Return on Investment (ROI)
Results for CalFresh Employment and Training Program entitled *Fresno Bridge Academy*

Return on Investment (ROI) Calculator Methodology

Introduction

The Fresno Bridge Academy (FBA) was designed to move families from government dependence to self-reliance. This benefit-cost model was created to estimate the long term benefits to families and taxpayers from the services provided through FBA. These services include employment training, wrap-around life skills, and tutoring resources for children. This benefit-cost model examines the long term monetary impacts to clients and taxpayers from changes in client wages, changes in the amount of CalFresh benefits and changes to children's educational outcomes.

Impact of Increased Wages

FBA is designed to increase clients' wages through employment and GED training. This model examines the differences in wages between FBA clients and a similar group of individuals who did not receive FBA services. Fresno DSS and Reading and Beyond staff worked together to gather wage data for FBA participants and similar individuals who did not participate in FBA. These wages are entered into the model and the wage difference is used to estimate the long term benefits of the program (see equation 1). Part of the difference in wages is likely a result of the program and part of the difference may be from motivational differences between the two groups. The benefit-cost model allows the user to adjust the causal impact of the program. A number closer to one assumes that most of the wage differences are caused by the program and a number closer to zero assumes that most of the wage differences are caused by some other factor. Reading and Beyond staff will determine the causal percentage to input into the model. The model also allows the user to adjust the number of years the wage benefits persist by adjusting the maximum age of the program impact. The longer the time period over which the benefits are measured, the higher the overall benefits will be. Finally, the user can also adjust the fade out percentage. This allows the user to make an assumption of how much the wage differences will decrease each year after completion of the program. A number close to zero means the wage differences are expected to remain the same into the future. Reading and Beyond Staff will determine what value to use for the fade out percentage.

$$(1) \quad PVWageGain = \sum_{y=age}^{maxage} \frac{(FBAWage - DSSWage) \times \%Causal \times (1 - Fade)^{y-age}}{(1 + Dis)^{y-age}}$$

Impact of CalFresh Benefits

As clients' wages change, their CalFresh benefits will also change. The benefit-cost model calculates the changes in CalFresh benefits in nearly an identical way as the wage portion of the model described above. The only notable difference is that the overall economic benefit of changes in CalFresh is equal to zero. The reason of this is as clients' CalFresh benefits decrease there is a benefit/savings to taxpayers but a loss to the client resulting in offsetting benefits for

the overall calculation in the model. The model separates the benefits out between the program participant and the taxpayer as shown in equations 2 and 3 below.

$$(2) \quad PVCalF_{ind} = \sum_{y=age}^{maxage} \frac{(FBACalF - DSSCalF) \times \%Causal \times (1 - Fade)^{y-age}}{(1 + Dis)^{y-age}}$$

$$(3) \quad PVCalF_{tax} = - \sum_{y=age}^{maxage} \frac{(FBACalF - DSSCalF) \times \%Causal \times (1 - Fade)^{y-age}}{(1 + Dis)^{y-age}}$$

Impact of Increased Tutoring

FBA also provides tutoring for school aged children. Research from around the country has shown that tutoring increases test scores, which increases future wages. The Washington State Institute for Public Policy (WSIPP) has published results from a comprehensive study they have conducted on programs from across the country. Using these results and wage data from the Current Population Survey, the long term gain in wages and increased tax revenue from the wage increases of the children can be estimated (see equation 4 below). The model uses WSIPP's estimates from the national literature on the effectiveness of tutoring for English language learners and for K-12 tutoring by adults ($ESTut$) on children's test scores. Additional research has found that increases in test scores result in higher lifetime earnings for students. This effect has also been estimated by WSIPP and is included in the model ($Causal$). The model uses these estimates to translate the impact of tutoring on increased test score and the impact of increased test scores into increased wages. Wage data by age from the Current Population Survey is used as a baseline to estimate the wage increases from tutoring. Since kids may receive tutoring services well before graduation and employment, WSIPP has estimated how much the impact of tutoring fades out by age 17 ($Fade17$). The user can enter a second fade out percentage ($Fade$) to account for the potentially diminishing impact of the program after age 17. The fade out percentage past age 17 is also entered into the cost-benefit model by the user. Staff at Reading and Beyond have estimated the number of children who receive general tutoring and ELL tutoring services per individual in the FBA. Finally, the model also allows the user to choose the number of years to measure the impact of tutoring by choosing the maximum age that participants receive benefits.

$$(4) \quad PVWageGain = \sum_{y=age}^{maxage} \frac{Wage_y \times ESTut \times Causal \times Fade17 \times (1 - Fade)^{y-age}}{(1 + Dis)^{y-age}}$$

Impact of Increasing the Number of GEDs

The model also can be used to estimate the long term benefits of client receiving their GED. This calculation is done by examining the wage data from the Current Population Survey by different levels of education. The model takes the difference in wages, by age, between high school graduates and non-high school graduates. Similar to other components of the model, Reading and Beyond staff will need to determine the values for the causal impact, the fadeout factor and years the benefits will be measured. They will also need to estimate how many

individuals receive their GED as a result of the program. Equation 5 provides further details of this calculation.

$$(5) \quad PVWageGED = \sum_{y=age}^{maxage} \frac{(WageHS_y - WageNoHS_y) \times FBAImpact \times \%Casual \times (1 - Fade)^{y-age}}{(1 + Dis)^{y-age}}$$

Impact of Increased Pre-K Services

FBA provides Pre-K services that research has found to have impacts on high school graduation rates. As part of WSIPP's comprehensive review of the literature they estimated the impact of state and district early childhood education programs. The model uses this estimated effect on high school graduation ($ESPreK$) to calculate the long term benefits of kids receiving Pre-K services. This calculation is done by using the effect size in the WSIPP study, the high school graduation rates ($HSRate$) from Fresno and the wage data from the Current Population Survey by different levels of education (see equations 6 and 7). The model takes the difference in wages, by age, between high school graduates and non-high school graduate.

$$(6) \quad HSUnits = \left[\left(\frac{(e^{ESPreK \times 1.65} \times HSRate)}{(1 - HSRate + HSRate \times e^{(ESPreK \times 1.65)}) \times HSRate}\right)\right] - 1$$

$$(7) \quad PVWagePreK = \sum_{y=age}^{maxage} \frac{(WageHS_y - WageNonHS_y) \times HSUnits \times (1 - Fade)^{y-age}}{(1 + Dis)^{y-age}}$$

Crime

The model also estimates the benefits from reduced crime. Research by WSIPP estimates that employment training in the community has a significant impact on reducing future recidivism ($ESEmp$). The estimated recidivism reduction can be monetized using Fresno's three year recidivism rate ($RecRate$) and national research on the cost of crime to victims and to tax payers. A study by McCollister, French and Fang (2010) estimated the costs of crime by crime type. This study, along with arrest data from Fresno County, was used to estimate the overall cost of crime in Fresno. The estimated avoided crime from employment training becomes a benefit to the taxpayers and citizens of the county. Equations 8 and 9 provide more details on this calculation.

$$(8) \quad CrimeUnits = \left[\left(\frac{(e^{ESEmp \times 1.65} \times RecRate)}{(1 - RecRate + RecRate \times e^{(ESEmp \times 1.65)}) \times RecRate}\right)\right] - 1$$

$$(9) \quad CrimeBenefit = CrimeCost \times CrimeUnits$$

Other

The model also uses a standard discount rate of 3.5% to discount dollars back to present values. It is common practice in these types of economic studies to discount future benefits using this method. The model also uses an estimated tax rate to break out the benefits between the participant and taxpayers. Based on a 2013 study we used a tax rate of 18.8% which represents the total tax rate for individuals with income in the lowest quintile.

Required Data for the FBA Cost-Benefit Model

Participant Age is provided by staff from Reading and Beyond based on their clients.
Max Age of Benefits is an assumption entered by the user of the model that is used as the maximum age that the impact of the program lasts.
Percent of Impact that is Causal is an assumption entered by the user of the model to allow for part of the impact to be attributed to factors other than program participation.
Fadeout is an assumption entered by the user of the model that allows the impacts of the program to diminish over time.
Annual Wages of FBA Clients is calculated by staff from Reading and Beyond.
Annual Wages of Others is calculated by staff from Fresno County's Department of Social Services.
Annual CalFresh Benefits of FBA Clients and Others is calculated by staff from Fresno County's Department of Social Services.
Effect Size of General Tutoring is estimated from a meta-analysis conducted by WSIPP.
Effect Size of ELL Tutoring is estimated from a meta-analysis conducted by WSIPP.
Gain in Life Time Earning from a 1 SD increase in Test Scores is estimated from a meta-analysis conducted by WSIPP.
Fadeout, Under Age 18 is estimated from a meta-analysis conducted by WSIPP.
Fadeout, Age 18 and Older is an assumption entered by the user of the model that allows the impacts of the program to diminish over time. For this program an empirically tested fadeout value has already been used up to age 18. If the user wishes to further reduce the impacts of the program past age 18 they should use this additional value.
Average Number of School Aged Children per Participant is calculated by staff at Reading and Beyond.
Percent Impact on GED is calculated by staff at Reading and Beyond and measures the likelihood that a given individual entering the program will receive a GED.
Effect Size of Pre-K Program is estimated from a meta-analysis conducted by WSIPP.
Fresno Graduation Rates is taken from an April 9th, 2013 article in the Fresno Bee.
Number in Early Education Program is calculated by staff from Reading and Beyond.
Effect Size of Employment Training is estimated from a meta-analysis conducted by WSIPP.
Fresno's Three Year Recidivism Rate is taken from CDCR's 2012 Outcome Evaluation Report.
Percent of FBA Clients Involved in the Criminal Justice System is calculated by staff from Reading and Beyond.
Discount Rate is based on a standard rate used by WSIPP and other economists but can be adjusted by the user of the model.
Tax Rate is taken from a report by the Citizens for Tax Justice.

READING AND BEYOND
FRESNO BRIDGE ACADEMY

Benefit Calculator

Methodology | Instructions

For every $1 spent on the program, the benefit for taxpayers and participants is $22.28

For every $1 spent on the program, the benefit for taxpayers only is $5.50

Click on an Impact in the table to adjust assumptions

Total Benefits of Impact Areas

Impact Area	Total Benefit	Participants/Others	Taxpayers
Clients Wages	$ 16,691	$ 13,686	$ 3,004
CalFresh Benefits	$ 0	-$ 2,446	$ 2,446
General Tutoring	$ 751	$ 616	$ 135
ELL Tutoring	$ 615	$ 504	$ 111
GED Completion	$ 16,192	$ 13,278	$ 2,915
Pre-K Education	$ 2,226	$ 1,826	$ 401
Crime	$ 79	$ 71	$ 8
~~Total	$ 36,555	$ 27,535	$ 9,019

Cost for a Program Participant
$1,641

Save Scenario

Print

Change Model Assumptions

Tax Rate 18%

Discount Rate 3.5%

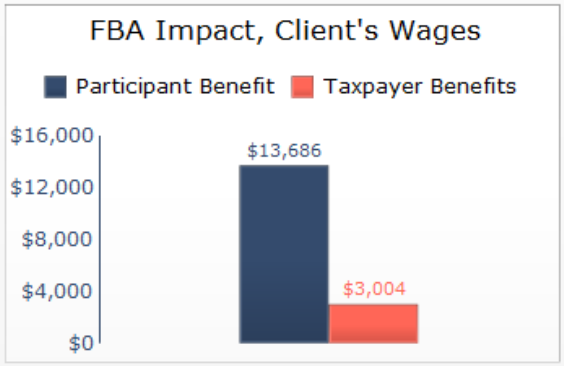
Adjust County Arrests

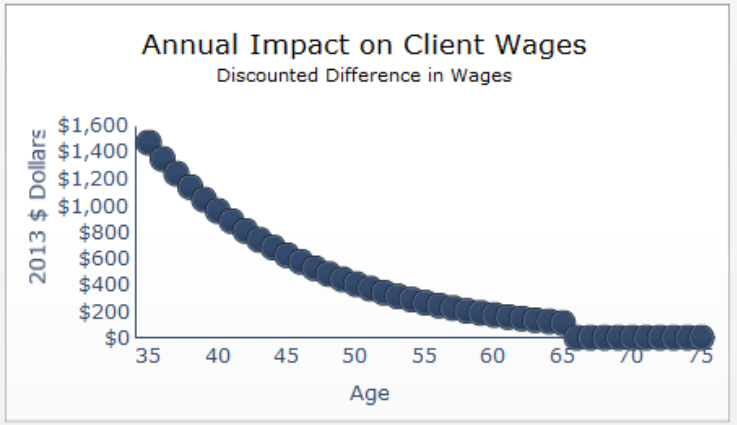
Impact Area: Clients Wages

Average Client Age	35
Max Age of Wage Earning	65
Monthly Wage-Particpant	$284
Monthly Wage-Others	$102

% of Impact that is Causal 75%

Annual Impact Fadeout 5%





READING AND BEYOND
FRESNO BRIDGE ACADEMY

Benefit Calculator

Methodology | Instructions

Impact Area: CalFresh Benefits

Average Client Age	35
Max Age of Impact on CalFresh	65
Monthly CalFresh Benefits-Participant	$337
Monthly CalFresh Benefits-Others	$361

For every $1 spent on the program, the benefit for taxpayers and participants is $22.28

For every $1 spent on the program, the benefit for taxpayers only is $5.50

Percent of Impact that is Causal: 75%

Annual Impact Fadeout: 5%

Click on an Impact in the table to adjust assumptions

Total Benefits of Impact Areas

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CalFresh Benefits	$ 0	-$ 2,446	$ 2,446
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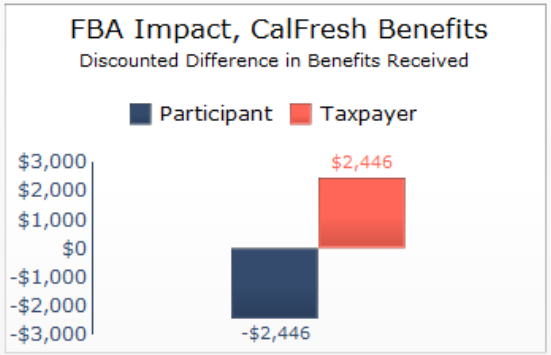
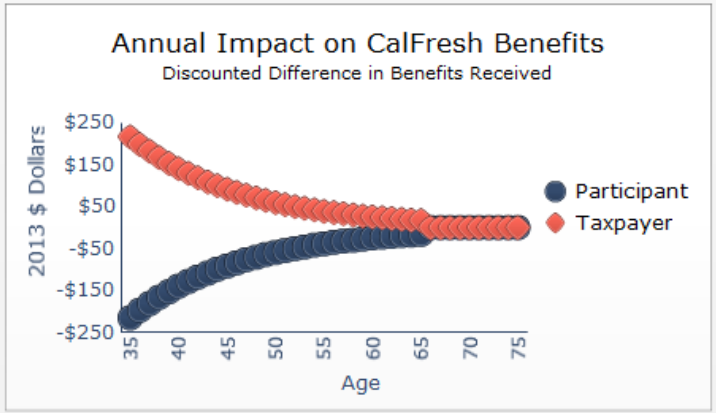


Cost for a Program Participant: $1,641



Save Scenario

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Change Model Assumptions

Tax Rate: 18%

Discount Rate: 3.5%

Adjust County Arrests

READING AND BEYOND
FRESNO BRIDGE ACADEMY

Benefit Calculator

Methodology | Instructions

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Cost for a Program Participant
$1,641

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Change Model Assumptions

Tax Rate 18%

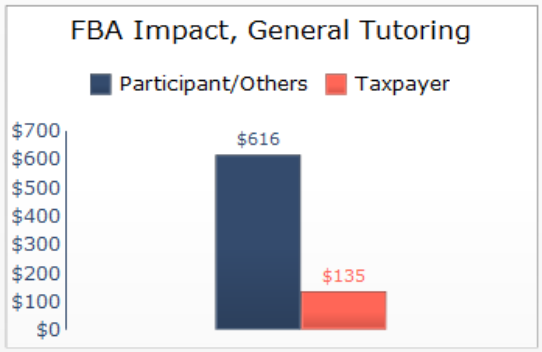
Discount Rate 3.5%

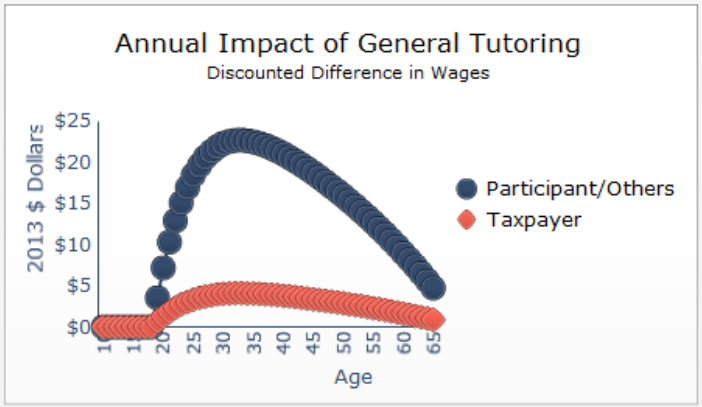
Adjust County Arrests

Impact Area: General Tutoring

Average Client Age	10
Max Age of Program Impact	65
School Aged Children- Participant	0.2
Effect Size	0.121
Gain in Earnings- Test Score Increase	9.45%

Fadeout, Age 18 and Older 0%





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$1,641

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Change Model Assumptions

Tax Rate 18%

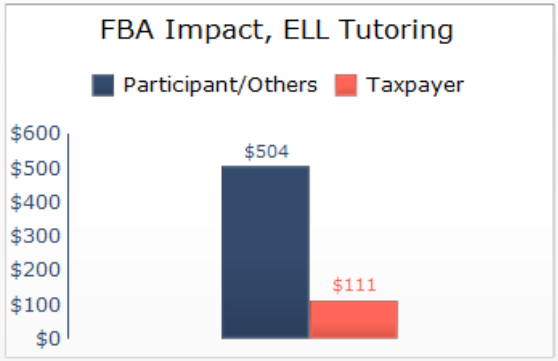
Discount Rate 3.5%

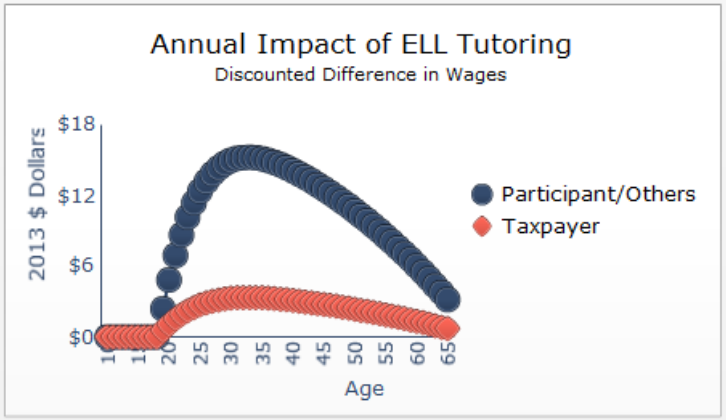
Adjust County Arrests

Impact Area: ELL Tutoring

Average Client Age	10
Max Age of Program Impact	65
School Aged Children- Participant	0.1
Effect Size	0.198
Gain in Earnings- Test Score Increase	9.45%

Fadeout, age 18 and older 0%





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Change Model Assumptions

Tax Rate 18%

Discount Rate 3.5%

Adjust County Arrests

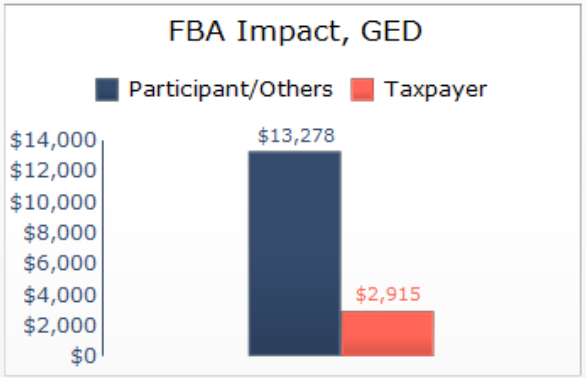
Impact Area: GED Completion

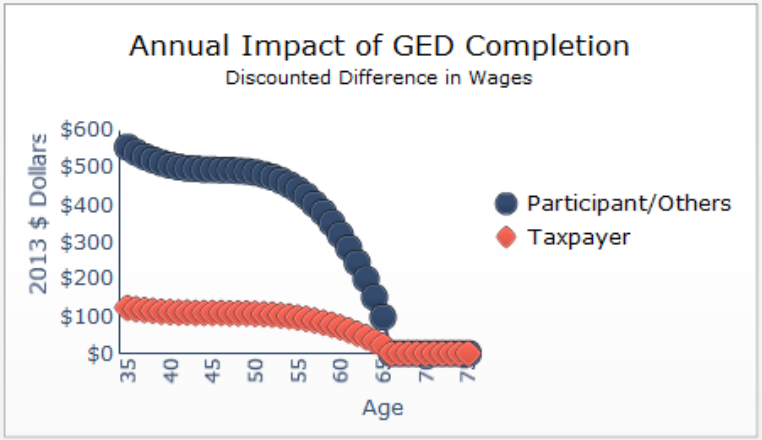
Average Client Age	35
Max Age of Program Impact	65

Annual Impact Fadeout 0%

Percent of Impact that is Causal 75%

Percent Impact on GED 10%





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FRESNO BRIDGE ACADEMY

Benefit Calculator

Methodology | Instructions

Impact Area: Pre-K Education

Average Client Age	4
Max Age of Program Impact	65
Children in Early Ed Programs	0.20
Effect Size	0.23

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Annual Impact Fadeout 0%

Fresno Graduation Rates 75%

Click on an Impact in the table to adjust assumptions

Total Benefits of Impact Areas

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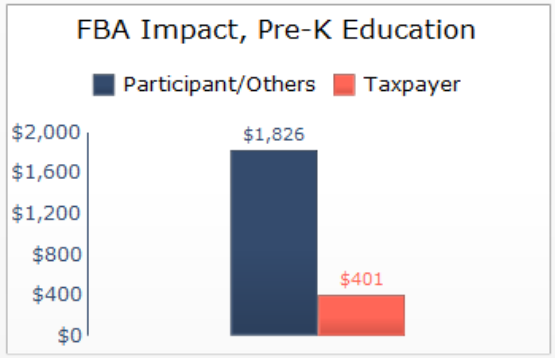
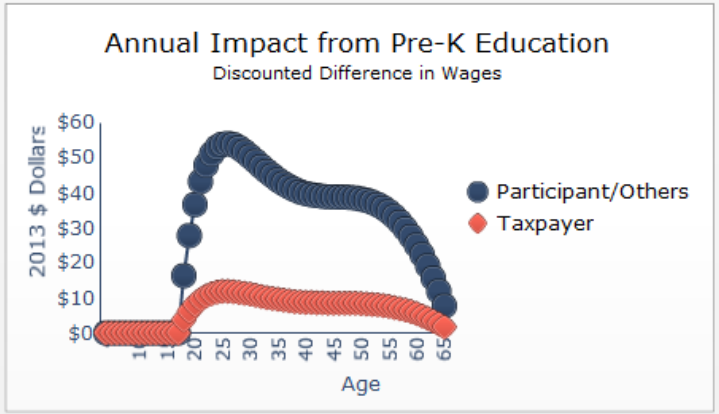


Cost for a Program Participant $1,641



Save Scenario

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Change Model Assumptions

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Discount Rate 3.5%

Adjust County Arrests

READING AND BEYOND
FRESNO BRIDGE ACADEMY

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Discount Rate 3.5%

Adjust County Arrests

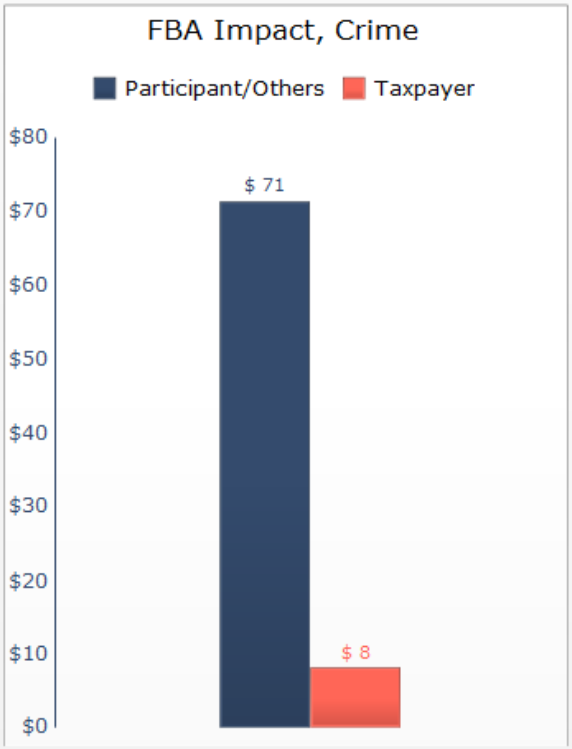
Impact Area: Crime

Employment Training Effect Size -0.074

Percent of FBA Clients in the CJ System 5%

Fresno's Three Year Recidivism 74%

Percent of Recidivism New Crime 50%



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Adjust County Arrests

Impact Area: Total Programming