

Social Innovation Fund – Return on Investment Study for three National Fund for Workforce Solutions (NFWS) Workforce Partnership Programs in Ohio

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1. Introduction

The Corporation for National and Community Service (CNCS) implements the Social Innovation Fund (SIF), an initiative that combines public and private resources to grow the impact of innovative, evidence-based solutions to improve the lives of people in low-income communities throughout the United States. As part of the national assessment of the SIF, ICF International conducted a series of Return on Investment (ROI) analyses of selected funded programs, primarily relying on data from evaluation reports submitted to SIF by the grantees, and supplemented by information obtained from the grantee and evaluator. This report describes the results of an ROI analysis of three National Fund for Workforce Solutions (NFWS) Workforce Partnership Programs implemented by the Partners for a Competitive Workforce in Cincinnati, Ohio, a subgrantee to Jobs for the Future. The results of the analyses can be used to estimate the ROI of the specific programs, and also show the potential application of the ROI method used here for analyses of additional SIF-funded programs.

ROI is a performance measure used to evaluate the effectiveness of an investment. ROI measures the amount of return on an investment relative to the cost of the investment. To calculate ROI, the benefit (or return) of an investment is divided by the cost of the investment, and the result is expressed as a percentage or ratio. The results of an ROI analysis can help programs communicate the cost-benefit aspect of the program to stakeholders. In addition to providing a succinct program outcome measure, ROI information may be useful for considering the investment of additional program funding from public or private sources.

The ROI studies included here follow a simplified methodology that uses secondary data to provide insight into return on investment from an intervention. This approach is not as robust as a fully detailed ROI using a method such as the “ingredients approach” in which all resources or ingredients (e.g., personnel, facilities, materials and equipment) consumed in an intervention are identified and the cost is estimated for each (McEwan, P., 2012), and for which all benefits, to the individual, the family, and society are assessed. However, this simplified methodology can be implemented at lower cost and can be done using the results of evaluations already completed, together with secondary data and, as needed, additional information from the program or evaluators, to provide ROI estimates for an intervention. One goal of this study is to assess the extent to which this simplified methodology can provide a useful perspective on the ROI for different interventions for a relatively low level of effort and associated cost by relying on secondary data.

Using the simplified approach and secondary data, the ROI estimates are designed to capture the returns on the investment of Federal funds and matching funds to carry out the program/intervention, as measured by returns to the government (Federal and State) resulting from decreased transfer payments to unemployed or low income residents and increased tax payments (income tax and sales tax). This approach has been used in a number of ROI studies on occupational and career training programs (Hollenbeck, K., and Huang, W., 2006; Rotz, D., et. al, 2014; and Redcross, C., et. al. 2010). In a sense, this kind of ROI analysis addresses the question: Is the government’s investment in the program paid back through the increased revenue received by the government and decreased public assistance payments from the government?

To carry out these ROI analyses, we assume that the direct public funding components and associated match funds constitute the entire cost of the program. Often, the true cost of programs are higher than the grant and match amount in cash, because in-kind costs are usually not accounted for and fixed costs such as office space or equipment may also not be charged to a grant. On the other hand, the program cost includes cost devoted to areas other than program delivery, such as the rigorous program evaluation required under the SIF. Evaluation costs are important for building the evidence base, but are not part of the cost of delivering services, and contribute to some overestimation of costs associated with service delivery. We further assume that the benefits that accrue from the intervention are limited to those measured in the secondary reports used as the basis for this study (in this case employment and earnings). This means that the ROI analysis does not account for other important benefits that are known to accrue when employment and earnings are improved, for example:

- Direct benefits to the family from achieving family economic security through an increase in income. Family economic security refers to a family’s ability to meet its financial needs in a way that promotes the health

and well-being of parents and their children in both the short and long term (Cauthen, Nancy K. 2002). Families that achieve economic security are more likely to have children enroll in higher education, plan for retirement, and purchase a home and automobile. These all contribute to the ROI, both in the short and long term, but are not factored into this study.

- Health benefits, such as improved health care and reduction in public health care use including savings by the individual that would be realized through an employer provided health care plan, improved health care through access to health plan medical care, and benefits to the government through less reliance on government funded public health care.
- Multi-generational benefits, such as reduction in multigenerational poverty that may impact future generations helping them avoid to poverty through greater household income.
- Benefits to the employer and industry from an increase in the number of qualified workers, and benefits to the local economy and community from increased family and worker earnings and well-being

Participants, staff and evaluators directly involved with the programs can readily supply individual stories about benefits not captured in the evaluation reports used as the basis for the ROI study. As a result, the benefits calculated here provide conservative estimates.

Since the ROI builds on the results of a completed impact evaluation of the program, any limitations to the impact evaluation will be carried over. For example, an impact evaluation that employs a rigorous design using a randomized controlled trial (RCT) will have a stronger validity than one that uses a pre-post design. A study may report outcomes related to employment, earnings, and job retention but does not report other potential benefits to participants such as health benefits.

Despite these limitations, this kind of simplified ROI analysis offers a promising approach by providing a reasonable, generally conservative estimate of the return for each dollar invested by the government and match stakeholders, using a methodology that is straightforward to implement (as compared to approaches that require more time and resources to collect primary data). A key next step in future will be to assess the practical value of the information provided by this simplified ROI approach.

A final note of caution is that it is difficult to compare ROI results from different studies. Assumptions vary from program to program depending on data availability and quality, and impacts are often reported in different ways and for different time periods. At the same time, different results from similar program structures can help identify areas for deeper study.

This study begins with a description of each program, with a focus on the program objective and the services that were offered. This is followed by the ROI analysis and results. The appendix details the methodology employed to conduct the ROI analyses.

2. Program Descriptions

This ROI study focuses on three National Fund for Workforce Solutions (NFWS) Workforce Partnership Programs. In partnership with Jobs for the Future, NFWS funds regional collaboratives that match funds from other sources to grow and develop local workforce partnerships. In 2010, NFWS received a two-year grant from CNCS' SIF to scale up existing programs and create new programs in 30 NFWS/SIF funded programs in six states. NFWS engaged IMPAQ International to assess the effectiveness of the programs using two types of studies: outcome assessment studies to look at participation, services provided, and participant outcomes, and quasi-experimental impact studies to assess the impacts of selected NFWS/SIF programs on the labor market outcomes of individuals who participated in the program (Michaelides, M. et al, 2015). The analysis here is based on findings from the impact studies of three programs that were part of the Partners for a Competitive Workforce collaborative, a regional partnership in the Greater Cincinnati, Ohio area: (1) the Health Careers Collaborative of Greater Cincinnati, (2) the Advanced Manufacturing Partnership, and (3) the Construction Sector Partnership. The regional collaborative used NFWS/SIF

funds combined with match funds from other public and private sources to support the scale-up of the three programs, which were implemented in the period from January 2010 through December 2011.

Each of the three NFWS/SIF programs provided training and supportive services to individuals interested in gaining employment and career advancement in either healthcare, manufacturing, or construction. The quasi-experimental impact study used propensity score matching to compare outcomes for individuals who were unemployed at the time they entered the program with an equivalent group of unemployed non-participants. Outcomes assessed included employment, employment in program's focus industry, job retention, and earnings. The ROI analysis only used employment and earnings data. Exhibit 1 describes the three programs.

Exhibit 1: Program Description

Program	Objective	Services	Outcomes Study Participants (unemployed participants only)
The Health Careers Collaborative of Greater Cincinnati	Help low-skill unemployed workers gain the skills needed to access healthcare jobs and help incumbent entry-level healthcare workers gain skills and promotions in their careers.	Job readiness training (workplace professionalism, computer literacy, financial and life skills, and training on accessing public services), assistance in obtaining the National Career Readiness Certificate, GED services, industry-focused training, and job search assistance.	992 unemployed workers were included in the study. Demographic characteristics included: <ul style="list-style-type: none"> ▪ Men (10%) ▪ White (50%) ▪ High school education or more (54%) ▪ Under age 35 (65%) ▪ Prior work experience (67%) ▪ Prior healthcare work experience (28%)
The Advanced Manufacturing Partnership	Promote the employment and career advancement for low-skill workers in advanced manufacturing jobs by creating educational and career pathways for in-demand advanced manufacturing jobs.	Short-term training and an incremental approach to training and employment, including job readiness training, assistance in obtaining employability and industry credentials, enrollment in college coursework and specialized apprenticeships, and job search assistance.	684 unemployed workers were included in the study. Demographic characteristics included: <ul style="list-style-type: none"> ▪ Men (66%) ▪ White (21%) ▪ High School education or more (31%) ▪ Under age 35 (51%) ▪ Prior work experience (53%) ▪ Work experience in manufacturing (5%)
The Construction Sector Partnership	Improve and create construction career pathways for low-skill workers for in-demand construction jobs.	Enrolling participants in pre-apprenticeship programs and on-the-job training to help them obtain construction skills. Offering job readiness training and job search assistance and focusing on recruiting women and minority participants.	379 unemployed workers were included in the study. Demographic characteristics included: <ul style="list-style-type: none"> ▪ Men (52%) ▪ White (19%) ▪ High School education or more (28%) ▪ Under 35 years of age (60%) ▪ Prior Work experience (44%) ▪ Work experience in construction (2%)

Sources: Quasi-Experimental Impact Study of NFWS/SIF Workforce Partnership Programs, IMPAQ International, 2015.

3. ROI Approach and Results

The ROI analysis is divided into costs and benefits (or returns), based on the outcomes of each program. The focus is on the intervention rather than sources of funding, with a goal of providing information to support future replication or scaling. This is a convention for most ROIs. The cost of each program is provided by Partners for a Competitive Workforce, and equal to the sum of all the public and match funding provided for the program. The benefits, or returns, are based on the outcomes data provided in the evaluation report and for this analysis are projected 10 years out from program completion. Technically, one could project out more years. However, since the impact estimate was based on a one year intervention, the longer-term implications on ROI will become increasingly less accurate. Costs and benefits are determined on an average per individual level and aggregated to include the entire population of program participants.

3.1 Cost Analysis

Overall program costs included staff expenses and other job training and placement costs, as well as costs for scholarships and evaluation. The sources of funding included grants from the U.S. Department of Labor, the State of Ohio, and the SIF. The overall public funding and match cost for each program, as well as the number of participants served, and the per-participant cost is shown in Exhibit 2. That cost per participant calculated for all participants was then used to estimate the total cost for the ROI study by including only those who were unemployed when beginning the program. Appendix A includes detailed information about the programs' sources of funding.

Exhibit 2: Cost per Participant for the Three Programs

Program	Total Public/Match Cost	Total Number of Program Participants	Cost per Participant	Number of Participants used for ROI Study (unemployed at entry)	Total Public/Match Cost Attributable to ROI Program Participants
Health Careers Collaborative	\$3,786,270	1,970	\$1,922	992	\$1,906,624
Advanced Manufacturing Partnership	\$290,400	121 ¹	\$2,400	121	\$290,400
Construction Sector Partnership	\$1,399,823	464	\$3,017	379	\$1,143,443

3.2 Benefits Analysis

To represent the magnitude of the program benefits, this ROI examines outcomes for a treatment group and a comparison group, all unemployed at the time they entered the program. The differences between the treatment and comparison groups represent the benefits that can be attributed to the program. Earnings after one year post program completion are used to calculate the ROI.

Earnings

¹ Partner for a Competitive Workforce has valid cost data for 121 individuals they served under this program due to data quality issues.

Program participant earnings are not, in and of themselves, treated as a benefit for the purposes of this ROI. Increased earnings provide value to the households that benefit from increased income, and may have many ancillary benefits. However, for the purpose of this simplified ROI calculation, earnings are considered only as they support a calculation of benefits to the Federal and state government. Exhibit 3 shows the average annual earnings per participant and employment rate for each program one year post program. The last column presents the additional benefits gained by program participants over the comparison group.

Exhibit 3: Average Annual Earnings and Employment Status of Individuals Who Were Unemployed at Program Application: One-year Post-program (based on 4th Quarter)

	Treatment	Comparison	Difference
Annual Earnings			
Health Careers Collaborative	\$11,040	\$7,556	\$3,484
Advanced Manufacturing Partnership	\$7,832	\$6,196	\$1,636
Construction Sector Partnership	\$5,816	\$5,280	\$536
Employment Rate			
Health Careers Collaborative	63%	48%	15%
Advanced Manufacturing Partnership	50%	38%	12%
Construction Sector Partnership	46%	40%	6%

Sources: Quasi-Experimental Impact Study of NFWS/SIF Workforce Partnership Programs, IMPAQ International, 2015.

As shown in Exhibit 3, participants in all three programs earned more on average one year after program completion than did the comparison groups. The Health Career Collaborative Program had the greatest effect on average annual earnings, with a difference between treatment and comparison groups of nearly \$3,484 per year, compared with \$1,636 and \$536, respectively for the other two programs.

The average annual earnings – ranging from \$5,816 to \$11,040 for the treatment groups, may seem low. This can be explained in part by the fact that the average includes zero earnings for those individuals who did not find employment. Although the program results differed slightly, about half of the individuals in each program who received training were employed after a year.

Public Savings

Information about average annual earnings was then used to estimate savings from reductions in public assistance payments and increases in federal and state taxes. Since these benefits will be cumulative over time, we project them out 10 years from program completion, as shown in Exhibit 4.

The U.S. Bureau of Labor Statistics reports data on public assistance collection by income in brackets (or ranges, as shown in Exhibit A-5 in the Appendix). Using variances from the mid-point of the original data, the two brackets that include the \$5,000 to \$9,999 and \$10,000 to \$14,999 ranges were further divided for this study to produce more granular detail on the estimated public assistance collection by income range (shown in Exhibit A-5.1 in the Appendix). Changes in the amount of Public Assistance received were calculated based on estimated movement between income brackets.

Exhibit 4: Estimated Aggregate 10-Year Public Benefits, by Program

	Benefits from Reduced Public Assistance Payments	Benefits from Increases in Federal and State Taxes	Total Public Benefit
Health Careers Collaborative	\$1,448,640	\$5,185,088	\$6,633,728
Advanced Manufacturing Partnership	\$62,284	\$267,973	\$330,257
Construction Sector Partnership	\$78,996	\$340,563	\$419,559

3.3 ROI Results

As Exhibit 5 shows, the calculated public ROI for each grant and match dollar invested in the three programs ranges between \$0.34 for the Construction Sector Partnership Program and \$3.16 for the Health Careers Collaborative Program by year 10.

Exhibit 5: ROI Results by Program

Program	Break Even Point	Cumulative Return on Investment (10 years)
Health Careers Collaborative Program	Year 4	\$3.16 / dollar invested
Advanced Manufacturing Partnership Program	Year 9	\$1.04 / dollar invested
Construction Sector Partnership Program	Beyond 10 years	\$0.34 / dollar invested

The differing ROI results for three programs with similar designs raises the question of “Why”. One hypothesis was that economic and labor market conditions in the three industry sectors at the time of program completion might have differed significantly enough to explain the differential, based on factors such as the number of openings and the amount of qualified labor. However, the employment data in Exhibit 6 (during the study period) show that the three industries in the Cincinnati Metropolitan area grew at roughly the same rate, indicating similar conditions with regard to the demand for labor in these sectors. On the other hand, the health care sector is the largest of the three industries, which may result in greater job availability. The fact that a training program has varying impacts and ROIs when implemented in three different sectors merits further investigation.

Exhibit 6: Employment in Cincinnati-Wilmington-Maysville, OH-KY-IN Metropolitan Statistical Area, 2010-2012

Industry Sector	2010	2011	2012	Change 2010-2012	Percent Change 2010-2012
Health Care and Social Assistance	150,688	152,337	155,513	4,825	3.2%
Manufacturing	110,860	112,922	114,021	3,161	2.9%
Construction	60,589	63,453	62,618	2,029	3.3%

Source: U.S. Bureau of Economic Analysis, 2015

4. Conclusion

The basis for the ROI calculations presented here is the difference in employment earnings between the treatment and comparison groups for each program and, through those earnings differences, the impact on public costs and tax revenue. In the case of the Construction Sector Partnership, the differences between the treatment and comparison group were too small to generate a positive ROI over the 10 year period, whereas, for the Health Careers Collaborative Program, and the Advanced Manufacturing Partnership Program, the differences were great enough to generate a positive ROI by year 4 and year 9, respectively.

It is important to note that these results should be viewed in the context of the limited amount of information that was available and should be interpreted with caution. As noted earlier, not all benefits of the programs are accounted for in the ROI, such as health benefits, direct benefits to individual and family from increased earnings, multi-generational benefits and long-term system benefits. Similarly, in-kind costs were not accounted for. Even without accounting for all the other intangible benefits, however, the Health Career Collaborative Program realized a positive ROI within four years of the participants’ participation in the program and the Advanced Manufacturing Partnership realized a positive ROI within nine years. Although the Construction Sector Partnership Program did not show a

positive ROI after 10 years, it is possible that by including the other benefits, they may have. More in-depth ROI analyses using an “ingredients approach”, could give a fuller picture of the ROI for a program, though at greater cost.

The ability to do this kind of ROI analysis using secondary data is valuable as a way of “screening” programs for further analysis. Thus, the indication that the Health Sector and Advanced Manufacturing programs have a clearly positive ROI but the findings do not show a clear ROI for the construction program suggests that it may be more productive to target more costly, intensive study resources on programs that do not show as clear ROI, in order to determine whether there are important benefits that are not captured, or higher ROI for some subgroups than others. It may be that such studies will find programs or programs in some sectors do not have a return that justifies continuing public investment – but it is important to do those studies rather than concluding too quickly that some programs are “not worthy” of public investment.

From the perspective of the SIF program, this ROI application has additional contributions and limitations, both of which should be acknowledged. As described above, limitations include the fact that important costs and benefits are not captured by the approach. At the same time – if this approach is applied to evaluations where the findings already show significant positive effects of the program, it can provide additional insight. In this context, it should be noted that programs with a significant positive impact will eventually (if conditions persist) show a positive ROI, and this ROI approach helps quantify the amount and timing of that payoff. Additionally, it is the case that “classic” ingredient-type ROI studies impose very substantial burdens on programs to record and analyze the needed data. By using this kind of lower-cost “screening” type of ROI analysis – especially in conjunction with the rigorous impact evaluations SIF calls for – it is possible to target future ROI studies on SIF to minimize burden and maximize value. Finally, taken together with the impact evaluation findings, the ROI analyses can help foster an expanded conversation about SIF programs.

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5. Appendix A: ROI Methodology

5.1 Overview of the Simplified ROI Methodology

The concept of a return on investment analysis is straightforward: calculate a ratio between what the program costs and the benefits that accrue, and see how they compare. Conducting such a study can be quite complex, however. On the cost side, a program may have a fixed level of funding. But how does the analyst account for costs that do not show up in an account ledger - things like in-kind contributions, burden placed on a larger organization, externalities, or opportunity costs lost? On the benefits side, some measures are readily measurable. But what about the intangibles that are difficult to measure or monetize, or that may accrue over decades?

The ROI literature provides extensive and creative approaches to calculating and monetizing both costs and benefits. For example, the “ingredients approach” calls for all resources or ingredients (e.g., personnel, facilities, materials and equipment) consumed in an intervention to be identified, with a cost estimate for each (McEwan, P., 2012). But to do a detailed ROI study accounting for the full range of costs and benefits is a labor-intensive endeavor and one that places substantial demands on programs and participants. The ROI studies presented in this document apply a simplified ROI process that looks only at a subset of costs – those paid directly by the SIF program and the partners who provided the required match for the federal contribution. They also include a simplified benefit analysis, incorporating the incremental benefits that the treatment group experienced over the comparison group on a subset of estimated benefits – those that accrue to the public sector.

This simplified analysis can provide a valuable, generally conservative estimate of costs and benefits fairly quickly, and with comparatively modest levels of effort. A benefit of this approach is that these estimates may be sufficient to identify programs that very clearly generate positive or negative returns. By doing so, program administrators can make informed choices about programs where the lack of a clearly positive ROI may make it important to invest more resources to conduct more rigorous ROI studies. With a combination of the relatively simpler ROI approach and more in-depth approaches for selected programs, it will be possible to build a robust body of evidence about which evidence-based programs not only generate the desired results, but do so in a cost-effective way.

5.2 Costs

Costs for the programs were calculated by summing the amount of SIF funding and associated match. These costs included the following:

- The amount of the SIF grant
- The amount of the intermediary match to the SIF grant
- The amount of the sub grantee match to their SIF grants

Exhibit A-1 presents the funding sources and amounts for each of the programs.

Exhibit A-1: Funding Sources and Amounts for the Three Programs

Program/Source	Amount	Details
Health Careers Collaborative		
American Recovery and Reinvestment Act (ARRA) for High Growth and Emerging Industries (HGEI) Grant	\$2,810,558	Department of Labor (DOL) 2 years of a 3 year grant; 85% of participants were job seekers
Community Based Job Training Grant	\$369,584	Department of Labor 25% of a 4 year grant; all participants were assumed to be job seekers
United Way of Greater Cincinnati (UWGC) funds for scholarships	\$500,000	Half of a \$1,000,000 grant for four years
Social Innovation Fund	\$106,129	CNCS
	Total: \$3,786,270	

Advanced Manufacturing Partnership		
Women Apprenticeship in Nontraditional Occupations (WANTO) Grant	\$93,750	Department of Labor (half Construction, half Manufacturing)
Manufacturing Skill Standards Council (MSSC) Pilot	\$60,000	State of Ohio
Easter Seals Social Innovation Fund Grant	\$245,000	Social Innovation Fund
Social Innovation Fund	\$184,178	CNCS
	Total: \$582,928	
Construction Sector Partnership		
Constructing Futures Grant	\$998,976	State of Ohio
Women Apprenticeship in Nontraditional Occupations (WANTO) Grant	\$93,750	Department of Labor (half Construction, half Manufacturing)
Social Innovation Fund	\$307,097	CNCS
	Total: \$1,399,823	

Source: Partners for a Competitive Workforce (2016)

The cost per participant was calculated based on the number of participants and the total public and match contribution to the program, as shown in Exhibit A-2. That cost per participant calculated for all participants was then used to estimate the total cost in the ROI study by including only those who were unemployed when beginning the program.

Exhibit A-2: Cost per Participant for the Three Programs

Program	Total Public/Match Cost	Total Number of Program Participants	Cost per Participant	Number of Participants used for ROI Study (unemployed at entry)	Total Public/Match Cost Attributable to ROI Program Participants
Health Careers Collaborative	\$3,786,270	1,970	\$1,922	992	\$1,906,624
Advanced Manufacturing Partnership	\$290,400	121*	\$2,400	121	\$290,400
Construction Sector Partnership	\$1,399,823	464	\$3,017	379	\$1,143,443

* Partners for a Competitive Workforce in Cincinnati has valid cost data for 121 individuals

5.3 Benefits

The ROI analyses presented here are based on performance impacts reported in evaluation reports completed by the SIF grantees and focus only on public benefits. The methodology assumes that by knowing a quantitative output, such as number of program graduates, and by knowing the outcomes associated with completing the programs (such as employment attainment and wages), one can calculate the dollar amount of value gained from the program by state and federal government. Therefore, as participants in each of the programs successfully complete the programs and as a result move into employment and self-sufficiency, the participant experiences reduced reliance on public assistance, supplementary income and food stamps. In addition, by securing a higher income through employment, local, state, and federal government benefit from increases in tax revenue in terms of income taxes and sales taxes. By computing the difference in outcomes between program participants and a comparison group that did not

participate in the program, it is possible to estimate the net effect of the program – over what would have happened in the absence of the program. This approach has been used in a number of ROI studies on occupational and career training programs (Hollenbeck, K., and Huang, W., 2006; Rotz, D., et. al, 2014; and Redcross, C., et. al. 2010).

The analyses in this report took into account both the additional State and Federal taxes paid by program participants with increased earnings, and reductions in the amount of public assistance paid to program participants with increased earnings. The process followed for estimating these public savings is described below.

Annual Earnings

First, we assessed the employment outcomes experienced by the treatment group compared with the experiences of the comparison group. Specifically, we looked at differences in the average annual earnings, one year after program completion, as shown in Exhibit A-3. The estimates of changes in tax revenue and public assistance that follow were based on these changes in annual earnings and subsequent earnings growth. Program participant earnings are not considered a benefit for the purposes of this ROI analysis, because earnings in themselves do not constitute a public benefit.

Exhibit A-3: Average Annual Earnings and Employment Status of Individuals Who Were Unemployed at Program Application: One-year Post-program (based on 4th Quarter)

	Treatment	Comparison	Difference
Annual Earnings			
Health Careers Collaborative	\$11,040	\$7,556	\$3,484
Advanced Manufacturing Partnership	\$7,832	\$6,196	\$1,636
Construction Sector Partnership	\$5,816	\$5,280	\$536
Employment Rate			
Health Careers Collaborative	63%	48%	15%
Advanced Manufacturing Partnership	50%	38%	12%
Construction Sector Partnership	46%	40%	6%

Sources: Employment and Wages: Quasi-Experimental Impact Study of NFWS/SIF Workforce Partnership Programs, IMPAQ International, 2015.

Wage Inflation

The analysis assumes that both program participant and comparison group annual earnings will increase by 2.5% per year. This is based on a typical yearly inflation rate (InflationData.com)

Increased Tax Revenues

The analysis estimates increases in three types of taxes: federal income tax, state income tax, and state sales tax. Exhibit A-4 lists the rates used for these calculations. We used the simplifying assumption that all of the increased wages were earned by program participants in the \$5,000 to \$20,000 per year bracket.

Exhibit A-4: Tax and Inflation Assumptions

Tax and Inflation	Rate	Notes
Effective Federal Income Tax Rate	10%	based on an average yearly earnings range of \$5,000 to \$20,000
Effective Ohio Income Tax Rate	2%	based on an average yearly earnings range of \$5,000 to \$20,000

Ohio Sales Tax Rate	5.75%	Actual Ohio sales tax rate
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Source: Bankrate (bankrate.com), 2016

Reduced Public Assistance Payments

The analysis estimates the amount of savings that will be generated as earnings rise and public assistance payments fall. Types of assistance considered for this analysis include public assistance, supplemental security, and food stamps. Exhibit A-5 shows the average amount collected in public assistance by household income range. U.S. Bureau of Labor Statistics (BLS) reports data on public assistance collection by income in brackets (or ranges) based on annual survey of households in the US. For the average amount of public assistance collection to change, an individual's income would have to change from one bracket to another; the information reported by the BLS has income brackets in the lower end of the income scale consisting of \$5,000 ranges. To get a more granular estimate of public assistance payments by income range for the ROI calculation, we expanded the \$5,000 to \$9,999 and \$10,000 to \$14,999 ranges into ten brackets consisting of \$1,000 increments, using variances from the mid-point of the original data (these brackets are shown in Exhibit A-5.1). The limitation to using this data set for the ROI analysis is that there can be a very small difference in actual income between the treatment and comparison groups but if that amount places the groups into different brackets, the amount of public assistance collection can be significantly different. The data still, however, represents a general level of public assistance collection that is useful to capture the benefit to the government of increasing wages.

Exhibit A-5: Average Public Assistance Payments by Income Range

	Less than \$5,000	\$5,000 to \$9,999	\$10,000 to \$14,999	\$15,000 to \$19,999	\$20,000 to \$29,999	\$30,000 to \$39,999	\$40,000 to \$49,999	\$50,000 to \$69,999	\$70,000 and more
Public assistance, supplemental security income, food stamps	\$754 ²	\$1,656	\$1,279	\$968	\$885	\$633	\$411	\$309	\$103

Source: Consumer Expenditure Survey, U.S. Bureau of Labor Statistics (2016) <http://www.bls.gov/cex/2014/combined/income.pdf>

Exhibit A-5.1: Estimated Average Public Assistance Payments by Expanded Income Ranges (used for ROI Calculation)

	\$5,000 to \$5,999	\$6,000 to \$6,999	\$7,000 to \$7,999	\$8,000 to \$8,999	\$9,000 to \$9,999	\$10,000 to \$10,999	\$11,000 to \$11,999	\$12,000 to \$12,999	\$13,000 to \$13,999	\$14,000 to \$14,999
Estimated public assistance, supplemental security income, food stamps	\$1,807	\$1,773	\$1,656	\$1,581	\$1,505	\$1,430	\$1,354	\$1,279	\$1,204	\$1,128

Source: ICF estimate based on Consumer Expenditure Survey, U.S. Bureau of Labor Statistics (2016) <http://www.bls.gov/cex/2014/combined/income.pdf>

² The fact that people with income in the lowest bracket would receive less than those in higher income brackets may appear to be an anomaly. We speculate that people in the lowest bracket may be in shelters or homeless and do not receive public assistance such as housing allowance.

5.4 ROI

The ROI for each program was calculated using the costs and benefits described above for the 10 years following completion of the program as follows:

Taxes

The Taxes Collected calculation uses the data from Exhibit A-3 and A-4 to estimate the change in the aggregate amount of federal income tax, state income tax, and state sales tax collected. The calculation is based on the difference in earnings presented in Exhibit A-3, as follows:

Exhibit A-6: Formula Used to Calculate Savings on Taxes

Difference in total annual earnings	X	Effective Federal Income Tax Rate (10%)	=	Additional Federal income tax paid by treatment group
Difference in total annual earnings	X	Effective Ohio Income Tax Rate (2%)	=	Additional State income tax paid by treatment group
Difference in total annual earnings X 50% (assumed taxable spending)	X	Ohio Sales Tax Rate (5.75%)	=	Additional sales tax paid by treatment group

Public Assistance

The Public Assistance calculation uses the data from Exhibit A-5.1 to estimate the reduced amount of government public payments, including public assistance, supplemental security, and food stamps payments. The calculations are based on the earnings presented in Exhibit A-3, as follows:

Exhibit A-7: Formula Used to Calculate Savings from Public Assistance

Assistance Paid in Initial Income Range per year	-	Assistance Paid in New Income Range per year	=	Reduced Public Assistance payments
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Total Public Benefit

Total public benefit is calculated as the combined public benefit of higher taxes and lower public assistance payments, as follows:

Exhibit A-8: Formula Used to Calculate Total Public Benefits

Increased Taxes Collected	+	Reduction in Public Assistance payments	=	Total Public Benefit
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ROI Calculation

The ROI is calculated for 10 annual periods by dividing the cumulative public benefit attained by the total cost of the program. Exhibits A-9, A-10, and A-11 show the calculations used to estimate taxes collected and public assistance paid, and the resulting ROI.

Exhibit A-9: ROI Results Health Careers Collaborative Program

	Taxes Collected	Public Assistance Paid		
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Year	Treatment	Comparison	Additional Taxes	Treatment	Comparison	Public Assistance Savings	Total Public Benefit	ROI
1	\$1,466,554	\$1,003,739	\$462,815	\$649,920	\$794,880	\$144,960	\$607,775	0.32
2	\$1,503,217	\$1,028,833	\$474,385	\$649,920	\$794,880	\$144,960	\$619,345	0.64
3	\$1,540,798	\$1,054,553	\$486,245	\$649,920	\$794,880	\$144,960	\$631,205	0.97
4	\$1,579,318	\$1,080,917	\$498,401	\$649,920	\$758,880	\$108,960	\$607,361	1.29
5	\$1,618,801	\$1,107,940	\$510,861	\$613,920	\$758,880	\$144,960	\$655,821	1.64
6	\$1,659,271	\$1,135,639	\$523,632	\$613,920	\$758,880	\$144,960	\$668,592	1.99
7	\$1,700,753	\$1,164,030	\$536,723	\$613,920	\$758,880	\$144,960	\$681,683	2.35
8	\$1,743,271	\$1,193,130	\$550,141	\$577,920	\$758,880	\$180,960	\$731,101	2.73
9	\$1,786,853	\$1,222,959	\$563,895	\$577,920	\$722,400	\$144,480	\$708,375	3.10
10	\$1,831,524	\$1,253,533	\$577,992	\$577,920	\$722,400	\$144,480	\$722,472	3.16
Total	\$16,430,360	\$11,245,272	\$5,185,088	\$6,175,200	\$7,623,840	\$1,448,640	\$6,633,728	3.16

Total Program Cost: \$ 1,906,624

Exhibit A-10: ROI Results Advanced Manufacturing Partnership Program

Year	Taxes Collected			Public Assistance Paid			Total Public Benefit	ROI
	Treatment	Comparison	Additional Taxes	Treatment	Comparison	Public Assistance Savings		
1	\$114,507	\$90,588	\$23,919	\$76,176	\$79,626	\$3,450	\$27,369	0.09
2	\$117,370	\$92,853	\$24,517	\$72,726	\$79,626	\$6,900	\$31,417	0.20
3	\$120,304	\$95,174	\$25,130	\$72,726	\$79,626	\$6,900	\$32,030	0.31
4	\$123,311	\$97,553	\$25,758	\$72,726	\$79,626	\$6,900	\$32,658	0.43
5	\$126,394	\$99,992	\$26,402	\$72,726	\$79,626	\$6,900	\$33,302	0.54
6	\$129,554	\$102,492	\$27,062	\$72,726	\$76,176	\$3,450	\$30,512	0.64
7	\$132,793	\$105,054	\$27,739	\$69,230	\$76,176	\$6,946	\$34,685	0.76
8	\$136,113	\$107,681	\$28,432	\$69,230	\$76,176	\$6,946	\$35,378	0.89
9	\$139,516	\$110,373	\$29,143	\$69,230	\$76,176	\$6,946	\$36,089	1.01
10	\$143,004	\$113,132	\$29,872	\$69,230	\$76,176	\$6,946	\$36,818	1.04
Total	\$1,282,865	\$1,014,892	\$267,973	\$716,726	\$779,010	\$62,284	\$330,257	1.04

Total Program Cost: \$ 290,400

Exhibit A-11: ROI Results Construction Sector Partnership Program

Year	Taxes Collected			Public Assistance Paid			Total Public Benefit	ROI
	Treatment	Comparison	Additional Taxes	Treatment	Comparison	Public Assistance Savings		
1	\$293,606	\$263,208	\$30,398	\$314,418	\$314,418	\$0	\$30,398	0.03
2	\$300,946	\$269,788	\$31,158	\$314,418	\$314,418	\$0	\$31,158	0.05
3	\$308,470	\$276,533	\$31,937	\$301,194	\$314,418	\$13,224	\$45,161	0.09

4	\$316,182	\$283,446	\$32,736	\$301,194	\$314,418	\$13,224	\$45,960	0.13
5	\$324,086	\$290,532	\$33,554	\$301,194	\$314,418	\$13,224	\$46,778	0.17
6	\$332,188	\$297,796	\$34,393	\$301,194	\$314,418	\$13,224	\$47,617	0.22
7	\$340,493	\$305,241	\$35,253	\$301,194	\$301,194	\$0	\$35,253	0.25
8	\$349,006	\$312,872	\$36,134	\$301,194	\$301,194	\$0	\$36,134	0.28
9	\$357,731	\$320,693	\$37,037	\$288,144	\$301,194	\$13,050	\$50,087	0.32
10	\$366,674	\$328,711	\$37,963	\$288,144	\$301,194	\$13,050	\$51,013	0.34
Total	\$3,289,383	\$2,948,820	\$340,563	\$3,012,288	\$3,091,284	\$78,996	\$419,559	0.34

Total Program Cost: \$ 1,143,443