Cost-Effective Violence Prevention Programs: A Guide to Current Knowledge and How to Use it

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Crime typically is listed near the top of most Americans' concerns, yet most of the money and effort devoted to solving the problem of crime are restricted to a narrow range of solutions—chief among them, incarceration of persons who already have committed crimes. Much less attention has been paid to diverting youth who have not yet committed crimes from doing so. In most jurisdictions, the juvenile system has little to offer delinquent preteens because they are not yet seen as dangerous, despite the fact that these delinquents disproportionately include the future violent criminals of their cohort.

In some ways, this lopsided allocation of resources makes sense. When a criminal is imprisoned, there is little doubt that crimes are being prevented by that person's incarceration. However, for a variety of reasons, programs intended to reduce the flow of children into criminal careers are more difficult to evaluate. For example, youth who are detained for committing a crime cannot be identified with certainty before they wind up in trouble with the law. In addition, participation in even the best of diversion programs cannot ensure against eventual criminal activity, and even the most positive effects can wear off or decay over time. How, then, can we select and evaluate the effectiveness of programs aimed at reducing youth crime and violence? And how can we assess whether the dollars spent on such programs are worth the benefits attained?

This article provides some guideposts for answering these difficult questions. First, it defines criteria for judging program effectiveness. Next, it outlines common characteristics of programs that have proven effective, and identifies some programs that have fallen flat. The article then describes a series of steps that policymakers can take in conducting cost-benefit analyses of violence prevention programs for youth, suggests reasons that program results may vary, and provides strategies for reducing both the risk of poor outcomes and local resistance to adopting proven programs.

Criteria for Judging Program Effectiveness

Four criteria are central to judging the effectiveness of any youth program intended to stem the tide of violence:

1. **Promise:** Does the program sound like a good idea? Will it "sell" well? Will it be popular with clients, taxpayers, program administrators, and policymakers?
2. **Proof of program effectiveness:** Is there sound, experimental evidence of the program's success? Has proof of the program's effectiveness been replicated, especially by those who do not profit from the program's appeal?
3. **Cost effectiveness:** Will the estimated benefits justify the costs? Can we expect "more bang for the buck" with this program than others also intended to produce positive outcomes?
4. **Sustainability:** Is this the right time to implement this program? Are the right resources— financial, human, and social –in place to make the program not only successful, but sustainable?

The juvenile system has little to offer delinquent preteens because they are not yet seen as dangerous, despite the fact that these delinquents dispropor- tionately include the future violent criminals of their cohort.

This article describes a series of steps that policymakers can take in conducting cost-benefit analyses of violence prevention programs for youth.

Strategies That Work—And Those That Don't

Despite their popularity, some programs fail to meet the important criterion of proven effectiveness. For example, a thorough analysis of more than 400 juvenile program evaluations revealed that such popular programs as "shock incarceration" and "scared-straight" techniques, both intended to deter crime, actually produced *negative* effects [57]. Programs that bring delinquents together in community—including "boot camps," vocational programs, and wilderness challenges—also have been disappointing. Even the widely implemented D.A.R.E. program, intended to dissuade children from drug use, has produced negative effects including *increased* drug use [58]. In response to these criticisms the D.A.R.E. program currently is undergoing revision.

The greatest impact was produced by programs that were community-based as opposed to institutional.

In contrast, Lipsey [57] found that programs that were behavioral, skill-oriented, and multi-modal—even if not "showy"—tended to produce the largest positive effects. (See "Some Promising Approaches for Reducing Youth Violence," pages 39-42 of this report, for several examples of such programs.) Interestingly, the greatest impact was produced by programs that were community-based as opposed to institutional [57]. Others have found that programs that are based upon developmental theory [59] and resolution of gender-specific issues [60] also show more evidence of positive outcome.

Characteristics of Effective Programs

Good programs are based on a sound rationale and provide ample data to support the claim that they are effective. Successful programs tend to be comprehensive and multi-faceted rather than simplistic, and they are targeted to a specific audience. In other words, such programs are not intended to be a panacea; rather, they are aimed at a specific group of youth with defined characteristics (e.g., age, developmental level, gender, ethnic group, cultural heritage, academic history, etc.). Because the programs are complex, they typically are costly as well. But some programs more than pay for themselves in justice system savings. (The next article on Multidimensional Treatment Foster Care provides an example of this type of program.)

The critical questions, then, become: Which programs have proven most effective? How should program effectiveness be weighed against cost effectiveness? Are there some programs that are not worth implementing?

Table 1
Steps in Conducting a Cost-Benefit Analysis of a Juvenile Intervention Program

1. Assess all beneficial outcomes
2. Project beneficial outcomes over the life of the participant
3. Adjust for scale-up and decay
4. Convert all benefits to monetary values for specific parties
   a. Government
   b. Potential victims
   c. Program participants
5. Recalculate future benefits in terms of their present value (i.e., discount them)

Estimating the Direct Costs and Benefits of Alternative Approaches

Comparing the cost of incarcerating a person for one year with the costs and economic benefits associated with a particular intervention strategy provides an estimate of that program's comparative cost effectiveness. To conduct such an analysis requires addressing the following questions:

- What percentage of the population is to be treated, and how much crime do they commit?
- What is the cost per treatment?
- How effective is each program at preventing crime?
- How will effectiveness change if the program is expanded?
- How long do effects persist after treatment has ceased?

The RAND Corporation developed a model to answer these questions [34]. Table 1 provides the model's steps for conducting a cost-benefit analysis. The model calculates the impact of each intervention program on crime

and criminal justice spending, relying on a mathematical model of criminal populations in prison and on the street, as affected by criminal career initiation, arrest and sentencing, release, and desistance from criminal activity.

A Case Example Comparing Cost-Benefit Analyses for Five Intervention Approaches

Using RAND's analytical model, Greenwood and colleagues [34] compared the effectiveness of California's "three-strikes" approach* with the estimated 30-year cost-effectiveness of four other strategies to prevent crime: (1) early intervention home visits plus high-quality child care, (2) parent-training programs, (3) high school graduation incentives, and (4) delinquent supervision. The researchers calculated typical costs for each of these interventions using average costs of programs proven to be effective. Table 2 summarizes program costs for each of the four interventions, estimated using 1995 dollars.

Table 3 compares the estimated cost-effectiveness of the four interventions after 30 years. As the table shows, graduation incentives were by far the most cost-effective strategy, followed by the relatively inexpensive strategy of parent training. Early home visits plus child care, although important interventions, produced the least favorable cost-benefit ratios primarily because they were the most expensive and had large penalties for scale-up and decay effects (see definitions below).

In interpreting these findings, it is important to note that the RAND model rests on a number of assumptions. These assumptions are described next, including examples from the California analysis.

Graduation incentives were by far the most cost-effective strategy, followed by the relatively inexpensive strategy of parent training.

Assumption 1:
Chronic delinquent behavior in adolescence leads fairly directly to the commission of more serious crimes in adulthood.

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*California's "three strikes" law mandates extended sentences for repeat offenders. To conduct the comparative analysis, Greenwood and colleagues used a 1994 estimate provided by the California Offender Information Services Branch showing that the annual cost of incarceration per person in the state was $21,000.

Table 2
Estimated Annual Costs for Four Intervention Programs

	Home Visit/ Day Care	Parent Training	Graduation Incentives	Delinquent Supervision
Year 1	$2,700	$3,000	$3,130	$10,000
Year 2	$2,700		$3,130	
Year 3	$6,000		$3,130	
Year 4	$6,000		$3,130	
Year 5	$6,000			
Year 6	$6,000			
Total	$29,400	$3,000	$12,520	$10,000

Adapted from [75]

Assumption 2:

Programs that begin at earlier ages are expected to have a lower "targeting ratio" because it is difficult to predict at younger ages who will become a high-rate offender.

Targeting ratio is defined as the number of crimes per person in the population targeted by the program (assuming no treatment) versus that per person in the general population. A targeting ratio of 1.0 indicates a participant group that commits crimes at the same rate as persons in the rest of the population. Targeting ratios greater than 1.0 indicate groups with greater criminal activity than the remainder of the population.

> **California example:** Information on pre-intervention criminality was available for only one of the treatments considered in the RAND analysis: Targeting ratio for graduation incentives = 3.0. In other words, persons in the targeted population, if untreated, commit 3 times as many crimes as those in the population as a whole. Using this rate as a benchmark, the researchers selected a targeting ratio of 2.0 for early home visit plus child care and 2.0 for parent-training programs, to reflect the fact that younger children cannot be targeted as effectively through these programs. In contrast, the researchers selected a targeting ratio of 4.5 for supervision of chronic delinquents because those youth already are heavily involved with the juvenile-justice system at the time of treatment.

Assumption 3:

Prevention rates typically are available for small, intensive pilot programs, which are likely to be more effective than large-scale, expanded programs.

The RAND model includes a modifying parameter to account for the effect of scale-up on program efficacy.

To correct for this factor, the RAND model includes a modifying parameter to account for the effect of *scale-up* on program efficacy. The values chosen for this parameter reflect the relative size of each program. Specifically, the larger the percentage of a group treatable by a program, the larger is the penalty due to scale-up.

> **California example:** The researchers selected a scale-up penalty of 40% for early home visit plus child care and 40% for parent-training programs, assuming that a larger percentage of the groups in these treatment conditions were treatable, but 20% for graduation incentives and 15% for delinquent supervision (assuming a smaller percentage of treatable individuals).

**Table 3
Estimated Cost-Effectiveness of Four Interventions After 30 Years**

	Home Visit/ Day Care	*Parent Training*	*Graduation Incentives*	*Delinquent Supervision*
Cost per participant	$29,400	$3,000	$12,520	$10,000
Net present value of cost per participant	$26,238	$3,000	$11,816	$10,000
Serious crimes prevented per participant	0.59	0.71	4.16	0.99
Net present value of serious crimes prevented per participant	0.30	0.47	3.05	0.72
Dollars spent per serious crime prevented	$89,035	$6,351	$3,881	$13,899
Serious crimes prevented per million dollars spent	11	157	258	72

Adapted from [75]

Assumption 4:

Most program evaluations have follow-up periods that are too brief to assess long-term program benefits.

Some studies, moreover, have shown that positive program effects decay rapidly after program completion [61; 62]. The RAND model thus incorporates another parameter to account for *decay* in effectiveness due to time. Intervention programs designed for administration during adolescence show less decay than early-intervention programs, as the latter are administered several years before criminal activity is likely to begin.

> **California example:** The researchers assumed that graduation incentives and delinquent supervision show no decay in their effectiveness in deterring juvenile crimes because they are administered during adolescence. Therefore, they selected a decay rate of 0% for delinquent supervision and 0% for graduation incentives. On the other hand, they attached larger decay rates (20%) for juvenile crime deterrence to early home visit plus child care and parent-training programs, as these interventions are administered several years before individuals may be expected to begin to commit crimes. The researchers also included another percentage for decay regarding prevention of **adult** crime: 70% for home visit plus child care, 70% for parent-training programs, 10% for graduation incentives, and 5% for delinquent supervision.

Whether policymakers accept these assumptions or adopt assumptions that are either more conservative or liberal, estimation of the long-term effectiveness of a particular scaled-up program can be calculated using the following formula:

Effective Prevention Rate =
Pilot Prevention Rate x Scale-up Penalty x Decay Rate

The resulting percentage (i.e., Effective Prevention Rate) can be applied to the number of serious crimes that an *average* program participant would be expected to commit in a lifetime. This calculation results in estimated program benefits, in terms of the number of serious crimes prevented per program participant.

For example, the RAND researchers estimated the number of serious crimes prevented per million dollars spent to implement California's "three strikes" law and compared that result with each of the four early-intervention strategies described above. They concluded that the California statute, if applied in all eligible cases, would reduce the number of serious felonies committed by adults in any one year by approximately 28% (or 329,000 crimes). They further estimated that such application would cost $5.5 billion per year in additional criminal justice funding, primarily reflected in the costs of constructing and operating additional prison facilities. The "three strikes" law thus was estimated to cost $16,000 per serious felony prevented. As Figure 1 shows, two of the four early interventions were considered more cost-effective at reducing serious crime over time than the statute, and a third was roughly equivalent.

Figure 2 illustrates the estimated criminal justice system savings achieved through early intervention, as estimated by the same mathematical model used to estimate the costs and benefits of California's "three strikes" law. The figure presents savings relative to costs that would have been incurred under sentencing laws in existence prior to "three strikes" and relative to the newly enacted law. As the figure shows, a million dollars spent on graduation incentives should result in savings to the criminal justice system of between $600,000 and $1.1 million. Thus, over time, the program likely would save enough money to pay most, if not all, of its costs. Criminal justice system savings would pay about one-third of the costs of parent training and about one-fourth the costs of delinquent supervision. Other potential savings (for example to taxpayers and society) are not included in this analysis.

The RAND model incorporates another parameter to account for decay in effectiveness due to time.

Policy Implications

Chronic youth offenders disproportionately include the future violent criminals of their cohort. Policymakers, therefore, must implement proven, cost-effective strategies to positively intervene in the trajectory of the lives of youth who are chronically delinquent. Although there is no panacea for the problem of reducing youth violence, research evidence suggests some promising approaches.

Based on current estimates of program costs and benefits, investments in some interventions for high-risk youth may be several times more cost-effective in reducing serious crime than long mandatory sentences for repeat offenders. This is not to suggest that incarceration is the wrong approach. The crime reductions achievable through incarceration—on the order of 20% or so—are substantial. But, with 80 percent of serious crime remaining, Americans will want to know what else can be done.

The analyses conducted by the RAND researchers indicate that some early-intervention alternatives appear to be more cost-effective than the high-profile, widely endorsed "three strikes" incarceration alternative adopted in the State of California. That approach significantly reduced crime, but also carried an estimated price tag of $5.5 billion. By comparison, the combined interventions of graduation incentives and parent training were estimated to reduce serious crime by an equivalent amount (22%) at a combined annual cost of less than $1 billion—approximately one-sixth the cost of the "three strikes" approach. A third approach, delinquent supervision, also compared favorably with the statute in cost effectiveness.

Although the early home visits plus child care approach was found to be an expensive alterative compared to the "three strikes" law, the additional benefits of the early intervention program cannot be ignored. Comprehensive early intervention with at-risk families has been shown to reduce by approximately 50% rates of child abuse, which is one of the risk factors for later delinquency. Early home visits plus child care also produce considerable benefits by way of savings in the medical and social service costs associated with foster care, as well as improvements in student performance [63; 64].

Even the most successful program, however, might have less favorable results when implemented in a new location or with a different population. Modifications to program design, changes in training protocol, local resistance to specific program features, alterations to program management, application to a different target group, and other factors may produce variations in program results. Policymakers and program implementers, therefore, need to identify strategies for reducing the risk of poor outcomes.

The "three strikes" approach adopted in California significantly reduced crime, but also cost $5.5 billion.

By comparison, a combination of graduation incentives and parent training incentives reduced serious crime by an equivalent amount, at approximately one-sixth of the cost.

Figure 1
Series Crimes Prevented per
Million Dollars Spent
Adapted from [75]
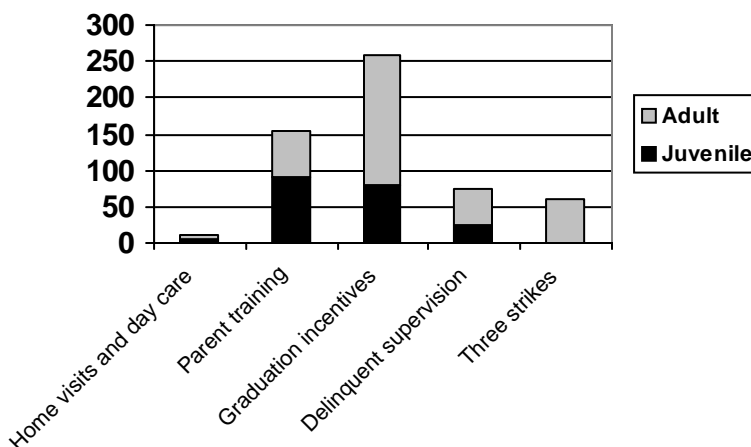
To reduce the risk of poor outcomes, policymakers should take the following steps:

- Adopt programs proven effective through sound research
- Use the program developer's theoretical assumptions
- Encourage the use of multiple program models with different service providers in order to compare programs in relative effectiveness
- Set up quality assurance programs
- Evaluate outcomes
- Hold providers accountable for results

Concluding Comments

Research clearly suggests that positive impacts are much more certain with proven programs. However, policymakers may encounter significant resistance to adopting programs, even those with a proven track record. Unless funders create incentives for local providers to adopt proven programs, they may be reluctant to do so. Local providers may be complacent about current programming, may believe that "we are different," or may resist adopting a program that isn't "home grown."

In addition, policymakers typically are confronted with a dilemma when attempting to choose among several programs that all appear promising: *How do we decide which alternative is best for us?*

Using the strategies described in this article should assist policymakers in making decisions regarding selection and implementation of programs designed to reduce youth violence that are appropriate for their specific circumstances. Use of the cost-benefit analysis model described in this article can assist policymakers to implement policies that are both programmatically and fiscally sound.

Local providers may be reluctant to adopt proven programs unless funders create incentives for them to do so.

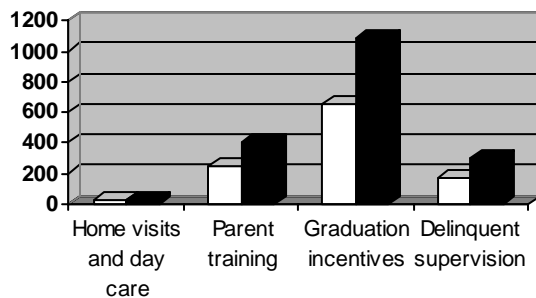**□ Pre-three-strikes baseline ■ Three-strikes baseline**

Figure 2
Estimated Criminal Justice System Savings per Million Dollars of Program Costs
Adapted from [75]

As Executive Director of the OSLC (Oregon Social Learning Center) Community Programs, Dr. Patricia Chamberlain has been researching the effectiveness of prevention and intervention programs for juvenile offenders for nearly two decades. Her work focuses on ecological approaches to treatment that are developmentally appropriate and gender specific. Dr. Chamberlain's Multidimensional Treatment Foster Care Program, described in this article, has been selected as one of 10 National Blueprint Programs for Violence Prevention by the U.S. Department of Justice, Office of Juvenile Justice and Delinquency Prevention, and by the U.S. Department of Education as one of 9 national exemplary violence prevention programs.