Mark A. Cohen* and Alex R. Piquero

Benefits and Costs of a Targeted Intervention Program for Youthful Offenders: The YouthBuild USA Offender Project

Abstract: This paper reports on a benefit-cost analysis of a targeted intervention program, the YouthBuild USA Offender Project (YBOP), aimed at low-income, criminal offenders who are 16–24 years old. Using data on 388 participants, we find: (1) evidence of reduced recidivism and improved educational outcomes that exceed our expectations based on similar cohorts and (2) evidence consistent with a positive benefit-cost ratio, indicating that every dollar spent on the YBOP is estimated to produce a return on investment between $7.20 and $21.60, with benefits to society ranging between $174,000 and $281,000 per participant at a cost to society between $13,000 and $24,000.

Keywords: benefit-cost analysis; delinquency; education and human capital; high-risk youth; high school graduation; law and regulation; other social policy; recidivism.

JEL classifications: D61; K42; I21.

1 Introduction

A significant proportion of street crimes are committed by a small number of offenders – most of whom begin their criminal careers as juveniles (Blumstein et al., 1986; Piquero, Farrington & Blumstein, 2003; Wolfgang, Figlio & Sellin, 1972). For example, based on a longitudinal analysis of over 27,000 individuals born in 1958 in Philadelphia, Cohen and Piquero (2009, Table 2) estimated that those with two or more police contacts through age 26 represent 12% of the

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*Corresponding author: Mark A. Cohen, Justin Potter Professor of American Competitive Enterprise and Professor of Law, Vanderbilt University, 401 21st Avenue South, Nashville, TN 37203, USA
and
Resources for the Future, Washington, DC, USA, e-mail: mark.cohen@owen.vanderbilt.edu
Alex R. Piquero: Ashbel Smith Professor of Criminology, School of Economic, Political and Policy Sciences, University of Texas - Dallas, 800 W. Campbell Road, Richardson, TX 75080, USA

population and yet account for 86% of all offenses, while those with six or more police contacts represent 3.6% of the population and account for about half of all offenses. Aggregating the estimated cost of a lifetime of crime, drug abuse, lack of education, and contact with the criminal justice system, Cohen and Piquero (2009) estimated the present value of the monetary value of "saving" one of these high-risk youth (with 6+ police contacts) to be $2.6–$5.3 million. Thus, programs targeting high-risk youth have the potential for tremendous benefits if they are successful in turning a youth around from a life of crime.

The use of benefit-cost analysis is relatively new in the criminal justice policy arena. Early attempts to introduce benefit-cost analysis in the 1980s often underestimated the benefits of crime reduction by counting only the out-of-pocket victim losses and criminal justice costs – ignoring pain, suffering, and lost quality of life to victims and costs to the public at large such as fear or avoidance behaviors. Cohen (1988, 2000) and Cohen et al. (2004) introduced methodologies such as revealed preference and willingness to pay commonly used in studies of traffic and worker safety and environmental protection into criminal justice policy analysis. As little as 10–15 years ago, benefit-cost studies in criminal justice were rare. For example, a systematic review of the criminal sentencing literature in 2003 (McDougall et al., 2003) found only nine benefit-cost analyses – many of which were described as having "poor methodological quality" (see also Welsh & Farrington, 2006). More recently, benefit-cost analyses of crime reduction programs have begun to appear in the academic literature – including studies on the long-term crime benefits of early childhood education (e.g., Schweinhart, Barnes & Weikart, 1993; Belfield et al., 2006), programs targeting high-risk juveniles (Farrington & Koegl, 2015), and adult incarceration (Owens, 2009). A more recent review of the crime prevention literature (Welsh, Farrington & Gowar, 2015) identifies only 23 benefit-cost studies since 2000 on such varied topics as preschool programs, cognitive-behavioral programs for youthful offenders, and situational crime prevention programs such as improved street lighting.

The first known use of benefit-cost analysis in a criminal justice policy setting appears to have been in Washington State beginning in the 1990s (see e.g., Aos & Drake, 2010 and more generally http://www.wsipp.wa.gov/BenefitCost). At the behest of the state legislature, the Washington State Institute for Public Policy (WSIPP) conducts systematic meta-analyses of outcome evaluations in the areas of juvenile justice, adult criminal justice, child welfare, education, children's mental health, health care, substance abuse, adult mental health, and public health prevention, and then attempts to estimate what these programs would cost and what their benefits would be if adopted in Washington. The federal government's first known

use of benefit-cost analysis in a criminal justice setting was in the context of prison rape regulation in 2012 (U.S. Department of Justice, 2012).

This paper adds to the small but growing set of benefit-cost analyses in criminal justice by analyzing the YouthBuild USA Offender Project (YBOP) – a targeted intervention focussing on criminal offenders who are 16–24 years old. The program was designed to improve both educational and vocational outcomes as well as reduce recidivism. Section 2 describes the YBOP and summarizes an earlier study comparing educational and criminal justice outcomes of participants (both successful graduates and dropouts) before and after entering the program. Next, in Section 3, we compare the YBOP sample to similar youth cohorts. We find evidence of reduced recidivism and improved educational outcomes that exceed our expectations based on similar cohorts. Section 4 compares the potential benefits of the YBOP to its costs and finds considerable evidence consistent with a positive benefit-cost ratio. Section 5 considers the extent to which our findings on the YBOP can be generalized to other YouthBuild (YB) programs. Finally, Section 6 summarizes our findings.

2 The YouthBuild USA Offender Project

The YBOP is a program targeting recent juvenile or young adult offenders who were either diverted by a court to avoid incarceration, referred by the criminal justice system through reentry following incarceration, or who otherwise had served time in jail or prison (Leslie, 2007, 15). The YBOP program was funded for 3 years by the Department of Labor starting in 2004. Participants in the YBOP were integrated into the existing YB program – a comprehensive program targeting low-income young adults with troubled pasts.[1] YouthBuild programs are funded through a combination of public grants and private donations. Among others, the YB program has received funding from the Department of Labor and formal recognition by Congress.[2]

According to the Department of Labor's description of the YB program (http://www.doleta.gov/youth_services/youthbuild.cfm):

> YouthBuild is a community-based alternative education program that provides job training and educational opportunities for at-risk youth ages 16–24.

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[1] Throughout this paper, we distinguish between "YouthBuild" (YB), which is the generic program offered to all participants, and the "YouthBuild USA Offender Project" (YBOP), which targets prior criminal offenders. As noted, participants are mixed in the program and thus the costs associated with both programs are the same. However, the outcome measures – and hence benefits estimated here – apply only to the YBOP population.

[2] "YouthBuild Transfer Act," Public Law 109-281, September 22, 2006; 29 USC 2801 note.

Youth learn construction skills while constructing or rehabilitating affordable housing for low-income or homeless families in their own neighborhoods. Youth split their time between the construction site and the classroom, where they earn their GED or high school diploma, learn to be community leaders, and prepare for college and other postsecondary training opportunities. YouthBuild includes significant support systems, such as a mentoring, follow-up education, employment, and personal counseling services; and participation in community service and civic engagement. There are over 220 DOL funded YouthBuild programs in 43 states serving over 6000 youth per year.

Thus, while including job training and education, YB goes beyond these individual needs and includes personal counseling, and participants become part of an ongoing community of alumni and staff. Since 1994, YB has served over 130,000 students in the United States aged 16–24, with more recent expansion to over 15 countries (www.youthbuild.org/our-impact).

To date, only a handful of impact evaluations have been conducted on either the YB or YBOP programs (Hahn et al., 2004; Leslie, 2007; Abrazaldo et al., 2009). While providing evidence consistent with positive outcomes, these earlier studies were based on self-reported success of YB graduates, and did not have control or comparison groups. More recently, Levine (2012) surveyed 344 YB graduates who had been identified as being active "leaders" in the YB network. These alumni reported significant improvements in the stability and productivity of their lives as well as increased civic activities. While largely anecdotal, the study reported on individual graduates who went on to successful careers as nurses, youth counselors, ministers, and even serving in public office.[3]

A study in Minnesota attempted to conduct a benefit-cost analysis for the state's investment in YB (Minnesota Department of Employment and Economic Development, 2003). Purely from the perspective of state expenditures, it was estimated that Minnesota's budget saved about $3.00 for every dollar it spent on the YB program.[4] About one third of this benefit was estimated to be additional tax revenue collected from YB graduates who now have higher earnings, while the remainder of the benefit is estimated to be reduced prison costs due to lower recidivism. While interesting, one cannot generalize from this study to other states or to an overall social benefit-cost study, primarily because the study limited its focus to direct

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3 Notably, the individuals interviewed by Levine (2012) were not necessarily candidates (or members) of the YouthBuild Offender program. For example, only 16% of respondents reported they had been incarcerated prior to their YB experience.

4 Over a 4-year period, program costs were estimated to be $3.5 million compared to $10.8 million in benefits (Minnesota Department of Employment and Economic Development, 2003, Figure 6).

expenditures. For example, the State of Minnesota spent an average of only $2200 per program participant – probably about 15% of total program costs. However, benefits are also likely to be underestimated as they exclude reduced costs associated with rearrests, trials, probation, and so on; and instead focus solely on reduced prison costs.

More recently, Cohen and Piquero (2010) evaluated 388 YBOP participants by comparing graduates to dropouts. Tables 1 and 2 reproduce the descriptive statistics shown in Tables 1 and 2 in Cohen and Piquero (2010), showing both participant characteristics at the time of entry (starting from the fourth quarter of 2004) and outcomes through the second quarter of 2007. The average age of participants was 19.6 years at program entry and data were available for an average of 10.3 quarters (3.6 quarters in the program and 6.8 quarters after completion or dropout). Only 11% of the participants had a General Educational Development (GED) or high school degree at the time of entry. At the time of follow-up, 58% of those who entered without a degree and completed the YBOP program had earned either a high school or GED (compared to only 18% of those who dropped out of the YBOP program). Forty-one percent of participants reported a substance abuse problem at the time of entry. Virtually all participants had a prior arrest, 60% had served time in juvenile detention, and 40% in an adult correctional facility. Throughout the entire evaluation period, 28% of graduates and 44% of dropouts had at least one other criminal encounter (conviction, incarceration, or parole revocation).

It is possible that not all of the outcome differences found between graduates and dropouts are explained by the program itself. To control for systematic differences in those who enter the program, a treatment effect model was estimated (Cohen & Piquero, 2010, 382). The first stage of the treatment effect model estimated a probit equation explaining graduation from the program. The most significant explanatory variable was prior juvenile or adult detention (as opposed to offenders who were diverted from juvenile detention or prison) – participants with a prior detention had a significantly lower chance of YBOP graduation. The second stage of the treatment effect model thus controls for the expected YBOP graduation rate and finds that actual graduation from YBOP was a significant factor explaining successful outcomes – measured three different ways: (a) high school or GED graduation, (b) high school graduation itself, or (c) any criminal violation postentry.

To briefly summarize our earlier findings, YBOP graduates were significantly more likely to receive a GED or to graduate from high school and less likely to have been convicted of a criminal violation (postentry) than dropouts. Thus, for offenders who enter and complete the YBOP program, they are more likely to receive a GED or high school degree and less likely to recidivate than those who drop out from this

Table 1 Characteristics of YouthBuild Offender Project graduates and dropouts at the time of entry.

	Total	YB graduate	YB dropout	Sample sizes (graduate/dropout/ total)	P-value
Demographics					
Age	19.62	19.50	19.90	166/99/265	0.18
Male	0.85	0.85	0.85	272/116/388	0.92
Non-White	0.76	0.78	0.72	272/116/388	0.24
Married	0.02	0.01	0.03	272/116/388	0.45
High school or GED at entry	0.11	0.12	0.11	272/116/388	0.96
High school at entry	0.06	0.07	0.05	272/116/388	0.59
GED at entry	0.05	0.05	0.06	272/116/388	0.61
Household income	$8784	$9573	$7023	199/89/288	0.03
Working at entry	0.09	0.09	0.10	272/116/388	0.64
Prior Record					
Prior arrest	0.97	0.96	0.99	268/111/379	0.11
Prior misdemeanor	0.70	0.69	0.73	226/96/322	0.44
Prior felony	0.46	0.42	0.57	232/97/329	0.02
Served time in juvenile detention	0.60	0.57	0.68	272/116/388	0.04
Served time in adult correctional facility	0.40	0.36	0.48	271/116/387	0.03
Intensive aftercare program at time of entry	0.33	0.30	0.40	271/116/387	0.05
Substance abuse problem at time of entry	0.41	0.42	0.37	170/68/238	0.43
Undergoing substance abuse treatment at time of entry	0.14	0.13	0.17	163/65/228	0.51
Living Situation					
Living in group home	0.02	0.01	0.02	272/116/388	0.85
Living in half-way house	0.03	0.01	0.06	272/116/388	0.01
Homeless	0.03	0.02	0.05	272/116/388	0.07
Living in public housing	0.10	0.09	0.12	272/116/388	0.33
Foster child	0.04	0.04	0.04	272/116/388	0.90
Student on public assistance	0.28	0.28	0.28	272/116/388	0.98
Family on public assistance	0.32	0.30	0.34	272/115/387	0.51
Lives with parents	0.63	0.67	0.53	272/116/388	0.01
Lives by self	0.10	0.08	0.15	272/116/388	0.07

Table 2 Program outcomes for YouthBuild Offender Project graduates and dropouts.

	Total	YB graduate	YB dropout	Sample sizes (graduate/dropout/ total)	P-value
Number of quarters in program	3.6	4.0	2.4	258/106/364	0.00
Number of quarters after program	6.8	6.4	7.6	258/106/364	0.00
Total number of quarters	10.3	10.4	10.0	272/116/388	0.00
High school/GED after program entry (only those who entered without degree, $n = 345$)	0.46	0.58	0.18	242/103/345	0.00
High school after program entry ($n = 345$)	0.19	0.24	0.05	242/103/345	0.00
GED after program entry ($n = 345$)	0.28	0.34	0.14	242/103 /345	0.00
Percentage of Students (a) After Entry					
Convicted of crime	0.12	0.11	0.14	272/116/388	0.44
Incarcerated	0.18	0.15	0.27	272/116/388	0.00
Parole revocation	0.18	0.13	0.29	272/116/388	0.00
Any of the above	0.33	0.28	0.44	272/116/388	0.00
Percentage of Students (b) After Departure					
Convicted of crime	0.06	0.05	0.09	263/108/371	0.16
Incarcerated	0.13	0.09	0.21	263/108/371	0.00
Parole revocation	0.12	0.08	0.20	263/108/371	0.00
Any of the above	0.21	0.17	0.33	263/108/371	0.00
Percentage of Quarters (a) After Entry					
Convicted of crime	0.02	0.01	0.02	272/116/388	0.28
Incarcerated	0.03	0.02	0.05	272/116/388	0.00
Parole revocation	0.03	0.02	0.05	272/116/388	0.00
Any of the above	0.08	0.06	0.12	272/116/388	0.00
Percentage of Quarters (b) After Departure					
Convicted of crime	0.01	0.01	0.02	253/106/359	0.12
Incarcerated	0.03	0.02	0.05	253/106/359	0.02
Parole revocation	0.03	0.02	0.04	253/106/359	0.01
Any of the above	0.07	0.05	0.11	253/106/359	0.00

Note: Convictions and incarcerations are only counted if the offense occurred subsequent to program entry. Parole revocations are for incidents that occur after entry – even if the underlying crime was committed prior to entry.

program. Of course, YBOP participants are necessarily a selected sample. While it is not possible ex post to randomize the selection process into the YBOP program, the current study builds on this earlier analysis by comparing YBOP participants to two similar cohorts and monetizes the costs and potential benefits of the YBOP program.

3 Comparison of YouthBuild offender sample to similar youth

While we have found significant increases in high school or GED graduation rates and what appear to be improvements in offending behavior following participation in the YBOP program, we do not know if these positive outcomes are the result of the YBOP program itself or if participants would have had similar outcomes in the absence of program participation. For example, it is possible that YBOP participants are a highly selected sample of students who are motivated to further their education and refrain from criminal offending – and would have done so regardless. Ideally, potential participants would be randomly assigned to a treatment and control group so that we could compare outcomes in these two groups. Instead, we know only a little about their selection criteria. We do know, however, that "YouthBuild programs have always welcomed young adults who have been convicted of crimes, as long as they show a sincere desire to work hard to achieve a positive lifestyle. Applicants are not rejected based on any specific crime committed . . . Sometimes they are mandated to participate, sometimes their relatives insist that they do something positive. Sometimes they just want a GED or a job." (Leslie, 2007, 11–12).

In the absence of such an experimental design, we are able to make some comparisons to a similar youth cohort. In the case of high school graduation, the best data available on the likelihood that high school dropouts will subsequently graduate with a degree or GED is the National Longitudinal Survey of Youth ("NLSY97").[5] The NLSY97 cohort began in 1997 with about 9000 youth aged 14–21 at the time, with follow-up interviews annually. Thus, we are able to estimate the percentage of high school dropouts who ultimately obtain their high school diploma or GED after originally dropping out of high school. Table 3 reports these graduation rates. For example, for respondents who had dropped out in 1998, 8.4% had received their high school diploma or GED after 1 year, 11.6% by year 2, and

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5 See http://www.bls.gov/nls/nlsy97.htm for details. The figures reported here have been computed directly from these survey data.

Table 3 High school and GED graduation rate for dropouts: National Longitudinal Youth Survey 1997.

Dropout in year:	Year 1 (%)	Year 2 (%)	Year 3 (%)	Year 4 (%)	Year 5 (%)
1998 ($n = 560$)	8.4	11.6	12.7	13.7	16.8
1999 ($n = 350$)	6.9	14.4	14.8	15.0	15.8
2000 ($n = 330$)	9.6	15.0	18.3	20.1	—
2001 ($n = 240$)	7.8	11.9	13.7	—	—

16.8% by year 5. Overall, Table 3 suggests a 2-year cumulative graduation or GED rate of about 12%–15% and a 3–5-year rate of 18%–20% for youth who originally drop out of high school. This is similar to findings from an earlier study of the NLSY79 by Mishel and Roy (2006, 18) who report a 22.3% completion rate after about 13 years.[6]

In the YBOP sample, 43 out of 388 entered with a high school degree or GED. As shown in Table 2, of the remaining 345 high school dropouts, 159 (46.1%) received their GED or high school degree at some point within the time period measured (10 quarters on average). This is more than three times the 2-year graduation rate in the NLSY97 survey and more than twice the 3–5-year graduation rate shown in Table 3. Interestingly, the high school/GED graduation rate for those who drop out of the YBOP program is very similar to the NLSY97 survey – about 18%. The high school graduation rate for those who successfully complete the YBOP program is 58%, a difference that is highly statistically significant ($p < 0.01$). Thus, the YBOP program is estimated to result in up to a 40% higher high school or GED graduation rate for incoming participants who enter without a degree. Since 89% of those who enter the YBOP program had dropped out of high school prior to entry, the program is estimated to result in an "excess" high school or GED graduation rate, among those who enter the program, of 35.6% (89% × 40%). Later, we use this 35.6% "excess" graduation rate as an estimate of the educational benefits of the YBOP program – the additional GED or high school graduation rate for all YBOP participants – regardless of whether or not they successfully complete the program.

In the case of criminal outcomes, we have compared the YBOP sample to the Second Philadelphia Birth Cohort sample ("Philadelphia Cohort") – a comprehensive dataset of police contacts (obtained from the Juvenile Aid Division of

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[6] Mishel and Roy (2006) report that 8.5% of respondents had dropped out at the time of initial "completion" of their schooling, compared to 6.6% at final follow-up. Thus, 1.9% of the population subsequently received a high school degree or GED, which represents 22% of those who initially dropped out (1.9/8.5 = 22.3%).

the Philadelphia Police Department) for all youth born in Philadelphia in 1958 and who resided in the city until age 18 (Figlio, Tracy & Wolfgang, 1994). The Philadelphia Cohort data, which followed these youth through age 26, are among the best data sources for studying long-term patterns of juvenile delinquency and criminal activity (Piquero et al., 2003). While this cohort is about 25 years older than the YBOP sample, it is the most recent available. We also note that the crime rates in the United States during these two time periods are similar. For example, the violent crime rate in the United States was 468 per 100,000 in 1976 when the Philadelphia Cohort turned 18, compared to 463 in 2004, the first year of our YBOP sample.[7] Of course, this does not mean that the rate of individual offending over time will be the same for these offenders. If anything however, the rate of youth offending is higher than it was in previous decades.[8] As shown below, the Philadelphia Cohort sample allows us to identify youth at any age by prior police contact status.[9] Since virtually all YBOP students enter with a prior offending record, we can use these two samples for comparison purposes.

We compared the "recidivism rate"[10] of YBOP students to that of the Philadelphia Cohort sample. As shown in Table 2, we have approximately 10 quarters of data on the YBOP students – including their time in the program. Table 4 examines the "recidivism rate" for the Philadelphia Cohort by age. For the Philadelphia Cohort sample, for example, 16-year-olds are those youth who had at least one police contact at age 16. The recidivism rate is defined as the percentage of these 16-year-olds who had at least one police contact at either age 17 or 18. Thus, 45.0% of 16-year-olds in the Philadelphia Cohort who had a police contact that year had at least one additional police contact between ages 17 and 18. In the case of the YBOP participants, we do not know when their preentry police contacts occurred – but we

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7 The Federal Bureau of Investigation Uniform Crime Report (1995 and 2006). However, property crime rates were higher in 1976 (4819 per 100,000) than in 2004 (3514 per 100,000). We note that the massive increase in crime rates began around 1979–1980 and these rates began to drop beginning around 1995.

8 Brame et al. (2011) compared reported arrest rates from the 1960s to the 1997 National Longitudinal Survey of Youth, and found that by age 23 about 22% of youth had been arrested in the older sample, compared to 30% more recently. Although not directly comparable, in the Philadelphia Cohort data, 23% of those through age 26 had at least one police contact (Cohen & Piquero, 2009, Table 2).

9 In the case of juveniles, prior police contacts in the Philadelphia Cohort data include many incidents that are not crimes (e.g., truancy). We have eliminated from consideration any police contacts where there was no alleged criminal offense. Even then, however, not all of these police contacts ultimately result in an arrest as police will sometimes refer the youth to a remedial program without a formal arrest. Thus, in the case of juveniles, our measure of recidivism might not be completely comparable. However, in the case of adults, the Philadelphia Cohort data include only arrests.

10 Recidivism in the YBOP refers to any conviction, incarceration, or parole revocation, while recidivism in the Philadelphia Cohort data refers to any police contact involving a criminal offense (in the case of juveniles) or any arrest (in the case of adults).

Table 4 Two-year recidivism rate in Philadelphia Cohort data versus overall recidivism rate in YouthBuild Offender Project sample.

Age	Philadelphia Cohort Number	Recidivism rate (2 years) (%)	YouthBuild students (combined) N	Recidivism Rate (10 quarters) (%)	P-value	YouthBuild graduates only N	Recidivism Rate (10 quarters) (%)	P-value
16	1793	45.0	11	18.2	0.053	8	0	—
17	1593	32.7	41	34.2	0.848	29	34.5	0.844
18	1080	40.3	49	38.8	0.829	32	21.9	0.019
19	919	40.9	40	27.5	0.068	25	24.0	0.064
20	797	41.4	36	38.9	0.762	24	33.3	0.420
21	804	40.3	29	37.9	0.798	14	33.3	0.589
22	753	40.0	20	15.0	0.007	10	0	—
23	752	35.6	16	31.3	0.721	8	37.5	0.920
24			14	42.9				
25			7	28.6				
Combined age 16–23			232	33.3	0.045	143	27.3	0.000
Combined entire YB sample			388	32.7	0.004	272	28.3	0.001

do know that 100% of those entering the program had a prior police contact.[11] In the Philadelphia Cohort sample, we cannot measure the recidivism rate for those older than 23, since we have only complete 2-year follow-up data on this cohort through age 25. Table 4 compares these recidivism rates year by year. First, we compare the Philadelphia Cohort to the sample of all YBOP students – including those who drop out of the program. Next, we compare them to successful graduates of the program. In all cases, the YBOP sample has an equal or lower recidivism rate.

Combined, the recidivism rate for YBOP students is lower than that of the Philadelphia Cohort offenders, and this difference is statistically significant. This is measured both with the full sample of YBOP students and with those whose age at entry is known to be between ages 16 and 23 ($n = 232$).[12] For example, compared to the Philadelphia Cohort recidivism rate of 39.6%, the full sample of 388 YBOP students has a recidivism rate of 32.7% ($p < 0.01$) – a difference of 6.9%. Alternatively, the 232 students we have identified as being between ages 16 and 23 at entry have a recidivism rate of 33.3% ($p < 0.04$) – a difference of 6.3%. The results are stronger if we limit our comparison to YBOP graduates – where the recidivism rate is only 28.3% overall. Note that we have also been overly conservative in our comparison by including the entire time period, averaging 10 quarters. If we restrict our analysis to 8 quarters to be consistent with the Philadelphia Cohort sample, the recidivism rate is only 30.7% compared to 25.0% for the YBOP graduates – a difference of 5.7%. Thus, between 5.7% and 6.9% fewer YBOP participants were recidivists than would have been expected compared to the Philadelphia Cohort sample.

While the above comparison is not perfect – as our measures of recidivism are not identical – we note also that our comparison group is much closer to the YBOP sample than any other dataset we are aware of. In fact, the Philadelphia Cohort sample includes individuals who were arrested but never convicted; hence we might expect a higher recidivism rate if we could restrict the Philadelphia Cohort sample to only those with prior convictions. On the other hand, since the Philadelphia Cohort data include police contacts that do not ultimately result in a conviction or parole violation, it is possible that the "conviction" or "parole violation" recidivism rate is higher.

One other dataset we are aware of that compares recidivism rates of individuals with prior convictions is periodically collected by the Bureau of Justice Statistics (BJS). In a study of many thousand prisoners released from state prisons in 1994

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11 Prior police contact in the case of our YBOP sample means that the individual entered the program with at least one prior misdemeanor or felony conviction. Although 8 out of the 388 had prior police contact information missing, a prior history of serving in jail or prison – or being referred by a court in pretrial diversion – was a prerequisite to entering the YBOP program.
12 Although most entering YBOP students are within the age range of 16–23 years, not all birth dates are recorded in the data; thus we have shown these figures both ways.

and followed for three consecutive years postparole, they found that 29.9% were rearrested within 6 months, 44.1% within 1 year, 59.2% within 2 years, and 67.5% within 3 years of their release (Langan & Levin, 2002).[13] These are considerably higher than the recidivism rate for the Philadelphia Cohort – which is to be expected since the sample of offenders in the prisoner release study is restricted to those who served time in prison – while the Philadelphia Cohort sample includes those whose charges were dropped, acquitted at trial, convicted but placed on probation, and so on. The "reconviction" rates for these released prisoners were 10.6% after 6 months, 21.5% after 1 year, 36.4% after 2 years, and 46.9% after 3 years.[14] This compares to the YBOP "reconviction" rate of 33% overall (28% for graduates) over 10 quarters (30 months), or 30.7% (25.0% for graduates) over 2 years. Thus, the reconviction rate for the average YBOP student (including those who drop out) is between 3.4% (36.4% versus 33.0%) and 5.7% (36.4% versus 30.7%) lower than the average state prisoner releasee in 1994 as reported by BJS. For YBOP graduates, it is between 8.4% and 11.4% lower.[15] This comparison is even starker if we were able to restrict our comparison of 1994 releasees to those aged 18–24 who have a higher reconviction rate than average. To be conservative, we assume a lower recidivism rate between 3.4% and 5.7% – the lowest estimates for the 1994 BJS and Philadelphia Cohort samples.

4 Potential costs and benefits of YBOP

In the section, we estimate the potential costs and benefits of the YBOP program. While we do not have a randomized controlled experiment in which to compare identical YBOP participants to nonparticipants, we do have data on both successful graduates as well as those who drop out of the program – about 30% of those who enter. In addition, we can compare both graduates and dropouts to similar cohorts to arrive at preliminary estimates of the potential benefits of the YBOP. We do

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13 A more recent BJS study based on a survey of 30 state prison systems found similar results: 43.4% of released prisoners were arrested within their first year of release in 2005; 59.5% within 2 years and 67.8% within 3 years (Durose, Cooper & Snyder, 2014, Table 8).

14 The figures in 2005 are virtually identical with a 2-year reconviction rate of 36.3% (Durose et al., 2014, Table 16). It is also similar to the 2-year reconviction rate of prisoners released in 1983, reported to be 38.3% by Beck and Shipley (1989). We also note that while we do not have the 2-year reconviction rates for released prisoners aged 18–24, the 3-year reconviction rates are considerably higher for this age group than they are for all released prisoners (see e.g., (Langan & Levin, 2002, Table 8)).

15 The 3.4% and 8.4% figures are based on comparing the 30-month YBOP reconviction rate to the 2-year rate in the BJS study, while the 5.7% and 11.4% figures are based on the 24-month YBOP reconviction rate.

this for both educational attainment and recidivism, two key life course outcomes. To place all benefits and costs on an equal footing, all dollars are converted to 2007 – the year in which the program outcomes are measured.

Program costs

Mitchell et al. (2003) evaluated the YB program and reported the average cost per program participant to be $14,830 in 2001 dollars, or $20,302 when construction costs are included (Mitchell et al., 2003, 73). They also note that trainee wages and stipends accounted for approximately 27% of program budgets (excluding construction costs). Thus, approximately $4004 per program participant was spent on trainee wages and stipends. While Mitchell et al. (2003, Exhibit III-3) report that program costs vary widely from state to state, average additional program cost categories (excluding construction costs) included education and training costs (35%), leadership development, counseling and support services (14%), administrative costs (12%), outreach and recruitment activities (7%), and job placement and follow-up (5%). (According to the U.S. Department of Housing and Urban Development [HUD] regulations, administrative costs are not to exceed 15% of total costs.) Combining the trainee wages with construction costs, about half of the cost of the YB program ($9476) is transferred to participants or used for constructing low-cost housing and hence provides a direct transfer benefit that is likely to exceed its social costs. While these costs are real, they are a transfer from taxpayers to other members of society who directly benefit through earnings and/or homes that are being constructed, and thus would not generally be considered a cost in a social benefit-cost analysis.[16] The other half ($10,826) would be considered the social cost of the program. Converting these figures to 2007 dollars (increasing by 20% to account for the increase in average hourly wage rates in the United States),[17] social costs are estimated to be $13,000 and total program costs (including construction materials) to be approximately $24,000 per participant. In comparison, the costs of incarcerating an adult for 1 year averaged over $30,000 in 2010 (Henrichson & Delaney, 2012) and the costs of incarceration in a typical juvenile facility for the same 1-year period are much higher, typically of the order of $100,000 (Nagin et al., 2006).

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16 See for example, Cohen (2005) for a more detailed discussion of social costs versus transfer payments and Boardman et al. (2011, 297–307) for a discussion in the context of employment and training programs.

17 According to the Bureau of Labor Statistics, the average hourly earnings in private nonagricultural industries in the United States were $17.44 in 2007, compared to $14.55 in 2001 – a 19.9% increase. See Economic Report of the President (2013, Table B-47). This is slightly higher than the increase in consumer prices over this time period, about 17.1%.

Program benefits: high school education

One measure of improved educational attainment is the value of additional employment opportunities and wages. While the YBOP data provide some evidence on improved educational outcomes, it lacks any data on earnings postgraduation and only sporadic data on preentry earning capacity. For example, preentry earnings data are available on only 57 out of the 388 participants, and earnings data during the program for 160 participants. The average preprogram earnings for those 57 students were $225 per week, while the average earnings during the program for the 160 students with data were $326 per week. For those 28 students where data are contained, average earnings significantly increased from $254 to $347 per week. Of course, earnings during the YBOP program are largely obtained through the program itself – and hence a better assessment would be to compare postgraduate earnings. In the absence of such data, comparisons of lifetime earnings of generic high school graduates to high school dropouts are presented.

Cohen and Piquero (2009) estimate the present value of future benefits from saving a youth from dropping out of high school to range between $420,000 and $630,000 (in 2007 dollars). Applying this to the 35.6% excess graduation rate estimated above (the additional 2-year graduation rate above that is expected for high school dropouts more generally) yields potential educational benefits of $150,000 to $225,000 per program participant. If this were the only benefit of the YBOP program, the benefit-cost ratio would thus range from 11.5 to 17.3 based on $13,000 cost per participant. Even if the higher program cost of $24,000 is used, the benefit-cost ratio would range from 6.2 to 9.4. Put differently, to "break even" at a cost of $13,000 per program participant, between 2% and 3% of all YBOP participants would have to obtain a high school or GED degree as a result of the program, while the actual rate is estimated to be 35.6%. At a cost of $24,000, an excess graduation rate of between 4% and 6% would be required for the program to break even. Note that some of these benefits are "nonpecuniary" (such as the value of a more informed public, health benefits from better education, etc.). Even focussing solely on the lost productivity and value of fringe benefits (see Cohen & Piquero, 2009, Table 11), potential benefits total $350,000 – or $125,000 per program participant – significantly higher than the costs.

Program benefits: lower recidivism

As noted in the previous section, it is estimated that between 3.4% and 5.7% of participants who otherwise would have been expected to recidivate were not convicted

of any crimes (or parole violations) during 8–10 quarters following program entry. Cohen and Piquero (2009) estimate the present value of costs imposed by a lifetime of crime from age 18 to range between $2.0 and $4.3 million. However, we cannot directly compare the YBOP participants to these benefits as they are based on individuals with six or more police contacts throughout their lifetime. While we know that 100% of YBOP participants had at least one prior conviction or court diversion, we do not know how many actual police contacts they had (or would likely have had in the future). As an alternative – and even more conservative measure, Cohen and Piquero (2009, Table 6) report that the present value of lifetime costs for those offenders who have had only one police contact through age 26 ranges between $173,140 and $241,950, whereas the present value cost imposed by all offenders who have had two or more police contacts ranges from $1,074,124 to $1,627,736. They also report that 46% of offenders only had one police contact through age 26 while 54% had two or more police contacts (Cohen & Piquero, 2009, Table 2). Combining this information, it is estimated that at a minimum, any offender who has had at least one police contact imposes an expected present value cost between $659,671 and $990,274. This is likely to be an underestimate of the expected costs imposed by YBOP participants because it includes individuals who had prior police contacts even if no arrest occurred, whereas virtually all YBOP participants had at least one arrest. Based on these minimum values, benefits per program participant are estimated to range between $24,000 and $34,000 based on a 3.4% success rate, and between $38,000 and $56,000 based on 5.7%. Based on costs ranging from $13,000 to $24,000, the benefit-cost ratios for reduced recidivism range between 1.0 and 4.3. If the average YBOP offender had two or more police contacts, these numbers would be considerably higher. Put differently, to "break even" at a cost of $24,000 per participant, this program would need to only "save" between 0.5% and 1.2% of its participants from a life of crime (based on the monetary value of saving "high-risk youth," from Cohen and Piquero (2009)) – whereas the overall program success rate is estimated to range from 3.4% to 5.7% – about 5 to 10 times the break-even level.

As an even more conservative estimate of the potential value of the crime reduction benefits of the YBOP program, Cohen and Piquero (2009) report on the year-by-year costs imposed by high rate offenders. Between ages 20 and 24, costs imposed annually are estimated to range between about $200,000 and $500,000 per offender. Assuming 3.4% of YBOP participants are diverted from this path, benefits per participant would range between $6800 and $17,000 after just 1 year of reduced criminal activity. At a success rate of 5.7%, benefits would range between $11,000 and $28,000. Thus, the program could pay back its costs solely from crime reductions within about 1 or 2 years.

Table 5 Potential costs and benefits of YouthBuild Offender Project (2007 dollars).

	Benefits	"Social" benefit-cost ratio ($13,000 cost)	"Program" benefit-cost ratio ($24,000 cost)
Education alone			
Minimum	$150,000	11.5	6.2
Maximum	$225,000	17.3	9.4
Crime alone			
Minimum	$24,000	1.8	1.0
Maximum	$56,000	4.3	2.3
Combined			
Minimum	$174,000	13.3	7.2
Maximum	$281,000	21.6	11.7

Note: "Social" benefit-cost ratio ignores transfer payments. "Program" benefit-cost ratio is based on the actual out-of-pocket costs to YouthBuild (including grant money received); see text.

Combined with the estimated range of $150,000 to $225,000 benefits from improved educational attainment, the total benefits from the YBOP program are thus estimated to range between $174,000 and $281,000 – excluding any potential benefits from reduced drug abuse. The benefit-cost ratio is thus estimated to range between 13.3 and 21.6 based on the social costs of $13,000 per participant or 7.2–11.7 based on the program costs of $24,000. Put differently, every dollar spent on the YBOP program will return between about $7.20 and $11.70 to taxpayers and others who donate to the program. In terms of social costs, every dollar spent is estimated to return between $13.30 and $21.60. These figures are shown in Table 5.

Program benefits: reduced drug abuse

Finally, approximately 40% of program participants reportedly had a substance abuse problem at the time of entry. While there are no YBOP program outcomes available on this dimension, Cohen and Piquero (2009) estimate the present value of lifetime costs for a heavy drug abuser at age 18 to range from $950,000 to $1.1 million. (Heavy drug abusers were defined as the 3.5 million Americans who reported using cocaine, crack, methamphetamine, or heroin in the previous month based on a recent drug abuse survey; see Substance Abuse and Mental Health Services Administration (SAMHSA, 2007)). Ignoring crimes committed by drug abusers (since crimes are already accounted for in the reduced recidivism estimates) and simply focussing on reduced productivity, medical costs, and so on, the costs range

between $230,000 and $350,000. To see the potential value of YBOP, if only 10% of program participants with substance abuse problems overcome a heavy drug abuse problem, the benefit "per participant" would range from $9000 to $14,000 – nearly the cost of the program itself. Put differently, at a cost of $24,000 per program participant, YBOP would break even solely on the drug abuse reduction benefits if between 7% and 11% of program participants were diverted from a heavy drug abuse career. Since approximately 40% of program participants reportedly entered with a drug abuse problem, this would require a "success" rate of 17.5% to 27.5% for those entering with a drug abuse problem. These figures are only illustrative however, as it is unknown what fraction of the 40% of YBOP participants are "heavy drug abusers" – the definition used by Cohen and Piquero (2009), which is more restrictive than simply drug abusers "in need of treatment." Thus, while a break-even analysis for drug abuse has been provided, no data on which to estimate the likely drug abuse benefits of the YBOP program exists at this time.

5 How do YouthBuild Offender Project students compare to other YouthBuild students?

While this paper largely analyzes the YBOP, the model used for that program is virtually identical to that of the more general YB program itself – with the key difference being that the Offender Project specifically targets offenders. To compare the outcomes of the YBOP to the overall YB program, we obtained data on 1694 YB students where sufficient demographic information as well as prior educational and offending records existed. Though not a random sample, there is no reason to believe it is biased in any way – other than perhaps coming from locations that are better organized (as they are more likely to systematically collect data).

Of the 1694 incoming YB students, 1003 (59.2%) ultimately graduated from the program. This is lower than the 70.1% graduation rate for the 388 YBOP participants. As shown in Table 6, the profile of YB graduates and dropouts vary. For example, YB graduates entered the program with a higher educational attainment on average (10.3% graduates entering with a degree versus 7.5% of dropouts). They were also less likely to have a criminal background.

While the profile of the typical YB student is similar to that of the YBOP participant, they are not identical. For example, while about 2/3 of YB students are male, this figure is higher (85%) for the YBOP. The YBOP students are also slightly more likely to have a high school diploma or GED at entry (11%) compared to the overall sample (9.1%). Similarly, while virtually all YBOP students entered with a

Table 6 Comparison of YouthBuild graduates to dropouts: demographics, prior educational attainment, and criminal background.

	YouthBuild graduates ($n = 1003$)	YouthBuild dropouts ($n = 691$)	P-value
Prior high school/GED	0.103	0.075	0.000
Male	0.68	0.65	0.290
Non-White	0.73	0.74	0.724
Married	0.04	0.04	0.853
Household income	$10,071	$9052	0.039
Prior arrest	0.60	0.65	0.049
Prior misdemeanor	0.42	0.47	0.040
Prior felony	0.21	0.24	0.167
Prior juvenile detention	0.29	0.39	0.000
Prior adult corrections	0.22	0.27	0.013
Any prior offense	0.68	0.63	0.022
Prior substance abuse	0.34	0.40	0.022

prior criminal record, only about 2/3 of the more general YB sample have a prior arrest or criminal record.

Unlike the YBOP, no follow-up data exists on dropouts of the standard YB program. Thus, we cannot directly compare their post-YB educational attainment or criminal offending records. However, graduates of the YB program are monitored at the date of graduation, and every six months for the first two years. Table 7 reports on the follow-up information that is available for YB graduates. At the time of their graduation from the program, 50.5% of those who entered without a high school degree or GED had received one. This increases to 51.4% at 6 months following graduation, 58% after 12 months, and 68.9% after 24 months. This compares favorably with the 58% of YBOP graduates who reportedly received a high school degree or GED at some point during their follow-up period – which averages approximately 20 months following graduation (see Table 2). While promising, it is important to note that these high school graduation rates might be biased as they are not based on the full sample of 1003 graduates. For example, the 58% graduation rate is based on 296 reports – only 30% of the sample, and the 68.9% rate is based on 49 reports – only 5% of the sample. It is quite possible that the "successful" graduates are those who continue to report and the "unsuccessful" ones "drop out" of the system and are not included in the follow-up data.

Table 7 Educational attainment and recidivism for YouthBuild graduates.

	YB dropouts (n = 691)	At exit (n = 1003)	6 months (n = 434)	12 months (n = 296)	24 months (n = 49)
Prior high school/GED	0.075	0.103	0.081	0.074	0.082
High school/GED for those entering w/o	—	0.505	0.514	0.580	0.689
Prior offense	0.683	0.629	0.673	0.676	0.714
In jail at 6 months	—	—	0.045	0.036	0.133
In jail at 12 months	—	—	—	0.068	0.067
In jail at 24 months	—	—	—	—	0.100
In jail (per person)	—	—	0.045	0.064	0.122

Although not entirely comparable, the recidivism rate of YB graduates also appears to compare favorably (and likely is less than that of graduates of the YBOP). While the latter have a recidivism rate of 17% within the 20-month time period following graduation (defined as either a new criminal conviction, incarceration, or parole revocation), between 6% and 12% of YB graduates overall spend some time in jail over the course of 12–24 months following their graduation. As shown in Table 7, 4.5% of graduates with only 6 months of follow-up reportedly were in jail. This increases to 6.4% for those with 12-month follow-up, and 12.2% for graduates who have been followed for 24 months. However, these figures are likely to be somewhat higher due to missing data[18] and they also exclude offending behavior that does not result in incarceration.

6 Concluding remarks

This paper estimates the potential benefits and costs of a targeted intervention for offenders who are 16–24 years old – the YBOP. The program includes job training with vocational skills, educational opportunities leading toward a high school or GED degree, as well as life skill training and mentoring. In the absence of a randomized experimental design, we compare program participants to similar youth cohorts and also conduct a break-even analysis.

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[18] Note that while we have data on 49 individuals at 24 months postgraduation, the intermediate data (e.g., 6-month or 12-month follow-up) is not always available. For example, we only have 30 of these individuals at 6 months. Thus, the 12.2% recidivism rate is an underestimate.

With respect to educational attainment, we estimate that YBOP participants (whether they complete the program or not) have an "excess" high school or GED graduation rate (compared to our reference group of high school dropouts) of 35.6% with the resulting present value of increased benefits ranging from $150,000 to $225,000 per program participant. Further, we estimate the potential reduction in recidivism for YBOP participants to range between 3.4% and 5.6%. Based on the most conservative estimate of the present value of benefits from these youth avoiding a future lifetime of crime, the benefits would range between $24,000 and $56,000 per program participant.

Combined, the potential benefits from the YBOP are thus estimated to range between $174,000 and $281,000. The costs of the program are estimated to be $24,000 – or $13,000 if only "social costs" (excluding transfers in the form of trainee stipends or the cost of building materials) are excluded. The benefit-cost ratio is thus estimated to range between 13.3 and 21.6 based on the social costs and 7.2–11.7 based on the program costs. Put differently, every dollar spent on the YBOP will return between about $7.20 and $11.70 to taxpayers and others who donate to the program. In terms of social costs, every dollar spent is estimated to return between $13.30 and $21.60.

While the benefit-cost analysis focuses on the two program outcomes – recidivism and educational attainment – the YB program targets other socially desirable outcomes, including reduced drug abuse and increased civic engagement such as voter registration and community service. While program outcomes on these measures are unavailable, some hypothetical estimates of the value of substance abuse reductions can be made. For example, if 10% of program participants with substance abuse problems overcame a "heavy drug abuse" problem, the benefit "per participant" would range from $9000 to $14,000 – nearly the cost of the program itself.

Despite this relatively large benefit-cost ratio, we note several important limitations, which also are relevant to much of the prevention/intervention literature. First, the benefit-cost ratio above is based on the present value of future benefits including a lifetime of educational and reduced recidivism benefits. However, the YBOP sample was followed for approximately 30 months and had a rather short-term follow-up period – about 18 months after completion of the program. It is possible that after a period of time, the short-term deterrent effects observed with respect to crime could dwindle and/or the anticipated long-term employment benefits from achieving a high school education might not continue. Nevertheless, our preliminary benefit-cost analysis suggests that the payback period from crime reduction alone could be as little as 1 year – enough to justify the program even if no further benefits accrue.

Second, some care must be taken when comparing our benefit-cost ratios to those estimated for alternative programs targeting educational and/or crime outcomes. Our crime reduction benefit estimates are based on willingness to pay to avoid the risk of crime, and the benefits of a high school education include social benefits beyond wages and productivity (see Cohen & Piquero, 2009). Although this approach is appropriate based on benefit-cost methodology and protocol (see e.g., Boardman et al. 2011, 81; and Cohen, 2005), not all benefit-cost analyses are as comprehensive. For example, while the WSIPP estimates a benefit-cost ratio of $10.25 per dollar spent on aggression replacement therapy (ART) programs for offenders on probation, and between $3 and $4 for a dollar spent on Head Start and pre-K programs, the WSIPP benefits only include taxpayer and crime victim benefits and exclude the full social benefits such as willingness to pay for the reduction in risk of crime. Nevertheless, even if we were to limit our benefits estimates to those received by taxpayers and crime victims, we would obtain a positive benefit-cost ratio.[19]

Third, we have studied 30 YBOP program sites that were chosen based on criteria that favored a successful outcome because of an a priori assessment by the national YB office that these local sites were well operated and fulfilled their criteria for a likely successful outcome. Thus, our main findings should be considered an assessment of well-designed and operated YBOP programs, and may not be generalizable to all programs and sites. However, a more limited analysis (due to data availability) of a random sample of all YB participants suggests that our finding of a high graduation rate and low recidivism is likely to carry over to the program as a whole – although we are unable to quantify this effect.

Fourth, we cannot definitively attribute the positive outcomes to YBOP itself. This is so because we do not know if these positive outcomes are the result of the YBOP program or if participants would have had similar outcomes in the absence of program participation. While we have utilized external comparison data and the best statistical techniques available to isolate the benefits of the YBOP program, we cannot entirely rule out the possibility that program participants were simply highly motivated individuals who would have otherwise been successful. Ideally, potential participants would be randomly assigned to a treatment and control group so that

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19 For example, (Cohen & Piquero, 2009, Table 6) also report on the value of crime reduction based on a "bottom up" approach that includes only criminal justice, victim costs, and offender productivity. Using this more restrictive definition of crime reduction benefits reduces the crime-related benefit-cost ratio by approximately 65% of the value shown in Table 5. Similarly, excluding the nonmarket benefits of education (Cohen & Piquero, 2009, Table 11) reduces the benefits of education by about 10%–15% of the value shown in Table 5. Combined, the "social" benefit-cost ratio shown in Table 5 would still range between 5.6 and 16.2.

we could compare outcomes in these two groups.[20] Unfortunately, we are unable to quantify the size of this potential selection bias, but readily admit that there is some degree of selection bias that exists and should be considered when interpreting our results.

In the absence of a randomized control design, we also conducted a "break-even" analysis to determine the level of effectiveness required of the YBOP program before it pays for itself. Simply based on the educational benefits (ignoring any crime or drug abuse reduction benefits), an "excess" graduation rate of 2%–6% of program participants would be required for the program to pay for itself, compared to an estimated excess graduation rate of 35.6%. Similarly, simply based on estimated crime reduction benefits (ignoring educational or drug abuse reduction benefits), the program would need to "save" between 0.5% and 1.2% of its participants from a lifetime of crime in order to pay for itself. This compares to an estimated overall crime reduction benefit of 3.4% to 5.7% from the program.

Despite these limitations, the current study adds to the rather nascent benefit-cost literature on criminal justice and provides strong evidence that the YBOP program, even with the limited data available, provides more benefits than costs to taxpayers and society – and perhaps more importantly to the youth themselves. Continued evaluation of YBOP and similar programs targeted at young offenders appears to be a promising area for future research.

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20 A randomized control study is currently under way to evaluate the effectiveness of the YB model, with a 4-year follow-up survey being conducted in mid-2017. Unlike the YBOP program that targeted prior offenders, the focus of the ongoing study is on high school dropouts more generally. See MDRC (http://www.mdrc.org/sites/default/files/Adapting_to_Local_Context.pdf) and Department of Labor Federal Register Notice (http://www.gpo.gov/fdsys/pkg/FR-2015-06-02/pdf/2015-13375.pdf).

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