Policy.

<sup>3</sup> D. Lovell. (in press). *Washington's Dangerous Mentally Ill Offender Law: Community safety, costs, and program development.* Olympia: Washington State Institute for Public Policy.

### Summary

Washington State's DMIO program, enabled by the 1999 Legislature, identifies mentally ill prisoners who pose a threat to public safety and provides them services and treatment up to five years after their release from prison. Our analysis of 100 DMIO participants 2.5 years after release from prison indicates that the program:

- ✓ **Reduces new offense rates by 38%.**
- ✓ **Reduces felony recidivism rates 45%.**
- ✓ **Has yet to demonstrate a statistically discernable effect on violent felonies.**

Using methods developed by the Institute for previous crime studies, these recidivism outcomes were used to estimate the total economic impact of the program for both taxpayers and victims of crime. The state spends \$24,280 per DMIO participant. **For taxpayers and victims**, the DMIO program generates:

- ✓ **\$25,100 in benefits per participant.**
- ✓ **\$1.03 for every dollar spent.**

### Previous Findings

The 2005 report demonstrated that the DMIO program significantly reduced recidivism after 1.5 years.<sup>4</sup> Overall, the program appeared to be accomplishing its other principal objectives such as improved delivery of social services and improved living situations. The benefit-cost analysis in that report indicated that the reductions in DMIO recidivism generated financial benefits to taxpayers that were less than program costs. This report provides an improved estimate of costs and benefits based on newly acquired information on per-person program expenditures and a re-estimate of the total economic benefits to taxpayers and crime victims.

<sup>4</sup> Lovell et al. (2005).

## DMIO and Comparison Groups

To evaluate the program, it is necessary to compare DMIO participants with a similar group of offenders (comparison group) who were released without the interagency coordination and supplemental funding for services created for the DMIO program. Consistent with the 2005 study, the selected comparison group comprised mentally ill offenders, released from Washington State prisons in 1996 and 1997, who were part of the Community Transitions Study (CTS). The DMIO study group consists of 113 participants released by the end of 2002, the same individuals followed in the previous study.

One DMIO participant died immediately after release and was excluded from the analysis. Other participants were omitted because they were committed to a state hospital over the follow-up period, transferred out-of-state, or committed as sexual predators. The outcomes of the remaining 100 participants were examined. Their outcomes were compared with the outcomes of 287 individuals in the comparison group. Subjects in both groups were examined over an equal length of time, 2.5 years after release.<sup>5</sup>

## Key Methodological Issues

Due to ethical and political concerns about denial of service and public safety, a random assignment research design was not used for this study. Rather, we used a quasi-experimental approach that relied on a comparison group from the CTS. Multivariate statistical controls (logistic regression) were also used to account for observed differences between the two groups.

Pre-existing differences were found between DMIO participants and comparison subjects and are reported in Exhibit 1. More comparison group subjects were female or 25 years old or younger upon release; most importantly, they also had more previous felonies, though fewer violent ones. As a result of these and other differences, the comparison group was found to be at substantially higher risk of felony recidivism than the DMIO group (41 percent versus 29 percent respectively).<sup>6</sup>

<sup>5</sup> This study relied on databases maintained by the Administrative Office of the Courts; DOC; the Department of Social and Health Services Mental Health Division, Division of Alcohol and Substance Abuse, and the Research and Data Analysis Division; and Department of Health.

<sup>6</sup> G. Gagliardi, D. Lovell, P. Peterson, & R. Jemelka. (2004). Forecasting Recidivism in Mentally Ill Offenders Released From Prison. *Law and Human Behavior* 928(2): 133-155.

**Exhibit 1**  
**Significant Pre-Existing Differences Between DMIO Participants and Comparison Group**

Pre-Release Variables	Means/Proportions	
	Comparison	DMIO
Female*	33%	9%
≤ age 25 at release**	19%	9%
Time served (days)*	799.9	1362.4
Previous felonies**	3.98	3.33
Previous violent felonies*	.72	1.47
Previous sex felonies*	.16	.32
Previous drug felonies*	.97	.32
Misdemeanor assaults*	.66	1.37
Misdemeanor offenses**	3.16	3.29
Index violent offense*	37%	82%
Felony risk probability*	.41	.29

\* Statistically significant,  $p < .01$

\*\* Statistically significant,  $p < .05$

The observed differences between the recidivism rates of DMIO participants and the comparison group could potentially be caused by factors other than DMIO participation. To account for this possibility, we conducted a logistic regression analysis that included, as explanatory variables, all pre-existing differences detailed in Exhibit 1 (in addition to DMIO treatment).

There are several limitations to the research design adopted for this study:

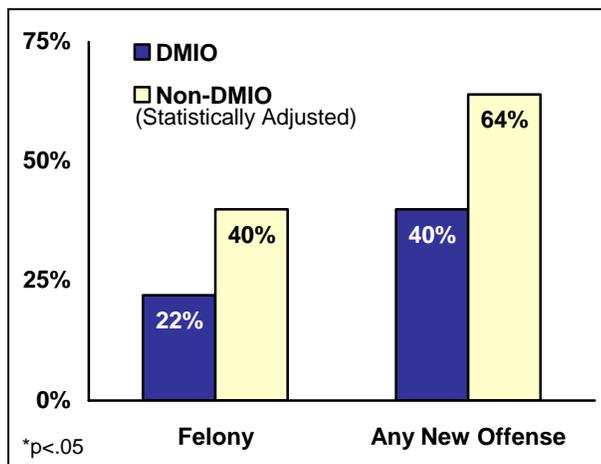
- Individuals in the comparison group were released from prison more than four years before DMIO participants were released. During the intervening period, changes in factors such as interagency coordination and community supervision could account for some effects attributed to the DMIO program.
- Statistical controls account for significant observable differences between the study groups. Possible unobserved differences, however, such as motivation and participant selection, may bias the estimate of program effects. Consequently, for the benefit-cost analysis, we discount the estimated effect size to arrive at a more conservative estimate of the economic outcomes.
- This analysis of DMIO participants' criminal recidivism should still be considered preliminary. This report describes recidivism outcomes observed over the first 2.5 years of a program that is available to participants for up to five years.

## Criminal Recidivism Rates After 2.5 Years

**Significant Reductions in Recidivism.** We define recidivism, in all Institute reports, as a reconviction in a Washington court for any offense during the follow-up period. We examined three categories of recidivism: felony, any new offense (including all felonies and misdemeanors), and violent felony recidivism. The statistically significant differences in criminal recidivism associated with the DMIO program are shown in Exhibit 2.

After controlling for other characteristics that may influence recidivism, participation in the DMIO program significantly reduced the likelihood of felony recidivism (22 versus 40 percent) and recidivism for any new offense (40 versus 64 percent).<sup>7</sup>

**Exhibit 2**  
**Reductions in Recidivism Rates**  
**Attributable to the DMIO Program\***  
**(2.5-year follow-up, statistically adjusted)**



**Felony Recidivism.** After controlling for the pre-existing differences listed in Exhibit 1—many of which are well-known recidivism risk factors—the DMIO program was found to substantially reduce felony recidivism relative to the comparison group.<sup>8</sup> After adjusting for these pre-existing differences, DMIO participants were about 55 percent as likely to be convicted of a new felony as the comparison group. That is, the comparison subjects were about 1.8 times more likely to be reconvicted of a felony. The DMIO program had an effect size of  $-.39$  in reducing the likelihood of a future felony conviction.

<sup>7</sup> Here, the actual recidivism rates of DMIO participants are compared to “statistically adjusted” rates obtained by calculating odds ratios based on the logistic regression coefficients associated with DMIO participation and applying them to the actual DMIO recidivism rates.

<sup>8</sup> Beta= $-.85$ ;  $p=.016$ ; ROC= $.82$ .

**Other Recidivism Measures.** Similar analyses were conducted for two other measures: “any new offense,” a composite of misdemeanor and felony recidivism, and for violent felony recidivism. Relative to comparison subjects, DMIO-treated subjects were about 63 percent as likely to commit any new offense.<sup>9</sup> The DMIO treatment effect size was  $-.47$ , larger than that for felony recidivism.

The unadjusted rates for violent felonies were higher in the DMIO group; but after controlling for other factors that affect recidivism, the impact of the DMIO program was not significantly different from zero.<sup>10</sup>

**Exhibit 3**  
**1.5- and 2.5-Year Criminal Recidivism**  
**Unadjusted Rates for DMIO and Comparison Groups**

Recidivism Type	Comparison		DMIO		Effect Size
	N	Rate	N	Rate	
<b>1.5-year follow-up</b>					
Felony	97	34%	15	15%	$-.34^*$
Any Offense	152	53%	31	31%	$-.41^*$
Violent Felony	14	5%	10	10%	NS
<b>2.5-year follow-up</b>					
Felony	122	43%	22	22%	$-.39^*$
Any Offense	185	65%	40	40%	$-.47^*$
Violent Felony	25	9%	13	13%	NS

\*Statistically adjusted effect sizes significant at  $p<.05$

**Program Effects Sustained Over Time.** The impact of DMIO participation on recidivism has not weakened since the 2005 evaluation. At the 1.5-year follow-up, 15 percent of DMIO participants had committed new felonies since release, compared with 34 percent in the comparison group (Exhibit 3).<sup>11</sup> The statistically-adjusted effect size associated with DMIO participation at that time was  $-.34$  for new felonies. A year later, the felony recidivism rates had increased to 22 and 43 percent, respectively, with an adjusted effect size of DMIO participation at  $-.39$ . The adjusted effect size of DMIO on “any new offenses” followed a pattern similar to felony recidivism:  $-.41$  at 1.5 years and  $-.47$  at 2.5 years. The impact of DMIO on violent felony recidivism was not statistically significant in either follow-up period.

<sup>9</sup> Beta= $-.94$ ;  $p=.003$ ; ROC= $.82$ .

<sup>10</sup>  $p=.22$

<sup>11</sup> Because they are unadjusted, these rates are not equal to those in Exhibit 2 for the comparison group.

**Violent Felony Offenses in Detail.** Our analysis did not detect a statistically significant link between DMIO participation and *violent* felonies. This finding may be due to the lack of statistical power resulting from the low number of offenses committed by the study groups. Future analyses with larger samples and longer follow-up will increase the confidence and precision of this analysis. The DMIO program was created in part to reduce serious violent crime. Therefore, we display new violent felonies in detail (Exhibit 4). New violent felonies were relatively infrequent for both the comparison and DMIO groups, and very few DMIO offenses are classified as “most serious violent felonies” as defined in RCW 9.9A.030. At this time, however, these data do not provide a statistically meaningful comparison of the DMIO and comparison groups regarding violent felonies.

**Exhibit 4**  
**Violent Felony Recidivism in the Comparison and DMIO Groups: 2.5-Year Follow-up**

Violent Felony	Comparison N=287	DMIO N=100	Total
Murder in the 1st Degree <sup>†</sup>	1	0	1
Rape of a Child in the 1st Degree <sup>†</sup>	1	0	1
Rape in the 2nd Degree <sup>†</sup>	0	1	1
Robbery in the 1st Degree <sup>†</sup>	1	0	1
Robbery in the 2nd Degree <sup>†</sup>	5	0	5
Extortion in the 1st Degree <sup>†</sup>	0	1	1
Assault in the 1st Degree <sup>†</sup>	1	0	1
Assault in the 2nd Degree	2	0	2
Assault in the 3rd Degree	5	5	10
Vehicular Homicide	1	0	1
Custodial Assault	2	0	2
Violation of Protection Order	1	1	2
Harassment	1	4	5
Firearm Possession	3	1	4
Unspecified	1	0	1
<b>Total Violent Felonies</b>	<b>25</b>	<b>13</b>	<b>38</b>

<sup>†</sup> Most violent felonies according to RCW 9.9A.030.

## Program Costs and Recidivism Savings

**Benefit-Cost Analysis.** The Institute has developed methods of economic analysis to assess program benefits in terms of reduced costs to taxpayers for law enforcement, adjudication, and corrections, and for the victims of crime. To calculate benefits, the reductions in recidivism attributable to the DMIO program are applied to the life-time distribution of criminal offenses expected from those released from prison. Per-person program costs were estimated based on a review of provider billing records.

**Program Costs.** The state compensates Regional Support Networks (RSNs) and other providers who contract with the Department of Social and Health Services (DSHS) to provide additional support services for DMIO program participants. The program funds up to \$10,000 per DMIO participant per year, for a maximum of five years. The specific funding formula established by DSHS-Mental Health Division is as follows:

- Providers of special services during the three months just before and just after prison release are reimbursed \$6,000 to engage the participant.
- After the first three months, providers are reimbursed \$700 per month for special DMIO service for Medicaid-eligible participants and \$900 per month for non-Medicaid-eligible participants.

Per-person program costs over the 2.5 year follow-up period are estimated at \$24,100 per participant (in 2006 dollars). This estimate is based on a detailed review of billing records for agencies serving 131 DMIO participants released between July 1, 2002, and December 30, 2003.<sup>12</sup> The appendix provides more detail on costs.

**Cost Savings of Reduced Recidivism.** Does the value of the reduction in crime attributed to the DMIO program outweigh the costs? To answer this question, we turned to the Institute’s benefit-cost model.<sup>13</sup> When there are fewer crimes, there are fewer victims and taxpayers spend less on the criminal justice system. We estimate the present value of crime-related costs avoided over the lifetime of a participant for both taxpayers and crime

<sup>12</sup> Lovell (in press). Detailed cost data for the 100 DMIO participants used in the recidivism analysis are unavailable.

<sup>13</sup> S. Aos, R. Lieb, J. Mayfield, M. Miller, A. Pennucci. (2004). *Benefits and costs of prevention and early intervention programs for youth*. Olympia: Washington State Institute for Public Policy.

victims. To determine the economic “bottom line” of the program, we subtract the cost of the DMIO program from the present-value sum of its benefits (including avoided costs).

When research is based on a less-than-randomized research design, we know the results have a larger margin of error than a randomized design. Since random assignment was not possible for this study, we reduced the estimated effect on recidivism by 50 percent when calculating cost savings.<sup>14</sup> That is, since we cannot control for selection bias that may result in an overestimation of the effectiveness of the program, we apply a 50 percent discount factor to the program effect when we perform our benefit-cost analysis.

We estimate that the DMIO program costs about \$24,280 per participant over the first 2.5 years post release and produces about \$25,100 in crime-reduction benefits (Exhibit 5). Of these total benefits, \$11,450 accrues to taxpayers in the form of reduced criminal justice system expenditures; another \$13,650 accrues to society because there are fewer crime victims. The result is an overall return to society of \$820 or \$1.03 per dollar spent on a DMIO participant.

**Exhibit 5**  
**DMIO Program Benefits and Costs**

	<b>Taxpayers and Victims</b>	<b>Taxpayers Only</b>
Benefits (over life-time)	\$25,100	\$11,450
Costs (over 2.5 years)	\$23,500	\$24,280
Benefit/Cost Ratio	\$1.03	\$0.47
Net Benefits	\$820	-\$12,830

The Institute has measured the cost effectiveness of a number of other programs that target adult offenders.<sup>15</sup> The net benefits (total benefits minus costs) attributed to each of these programs are described in Exhibit 6. While the benefits of the DMIO program exceed the costs, according to our analysis, it does not rank highly in cost effectiveness compared with other programs. These other programs, however, may not necessarily be effective for individuals eligible for the DMIO program.

<sup>14</sup>The rationale for this discount is explained in Aos (2004).

<sup>15</sup> 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.

**Exhibit 6**  
**Net Benefits of Research-Based Offender Programs**

<b>Adult Offender Program</b>	<b>Net Benefits</b>
Vocational education in prison	\$13,738
Treatment-oriented intensive supervision	\$11,563
Cognitive-behavioral therapy	\$10,669
Drug treatment in community	\$10,299
Correctional industries in prison	\$10,054
Drug treatment in prison	\$9,439
Adult basic education in prison	\$7,836
Adult drug courts	\$4,767
Employment and job training in the community	\$4,359
Electronic monitoring in lieu of jail time	\$870
<b>DMIO program</b>	<b>\$820</b>
Sex offender treatment in prison with aftercare	-\$3,258
Surveillance-oriented intensive supervision	-\$3,747

Adapted from Aos et al. (2006).

## Conclusion

The reductions in DMIO criminal recidivism found during the first 1.5 years after prison release hold up at the 2.5 year mark. Participation in DMIO is associated with statistically significant decreases in felony recidivism and in recidivism for combined felony or misdemeanor offenses. The analysis was unable to identify statistically significant effects on violent felony recidivism. A benefit-cost analysis indicates that the reduction in criminal recidivism attributed to the DMIO program provides a net economic benefit to crime victims and taxpayers, although, net benefits are small compared with other offender programs.

The pre-existing differences between the DMIO and comparison groups, such as recidivism risk and gender, remain a potential weakness of this study. Future analyses will include a larger sample of DMIO participants and a comparison group that more closely resembles the DMIO population. We are also unable to account for a potentially important difference between DMIO and comparison groups, willingness to participate. Currently, we account for this selection bias by discounting our findings by 50 percent. Future analyses, based on a substantially larger sample of DMIO participants, will provide an opportunity to address the issue of selection bias more effectively.

**Appendix: DMIO Program Costs**

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Cost estimates are based on a cohort of 116 DMIO participants released from prison between July 1, 2002, and December 30, 2003. The actual billings attributed to these clients were examined over a two-year period and are reported in Exhibit A1.<sup>16</sup> Administrative costs are based on average enrollments of 165 during 2005, a period during which program participation stabilized.

**Exhibit A1  
Total and Per-Capita Costs for  
Two Years After Prison Release (2004 Dollars)**

Period	Total Billings (N=116)	Per Capita Costs		
		Billing	Admin <sup>(2)</sup>	Total
Months 1-6 <sup>(1)</sup>	\$750,430	\$6,580	\$680	\$7,260
Months 7-12	\$419,250	\$3,680	\$680	\$4,360
Months 13-18	\$384,860	\$3,380	\$680	\$4,060
Months 19-24	\$345,090	\$3,030	\$680	\$3,700
2-Year Total	\$1,899,630	\$16,670	\$2,720	\$19,390
Months 25-30 (estimate)	--	\$2,680	\$680	\$3,360
2.5-Year Total (estimate)	--	\$19,350	\$3,400	\$22,740 <sup>(3)</sup>

Notes: (1) includes transition costs for pre- and post-release planning, engagement, and services; (2) based on stable program enrollments of 165; (3) For the benefit-cost calculations in this report, 2.5 year expenditures were estimated by extrapolating an additional six months at per-person costs expected during the 25- to 30-month period. Costs were then expressed in 2006 dollars (\$24,280).

<sup>16</sup> More details on these costs estimates are provided in Lovell (in press).



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