PROGRAMMING SEMINAR SERIES

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Seminar 1.4:
Cost-Benefit Analysis, Part 1
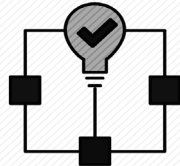
HOUSEKEEPING/ZOOM

PROGRAMMING SEMINAR SERIES OVERVIEW

- Give counties approaches to look at their justice involved populations through a lens of evidence, shared interventions, and a system-wide view.

- Offer tools that help to operationalize and embed evidence in program design and funding

- Apply concepts of cost efficacy to program design and assessment

PROGRAMMING SERIES CORE COMPONENTS

Program Inventory	• How do we build a program inventory and make it useful?	Oct 2020
Assessing and Applying Evidence	• How do we look at evidence and ask critical question?	Dec 2020
Program Design and Contracting	• How do we connect evidence to contracting and program design?	Feb 2021
Cost Benefit, Part 1	• What are the key concepts in developing a cost-benefit model?	Apr 2021
Cost Benefit, Part 2	• How do we use cost-benefit analysis to inform policy and practice?	June 2021

SEMINAR 1.4: COST-BENEFIT ANALYSIS

SEMINAR OVERVIEW

- What is cost-benefit analysis and why is it important

- Overview of criminal justice cost-benefit analysis

- Methodology for county level cost-benefit analysis

WHAT IS COST-BENEFIT ANALYSIS

- The process of comparing the costs involved in doing something to the advantage or profit it may bring
  - An approach to policy making
  - A systematic tool for monetizing public policy outcomes
  - A method to weigh options
  - A way for finding out what will achieve the greatest results at the lowest costs
  - Provides an apples-to-apples comparison across policy choices

KEY TERMS

- Present value – today's value of a future stream of money or benefits
  - Discount rate – the rate at which future dollars are valued

- Sensitivity analysis – a method for quantifying uncertainty in estimates

- Cost avoidance vs cost savings – many benefits do not result in quantifiable taxpayer savings

- Benefit-cost ratio – the expected benefit for each dollar invested

WHY USE COST-BENEFIT ANALYSIS

Strengths

Inform policy

Efficient use of resources

Common measurement

Challenges

Limited data in some areas

Uncertainty in some estimates

Need to decide cost/benefits to include

CBA USE IN CRIMINAL JUSTICE

Washington State Institute for Public Policy

- Pioneers in creating a statewide cost-benefit model and summary of available rigorous research

Pew-MacArthur Results First Initiative

- Working with jurisdictions to implement a cost-benefit approach to invest in policies and programs that are proven to work

CSAC

- Partnered with multiple California counties to implement and county specific criminal justice cost-benefit model

CBA EXAMPLE

Program/Practice Name	Benefits per Participant	Cost per Participant	Net Benefit per Participant	Benefit Cost Ratio	Recidivism Reduction
DAY REPORTING CENTER	$10,094	$2,869	$7,225	$3.52	-24.06%
DRUG COURT	$8,335	$5,680	$2,655	$1.47	-19.86%
ELECTRONIC MONITORING (in lieu of jail)	$6,823	$1,650	$5,173	$4.14	-7.67%
OUTPATIENT DRUG/ALCOHOL TREATMENT (Matrix)	$838	$1,763	$925	$0.48	-1.99%
REASONING AND REHABILITATION	$4,553	$216	$4,337	$21.08	-10.83%
RISK-NEED-RESPONSIVITY	$8,063	N/A	$8,063	N/A	-19.21%
WAGE$$	$3,827	$199	$3,628	$19.23	-9.1%

OVERVIEW OF CRIMINAL JUSTICE COST-BENEFIT ANALYSIS

CRIMINAL JUSTICE CBA: BIG PICTURE

- Estimate the cost of crime in your jurisdiction

- Examine programs/policies that impact crime

- Apply the cost of crime to programs/policies to estimate their monetary benefits to taxpayers and society

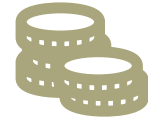# FOUR MAIN SECTIONS
OF THE COST-BENEFIT MODEL

Program effectiveness and costs

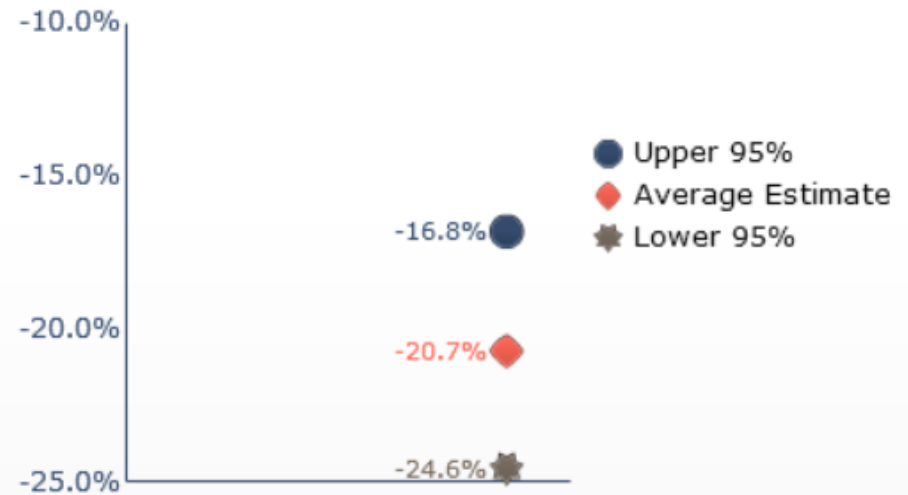Recidivism analysis

System resource use

System costs

PROGRAM EFFECTIVENESS AND COSTS

- Local rigorous evaluation

- Match programs from the program inventory to those found in the cost-benefit model

- Calculate the marginal costs per participant for each of the programs found in the cost-benefit model

Recidivism Reduction with Confidence Intervals
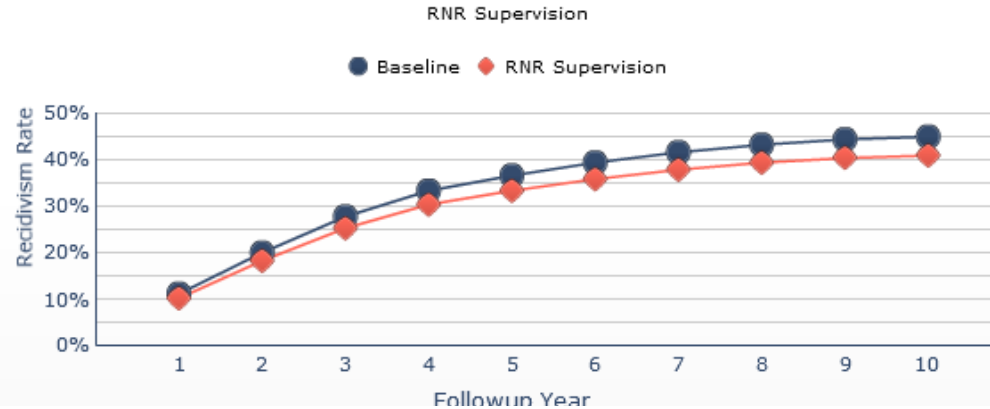Drug Court

RECIDIVISM ANALYSIS

- Establish a baseline to predict program outcomes in your jurisdiction

- Matches a cohort to the types of programs offered in the jurisdiction

- Identifies how many people have new convictions, as well as when

Cumulative Recidivism Rate for New Conviction
RNR Supervision

Baseline ● RNR Supervision ◆

SYSTEM RESOURCE USE

- Informs how often an event happens in the criminal justice system and for how long

- Estimates the probability of a certain set of sentencing outcomes

- Estimates the average length of time spent in each part of the system

SYSTEM AND SOCIETAL COSTS

Police

Courts, District Attorney and Public Defender

Probation

Jail

Prison

Parole and PRCS

Victimization

SUMMARY

- Program effectiveness estimates

- Monetizing changes in crime
  - What is the value of avoiding one recidivist?

- Using economic analysis to combine program effectiveness and the costs of the criminal justice system

POLL
Q&A

How interested in are stakeholders in making sure programs are fiscally beneficial (i.e., are there more benefits than costs)?

CRIMINAL JUSTICE COST-BENEFIT ANALYSIS METHODOLOGY

CBA FRAMEWORK

- Use standard economic tools that been developed to monetize crime
  - Including adjusting for inflation, discounting future dollars, victimization cost estimates, and accounting for uncertainty

- Measuring recidivism using a standardized tool

- Marginal compared to average costs
  - Only certain variable costs are impacted by smaller changes in caseloads

PROGRAM EVALUATION AND CBA

• Cost-benefit analysis relies on estimated impacts of programs on recidivism

• Local evaluations can provide this information
  • Very few rigorous local evaluations
  • Evaluations need to be updated as programs and system change

• Meta-analysis provides a summary of the research base
  • Effect sizes from the literature can be used when local evaluations are not available

MATCHING LOCAL PROGRAMS TO ESTABLISHED RESEARCH FINDINGS

- The program inventory can be used to match local programs to the established research base to estimate program effectiveness

- Program summaries are available to help counties match their specific programs to the research base
  - This will provide an estimated level of effectiveness that can be used in the cost-benefit model

ESTIMATING PROGRAM COSTS

- Cost per participants makes up half of the cost-benefit equation

- Contracted rates

- Overall annual expenditures and number of program participants
  - Expenditures divided by number of participants
  - Staff time, training, materials, and other program costs

- Weighted cost estimates for programs that can not be disaggregated

RECIDIVISM DATA ANALYSIS ELEMENTS

Cohort

- The goal is to create cohorts that will most closely match those receiving programs and follow them for 5+ years.

- CII or another identifier

- Risk for future re-offense category.
  - Mutually exclusive categories of High, Moderate, and Low risk.

Follow-up

- Each new conviction event occurring after each offender's release date or community supervision placement date must be matched to the individual in each cohort.
  - Case/Docket ID
  - Date of conviction
  - Most serious ("primary" or "governing") offense level for each conviction (misd or felony)
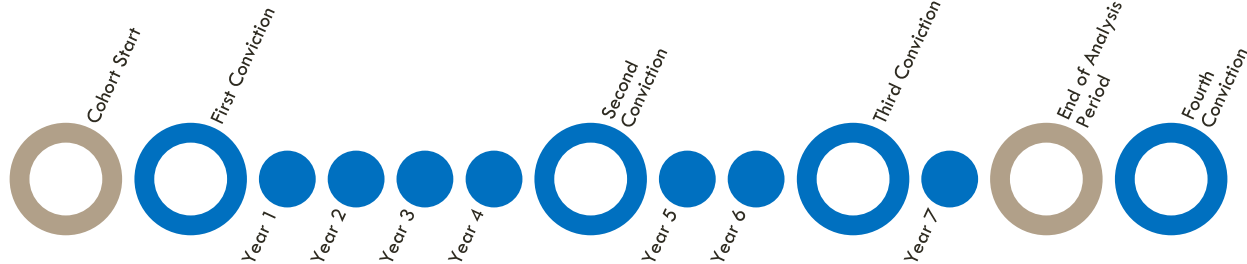
RECIDIVISM EXAMPLE

Cohort

Probationer 1 was placed on felony probation January 1, 2010

Assessed as low risk

Follow-up Period

Probationer 1 had four subsequent convictions

- January 2, 2010 (F)
- February 13, 2014 (M)
- March 1, 2016 (F)
- January 12, 2018 (M)

RECIDIVISM EXAMPLE

Cohort

- Part of the General Probation Cohort, but not a part of the High/Moderate Risk Cohort
- Any conviction from January 2, 2010 to Dec 31, 2017 would be counted in the cohort to provide 7 years of follow-up
  - Conviction 1: Doesn't count since its likely a sentencing anomaly
  - Conviction 2: Counts as a misdemeanor conviction in Year 4
  - Conviction 3: Counts as a felony conviction in year 6
  - Conviction 4: Does not count since outside of the 7-year follow-up
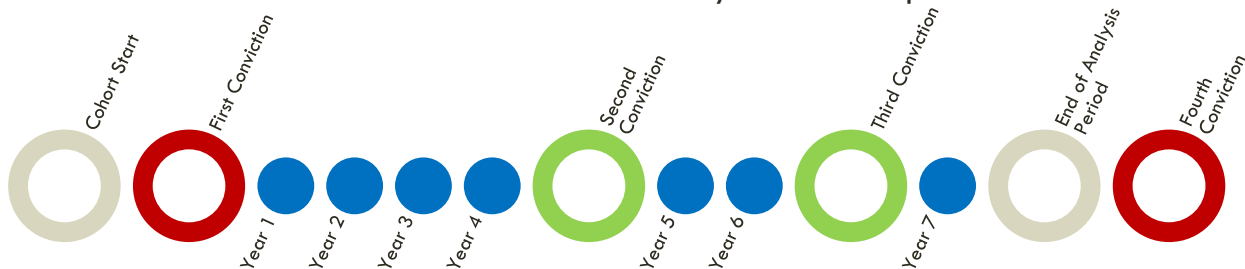
RECIDIVISM ANALYSIS

- Analytic platform to standardize data gathering, merging and analysis

- Uses freely distributable Microsoft database application

- Lives locally, so no data transfer of offender records

- Exports merged data to simplify further analysis

- Measures recidivism multiple ways in order to correctly monetize the impacts of recidivism

RESOURCE USE DATA ELEMENTS

- Recent year of felony and misdemeanor convictions
  - Include type of most serious offense (felony or misdemeanor)
  - Sentence type (prison, jail, probation, etc.)

- Recent year of jail releases to estimate length of stay by felony and misdemeanor

- Recent year of probation closures to estimate length of stay by felony and misdemeanor

FELONY CONVICTION PROBABILITY

100 People Convicted of a Felony

10 Receive no Jail Post Sentence

80 Receive Jail time, Post Sentence

10 Sentenced to Prison

5 Supervision Only

5 Fines/Fees/Treatment/Other

10 Jail only

70 Receive Probation or Mandatory Supervision

9 granted Post Release Community Supervision or Parole

1 Not Released, or Released Outright
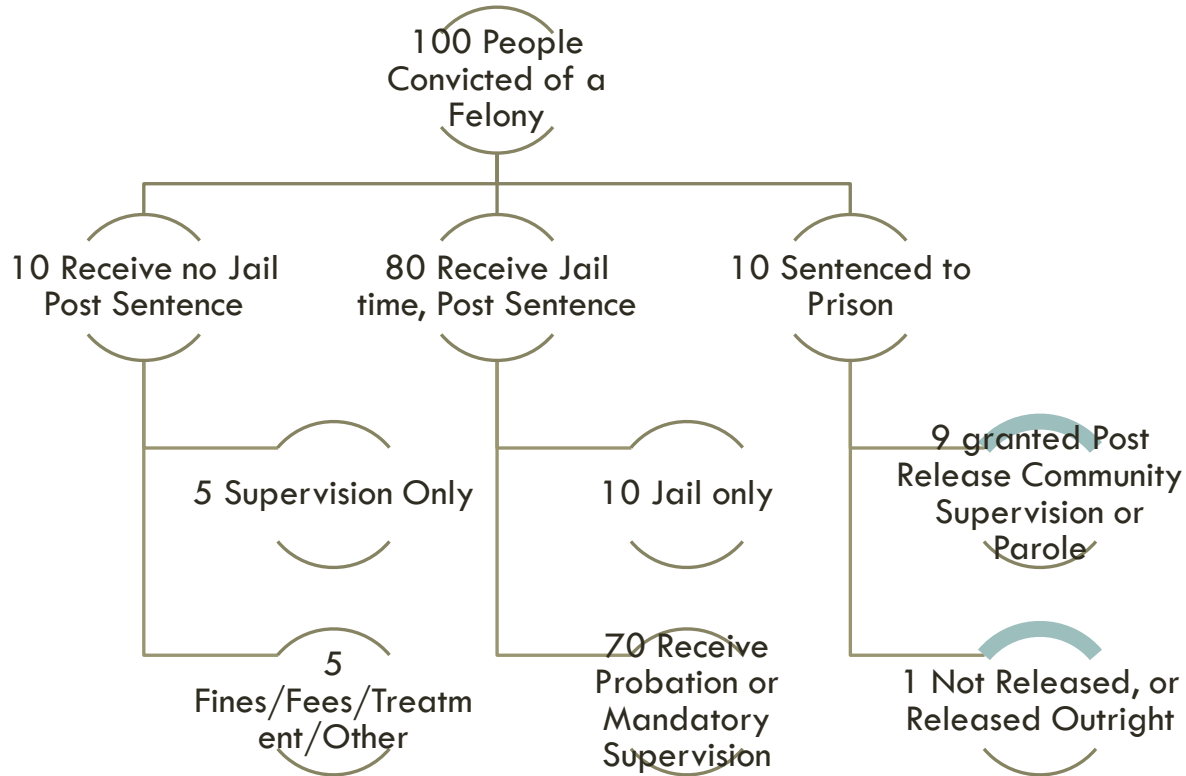
Disposition	Percent of Felonies
Jail Only, Post Sentence	10%
Probation or Mandatory Supervision Only	5%
Jail and Supervision	70%
Other Dispositions	5%
Prison	10%
---Post Prison Supervision	90%

AN EXAMPLE

Person 1 was convicted on 3 counts of Misdemeanor Drug Possession March 3, 2019 on Docket 1432.

- He received 30 days in jail, 2 years on probation

Person 1 was convicted on 1 count of Felony Assault on November 12, 2019 on Docket 1787.

- He received 180 days in jail, an additional 2 years on probation

Person 2 was convicted on 1 count of 2nd degree Murder (Homicide) on December 20, 2019 on Docket 1787.

- He received 10 years in State Prison and would be eligible for Parole

3 convictions toward the probabilities

2 Felony and 1 Misdemeanor

2 are "Jail and Supervision"

1 is State Prison

1 is Post Prison Supervision

LENGTH OF STAY- JAIL

1 Year of Jail Releases

Broken out by severity of most serious convicted charge in the booking

(Felony or Misdemeanor)

| Person ID | Booking ID | Case ID | Booking and Release Reason | Entry Date | Exit Date | Sentence Date |

LENGTH OF STAY-SUPERVISION

1 Year of Supervision Completions

Broken out by severity of most serious convicted charge (Felony or Misdemeanor)

| Entry Date | Exit Date | Person ID | Case ID | Supervision Type |

MEASURING MARGINAL COSTS

- Marginal costs – How much more does it cost for a small increase in the caseload

- Marginal costs exclude fixed costs and focus on drivers that change in the short or medium term with increases in people served

- Estimating benefits based on marginal costs provides a more conservative estimate of cost avoidance and more accurately estimates the impact to the system of small changes in recidivism

MARGINAL COST ESTIMATE METHODOLOGY: TOP-DOWN APPROACH

Isolate costs directly related to providing the service or activity

Determine what expenditure categories are fixed and what are variable

Divide operating expenditures by the number of units served
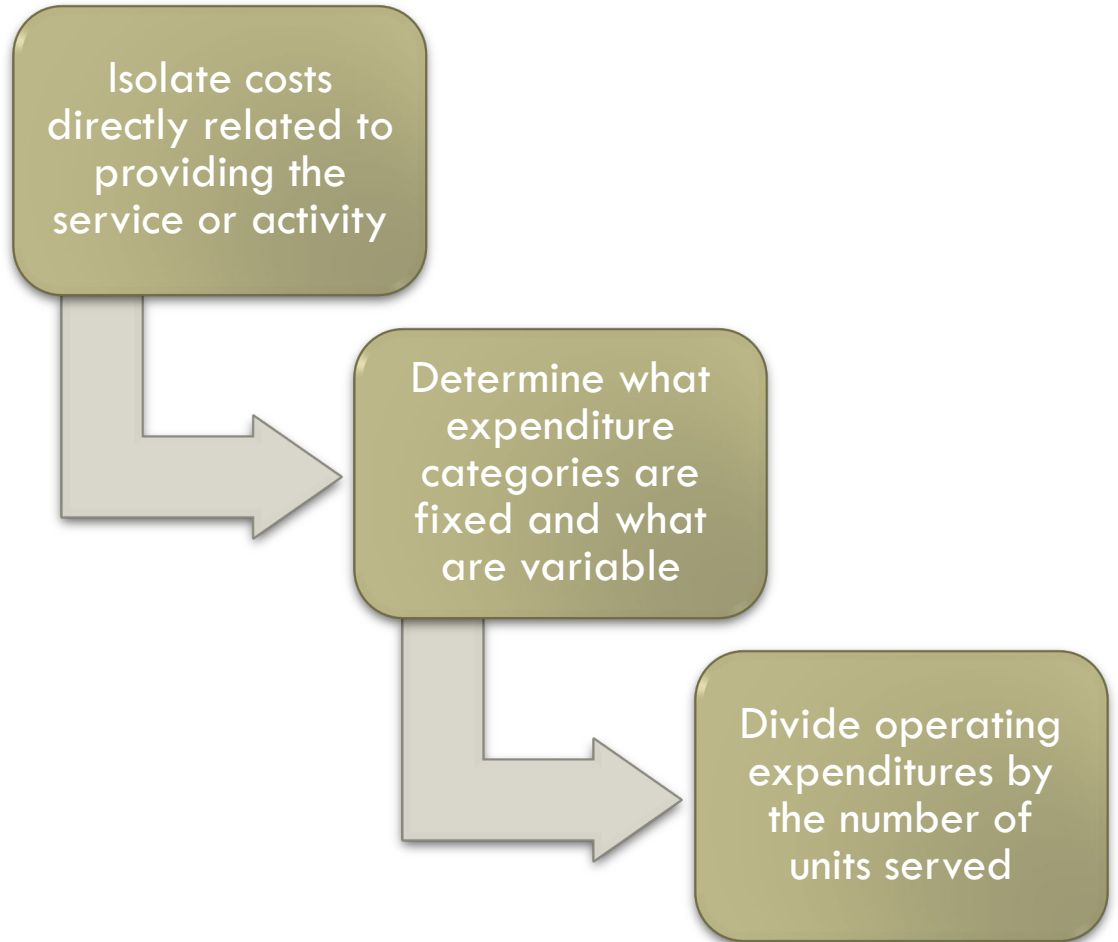
MARGINAL COST ESTIMATE METHODOLOGY: BOTTOM-UP APPROACH

Iowa: Estimating Judicial Time

- Determined the judicial time per crime class
- Multiplied the time by the average wages and benefits
- Estimated the percent of each crime class to estimate the overall weights

Another study estimated the marginal cost of drug court hearings by the hourly cost of the personnel involved

- $3.50 per minute multiplied by an extra 9.7 minutes for a drug court hearing

TAXPAYER COST AREAS

Police	Courts, District Attorney and Public Defender	Probation
Jail	Prison	Post-prison supervision

- These also get broken out by local and state costs to identify the perspective

VICTIMIZATION COSTS

How can costs to victims be estimated?

What are tangible and intangible losses?

Victimization estimates:

- K. E. McCollister, M. T. French, & H. Fang (2010). The Cost of Crime to Society: New Crime-Specific Estimates for Policy and Program Evaluation. *Drug and Alcohol Dependence, 108(1), 98-109.*
- Cohen, M. A. & Piquero, A. R. (2009). New evidence on the monetary value of saving a high risk youth. *Journal of Quantitative Criminology, 25, 25-49.*

Q AND A

COUNTY EXAMPLES

SOLANO COUNTY

Cost Benefit Model Results					
Program Name	**Description**	**Benefits Per Participant**	**Cost Per Participant**	**Cost-Benefit Ratio**	**Recidivism Reduction**
Education - High School Diploma or GED	GED preparation. Independent Study Programs and Special Education.	$7,622	$ 1,564	$4.87	-9%
Employment Services	Employment services in the form of soft skills, resume preparation, job searches and job training. Includes interactive journalized curriculum.	$1,714	$ 1,083	$1.58	-2%
Helping Women Recover	Program that integrates theories of women's psychological development, trauma, and addiction to meet the needs of women with addictive disorders.	$6,564	$ 1,012	$6.48	-8%
Matrix Model	Intensive outpatient treatment approach for substance abuse and dependence.	$8,196	$ 1,208	$6.78	-10%
Reasoning and Rehabilitation	Cognitive behavioral therapy intended to help participants develop social skills, moral reasoning, and problem-solving skills. The focus of R&R II involves assisting clients develop problem solving skills through moral reasoning.	$7,312	$ 227	$32.15	-9%
Thinking for a Change (T4C)	Cognitive-based program designed to improve social skills, cognitive self-change skills, and problem-solving skills. The goal of T4C is to have the participants comprehend that their thinking controls their behavior.	$7,312	$ 248	$29.49	-9%

- **Benefits Per Participant:** The program's monetary impact for reducing recidivism
- **Program Cost:** The operational cost to provide the program
- **Cost-Benefit Ratio:** The amount of benefits for every dollar in costs invested
- **Recidivism Reduction:** The estimated recidivism reduction based on Solano County's baseline recidivism rate

YOLO COUNTY

Yolo County Cost-Benefit Results

Program Name	Benefits per Participant	Costs per Participant	Benefit to Cost Ratio	Recidivism Reduction
Cognitive Behavioral Therapy	$5,759	$1,229	$4.69	-9%
Drug Court	$13,332	$12,485	$1.07	-21%
Electronic Monitoring (PRCS)	$587	$653	$0.90	-6%
Electronic Monitoring Sheriff	$7,249	$906	$8.00	-13%
Literacy Training	$6,004	$465	$12.92	-9%
Mental Health Court	$8,874	$20,936	$0.42	-14%
Swift Certain and Fair	$2,480	$2,434	$1.02	-4%

RESOURCES

MATERIALS, GUIDES AND TEMPLATES

Materials available:

California County Adult Criminal Justice Cost Benefit Model Guide

Adult Criminal Justice Cost-Benefit Model Program Summaries

Programming Series Info:

https://www.counties.org/framework-seminar-series

Support Hub Website:

https://www.counties.org/csac-support-hub

LOOKING AHEAD

DATA AND EVALUATION SERIES - SEMINAR 2.4 (MAY)

Data Dashboards

This seminar provides an introduction to designing data dashboards, a key tool in making your data more accessible and flexible. We first discuss the process of designing a data dashboard that will allow you to track the key population characteristics, interventions, and outcomes that are important for your agency or county. We will then present and discuss several data dashboards concepts that can be adapted for your purposes.

PROGRAMMING SERIES - SEMINAR 1.5 (JUNE)

Cost-Benefit, Part 2

A presentation of CSAC team learnings from 10 California counties across various areas of cost benefit analysis will include an overview of relative recidivism rates, program costs, system cost drivers, and system usage. We will discuss how these findings can be interpreted and applied to local decision-making, particularly in resource-constrained environments.

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