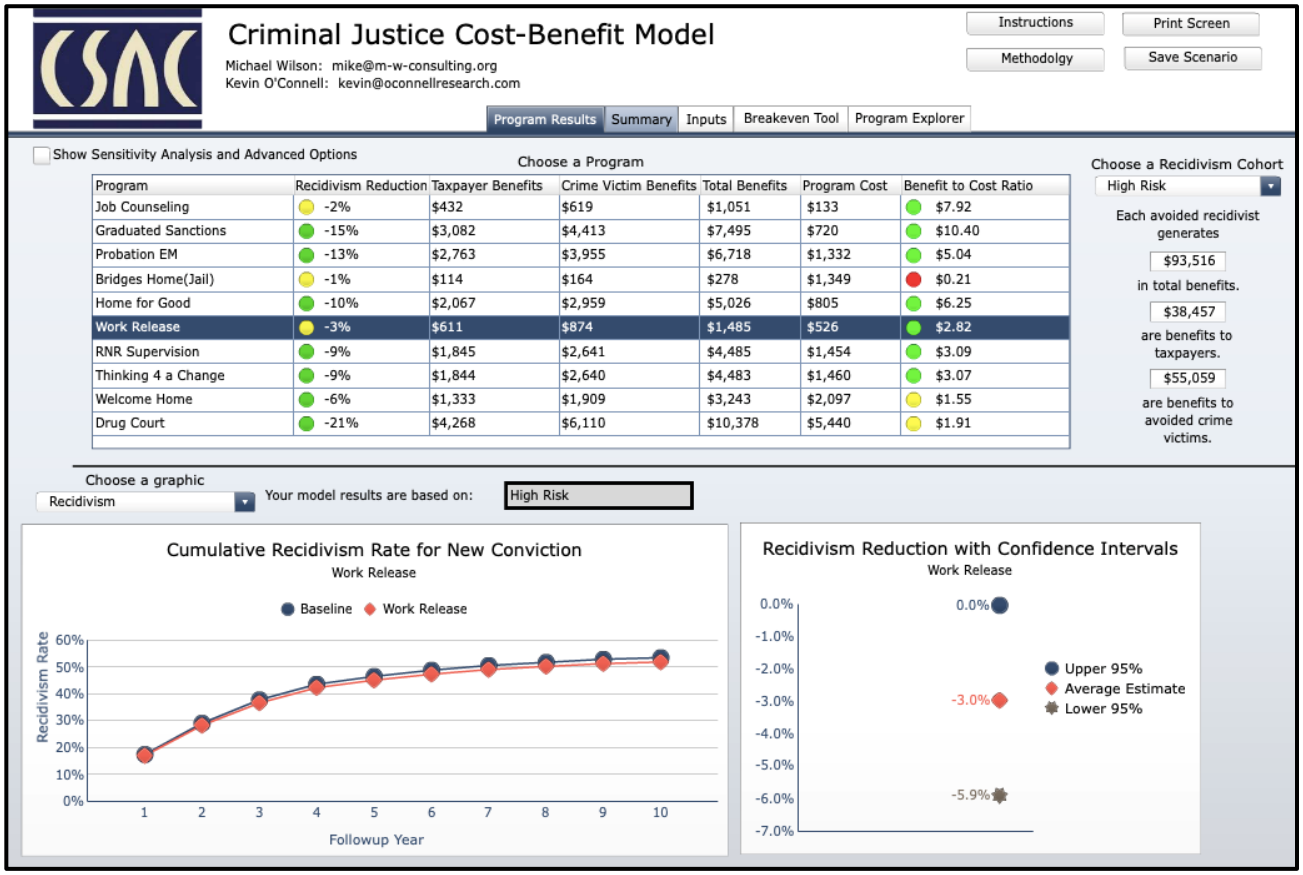
Table of Contents

Introduction

This guide will help users populate the Adult Justice: Cost-Benefit model (AJ-CB). The model allows users to estimate the value of programs in their jurisdiction that are designed to reduce recidivism.[1] The model measures costs and outcomes in the same way, which allows for the comparison of different criminal justice policy programs. Users may compare the impacts of up to 10 programs at a time in the *Choose a Program* table.[2]

Cost-benefit analysis (CBA) is an analytical method that compares various policy alternatives and allows stakeholders to determine which programs generate the highest net benefits to taxpayers and society over time. CBA is a systematic approach to determining the efficiency of alternative policies and programs by comparing the total expected costs against the total expected benefits. For more information on cost-benefit analysis and methods, please see Cost-Benefit Methodology.

Exhibit 1. Adult Justice: Cost-Benefit Model Inputs Tab



Program	Recidivism Reduction	Taxpayer Benefits	Crime Victim Benefits	Total Benefits	Program Cost	Benefit to Cost Ratio
Job Counseling	-2%	$432	$619	$1,051	$133	$7.92
Graduated Sanctions	-15%	$3,082	$4,413	$7,495	$720	$10.40
Probation EM	-13%	$2,763	$3,955	$6,718	$1,332	$5.04
Bridges Home(Jail)	-1%	$114	$164	$278	$1,349	$0.21
Home for Good	-10%	$2,067	$2,959	$5,026	$805	$6.25
Work Release	-3%	$611	$874	$1,485	$526	$2.82
RNR Supervision	-9%	$1,845	$2,641	$4,485	$1,454	$3.09
Thinking 4 a Change	-9%	$1,844	$2,640	$4,483	$1,460	$3.07
Welcome Home	-6%	$1,333	$1,909	$3,243	$2,097	$1.55
Drug Court	-21%	$4,268	$6,110	$10,378	$5,440	$1.91

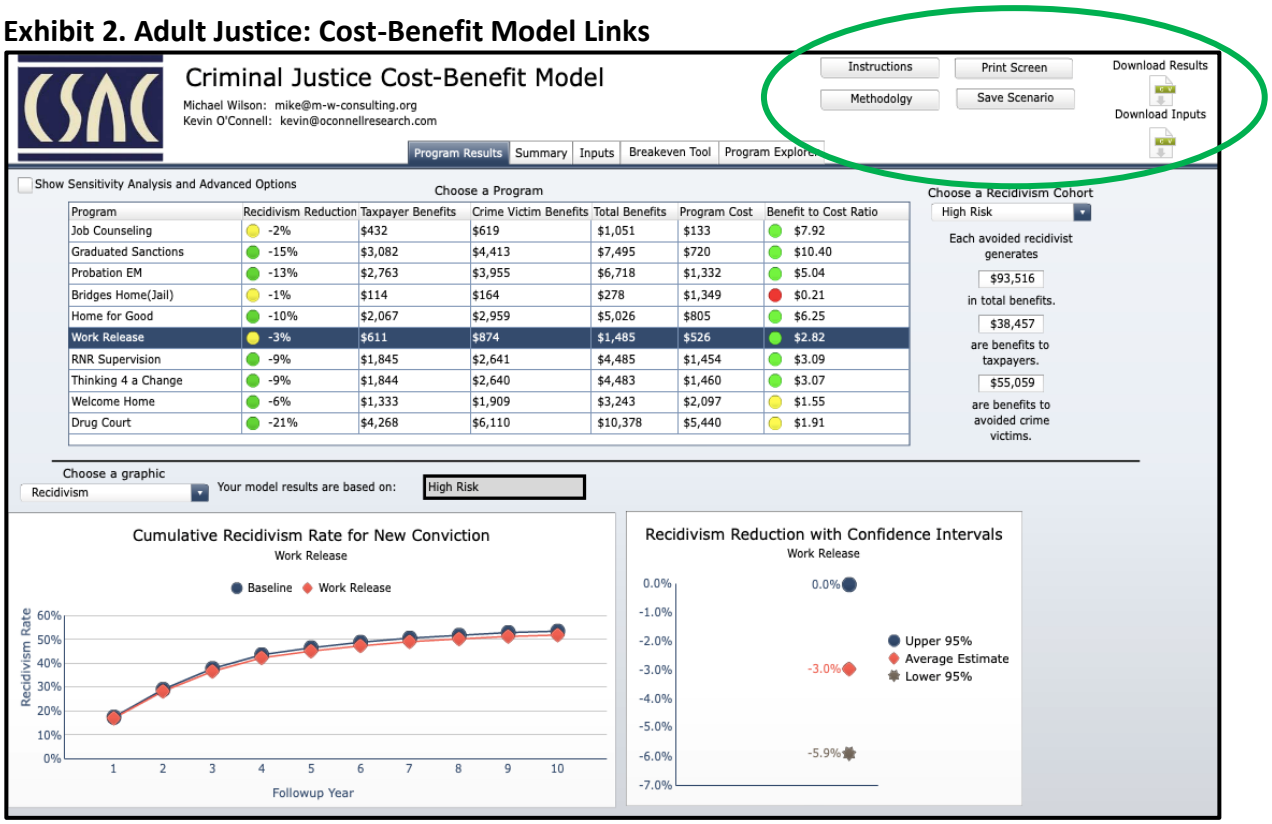
[1] Benefits from reduced recidivism are based on taxpayer savings from reduced criminal justice system resource usage and avoided victimizations.

[2] The model works in most web browsers but for optional layout and performance, Google Chrome is recommended.

There are six important links at the top right of the screen on each tab:

- *Instructions*- link to the Adult Justice: Cost-Benefit model instructions.
- *Methodology*- link to the Cost-Benefit Methodology document.
- *Print Screen*- allows users to print information on the Program Results, Summary, Inputs, Breakeven Tool, and Program Explorer tabs.
- *Save Scenario*- allows users to save different versions of the model. To save a new version, users should click the "Save Scenario" button, select "Save" and enter a name for the scenario. Historical versions of the model may be accessed by clicking "Save Scenario", selecting "Load", and choosing the name of the desired scenario from the list.
- *Download Results*- allows users to download the model results in an Excel workbook.
- *Download Inputs*- allows users to download their jurisdiction-specific input parameters in an Excel workbook.

Exhibit 2. Adult Justice: Cost-Benefit Model Links



The model includes five tabs:

Program Results: The Program Results tab displays the following information for each program on the Inputs tab:

- Expected recidivism reduction;
- Taxpayer benefits
- Benefits to avoided victims of crime;
- Total benefits (taxpayer benefits plus crime victim benefits);
- Cost; and
- Benefit to cost ratio.

The Program Results tab also displays the total benefits of each avoided recidivist (by jurisdiction defined cohorts) and disaggregates the total benefits by benefits accruing to taxpayers and avoided victims of crime.

Additionally, users can graphically display the expected effects of programs in a number of different ways, including expected recidivism impact, cash flow (e.g. how benefits accrue over the years following the intervention and benefits disaggregated by perspective), and benefits disaggregated by how they accrue to the different criminal justice resource areas.

Summary: The Summary tab displays the benefit to cost ratio for each program and breaks down the cost of a trip through the criminal justice system by system point for felony and misdemeanor crime types.

Inputs: The Inputs tab requires users to enter jurisdiction-specific information on programs, criminal justice system costs, justice system usage, and recidivism trends.

Breakeven Tool: The breakeven tool provides information about the minimum recidivism reduction required for the cost of the program to equal or exceed the benefits.

The tool should be used for programs that have not been rigorously evaluated in terms of their impact on recidivism. Once the user enters basic information about the program, the tool will show the recidivism reduction necessary for the program to breakeven.

Program Explorer: The Program Explorer tab allows users to view the estimated impact of all programs in the cost-benefit model. The information is intended to be used to explore the potential impacts of local criminal justice programming.

The remainder of this document will discuss the information needed to populate the model and results produced by the model, starting with the Inputs tab.

Inputs Tab

The Inputs tab is divided into three sections: *Programs and Justice System Costs, Justice System Usage,* and *Recidivism Information*. Users will need to calculate and enter jurisdiction-specific information for all applicable fields.

The remainder of this section discusses the parameters needed to populate the Inputs tab. Note that users can enter data by double clicking on a cell, deleting the existing value, typing in the new value, and pressing enter to save the updated information.

Exhibit 3. Adult Justice: Cost-Benefit Model Inputs Tab

Enter Programs and Justice System Costs

Program Name	Cost	Year of Dollars	ES	SE/CI	Local Evaluation	Evidence
Job Counseling	$125	2014	-0.03	0.04		Emp Counseling Comm
Graduated Sanctio	$680	2015	-0.18	0.07		CM SCF Drug
Probation EM	$1,138	2009	-0.16	0.13		EM Probation
Bridges Home(Jail)	$1,289	2016	-0.01	0.04		Intensive Drug Tx Comm
Home for Good	$769	2016	-0.12	0.01		Outpatient Drug Tx Com
Work Release	$503	2016	-0.04	0.02		Work Release
RNR Supervision	$1,372	2015	-0.11	0.04		RNR
Thinking 4 a Chang	$1,395	2016	-0.11	0.03		CBT High & Mod Risk
Welcome Home	$2,004	2016	-0.08	0.06		Housing(services)
Drug Court	$5,200	2016	-0.26	0.03		Drug Courts

Justice Costs	Felony	Misdemeanor	Year of Dollars	% Local
Arrest	$750	$750	2012	85%
Conviction	$4,000	$1,000	2014	50%
Jail	$20,000	$20,000	2012	100%
Probation	$1,000	$1,000	2012	50%
Prison	$15,000	$15,000	2012	0%
Parole/PPS	$2,500	$2,500	2014	0%

Enter Justice System Usage

Criminal Justice System Use	Felony	Misd
% Jail Only	10.0%	25.0%
% Probation Only	20.0%	25.0%
% Jail and Probation	25.0%	30.0%
% Prison	40.0%	0.0%
% Other	5.0%	20.0%
% Supervision Post Prison	75.0%	88.0%

Length of Stay (Months)	Felony	Misd
Jail Sentence	6.0	3.0
Jail Prior to Prison Sentence	3.0	0.0
Probation	36.0	18.0
Prison	42.0	0.0
Supervision Post Prison	22.0	0.0

Jurisdictional Felonies	Number of Felonies
Murder	30
Sex	150
Robbery	125
Assault	500
Burglary	250
MV Theft	500
Theft	750
Drug	1,500
Other	1,000

Enter Recidivism Information

Total Recidivists

	High Risk	Moderate F
1	150	100
2	100	80
3	75	70
4	50	50
5	25	30
6	20	25
7	15	20
8	10	15
9	10	10
10	5	5
No	400	500

% of Convictions-Felonies

40%	33%

Total Recidivating Events

1	250	200
2	200	150
3	190	100
4	150	80
5	110	70
6	70	50
7	50	25
8	40	20
9	30	15
10	20	10

Programs and Justice System Costs

Program Information

There are six pieces of information that users should enter for each program in their jurisdiction.

Exhibit 4. Program Information Table

Enter Programs and Justice System Costs

Program Name	Cost	Year of Dollars	ES	SE/CI	Local Evaluation	Evidence
Job Counseling	$125	2014	-0.03	0.04		Emp Counseling Comm
Graduated Sanctio	$680	2015	-0.18	0.07		CM SCF Drug
Probation EM	$1,138	2009	-0.16	0.13		EM Probation
Bridges Home(Jail)	$1,289	2016	-0.01	0.04		Intensive Drug Tx Comm
Home for Good	$769	2016	-0.12	0.01		Outpatient Drug Tx Com
Work Release	$503	2016	-0.04	0.02		Work Release
RNR Supervision	$1,372	2015	-0.11	0.04		RNR
Thinking 4 a Chang	$1,395	2016	-0.11	0.03		CBT High & Mod Risk
Welcome Home	$2,004	2016	-0.08	0.06		Housing(services)
Drug Court	$5,200	2016	-0.26	0.03		Drug Courts

Program Name

Users may enter the name of up to 10 programs to run in the cost-benefit model. Only programs that have been rigorously evaluated in terms of their impact on recidivism, either locally or through the Washington State Institute for Public Policy's (WSIPP) meta-analyses, should be entered in the model.

Cost

Users must enter the cost of each program. For programs that are currently operating, the program cost should include the direct expense of providing treatment to a small number of additional clients (referred to as the marginal or incremental cost). Additionally, the cost should be based on all participants admitted to the program not just those who successfully completed it.

If the program is being considered for implementation (e.g. not currently operating) the average cost, including administrative and start-up costs, can be used.

Year of Dollars

The year that the cost estimate was derived from should be entered. The model uses this information to adjust for inflation.

Effect Sizes (ES)

Effect sizes provide an estimate of how effective a program is at achieving its intended outcome/s. They can provide an indication of how effective a program is at reducing recidivism by comparing the difference in recidivism outcomes between treatment and control groups in rigorous evaluations.

If the jurisdiction has performed a local evaluation using a rigorous research design that controls for selection bias, users should enter the estimated percent change in recidivism (as a result of program participation) in this field.[3]

In the absence of a jurisdiction-specific evaluation, users should match their local programs to those analyzed by WSIPP. County partners should use the Adult Criminal Justice Program Summaries to match their programs to the cost-benefit model. Non-partner jurisdictions interested in populating the model should contact Mike Wilson for assistance at Mike@m-w-consulting.org.[4]

If using WSIPP's effect sizes, user should:

1. Ensure that their local programs target the same populations (e.g. that the program is provided to a similar population as those in the meta-analyses such as offenders in an institution versus community-based offenders) and have similar duration and frequency requirements as the programs in WSIPP's meta-analyses.
2. Once the user has confirmed that the programs align, select the name of the program in WSIPP's meta-analyses by selecting it from the dropdown list under "Evidence".
3. Once the program name is selected, the ES box will automatically populate with the first adjusted effect size from WSIPP.

The ES will be shaded green if the program reduces recidivism and red if it is expected to increase recidivism.

Standard Error/Confidence Interval

Users must enter the standard error or the 95% confidence interval in the SE/CI column. If a program from WSIPP's meta-analyses has been selected from the dropdown list, the SE/CI cell will automatically populate. If using a local evaluation, users should enter the 95% confidence interval from the evaluation.

---

[3] For more information about research design and effect sizes, see the Cost-Benefit Methodology document.

[4] A list of programs and a summary of each are available on WSIPP's website: http://www.wsipp.wa.gov/BenefitCost?topicId=2.

Local Evaluation

If using program information from a local evaluation, users must check the "Local Evaluation" box.

Justice System Costs

Users must enter cost data, broken out by felony and misdemeanor crime categories (if data that allows users to distinguish between the two is available), for each area of the criminal justice system. Similar to program costs, the marginal cost of each resource area (excluding fixed costs and administrative overhead) should be used.

The cost of an arrest and conviction should be per event; whereas jail, probation, prison, and post-prison supervision costs should be annual, per person costs.

The budget year that the cost was estimated for should be entered in the "Year of Dollars" cell to allow the model to adjust for inflation.

If the user wishes to view program benefits by type, the percent of each resource paid by local taxes must also be entered.

Exhibit 5. Justice Costs Table

Justice Costs	Felony	Misdemeanor	Year of Dollars	% Local
Arrest	$750	$750	2012	85%
Conviction	$4,000	$1,000	2014	50%
Jail	$20,000	$20,000	2012	100%
Probation	$1,000	$1,000	2012	50%
Prison	$15,000	$15,000	2012	0%
Parole/PPS	$2,500	$2,500	2014	0%

Justice System Usage

Users will need to enter information about local criminal justice system resource use into three tables: *Criminal Justice System Usage, Length of Stay (Months), and Jurisdictional Felonies.*

The information needed to populate each table is discussed in further detail below.

Exhibit 6. Justice System Usage Table

Enter Justice System Usage

Criminal Justice System Use	Felony	Misd
% Jail Only	10.0%	25.0%
% Probation Only	20.0%	25.0%
% Jail and Probation	25.0%	30.0%
% Prison	40.0%	0.0%
% Other	5.0%	20.0%
% Supervision Post Prison	75.0%	88.0%

Length of Stay (Months)	Felony	Misd
Jail Sentence	6.0	3.0
Jail Prior to Prison Sentence	3.0	0.0
Probation	36.0	18.0
Prison	42.0	0.0
Supervision Post Prison	22.0	0.0

Jurisdictional Felonies	Number of Felonies
Murder	30
Sex	150
Robbery	125
Assault	500
Burglary	250
MV Theft	500
Theft	750
Drug	1,500
Other	1,000

Criminal Justice System Use

Users must enter information about local offenders and their likelihood of using various criminal justice system resources. This information is used by the model to determine how many resources are avoided and the associated cost avoidance as a result of effective criminal justice programs. For example, if a felony conviction is avoided, how many jail, probation, prison, and post-release community supervision days are expected to be avoided on average?

If possible, local sentencing data should be used to estimate these likelihoods.

The percent jail only, probation only, jail and probation, prison, and other categories should add up to one hundred percent. The percent supervision post prison is conditional upon an offender receiving a prison sentence. The information needed to populate this table is normally obtained from court sentencing data.

Length of Stay

Users must enter local average length of stay information for each criminal justice system resource. This data, along with the resource use and cost data described previously, is used by the model to estimate the overall cost of an offender moving through the system.

Length of stay calculations should be based on a recent year's worth of data that indicates how long offenders typically use each system resource listed in the table.

Jurisdictional Felonies

Users must enter the number of local felonies by broad crime categories using either arrest or conviction data. If both conviction and arrest data are available, conviction data should be used.

This information is used by the model to estimate the costs associated with crime victimization. The first seven categories have victimization costs attached to them, while the drug and other categories do not.

Recidivism Information

The cost-benefit model applies each program's effect size to the jurisdiction's baseline recidivism rate. Shifts from the baseline rate get monetized through reduced victimization and system costs. If the baseline rate is higher than the shifted rate, the program is expected to reduce recidivism.

The AJ-CB allows users to create up to two county specific cohorts and develop cohort specific recidivism baselines. Users should begin by naming the cohorts they are entering information for. The name of the first cohort should be preceded by the number 1 (e.g. 1. General) and the second cohort name should be preceded by the number 2 (e.g. 2. Misd).

Exhibit 7. Recidivism Information

Enter Recidivism Information

Total Recidivists

	1. General	2. Misd
1	150	100
2	100	80
3	75	70
4	50	50
5	25	30
6	20	25
7	15	20
8	10	15
9	10	10
10	5	5
No	400	500

% of Convictions-Felonies

	40%	33%

Total Recidivating Events

1	250	200
2	200	150
3	190	100
4	150	80
5	110	70
6	70	50
7	50	25
8	40	20
9	30	15
10	20	10

Total Recidivists

The Total Recidivists table is a count of the number of offenders who recidivate over the site defined follow-up period. Users should enter the cumulative recidivism rate for each follow-up year by counting the number of offenders who recidivate (yes or no) by year. If an offender has multiple recidivating events, only the first event should be counted.

The AJ-CB allows users to enter data for up to 10 years. For any full year not included in the cohort analysis, users should enter 0 or leave the field blank. For example, if a county chooses to track recidivism for 5 years following release from supervision, they should enter data from the Recidivism Report for years 1-5 and 0's in years 6-10.

Users must also enter the total number of individuals in the cohort who did not recidivate in the No row.

Percent of Convictions-Felonies

Users must enter the percent of convictions in the jurisdiction that are felonies. The model uses this information, along with victimization costs, to estimate the cost of an offender moving through the system.

Total Recidivating Events

This parameter indicates the frequency of recidivism over the follow-up period. Users should count the number of offenders who recidivate each year of the follow-up. The count should include multiple conviction events for the same offender.

Program Results Tab

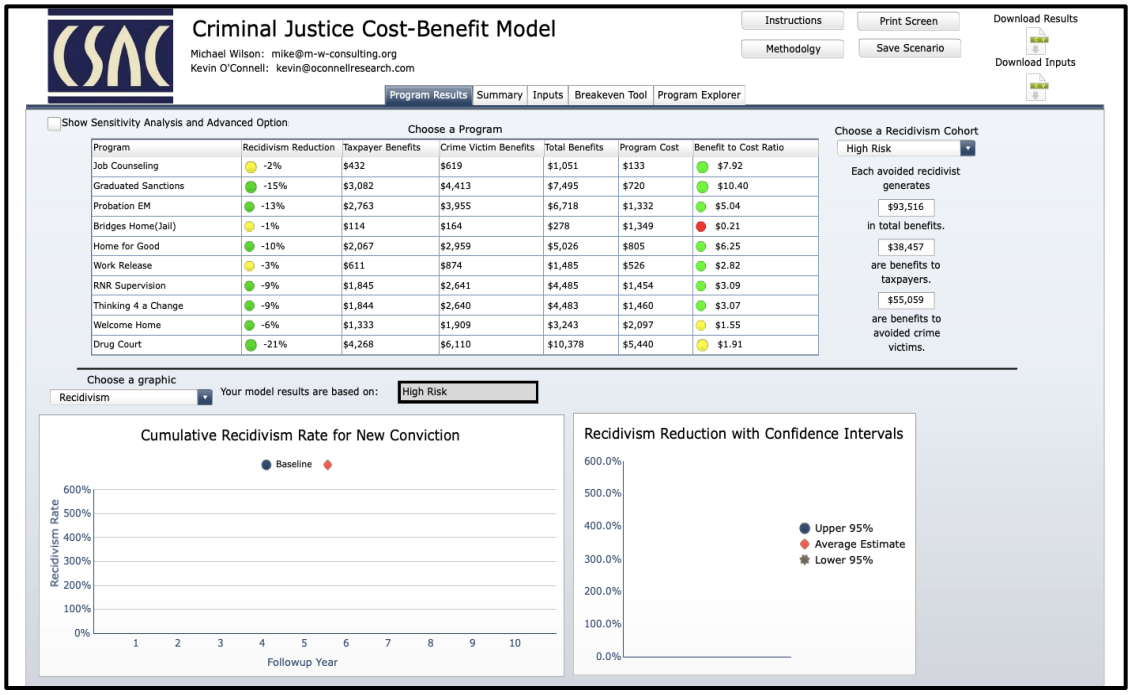
Users should select the program they wish to display information for from the dropdown list at the top right of the screen. Note that the information displayed on the Program Results tab will be specific to the cohort selected.

Exhibit 8. Choose a Recidivism Cohort

There are three sections in the Program Results tab. The *Program* table located at the top of the screen displays information about each program's expected impact, cost, and benefits. The recidivism information at the top right of the screen shows the total benefits that a jurisdiction can expect from avoiding a recidivist and disaggregates the total benefits into the benefits according to taxpayers and those resulting from avoided victimizations.

Depending on the graphic selected, the lower half of the tab will display the selected program's overall effect on recidivism, cash flow analysis over the 10-year period following the intervention (disaggregated by perspective), or how program benefits will accrue across criminal justice resources and to future crime victims.

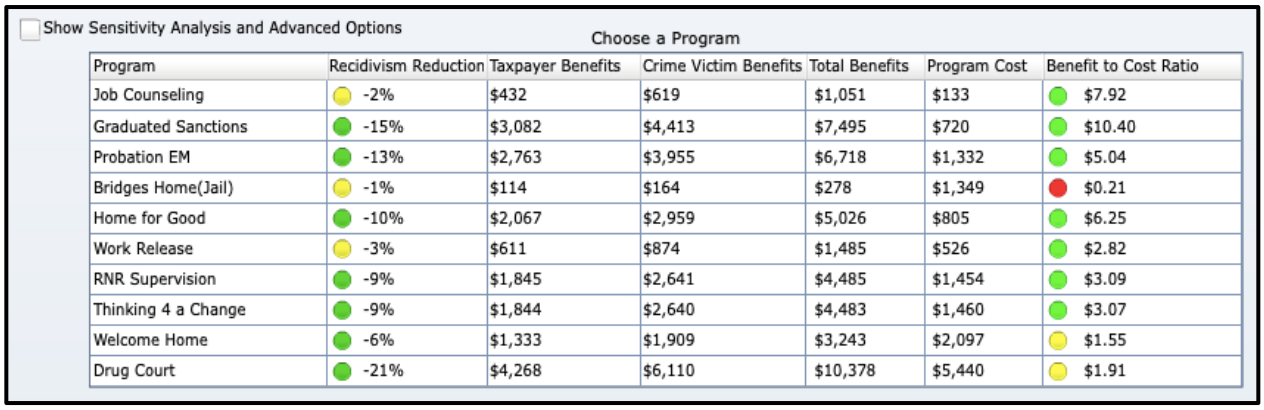
Exhibit 9. Program Results Tab



Program Table

The Program table displays information about each program's expected impact on recidivism, costs, and benefits (total, taxpayer, and avoided crime victimizations) on a per participant basis.

Exhibit 10. Program Table



The Program table includes the following information:

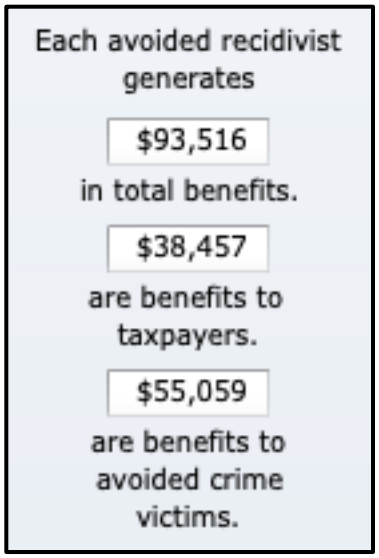
- *Program*- Program name automatically populates with the program name entered on the Inputs tab.
- *Recidivism Reduction*- Impact that the program is expected to have on recidivism.

  The cell includes a color code. If the program is expected to reduce crime by more than 5%, it will be coded green. A reduction from 0 to 5% is coded yellow and if the program is expected to increase recidivism it will be coded red.
- *Taxpayer Benefits*- Expected taxpayer benefits, per program participant, resulting from the avoided consumption of criminal justice resources as a result of program participation.
- *Crime Victim Benefits*- Benefits that are expected to accrue to crime victims (resulting from avoided future crimes) as a result of program participation.
- *Total Benefits*-Total benefits a jurisdiction can expect from each participant who engages in the program. The column is a sum of the taxpayer and crime victim benefits in the preceding columns.
- *Program Cost*- Expected per participant cost of the program in the jurisdiction.
- *Benefit to Cost Ratio*- Benefit to cost ratio (BCR) is calculated by dividing the total discounted benefits by the program costs. A BCR greater than 1 means the benefits of the program outweigh the costs. A ratio less than 1 means the costs outweigh the benefits.

Cost of a Recidivist

The Cost of a Recidivist section of the Program Results tab presents the total benefits from an avoided recidivist and breaks down the benefits into taxpayer and avoided crime victim benefits for the cohort selected.

Exhibit 11. Benefits from Avoided Recidivism



Choose a Graphic

This section of the Program Results table allows users to display information about each program's expected effect on recidivism, net benefits over time, and benefits by criminal justice resource area. Users should select the program they want to display information for by double clicking the program in the Program table (see Exhibit 9) and selecting the type of graph they would like to view from the dropdown list.

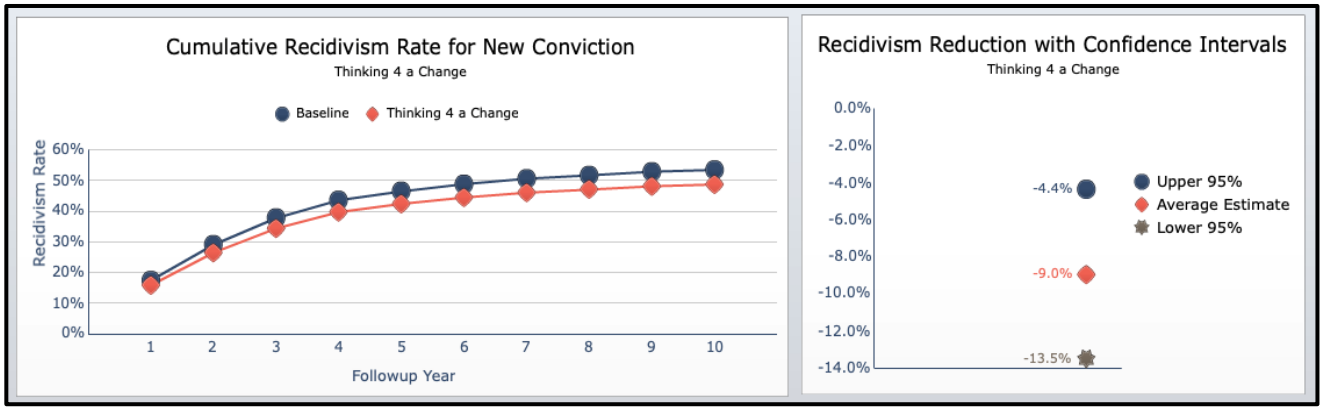
Recidivism

The Cumulative Recidivism Rate for a New Conviction graph presents the jurisdiction's baseline recidivism rate and the estimated change in recidivism based on program participation. The difference between the two lines is monetized by estimating the reduced consumption of criminal justice system resources and crime victimization.

The Recidivism Reduction with Confidence Interval graph shows the 95% confidence internal based on the standard error from WSIPP's meta-analysis or the confidence interval from the local evaluation (if applicable). The lower estimate is the point at which a jurisdiction can have 95% confidence that the actual recidivism reduction is less than or equal to the percentage shown. The average estimate is the point estimate derived by the effect size. The upper estimate is the point at which a jurisdiction can have 95% confidence that the actual recidivism

reduction is greater than or equal to the percentage shown. The interval in its entirety illustrates how much uncertainty there is around the effectiveness of the program.

Exhibit 12. Cumulative Recidivism for a New Conviction and Confidence Interval Graphs

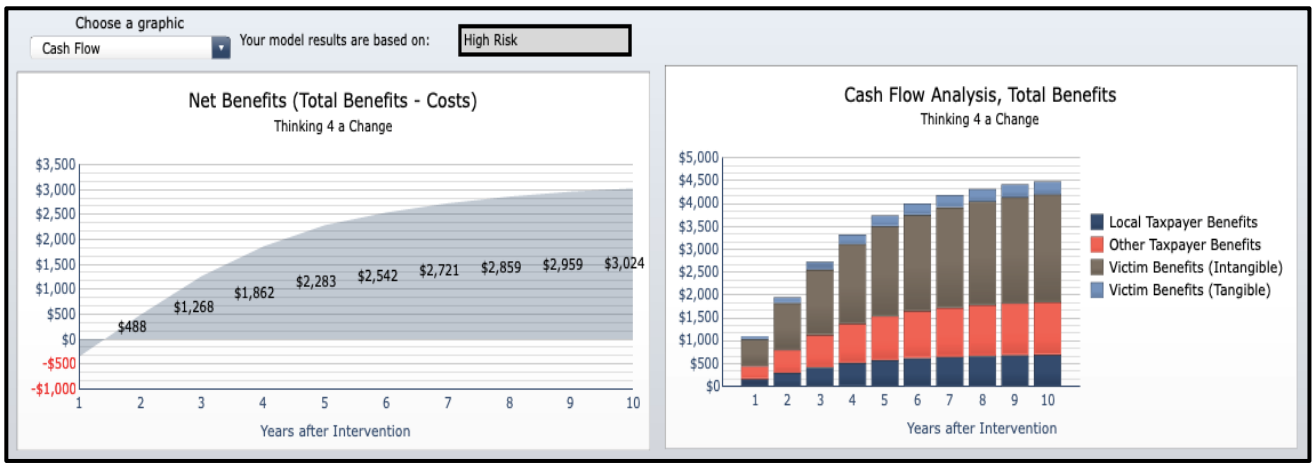


Cash Flow

The Cash Flow (or Net Benefits) graph illustrates the total benefits of the program minus operating costs over the follow-up period. The point where the shaded area crosses the horizontal axis is the point where program benefits breakeven with the cost. After this point, the benefits exceed costs. The shaded area will always be above the axis if the benefits exceed program costs from the first year forward and the shaded area will always be below the axis if the costs exceed the benefits over the entire follow-up period.

The Cash Flow Analysis graph disaggregates the total benefits by perspective (local taxpayers, other taxpayer benefits, intangible victim benefits, and tangible victim benefits for each follow-up year).

Exhibit 13. Cash Flow Graphs



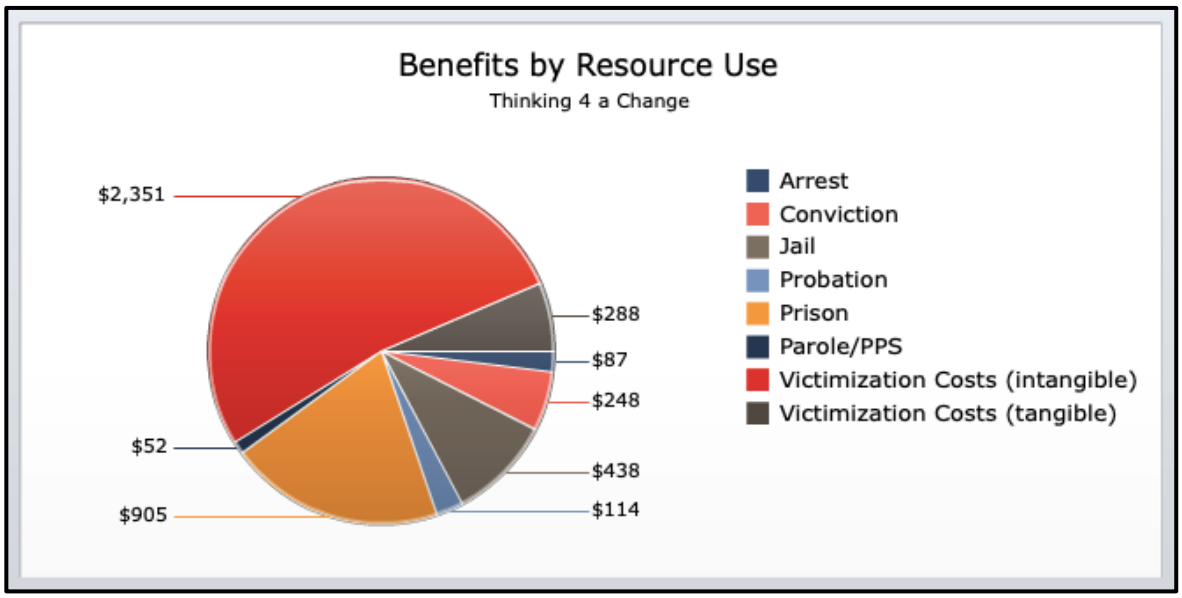
Benefits

The Benefits by Resource Use graph disaggregates the total benefits of the selected program by criminal justice resource area, including:

- Arrest
- Conviction
- Jail
- Probation
- Prison
- Parole/Post-Prison Supervision
- Tangible Victimization Costs
- Intangible Victimization Costs

Users can display the specific percentage of total benefits that each resource area represents by hovering over the pie sections.

Exhibit 14. Benefits by Resource Use



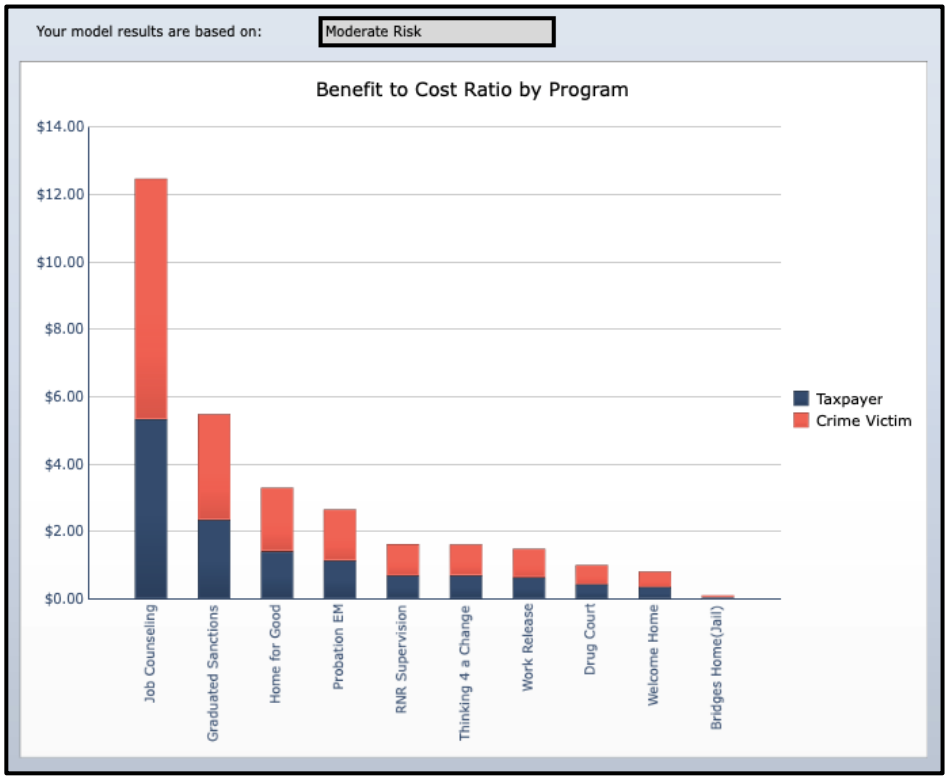
Summary Tab

There are three sections in the Summary tab: Benefit to Cost Ratio by Program, Cost of a Trip through the System for felonies, and Cost of a Trip through the System for misdemeanors.

Benefit to Cost Ratio by Program

This table displays the benefit to cost ratio for *all* programs entered on the Inputs tab in bar graph form. The results displayed will be based on the cohort selected on the Program Results tab.

Exhibit 15. Benefit to Cost Ratio by Program



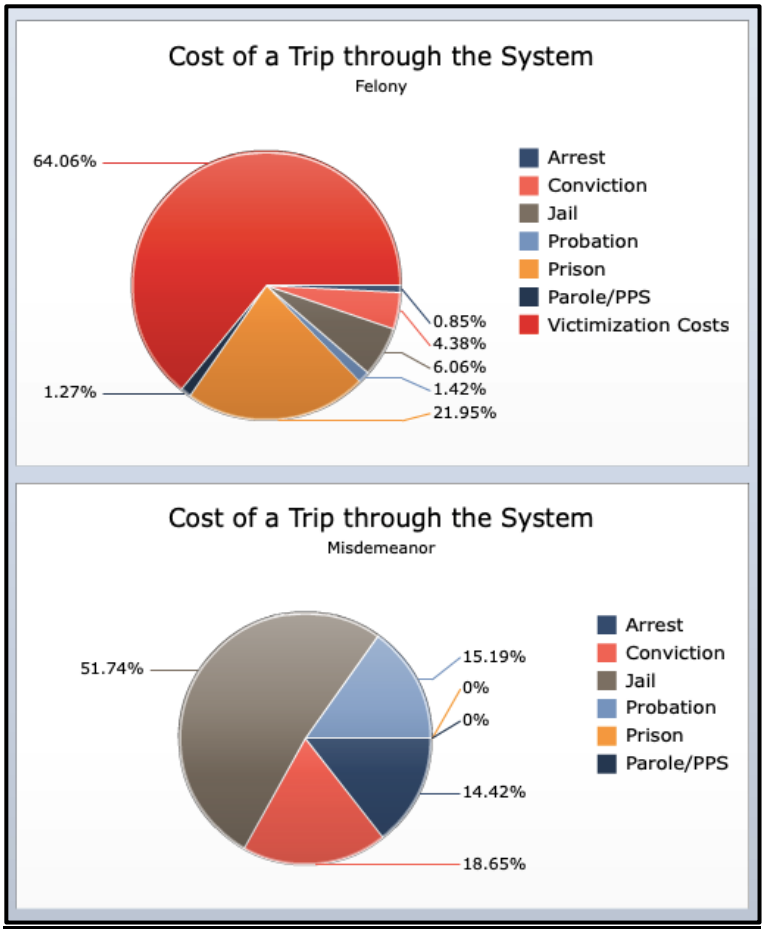
The graph displays the benefit to cost ratio (blue plus red portions of the bar), benefits from reduced crime victimization (red), and taxpayer benefits (blue). Users can hover over sections of the bar to show the specific dollar amount. For example, for each dollar invested in Thinking 4 a Change, the jurisdiction can expect $1.63 in total benefits (as shown in the graph above). Taxpayer benefits account for $0.69 of the total benefits and reduced victimizations account for $0.93.

Cost of a Trip Through the System

The Cost of a Trip through the System graphs breakdown the cost of a recidivist by criminal justice resource area and victimization costs. Felony and misdemeanor recidivists are shown separately.

By hovering over a section in the pie graph, users can display the specific dollar amount associated with the cost category.

Exhibit 16. Cost of a Trip through the System



Breakeven Tool

The break-even tool allows jurisdictions to determine the extent to which a program must reduce recidivism in order for the benefits to be equal to or exceed the costs. The tool should be used with programs that do not have an estimated recidivism reduction (e.g. the program has not been analyzed by WSIPP or locally evaluated) to determine the minimum change in recidivism needed for the intervention to breakeven.

Exhibit 17. Breakeven Tool

Benefits Selector: Taxpayer Benefits Only

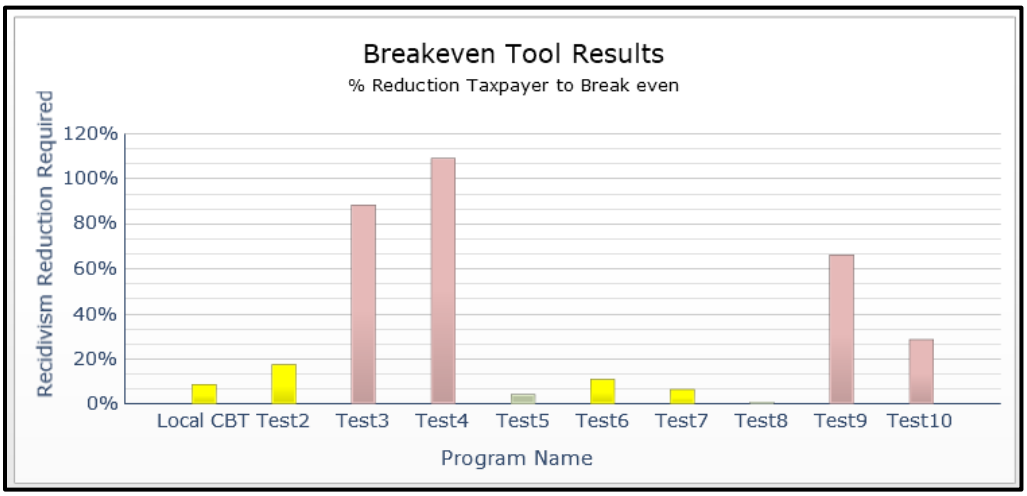
Enter Local Program	Enter Per Person Cost	Recidivism % required to breakeven
Local CBT	$1,000	9%
Test2	$2,000	18%
Test3	$10,000	89%
Test4	$12,333	109%
Test5	$500	4%
Test6	$1,250	11%
Test7	$750	7%
Test8	$100	1%
Test9	$7,500	66%
Test10	$3,250	29%

Users must enter the name of the local program and the per person cost. The tool will display the recidivism percentage required for the program costs and benefits to breakeven. The results displayed will be based on the option selected from the dropdown list under Benefits Selector (all benefits or taxpayer benefits only).

The tool includes a color code. Green indicates the program requires less a 10% recidivism reduction, yellow for programs between 10 to 25%, and red for programs above 25%. Generally, the smaller the recidivism reduction that a program needs to achieve, greater the likelihood that its benefits will outweigh the costs.

Users can also display the results graphically across programs. The specific percentage reduction needed for the program to breakeven can be displayed by hovering over the bars in the graph.

Exhibit 18. Breakeven Tool Results

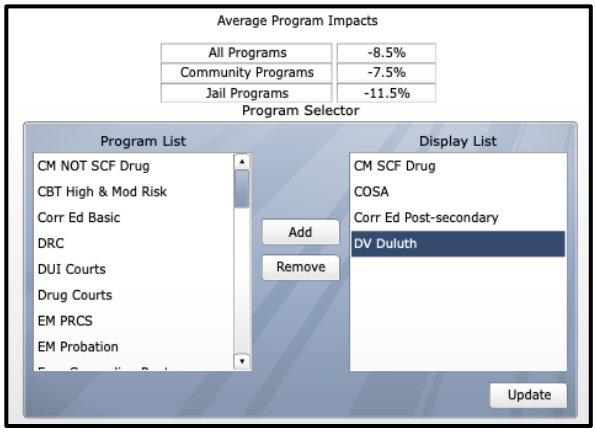


Program Explorer

The Program Explorer tab allows users to see the estimated impact of all programs in the cost-benefit model (e.g. not just those the jurisdiction has entered information for on the Program Inputs page). The information is intended to be used to supplement the information provided by the break-even tool and explore the potential impacts of programs a jurisdiction is considering implementing.

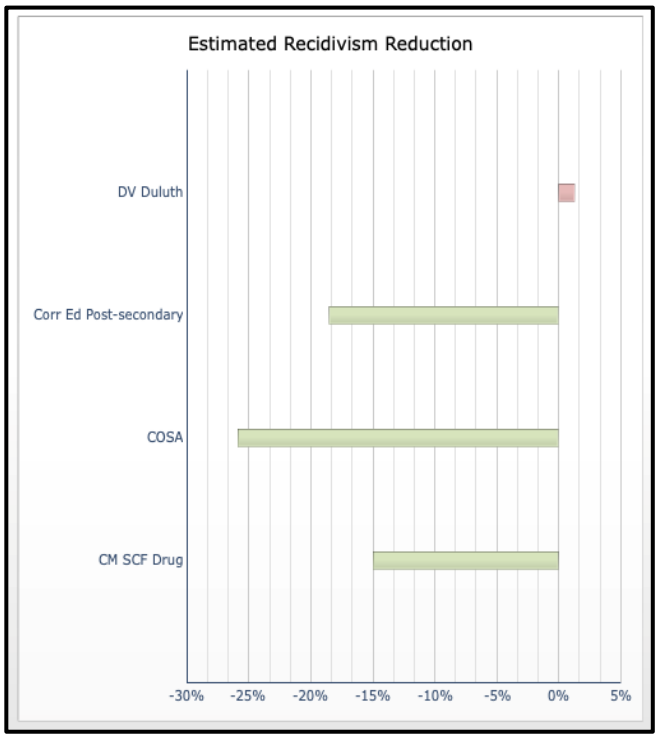
To use the Program Explorer, users should select the program of interest, click the Add button, and click the update button. Users can add multiple programs at one time by holding the control or shift keys when selecting programs. To remove programs from the list, users should select the programs they wish to remove from the Display List and click remove.

Exhibit 19. Program Explorer



The Estimated Recidivism Reduction graph includes color coding. Green indicates the program is expected to reduce recidivism by more than 10%, yellow indicates an estimated reduction of between 0 to 10%, and programs that are expected to increase recidivism are red. Users can display the specific percentage recidivism reduction for a program by hovering over the bars in the graph.

Exhibit 20. Estimated Recidivism Reduction



Users may want to update information in the model over time. The AJ-CB model is designed to allow for easy updates on an as needed basis. For model related questions, please contact Mike Wilson at Mike@m-w-consulting.org.