Correctional Education as a Crime Control Program

by

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EXECUTIVE SUMMARY

Spending on prison education programs fell even as prison populations and budgets soared during the 1980s and 1990s. In the current fiscal situation many states find themselves in, additional cutbacks in correctional education programs are expected. Do those reductions make sense, either from a crime-control perspective or from a long-term budget perspective?

We know expanding the prison population works at reducing crime, but with a very high price tag. Prison capacity expansion has been estimated to prevent 60,000 to 340,000 crimes per year with a respective cost of 200 million to 5.5 billion dollars.

Several studies have shown that prison education programs also significantly reduce crime. Once correctional education participants are released, they are about 10 to 20 percent less likely to re-offend than the average released prisoner.

This study compares the cost-effectiveness of these two crime control methods - educating prisoners and expanding prisons. One million dollars spent on correctional education prevents about 600 crimes, while that same money invested in incarceration prevents 350 crimes. Correctional education is almost twice as cost-effective as a crime control policy.

Additionally, correctional education may actually create long-run net cost savings. Inmates who participate in education programs are less likely to return to prison. For each re-incarceration prevented by education, states save about $20,000. One million dollars invested in education would prevent 26 re-incarcerations, for net future savings of $600,000.

INTRODUCTION

State and federal funding for correctional education programs was significantly reduced throughout the 1990s while the total incarcerated population increased[1]. Many states, such as Florida, Illinois, Kentucky, Iowa and California, are further slashing correctional education budgets due to the current budget crisis[2]. These states and others, such as Ohio, Michigan and Kansas, are closing prisons to make the necessary cuts in state spending[3].

Budgets need to be cut. But states have a responsibility to protect public safety by controlling crime. How can states prevent crime with limited resources and save money in the long run? We will investigate the possibility that prison education programs are the answer.

CORRECTIONAL EDUCATION

There are two basic types of correctional education programs – vocational training and literacy development. Vocational training courses focus on the acquisition of skills that are directly transferable to a workplace, such as appliance repair. Literacy development courses are loosely based on the traditional classroom model centered around the improvement of reading and math skills.

There are two main reasons why researchers in this field believe in-prison education can reduce future criminal activity. The first involves the impact of increased cognitive skills on changes in behavior and the second contends that participants can learn how to live a crime-free life by participating in education courses.

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[1] Harrison and Beck, 2002.
[2] King and Mauer, 2002.
[3] Justice Policy Institute, "What the States are Doing," http://www.justicepolicy.org/article.php?id=27

- Education: Available evidence suggests that education programs in correctional facilities increase literacy[4]. Increased educational attainment generally is associated with increased income, even among those with relatively low cognitive skills[5,6]. And increased income is associated with a decreased incidence of crime[7]. This can be explained because people choose between committing crimes and pursuing employment in the labor market. The risks associated with committing crimes are larger when having a job pays more, or getting a job is easier. As a result, choosing to commit a crime is a less attractive option to those who could earn more money with a legal job. An increase in an individual's educational attainment is therefore likely to be associated with increased earnings, which is in turn associated with a decreased level of criminal activity. [See Appendix D]

- Socialization: Prison education programs give inmates the opportunity to learn "pro-social norms" by providing an enclave removed from the "criminal subculture" predominant among inmates[8]. Interacting with educators can familiarize inmates with the norms that law-abiding citizens observe while also reducing the feeling of "alienation that inmates tend to experience while in prison[9]." The resulting improvement in social skills can make it easier for inmates to find and hold a job upon release, which in turn reduces their likelihood of re-offending.

[4] Based on data from Minnesota, California and Texas, 3 states that keep track of the literacy progress of the inmates in correctional education. For more information, access the following websites: http://www.corr.state.mn.us/pdf/2001annualreport.pdf, http://www.tea.state.tx.us/adult/tables2002/ins3.pdf, http://www.cde.ca.gov/adulteducation/datacollect/fedprogdata/fedstudentdata99-00.html
[5] Tyler, Murnane and Willett, 2000.
[6] According to Tyler (2003), basic cognitive skills are those that most individuals obtain before completing the ninth grade.
[7] Lochner and Moretti, 2002. Controlling for many factors, including age, cohort and state of residence.
[8] Harer, 1995, p.2.

The vast majority of studies that have studied the impact of in-prison education on future criminal activity have found that participation reduces crime. We focused our analysis on the three studies that took the strongest methodological approach at investigating this relationship[10]. The first found that six months worth of participation in an education course among federal prisoners was responsible for a 15.7% reduction in re-arrests, even after accounting for a number of other factors known to predict recidivism[11]. The second found that Wisconsin inmates who complete a high school or adult basic education course are 20% less likely than the average offender to be re-incarcerated, again controlling for characteristics that predict recidivism[12]. Both of these studies used statistical regression methods to determine the impact of correctional education. Most notably, they both controlled for a number of factors believed to predict recidivism rates, such as age, race, and length of sentence. The study of federal prisoners even controlled for factors such as substance abuse and employment upon release from prison. Unfortunately, we were unable to include either the federal or Wisconsin study in our analysis. The complexity of the federal prison system, in that federal prisoners are contracted out to state and private prisons, prevented us from obtaining accurate correctional education budget estimates for the federal prisoners studied. While we were able to obtain the correctional education budget for Wisconsin institutions, the data provided did not differentiate between the budget for vocational courses and the budget for high school and ABE courses. As Piehl only analyzed the impact of adult basic education and high school programs on recidivism, we were unable to apply the available budget data to her findings.

We base our calculations of cost per crime prevented on the findings of a third study – the 'Three State Recidivism Study' conducted by the Correctional Education Association. This study compared the re-arrest, re-conviction and re-incarceration rates of correctional education

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[9] Harer, 1994, p.37.
[10] Our criteria for a strong methodological approach are the existence of a comparison group and some accounting for other characteristics that could predict recidivism.

participants to non-participants in Maryland, Minnesota and Ohio three years after their release[13]. The following reductions in recidivism were found for each state:

TABLE 1: REDUCTIONS IN RECIDIVISM RATES IN 'THREE STATE' STUDY

State	Percent Reduction in Re-incarceration	Percent Reduction in Re-conviction	Percent Reduction in re-arrest	Average Percent Reduction in Recidivism[14]
Maryland:	16	14	5	12
Minnesota:	33	29	22	28
Ohio:	23	21	14	19

[See Appendix C]

As the findings of the 'Three State' study were comparable to the other two studies that utilized sound research methodology, we were confident in using the 'Three State' study as the foundation of our analysis. Further, we were able to collect budget and enrollment data for Maryland, Minnesota and Ohio correctional education programs, which made it possible to conduct a cost-effectiveness analysis. In order to be conservative in our findings, we discounted the effect size found in the 'Three State' study by 50% before calculating our cost effectiveness and budget savings figures. This method is consistent with current practice in the field of program evaluation that reduces the findings of studies that lack an experimental design [See Appendix C]

[11] Recidivism is defined as a relapse into criminal behavior. Though no exact measures of this exist, re-arrest and re-incarceration are regarded as the best estimate in correctional data.
[12] Piehl, 1995.
[13] In the "Three State Recidivism Study," correctional education included adult basic education, high school degree courses, GED courses, post-secondary academic programs, life skills and pre-release classes and vocational training.
[14] To provide a simple figure that demonstrates the crime control benefits of correctional education, we averaged the three primary indicators of recidivism to generate a single figure.

INCARCERATION

Clearly, there are ways to reduce crime other than educating prisoners. Increasing incarceration rates and lengthening prison sentences through "tough on crime" legislation prevent crime by incapacitating perpetrators. William Spelman surveyed a large body of research on crime statistics and criminal activity and found that a one-percent increase in prison populations would prevent 60,000 to 100,000 crimes per year[15] for a total cost of over $200 million a year. We used these figures as a standard against which to compare the effectiveness of correctional education.

RESULTS

Cost Effectiveness Comparison

What we attempt to do in the analysis that follows is compare the cost per crime prevented by correctional education to the cost per crime prevented through incarceration. In other words, if a state has a million dollars to invest in crime control, which method will prevent more crimes – educating inmates or keeping them imprisoned longer?[16]

The following information was collected in order to make this comparison:

- The average cost per participating inmate was calculated by dividing the total correctional education budgets of the three states' programs by the total number of participants in all three states. The average cost per participant is $1,400. Ohio's program was the largest with an enrollment of 26,885 students and an annual budget of over $40 million, while

[15] Spelman, 1994, p.225

[16] Note what we are not examining here. We do not consider other approaches to crime control, such as community-based programs for ex-convicts on parole or probation, which may also be cost-effective. Unfortunately, little research has been done on the outcomes of these programs. We also do not address the social implications of correctional education programs – what they may do for the families of offenders or the communities to which they return. Rather, the available research allows us to evaluate prison education programs as a crime control policy against a predominant alternative – expanding prison populations.

Minnesota had the smallest program with an enrollment of 2,293 pupils and an annual budget of $7.8 million.

- In order to determine how participating in education classes might affect recidivism, we first needed to know the average number of crimes committed by the offender who never receives these services. Based on self-reported criminal activity and crime statistics, William Spelman estimated that increasing prison capacity by 1% would prevent about 80,000 crimes per year. Using this estimate, we concluded that the average offender commits 9 crimes per year.[17]
- According to the results of the 'Three State' study, correctional education is responsible for a ten percent reduction in recidivism (with the 50% discount applied). When we apply this rate to the nine crimes committed by the average offender, we see that correctional education prevents about one crime per offender per year.
- Therefore, the cost per crime prevented by correctional education is about $1,600.
- This can now be compared to the cost of crime prevention through incarceration. The cost to incarcerate one inmate is $25,000 a year.
- Imprisoning one offender prevents about nine crimes, so we get a cost per crime prevented through incarceration of $2,800.

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[17]This estimate is congruent with other research that estimates the annual number of crimes committed by previously incarcerated felons. See Appendix A.

TABLE 2: COST PER CRIME PREVENTED COMPARISON

Average annual cost of education per inmate	$1,400
Expected average number of crimes per offender per year	9
Reduction in recidivism due to education	10%
Crimes prevented upon release per participant	.9
Cost per crime prevented by correctional education	$1,600
Annual cost to incarcerate one inmate	$25,000
Average number of crimes prevented by incarcerating one inmate	9
Cost per crime prevented by incarceration	$2,800

Framed in another way, we see that a $1 million investment in incarceration will prevent about 350 crimes, while that same investment in education will prevent more than 600 crimes. Correctional education is almost twice as cost effective as incarceration. [See Appendix A]

To determine the strength of our cost-effectiveness findings, we conducted a sensitivity analysis. Sensitivity analyses are used to test the strength of statistical findings, particularly when researchers are concerned about the precision of the figures on which their research depends. In order to be conservative in our research, we discounted the findings of the 'Three State' study 50% in our initial analysis. To test the strength of our cost effectiveness findings, we calculated by how much we would need to discount the effect size of the study's findings in order for the costs of education to break even with those of incarceration.

What we found is that we would have needed to discount the effect size by a total of 72% in order for the costs of each crime prevention method to break even. Another way to look at this is that correctional education would only have to be responsible for a 6% reduction in recidivism for its costs to break even with those of incarceration. Research shows that the true effect of correctional education on reductions in recidivism is most likely somewhere between ten and twenty percent.

Budget Savings

By preventing crimes, in-prison education is also preventing a number of future re-incarcerations. Specifically, the 'Three State' study found that correctional education was able to reduce re-incarcerations by about 24%. Applying the fifty percent discount we applied to all the results from this study gives us a 12% reduction in re-incarcerations. By dividing the three states' total correctional education budgets by the number of prevented re-incarcerations, gives us a cost of $38,500 per prevented re-incarceration. A million dollars invested in correctional education can prevent 26 future re-incarcerations.

However, if a state chooses not to invest in correctional education these future re-incarcerations will not be avoided. With the average incarceration lasting 2.4 years[18] at a cost of $25,000 per year, 26 incarcerations will cost the state almost $1.6 million dollars. Since avoiding these incarcerations through correctional education only costs $1 million, a state can gain a net savings of $600,000 in future costs for every $1 million it invests in correctional education today. Clearly, spending on prison education saves states money in the long run due to the prevented re-incarcerations of its participants. But states will not save this money if they do not make this investment – prisoners will just keep coming back. [See Appendix B]

With these findings we again conducted a sensitivity analysis. The findings of the 'Three State' study would need to be discounted by a total of 78% in order to bring the future savings of correctional education down to zero. In other words, correctional education would only need to reduce re-incarcerations by 3% in order to eliminate future savings.

[18] Bureau of Justice Statistics, 2001.

RECOMMENDATIONS

Don't cut what works

States have a responsibility to ensure public safety, and cannot abandon this duty in times of budgetary crisis. Cutting funding for prison education programs is a bad decision. These programs prevent more crimes than increasing incarceration rates and lengthening sentences – and cost far less. They even save states money on correctional budgets by reducing the number of offenders who return to prison in the future.

Keep detailed, accurate records at correctional facilities

Correctional education administrators should record as much information about their programs as possible. Crucial data includes the number of hours per week prisoners and teachers spend in the classroom, how prisoners perform on a literacy assessment before and after participating in the program, how many participants drop-out of classes, and how much each type of program (e.g. adult basic education, vocational education) costs per year. With these data, researchers would be able to determine the amount of classroom time necessary to create gains in literacy and decreases in recidivism. This would inform an effort to produce a maximally cost-effective correctional education system.

Invest in further research

Several large-scale studies should be conducted to add to the body of research on the effects of correctional education. These studies would need to have the following components:

- *Random assignment*: The most fundamental improvement that could be made to correctional education research would be random assignment – to randomly place in either a treatment or control groups those inmates who wish to participate in education programs. To make this politically feasible, find states with long waiting lists for

correctional education[19]. Use the gap between supply and demand for these programs to justify the random selection and assignment of program participants.

- *Participant characteristics*: Participants in both groups – treatment and control – should be within three years of release, but have no less than a year left on their sentences. The treatment group will need ample time to actively participate in their classes. Some matching will need to be done between the treatment and control groups to ensure that there are no significant differences in age, race, criminal history, incarcerating offense and education level. This will require a large sample size.
- *Programmatic details*: Researchers must clearly state the types of correctional education programs that have been implemented in their study. They should investigate the effects of participation in each type of program separately, such as vocational or adult basic education, so that conclusions can be made about which approach best reduces recidivism at the lowest cost.
- *Follow-up*: Program participants and non-participants should be tracked for three years. Information about how often recidivists are re-arrested per year (as opposed to whether or not they were arrested in a given time period) should be collected to get a more accurate estimate of the true recidivism rate.
- *Size*: The population size (and funding) required for this type of study depends on the assumptions made. If we believe that the true effect of education on recidivism is around 20%, we would need 550 participants and an equally sized control group in order to have enough power to find significant results. If we believe that the true effect of education on recidivism is only 10%, we would need 1,800 participants with an equally sized control group in order to have enough power to find significant results.

[19] Lawrence, Mears, Dubin, and Travis, 2002

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APPENDIX A: COST PER CRIME PREVENTED: METHOD

Our cost-effectiveness analysis compares the reduction in crime[20] associated with correctional education to that of prison expansion. The data we collected gave us the following information on correctional education program enrollments and budgets for each state in the 'Three State Recidivism' study:

TABLE 3: 1997 STATE CORRECTIONAL EDUCATION ENROLLMENTS AND BUDGETS

State	Cumulative Enrollment[21]	Annual budget[22]
Maryland	14,523	$11,857,298
Minnesota	2,293	$7,832,029
Ohio	26,885	$40,231,253

These data were collected from the following sources:

Maryland

Enrollment and budget: Mark Mechlinski, Field Director, MD Correctional Education.

Minnesota

Enrollment: Estimate - 2,781 inmates participated in ABE, vocational education and academic higher education by the end of third quarter, FY2001 ('Three State,' pg. 59), which accounted for 43.9% of that year's total prison population. 43.9% of 1997's prison population is 2,293. We are assuming there were no significant changes in the proportion of inmates enrolled in correctional education between 1997 and 2001.

Budget: Jamie Friesen Nordstrom, Accounting Manager, MN Department of Corrections.

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[20] Throughout the majority of this study when "crime" or "serious crime" is referred to, we are speaking of the seven FBI index crimes. These crime categories are murder, rape, robbery, assault, burglary, theft, motor vehicle theft and arson. However, when we are making comparisons to the RAND data we differentiate between 'serious crime' and 'total crime.' Only murder, rape, robbery, assault, 60% burglaries and arson are defined as 'serious crimes.' This is because California law does not consider theft, motor vehicle theft and 40% of burglaries serious crimes. All of these crimes combined are defined as 'total crimes.'

[21] We chose to use total cumulative correctional program participants per year rather than average participants per day (i.e., number of program "slots") in our calculations because no information was reported on the 'length of participation' of education 'participants' in the 'Three State Recidivism' study. Participants, therefore, could be inmates who attended classes for a week and then dropped out. We felt that 'total cumulative participants' would be a better approximation to the actual types of participants in the study than would 'average participators per day.'

[38] All dollar amounts are converted to 2003 dollars to provide a standard rate to compare cost data from different years.

Ohio

Enrollment: Ohio Central School System: www.drc.state.oh.us/web/educatio.htm

Budget: Estimate based on FY 1999 actual budget of $37,491,900 (Ohio State Government Book, 4th Edition, pg. 599) less $750,000 for 'Youthful Offenders program,' less 3% for annual budget increase (Richard Ebin, Project Manager, OH Department of Rehabilitation and Correction.)

Comparing a 1% increase in prison bed capacity to correctional education

William Spelman estimated that a 1% increase in current prison bed capacity would reduce crime by .12 percent to .20 percent, which translates into 60,000 to 100,000 serious crimes prevented per year[23]. This one-percent increases prison populations by 9,000 inmates, at a cost of $25,000 each – for a total of $225,000,000 a year. If incarcerating 9,000 additional offenders result in a reduction of 60,000 to 100,000 crimes, then the number of crimes prevented per offender ranges from 6.67 to 11.11 per year.

$$60{,}000 / 9{,}000 = 6.67 \text{ crimes per year}$$

$$100{,}000 / 9{,}000 = 11.11 \text{ crimes per year}$$

We use the mid-point of this range, 8.89 crimes per year in our analysis. If 9,000 offenders are committing an average of 8.89 crimes per year, then the cost per crime due to an increase in the prison population is $2,812.

$$\$225{,}000{,}000 / (8.89 * 9{,}000) = \$2{,}812$$

This estimate is in line with other research conducted on the average number of serious crimes committed per offender. Based on survey research previously conducted on inmates, Spelman estimated that six offenses per year are committed by anyone that has ever been arrested for a serious crime. For those who have been arrested two or more times, a cohort more representative of the prison population as a whole, 15 to 20 offenses are committed per year.

[23] Spelman, 1994.

Offenses and crimes are not interchangeable, however. Consider the case of two men working together to rob a bank. In this case, "each one has committed an offense, but there is only one crime"[24]. Based on Spelman's figures, we estimate that there is an average of 1.56 offenders per crime committed. Reanalysis of existing research allowed Spelman to estimate that 1.73 offenders are involved in the average personal crime and 1.39 offenders are involved in the typical adult property crime. An average of these two numbers gives us 1.56 offenders per crime.

If the number of offenses per offender ranges from 6 to 20, then applying this 1.56 offenders per crime estimate tells us that offenders commit somewhere between 3.85 and 12.8 crime per year.

$$6 / 1.56 = 3.85$$

$$20 / 1.56 = 12.8$$

In order to compare the cost-effectiveness of correctional education to that of prison expansion, we will use Spelman's 8.89 crimes per offender per year estimate in our calculations.

Table 4 shows this rate applied to the findings of the 'Three State Recidivism Study' to assess correctional education's comparative cost-effectiveness.

[24] RAND, 1994, p. 17.

TABLE 4: COST PER CRIME PREVENTED BY CORRECTIONAL EDUCATION

Participants	Crimes per participant per year	Total crimes per year	Reduction due to education*[1]	Crimes prevented by education	Correctional education budget	**Cost per crime prevented**
Maryland						
14,523	8.89	129,110	5.82%	7,516	$11,857,298	$1,578
Minnesota						
2,293	8.89	20,385	14.2%	2,887	$7,832,029	$2,713
Ohio						
26,885	8.89	239,008	9.6%	22,939	$40,231,253	$1,754
Average	8.89	388,502	9.86%	38,306	$59,920,580	**$1,564**

*1 The reduction due to education is based on recidivism rates of participants compared to non-participants, with a 50% discount.

Again, based on Spelman's research, cost per serious crime prevented due to a 1% increase in prison population costs $2,812 a year.

Average cost per serious crime prevented:
- Correctional education: $1,564
- Incarceration: $2,812

Serious crimes prevented per $1 million invested:
- Correctional education: 639
- Incarceration: 356

Based on these findings, correctional education is 1.8 times more cost-effective at preventing crime than incarceration.

The preceding calculations applied a discount rate of 50% to the findings of the 'Three State' study. However, this discount is rather arbitrary. The true discount required to account for flaws in the methodological design may be more than this rate or nothing at all. To account for this unknown, we re-calculated the cost per crime prevented using a range of discount rates on the effect size.

TABLE 5: COST PER CRIME PREVENTED BY CORRECTIONAL EDUCATION VARYING THE DISCOUNT ON THE RECIDIVISM RATE

	Reduction in recidivism	Crimes prevented by education	Cost per crime prevented
No discount	19.7%	76,535	$783
50% discount	9.86%	38,306	$1,564
72% discount	5.48%	21,308	$2,812
Cost per crime prevented by incarceration:			$2,812

What this table demonstrates is that the effect size discount rate would have to be more than 72% in order for the crimes reduced through incarceration to be more cost-effective than the crimes reduced through prison education. This means that the true effect of correctional education on crime reduction would need to be 5.5% in order for it to "break even" with incarceration. This is far below the ten to twenty percent researchers believe to be the true effect size of education.

Another assumption we make in our findings is that the mean number of crimes committed per offender per year is 8.89. While Spelman was able to estimate a range of 6.67 to 11.11 crimes per offender per year, other research he reviewed found that the average may be more like 3.85. Separate research based on inmate surveys conducted by RAND found that the average might actually be around 2.6 serious crimes per offender per year. To account for the

possibility that our 8.89 crimes per offender may be an overestimate of the true rate of crime, we tested our results against a number of different rates. These results are listed below in Table 6.

TABLE 6: COST PER CRIME PREVENTED BY CORRECTIONAL EDUCATION AS COMPARED TO PRISON EXPANSION USING RANGE OF CRIME RATES

	Total crimes per year*[1]	Reduction in recidivism	Crimes prevented*[2]	Cost per crime prevented*[3]
Correctional Education				
8.89 crimes/yr	388,502	9.9%	38,306	$1,564
6.67 crimes/yr	291,486	9.9%	28,740	$2,085
3.85 crimes/yr	168,249	9.9%	16,589	$3,612
2.6 crimes/yr	113,623	9.9%	11,203	$5,349
Prison Expansion				
8.89 crimes/yr	80,010			$2,812
6.67 crimes/yr	60,030			$3,748
3.85 crimes/yr	34,650			$6,494
2.6 crimes/yr	23,400			$9,615

*1 Number of crimes participants would have committed had they not received education.
*2 Total crimes multiplied by 9.9% reduction in recidivism
*3 Total state correctional education budget divided by number of crimes prevented.
*4 Number of crimes offenders would have committed had they not been incarcerated.

Notice that when we change the assumptions made about the number of crimes committed per participant per year, we are also changing our assumptions about the crime rates of offenders incarcerated by prison expansion. At every crime rate, correctional education is twice as cost-effective as prison expansion.

APPENDIX B: SAVINGS DUE TO PREVENTED RE-INCARCERATIONS: METHOD

The 'Three State' study tracked the re-incarcerations of a sample of offenders; some had participated in correctional education, and some had not. The study reported that 29.7% of non-participants were re-incarcerated when tracked three years after release. We applied this percentage to the total number of participants in all three states' correctional education programs, 43,701. Had these prisoners never participated in any education programming, 12,965 of them would have been re-incarcerated (43,701 * .297).

The study found that correctional education was responsible for a 24% reduction in re-incarcerations in these three states. When we apply the 50% discount, this becomes an effect size of 12%. By applying this rate to the 12,965 re-incarcerated prisoners, we see that correctional education is responsible for preventing a total of 1,557 re-incarcerations (12,965 * .12).

We then divided the total budget for correctional education in the three states ($59,920,581) by the number of re-incarcerations prevented by correctional education (1,557) to find the cost per prevented re-incarceration: $38,481. So, a $1 million investment in correctional education will prevent 26 future re-incarcerations ($1,000,000 / $38,481).

We then had to compare this to the cost of an average incarceration to determine whether any future savings were associated with investing in correctional education. According to the Bureau of Justice Statistics, the average length of stay is 2.4 years, with a cost of 25,000 per year[25]. Therefore, the average incarceration costs roughly $60,000. Incarcerating these 26 offenders would cost the state about $1,560,000. But preventing these incarcerations through

[25] Pastore and Maguire, 2001.

correctional education only costs the state $1 million. A state can save almost six hundred thousand dollars in future costs by investing one million in correctional education today.

In an effort to test the sensitivity of our findings, we varied the 50% discount rate we originally applied to the recidivism rate of program participants. The break-even point – where the cost of preventing one incarceration through correctional education was the same as the cost of the average incarceration – was reached when we discounted the effect size by 78%. Another way to look at this is that correctional education's true effect on reduced re-incarceration would have to be around 3% for a state to realize no future savings – a figure that is much lower than what was found by the 'Three State' study.

APPENDIX C: EFFECT SIZE REDUCTION

Thus far, none of the studies examining the effect of correctional education on recidivism have been experimental. Because there has not been random assignment of inmates into control and treatment groups, we cannot know that the reductions in recidivism witnessed are truly due to the education programs. While a number of attempts have been made to account for this, there may yet still be some unmeasured traits among participants that are correlated with lower recidivism rates.

It is for this reason that less confidence can be placed in the cause-and-effect conclusions made about correctional education's ability to reduce recidivism. In order to account for this, we have followed the lead of the 'Washington State Institute of Public Policy' (WSIPP) by discounting the effect size of the 'Three State' study's results by 50%. WSIPP developed a system to rate the methodology and resulting reliability and validity of studies examining the effects of programs intended to reduce crime ('The Comparative Costs and Benefits of Programs to Reduce Crime,' WSIPP, 2001). Based on their criteria[26], we estimate that the 'Three State' study would score a '3' on a scale of 1 to 5, wherein:

> "A '3' indicates an evaluation where the program and comparison groups were matched for pre-existing differences in key variables. There must be evidence presented in the evaluation that indicates few, if any, significant differences in these variables. Alternatively, if an evaluation employs statistical techniques (e.g. logistic regression) to control for pre-existing differences, and if the analysis is successfully completed, then a study with some differences in matched pre-existing variables can qualify as a level 3 study" (WSIPP, pg. 40).

[26] Although the 'Three State' study was published subsequent to the WSIPP analysis, a conversation with the lead author of the study – Steve Aos, led me to conclude that it would also score a '3' for methodological design.

Discounting the recidivism rates gives us the following results:

TABLE 7: DISCOUNTED RECIDIVISM RATES (50%)

State	Percent Reduction in re-incarceration	Percent Reduction in re-conviction	Percent Reduction in re-arrest	Average Percent reduction in recidivism	50 percent discount of reduction in recidivism
Maryland:	16	14	5	12	6
Minnesota:	33	29	22	28	14
Ohio:	23	21	14	19	10

Note: The true discount due to poor methodological design may be more or less than 50%.

APPENDIX D: THE LINK BETWEEN EDUCATION AND CRIME

According to research, increased educational attainment is associated with a decreased incidence of crime[27]. This can be explained because people choose between committing crimes and pursuing employment in the labor market. The risks associated with criminal activity bear a greater cost when the alternative to crime, having a job, pays more. As a result, choosing to commit a crime is a less attractive option to those who could earn a greater amount in the labor market.

The association between education and crime can also be derived from research that indicates that increased cognitive skills[28] are associated with increased income, and that increased income is associated with decreased crime. Several prominent studies establish that there is a positive relationship between cognitive skills and income[29]. Key findings include:

- The payoff to a minor difference in measured cognitive skills is between $1,000 and $1,400 in annual income among those with relatively low cognitive skills. This return to skills is even greater among those who failed the GED. Individuals who scored slightly higher but still failed the test earned significantly more — $2,000 for men and $3,000 for women — than those who scored lower and failed the test[30].
- Basic cognitive skills are rewarded with higher income in the labor market[31].

[27] Lochner and Moretti, 2002. Controlling for many factors, including age, cohort and state of residence.
[28] The term "cognitive skills" refers to an individual's mental abilities due to a combination of innate ability and educational attainment. It is generally supposed that cognitive skills can be increased through instruction. Assessments that quantify cognitive skills include the SAT, GED, Air Force Qualifying Test (AFQT), or the National Adult Literacy Survey (NALS).
[29] Card, 1994; Tyler, Murnane and Willett, 2000; Tyler, 2003.
[30] Tyler, Murnane and Willett, 2000.
[31] According to Tyler (2003), basic cognitive skills are those that most individuals obtain before completing the ninth grade.

- The effects of schooling on income are large, and may be underestimated by up to 30%[32].

These findings indicate that educational attainment and cognitive skills are rewarded with higher income in the labor market, even for those individuals on the lower end of the distribution. Therefore, criminal behavior is more costly to those with higher cognitive skills because they have more to gain in the labor market than they can expect to gain from crime. This may result in reduced criminal behavior. In fact, research has corroborated this relationship[33].

This association between education and crime offers an opportunity for policy makers to dedicate resources to improving cognitive skills as a crime control policy. Much of this research on the payoff to education considers traditional K-12 education instruction. However, we can also apply the fundamental reasoning of the preceding analysis to the population of adult learners. Investment in children and youth is certainly critical, but there may be payoffs to targeting the adult population, as well.

Adult education

Before arguing for an investment in adult education as an effort to reduce crime, it is important to answer a key question: can adults improve their cognitive skills by attending academic courses?

Several large evaluations have shown that adults benefit from education services in different ways. In some programs, adult learners have demonstrated employment and earnings gains[34]. Other research shows that participants are likely to self-report gains in basic cognitive

[32] Card, 1994.
[33] Grogger, 1998.
[34] Beder, 1999.

skills[35]. However, these studies do not use pre- and post-testing to establish that real improvements in literacy have occurred.

Literacy

The National Adult Literacy Survey (NALS) defines literacy as "using printed and written information to function in society, to achieve one's goals, and to develop one's knowledge and potential[36]." Five levels of literacy are commonly referred to in the field. The NALS describes them as follows:

- "Level 1: Individual can read a little but not well enough to fill out an application, read a food label, or read a simple story to a child.
- Level 2: Individual usually can perform more complex tasks such as comparing, contrasting, or integrating pieces of information, but usually not higher-level reading and problem-solving skills.
- Levels 3 through 5: Individuals usually can perform the same types of more complex tasks on increasingly lengthy and dense texts and documents.[37]"

Separate evidence directly from state outcome reports does suggest that adult education programs improve literacy. For example, California and Ohio released data that indicates that participants in adult education programs gained at least one level of literacy[38]. California's statistics show that between 45% and 65% of adult learners gained a literacy level after participating in an adult basic education program[39]. Ohio's reporting illustrates that over half of

[35] Ibid.
[36] The National Assessment of Adult Literacy defines literacy as http://nces.ed.gov/naal/defining/defining.asp
[37] http://www.nifl.gov/nifl/faqs.html#measure
[38] There are several different definitions of literacy used in the adult education field. The NALS scale uses a 1-5 scale that rates the ability to find and analyze information embedded in text (prose), the level of mathematical skill (quantitative) and the ability to understand and complete everyday forms (document). Many states have their own measures of literacy. Some are similar to the NALS scale but several more levels, such as the system in California. Others, such as Minnesota, follow the scale that compares skills to the standards related to grades K-12.
[39] http://www.cde.ca.gov/adulteducation/datacollect/fedprogdata/fedstudentdata99-00.html

adult learners completed a literacy level. Approximately 35% of them completed more than one level[40].

This data illustrate two things. First, it does seem that adult education programs are effective at improving cognitive skills. Second, states have a long way to go to improve their reporting of adult education outcomes. The U.S. Department of Education is leading efforts to standardize reporting, but state governments use many scales other than the NALS. This makes it difficult to compare the literacy gains attributed to programs in different states.

The literacy of inmates

The NALS found that the literacy of the prison population differs substantially from the "household" – or, free, population (see Table 1 below). Approximately 67.5% of the incarcerated population functions at the two lowest levels of prose literacy, compared to 47% of the household population. The average member of the household population scores a 3 on the prose portion of the NALS assessment, whereas the average prisoner scores a 2. The difference between these two levels is observed in analytic skills that are necessary to process information in the often indirect ways it is presented in the real world.

TABLE 8: PERCENTAGE OF POPULATION AT EACH LITERACY LEVEL[41]

NALS Prose Literacy Level	Incarcerated population	Household population
1	30.5	20
2	37	27
3	26	32
4	6	17
5	0.5	3

[40] http://www.ode.state.oh.us/ctae/adult/able/annual/EnrollmentCompletionProgressSummary2001.asp
[41] http://novel.nifl.gov/nifl/facts/correctional.html

Clearly, the prison population has a great need for adult basic education – in fact, their need is greater than that of the household population. However, skeptics argue that inmates are not capable of increasing their cognitive skills. Evidence suggests the contrary.

Literacy outcomes

Available evidence suggests that education programs in correctional facilities have a positive impact on cognitive skills. In Minnesota, 28% of enrollees in prison education programs increased a grade level in one year[42]. In California, approximately 37% of adult learners in the correctional population gained a literacy level in one year[43]. In Texas, participants in prison education programs demonstrated gains as well; an average of 36% of inmates completed one literacy level in one year. And an average of 21% of inmates completed two or more levels in the 2001-2002 fiscal year[44].

[42] http://www.corr.state.mn.us/pdf/2001annualreport.pdf
[43] http://www.cde.ca.gov/adulteducation/datacollect/fedprogdata/fedstudentdata99-00.html
[44] http://www.tea.state.tx.us/adult/tables2002/ins3.pdf

APPENDIX E: POTENTIAL CRITIQUES OF OUR METHODS

In order to conclude that correctional education programs are more cost-effective than increasing prison beds, we are implicitly making the assumption that the types of crimes committed by education participants are equally or more expensive than the crimes committed by the general offender. For example, if education participants typically commit relatively inexpensive crimes compared to the general prison population, one would not be able to conclude that correctional education is more cost-effective. Prison expansion may be preventing fewer crimes, but as a whole, the monetary benefits of preventing those crimes may outweigh those of correctional education.

However, this does not appear to be the case. In both the 'Three State Recidivism' study and 'Learning While Doing Time,' the correctional education participants are, on average, more serious offenders. By examining 'crime of current incarceration' and 're-arrest offenses' among the inmates in the 'Three State' study, we see that education participants are more likely to be violent felons.

TABLE 9: 'THREE STATE' CRIME OF CURRENT INCARCERATION

Type of Crime	Participants	Non-participants
Violent	50%	38%
Property	27%	30%
Drug/Alcohol	18%	25%

TABLE 10: 'THREE STATE' RE-ARREST OFFENSES FOR RELEASE COHORT

Type of Crime	Participants	Non-participants
Violent	30%	24%
Property	23%	23%
Drug/Alcohol	21%	22%

Further, we can see that violent crimes are substantially more expensive than property crimes:

TABLE 11: AVERAGE COST TO THE VICTIM PER CRIME

Type of Crime	**Cost per victim**
Violent	
Robbery	$14,357
Assault	$13,712
Property	
Burglary	$1,564
Larceny	$203
Auto Theft	$3,565

Source. Criminal Incapacitation, Spelman, 1994, pg. 223
All costs expressed in 1989 dollars.

The cost-effectiveness of correctional education previously calculated may actually be underestimated to the extent that education participants tend to commit more serious (or more expensive) crimes than the average offender.

'Learning While Doing Time' corroborated the finding that correctional education participants are more serious offenders. It does not provide data on crime of incarceration nor recidivating crime, however it does provide data for length of sentence and prior penal experience. Even though those who complete an education course had fewer prior penal experiences (28%) than the sample on average (49%), they had longer than average sentences (64.71 months) than the sample as a whole (58.07 months). As prior convictions can affect the length of subsequent sentences, we would predict that the full sample, on average, should have longer sentences due to their prior records. However, we see the opposite: those who complete an education course have longer sentences. This probably indicates that the crimes for which they were incarcerated are, on average, more serious crimes than those committed by the average prisoner. More serious crimes are also more expensive crimes.

One could also make the argument that the population of education participants is simply less inclined to commit crime than is the average offender upon release. Because the 'Three State' study did not use an experimental study design , we cannot know that the participants were not less likely to recidivate from the beginning, independent of the effects of education. What we can see, however, is how the two groups match up on criminality indicators, or indicators thought to predict the future criminal patterns of offenders. One would think that some of the best predictors of criminality in the future would be criminal history factors. The 'Three State' study allows us to compare the differences between participants and non-participants on these factors.

TABLE 12: CRIMINALITY INDICATORS

Indicator	**Participants N=1,342**	**Non-participants N=1,757**	**Total Population N=3,099**
Average number of felony arrests	5.05	4.69	4.8459
Average number of times in jail	3.57	3.73	3.66
Average number of times in prison	2.35	2.62	2.5
Average age	30.8	32.6	31.82

The number of prior felony arrests indicates that the participants have a higher degree of criminality, while the number of prior incarcerations in jail and prison would indicate the opposite. Across all three categories the differences are minute, inconsistent, and probably not statistically significant. This suggests that to the extent differences between participants and non-participants on criminality exist, they are likely to be unobservable.

These indicators are simply that – predictors of future criminal behavior. Such indicators only go so far in predicting actual future criminal behavior. It may be that there are some unknown characteristics of the participant group that make them less likely to recidivate. It is precisely for this reason that the effect sizes for the reductions in recidivism found in the 'Three State' study were reduced by 50%, which may be overestimating or underestimating the true effect of the differences between participants and non-participants.