



CITY AND COUNTY OF DENVER

CRIME PREVENTION AND CONTROL COMMISSION

DEPARTMENT OF SAFETY

FIRE • POLICE • SHERIFF

Return on Investment (ROI) Methodology for Crime Prevention and Control Commission (CPCC) Investments

Purpose

The CPCC's stated mission is to create and execute an evidence-based, accountable, and efficient public safety strategy to reduce crime and delinquency in Denver. Directives include (1) developing new systems of interventions, sanctions and programs and (2) facilitating the use of jail space by encouraging appropriate alternatives. The ROI analysis provides accountability on both economic and jail space measures.

Methodology

CPCC programs provide the potential for measurable value in two categories: system efficiency and recidivism reduction. In some cases, a third category, utilization of public health or social services, may be factored into the ROI analysis to determine the reduction in public spending and ultimately, savings to Denver taxpayers, as the populations impacted by CPCC programs are often frequent consumers of these costly services.

Due to limited data access both within Denver agencies and between metro area jurisdictions, recidivism for the purpose of the ROI analysis is defined as re-booking in the Denver jail within six months of the date of program completion or release from jail post-program enrollment (unless indicated otherwise). Longer timeframes may be examined where more than one year has passed since program completion. Reentry is a program that impacts both categories (system efficiency and recidivism) and will be used as an example to illustrate the methodology.

The first step is estimating the approximate new annual population served by a program. In 2019, the Reentry Program served approximately 551 new participants. While a participant may remain in the program less than or more than one year, it is these 551 new participants that correspond to the annual investment in the program (the CPCC Reentry Program investment for the jail and community, was \$519,583 – see Assumptions table below). As long as the population does not vary widely from year to year, this is the annual investment required to regenerate a new population of 551 new participants while maintaining any remnant population from previous periods. The 551 participants that carryover into future years will be supported as remnant populations by investments in subsequent years. It is not necessary to consider whether the current year's investment is supporting some of last year's participants and/or only a portion of

this year’s new participants, since they offset. This assumption will not hold if the population varies significantly from year to year.

Other assumptions are based on a combination of Denver data (e.g. average length of stay, Denver recidivism rates) and available studies (e.g. the cost of crime, comparison recidivism rate based on a 2016 control group study). System efficiency assumptions are generally easier to capture since they occur in short time periods and are easily tracked. Recidivism data is more difficult because it occurs over a lengthy period of time post-release and is difficult to access due to technology constraints, the transient nature of the population served, and other factors (e.g., privacy laws on medical records in the case of utilization of public social or health services such as emergency room visits). For Reentry Program, base assumptions for the 2019 evaluation are:

Assumptions	2019eval
6-month Recidivism Rate - Base	43%
# Crimes per Recidivist in 12 mo - Base	1.87
12-month Recidivism Rate - Reentry	36%
# Crimes per Recidivist in 12 mo - Reentry	1.79
Average Cost of Crime	\$ 587
Average Cost of Processing Arrest	\$ 164
Avg Incarcerated Length of Stay	60
# New Annual Participants	551
Life Skills Costs	\$ 20,000.00
Provider Costs	\$499,583.00
Cost per Bed Day (Federal Reimbursement Rate)	\$ 70.20

The second step is to create and measure two comparable paths for these individuals: The No Program Path and the Program Path (e.g., Reentry). Each path has two components. The first is the initial cost associated with the booking event that initiated the choice of path (i.e., whether No Program or Program). In the case of the Reentry Program, the client is released 3 days early for each hour of class participation, creating system efficiency which reduces the number of jail bed days.

Option 1: No Program	2019eval	Option 2: Program	2019 eval
Count	551	Count	551
Jail Bed Days	33,060	Jail Bed Days (Earned Time Credit Included)	32,044
Initial Jail Cost	\$ 2,320,812	Initial Jail Cost	\$ 2,249,489
Initial Processing Cost	\$ 90,529	Initial Processing Cost	\$ 90,529
# Crimes	1,030	# Crimes	986
Initial Crime Cost	\$ 604,827	Initial Crime Cost	\$ 578,952
Regular Initial Cost	\$ 3,016,168	Regular Initial Cost	\$ 2,918,970

Costs are reduced because Jail Bed Days are reduced for the same 551 participants. Processing and crime costs remain the same because nothing has changed for the initial booking. A systems efficiency savings is generated – regardless of the program’s effectiveness at recidivism reduction – by reducing the length of stay for early release due to program participation while incarcerated.

The third step is measuring the costs of recidivism, and where possible, the utilization of public social or health services (e.g., emergency room visits, hospital stays, detox). Drug Court, and Reentry have the potential to affect recidivism, while Wellness Court impacts recidivism as well as the use of public services because it serves a high number of individuals who are diagnosed with mental health disorders and/or substance abuse issues. Currently, Wellness Court is the only program where the utilization of public services is measured (because the program has a small number of participants this data can be gathered manually by the program coordinator).

The Reentry Program recidivism costs, without consideration to decreased public service utilization, are reflected here:

Option 1: No Program	2019eval	Option 2: Program	2019 eval
# Recidivating <12 Months	237	# Recidivating <12 Months	198
# Recidivating 12-24 months	102	# Recidivating 12-24 months	71
Total # Recidivating	339	Total # Recidivating	270
# Crimes	634	# Crimes	483
Recidivist Processing Cost	\$ 55,666	Recidivist Processing Cost	\$ 44,323
Recidivist Crime Cost	\$ 371,908	Recidivist Crime Cost	\$ 283,455
Jail Bed Days	20,329	Jail Bed Days	16,186
\$ Jail Cost	\$ 1,427,067	\$ Jail Cost	\$ 1,136,270
Recidivism Cost	\$ 1,874,971	Recidivism Cost	\$ 1,480,234
Option 1: Total Cost	\$ 4,891,139	Option 1: Total Cost (Budget Included)	\$ 4,948,750

The number recidivating in the first twelve months post release is the annual number of participants multiplied by the recidivism rate. To determine an average rate of recidivism for the model, a control group rate of 43% was calculated in 2016 which was the rate for incarcerated individuals that fit the criteria for the program but did not participate. Of the 551 participants, 237 are projected to recidivate in the first twelve months. One hundred and two participants (234 participants who recidivated in the first twelve months multiplied by the 43% recidivism rate) will be booked in the next twelve months. The Terminal Value captures all future year recidivating (from 25 months on) by dividing the second year's total (102) by a terminal value rate (1 minus the recidivism rate of 43%, or 57%).¹ The total number of participants who recidivate (339) then drives the crime costs, processing costs, and jail bed days costs. This same methodology is used to create the comparable costs for the program, using the program recidivism rate for the 551 participants (i.e., 36%).

The final step is adding the cost of the program to the program path. The Reentry expenditures total \$519,583 which are added to system efficiency savings. Dividing the return by the investment (the program cost) equals a return on investment (ROI) of -10% meaning the program did not provide a savings in 2019 (see table below). However, with the reduction in recidivism, the program averted 14 jail beds per day, although the reduction was not enough to overcome the budget spent in 2019.

¹ This is a financial modeling technique used to project future cash flows beyond periods in the model.

Cost	No Program	Program	Savings/Loss
System Efficiency	\$ 3,016,168	\$ 2,918,970	\$ 97,198
Recidivism	\$ 1,874,971	\$ 1,480,234	\$ 394,737
Program		\$ 519,593	\$ (519,593)
Total Costs	\$ 4,891,139	\$ 4,918,797	
ROI			-10%

Any model is only as good as the assumptions that populate it. Based on different what-if scenarios, there is considerable margin for error on the two assumptions where accuracy is in question before the program would sustain a positive or negative ROI. Testing and recapturing the assumptions each year increases confidence in the validity of the results.