Quasi-Experimental Impact Study of NFWS/SIF Workforce Partnership Programs

Evidence on the Effectiveness of Workforce Partnership Programs in Ohio and Wisconsin

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Authors

Marios Michaelides
Project Director and co-Principal Investigator
(University of Cyprus and IMPAQ International)

Peter Mueser
Co-Principal Investigator
(University of Missouri and IMPAQ International)

Scott Davis
(IMPAQ International)

Kassim Mbwana
(IMPAQ International)

Prepared and Submitted by:

IMPAQ International, LLC
10420 Little Patuxent Parkway
Columbia, MD 21044

Submitted to:

National Fund for Workforce Solutions
88 Broad Street
Boston, MA 02110

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Executive Summary

Since its establishment in 2007, the National Fund for Workforce Solutions (NFWS) has invested in Regional Funding Collaboratives that match NFWS funds with funds from other sources to support the development of local workforce partnerships. These partnerships identify the workforce needs of local employers and design and administer programs to help workers to obtain the skills needed to meet those needs. By 2010, NFWS was supporting 30 local workforce partnerships with active training programs in six states. In 2010, NFWS was awarded a two-year, $7.7 million grant by the Social Innovation Fund (SIF) to expand these programs and to support the creation of new programs.

In 2011, NFWS contracted with IMPAQ International, LLC (IMPAQ) to evaluate the effectiveness of the 30 NFWS/SIF-funded workforce partnership programs. The evaluation consisted of:

1) *an outcomes study* to examine program participation, services provided, and participant outcomes in the period of the SIF funding (January 2010 – February 2012); and
2) *a quasi-experimental impact study* to estimate the effects of selected NFWS/SIF-funded programs on the labor market outcomes of individuals who entered those programs during the SIF funding period.

This report presents the findings of the quasi-experimental impact study for six NFWS/SIF-funded programs – three based in Ohio (Healthcare Careers Collaborative, Advanced Manufacturing Partnership, and Construction Sector Partnership) and three based in Wisconsin (Wisconsin Regional Training Partnership Manufacturing Pathway, Wisconsin Regional Training Partnership Construction Pathway, and Milwaukee Area Health Alliance). These six programs provided training and other services to individuals interested in obtaining jobs and advancing their careers in healthcare, advanced manufacturing, and construction. The study relies on a quasi-experimental approach to estimate program impacts for participants who were unemployed at program entry by: (1) using the propensity score matching method to identify

matched comparison groups consisting of unemployed non-participants who were observationally equivalent to unemployed NFWS/SIF participants, and (2) estimating program impacts by comparing the labor market outcomes of NFWS/SIF participants with the outcomes of unemployed individuals in the matched comparison groups.

A. Program Descriptions

A.1 Ohio-based Programs

The three Ohio-based programs were supported by the Partners for a Competitive Workforce collaborative, a regional partnership in the Cincinnati area. This collaborative used NFWS funds, combined with funds from numerous private and public organizations, to help the three partnerships design and implement sustainable workforce strategies to promote the employment of low-income individuals in their respective focus industries. Below is summary of each of the three programs.

Health Careers Collaborative of Greater Cincinnati. This program focused on helping unemployed workers obtain the skills needed to access healthcare jobs. The program provided a wide range of services, including job readiness training, assistance in obtaining employability and training credentials, industry-focused training, and job search assistance. During the study period (January 2010 – February 2012), the program served 992 unemployed participants, who were primarily women, had more than a high school education, were under age 35, and had prior work experience.

Advanced Manufacturing Partnership. This program focused on promoting the employment and career advancement of low-skill workers in advanced manufacturing jobs. The program used an incremental approach in promoting participants' employment and educational advancement, which included job readiness training, assistance in obtaining employability credentials, enrollment in college coursework and specialized apprenticeships, and receipt of job search assistance. During the study period, the program recruited 684 unemployed

participants – the majority of participants were men, were nonwhite, had no more than a high school education, were under age 35, and had limited work experience.

Construction Sector Partnership. This program focused on creating career pathways in construction for low-skill workers. The program's pathways model was based on enrolling participants in pre-apprenticeship programs to help them obtain construction skills and providing job search services. During the study period, the program recruited 379 unemployed participants – the majority of participants were men, were nonwhite, with no more than a high school education, under age 35, and with limited work experience.

A.2 Wisconsin-Based Programs

The three Wisconsin-based programs were supported by the Milwaukee Area Workforce Alliance, which operates in the Milwaukee area. This collaborative used NFWS funds, combined with funds from private and public organizations, to support training programs that help low-income workers to obtain in-demand jobs in construction, manufacturing, and healthcare. Below is summary of the three programs.

Wisconsin Regional Training Partnership (WRTP) Construction Pathways and Manufacturing Pathways. WRTP focused on brokering relations between employers, unions, and workers to promote employment of low-skill workers in construction and manufacturing, and to help local employers to recruit a diversified and qualified workforce. The partnership supported two programs – WRTP Construction Pathways and WRTP Manufacturing Pathways – that offered participants pre-apprenticeship training, assistance in obtaining occupational credentials, career advancement training, and job search services. During the study period, the construction and manufacturing programs served 1,103 and 88 unemployed participants, respectively – the majority were men, were nonwhite, and with no more than a high school education.

Milwaukee Area Healthcare Alliance. This program worked with healthcare employers to identify sought-after skills and to provide training and other services to low-skill workers to

meet those needs. It provided participants with occupational training to obtain in-demand healthcare jobs (as identified by their employer partners), on-the-job training to help advance their careers, and job search services to identify suitable jobs. During the study period, the program served 306 unemployed workers, the majority were women, black, and under age 35.

B. Impact Study Results

The objective of the study is to examine the impacts of each program on the labor market outcomes of unemployed participants, including: employment, employment in the program's focus industry, job retention, and earnings. IMPAQ developed a quasi-experimental approach based on the propensity score matching method, which involved the following steps:

- *Step 1: Merge data* – Merge NFWS/SIF data on unemployed program participants (treatment group) with state Employer Service data on unemployed workers who sought state services during the same period as NFWS/SIF-funded program participants (comparison group).
- *Step 2: Produce propensity score* – Apply a logit model on the merged data to estimate the probability of NFWS/SIF program participation based on individual characteristics and employment history, and use the results to produce the propensity score (predicted probability of NFWS/SIF participation) for treatment and comparison cases.
- *Step 3: Use propensity score to construct sample weight* – Weigh each comparison case by the odds ratio of the predicted propensity score, so that the weighted comparison sample matches the characteristics distribution of the treatment sample.
- *Step 4: Compare treatment and weighted matched comparison sample* – Conduct statistical tests to verify that the treatment and matched comparison groups are truly matched in their characteristics.

The above approach was successfully implemented, producing a matched comparison group for each NFWS/SIF-funded program. It consisted of non-participants who sought state employment services during the same period, had similar characteristics, and resided in the same area as

unemployed NFWS/SIF participants. State Unemployment Insurance (UI) wage records data were used to produce common labor market outcomes for treatment and matched comparison cases in the six-quarter period following program entry, including: employment, employment in the program's focus industry, job retention, and earnings. Program impacts were estimated by comparing the mean outcomes between the treatment and the matched comparison group; results for each program are summarized below.

B.1 Ohio-based NFWS/SIF-funded programs

Health Careers Collaborative of Greater Cincinnati

- The program had large effects on employment. In the six quarters after program entry, participants' employment rates were 57.6–64.8 percent, exceeding the rates of the matched comparison group by 14.1–17.0 percentage points (29–37 percent).
- The program was effective in helping participants to obtain healthcare jobs. In the four quarters after entry, 33.4–34.3 percent of participants were employed in healthcare, exceeding the healthcare employment rates of the matched comparison group by 24.0–25.3 percentage points (23.3–30.4 percent).
- The program was very effective in improving participant job retention rates. About 35.2 percent of participants found employment in quarter 1 and remained employed in each of the six quarters after entry, compared to only 22.4 percent of matched comparison group members – a 12.8 percentage point (57 percent) difference.
- The program had large effects on earnings. In the six-quarter follow-up period, participants had $5,517 (52 percent) higher earnings than those in the matched comparison group.

Advanced Manufacturing Partnership

- The program had large effects on employment. In the six quarters after entry, 42.2–52.6 percent of participants were employed, exceeding the employment rates of matched comparison group members by 8.2–14.3 percentage points (24–38 percent).

- The program had modest effects on manufacturing employment; no more than 4.2 percent of participants were employed in manufacturing in the four quarters after entry.
- The program had positive effects on job retention. About 19.9 percent of participants found a job in quarter 1 and remained employed in each of the six quarters after entry, compared to 15.9 percent of matched comparison group members, a 25 percent difference.
- The program had positive effects on earnings. In the six-quarter follow-up period, participants had $2,635 (31 percent) higher earnings than those in the matched comparison group. These effects were lower than those of the Health Careers program.

Construction Sector Partnership

- The program had modest effects on employment. Between 38.8–45.9 percent of participants were employed in quarters 1–6 after program entry, which exceeded the employment rates of matched comparison group members by 3.2–6.1 percentage points (9–16 percent).
- The program had modest effects on employment in construction; no more than 4.8 percent of participants were employed in construction in the four quarters after entry.
- The program had no effects on job retention and modest effects on earnings.

B.2 Wisconsin-based NFWS/SIF-funded programs

WRTP Construction Pathways

- The program had large effects on employment. In the six quarters after program entry, 67.2–72.7 percent of participants were employed, exceeding the employment rates of matched comparison group members by 8.8–21.7 percentage points (14–43 percent).
- The program was not effective in helping participants to obtain construction jobs. In the six quarters after entry, fewer than three percent of participants were in construction jobs.
- The program had large positive effects on job retention. About 44.5 percent of participants found employment in quarter 1 and remained employed in each of the six quarters after

entry, compared to only 29.4 percent of matched comparison group members, a 15.1 percentage point (51 percent) difference.

- The program had large effects on earnings. In the six-quarter follow-up period, participants had $11,237 (56 percent) higher earnings than the matched comparison group.

WRTP Manufacturing Pathways

- The program had large effects on employment. In the six quarters after program entry, 66.3–72.1 percent of participants were employed, exceeding the employment rates of matched comparison group members by 11.1–28.6 percentage points (21–68 percent).
- The program was effective in helping participants to obtain manufacturing jobs. In the six quarters after entry, 32.6–40.7 percent of participants were employed in manufacturing, exceeding the rates of the matched comparison group by 23.7–29.6 percentage points (202–535 percent).
- The program had large effects on job retention. About 43.0 percent of participants found a job in quarter 1 and remained employed in each of the six quarters after entry, compared to 19.8 percent of matched comparison group members, a 118 percent difference.
- The program had large effects on earnings. In the six-quarter follow-up period, participants had $16,661 (134 percent) higher earnings than the matched comparison group.

Milwaukee Healthcare Alliance

- The program had substantial effects on employment. In the six quarters after program entry, 57.1–77.0 percent of participants were employed, exceeding the employment rates of matched comparison group members by 16.5–19.4 percentage points (28–40 percent).
- The program was effective in helping participants to obtain healthcare jobs. In the six quarters after entry, 27.9–47.4 percent of participants were employed in healthcare, exceeding the healthcare employment rates of the matched comparison group by 18.1–29.6 percentage points (155–196 percent).
- The program had large effects on job retention. About 40.1 percent of participants found a job in quarter 1 and remained employed in each of the six quarters after entry, compared

to 22.3 percent of matched comparison group members, an 80 percent difference.

- The program had positive effects on earnings. In the six-quarter follow-up period, participants had $5,418 (55 percent) higher earnings than the matched comparison group.

C. Conclusions

The results of the quasi-experimental impact study provide promising evidence about the effectiveness of NFWS/SIF-funded workforce training programs in healthcare, manufacturing, and construction. Results for the Ohio-based programs show that the Health Careers program was very effective in placing participants in healthcare jobs, leading to positive effects on overall employment, job retention, and earnings. The Advanced Manufacturing and Construction Partnership programs were not effective in placing participants in their respective focus industries. The Advanced Manufacturing program had positive effects on employment, job retention, and earnings, which were lower than the effects of the Health Careers programs, while the Construction Partnership program had modest effects on employment and earnings.

All three Wisconsin-based programs had important positive effects on participants' labor market outcomes. The WRTP Manufacturing program was the most effective of the six programs, since it placed participants in manufacturing jobs, leading to substantial effects on overall employment, job retention, and earnings. The Healthcare Alliance program was effective in helping participants find jobs in healthcare, leading to improved employment, job retention, and earnings. The program's effects were similar to the effects of the Ohio-based Health Careers program. The WRTP Construction program was ineffective in helping participants obtain jobs in construction, but – unlike the Ohio-based Construction Partnership program – it led to positive effects on employment, job retention, and earnings.

Overall, these results provide important insights on the effectiveness of NFWS/SIF-funded programs. Programs focusing on the healthcare industry can help participants obtain jobs in the industry and improve their labor market outcomes. While we get mixed results on manufacturing programs' effectiveness in helping participants obtain jobs in the industry, these

programs often lead to substantively important improvements in overall employment, job retention, and earnings. Finally, it appears that construction programs are unlikely to help participants obtain construction jobs, and are likely to have lower overall impacts on participants' labor market outcomes than healthcare and manufacturing programs.

1. Introduction

The National Fund for Workforce Solutions (NFWS), a collaboration of national foundations, was established in 2007 to promote the employment and career advancement of low-income individuals and ensure that employers obtain the skilled workforce needed to compete in the modern economy. To achieve these goals, NFWS invests in Regional Funding Collaboratives, which match NFWS contributions with public and private funding to support local workforce partnerships composed of employers, community-based organizations, and service providers. These partnerships use the funding to identify employers' workforce needs in their local areas and then design and administer training programs and other services to low-income workers to prepare them to meet those needs.

In 2010, NFWS was awarded a two-year, $7.7 million Social Innovation Fund (SIF) grant to expand their model. NFWS used the grant to support existing collaboratives committed to extend the operations of their programs and to help develop new collaboratives. In 2011, NFWS selected IMPAQ International, LLC (IMPAQ) to evaluate the 30 NFWS/SIF-funded workforce partnerships supported by eight scale-up collaboratives. The evaluation consisted of two components:

1) An outcomes study of all 30 scale-up programs to examine program participation, services provided, and participant outcomes in the period January 2010 – February 2012. This study was completed in February 2013 (Michaelides *et al.*, 2013).

2) A quasi-experimental study of the impacts of selected NFWS/SIF-funded workforce partnership programs on the labor market outcomes of individuals who entered these programs from January 2010 through February 2012.

This report presents the findings of the quasi-experimental impact study for six workforce partnership programs, focusing on helping unemployed workers to obtain jobs and access better careers in healthcare, manufacturing, and construction. Three of the programs examined in this study – the Healthcare Careers Collaborative, the Advanced Manufacturing Partnership, and the Construction Sector Partnership – are supported by the Ohio-based Partners for a

Competitive Workforce Collaborative (formerly called Greater Cincinnati Workforce Network). The other three study programs – the WRTP Manufacturing Pathway, the WRTP Construction Pathway, and the Milwaukee Area Health Alliance – are supported by the Wisconsin-based Milwaukee Area Workforce Alliance. These six programs were among the first to receive NFWS support and leverage NFWS funds with funds from other sources to develop training programs focusing on in-demand jobs in healthcare, manufacturing, and construction. In the period of January 2010 through February 2012, the six programs provided training, employment, and other services to 3,552 unemployed workers.

This study examines the impact of the six NFWS/SIF-funded programs on the labor market outcomes of participants who were unemployed at program entry. To estimate the programs' impacts, a quasi-experimental approach was implemented. It relied on NFWS/SIF-funded program data and state administrative data to: (1) apply the propensity score matching method to identify matched comparison groups consisting of unemployed non-participants who registered to receive state employment services and were observationally equivalent to NFWS/SIF-funded program participants, and (2) estimate program impacts by comparing the labor market outcomes of unemployed NFWS/SIF-funded program participants (employment, employment in a program's focus industry, job retention, and earnings) with the outcomes of the matched comparison group. Essentially, this study answers the question: *Are the NFWS/SIF-funded programs effective in helping unemployed workers achieve better labor market outcomes than they would achieve if they were left to find jobs without access to these programs*?

The remainder of the report is organized as follows. Section 2 provides an overview of NFWS and a discussion of the design of the quasi-experimental impact study. Section 3 describes the six partnership programs, including partnership objectives, program services provided to their target populations, and the characteristics of all unemployed individuals who participated in each program during the study period. Section 4 presents the results of the quasi-experimental impact study for each program. Section 5 provides our conclusions based on the study findings.

2. Background

2.1 The National Fund for Workforce Solutions

NFWS has created a model of developing sustainable workforce strategies, based on the principle that local entities are best suited to identify local workforce needs and to leverage the funding needed to develop workforce programs to address those needs. Based on this model, NFWS invests in regional collaboratives responsible for: (1) matching NFWS contributions with public and private funding, and (2) using the leveraged funding to build local workforce partnerships that are developing or implementing promising strategies.

Local workforce partnerships are typically composed of employers, community-based organizations, and training/service providers. These partnerships identify employers' workforce needs in their local areas, often in specific industries, and fund the training and provide other resources to low-skill workers to prepare them to meet those needs. By January 2010, NFWS was funding eight regional collaboratives that supported 30 active workforce programs:[1]

- Pennsylvania Fund for Workforce Solutions (Pennsylvania, 5 programs)
- Philadelphia Job Opportunity Investment Network (Pennsylvania, 4 programs)
- Milwaukee Area Workforce Funding Alliance (Wisconsin, 3 programs)
- Workforce Central Funders Collaborative (Wisconsin, 3 programs)
- Partners for a Competitive Workforce (Ohio, 3 programs)
- Baltimore Workforce Funders Collaborative (Maryland, 3 programs)
- SkillWorks (Massachusetts, 4 programs)
- SkillUp Washington (Washington, 5 programs)

Of the 30 partnership programs, 26 focused on helping workers to obtain skills needed to access careers in a specific industry, while the remaining four provided services to help

[1] NFWS was funding 14 additional collaboratives that supported partnerships, which, at that time, had not started implementing their programs.

participants obtain employment in a broad array of industries. The majority of the 26 industry-specific programs emphasized three sectors: healthcare (eight programs), manufacturing (five programs), and construction (four programs). Other focus industries included hospitality, utilities, landscaping, transportation, information technology, financial services, and biotechnology.[2]

In 2010, SIF, an initiative of the Corporation for National and Community Service (CNCS), awarded NFWS a two-year, $7.7 million grant to expand its model. These funds extended grants to the eight collaboratives listed above, which committed to use the funding to expand the operations of their 30 workforce partnership programs through service enhancement and increasing recruitment. The remaining funds supported the efforts of collaboratives that had not started implementing their programs. The funds also supported the creation of collaboratives. These collaboratives were expected to use the funding to adopt successful and sustainable workforce strategies to address employers' needs in their region.

Due in part to the SIF grant, NFWS has expanded substantially since 2010. It has grown from eight collaboratives that supported 30 workforce partnership programs in 2010 to 29 collaboratives that supported 96 programs in 2012.[3] These 96 programs focused mainly on three sectors – healthcare (38 programs), manufacturing (17), and construction (16). According to NFWS, through 2012, NFWS partnerships had received $41 million in federal funds, and had leveraged approximately $192 million from 476 private sources.[4] NFWS also reports that these funds engaged 4,064 employers and provided training and related services to 42,299 individuals.

2.2 Quasi-Experimental Impact Study Design

One of the key components of IMPAQ's evaluation was to examine the impacts of NFWS/SIF-

[2] For more details, see Michaelides *et al*. (2013).

[3] Source: *Building on Success: Five Years of Impact 2007-2012*. National Fund for Workforce Solutions, 2013. (http://www.nfwsolutions.org/tools/building-success).

[4] Source: *Building on Success: Five Years of Impact 2007-2012*. National Fund for Workforce Solutions, 2013. (http://www.nfwsolutions.org/tools/building-success).

funded programs[5] on the labor market outcomes of individuals who entered those programs in the period January 2010 – February 2012. IMPAQ developed a quasi-experimental evaluation approach, in which program impacts were estimated by comparing the outcomes of NFWS/SIF participants (treatment group) with the outcomes of non-participants who were observationally equivalent to participants (matched comparison group). This approach included the following components:

- Apply matching methods to construct matched comparison groups for NFWS/SIF participants, using NFWS/SIF-funded program data merged to administrative data from the state in which the program operates.
- Use state administrative data to construct common labor market outcomes for treatment and matched comparison group cases in the six-quarter follow-up period.
- Estimate program impacts by comparing the labor market outcomes between the treatment and the matched comparison group.

Most NFWS/SIF program participants were unemployed workers, but many programs also served workers who were employed at program entry. However, due to lack of appropriate data for constructing matched comparison groups for employed participants, the study focused on estimating impacts only for unemployed workers. Below, we discuss the evaluation approach, including key research questions, the process for selecting programs for inclusion in the study, data sources, and the methodology for the quasi-experimental impact study.

2.2.1 Key Research Questions

The objective of the NFWS/SIF quasi-experimental impact study was to address key research questions about the efficacy of the NFWS/SIF-funded programs in improving the labor market outcomes of unemployed participants:

- Were these programs effective in helping unemployed participants to obtain employment after program entry?

[5] Hereafter, the term "NFWS/SIF programs" refers to the 30 workforce partnership programs active at the beginning of 2010 and received SIF funding to expand their operations.

- Did these programs help unemployed participants to obtain jobs in the industries related to the training received?
- Were these programs successful in helping unemployed participants to obtain employment *and* remain employed for longer periods than they would have in the absence of the program?
- Were these programs effective in helping unemployed participants to achieve higher earnings than they would have in the absence of the program?

Addressing these questions provides substantial insight into the effectiveness of NFWS/SIF-funded programs in promoting the employment and career advancement of low-income unemployed individuals. Further, this study provides information on whether certain types of programs – based on the focus industry and services provided – are likely to be more effective than others in improving participant labor market outcomes.

2.2.2 Program Selection

During the study period, NFWS funded eight collaboratives, which supported 30 partnerships with active workforce programs. Of these, 17 programs provided training and other services to low-income workers to access jobs in healthcare, manufacturing, and construction, while the remaining programs focused on other industries. An important aspect of implementing the impact study was to identify which programs were suitable for inclusion in the study. Selection criteria included:

- ***Exemplary Implementation of the NFWS Model*** – Select sites that successfully implemented the NFWS model, based on: 1) their effectiveness in matching NFWS funds, 2) the strength of their partnership with employers and service providers, and 3) the types and quality of training/services they provided. This criterion ensured that impact findings would represent the programs effectively implementing the NFWS model.
- ***Number of Participants*** – Select programs that served at least approximately 100

unemployed participants, to ensure sufficiently large samples of participants so that the study could detect substantively meaningful impacts.

- ***Data Availability*** – As outlined in Section 2.2.3, below, the study relied on two types of data: (1) NFWS/SIF-funded program data, with information on participants' characteristics and personal identifiers to link participants to state administrative data, and (2) state administrative data, with information on the characteristics of non-participants and on the labor market outcomes of both participants and non-participants. It was, therefore, critical that programs included in the study were collecting high-quality data on participants (including personal identifiers) and were operating in states willing to provide their administrative labor market data to support the study.

Nearly all 30 NFWS/SIF partnership programs successfully implemented the NFWS model and collected participants' data that provided the information listed above.[6] However, 14 programs served much fewer than 100 participants during the study period, so were excluded from the study because they were too small to allow the identification of matched comparison groups and to produce meaningful impact estimates. In addition, although the five SkillUp Washington programs served 1,285 participants, a sample size that was sufficient to implement the impact study, they were excluded because they could not provide participants' identifiers, which are critical for state administrative data.

Using those criteria, only 11 remaining programs were deemed eligible for the study. Table 1 presents a summary of these programs, including their focus industry and the total participants served during the study period.

[6] For a detailed discussion of each program and their data availability, see Michaelides *et al*. (2013).

Table 1: NFWS/SIF-funded Programs Eligible for the Quasi-experimental Impact Study

Collaborative/Partnership Name	Focus Industry	Number of Unemployed Participants
Partners for a Competitive Workforce		
Health Careers Collaborative	Healthcare	992
Advanced Manufacturing Partnership	Manufacturing	684
Construction Sector Partnership	Construction	379
Philadelphia Job Opportunity Investment Network		
Pennsylvania Partnership for Direct Care Workers	Healthcare	172
Pennsylvania Fund for Workforce Solutions		
Lancaster-SACA Partnership	Various Industries	315
Labor Management Clearinghouse	Building Services, Hospitality	111
Keystone Utilities Partnership	Utilities	136
Reading Regional Construction Partnership	Construction	191
Milwaukee Area Workforce Funding Alliance		
WRTP Construction Pathways	Construction	1,103
WRTP Manufacturing Pathways	Manufacturing	88
Milwaukee Area Healthcare Alliance	Healthcare	306

These 11 programs were supported by four collaboratives, operating in three states – Ohio (three programs), Pennsylvania (five programs), and Wisconsin (three programs). Table 1 shows that eight of these 11 programs focused on three industries: healthcare (three programs), manufacturing (two programs), and construction (three programs). During the study period, the 11 programs served 4,477 unemployed participants.

A critical aspect of implementing the quasi-experimental impact study was the availability of state administrative data to identify appropriate matched comparison groups and to produce labor market outcome measures for both treatment and matched comparison group cases (see Section 2.2.3). To date, IMPAQ and NFWS have secured state administrative data from Ohio and Wisconsin, but have not been able to secure Pennsylvania data. In the remainder of this

report, we present the impact results for the three Ohio and the three Wisconsin programs.

We believe that the impact study for the six programs in Ohio and Wisconsin can be used to draw inferences about the efficacy of the remaining programs supported by NFWS/SIF. First, the three programs focused on healthcare, manufacturing, and construction – the focus industries of most NFWS/SIF-funded programs. Second, the six programs offered a wide range of training and employment services to participants, which are comparable to the training and services provided by nearly all NFWS/SIF-funded programs.[7]

2.2.3 Data Sources

The quasi-experimental impact study relies on participants' data gathered by each program and on state administrative data. Below, we provide an overview of these data sources.

NFWS/SIF-funded program Data. The NFWS/SIF-funded program data provide information on all unemployed individuals who entered NFWS/SIF-funded programs from January 2010 through February 2012. The data include the following:

- Participants' socioeconomic characteristics at program entry, including gender, race, age, education, date of program entry, and the Local Workforce Investment Area (LWIA) area in which the participant resided.
- Personal identifiers to match to state administrative data.

Also, the data of the three Ohio programs provided information on the types of services received by participants. This information was unavailable for the three Wisconsin programs. Notably, the data provided by the six programs were mostly complete with very few cases of missing data. In particular, the three Ohio programs had 2,055 participants, with only two missing values for race, 23 missing values for age, and 25 missing values for area. The three Wisconsin programs had no missing values on individual characteristics. In the analyses

[7] For a discussion of the focus industry, services provided, and participant characteristics for each NFWS/SIF program, see Michaelides *et al*. (2013).

described below, no attempts were made to impute missing values; instead, we treated missing values as a separate category.

Employment Service (ES) Data. ES data provide information on all unemployed workers who sought employment and training services with the state employment exchange agency from January 2010 through February 2012 and were residing in the same LWIAs as NFWS/SIF-funded program participants.[8] In particular, the data provide information similar to those reported in the NFWS/SIF data, including socioeconomic characteristics (gender, race, age, education, date of program entry, and LWIA of residence) and personal identifiers (name, address, and Social Security number). IMPAQ obtained a de-identified dataset for each state that provided information on all ES participants in the period January 2010 – February 2012. The Ohio data were provided by the Ohio State University's Center for Human Resource Research (CHRR); the Wisconsin data were provided by the Wisconsin Department of Workforce Development. The ES data used in this study were mostly complete – the Ohio ES data were missing race for 12 percent of the cases and age for less than 1 percent of the cases; no missing values in the Wisconsin ES data. In our analyses, we treated missing values in the Ohio data as separate categories.

UI Wage Records. UI Wage Records provide quarterly earnings information on all NFWS/SIF participants who entered the program during the study period and on all ES non-participants who sought state services during that period.[9] The data include the year/quarter of employment, total earnings, employer industry, and identifiers for matching with NFWS/SIF and ES data. IMPAQ has obtained de-identified Ohio and Wisconsin UI Wage Records from the first quarter of 2009 through the fourth quarter of 2012. These data were used to construct employment outcomes for six quarters after program entry for NFWS/SIF and ES participants

[8] ES data typically include information on unemployed workers who applied for UI benefits and/or registered with the state's labor exchange agency to find a job.

[9] UI Wage Records include earnings from jobs with employers located within the state and covered by the state UI system. The data do not report individual earnings earned within the state (such as from Federal government jobs, including the military, and self-employment) or individual earnings from out-of-state employers.

who entered their respective programs from January 2010 through February 2012.[10] These data also provide information on prior employment outcomes beginning in the first quarter of 2009, which were used to construct measures of prior employment and earnings.

2.2.4 Research Approach

The quasi-experimental approach used in this study involves the following steps: (1) use matching methods to construct matched comparison groups for unemployed participants in each of the six NFWS/SIF-funded programs; (2) use UI Wage Records to construct common labor market outcomes for treatment and matched comparison cases in the six-quarter follow-up period; and (3) estimate program impacts by comparing the mean labor market outcomes between the treatment and the matched comparison groups. A detailed description of this approach follows. The matching and impact analyses results are presented in Section 4.

Construct Matched Comparison Groups Using Matching Methods. Matching methods have emerged as a reliable approach for producing rigorous impact studies of workforce programs when an experimental impact design is not feasible (Rubin, 2006). These methods rely on the conditional independence assumption, which may be formally written as $_{0i} \perp T_i/_i$, where $_{0i}$ is the outcome for individual i if that individual had not participated in the program (not observed for participants), T_i is an indicator of program participation (equals 1 if treated, 0 if not treated), and $_i$ is a vector representing a set of observable individual characteristics. Essentially, this assumption stipulates that participants' outcomes had the individual not participated in the program are independent of program participation controlling for observed characteristics. The implication is that non-participants who are observationally similar to

[10] The evaluation sample includes NFWS/SIF and ES participants who entered their programs in January 2010 through February 2012. Using UI Wage Records for the period through the fourth quarter of 2012, we can construct quarterly employment outcomes for: (1) quarters 1–3 after program entry for all individuals in the sample; (2) quarter 4 for individuals who entered their program in the first quarter of 2010 through the fourth quarter of 2011; (3) quarter 5 for individuals who entered their program in the first quarter of 2010 through the third quarter of 2011; and (3) quarter 6 for individuals who entered their program in the first quarter of 2010 through the second quarter of 2011. We do not examine employment outcomes in quarters 7–8 because these are available for less than half of the evaluation sample.

participants can be an appropriate matched comparison group for estimating the programs' impacts.

Matching methods provide credible impact estimates when the data include large samples of non-participants and matching is based on rich information on participants' and non-participants' characteristics and prior work history. In particular, it is critically important that the set of covariates include demographic characteristics and measures of prior employment experience, and that the participant and comparison groups include individuals in the same local labor market. Outcome measures need to be consistent for treated and untreated cases; if possible, they should be derived from the same or strictly comparable sources. These conditions are satisfied in the analyses performed here (Mueser *et al*., 2007; Heinrich *et al*., 2013).

The treatment group in this study includes unemployed individuals who participated in each of the six NFWS/SIF-funded programs during the study period. To construct matched comparison groups for each program, we relied on ES data, which provide rich information on the characteristics of unemployed individuals who sought state employment services, combined with UI Wage Records, which provide detailed information on individuals' employment histories. ES data are particularly appropriate to use for this purpose. First, they include large samples of unemployed non-participants who: (1) were residing in the same LWIAs as NFWS/SIF participants, and (2) sought state employment and training services at the same time the NFWS/SIF participants entered their programs. Second, the ES data report similar information to that reported in the NFWS/SIF-funded program data, which facilitates the matching process. These properties ensure that, if matching is done correctly, we can identify a matched comparison sample in the same labor market and nearly identical to the treatment sample in personal characteristics and prior employment history.

To construct matched comparison groups in this study, we use the propensity score matching (PSM) method. Since the six NFWS/SIF-funded programs included in this study differed in their

target populations, focus industries, and services provided, this method is implemented separately for each program.[11] The PSM method is implemented as follows:

- *Step 1: Merge data* – The NFWS/SIF data for a given program are combined with the ES comparison group, forming a single dataset containing both treated and untreated individuals. UI Wage Record data are then appended using participant personal identifiers (Social Security number, name, and address). The merged data include all available characteristics, service location, and prior employment outcome measures of participants and non-participants.

- *Step 2: Produce propensity score* – Based on this sample, a logit model predicting whether an individual was a treated case is estimated:

$$\Pr(T_i = 1) = \frac{\exp(\beta_i)}{1 + \exp(\beta_i)}$$

where $_i$ is a vector identifying the set of covariate values for individual i that are to be fitted, and β is a vector of coefficients to be estimated. The vector $_i$ contains both the covariates (e.g., individual characteristics, employment history measures) and also nonlinear terms for these measures and interaction terms to provide a general structure to identify the relationship between participation and these variables. Based on the estimated coefficient, the propensity score for each participant and nonparticipant in the sample is estimated as follows:

$$p_i = \frac{\exp(\tilde{\beta})}{1 + \exp(\tilde{\beta})}$$

The propensity score p_i is equal to the predicted probability of program participation for an individual i, based on individual characteristics. As shown above, this is calculated using the vector of parameter estimates ($\tilde{\beta}$ from the logit model and the vector of individual characteristics ($_i$).

- *Step 3: Use propensity score to construct sample weight* – Each comparison case is

[11] Differences in participant characteristics are particularly important, since they show that participation in each program is strongly correlated with characteristics that do not necessarily influence participation in other programs. For this reason, the matching should be done separately for each program.

weighted by the odds ratio of the predicted propensity score ($w_i = \frac{p_i}{1-p_i}$). If the specification used in estimating the propensity score is correct, theory indicates that the weighted comparison sample has the same distribution on all control variables (i.e., the logit model variables) as the treatment sample (Angrist and Pischke, 2009).

- *Step 4: Compare treatment and weighted matched comparison sample* – Once matching is done, it is necessary to test whether the implementation of the matching has been successful, to ensure that the treatment and the matched comparison group are truly matched in their characteristics. To do so, we compare the means on all individual characteristics in $_i$ for the treatment and the weighted matched comparison groups. Differences between the treatment and the weighted matched comparison groups that are statistically and substantively significant imply that the specification used for the variables in $_i$ was unsuccessful and needs modification. In practice, when such differences were detected, the specification of the logit was modified to include additional interactions between variables, and steps 1–4 were repeated until a successful matching was achieved.

This matching approach constructs a matched comparison group for each NFWS/SIF-funded program, consisting of non-participants who enrolled in ES during the same period, had similar socioeconomic characteristics, had similar prior employment outcomes, and resided in the same LWIA as unemployed NFWS/SIF-funded program participants. Under the maintained conditional independence assumption, the outcomes observed in the matched comparison group provide the counterfactual of the outcomes the treated group would have achieved if treatment had not occurred.

Construct Labor Market Outcome Measures. Once matching was achieved, we used UI Wage Records to construct common labor market outcome measures for treatment and matched comparison groups. Specifically, we constructed the following outcomes:

- *Employed* – Individual had positive earnings in the quarter, for each of the six quarters

after program entry.

- *Employed in focus industry* – Individual had positive earnings in the quarter from an employer in the program's focus industry, for up to six quarters after entry.[12]
- *Job retention* – Individual had positive earnings in the first quarter after entry *and* in up to five subsequent quarters.
- *Earnings* – Individual earnings in each of the six quarters after entry.

Estimate Program Impacts. When matching is successful, there will be no statistically significant differences in characteristics and prior employment measures between the treatment group and the matched comparison group for each NFWS/SIF-funded program. The difference between the outcomes for the treated sample and the matched comparison sample is the impact estimate, or the *average effect of the treatment on the treated*. Formally, this estimate of the program effect on the outcome of interest may be written as:

$$\mathrm{E}(\Delta_i/_i = 1) = {}_N \frac{1}{T}\sum_{\iota=1}^{N_T} {}_i - \frac{1}{\sum_{\iota=1}^{N_C} w_i}\sum_{\iota=1}^{N_C} w_{ii}$$

where ${}_i$ is the outcome of interest for individual i; N_T and N_C is the number of treatment and matched comparison group cases, respectively; and w_i is the odds ratio of the predicted propensity score. This essentially shows that the program's effect on the outcome of interest is equal to the mean outcome across treated cases (the first term on the right side of the equals sign) minus the mean outcome for the weighted matched comparison group (the second term on the right side of the equals sign). Given the conditional independence assumption, the only difference between the treatment and the matched comparison groups is that individuals in the treatment group participated in the NFWS/SIF-funded program. Therefore, any differences in outcomes between the treatment group and the matched comparison group are attributed to the program.

[12] In the Ohio data, employer industry was not reported in quarters 3–4 in 2012; thus, employment in the program's focus industry was constructed for up to four quarters after program entry.

This approach estimates the impact of each of the six programs on the average program participant. There is, of course, variation in the program's effect across participants, and the estimate is subject to uncertainty because of random factors that may affect individual program success. For that reason, it is important to calculate the statistical significance of the estimates, using standard errors that capture statistical factors that influence a program's success. For the type of matching process used in this study, bootstrapping is the best method to calculate standard errors that capture such statistical factors.[13] Bootstrap standard errors were used to calculate t-tests to assess whether the estimated program impacts are statistically significant.

The analyses below report tests of statistical significance for a large number of program effect estimates. If true program effects were zero, we would expect to nonetheless find statistical significance for some estimates due to chance. There are many approaches to guard against making false inferences from results produced by multiple tests (e.g., Holm–Bonferroni). We have chosen not to pursue such methods because many of our tests are related – both statistically and substantively – and such approaches fail to consider this. The analyses we report consider programs' effects on employment, industry of employment, employment stability, and earnings, each measured for up to six quarters following initial program participation, and providing for up to two dozen estimates for each program. The hypotheses considered are not tied to a single estimate; rather, inferences are drawn from the patterns of results across these outcomes and over time. As a practical matter, estimated effects that border on statistical significance are often so small that they are of little substantive importance, whereas the important conclusions depend on estimates where sampling error is relatively small and statistical significance – however gauged – is not open to question.

[13] Bootstrapping involves re-estimating the impact multiple times, using samples formed by random sampling with replacement from the treatment and matched comparison samples. The bootstrap standard errors reported here are based on 20 replications. For a discussion of bootstrapping in PSM models, see Caliendo and Kopeing (2008).

3. Program Descriptions

3.1 Partners for a Competitive Workforce Collaborative

The Partners for a Competitive Workforce collaborative (originally named Greater Cincinnati Workforce Network) was established in 2008 as a regional partnership in the greater Cincinnati area in southwest Ohio, and consists of area Workforce Investment Boards (WIBs), employers, community colleges, service providers, and other community-based organizations. The collaborative had three main objectives:

1) Connect regional employers with qualified workers by coordinating the efforts of area WIBs to create a common system, which can be used by workers to access information on available jobs and by employers to access information on jobseekers.

2) Improve job readiness of low-income individuals by providing them with counseling services and training to improve their core work competencies and basic skills.

3) Align training/education with employer needs by creating industry-driven training programs that create career pathways for low-skill workers.

To achieve its objectives, the collaborative leveraged funding from foundations and numerous private and public organizations, including NFWS. In fact, the $450,000 start-up grant provided by NFWS in 2008 was instrumental in the collaborative's inception.[14] The leveraged funds were invested in three workforce partnership programs to provide training and other services to low-income individuals to help them access jobs in their respective focus industries: (1) Health Careers Collaborative of Greater Cincinnati; (2) Advanced Manufacturing Partnership; and (3) Construction Sector Partnership.

The collaborative obtained $22.5 million from public and private sources, including the $450,000 NFWS start-up grant in 2008 and $600,000 from the NFWS/SIF grant in 2010.[15] These

[14] See: Spence C., Elvery J., and Stacy L. (2009). Greater Cincinnati Workforce Network, Annual Evaluation Report.

[15] The collaborative secured funds from multiple sources, including $4.5 million from philanthropic funds, $8 million from state and Federal grants, and $10 million in aligned training funds from the region's public workforce system: http://www.nfwsolutions.org/regional-collaboratives/partners-for-competitive-workforce.

funds were partly used to expand the operations of the three programs and enhance recruitment. Detailed descriptions of the three programs are provided below, followed by an overview of the characteristics of participants in each program during the study period and the types of services participants received. A summary of each program is provided in Box 1.

3.1.1 Health Careers Collaborative of Greater Cincinnati

The Health Careers Collaborative of Greater Cincinnati (Health Careers) was established in 2003 as a partnership between the Cincinnati State Technical and Community College, Great Oaks Institute of Technology, and the Cincinnati Children's Hospital Medical Center in Greater Cincinnati to address a serious shortage of skilled healthcare workers. The partnership's key objective was to create a training program to provide workers with the skills needed to access in-demand healthcare jobs. A secondary objective was to increase the diversity of healthcare workers by recruiting and training minorities. Over time, the partnership grew to involve many healthcare employers, education and training providers, and community-based organizations.

The partnership leveraged the funds from the NFWS grant to the Partners for a Competitive Workforce with funding from numerous additional sources, including the U.S. Department of Labor and the Bill and Melinda Gates Foundation. These funds helped to implement their healthcare-focused training program and to extend operations by expanding to other area hospitals, recruiting additional educational institutions, and expanding the breadth of training provided.

BOX 1: SUMMARY OF OHIO-BASED NFWS/SIF PROGRAMS

Health Careers Collaborative of Greater Cincinnati

Objective. A workforce partnership focused on addressing shortages of skilled healthcare workers by assisting: (1) low-skill unemployed workers to obtain the skills needed to access healthcare jobs, and (2) incumbent entry-level healthcare workers to promote their careers.

Services. The program offered participants a wide range of services, including job readiness training, assistance in obtaining employability and training credentials, industry-focused training, and job search services.

Participants. The program recruited 992 unemployed participants during the study period (January 2010 – February 2012). The majority of unemployed participants were women (90 percent), had more than a high school education (54 percent), and were under age 35 (65 percent). Large proportions were white (50 percent), had prior work experience (67 percent), and had prior work experience in healthcare (28 percent).

Advanced Manufacturing Partnership

Objective. A workforce partnership focusing on promoting the employment and career advancement of low-skill workers – particularly unemployed workers – in advanced manufacturing jobs

Services. The program used an incremental approach in promoting participants' employment and educational advancement. Upon program entry, participants were offered job readiness training, followed by assistance in obtaining national employability credentials. Participants who completed these steps could enroll in college coursework or engage in specialized apprenticeships. Participants were also offered job search services.

Participants. The program recruited 684 unemployed participants during the study period. The majority of unemployed participants were men (66 percent) and nonwhite (79 percent), had no more than a high school education (69 percent), and were under age 35 (51 percent). A large proportion had no prior work experience (47 percent), and most had no experience in manufacturing (95 percent).

Construction Sector Partnership

Objective. A workforce partnership focused on creating career pathways for low-skill workers to meet regional construction workforce needs.

Services. The program's career pathways model was based on providing participants with: 1) the opportunity to enroll in construction pre-apprenticeship programs and receive on-the-job training to help them obtain the skills needed to access construction jobs, and 2) services to help them find jobs that suited their skills.

Participants. The program recruited 379 unemployed participants during the study period. The majority of unemployed participants were men (52 percent) and nonwhite (81 percent), had no more than a high school education (72 percent), and were under age 35 (60 percent). A large proportion had no work experience (56 percent), and most had no experience in construction (98 percent).

The partnership used the funding to develop a career pathways program in nursing, allied health, rehabilitation, health information technology (IT), and biotechnology. The program targeted workers interested in obtaining the skills needed to access jobs in the healthcare industry, particularly in the sectors listed above. Recruitment was supported by community-based organizations and partnership service providers through referrals of jobseekers who expressed interest in the program. In addition, employer partners played a key role in recruitment by referring entry-level healthcare workers to the program who were interested in accessing mid-level careers. As a result, the program primarily attracted two types of participants: low-skill unemployed workers interested in healthcare jobs, and incumbent workers in entry-level healthcare jobs interested in promoting their careers.

Upon program entry, participants were paired with a qualified career pathways advisor from partner OhioMeansJobs Centers or other training/services providers. The advisor was assigned to help the participant identify the types of program services best suited to individual needs. Key program services included:

- *Job readiness training*. The purpose of this training was to provide participants with the basic skills needed to pursue, obtain, and retain a rewarding career in healthcare. The training included the following components: (1) workplace professionalism guidance (including dressing for success); (2) computer literacy training, to learn the basic use of computers and the Internet; (3) financial and life skills training; and (4) introduction to avenues for accessing public benefits and other available public services.
- *Obtain National Career Readiness Certificate (NCRC).* The program offered participants assistance in obtaining an NCRC, which demonstrates to potential employers that the individual possesses basic skills in applied mathematics, locating information, and reading for information.[16] In addition, participants had access to the School at Work program, a healthcare-focused career development and academic readiness course designed to help incumbent workers advance their careers and education. Participants

[16] For more information on NCRC, see http://www.act.org/products/workforce-act-national-career-readiness-certificate.

also had access to programs to assist them in earning a GED diploma and preparing for post-secondary education.

- *Industry-focused training.* Service providers worked closely with employers to develop curricula with customized training courses to help participants acquire the skills and knowledge to address employer needs. Participants received a training credential upon completion that they could use to obtain immediate employment with the partner employers that supported the training. To enhance recruitment and retention in these programs, partner employers offered tuition reimbursement to participants and, in some cases, even prepaid tuition.
- *Job search assistance*. Participants could receive personalized services to help them access jobs compatible with their skills. In particular, participants had face-to-face consultations with advisors and other qualified workforce staff from OhioMeansJobs Centers or other service providers, in which they received (1) an assessment to help identify their skills and work experience, (2) assistance to develop a résumé to highlight their skills and work experience, (3) job application assistance, including mock interviews, and (4) referrals to job openings at partner employers.

The advisor was responsible for helping participants identify which services best suited their needs, and working with participants as they progressed through the program to identify additional services to advance their educational/employment goals. A 2011 study found that the program successfully served its target population and provided participants with the training needed to access healthcare jobs (Elvery and Spence, 2011).

3.1.2 Advanced Manufacturing Partnership

The Advanced Manufacturing Partnership (Advanced Manufacturing) was created in 2009, with the objective of promoting the employment and career advancement of low-skill workers in advanced manufacturing jobs. The partnership includes nearly 40 employers, eight educational institutions, and eight community-based organizations. Advanced Manufacturing used funds from NFWS and other sources to develop a program that creates educational and career

pathways for in-demand advanced manufacturing jobs, including team assembler, electro-mechanical maintenance technician, welder, computer numerical control (CNC) operator, and bioscience/ pharmaceutical technician. The program primarily targeted unemployed workers interested in advanced manufacturing jobs, including new labor force entrants. A secondary target population was entry-level incumbent workers interested in accessing high-skill jobs and advancing their careers.

The Advanced Manufacturing program used a service delivery model that was different from that of the Health Careers partnership. In particular, the training was primarily short-term, with a career pathways framework promoting incremental employment and educational advancement. The following services were offered:

- *Job readiness training*. Participants were offered training to improve personal and professional skills. Once individuals completed the training, the program attempted to place them in entry-level internships or part-time jobs in manufacturing to gain workplace experience.
- *Obtain NCRC and Manufacturing Standard Skills Council* (MSSC) *certifications.* Participants who completed the job readiness training and retained entry-level jobs for some time were offered assistance in obtaining the NCRC. Participants were also encouraged to enroll in the MSSC Certified Production Technician program to earn certification of their readiness for high-skill manufacturing jobs.[17] These certifications were expected to promote evidence-based hiring of program participants in mid-level and, potentially, high-skill manufacturing jobs.
- *Academic and career advancement services.* Participants successful in earning certificates and obtaining mid-level and high-skill jobs could (1) enroll in college-level coursework and to obtain an associate degree with one of the partner colleges, and (2) engage in specialized apprenticeships with partner employers to help advance their careers.

[17] For more details, see http://www.msscusa.org/production-certification-cpt.

- *Job search assistance*. Throughout the program, participants were offered job search assistance to help connect to employers with workforce needs. These services were expected to be most valuable for participants who went through the program and were able to earn both NCRC and MSSC certifications, which opened pathways to in-demand, high-skill jobs with partner employers. These services were available even to participants who did not earn credentials.

The program was structured so that, over time, motivated participants could obtain all the credentials and work experience needed to access high-skill manufacturing jobs. To ensure success, participants were advised by case managers who supported them from enrollment to finding a job.

3.1.3 Construction Sector Partnership

The Construction Sector Partnership (Construction Partnership), which was formed in 2009, is to improve existing construction career pathways and design new ones to meet regional workforce needs. The partnership is composed of employers, community colleges, vocational schools, the Associated Builders and Contractors, the Independent Electrical Contractors, and the Greater Cincinnati Apprenticeship Council. The partnership's program emphasizes the development of educational pathways for the region's in-demand construction occupations, as identified by partner employers, including carpentry; electrical; plumbing/pipefitting; heating, ventilation, air conditioning, and refrigeration (HVAC/R); and laborers.

The program primarily focuses on recruiting low-skill jobseekers, including new entrants in the labor market and inexperienced workers. Special emphasis is placed on recruiting women and minorities, to increase diversity in the construction workforce. The Construction Partnership program differs from the two programs described earlier in that its career pathways model is based on pre-apprenticeship programs and on-the-job training. The program enrolls participants in pre-apprenticeship programs sponsored by its partners, which enables them to receive on-the-job training and acquire the skills needed to access entry-level construction jobs.

The program is similar to the other two programs in offering participants job readiness training and job search assistance to ensure high job placement and retention rates.

3.1.4 Participant Characteristics

All three programs collected rich information on all participants who entered their programs during the study period (January 2010 – February 2012). Table 2 provides descriptive analyses of the characteristics of unemployed participants in each of the three programs. As shown, during this period, the Health Careers program served 992 unemployed participants, making it the largest of the three programs. The Advanced Manufacturing and Construction Partnership programs served 684 and 379 participants, respectively.[18]

The figures in Table 2 also show that the three programs attracted different populations. About 90 percent of unemployed Healthcare Careers participants were women, compared to 34 percent and 48 percent for the Advanced Manufacturing and Construction Partnership programs, respectively. This is not surprising, given that, historically, women have long been overrepresented in healthcare relative to men, while the opposite is true for manufacturing and construction.[19] However, we should note that Advanced Manufacturing, and particularly the Construction Partnership program, recruited a high number of women relative to employment in their focus industries – a key program recruitment objective.

Although half of the unemployed participants in the Health Careers program were white, the program recruited a large proportion of black participants (40 percent). The Advanced Manufacturing and Construction Partnership programs recruited primarily black and other race participants. This shows that the latter two programs were very effective in recruiting racial minorities, which was one of their objectives.

[18] Note that, during the study period, the three programs also served employed participants. In particular, Health Careers served 978 employed participants, Advanced Manufacturing served 82 employed participants, and Construction Pathways served 85 employed participants. Since employed participants are not included in the quasi-experimental study, we present only analyses of the characteristics of unemployed participants.

[19] See Michaelides and Mueser (2013) for a discussion of the industry workforce composition in the United States by gender, race, and ethnicity.

Table 2: Characteristics of Unemployed Program Participants

	Health Careers	Advanced Manufacturing	Construction Partnership
Unemployed Participants	**992 (100%)**	**684 (100%)**	**379 (100%)**
Gender			
Men	97 (10%)	449 (66%)	197 (52%)
Women	895 (90%)	235 (34%)	182 (48%)
Race			
White	499 (50%)	142 (21%)	70 (18%)
Black	397 (40%)	517 (76%)	296 (78%)
Other Race	95 (10%)	25 (3%)	12 (3%)
Missing	1 (0%)	--	1 (0%)
Education			
No High School Diploma	80 (8%)	199 (29%)	63 (17%)
High School Diploma	391 (38%)	273 (40%)	210 (55%)
Associate Degree, Some College	454 (46%)	187 (27%)	93 (25%)
College Degree	77 (8%)	25 (4%)	13 (3%)
Age			
Less than 25 Years	311 (31%)	145 (21%)	118 (31%)
25-34 Years	333 (34%)	206 (30%)	111 (29%)
35-44 Years	147 (15%)	146 (21%)	90 (24%)
45-54 Years	124 (13%)	127 (19%)	48 (13%)
55-64 Years	54 (5%)	53 (8%)	8 (2%)
65+ Years	5 (1%)	5 (1%)	1 (0%)
Missing	18 (2%)	2 (0%)	3 (1%)
Local Workforce Investment Area			
Area 12 (Butler County)	184 (19%)	81 (12%)	53 (14%)
Area 13 (Hamilton County)	788 (79%)	598 (87%)	326 (86%)
Other Areas	20 (2%)	5 (1%)	--
Program Entry			
Quarter 1, 2010	234 (24%)	12 (2%)	59 (16%)
Quarter 2, 2010	76 (8%)	29 (4%)	77 (20%)
Quarter 3, 2010	96 (10%)	52 (8%)	73 (19%)
Quarter 4, 2010	93 (9%)	80 (12%)	75 (20%)
Quarter 1, 2011	87 (9%)	147 (21%)	26 (7%)
Quarter 2, 2011	127 (13%)	123 (18%)	25 (7%)
Quarter 3, 2011	150 (15%)	87 (13%)	20 (5%)
Quarter 4, 2011	129 (13%)	154 (23%)	24 (6%)

Note: Reported is the number of participants with sample proportion in parentheses.

The Health Careers program attracted individuals with higher educational attainment than those attracted by the other two programs. About 46 percent of Health Careers' unemployed participants had an associate degree or some college education, and 8 percent had a college degree. On the other hand, only 31 and 28 percent of participants in the Advanced Manufacturing and Construction Partnership programs, respectively, had more than a high school education.

The age distribution of participants did not vary much across programs. All three programs attracted high proportions of unemployed participants under age 35 (65 percent for Health Careers, 51 percent for Advanced Manufacturing, and 60 percent for Construction Partnership), while only 9 percent of participants were age 55 or older in each program. Finally, the vast majority of unemployed participants in all three programs resided in Ohio's LWIAs 12 (Butler County) and 13 (Hamilton County).

Using the merged Ohio UI Wage Records and the NFWS/SIF-funded program data, we examined the employment history of unemployed program participants in the eight-quarter period prior to program entry. The following prior employment measures were constructed:

- *Employment in prior eight quarters* – Participant had positive earnings in the quarter, for each prior quarter.
- *Prior employment in both quarters 1–2* – Participant had positive earnings in each of the two quarters prior to program entry.
- *Prior employment in all quarters 1–4* – Participant had positive earnings in each of the four quarters prior to program entry.
- *No prior employment in quarters 1–2* – Participant had zero earnings in each of the two quarters prior to program entry.
- *No prior employment in quarters 1–4* – Participant had zero earnings in each of the four quarters prior to program entry.

- *Prior employment in the focus industry, quarter 1* – Participant had positive earnings from an employer in the program's focus industry in quarter 1 prior to program entry.
- *Prior employment in the focus industry, quarter 1–4* – Participant had positive earnings from an employer in the program's focus industry in any of the four quarters prior to program entry.
- *Earnings amount in the prior eight quarters* – Earnings amount in each quarter prior to program entry.

Table 3 presents these measures for the three programs. As shown, unemployed participants in the Health Careers program were more likely than those in the other two programs to be employed prior to program entry. In particular, 45 percent of unemployed Health Careers participants were employed in quarter 1 prior to program entry, compared to 29 percent of Advanced Manufacturing participants and 30 percent of Construction Partnership participants. These proportions were similar in the entire eight-quarter period prior to program entry.

Comparing the remaining measures of prior employment history across programs, we find that 390 (39 percent) Health Careers participants were employed in both quarters 1 and 2 prior to program entry, and 309 (31 percent) were employed in all four quarters prior to program entry. These proportions greatly exceeded those of the other two programs, which shows that unemployed participants in Health Careers were more likely to be employed prior to program entry than participants in the other two programs and much more likely to have continuous employment. Moreover, only 33 percent of Health Careers' unemployed participants had no earnings in the entire four-quarter period prior to program entry, compared with 50 percent and 44 percent for Advanced Manufacturing's and Construction Partnership's unemployed participants, respectively.

Another interesting difference across the three programs is that a relatively high proportion of Health Careers' participants had prior work experience in the healthcare industry. As shown in Table 3, 20 percent of unemployed participants in this program had positive earnings from a

healthcare employer in the quarter immediately prior to program entry, and 28 percent had positive earnings from a healthcare employer in at least one of the four quarters prior to program entry. By comparison, only 5 percent of Advanced Manufacturing unemployed participants, and fewer than 3 percent of Construction Partnership unemployed participants had experience working in their program's focus industry in the four quarters prior to entry.

Table 3: Employment History of Unemployed Program Participants

	Health Careers	Advanced Manufacturing	Construction Partnership
Unemployed Participants	**992 (100%)**	**684 (100%)**	**379 (100%)**
Employment			
In Prior Quarter 1	451 (45%)	196 (29%)	113 (30%)
In Prior Quarter 2	487 (49%)	199 (29%)	131 (35%)
In Prior Quarter 3	511 (52%)	227 (33%)	122 (32%)
In Prior Quarter 4	531 (54%)	221 (32%)	130 (34%)
In Prior Quarter 5	522 (53%)	234 (34%)	151 (40%)
In Prior Quarter 6	518 (52%)	257 (38%)	166 (44%)
In Prior Quarter 7	549 (55%)	260 (38%)	171 (45%)
In Prior Quarter 8	551 (56%)	292 (42%)	170 (45%)
Prior Employment			
In Both Quarters 1-2	390 (39%)	131 (19%)	80 (21%)
In All Quarters 1-4	309 (31%)	95 (14%)	49 (13%)
No Prior Employment			
In Quarters 1-2	444 (45%)	420 (61%)	215 (57%)
In Quarters 1-4	323 (33%)	340 (50%)	168 (44%)
Prior Employment in Focus Industry			
In Quarter 1	200 (20%)	19 (3%)	<10 (<3%)
In Quarter 1-4	280 (28%)	34 (5%)	<10 (<3%)
Earnings Amount ($)			
In Prior Quarter 1	1,902 (5,241)	785 (2,469)	1,028 (5,549)
In Prior Quarter 2	1,905 (3,560)	1,073 (3,322)	824 (2,046)
In Prior Quarter 3	2,328 (5,560)	1,352 (3,358)	935 (2,369)
In Prior Quarter 4	2,216 (4,456)	1,464 (3,452)	1,095 (2,677)
In Prior Quarter 5	2,380 (5,285)	1,617 (3,744)	1,172 (2,448)
In Prior Quarter 6	2,348 (4,547)	1,679 (3,519)	1,627 (5,800)
In Prior Quarter 7	2,354 (3,718)	1,983 (5,218)	1,460 (2,770)
In Prior Quarter 8	2,364 (4,506)	2,001 (3,680)	1,451 (2,855)

Note: Reported is the number of participants with sample proportion in parentheses; for prior earnings, reported is the sample mean with standard deviation in parentheses.

Overall, the figures presented in Tables 2 and 3 are compatible with the recruitment strategies and objectives of the three programs. The Health Careers program targeted unemployed workers interested in accessing healthcare jobs, so it primarily attracted women, individuals with more than a high school diploma, younger people, and those with prior work experience, particularly in the healthcare industry. The Advanced Manufacturing and Construction Partnership programs primarily focused on low-skill jobseekers, including new labor market entrants and inexperienced unemployed workers. Most unemployed participants in these two programs were male, nonwhite, with no more than a high school education, young workers, and unemployed workers with limited work experience. Importantly, both programs recruited relatively high proportions of women and racial minorities. Based on these results, it appears that all three programs reached their target populations.

3.1.5 Services Received

Program data also provide information on the types of services received by participants. This information cannot be used to identify all the services participants received in a program, but it can identify whether participants received: (1) job readiness training, (2) occupational training (includes industry-focused training, NCRC and other certificate preparation assistance, and participation in pre-apprenticeship programs), and (3) employment services. The data also report whether a participant earned a credential (occupational skills credential or NCRC) as a result of program participation. Using this information, we examined the types of services received by unemployed participants in each program.

Table 4 presents the services received by unemployed participants in each program. In the Health Careers program, only 27 percent of unemployed participants received job readiness training. The majority of Health Careers participants received occupational training (including industry-focused training and NCRC preparation assistance) to improve their employability in healthcare, and a little over a third received employment services. Of the 676 Health Careers participants who received occupational training, 26 also received job readiness training, and 110 received employment services. About 14 percent of all participants received all three

services, and only 20 percent received no services. Finally, nearly two thirds of Health Careers participants earned the NCRC or another training/occupational credential following their participation.

By comparison, higher proportions of Advanced Manufacturing participants received job readiness training (73 percent) and employment services (82 percent). Interestingly, only 23 percent received occupational training, which included NCRC and MSSC preparation assistance, enrollment in undergraduate coursework, and participation in specialized pre-apprenticeship programs. Of the 501 Advanced Manufacturing participants who received job readiness training, 373 also received employment services. We also find that 18 percent of all unemployed participants received all three types of services, and only 14 percent received no services at all. These figures suggest that most Advanced Manufacturing participants were more interested in improving their employability skills and looking for a job, and less interested in receiving manufacturing-focused training. As a result, only eight percent of unemployed participants earned a credential, much lower than in the Health Careers program. This disparity may be due to several factors, including Advanced Manufacturing's attracting larger proportions of inexperienced workers who perhaps needed basic training before they would be ready to work toward earning a credential.

Table 4: Services Received by Unemployed Participants, Health Careers

	Health Careers	Advanced Manufacturing	Construction Partnership
Unemployed Participants	**992 (100%)**	**684 (100%)**	**379 (100%)**
Job readiness Training	266 (27%)	501 (73%)	235 (62%)
Occupational Training	676 (68%)	157 (23%)	211 (56%)
Employment Services	352 (35%)	559 (82%)	236 (62%)
Job readiness & Occupational Training	26 (3%)	--	26 (7%)
Job readiness & Employment Services	76 (8%)	373 (55%)	79 (21%)
Occupational Training & Employment Services	110 (11%)	2 (2%)	15 (4%)
All Services	142 (14%)	124 (18%)	127 (34%)
No Services	194 (20%)	99 (14%)	71 (19%)
Earned Credential	626 (64%)	57 (8%)	212 (56%)

Note: Reported is the number of participants with sample proportion in parentheses.

The Construction Partnership figures show that 62 percent of participants received job readiness training, 56 percent received occupational training (which included on-the-job training obtained through participation in pre-apprenticeship programs), and 62 percent received employment services. Interestingly, more than a third of participants received all three services offered by the program, greatly exceeding the proportions in the other two programs. Finally, 56 percent of Construction Partnership participants earned a credential (including training credential and apprenticeship certificate), a slightly lower proportion than for the Health Careers proportion, but much higher than for Advanced Manufacturing.

3.2 The Milwaukee Area Workforce Alliance

The Milwaukee Area Workforce Funding Alliance – a consortium of 13 philanthropic organizations, six public agencies, and seven employers – was founded in 2008 with the objective of providing a skilled workforce that meets the demands of employers, while providing good jobs with family supporting wages. The collaborative is administered under the Donors Forum of Wisconsin. Its activities are implemented by Urban Strategies, a research, facilitation, training, and project management firm focusing on community and workforce development.

The collaborative aims to enhance the workforce development system and improve the coordination of public and private ventures to enhance regional competitiveness by: (1) leveraging local investments; (2) building capacity of public and private workforce system; (3) creating career advancement opportunities for low-income individuals; (4) helping employers get the skilled workers they need; and (5) advocating for policies that improve the effectiveness of regional workforce partnerships. The collaborative leverages funds from NFWS and other sources to support local workforce partnerships that provide industry-focused training to low-skill unemployed and incumbent workers.

Between October 2008 and September 2009, the collaborative obtained approximately $15

million from public and private sources, including $600,000 from the NFWS/SIF grant.[20] These funds were primarily used to support two partnerships: the WRTP and the Milwaukee Area Healthcare Alliance. These partnerships provide training and other services to help low-income individuals find jobs in manufacturing and construction (in the case of WRTP) and in healthcare (in the case of the Milwaukee Area Healthcare Alliance). Below, we present each partnership's objectives and a description of the characteristics of unemployed participants in each program. Box 2 provides a summary of the two partnerships.

BOX 2: SUMMARY OF WISCONSIN-BASED NFWS/SIF PROGRAMS

Wisconsin Regional Training Partnership (WRTP)

Objective. A workforce partnership focused on brokering relationships between employers, unions, and workers, with the objective to: (1) offer training and other services to low-skill workers to promote their employment in construction and manufacturing; and (2) help local builders and manufacturers recruit a diverse, qualified workforce.

Services. The WRTP Construction Pathways and Manufacturing Pathways programs offered participants a wide range of services, including pre-apprenticeship training, assistance in obtaining occupational credentials, career advancement training, and job search services.

Participants. The construction program recruited 1,103 unemployed participants during the study period (January 2010 – February 2012). The majority of participants were men (90 percent), nonwhite (62 percent), and had no more than a high school education (97 percent). The manufacturing program recruited 88 unemployed participants, of whom 84 percent were men, 69 percent were nonwhite and 97 percent had no more than a high school education. In both programs, the majority of participants did not have continuous employment prior to program entry, but many with prior employment had experience in the program's focus industry.

Milwaukee Area Healthcare Alliance

Objective. A workforce partnership that works with healthcare employers to identify sought-after skills and provide training and other services to low-skill workers to help them meet those needs.

Services. The program provided participants with occupational training to help them obtain jobs in healthcare, on-the-job training to help them advance their careers, and job search services.

Participants. The program served 306 unemployed participants during the study period, with 94 percent women, 74 percent black, and 72 percent under age 35. Fewer than half the participants had continuous employment prior to program entry, and 31 percent had prior experience in healthcare jobs.

[20] See: Holm, R. *Aligning for Impact – The Milwaukee Area Workforce Funding Alliance*, May 2013.

3.2.1 Wisconsin Regional Training Partnership

The Wisconsin Regional Training Partnership (WRTP) was established in 1992 to broker relationships between employers, unions, and workers, with the objective to enhance the ability of employers in the manufacturing and construction sectors to recruit and develop a diverse, qualified workforce. To achieve this, the partnership offers training and other services to low-skill individuals to promote their employment and career advancement in career-ladder, union-supported jobs. The partnership offers two programs, Manufacturing Pathways and Construction Pathways, which offer the following services:

- *Individual needs assessment.* Participants are evaluated to assess their workforce skills and job readiness and, based on this assessment, are referred to appropriate services.
- *Pre-apprenticeship training*. Participants are offered tutoring to improve their academic skills and prepare for apprenticeship exams. While receiving these services, participants are also referred to industry partners to engage in pre-apprenticeship training.
- *Occupational certifications.* Participants deemed ready to obtain entry-level jobs are offered the opportunity to receive pre-employment training certificates in skilled manufacturing trades (e.g., machinists, operating engineers, sheet metal workers, steamfitters, and welders) and in skilled construction trades (e.g., bricklayers, carpenters, electricians, laborers, and painters). WRTP Construction Pathways also offers the City of Milwaukee Residential Preference Program certification, which promotes local workers' hiring in city construction projects.
- *Career advancement training.* Participants who obtain an occupational certification and find mid-level jobs in construction or manufacturing are given the opportunity to engage in specialized apprenticeship programs provided by the partner employers to help improve their skills and advance their careers.
- *Job search services.* Participants are offered job search services to help them connect to partner or other employers with workforce needs compatible with participant skills.

The partnership works closely with several regional partners, including construction trade

associations, such as the Construction Labor Management Council; government organizations, such as the state of Wisconsin Joint Apprenticeship Board and the Milwaukee Workforce Investment Board; community organizations, such as the Milwaukee Community Service Corps and the Milwaukee YWCA; and training providers, such as the Milwaukee Christian Center and the Northcott Neighborhood House. Moreover, to identify employers' workforce and industry training needs, the partnership works with several employer partners, including Pieper Electric, Inc.; Michaels; CD Smith Construction; and Langer Roofing and Sheet Metal.

3.2.2 Milwaukee Area Healthcare Alliance

Formed in 2009, the Milwaukee Area Healthcare Alliance is a workforce intermediary led by the YWCA of Greater Milwaukee, which works with healthcare employers to identify sought-after skills and to develop a workforce possessing those skills. The partnership provides specialized training that prepares low-skilled workers, particularly African Americans, for entry in mid-level skill positions in the healthcare industry. The program provides: (1) a training curriculum designed to help unemployed workers to obtain jobs in healthcare, (2) on-the-job training to help incumbent workers advance their careers, and (3) job search services.

To achieve its objectives, the YWCA of Greater Milwaukee is partnered with the Milwaukee Area Health Education Center, which brings access to healthcare employers and educational institutions; the Milwaukee Area Technical College, which brings expertise in developing training curricula; and the Milwaukee Area Workforce Investment Board, which provides employment services to participants through its American Job Centers.

3.2.3 Participant Characteristics

Table 5 provides descriptive analyses of the characteristics of unemployed participants in each of the three programs. As shown, from January 2010 through March 2012, WRTP Construction Pathways served 1,103 unemployed participants, compared with WRTP Manufacturing Pathways, which served only 88 participants. The Milwaukee Area Healthcare Alliance program served 306 unemployed participants during the same period.

Table 5: Characteristics of Unemployed Program Participants

	WRTP Construction	WRTP Manufacturing	Healthcare Alliance
Unemployed Participants	**1,103 (100%)**	**88 (100%)**	**306 (100%)**
Gender			
Men	998 (90%)	74 (84%)	17 (6%)
Women	105 (10%)	14 (16%)	289 (94%)
Race/Ethnicity			
White	424 (38%)	27 (31%)	18 (6%)
Black	448 (41%)	50 (57%)	227 (74%)
Other Race	72 (7%)	4 (5%)	32 (10%)
Hispanic	159 (14%)	7 (8%)	5 (2%)
Education			
No High School Diploma	197 (18%)	18 (20%)	--
High School Diploma	873 (79%)	68 (77%)	--
Associate Degree, Some College	22 (2%)	2 (2%)	--
College Degree	11 (1%)	--	--
Age			
Less than 25 Years	214 (19%)	11 (13%)	119 (39%)
25-34 Years	363 (33%)	24 (27%)	101 (33%)
35-44 Years	251 (23%)	19 (22%)	29 (9%)
45-54 Years	191 (17%)	22 (25%)	26 (9%)
55-64 Years	70 (6%)	10 (11%)	11 (4%)
65+ Years	14 (1%)	2 (2%)	20 (7%)
Program Entry			
Quarter 1, 2010	7 (1%)	--	--
Quarter 2, 2010	22 (2%)	--	--
Quarter 3, 2010	11 (1%)	2 (2%)	--
Quarter 4, 2010	6 (1%)	3 (3%)	--
Quarter 1, 2011	206 (19%)	24 (27%)	--
Quarter 2, 2011	225 (20%)	24 (27%)	41 (13%)
Quarter 3, 2011	389 (35%)	19 (22%)	123 (40%)
Quarter 4, 2011	237 (21%)	16 (18%)	94 (31%)
Quarter 1, 2012	--	--	48 (16%)

Note: Reported is the number of participants with sample proportion in parentheses.

There were important differences in participant characteristics across the three programs. The two WRTP programs primarily served male participants, while healthcare participants were primarily female. Moreover, the majority of participants in the three programs were nonwhite,

which shows that the three programs were effective in recruiting minorities. More than three quarters of participants in the construction and manufacturing programs had no more than a high school education. Information on education levels was not available for the healthcare program. While all three programs attracted younger participants, the healthcare program had a higher proportion of participants under age 35 (72 percent) relative to the other two programs.

Table 6 presents prior employment outcomes of participants in the three programs using Wisconsin UI Wage Records. As shown, participants were about equally likely to be employed in each of the eight quarters prior to program entry. About 60 percent of unemployed participants in the construction and healthcare program were employed in each of the eight quarters prior to program entry. Prior employment rates were slightly lower for manufacturing participants.

In the construction and healthcare programs, about 38 percent of participants were employed in each of the two quarters prior to entry, and approximately 42 percent were employed in all four quarters prior to entry. At the same time, about a quarter of participants in these two programs had no employment in any of the four quarters prior to program entry. By comparison, manufacturing participants were less likely to have been continuously employed prior to program entry, but had about the same proportion of participants with no prior employment.

Interestingly, a relatively high proportion of participants in each program had prior experience in the relevant focus industry. As shown in Table 6, 39 percent of construction participants had experience working in the construction sector in the four-quarter period prior to program entry. Similarly, 26 percent of manufacturing participants and 31 percent of healthcare participants worked in their programs' focus industry prior to entering the program. These figures show that the Wisconsin construction and manufacturing programs had much higher proportions of participants with prior experience in the program's focus industry than the Ohio construction and manufacturing programs (3 and 5 percent, respectively). Prior experience

proportions were similar between the Ohio and the Wisconsin healthcare programs.

Table 6: Employment History of Unemployed Program Participants

	WRTP Construction	WRTP Manufacturing	Healthcare Alliance
Unemployed Participants	**1,103 (100%)**	**88 (100%)**	**306 (100%)**
Employment			
In Prior Quarter 1	666 (60%)	44 (50%)	168 (55%)
In Prior Quarter 2	664 (60%)	50 (57%)	184 (60%)
In Prior Quarter 3	664 (60%)	49 (56%)	181 (59%)
In Prior Quarter 4	655 (59%)	44 (50%)	184 (60%)
In Prior Quarter 5	622 (56%)	48 (55%)	185 (61%)
In Prior Quarter 6	646 (59%)	48 (55%)	187 (61%)
In Prior Quarter 7	665 (60%)	50 (57%)	189 (62%)
In Prior Quarter 8	669 (61%)	51 (58%)	169 (59%)
Prior Employment			
In Both Quarters 1-2	569 (48%)	38 (43%)	148 (48%)
In All Quarters 1-4	456 (41%)	26 (30%)	127 (42%)
No Prior Employment			
In Quarters 1-2	342 (31%)	32 (36%)	102 (33%)
In Quarters 1-4	258 (23%)	23 (26%)	75 (25%)
Prior Employment in Focus Industry			
In Quarter 1	305 (28%)	15 (17%)	70 (23%)
In Quarter 1-4	432 (39%)	23 (26%)	96 (31%)
Earnings Amount ($)			
In Prior Quarter 1	3,790 (4,981)	2,234 (3,129)	1,577 (2,249)
In Prior Quarter 2	4,168 (5,398)	2,565 (4,045)	1,792 (2,277)
In Prior Quarter 3	4,384 (5,559)	2,941 (4,585)	2,031 (2,523)
In Prior Quarter 4	4,424 (5,912)	2,526 (3,829)	1,968 (2,477)
In Prior Quarter 5	4,451 (6,138)	2,578 (3,634)	2,077 (2,631)
In Prior Quarter 6	4,647 (6,364)	2,840 (4,061)	2,101 (2,606)
In Prior Quarter 7	4,965 (6,462)	3,494 (5,197)	2,102 (2,622)
In Prior Quarter 8	4,884 (6,203)	3,811 (5,350)	2,046 (2,802)

Note: Reported is the number of participants with sample proportion in parentheses; for prior earnings, reported is the sample mean with standard deviation in parentheses.

Finally, construction participants had relatively higher average prior earnings in the eight-quarter period prior to program entry than participants in the manufacturing and healthcare programs. Because participants in the three programs had similar prior employment rates, the

earnings differences suggest that construction participants were more likely to be employed for longer periods or more hours within each quarter or had higher hourly earnings relative to those in the other programs.

Overall, the above descriptive analyses highlight the important differences in the characteristics and prior employment of unemployed participants across the three programs. The healthcare program attracted unemployed participants who were primarily female, black, and under age 35. The construction and manufacturing programs primarily served male, minority workers with no more than a high school education. While most participants in each of the three programs did not have continuous employment in the four-quarter period prior to program entry, many had prior experience working in the program's focus industry.

3.2.4 Services Received

Program data for the three partnerships did not provide complete information on services received. Thus, it is not feasible to assess which program services unemployed participants received during the study period.

4. Quasi-Experimental Impact Study Results

IMPAQ implemented the quasi-experimental approach (described in Section 2.2.4) to estimate the impacts of each of the six NFWS/SIF-funded programs on the labor market outcomes of unemployed participants. Due to differences across programs in their focus industries, participant characteristics, and services provided, we implemented the matching process and estimated program impacts separately for each program. Below, we present the results of the impact study, starting with the results for the three Ohio-based programs, followed by the results of three Wisconsin-based programs.

4.1 Ohio Results

This section describes the quasi-experimental impact study results for the three Ohio-based programs, including the matching process and the estimated impacts for each program. A summary of the results is provided in Box 3.

BOX 3: SUMMARY OF QUASI-EXPERIMENTAL IMPACT RESULTS IN OHIO

Health Careers Collaborative of Greater Cincinnati

- The program had large effects on employment. In the six quarters after program entry, participant employment rates were 57.6–64.8 percent, exceeding the employment rates of the matched comparison group by 14.1–17.0 percentage points (29–37 percent).
- The program was effective in helping participants to obtain healthcare jobs. In the four quarters after entry, 33.4–34.3 percent of participants were employed in healthcare, exceeding the healthcare employment rates of the matched comparison group by 24.0–25.3 percentage points (233–304 percent).
- The program was very effective in helping participants to improve their job retention rates. About 35.2 percent of participants found employment in quarter 1 and remained employed in each of the six quarters after entry, compared to only 22.4 percent of matched comparison group members, a 12.8 percentage point (57 percent) difference.
- The program had large effects on earnings. In the six-quarter follow-up period, participants had $5,517 (52 percent) higher earnings than those in the matched comparison group.

Advanced Manufacturing Partnership

- The program had large effects on employment. In the six quarters after entry, 42.2–52.6 percent of participants were employed, exceeding the employment rates of matched comparison group members by 8.2–14.3 percentage points (24–38 percent).
- The program had modest effects on employment in manufacturing; no more than 4.2 percent of participants were employed in manufacturing in the four quarters after entry.
- The program had positive effects on job retention. About 19.9 percent of participants found a job in quarter 1 and remained employed in each of the six quarters after entry, compared to 15.9 percent of matched comparison group members, a 25 percent difference.
- The program had positive effects on earnings. In the six-quarter follow-up period, participants had $2,635 (31 percent) higher earnings than those in the matched comparison group. These effects were lower than those of the Health Careers program.

Construction Sector Partnership

- The program had modest effects on employment. Between 38.8–45.9 percent of participants were employed in quarters 1–6 after program entry, which exceeded the employment rates of matched comparison group members by 3.2–6.1 percentage points (9–16 percent).
- The program had modest effects on employment in construction; no more than 4.8 percent of participants were employed in construction in the four quarters after entry.
- The program had no effects on job retention and modest effects on earnings.

4.1.1 Matching Results

To construct appropriate matched comparison groups for unemployed participants in each of the three Ohio NFWS/SIF-funded programs, we used the Ohio ES population, which includes unemployed workers who sought state employment and training services during the study period. Table 7 summarizes the characteristics of unemployed participants in each NFWS/SIF-funded program and of unemployed ES participants in Ohio.

As shown in Table 7, there were notable differences between the unemployed participants in each program and the unemployed ES population. For example, the Health Careers program attracted unemployed participants who were much more likely to be female, nonwhite, educated beyond high school, and under age 45, as compared to unemployed workers in the ES population. Similarly, the Advanced Manufacturing program attracted unemployed participants who were more likely to be male and nonwhite than ES participants, while the Construction Partnership program attracted a relatively higher proportion of nonwhites, individuals with no more than a high school diploma, and younger workers. These disparities show that the unemployed ES population differs in important ways from the unemployed participants in the three programs, and, therefore, we could not use the ES data in their original form as a comparison group for the impact study.

It is also important to note the disparities in the characteristics of unemployed participants across the three NFWS/SIF-funded programs. Relative to the other two programs, Health Careers attracted larger proportions of unemployed participants who were female, white, and had more than a high school education. Moreover, the Advanced Manufacturing program attracted larger proportions of unemployed participants who were male, had no high school diploma, and were at least age 45.

Table 7: Characteristics of Unemployed NFWS/SIF and ES Participants in Ohio

	Health Careers	Advanced Manufacturing	Construction Partnership	ES
Total Number of Participants	**992 (100%)**	**684 (100%)**	**379 (100%)**	**55,754 (100%)**
Gender				
Men	97 (10%)	449 (66%)	197 (52%)	30,645 (55%)
Women	895 (90%)	235 (34%)	182 (48%)	25,109 (45%)
Race				
White	499 (50%)	142 (21%)	70 (18%)	37,302 (67%)
Black	397 (40%)	517 (76%)	296 (78%)	9,072 (16%)
Other Race	95 (10%)	25 (3%)	12 (3%)	2,445 (4%)
Missing	1 (0%)	--	1 (0%)	6,935 (12%)
Education				
No High School Diploma	80 (8%)	199 (29%)	63 (17%)	8,219 (15%)
High School Diploma	391 (38%)	273 (40%)	210 (55%)	24,230 (43%)
Associate Degree, Some College	454 (46%)	187 (27%)	93 (25%)	13,164 (24%)
College Degree	77 (8%)	25 (4%)	13 (3%)	10,141 (18%)
Age				
Less than 25 Years	311 (31%)	145 (21%)	118 (31%)	9,584 (17%)
25-34 Years	333 (34%)	206 (30%)	111 (29%)	13,533 (24%)
35-44 Years	147 (15%)	146 (21%)	90 (24%)	11,197 (20%)
45-54 Years	124 (13%)	127 (19%)	48 (13%)	11,752 (21%)
55-64 Years	54 (5%)	53 (8%)	8 (2%)	7,603 (14%)
65+ Years	5 (1%)	5 (1%)	1 (0%)	1,885 (3%)
Missing	18 (2%)	2 (0%)	3 (1%)	200 (0%)
Local Workforce Investment Area				
Area 12 (Butler County)	184 (19%)	81 (12%)	53 (14%)	23,882 (43%)
Area 13 (Hamilton County)	788 (79%)	598 (87%)	326 (86%)	27,609 (50%)
Other Areas	20 (2%)	5 (1%)	--	4,263 (7%)
Program Entry				
Quarter 1, 2010	234 (24%)	12 (2%)	59 (16%)	8,604 (15%)
Quarter 2, 2010	76 (8%)	29 (4%)	77 (20%)	7,581 (14%)
Quarter 3, 2010	96 (10%)	52 (8%)	73 (19%)	8,311 (15%)
Quarter 4, 2010	93 (9%)	80 (12%)	75 (20%)	6,761 (12%)
Quarter 1, 2011	87 (9%)	147 (21%)	26 (7%)	7,128 (13%)
Quarter 2, 2011	127 (13%)	123 (18%)	25 (7%)	6,605 (12%)
Quarter 3, 2011	150 (15%)	87 (13%)	20 (5%)	5,621 (10%)
Quarter 4, 2011	129 (13%)	154 (23%)	24 (6%)	5,143 (9%)

Note: Reported is the number of participants with sample proportion in parentheses.

Table 8 summarizes the employment history of unemployed participants in each NFWS/SIF-funded program and of ES unemployed participants, and confirms the important disparities between the four populations on these measures. All three NFWS/SIF-funded programs attracted unemployed participants with weak employment history relative to the ES population. As shown in Table 8, NFWS/SIF participants in the three programs were less likely than unemployed ES participants to be employed in each of the eight quarters prior to program entry and to have continuous employment in the four quarters prior to program entry. Notably, Health Careers participants were more likely than participants in the other two programs to be employed and to have continuous employment prior to program entry. Health Careers participants were much more likely than ES participants to have prior employment in the program's focus industry, while the opposite is true for participants in the other two NFWS/SIF-funded programs. Participants in the three NFWS/SIF-funded programs had much lower prior earnings in the eight quarters prior to program entry compared with ES participants.

The disparities in characteristics and prior employment measures show that the three NFWS/SIF-funded programs attracted different types of unemployed participants. This suggests that participation in a given program is strongly correlated with certain characteristics that do not necessarily influence participation in the other two programs. Furthermore, the three programs focused on different industries and provided different services. For these reasons, the three programs were considered separately in the impact study.

Table 8: Employment History of Unemployed NFWS/SIF and ES Participants in Ohio

	Health Careers	Advanced Manufacturing	Construction Partnership	ES
Total Number of Participants	**992 (100%)**	**684 (100%)**	**379 (100%)**	**55,754 (100%)**
Employment				
In Prior Quarter 1	451 (45%)	196 (29%)	113 (30%)	42,891 (77%)
In Prior Quarter 2	487 (49%)	199 (29%)	131 (35%)	43,705 (78%)
In Prior Quarter 3	511 (52%)	227 (33%)	122 (32%)	42,895 (77%)
In Prior Quarter 4	531 (54%)	221 (32%)	130 (34%)	41,855 (75%)
In Prior Quarter 5	522 (53%)	234 (34%)	151 (40%)	41,288 (74%)
In Prior Quarter 6	518 (52%)	257 (38%)	166 (44%)	40,883 (73%)
In Prior Quarter 7	549 (55%)	260 (38%)	171 (45%)	40,295 (72%)
In Prior Quarter 8	551 (56%)	292 (42%)	170 (45%)	39,802 (71%)
Prior Employment				
In Both Quarters 1–2	390 (39%)	131 (19%)	80 (21%)	40,598 (73%)
In All Quarters 1–4	309 (31%)	95 (14%)	49 (13%)	35,580 (64%)
No Prior Employment				
In Quarters 1–2	444 (45%)	420 (61%)	215 (57%)	9,756 (18%)
In Quarters 1–4	323 (33%)	340 (50%)	168 (44%)	7,579 (14%)
Prior Employment in Focus Industry				
In Quarter 1 (Healthcare)	200 (20%)	--	--	5,283 (9%)
In Quarter 1-4 (Healthcare)	280 (28%)	--	--	6,301 (11%)
In Quarter 1 (Manufacturing)	--	19 (3%)	--	5,301 (10%)
In Quarter 1–4 (Manufacturing)	--	34 (5%)	--	6,058 (11%)
In Quarter 1 (Construction)	--	--	<10 (<3%)	2,873 (5%)
In Quarter 1–4 (Construction)	--	--	<10 (<3%)	3,558 (6%)
Earnings Amount ($)				
In Prior Quarter 1	1,902 (5,241)	785 (2,469)	1,028 (5,549)	6,681 (8,468)
In Prior Quarter 2	1,905 (3,560)	1,073 (3,322)	824 (2,046)	6,882 (8,396)
In Prior Quarter 3	2,328 (5,560)	1,352 (3,358)	935 (2,369)	6,925 (8,896)
In Prior Quarter 4	2,216 (4,456)	1,464 (3,452)	1,095 (2,677)	6,787 (9,027)
In Prior Quarter 5	2,380 (5,285)	1,617 (3,744)	1,172 (2,448)	6,646 (8,238)
In Prior Quarter 6	2,348 (4,547)	1,679 (3,519)	1,627 (5,800)	6,608 (8,327)
In Prior Quarter 7	2,354 (3,718)	1,983 (5,218)	1,460 (2,770)	6,488 (8,202)
In Prior Quarter 8	2,364 (4,506)	2,001 (3,680)	1,451 (2,855)	6,386 (8,147)

Note: Reported is the number of participants, with sample proportion in parentheses; for prior earnings, reported is the sample mean, with standard deviation in parentheses.

Our matching methods, as described in Section 2.2.4, were designed to re-weigh the comparison sample of ES participants to remove the differences in characteristics for the three program groups observed in Tables 7 and 8. The PSM methods were applied separately for each program. Although the reader is referred to the earlier section for a discussion of the formal structure underlying the matching process, we restate the process here, as applied to the Ohio program:

- *Step 1: Merge data* – We merged the NFWS/SIF data for each program with ES and UI Wage Record data using participant personal identifiers.
- *Step 2: Produce propensity score* – We used a logit model to estimate the likelihood of program participation based on individual characteristics, employment history measures, and interactions between these. Using the results, we produced the propensity score for each participant and non-participant in the data. At this point, we omitted cases from each sample that were off the common support of the propensity score;[21] these were cases whose characteristics were such that they could not be matched.[22] We then reran the logit model on the remaining sample to produce a propensity score for all cases on the common support.
- *Step 3: Use propensity score to construct sample weight* – We weighed each comparison case by the odds ratio of the predicted propensity score, which assures — in theory — that the weighted comparison sample will have the same distribution on all control variables as the treated sample.

[21] In practice, the common support includes all cases with predicted propensity scores between the smallest propensity score observed for the treatment group and the largest propensity score observed for the comparison group. Propensity scores outside this range are based on extrapolation and, therefore, may be subject to serious bias (Caliendo and Kopeing, 2008).

[22] In matching applications, it is common to omit a large number of comparison cases that do not provide useful matches for any treatment case. In implementing the matching process for the Health Careers program, 9,054 of the 55,754 ES participants were omitted because they failed to match program participants. Similarly, in the matching process of the Advanced Manufacturing and Construction Partnership, 13,361 and 18,895 ES cases were omitted, respectively. Such omissions do not create a bias in our estimates because our focus is on estimating impacts for participants. On the other hand, if many treatment cases are omitted, the true impact of the full population of participants may not correspond to the estimated impact. Fortunately, given the large sample size of the ES comparison sample, it was not necessary to omit many treatment cases. None of the participants in Health Careers or in Construction Partnership were omitted, and only two participants in Advanced Manufacturing were omitted. Hence, there is essentially no bias due to failure to match participants to comparison cases.

- *Step 4: Compare treatment and weighted matched comparison sample (balancing test)* – We employed a *balancing test* based on a t-statistic for the differences in mean characteristics between the treatment and the matched comparison groups. If matching was successful, the t-tests should yield no or very few statistically significant differences between the treatment and the matched comparison groups. If such differences were found, more complex specifications were considered (normally by including interaction terms), with the process repeated until matching was successful.[23]

This process, implemented separately for each program, allowed us to construct a set of weights for the remaining ES sample so that the weighted ES sample had the same characteristics and prior employment measures as the treatment sample. This means that the only difference between the treatment and the matched comparison samples is that individuals in the treatment sample participated in the NFWS/SIF-funded program. Thus, differences in the labor market outcomes between the treatment and the matched comparison samples constitute reliable estimates of the program's impacts.

The results of the balancing tests are presented in Tables A, B, and C in the Appendix. As noted, above, these results test whether the matched comparison group for each program has the same distribution of variables as the sample of program participants. In each table, we see that the matched comparison group is similar to the corresponding program sample.

Appendix Table A lists variable means for unemployed Health Careers program participants and the matched comparison sample, indicating the success of matching. In 50 comparisons of

[23] At the conclusion of this process, the following control variables were used in the logit model: 1) individual characteristics – gender, race, education, age, LWIA, and quarter of program entry; 2) employment history measures – employment in each prior quarter 1—8, prior employment in both quarters 1—2, prior employment in all quarters 1—4, no prior employment in both quarters 1—2, no prior employment in any quarter 1—4, prior employment in focus industry in prior quarter 1, prior employment in focus industry in prior quarters 1—4, and earnings in prior quarters 1—8; and 3) interactions between gender and race, gender and age, gender and education, gender and quarter of entry, gender and prior earnings, gender and prior employment in focus industry, race and age, race and education, race and quarter of entry, race and prior earnings, race and prior employment in focus industry, education and age, education and quarter of entry, education and prior earnings, education, and prior employment in focus industry.

means, we found that only one is statistically significant; among participants, approximately 1.8 percent were coded as missing age, whereas the proportion is only 0.1 percent among the matched comparison group. Although statistically significant, this difference is so small and affects so few cases that any resulting bias will be trivial. The comparable comparison for the Advance Manufacturing program and its matched comparison group similarly reveals 49 statistically insignificant differences, and only one statistically significant difference, in program entry in quarter 4, 2011. Again, the difference is very small, and it is unlikely to cause any important bias. Finally, in the case of the Construction Partnership program, we observe only one statistically significant difference. That difference is in the age missing group, where 0.8 percent of treatment group members and no matched comparison group members are coded as missing age. This difference is very small so that any resulting bias is negligible.

The balancing tests showed that, with only one exception in each program, treatment group cases are observationally equivalent to matched comparison group cases. Nevertheless, we wanted to ensure that the few differences in characteristics remaining after the matching would not influence our results. Therefore, we applied a *bias adjustment* method to our estimates of program impacts. This approach fits a linear regression model to the matched comparison sample for each outcome of interest and uses the results to adjust the impact estimate to account for differences in characteristics between treatment and the matched comparison group. We found that bias-adjusted impacts were equivalent to the impact estimates reported in the following section, which further supports our confidence in the validity of the matching implementation.

4.1.2 Impact Results

Program impacts for each of the three programs were estimated by calculating mean differences in employment and earnings between the treatment group and the matched comparison group. To assess the statistical significance of the impact estimates, we produced t-tests based on bootstrap standard errors. The results of the impact analyses, below, are presented separately for each program.

Health Careers. Table 9 presents the impact results for overall employment in quarters 1–6 after program entry and employment in the healthcare industry in quarters 1–4 after program entry.[24] The two left-hand columns of Table 8 present the means and standard deviations of these outcomes for the treatment and the matched comparison groups, respectively. The right-hand column presents the treatment matched comparison group difference, which is the estimated impact of the program on the outcome. The estimated impact expressed as a percentage of the matched comparison group mean appears in brackets.

Starting with the outcomes of program participants (treatment group), we see that 57.6 percent of participants were employed in quarter 1 after program entry. This proportion increased slightly in quarters 1–6 after entry, peaking at 64.8 percent in quarter 3. We also find that about one third of program participants were employed in healthcare jobs after program entry. Dividing participant healthcare employment rate by the participant overall employment, we find that over half of participants who found employment after program entry were employed in healthcare.

Comparing employment rates between the treatment and the matched comparison groups shows that the program led to positive effects on overall employment rates in each of the six quarters after program entry. For example, 57.6 percent of treatment group members and 43.5 percent of matched comparison group members had positive earnings in quarter 1 after program entry. As the right-hand column shows, the difference is .141 and statistically significant at the 1 percent level. This means that the Health Careers program led to a 14.1 percentage-point increase in employment for unemployed participants. If we divide this impact by the weighted matched comparison group mean, we find that the program led to a 32 percent increase in quarter 1 employment. This impact was sustained through the entire six-quarter follow-up period – program participants were 29–37 percent more likely to be employed in quarters 2–6 than individuals in the matched comparison group.

[24] As noted, employer industry was not available for quarters 3–4, 2012; thus, employment in the program's focus industry was constructed only for up to four quarters after program entry.

Table 9: Program Impacts on Employment, Health Careers

	Treatment Group	Matched Comparison Group	Program Impact [% Comparison Group]
Total Number of Participants	**992**	**46,701**	
Employed			
In Quarter 1	.576 (.495)	.435 (.496)	*.141 (.012)*** [+32%]*
In Quarter 2	.628 (.484)	.458 (.498)	*.170 (.016)*** [+37%]*
In Quarter 3	.648 (.478)	.481 (.500)	*.167 (.015)*** [+35%]*
In Quarter 4	.634 (.481)	.484 (.500)	*.150 (.019)*** [+31%]*
In Quarter 5	.641 (.480)	.491 (.500)	*.150 (.019)*** [+31%]*
In Quarter 6	.628 (.484)	.486 (.500)	*.142 (.021)*** [+29%]*
Employed in Healthcare			
In Quarter 1	.343 (.475)	.103 (.303)	*.240 (.012)*** [+233%]*
In Quarter 2	.338 (.473)	.087 (.282)	*.250 (.018)*** [+287%]*
In Quarter 3	.338 (.473)	.085 (.279)	*.253 (.020)*** [+297%]*
In Quarter 4	.334 (.472)	.083 (.275)	*.253 (.015)*** [+304%]*

Note: The two left-hand columns report the mean and standard deviation for the treatment and the matched comparison groups. The right-hand column reports the estimated program impact, with bootstrap standard errors in parentheses; in brackets is the program impact as a percentage of the matched comparison group mean. Statistical significance: *** = at 1 percent level.

Table 9 also shows that the program had positive effects on healthcare employment rates. In quarter 1, 34.3 percent of unemployed participants were employed in healthcare, compared to only 10.3 percent of the matched comparison group. This shows that the program led to a 24.0 percentage-point (233 percent) increase in healthcare employment rates at quarter 1 after entry. The percentage impact increased over time, as the proportion of participants who were employed in healthcare remained relatively constant in quarters 2–4, while the proportion of matched comparison group members employed in healthcare declined slightly. These results show that the Health Careers program was very effective in promoting participant employment in the healthcare industry, which was a main driver of the large program effects on overall employment.

Table 10 presents the program's impacts on job retention and earnings. Starting with the job retention rates of program participants, we find that 51.2 percent of participants found employment in quarter 1 and remained employed in quarter 2 after entry. Job retention declined over time to 35.2 percent in quarter 6 – meaning that 35.2 percent of participants found employment in quarter 1 and remained employed in each of the six quarters after entry. Comparing the job retention rates between the treatment and the matched comparison groups, we find that the program led to large impacts on job retention in each of the six quarters after program entry, ranging from 43 percent in quarter 1 to 57 percent in quarter 6. These results show that the program was not only effective in helping participants obtain employment, but also in helping participants to sustain their jobs for long periods after program entry.

The program led to large impacts on employment, so we would expect that participants had significantly higher earnings when compared with unemployed workers in the matched comparison group. Table 10 confirms this expectation. In quarter 1, the average participant earned $2,094, an amount that gradually increased, reaching $3,217 in quarter 6. Dividing the average earnings amount by the overall employment rate (see Table 10), we find that the average participant who was employed in quarter 1 earned $3,635, which gradually increased to $5,123 in quarter 6. As shown in the right-hand column of Table 10, program participants had significantly higher earnings than the matched comparison group throughout the six-quarter follow-up period. In quarter 1, treatment group members earned $868 (71 percent) higher earnings relative to the matched comparison group, an effect that gradually increased over time, reaching $1,104 (52 percent) in quarter 6.

Table 10: Program Impacts on Job Retention and Earnings, Health Careers

	Treatment Group	Matched Comparison Group	Program Impact [% Comparison Group]
Total Number of Participants	**992**	**46,701**	
Job Retention			
Employed in Q1—2	.512 (.500)	.359 (.480)	*.153 (.018)**** [+43%]
Employed in Q1—3	.472 (.499)	.314 (.464)	*.159 (.018)**** [+51%]
Employed in Q1—4	.426 (.495)	.273 (.446)	*.153 (.020)**** [+56%]
Employed in Q1—5	.400 (.490)	.248 (.432)	*.152 (.020)**** [+61%]
Employed in Q1—6	.352 (.478)	.224 (.417)	*.128 (.017)**** [+57%]
Earnings ($)			
In Quarter 1	2,094 (3,822)	1,226 (2,362)	*868 (146)**** [+71%]
In Quarter 2	2,473 (3,319)	1,622 (2,707)	*851 (115)**** [+52%]
In Quarter 3	2,749 (3,692)	1,843 (2,966)	*906 (162)**** [+49%]
In Quarter 4	2,760 (3,858)	1,889 (3,026)	870 (150)*** [+46%]
In Quarter 5	2,938 (4,269)	2,019 (3,065)	*918 (186)**** [+46%]
In Quarter 6	3,217 (6,121)	2,113 (3,170)	*1,104 (277)**** [+52%]

Note: The two left-hand columns report the mean and standard deviation for the treatment and the matched comparison groups. The right-hand column reports the estimated program impact, with bootstrap standard errors in parentheses; in brackets is the program impact as a percentage of the matched comparison group mean. Statistical significance: *** = at 1 percent level.

Overall, these results show that the Health Careers program was very effective in helping participants to obtain healthcare jobs, leading to large effects on overall employment rates. Moreover, our results show that the program helped participants not only to obtain jobs soon after program entry but also to sustain them throughout the six-quarter follow-up period. As a result of the program's large effects on employment and job retention, program participants earned significantly higher earnings than they would have earned in the program's absence.

Advanced Manufacturing. Table 11 presents the impact results for overall employment and employment in manufacturing. As shown, 42.2 percent of program participants were employed in quarter 1 after entry, a proportion that gradually increased over time to 52.2 percent in quarter 6. At the same time, we find that no more than 4.1 percent of participants were employed in manufacturing, the program's focus industry, in the four quarters after entry. Dividing the manufacturing employment rate by the overall employment rate in quarters 1–4, we find that only about 6 to 10 percent of participants who found employment after program entry were employed in the program's focus industry.

The impact results in Table 11 show that the program led to positive effects on overall employment. The program's impact on employment in quarter 1 was 8.2 percentage points, which translates to a 24 percent impact on employment. This impact grew over time and remained statistically significant through quarter 6 following program entry, when treatment group members were 12.2 percentage points (30 percent) more likely to be employed relative to their matched comparison group peers. Table 11 also shows that, despite very few participants obtaining jobs in manufacturing, the participant manufacturing employment rate exceeded that of the matched comparison group by 2.0–2.8 percentage points (147–215 percent) over the four-quarter follow-up period. These results suggest that the largest portion of program effects on overall employment is not attributable to program effects on manufacturing employment.

Table 11: Program Impacts on Employment, Advanced Manufacturing

	Treatment Group	Matched Comparison Group	Program Impact [% Comparison Group]
Total Number of Participants	**682**	**42,293**	
Employed			
In Quarter 1	.422 (.494)	.340 (.474)	*.082 (.020)*** [+24%]*
In Quarter 2	.478 (.500)	.362 (.481)	*.117 (.017)*** [+32%]*
In Quarter 3	.509 (.500)	.369 (.483)	*.141 (.023)*** [+38%]*
In Quarter 4	.508 (.500)	.384 (.486)	*.124 (.021)*** [+32%]*
In Quarter 5	.526 (.500)	.382 (.486)	*.143 (.027)*** [+37%]*
In Quarter 6	.522 (.500)	.401 (.490)	*.122 (.024)*** [+30%]*
Employed in Manufacturing			
In Quarter 1	.041 (.199)	.016 (.124)	*.025 (.007)*** [+156%]*
In Quarter 2	.041 (.199)	.013 (.113)	*.028 (.004)*** [+215%]*
In Quarter 3	.042 (.200)	.017 (.128)	*.025 (.006)*** [+147%]*
In Quarter 4	.032 (.176)	.012 (.107)	*.020 (.007)*** [+167%]*

Note: The two left-hand columns report the mean and standard deviation for the treatment and the matched comparison groups. The right-hand column reports the estimated program impact, with bootstrap standard errors in parentheses; in brackets is the program impact as a percentage of the matched comparison group mean. Statistical significance: *** = at 1 percent level.

Table 12 presents program impacts on job retention and earnings. As shown, 34.6 percent of participants found a job in quarter 1 after entry and remained employed in quarter 2. Job retention declined to 19.9 percent in quarter 6, which shows that one in every five participants found a job in quarter 1 and remained employed throughout the six-quarter follow-up period. The right-hand column of Table 12 shows that participant job retention rates were higher than the rates of the matched comparison group. For example, program participants were 4.0 percentage points (25 percent) more likely than matched comparison group members to be continuously employed in all six quarters after program entry.

The program's positive effects on employment and job retention yielded positive effects on

earnings. As shown in Table 12, program participants earned $1,146 in quarter 1, with average earnings increasing in each quarter after entry, reaching $2,442 in quarter 6. Dividing these amounts by the overall employment rate (see Table 11) shows that the average participant who was employed in quarter 1 earned $2,716, an amount that gradually increased to $4,678 in quarter 6. Program effects, reported in the right column of Table 12, show that participants earned $220 (24 percent) higher earnings in quarter 1 than matched comparison group members. This difference grew over time and, by quarters 5 and 6, treatment group members had 47 and 37 percent higher earnings, respectively.

Table 12: Program Impacts on Job Retention and Earnings, Advanced Manufacturing

	Treatment Group	Matched Comparison Group	Program Impact [% Comparison Group]
Total Number of Participants	**682**	**42,293**	
Job Retention			
Employed in Q1—2	.346 (.477)	.269 (.444)	*.076 (.019)**** [+28%]
Employed in Q1—3	.288 (.453)	.225 (.418)	*.064 (.020)**** [+28%]
Employed in Q1—4	.245 (.431)	.198 (.398)	*.048 (.019)**** [+24%]
Employed in Q1—5	.217 (.413)	.175 (.380)	*.043 (.016)**** [+24%]
Employed in Q1—6	.199 (.400)	.159 (.365)	*.040 (.016)*** [+25%]
Earnings			
In Quarter 1	1,146 (2,512)	925 (2,190)	*220 (84)**** [+24%]
In Quarter 2	1,580 (3,354)	1,249 (2,640)	*331 (130)*** [+27%]
In Quarter 3	1,707 (3,141)	1,447 (3,028)	*261 (166)* [+18%]
In Quarter 4	1,958 (3,324)	1,549 (3,063)	*409 (164)*** [+26%]
In Quarter 5	2,354 (3,736)	1,602 (3,108)	*752 (152)**** [+47%]
In Quarter 6	2,442 (3,956)	1,780 (3,357)	*662 (155)**** [+37%]

Note: The two left-hand columns report the mean and standard deviation for the treatment and the matched comparison groups. The right-hand column reports the estimated program impact, with bootstrap standard errors in parentheses; in brackets is the program impact as a percentage of the weighted matched comparison group mean. Statistical significance: ** = at 5 percent level; *** = at 1 percent level.

The results for the Advanced Manufacturing program show that the program was effective in helping participants obtain employment following program entry, with only a small proportion of the employment effects attributable to manufacturing employment. The program also led to positive effects on job retention, helping some participants to retain their jobs for long periods after program entry. As a result, program participants had higher earnings than matched comparison group members throughout the entire six-quarter follow-up period.

Construction Partnership. Impact estimates for the Construction Partnership program on employment are presented in Table 13. As shown, 38.8 of program participants were employed in quarter 1 after entry, which increased over time, peaking at 45.9 percent in quarter 4. We also find that no more than 4.8 percent of participants were employed in construction, the program's focus industry. In fact, comparing construction employment rates to overall employment rates, we find that only about one in every 10 participants who found employment were employed in construction in quarters 1–4 after program entry.

The impact results in the right-hand column of Table 13 show that the program had minor positive effects on employment in quarters 2–4 after program entry. In particular, the program increased the employment rates of participants by 5.5–6.1 percentage points (14–16 percent) during that period. Although positive, point estimates of effects are appreciably smaller in quarters 1 and 5 and are not statistically significant. Our analyses also show that, although construction employment rates in quarters 1–4 did not exceed 4.8 percent for program participants, these rates were 3.3–3.7 percentage points (275–336 percent) higher than the rates of the matched comparison group. These results suggest that the program was somewhat effective in improving overall employment rates, which was driven by helping a few participants obtain jobs in construction.

Table 13: Program Impacts on Employment, Construction Partnership

	Treatment Group	Matched Comparison Group	Program Impact [% Comparison Group]
Total Number of Participants	**379**	**36,859**	
Employed			
In Quarter 1	.388 (.488)	.356 (.479)	.032 (.029) [+9%]
In Quarter 2	.441 (.497)	.380 (.485)	.061 (.028)** [+16%]
In Quarter 3	.449 (.498)	.394 (.489)	.055 (.025)** [+14%]
In Quarter 4	.459 (.499)	.402 (.490)	.057 (.027)** [+14%]
In Quarter 5	.446 (.498)	.408 (.491)	.038 (.031) [+9%]
In Quarter 6	.453 (.498)	.414 (.493)	.040 (.027) [+9%]
Employed in Construction			
In Quarter 1	.047 (.213)	.011 (.104)	.037 (.008)*** [+336%]
In Quarter 2	.045 (.207)	.012 (.109)	.033 (.010)*** [+275%]
In Quarter 3	.048 (.214)	.013 (.111)	.035 (.009)*** [+269%]
In Quarter 4	.048 (.214)	.011 (.104)	.034 (.012)*** [+309%]

Note: The two left-hand columns report the mean and standard deviation for the treatment and the matched comparison groups. The right-hand column reports the estimated program impact, with bootstrap standard errors in parentheses; in brackets is the program impact as a percentage of the matched comparison group mean. Statistical significance: * = at 10 percent level; ** = at 5 percent level; *** = at 1 percent level.

Table 14 presents the program's effects on job retention and earnings. Only 29.0 percent of participants were employed in quarter 1 after entry and remained employed in quarter 2. Job retention rates declined over time, with only 16.1 percent of participants finding employment in quarter 1 and remaining employed throughout the six-quarter follow-up period. Comparisons in the right-hand column of Table 14 show that the job retention rates of the treatment group were statistically equivalent to those of the matched comparison group.

Table 14: Program Impacts on Job Retention and Earnings, Construction Partnership

	Treatment Group	Matched Comparison Group	Program Impact [% Comparison Group]
Total Number of Participants	**379**	**36,859**	
Job Retention			
Employed in Q1—2	.290 (.454)	.281 (.449)	*.009 (.026)* [+3%]
Employed in Q1—3	.251 (.434)	.240 (.427)	*.010 (.020)* [+5%]
Employed in Q1—4	.200 (.400)	.211 (.408)	*-.011 (.020)* [-5%]
Employed in Q1—5	.188 (.391)	.181 (.385)	*.006 (.020)* [+4%]
Employed in Q1—6	.161 (.368)	.162 (.369)	*-.002 (.024)* [-1%]
Earnings			
In Quarter 1	1,070 (2,289)	830 (1,880)	*244 (121)*** [+29%]
In Quarter 2	1,277 (2,487)	1,160 (2,304)	*119 (151)* [+10%]
In Quarter 3	1,381 (2,524)	1,280 (2,485)	*104 (93)* [+8%]
In Quarter 4	1,454 (2,464)	1,320 (2,495)	*135 (90)* [+10%]
In Quarter 5	1,518 (2,547)	1,434 (2,619)	*81 (28)**** [+6%]
In Quarter 6	1,617 (2,665)	1,524 (2,665)	*93 (126)* [+6%]

Note: The two left-hand columns report the mean and standard deviation for the treatment and the matched comparison groups. The right-hand column reports the estimated program impact, with bootstrap standard errors in parentheses; in brackets is the program impact as a percentage of the weighted matched comparison group mean. ** = statistically significant at 5 percent level.

Table 14 shows that the average program participant earned $1,070 in quarter 1, which increased over time to $1,617 in quarter 6. Dividing average earnings amounts by the overall employment rate (see Table 13), we find that average earnings for employed participants increased from $2,758 in quarter 1 to $3,570 in quarter 6. Program effects on earnings were small, with program participants earning $244 and $81 higher than the matched comparison group members in quarters 1 and 5; although positive, effects on earnings were not statistically significant in the other four quarters of the follow-up period.

Overall, the results show that the Construction Partnership program had minor effects on employment, which were driven by placing a few participants in construction jobs. But the program was ineffective in promoting job retention and had modest impacts on earnings.

4.1.3 Discussion

In this section, we summarize and compare the impact study results for the three programs and attempt to examine the underlying factors that may help interpret the results and explain variation in program effectiveness. Table 15 summarizes the impact results on employment. The Health Careers and Advanced Manufacturing program led to significant positive effects on overall employment, increasing employment rates by 29–37 percent and 24–38 percent, respectively, in the six quarters following program entry. The Construction Partnership program had minor positive effects on overall employment in quarters 2–4, but statistically insignificant effects in the remaining quarters.

A key objective of the three programs was to promote the employment of unemployed participants in their respective focus industries. Results show that the Health Careers program was very effective in helping participants to obtain healthcare jobs – on average, participants were 24.0–25.3 percentage points (233–304 percent) more likely than matched comparison group members to be employed in healthcare in quarters 1–4 after entry. In contrast, although statistically significant, the differentials for the Advanced Manufacturing and the Construction Partnership programs were 2 to 4 percentage points, and in each case less than 5 percent of participants found employment in the program's focus industry.

These results suggest that the Health Careers large effects on overall employment rates were largely driven by its effectiveness in promoting participant employment in healthcare. In contrast, only a small portion of the large Advanced Manufacturing effects on overall employment can be attributed to manufacturing employment. This suggests that the program provided participants with skills that were transferrable to non-manufacturing jobs and/or helped participants conduct a wider job search, effectively helping them to find non-

manufacturing jobs at a higher rate than the matched comparison group. By the same token, the small Construction Pathways' effects on overall employment were driven largely by the fact that the program placed a few participants in construction jobs. However, it appears that the skills obtained by the program provided little help for participants in finding non-construction jobs.

Table 15: Summary of Program Impacts on Employment

	Health Careers	Advanced Manufacturing	Construction Partnership
Employed			
In Quarter 1	*.141 (.012)*** [+32%]*	*.082 (.020)*** [+24%]*	.032 (.029) [+9%]
In Quarter 2	*.170 (.016)*** [+37%]*	*.117 (.017)*** [+32%]*	.061 (.028)** [+16%]
In Quarter 3	*.167 (.015)*** [+35%]*	*.141 (.023)*** [+38%]*	.055 (.025)** [+14%]
In Quarter 4	*.150 (.019)*** [+31%]*	*.124 (.021)*** [+32%]*	.057 (.027)** [+14%]
In Quarter 5	*.150 (.019)*** [+31%]*	*.143 (.027)*** [+37%]*	.038 (.031) [+9%]
In Quarter 6	*.142 (.021)*** [+29%]*	*.122 (.024)*** [+30%]*	.040 (.027) [+9%]
Employed in Focus Industry			
In Quarter 1	*.240 (.012)*** [+233%]*	*.025 (.007)*** [+156%]*	.037 (.008)*** [+336%]
In Quarter 2	*.250 (.018)*** [+287%]*	*.028 (.004)*** [+215%]*	.033 (.010)*** [+275%]
In Quarter 3	*.253 (.020)*** [+297%]*	*.025 (.006)*** [+147%]*	.035 (.009)*** [+269%]
In Quarter 4	*.253 (.015)*** [+304%]*	*.020 (.007)*** [+167%]*	.034 (.012)*** [+309%]

Note: Reported is the estimated program impact with bootstrap standard errors in parentheses; in brackets is the program impact as a percentage of the weighted matched comparison group mean. Statistical significance: ** = at 5 percent level; *** = at 1 percent level.

Table 16 summarizes program effects on job retention and earnings. The Health Careers program was very effective in improving job retention, with program participants being 43–61 percent more likely than those in the matched comparison group to obtain employment in quarter 1 after entry and remain employed in subsequent quarters. These results show that the program was not only effective in helping participants to obtain healthcare jobs, but also to

remain employed for long periods after program entry. Advanced Manufacturing led to positive effects on job retention (24–28 percent), although these were lower than the effects of the Health Careers program. This implies that, while the vast majority of participants were not able to obtain manufacturing jobs, the skills obtained from the program helped them find sustainable non-manufacturing jobs. In contrast, the Construction Partnership program did not affect job retention, which is consistent with the view that the program did not provide participants with transferrable skills that helped them access non-construction jobs.

Table 16: Summary of Program Impacts on Job Retention and Earnings

	Health Careers	Advanced Manufacturing	Construction Partnership
Job Retention			
Employed in Q1–2	*.153 (.018)**** [+43%]	*.076 (.019)**** [+28%]	*.009 (.026)* [+3%]
Employed in Q1–3	*.159 (.018)**** [+51%]	*.064 (.020)**** [+28%]	*.010 (.020)* [+5%]
Employed in Q1–4	*.153 (.020)**** [+56%]	*.048 (.019)**** [+24%]	*-.011 (.020)* [-5%]
Employed in Q1–5	*.152 (.020)**** [+61%]	*.043 (.016)**** [+24%]	*.006 (.020)* [+4%]
Employed in Q1–6	*.128 (.017)**** [+57%]	*.040 (.016)*** [+25%]	*-.002 (.024)* [-1%]
Earnings			
In Quarter 1	*868 (146)**** [+71%]	*220 (84)**** [+24%]	*244 (121)*** [+29%]
In Quarter 2	*851 (115)**** [+52%]	*331 (130)*** [+27%]	*119 (151)* [+10%]
In Quarter 3	*906 (162)**** [+49%]	*261 (166)* [+18%]	*104 (93)* [+8%]
In Quarter 4	870 (150)*** [+46%]	*409 (164)*** [+26%]	*135 (90)* [+10%]
In Quarter 5	*918 (186)**** [+46%]	*752 (152)**** [+47%]	*81 (28)**** [+6%]
In Quarter 6	*1,104 (277)**** [+52%]	*662 (155)**** [+37%]	*93 (126)* [+6%]

Note: Reported is the program estimated impact, with bootstrap standard errors in parentheses; in brackets is the program's impact as a percentage of the weighted matched comparison group mean. Statistical significance: ** = at 5 percent level; *** = at 1 percent level.

Finally, as shown in Table 16, the effects on earnings reflected an individual program's success in improving employment and job retention. The Health Careers program – which had the

largest effects on overall employment, employment in focus industry, and job retention – led to substantial effects on earnings throughout the six-quarter follow-up period. The Advanced Manufacturing program also had positive effects on earnings, reflecting the program's success in helping participants to improve their overall employment and job retention rates. But the program's effects on earnings were lower than the Health Careers program's effects, likely tied to Advanced Manufacturing's being less successful in promoting participant employment in its focus industry and improving job retention. Finally, the Construction Partnership program had very small effects on earnings, which is consistent with its limited success in improving participant employment and job retention.

A few underlying factors may help explain differences in a program's success. First, there were notable differences in the service delivery process. Health Careers offered a wide range of services, including job readiness training, NCRC preparation assistance, healthcare-focused training, and job search assistance. The program's staff worked individually with participants to help them assess which services would best help achieve their goals. Participants with low education and limited work experience could participate in job readiness training and receive NCRC assistance to improve their employability before engaging in industry-specific training.[25] Participants with higher levels of education and more stable employment histories (particularly those with experience in healthcare) could participate in industry-focused training upon program entry to help them access mid-level healthcare careers.[26] This design ensured that services catered to individual needs in: (1) helping low-skill, inexperienced participants to obtain skills to improve their employability and (2) helping high-skill, experienced participants to obtain skills to access careers in healthcare.

The Advanced Manufacturing program used an incremental approach to providing services, in which all program participants were first offered job readiness training and, upon completion, NCRC and MSSC certification training. Those successful in obtaining these certificates were

[25] As shown in Table 4, 27 percent of participants received job readiness training.

[26] As shown in Table 4, 68 percent of participants received healthcare-specific occupational training; consistent with program design, only 3 percent of participants received both job readiness and occupational training.

offered academic and career advancement services. The program's participants could receive job search assistance services at any time during the program period. As discussed in Section 3.1.5, 73 percent of participants received job readiness training, and 82 percent received employment services; only 23 percent received occupational training. These figures show that participants were most interested in improving their employability skills and finding a job, rather than receiving training to find jobs in manufacturing. This is consistent with the program's results discussed above.

The Construction Partnership program used a different approach. Its career pathways model was primarily based on pre-apprenticeship programs and on-the-job training. In addition, similar to the other two programs, Construction Partnership offered job search assistance. The program's limited effects on employment, job retention, and earnings suggest that its relatively narrow focus had a minor effect on participant employability in construction and did not offer them skills to obtain jobs in other sectors.

Another distinguishing characteristic of the Health Careers program is that its partners included large employers (i.e., large hospital systems) with very specific occupational-training needs and a well-defined job demand. These employers could hire many appropriately trained individuals graduating from the program. Although the Advanced Manufacturing and Construction Partnership programs partnered with a large pool of employers with specific workforce needs, many were small employers lacking the capacity to hire many program graduates. These differences may have had a bearing on the limited effectiveness of these programs in helping participants access and retain high-quality jobs in their focus industries.

Third, disparities in program success may be partly attributed to the three programs focused on three distinct industries. Healthcare jobs are typically less volatile and have lower unemployment rates than manufacturing and construction jobs, particularly during periods of high unemployment. As shown in Table 17, the unemployment rate for the healthcare industry in Ohio was 5.1 percent in 2010 – much lower than the overall unemployment rate in the state

(10.7 percent). The manufacturing unemployment rate was 11.7 percent, one percentage point higher than the statewide rate, and more than twice the healthcare rate. The unemployment rate in construction was 19.8 percent, nearly four times higher than for healthcare and nearly twice than for manufacturing.[27]

Table 17: Ohio Unemployment Rates and Employment Projections

	Healthcare	Manufacturing	Construction	Overall
Unemployment Rate, 2010	5.1%	11.7%	19.8%	10.7%
Total Employment, 2010 (% of overall employment in state)	726,730 (14%)	620,450 (12%)	168,660 (3%)	5,368,900 (100%)
Employment Projections, 2010–20 (% change over 2010)	+183,150 (25%)	–2,840 (<1%)	+38,880 (23%)	+498,100 (+9%)
Unionization Rate, 2010	4.8%	13.8%	12.3%	11.0%

Note: Unemployment and unionization rates are based on authors' tabulations of the 2010 American Community Survey. Total employment and employment projections are from the Ohio Job Outlook of the Ohio Department of Job and Family Services (http://ohiolmi.com/proj/OhioJobOutlook.htm).

Table 17 also illustrates the importance of the three sectors in the Ohio workforce. As shown, there were 5.4 million workers in Ohio in 2010, of whom 726,730 (14 percent) were employed in healthcare, 620,450 (12 percent) in manufacturing, and 168,660 (3 percent) in construction. Employment projections of the Ohio Department of Job and Family Services show that the healthcare industry was expected to grow by 183,150 workers by 2020, a 25 percent increase from 2010. The same projections show that manufacturing was expected to shrink by about one percent and construction to grow by 23 percent. These figures indicate that healthcare and construction in Ohio were expected to have higher than average growth in employment from 2010 through 2020, while manufacturing employment was expected to remain about the same.

It is also important to note that manufacturing and healthcare were more heavily unionized than healthcare jobs. As shown in Table 17, only 4.8 percent of healthcare workers in Ohio were represented by unions, compared with 13.8 percent and 12.3 percent of manufacturing and construction workers, respectively. These figures suggest that it may be easier for

[27] All unemployment rates indicated here and in Table 17 are unemployment rates for the experienced labor force. In 2010, the national unemployment rate was 10.1 percent, including 5.3 percent for healthcare, 10.7 percent for manufacturing, and 17.9 percent for construction.

unemployed workers to access healthcare jobs than manufacturing or construction jobs in Ohio, even if they have the appropriate skills and credentials for those jobs.

Based on these figures, the greater impacts estimated for the Health Careers program relative to the other two programs may be partly attributable to differences in the nature of the programs' focus industries. Health Careers focused on an industry that: (1) had very low unemployment; (2) employed a relatively large share of the state's workforce; (3) was expected to grow substantially; and (4) was less unionized. In contrast, Advanced Manufacturing and Construction Partnership programs were targeting industries with much higher unemployment rates and a much stronger union presence.

Finally, disparities in program success may be attributed to Health Careers attracting different types of participants. For instance, Health Careers attracted higher proportions of participants with more than a high school education, extensive prior work experience, and experience in the program's focus industry. The other two programs primarily attracted participants with no more than a high school education, less stable work experience, and limited experience in the program's focus industry. It is possible that highly skilled, experienced workers were more likely to benefit from industry-focused training than low-skill workers with weak prior work experience.

4.2 Wisconsin Results

This section presents the quasi-experimental impact results for the three Wisconsin-based NFWS/SIF-funded programs. The section begins with a discussion of the matching results, followed by a presentation of the impact results and a discussion of the findings and their interpretation. A summary of the results is provided in Box 4.

BOX 4: SUMMARY OF QUASI-EXPERIMENTAL IMPACT RESULTS IN WISCONSIN

WRTP Construction Pathways

- The program had large effects on employment. In the six quarters after program entry, 67.2–72.7 percent of participants were employed, exceeding the employment rates of matched comparison group members by 8.8–21.7 percentage points (14–43 percent).
- The program was not effective in helping participants to obtain construction jobs. In the six quarters after entry, fewer than three percent of participants worked in construction.
- The program had large effects on job retention rates. About 44.5 percent of participants found employment in quarter 1 and remained employed in each of the six quarters after entry, compared to only 29.4 percent of matched comparison group members, a 15.1 percentage point (51 percent) difference.
- The program had large effects on earnings. In the six-quarter follow-up period, participants had $11,237 (56 percent) higher earnings than the matched comparison group.

WRTP Manufacturing Pathways

- The program had large effects on employment. In the six quarters after program entry, 66.3–72.1 percent of participants were employed, exceeding the employment rates of matched comparison group members by 11.1–28.6 percentage points (21–68 percent).
- The program helped participants to obtain manufacturing jobs. In the six quarters after entry, 32.6–40.7 percent of participants were employed in manufacturing, exceeding the manufacturing employment rates of the matched comparison group by 23.7–29.6 percentage points (202–535 percent).
- The program had large effects on job retention. About 43.0 percent of participants found a job in quarter 1 and remained employed in each of the six quarters after entry, compared to 19.8 percent of matched comparison group members, a 118 percent difference.
- The program had substantial effects on earnings. In the six-quarter follow-up period, participants had $16,661 (134 percent) higher earnings than the matched comparison group.

Milwaukee Healthcare Alliance

- The program had large effects on employment. In the six quarters after program entry, 57.1–77.0 percent of participants were employed, exceeding the employment rates of matched comparison group members by 16.5–19.4 percentage points (28–40 percent).
- The program helped participants to obtain healthcare jobs. In the six quarters after entry, 27.9–47.4 percent of participants were employed in healthcare, exceeding the healthcare employment rates of the matched comparison group by 18.1–29.6 percentage points (155–196 percent).
- The program had large effects on job retention. About 40.1 percent of participants found a job in quarter 1 and remained employed in each of the six quarters after entry, compared to 22.3 percent of matched comparison group members, an 80 percent difference.
- The program had positive effects on earnings. In the six-quarter follow-up period, participants had $5,418 (55 percent) higher earnings than the matched comparison group.

4.2.1 Matching Results

Similar to the Ohio study, matched comparison groups for each of the three NFWS/SIF-funded programs were constructed using Wisconsin ES data. Table 18 summarizes the characteristics of unemployed NFWS/SIF participants and of unemployed workers in the ES data.

Table 18: Characteristics of Unemployed NFWS/SIF and ES Participants in Wisconsin

	WRTP Construction	WRTP Manufacturing	Healthcare Alliance	ES
Unemployed Participants	**1,103 (100%)**	**88 (100%)**	**306 (100%)**	**35,482 (100%)**
Gender				
Men	998 (90%)	74 (84%)	17 (6%)	18,495 (52%)
Women	105 (10%)	14 (16%)	289 (94%)	16,987 (48%)
Race/Ethnicity				
White	424 (38%)	27 (31%)	18 (6%)	22,807 (64%)
Black	448 (41%)	50 (57%)	227 (74%)	8,059 (23%)
Other Race	72 (7%)	4 (5%)	32 (10%)	2,224 (6%)
Hispanic	159 (14%)	7 (8%)	5 (2%)	2,392 (7%)
Education				
No High School Diploma	197 (18%)	18 (20%)	--	4,014 (11%)
High School Diploma	873 (79%)	68 (77%)	--	16,870 (48%)
Associate Degree, Some College	22 (2%)	2 (2%)	--	9,102 (26%)
College Degree	11 (1%)	0 (0%)	--	5,496 (15%)
Age				
Less than 25 Years	214 (19%)	11 (13%)	119 (39%)	5,243 (15%)
25-34 Years	363 (33%)	24 (27%)	101 (33%)	9,293 (26%)
35-44 Years	251 (23%)	19 (22%)	29 (9%)	7,264 (20%)
45-54 Years	191 (17%)	22 (25%)	26 (9%)	7,711 (22%)
55-64 Years	70 (6%)	10 (11%)	11 (4%)	5,069 (14%)
65+ Years	14 (1%)	2 (2%)	20 (7%)	902 (3%)
Veteran	38 (3%)	2 (2%)	--	1,869 (5%)
Program Entry			--	
Quarter 1, 2010	7 (1%)	--	--	3,930 (11%)
Quarter 2, 2010	22 (2%)	--	--	3,955 (11%)
Quarter 3, 2010	11 (1%)	2 (2%)	--	3,792 (11%)
Quarter 4, 2010	6 (1%)	3 (3%)	--	3,675 (10%)
Quarter 1, 2011	206 (19%)	24 (27%)	--	4,568 (13%)
Quarter 2, 2011	225 (20%)	24 (27%)	41 (13%)	4,340 (12%)
Quarter 3, 2011	389 (35%)	19 (22%)	123 (40%)	4,088 (12%)
Quarter 4, 2011	237 (21%)	16 (18%)	94 (31%)	4,332 (12%)
Quarter 1, 2012	--	--	48 (16%)	2,802 (8%)

Note: Reported is the number of participants with sample proportion in parentheses.

Important differences in characteristics exist between each NFWS/SIF-funded program and ES. WRTP Manufacturing had much higher proportions of male, black, and Hispanic participants than the ES, and much lower proportions of participants with more than a high school education and age 45 or older. Similarly, compared to the ES population, much higher proportions of WRTP Manufacturing participants were male, black, and with no more than a high school education. At the same time, women, nonwhites, and individuals younger than age 35 were overrepresented in the Health Careers participant population relative to the ES population.

Table 19 presents the employment history of unemployed workers in the three NFWS/SIF-funded programs and ES. As shown, employment rates in prior quarters for ES participants were similar to those of WRTP Construction and of Health Careers participants, but slightly higher than those of WRTP Manufacturing participants. Also, ES participants were as likely as WRTP Construction and Health Careers participants, and more likely than WRTP Manufacturing participants, to have continuous employment prior to program entry.

The most notable differences between NFWS/SIF participants and ES participants were in prior employment in focus industry and earnings. Participants in each of the three NFWS/SIF-funded programs were significantly more likely to have prior employment in the program's focus industry than were ES participants. Moreover, WRTP Manufacturing and Health Careers participants had lower prior earnings than ES participants over the entire eight-quarter period prior to program entry. Overall, the disparities in socioeconomic and prior employment characteristics between participants in each NFWS/SIF-funded program and ES participants – as presented in Tables 18 and 19 – suggest that the ES sample cannot be used in its original form as a comparison group for any of the three programs.

Table 19: Employment History of Unemployed NFWS/SIF and ES Participants in Wisconsin

	WRTP Construction	WRTP Manufacturing	Healthcare Alliance	ES
Total Number of Participants	**1,103 (100%)**	**88 (100%)**	**306 (100%)**	**35,482 (100%)**
Employment				
In Prior Quarter 1	666 (60%)	44 (50%)	168 (55%)	19,404 (55%)
In Prior Quarter 2	664 (60%)	50 (57%)	184 (60%)	21,187 (60%)
In Prior Quarter 3	664 (60%)	49 (56%)	181 (59%)	22,011 (62%)
In Prior Quarter 4	655 (59%)	44 (50%)	184 (60%)	22,721 (64%)
In Prior Quarter 5	622 (56%)	48 (55%)	185 (61%)	23,243 (66%)
In Prior Quarter 6	646 (59%)	48 (55%)	187 (61%)	23,553 (66%)
In Prior Quarter 7	665 (60%)	50 (57%)	189 (62%)	23,732 (67%
In Prior Quarter 8	669 (61%)	51 (58%)	169 (59%)	23,992 (68%)
Prior Employment				
In Both Quarters 1-2	569 (48%)	38 (43%)	148 (48%)	17,675 (50%)
In All Quarters 1-4	456 (41%)	26 (30%)	127 (42%)	14,736 (42%)
No Prior Employment				
In Quarters 1-2	342 (31%)	32 (36%)	102 (33%)	12,566 (35%)
In Quarters 1-4	258 (23%)	23 (26%)	75 (25%)	8,357 (24%)
Prior Employment in Focus Industry				
In Quarter 1 (Healthcare)	--	--	70 (23%)	2,537 (7%)
In Quarter 1-4 (Healthcare)	--	--	96 (31%)	3,898 (11%)
In Quarter 1 (Manufacturing)	--	15 (17%)	--	2,611 (7%)
In Quarter 1-4 (Manufacturing)	--	23 (26%)	--	3,211 (9%)
In Quarter 1 (Construction)	305 (28%)	--	--	692 (2%)
In Quarter 1-4 (Construction)	432 (39%)	--	--	929 (3%)
Earnings Amount ($)				
In Prior Quarter 1	3,790 (4,981)	2,234 (3,129)	1,577 (2,249)	3,306 (5,579)
In Prior Quarter 2	4,168 (5,398)	2,565 (4,045)	1,792 (2,277)	3,813 (6,196)
In Prior Quarter 3	4,384 (5,559)	2,941 (4,585)	2,031 (2,523)	4,053 (6,401)
In Prior Quarter 4	4,424 (5,912)	2,526 (3,829)	1,968 (2,477)	4,265 (8,171)
In Prior Quarter 5	4,451 (6,138)	2,578 (3,634)	2,077 (2,631)	4,449 (6,280)
In Prior Quarter 6	4,647 (6,364)	2,840 (4,061)	2,101 (2,606)	4,519 (6,531)
In Prior Quarter 7	4,965 (6,462)	3,494 (5,197)	2,102 (2,622)	4,580 (5,982)
In Prior Quarter 8	4,884 (6,203)	3,811 (5,350)	2,046 (2,802)	4,658 (6,108)

Note: Reported is the number of participants with sample proportion in parentheses; for prior earnings, reported is the sample mean with standard deviation in parentheses.

To construct an appropriate, matched comparison group for each program, we used the same matching approach used in the Ohio study. The formal details of this approach are provided in Section 2.2.4. Using a logistic model, we estimated the likelihood of program participation and

produced the propensity score for each participant and non-participant in the data. Cases that were off the common support of the propensity score were omitted, and the logistic model was re-estimated on the remaining sample to produce the propensity score for all cases that were on the common support.[28] We then weighted each comparison case by the odds ratio of the propensity score, so that the weighted comparison sample had the same characteristics as the treatment sample. Balancing tests were used to compare the treatment and the matched comparison sample; where differences were detected, we repeated the above process modifying the specification of the logistic model until the matching was successful.[29]

The results of the balancing tests (see Tables D, E, and F in the Appendix) show that for each of the three programs, the matched comparison group was similar in observable characteristics and prior employment to the treatment group. Balancing tests for WRTP Construction (Appendix Table D) show that of 45 characteristics, only three had statistically significant differences (two at the 10 percent level, one at the 5 percent level) between the treatment and matched comparison groups (45–54 years; program entry in quarter 1, 2010; and employment in prior quarter 3). Balancing tests for WRTP Manufacturing and Healthcare Alliance (Appendix Tables E and F, respectively) reveal no statistically significant differences between treatment and matched comparison cases. These tests show equivalence between treatment and matched comparison cases in all three programs, with a few exceptions regarding the WRTP Construction program. We wanted to ensure that these differences do not inject bias in our

[28] In implementing the matching process for each program, we omitted: (1) 12 treatment and 5,991 comparison cases for WRTP Construction; (2) 2 treatment and 15,638 comparison cases for WRTP Manufacturing; and (3) 19 treatment and 26,816 comparison cases for Healthcare Alliance. The small number of treatment cases omitted ensures that bias due to failure to match participants to comparison cases is negligible. Omission of comparison cases in the matching process does not induce bias, given that our focus is on program impacts for participants.

[29] At the conclusion of this process, the following control variables were used in the logit model: 1) individual characteristics: gender, race, education, age, and quarter of program entry; 2) employment history measures: employment in each prior quarter 1–8, prior employment in both quarters 1–2, prior employment in all quarters 1–4, no prior employment in both quarters 1–2, no prior employment in any quarter 1–4, prior employment in focus industry in prior quarter 1, prior employment in focus industry in prior quarters 1–4, and earnings in prior quarters 1–8; and 3) interactions between gender and race, gender and age, gender and education, gender and quarter of entry, gender and prior earnings, gender and prior employment in focus industry, race and age, race and education, race and quarter of entry, race and prior earnings, race and prior employment in focus industry, education and age, education and quarter of entry, education and prior earnings, education, and prior employment in focus industry.

results. Therefore, in addition to using outcome means comparisons to estimate program effects, we applied the same bias-adjustment method used in the Ohio analyses. The bias-adjusted impacts were equivalent to the impact estimates reported below, supporting the view that the few differences in characteristics for WRTP Construction did not affect the validity of the matching process.

4.2.2 Impact Results

Program impacts were estimated by comparing the mean outcomes between the treatment and the matched comparison groups. To assess their statistical significance, we produced t-tests based on bootstrap standard errors. Impact results for each program are presented below.

WRTP Construction Program Impacts. Table 20 presents the impact results on employment and employment in construction. We find that 72.7 percent of program participants (treatment group) were employed in quarter 1 after entry, a proportion that declined slightly but remained in the 67.2–70.7 percent range in quarters 2–6. Comparisons with the matched comparison group show that the program was effective in increasing employment rates throughout the follow-up period. In quarter 1 after entry, 72.7 percent of treatment group members were employed, compared with 51.0 percent of matched comparison group members. As the right-hand column shows, the 21.7 percentage-point difference was statistically significant at the 1 percent level, which means that participants were 43 percent more likely than those in the matched comparison group to be employed at quarter 1. The program's effect on employment declined over time, but remained statistically and substantively important through quarter 6.

Table 20: Program Impacts on Employment, WRTP Construction Pathways

	Treatment Group	Matched Comparison Group	Program Impact [% Comparison Group]
Total Number of Participants	**1,091**	**29,491**	
Employed			
In Quarter 1	.727 (.446)	.510 (.500)	*.217 (.027)*** [+43%]*
In Quarter 2	.705 (.456)	.521 (.500)	*.184 (.028)*** [+35%]*
In Quarter 3	.672 (.470)	.571 (.495)	*.101 (.028)*** [+18%]*
In Quarter 4	.700 (.458)	.590 (.492)	*.110 (.026)*** [+19%]*
In Quarter 5	.706 (.456)	.618 (.486)	*.088 (.025)*** [+14%]*
In Quarter 6	.707 (.455)	.600 (.490)	*.107 (.023)*** [+18%]*
Employed in Construction			
In Quarter 1	.027 (.161)	.024 (.152)	*.003 (.005) [+12%]*
In Quarter 2	.024 (.153)	.029 (.167)	*-.005 (.006) [-17%]*
In Quarter 3	.019 (.137)	.029 (.168)	*-.010 (.005)* [-34%]*
In Quarter 4	.022 (.147)	.034 (.180)	*-.012 (.005)** [-34%]*
In Quarter 5	.029 (.169)	.035 (.183)	*-.006 [.007] [-17%]*
In Quarter 6	.031 (.174)	.035 (.183)	*-.004 [.007] [-11%]*

Note: The two left-hand columns report the mean and standard deviation for the treatment and the matched comparison group. The right-hand column reports the estimated program impact, with bootstrap standard errors in parentheses; in brackets is the program impact as a percentage of the matched comparison group mean. Statistical significance: *** = at 1 percent level.

The same table shows that very few participants found construction jobs, with the construction employment rate not exceeding 3.1 percent in the six-quarter follow-up period. Comparing these to the matched comparison group, we find that the program did not lead to any positive effects on construction employment. These results show that, while the program effectively promoted overall employment rates, these effects are not attributable to the program's placing participants in construction jobs.

Table 21 presents program impacts on job retention and earnings. The table shows that 64.3 percent of participants were employed in both quarter 1 and quarter 2. Job retention rates declined over time, with 44.5 percent of participants finding a job in quarter 1 and remaining employed in each quarter throughout the six-quarter follow-up period. Compared to the matched comparison group, we find that the program helped participants obtain employment in quarter 1 after program entry and remain employed in multiple quarters thereafter. For example, 64.3 percent of treatment group members were employed in both quarters 1 and 2 after entry, compared to 42.3 percent of matched comparison group members. The difference was statistically significant, which shows that treatment group members were 52 percent more likely to find and sustain employment for two quarters after entry. The program's effect on job retention was retained through quarter 6; 44.5 percent of treatment group members were employed in all six quarters after program entry, compared with 29.4 percent of matched comparison group members, a 51 percent increase. These results show that the program was not only effective in helping participants obtain jobs, but also able to retain the jobs for long periods after entry.

The program's positive effects on employment and job retention led to large positive effects on earnings. The average participant earned $5,087 in quarter 1 after entry, with average earnings increasing over time, reaching $5,677 in quarter 6. Dividing average earnings by the overall employment rate (see Table 20), we find that the average participant who was employed in quarter 1 earned $6,997, increasing to $8,029 by quarter 6. Compared to the matched comparison group, the average participant had $2,137 (72 percent) higher earnings in quarter 1 after program entry. The program's effect on earnings was positive and statistically significant in quarters 2–6, ranging from 32 to 78 percent.

Table 21: Program Impacts on Job Retention and Earnings, WRTP Construction Pathways

	Treatment Group	Matched Comparison Group	Program Impact [% Comparison Group]
Total Number of Participants	**1,091**	**29,491**	
Job Retention			
Employed in Q1–2	.643 (.479)	.423 (.494)	*.220 (.029)*** [+52%]*
Employed in Q1–3	.555 (.497)	.367 (.482)	*.188 (.029)*** [+51%]*
Employed in Q1–4	.503 (.500)	.334 (.472)	*.169 (.033)*** [+51%]*
Employed in Q1–5	.467 (.499)	.315 (.465)	*.152 (.035)*** [+48%]*
Employed in Q1–6	.445 (.497)	.294 (.455)	*.151 (.032)*** [+51%]*
Earnings ($)			
In Quarter 1	5,087 (5,551)	2,950 (5,234)	*2,137 (485)*** [+72%]*
In Quarter 2	4,999 (5,477)	2,810 (3,975)	*2,189 (248)*** [+78%]*
In Quarter 3	4,746 (5,591)	3,586 (4,725)	*1,161 (417)*** [+32%]*
In Quarter 4	5,282 (5,682)	3,640 (5,008)	*1,641 (419)*** [+45%]*
In Quarter 5	5,641 (5,907)	3,616 (4,766)	*2,024 (342)*** [+56]*
In Quarter 6	5,677 (5,876)	3,592 (4,588)	*2,085 (311) [+58%]*

Note: The two left-hand columns report the mean and standard deviation for the treatment and the matched comparison groups. The right-hand column reports the estimated program impact, with bootstrap standard errors in parentheses; in brackets is the program impact as a percentage of the matched comparison group mean. Statistical significance: *** = at 1 percent level.

These results show that, despite WRTP Construction's ineffectiveness in helping participants obtain employment in construction, the program had positive effects on overall employment. The program also helped participants obtain sustainable jobs, as suggested by the job retention rates through the entire six-quarter follow-up period. As a result, participants had much higher earnings than non-participants in the matched comparison group.

WRTP Manufacturing Program Impacts. Program impacts on employment are presented in Table 22. About 70.9 percent of program participants were employed in quarter 1 after entry. Participant employment rates were relatively steady thereafter, at 66.3–72.1 percent in

quarters 2–6. Table 22 also shows that many participants were employed in healthcare jobs after program entry. In quarters 1–2 after entry, 32.6 percent of participants were employed in manufacturing jobs, a proportion that increased slightly over time, reaching as high as 40.7 percent in quarter 5. Dividing the manufacturing employment rate by the overall employment rate, we find that about half the treatment group participants who found jobs after program entry were employed in the program's focus industry.

Comparisons with the matched comparison group show that the program had large positive effects on employment in each of the six quarters after program entry. In quarter 1 after entry, program participants were 28.6 percentage points (68 percent) more likely to be employed than unemployed workers in the matched comparison group. The program's effects on overall employment declined in each subsequent quarter, but remained large and statistically significant.

The program also had significant effects on manufacturing employment. For example, 32.6 percent of participants found employment in manufacturing in quarter 1, compared with just 5.1 percent of matched comparison group members. The 25.3 percentage-point difference implies that program participants were more than five times more likely to find a manufacturing job relative to non-participants. Throughout the follow-up period, treatment matched comparison group differences in manufacturing employment rates remained large and statistically significant, with program participants at least three times more likely than matched comparison group members to be employed in manufacturing. In fact, the program's percentage-point effects on manufacturing employment were similar or exceeded the effects on overall employment, suggesting that the program's effects on employment were largely driven by the program's effectiveness in promoting employment in manufacturing.

Table 22: Program Impacts on Employment, WRTP Manufacturing

	Treatment Group	Matched Comparison Group	Program Impact [% Comparison Group]
Total Number of Participants	**86**	**19,844**	
Employed			
In Quarter 1	.709 (.457)	.423 (.494)	*.286 (.054)*** [+68%]*
In Quarter 2	.663 (.476)	.466 (.499)	*.199 (.046)*** [+42%]*
In Quarter 3	.698 (.462)	.478 (.500)	*.212 (.056)*** [+46%]*
In Quarter 4	.721 (.451)	.511 (.500)	*.208 (.041)*** [+41%]*
In Quarter 5	.698 (.462)	.526 (.499)	*.173 (.048)*** [+33%]*
In Quarter 6	.663 (.476)	.548 (.498)	*.111 (.062)* [+21%]*
Employed in Manufacturing			
In Quarter 1	.326 (.471)	.051 (.220)	*.253 (.052)*** [+535%]*
In Quarter 2	.326 (.471)	.067 (.250)	*.237 (.054)*** [+386%]*
In Quarter 3	.349 (.479)	.069 (.254)	*.258 (.056)*** [+403%]*
In Quarter 4	.384 (.489)	.089 (.284)	*.275 (.069)*** [+333%]*
In Quarter 5	.407 (.494)	.111 (.314)	*.296 (.067)*** [+267%]*
In Quarter 6	.372 (.486)	.123 (.328)	*.249 (.058)*** [+202%]*

Note: The two left-hand columns report the mean and standard deviation for the treatment and the matched comparison groups. The right-hand column reports the estimated program impact, with bootstrap standard errors in parentheses; in brackets is the program impact as a percentage of the matched comparison group mean. Statistical significance: *** = at 1 percent level.

Table 23 presents program impacts on job retention and earnings. Contrary to the results of the WRTP Construction program, WRTP Manufacturing led to significant effects on job retention. About 61.6 percent of treatment group members were employed in quarters 1 and 2 after entry. Job retention rates remained relatively high throughout the follow-up period – 43.0 percent of participants were employed in each of the six quarters after program entry. Participants' job retention rates were 81–126 percent higher than the job retention rates of the

matched comparison group. That shows that the program was very effective in helping participants find sustainable jobs.

Table 23: Program Impacts on Job Retention and Earnings, WRTP Manufacturing

	Treatment Group	Matched Comparison Group	Program Impact [% Comparison Group]
Total Number of Participants	**86**	**19,844**	
Job Retention			
Employed in Q1–2	.616 (.489)	.341 (.474)	*.277 (.058)*** [+81%]*
Employed in Q1–3	.547 (.501)	.264 (.441)	*.282 (.060)*** [+107%]*
Employed in Q1–4	.477 (.502)	.232 (.422)	*.243 (.052)*** [+106%]*
Employed in Q1–5	.477 (.502)	.211 (.408)	*.265 (.051)*** [+126%]*
Employed in Q1–6	.430 (.498)	.198 (.398)	*.231 (.054)*** [+118%]*
Earnings ($)			
In Quarter 1	4,783 (4,818)	1,336 (2,531)	*3,434 (482)*** [+258%]*
In Quarter 2	4,846 (4,637)	1,768 (4,846)	*3,062 (487)*** [+174%]*
In Quarter 3	4,724 (4,473)	2,022 (3,035)	*2,690 (456)*** [+134%]*
In Quarter 4	4,796 (4,425)	2,203 (3,331)	*2,584 (497)*** [+118%]*
In Quarter 5	5,138 (4,630)	2,484 (3,460)	*2,679 (542)*** [+107%]*
In Quarter 6	4,802 (4,565)	2,590 (3,524)	*2,212 (456)*** [+85%]*

Note: The two left-hand columns report the mean and standard deviation for the treatment and the matched comparison group. The right-hand column reports the estimated program impact, with bootstrap standard errors in parentheses; in brackets is the program impact as a percentage of the matched comparison group mean. Statistical significance: *** = at 1 percent level.

Finally, the program led to substantial effects on earnings. In quarter 1, the average participant earned $4,783, an amount that remained relatively steady throughout the six-quarter follow-up period. Dividing average earnings by the overall employment rates (from Table 22), we find that participants who found employment after program entry had average quarterly earnings in the $6,746–$7,361 range. Compared to the matched comparison group, participants had substantially higher earnings in each quarter after entry. In quarter 1, the program led to a

$3,434 increase in earnings, which means that participants had more than 2.5 times the earnings of those in the matched comparison group. The program's effects on earnings followed a declining patter over time that was similar to the program's effects on employment. Nevertheless, effects on earnings remained substantial and statistically significant in the entire six-quarter follow-up period, with treatment group members earning $2,212 (85 percent) higher earnings in quarter 6 relative to their peers.

Overall, these results show that the WRTP Manufacturing program was very successful in helping participants to obtain employment in manufacturing, leading to positive effects on overall employment rates. Moreover, the program had large effects on job retention, which shows that the program helped participants obtain jobs that were sustainable for long periods after program entry. The program's effectiveness in promoting employment and job retention yielded large positive effects on earnings; in fact, the program's effects on earnings were the largest across the six programs examined in this study.

Healthcare Alliance Program Impacts. Table 24 presents the program's impacts on employment. We observe that 57.1 percent of program participants were employed in quarter 1, with employment rates increasing in each subsequent quarter, reaching 76.0 percent in quarter 6. Large proportions of participants were employed in healthcare. In quarter 1 after entry, 27.9 percent of participants were employed in healthcare, which indicates that nearly half of all employed treatment group members in quarter 1 were employed in the program's focus industry. Healthcare employment rates and their importance in overall employment rates gradually increased over time, reaching 47.4 percent in quarter 6.

The right-hand column of Table 24 shows that the program led to positive and significant effects on overall employment in each of the six quarters after program entry. The program's effect on employment was 16.5 percentage points (40 percent) and 19.4 percentage points (41 percent) in quarters 1 and 2 after entry, respectively. The program's effects on employment rates remained statistically and substantively important in quarters 3–6: 28–34 percent. Table

24 also shows that the program was very effective in helping participants to obtain jobs in healthcare. Compared with matched comparison group members, treatment group members were at least 155 percent more likely to be employed in a healthcare job in each of the six quarters after entry. These results suggest that the program's success in improving overall employment is tied to the program's helping participants to obtain jobs in healthcare.

Table 24: Program Impacts on Employment, Healthcare Alliance

	Treatment Group	Matched Comparison Group	Program Impact [% Comparison Group]
Total Number of Participants	**287**	**8,666**	
Employed			
In Quarter 1	.571 (.500)	.407 (.491)	*.165 (.032)*** [+40%]*
In Quarter 2	.669 (.471)	.475 (.500)	*.194 (.031)*** [+41%]*
In Quarter 3	.679 (.468)	.530 (.499)	*.149 (.024)*** [+28%]*
In Quarter 4	.753 (.432)	.561 (.496)	*.192 (.024)*** [+34%]*
In Quarter 5	.770 (.422)	.587 (.492)	*.183 (.026)*** [+31%]*
In Quarter 6	.760 (.428)	.594 (.491)	*.166 (.026)*** [28%]*
Employed in Healthcare			
In Quarter 1	.279 (.449)	.098 (.297)	*.181 (.022)*** [185%]*
In Quarter 2	.376 (.485)	.127 (.333)	*.249 (.033)*** [+196%]*
In Quarter 3	.383 (.487)	.137 (.344)	*.246 (.032)*** [+180%]*
In Quarter 4	.449 (.498)	.170 (.375)	*.280 (.030)*** [+165%]*
In Quarter 5	.470 (.500)	.174 (.379)	*.296 (.027)*** [+170%]*
In Quarter 6	.474 (.500)	.186 (.389)	*.288 (.030)*** [+155%]*

Note: The two left-hand columns report the mean and standard deviation for the treatment and the matched comparison group. The right-hand column reports the estimated program's impact, with bootstrap standard errors in parentheses; in brackets is the program impact as a percentage of the matched comparison group mean. Statistical significance: *** = at 1 percent level.

The program's effects on job retention and earnings are summarized in Table 25. We see that 52.6 percent of participants found employment in quarter 1 after entry and remained employed in quarter 2. Job retention rates remained large throughout the entire follow-up period. Comparing job retention rates between the treatment and the matched comparison group, we find that the program led to positive and statistically significant effects on job retention throughout the six-quarter follow-up period. Case in point, 40.1 percent of treatment group members were employed in each of the six quarters after program entry, compared with 22.3 percent of matched comparison group members, an 80 percent difference.

Table 25: Program Impacts on Job Retention and Earnings, Healthcare Alliance

	Treatment Group	Matched Comparison Group	Program Impact [% Comparison Group]
Total Number of Participants	**287**	**8,666**	
Job Retention			
Employed in Q1—2	.526 (.500)	.340 (.474)	*.186 (.033)*** [55%]*
Employed in Q1—3	.467 (.500)	.282 (.450)	*.185 (.029)*** [66%]*
Employed in Q1—4	.443 (.498)	.255 (.436)	*.188 (.032)*** [+74%]*
Employed in Q1—5	.429 (.496)	.236 (.425)	*.192 (.033)*** [+82%]*
Employed in Q1—6	.401 (.491)	.223 (.416)	*.177 (.037)*** [+80%]*
Earnings ($)			
In Quarter 1	1,690 (2,160)	947 (1,754)	*743 (122)*** [79%]*
In Quarter 2	2,159 (2,306)	1,335 (2,135)	*825 (157)*** [+62%]*
In Quarter 3	2,301 (2,464)	1,550 (2,291)	*750 (149)*** [+48%]*
In Quarter 4	3,003 (2,795)	1,829 (2,566)	*1,174 (203)*** [+64%]*
In Quarter 5	2,982 (2,666)	2,023 (2,666)	*960 (176)*** [+47%]*
In Quarter 6	3,106 (2,811)	2,140 (2,732)	*966 (171)*** [+45%]*

Note: The two left-hand columns report the mean and standard deviation for the treatment and the matched comparison groups. The right-hand column reports the estimated program impact, with bootstrap standard errors in parentheses; in brackets is the program impact as a percentage of the matched comparison group mean. Statistical significance: *** = at 1 percent level.

The program led to positive effects on earnings in each of the six quarters after entry. The average participant earned $1,690 in quarter 1 after entry, which gradually increased to $3,106 by quarter 6. Compared to matched comparison group members, program participants earned significantly higher earnings in each of the six quarters after entry. In particular, the program led to a $743 (79 percent) increase in average earnings in quarter 1 after entry, an effect that was statistically significant at the 1 percent level. The program's effect on earnings was at least as great and as statistically significant in all subsequent quarters.

Overall, the above results show that the Healthcare Alliance program was very effective in helping participants to obtain jobs in healthcare, leading to positive effects on overall employment. Importantly, the jobs that programs participants were able to obtain as a result of program participation were sustainable. As a result, the average participant had earnings that exceeded the earnings of unemployed workers in the matched comparison group.

4.2.3 Discussion

This section summarizes and compares the results for the three programs, attempting to examine underlying factors to explain differences in program results. Table 26 summarizes the program effects on employment. All three programs had large positive effects on overall employment rates in the six quarters after program entry. WRTP Manufacturing had the greatest effects on employment, leading to a 68 percent increase in quarter 1 and a 33–41 percent increase in quarters 2–6. WRTP Construction and Healthcare Alliance raised employment rates by 43 and 40 percent, respectively, in quarter 1 after entry. Program effects declined over time, but remained substantively important, with the WRTP Construction and Healthcare Alliance programs increasing employment rates by 14–35 percent and 28–41 percent, respectively, in quarters 2–6.

The bottom panel of Table 26 also shows that the WRTP Manufacturing and Healthcare Alliance programs were very effective in promoting participant employment in their focus industries. WRTP Manufacturing increased manufacturing employment rates by 23.7–29.6 percentage

points in the six quarters after program entry, meaning that participants were at least twice as likely as their comparison group peers to find manufacturing jobs. Similarly, Healthcare Alliance increased healthcare employment rates by 18.1–29.6 percentage points, meaning that participants were at least 155 percent more likely to be employed in healthcare than those in the matched comparison group. In contrast, WRTP Construction was ineffective in helping participants to find jobs in construction.

Table 26: Summary of Program Impacts on Employment

	WRTP Construction	WRTP Manufacturing	Healthcare Alliance
Employed			
In Quarter 1	*.217 (.027)*** *[+43%]*	*.286 (.054)*** *[+68%]*	*.165 (.032)*** *[+40%]*
In Quarter 2	*.184 (.028)*** *[+35%]*	*.199 (.046)*** *[+42%]*	*.194 (.031)*** *[+41%]*
In Quarter 3	*.101 (.028)*** *[+18%]*	*.212 (.056)*** *[+46%]*	*.149 (.024)*** *[+28%]*
In Quarter 4	*.110 (.026)*** *[+19%]*	*.208 (.041)*** *[+41%]*	*.192 (.024)*** *[+34%]*
In Quarter 5	*.088 (.025)*** *[+14%]*	*.173 (.048)*** *[+33%]*	*.183 (.026)*** *[+31%]*
In Quarter 6	*.107 (.023)*** *[+18%]*	*.111 (.062)** *[+21%]*	*.166 (.026)*** *[28%]*
Employed in Focus Industry			
In Quarter 1	*.003 (.005)* *[+12%]*	*.253 (.052)*** *[+535%]*	*.181 (.022)*** *[185%]*
In Quarter 2	*-.005 (.006)* *[-17%]*	*.237 (.054)*** *[+386%]*	*.249 (.033)*** *[+196%]*
In Quarter 3	*-.010 (.005)** *[-34%]*	*.258 (.056)*** *[+403%]*	*.246 (.032)*** *[+180%]*
In Quarter 4	*-.012 (.005)** *[-34%]*	*.275 (.069)*** *[+333%]*	*.280 (.030)*** *[+165%]*
In Quarter 5	*-.006 [.007]* *[-17%]*	*.296 (.067)*** *[+267%]*	*.296 (.027)*** *[+170%]*
In Quarter 6	*-.004 [.007]* *[-11%]*	*.249 (.058)*** *[+202%]*	*.288 (.030)*** *[+155%]*

Note: Reported is the estimated program impact with bootstrap standard errors in parentheses; in brackets is the program impact as a percentage of the weighted matched comparison group mean. Statistical significance: ** = at 5 percent level; *** = at 1 percent level.

These results indicate that the effects on overall employment produced by the WRTP Manufacturing and Healthcare Alliance programs were largely attributable to the two programs' effectiveness in placing participants in jobs in their respective focus industries. On the other hand, WRTP Construction having no effect on employment in construction implies that the program's positive effects on overall employment were driven by participants' finding non-construction jobs at a higher rate than non-participants. This indicates that the services offered by WRTP Construction provided participants with transferrable skills and/or assistance in conducting an effective search for non-construction jobs.

Table 27 summarizes the impacts on job retention and earnings. All three programs were effective in helping participants to find jobs soon after program entry and retain those jobs for long periods. WRTP Manufacturing participants were 81–126 percent more likely than those in the matched comparison group to find a job in quarter 1 and remain employed in subsequent quarters. These results imply that the program did not just help participants find manufacturing jobs and improve their overall employment, but helped them find sustainable jobs, ensuring a more stable employment path. Similarly, WRTP Construction and Healthcare Alliance increased participants' job retention rates by 48–52 and 55–82 percent, respectively. For Healthcare Alliance, these results imply that the program achieved its goal of placing participants in promising, sustainable jobs in the healthcare industry. WRTP Construction's effects on job retention imply that the skills obtained by participants helped them obtain non-construction jobs more sustainable than the jobs they would have obtained in the program's absence.

Finally, Table 27 shows that all three programs had positive effects on average earnings in the entire six-quarter follow-up period. WRTP Manufacturing – which had greater effects on overall employment, focus industry employment, and job retention than the other two programs – had substantial effects on earnings. Driven by its positive effects on overall employment and job retention, WRTP Construction also had positive effects on earnings. This implies that the program's participants got better paying non-construction jobs than those in the matched comparison group. At the same time, the Healthcare Alliance had much lower, but

substantively important, effects on earnings than the other two programs, reflecting the program's effectiveness in placing participants in jobs earlier than if they left to search for a job without receiving program services.

Table 27: Summary of Program Impacts on Job Retention and Earnings, Wisconsin

	WRTP Construction	WRTP Manufacturing	Healthcare Alliance
Job Retention			
Employed in Q1–2	*.220 (.029)*** [+52%]*	*.277 (.058)*** [+81%]*	*.186 (.033)*** [55%]*
Employed in Q1–3	*.188 (.029)*** [+51%]*	*.282 (.060)*** [+107%]*	*.185 (.029)*** [66%]*
Employed in Q1–4	*.169 (.033)*** [+51%]*	*.243 (.052)*** [+106%]*	*.188 (.032)*** [+74%]*
Employed in Q1–5	*.152 (.035)*** [+48%]*	*.265 (.051)*** [+126%]*	*.192 (.033)*** [+82%]*
Employed in Q1–6	*.151 (.032)*** [+51%]*	*.231 (.054)*** [+118%]*	*.177 (.037)*** [+80%]*
Earnings			
In Quarter 1	*2,137 (485)*** [+72%]*	*3,434 (482)*** [+258%]*	*743 (122)*** [79%]*
In Quarter 2	*2,189 (248)*** [+78%]*	*3,062 (487)*** [+174%]*	*825 (157)*** [+62%]*
In Quarter 3	*1,161 (417)*** [+32%]*	*2,690 (456)*** [+134%]*	*750 (149)*** [+48%]*
In Quarter 4	*1,641 (419)*** [+45%]*	*2,584 (497)*** [+118%]*	*1,174 (203)*** [+64%]*
In Quarter 5	*2,024 (342)*** [+56]*	*2,679 (542)*** [+107%]*	*960 (176)*** [+47%]*
In Quarter 6	*2,085 (311) [+58%]*	*2,212 (456)*** [+85%]*	*966 (171)*** [+45%]*

Note: Reported is the estimated program impact, with bootstrap standard errors in parentheses; in brackets is the program impact as a percentage of the weighted matched comparison group mean. Statistical significance: ** = at 5 percent level; *** = at 1 percent level.

The Wisconsin NFWS/SIF-funded program results show that all three programs were very effective in helping participants to obtain sustainable jobs following program entry, leading to positive effects on earnings. There are two notable differences in program results. First, the success of WRTP Manufacturing and Healthcare Alliance was tied to the programs' effectiveness in placing participants in manufacturing and healthcare jobs, respectively. In contrast, WRTP Construction was not effective in placing participants in construction jobs, but

did help participants to obtain non-construction jobs at a higher rate than they would in the program's absence. Second, WRTP Manufacturing had greater effects on all outcomes of interest than did the other two programs.

Interestingly, differences in program effects cannot be directly tied to the service delivery process. In fact, WRTP Construction and WRTP Manufacturing followed the same model, consisting of: (1) pre-apprenticeship training to help low-skill, inexperienced workers to gain on-the-job training; (2) assistance to job-ready, experienced workers to obtain certificates in skilled trades; and (3) career advancement training to those who are successful in finding a job. These services are tied with the programs' success in promoting overall employment rates, job retention, and earnings, but cannot explain why the WRTP Manufacturing had higher overall impacts. The Healthcare Alliance program offered unemployed participants the opportunity to receive industry-specific classroom training and job search services, aimed at helping them obtain healthcare jobs. This differed from the design of the two WRTP programs, but it is not clear why the Healthcare Alliance program's design led to markedly better results than WRTP Construction and to slightly weaker effects than WRTP Manufacturing in placing participants in jobs in the program's focus industry.

Perhaps a more plausible explanation for WRTP Manufacturing and Healthcare Alliance having greater effects than WRTP Construction in placing workers in jobs in their respective focus industries is their relationship with their employer partners. The former two programs cooperated closely with their employer partners to develop curriculums that catered to specific employer needs and to create a pipeline for placing participants who completed the training in available jobs. Employer partners in WRTP Construction had a less intensive involvement in the program's design and participant job placement.

In thinking about variations in program results, we note the potential role of the nature and structure of the programs' focus industries, and the particular economic environment at the time. Similar to Ohio, the healthcare unemployment rate was 4.3 percent, about half the

manufacturing rate (8.6 percent) and more than four times lower than the construction rate (18.0 percent). These figures may explain why the construction program was unsuccessful in placing participants in construction jobs. The very high unemployment rates in construction reflect the fact that construction employment declined substantially during the recession and that many construction workers were experiencing long-term unemployment. This suggests that WRTP Construction participants would have to compete with many former construction workers in Wisconsin for a limited number of jobs.

Although manufacturing was the largest of the three sectors in the ratio of total employment in the state, it had the lowest projected growth. In particular, 453,620 (15 percent) of the 3,051,328 workers in Wisconsin were employed in manufacturing in 2012. Employment projections of the Wisconsin Department of Workforce Development show that manufacturing is expected to grow by two percent through 2022. In contrast, healthcare accounted for a slightly lower proportion of the workforce in 2012, but was expected to grow by 15 percent by 2022 – more than double the projected average workforce growth for the entire state (7 percent). Construction accounted for only three percent of the workforce in 2012, but had the highest projected job growth (18 percent).

Table 28: Wisconsin Unemployment Rates and Employment Projections

	Healthcare	Manufacturing	Construction	Overall
Unemployment Rate, 2010	4.3%	8.6%	18.0%	8.7%
Total Employment, 2012 (% of overall employment in state)	375,019 (12%)	453,620 (15%)	93,197 (3%)	3,051,328 (100%)
Employment Projections, 2012-2022 (% change over 2012)	430,649 (+15%)	462,784 (+2%)	110,310 (+18%)	3,269,173 (+7%)
Unionization Rate, 2010	12.6%	19.0%	14.0%	16.6%

Note: Unemployment and unionization rates are based on authors' tabulations of the 2010 American Community Survey. Total employment and employment projections are provided by the Wisconsin Department of Workforce Development (http://wisconsinjobcenter.org/labormarketinfo/).

Table 28 shows that healthcare and construction were less heavily unionized than manufacturing. Since the most successful program focused on the industry with the highest

unionization rate, it would appear that any union limitations on access to jobs does not play an important role in explaining differences in relative success across programs.

Comparing the characteristics of unemployed participants in the three programs shows that the demographic profiles of the WRTP Construction and WRTP Manufacturing participants were roughly similar – the two programs attracted large proportions of participants who were male, were nonwhite, had no more than a high school education, and were under age 45. Participants in the Healthcare Alliance program were almost exclusively women (94 percent), but similar to the other two programs, the majority of participants were nonwhites and under age 45. Comparing the prior employment histories of participants, we find that WRTP Manufacturing participants had a relatively less stable employment history and were less likely to have experience than those in the other two programs. Overall, there is little evidence to suggest that differences in industry structure and in participants' characteristics can be used to explain differences in the programs' success.

5. Conclusion

Since its establishment in 2007, NFWS has supported a wide range of programs that promote the employment and career advancement of low-skill individuals in in-demand industries. At the beginning of 2010, NFWS was supporting 30 active programs that were responsible for identifying employer workforce needs in their local areas and developing workforce programs providing training and other services to low-income workers to prepare them to meet those needs. NFWS efforts were enhanced by a two-year $7.7 million SIF grant awarded in 2010, which was partly used to support scaling up the operations of those 30 programs.

This report presented the results of a quasi-experimental impact study of six NFWS/SIF-funded programs – the Health Careers, Advanced Manufacturing, and Construction Partnership programs in Ohio, and the WRTP Construction, WRTP Manufacturing, and Healthcare Alliance programs in Wisconsin. Results for the three Ohio-based programs show that the Health Careers program was very effective in placing participants in healthcare jobs, leading to positive effects on overall employment rates, job retention, and earnings. The Advanced Manufacturing and Construction Partnership programs helped very few participants to obtain jobs in their respective focus industries. Nevertheless, Advanced Manufacturing positively affected overall employment rates, job retention, and earnings. In contrast, Construction Partnership had small effects on overall employment and earnings.

Results for the three Wisconsin-based programs show that all three programs were effective in improving participant outcomes following program entry. WRTP Manufacturing was the most effective of the six programs. It was very successful in placing participants in manufacturing jobs, substantially affecting overall employment rates, job retention, and earnings. The results of the WRTP Manufacturing program in Wisconsin were markedly different from those of the Advanced Manufacturing program in Ohio, with the latter being not effective in helping participants find manufacturing jobs and having relatively lower effects on overall employment, job retention, and earnings. The Healthcare Alliance program was found to be effective in helping participants obtain healthcare jobs, and thus improved overall employment rates, job

retention rates, and earnings. In fact, the results of this program were similar to the results of the Health Careers program in Ohio. As with the Construction Partnership program, the WRTP Construction program was not effective in placing participants in construction jobs. Still, we find that the Wisconsin program led to positive effects on overall employment, job retention, and earnings – substantially greater than the effects observed for the Ohio program.

Finally, it is natural to ask how these results compare with those obtained in other high-quality studies of training programs. Because of their focus on particular industries, these programs differ from most other programs studied to date. However, like the programs examined here, other training programs studied attempt to provide disadvantaged workers with training for jobs expected to be in greatest demand. The bulk of training programs' effects estimates come from U.S. program evaluations of the Workforce Investment Act programs and its predecessor, the Job Training Partnership Act. The estimates of employment effects are 5–29 percentage points (measured monthly or quarterly), with some differences observed between women and men, and by specific training type and time following program entry (Card *et al*., 2010; Decker, 2011; Heinrich *et al*., 2013).

The six programs we studied are in this range. Construction Partnership produced increments in employment in the range of five percentage points, whereas the Ohio Health Careers and Advanced Manufacturing programs produced improvements in the range of 10–15 percentage points. Similarly, the WRTP Construction and WRTP Manufacturing programs showed increments exceeding 20 percentage points, but the effect declined to around 10 percentage points at the end of the six-quarter follow-up period. The Healthcare Alliance showed increments in the range of 15–20 percentage points.

Studies examining the effects of training programs on earnings suggest benefits that range from about $300–$900 per quarter for participants, based on 2006 dollars (Andersson *et al*. 2013; Bloom *et al*., 2003; Decker, 2011; Heinrich *et al*., 2013). Some studies also translate earnings effects into percentage terms, with estimated effects (earnings increases) of training programs

in the United States and abroad ranging from about 5–26 percent (Bloom *et al*., 2003; Decker, 2011; Greenberg *et al*., 2005; Haelermans and Borghans, 2011; Heinrich *et al*., 2013). In the analyses reported here, Ohio's Construction Partnership showed very modest gains, generally less than $200 per quarter, which were statistically significant in only two of the six quarters. The two other Ohio programs showed effects ranging from $200–$1,100 per quarter. Although Wisconsin's Healthcare Alliance showed earnings effects in the same range, the two WRTP programs raised earnings by appreciably more, often exceeding $2,000 in a quarter, in some cases implying that earnings more than doubled.

Overall, the results of this study provide important insights on the effectiveness of NFWS/SIF-funded programs focusing on healthcare, manufacturing, and construction. Healthcare programs are likely to be effective in helping participants obtain jobs in healthcare, an industry with specific workforce needs, relatively low unemployment rates, and high growth potential. At the same time, training programs focusing on manufacturing are found to be effective in helping participants find sustainable jobs and improve their earnings. However, we get mixed results on the effectiveness of such programs in promoting employment in the manufacturing sector. Training programs focusing on construction jobs are found to be ineffective in promoting participants' employment in construction, and have lower overall effects on employment, job retention, and earnings than programs focusing on healthcare and manufacturing. Finally, it appears that program estimates of overall employment rates and earnings for all but one of the six NFWS/SIF-funded programs studied here – particularly for the two WRTP programs in Wisconsin – compared favorably with estimates obtained for other training programs studied to date.

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Appendix

Table A: Characteristics of Treatment and Matched Comparison Cases, Health Careers

	Treatment Group	Matched Comparison Group	*Difference*
Total Number of Participants	**992**	**46,701**	
Gender			
Men	.098 (.297)	.100 (.300)	*-.002 [.005]*
Women	.902 (.297)	.900 (.300)	*.002 [.005]*
Race			
White	.503 (.500)	.506 (.500)	*-.003 [.008]*
Black	.400 (.490)	.397 (.489)	*.003 [.008]*
Other Race	.096 (.294)	.096 (.294)	*.000 [.005]*
Missing	.001 (.032)	.001 (.032)	*.000 [.001]*
Education			
No High School Diploma	.081 (.272)	.077 (.267)	*.004 [.004]*
High School Diploma	.384 (.487)	.384 (.486)	*.000 [.008]*
Associate Degree, Some College	.458 (.498)	.458 (.498)	*.000 [.008]*
College Degree	.078 (.268)	.081 (.272)	*-.003 [.004]*
Age			
Less than 25 Years	.314 (.464)	.321 (.467)	*-.007 [.007]*
25-34 Years	.336 (.472)	.337 (.473)	*-.001 [.007]*
35-44 Years	.148 (.355)	.151 (.358)	*-.003 [.006]*
45-54 Years	.125 (.331)	.129 (.335)	*-.004 [.005]*
55-64 Years	.054 (.227)	.056 (.231)	*-.002 [.004]*
65+ Years	.005 (.071)	.005 (.071)	*.000 [.001]*
Missing	.018 (.134)	.001 (.030)	*.017 [.002]****
Local Workforce Investment Area			
Area 12 (Butler County)	.185 (.389)	.187 (.390)	*-.002 [.006]*
Area 13 (Hamilton County)	.794 (.404)	.793 (.405)	*.001 [.006]*
Other Areas	.020 (.141)	.021 (.143)	*-.001 [.002]*
Program Entry			
Quarter 1, 2010	.236 (.424)	.228 (.420)	*.008 [.007]*
Quarter 2, 2010	.077 (.266)	.077 (.266)	*.000 [.004]*
Quarter 3, 2010	.097 (.296)	.100 (.300)	*-.003 [.005]*
Quarter 4, 2010	.094 (.292)	.096 (.294)	*-.002 [.005]*
Quarter 1, 2011	.088 (.283)	.090 (.286)	*-.002 [.004]*
Quarter 2, 2011	.128 (.334)	.128 (.334)	*.000 [.005]*
Quarter 3, 2011	.151 (.358)	.157 (.364)	*-.006 [.006]*
Quarter 4, 2011	.130 (.337)	.124 (.330)	*.005 [.005]*

(Table continues on next page)

(Table A, continued from previous page)

	Treatment Group	Matched Comparison Group	*Difference*
Total Number of Participants	**992**	**46,701**	
Employment			
In Prior Quarter 1	.455 (.498)	.454 (.498)	*.001 [.008]*
In Prior Quarter 2	.491 (.500)	.487 (.500)	*.004 [.008]*
In Prior Quarter 3	.515 (.500)	.509 (.500)	*.006 [.008]*
In Prior Quarter 4	.535 (.499)	.532 (.499)	*.003 [.008]*
In Prior Quarter 5	.526 (.500)	.523 (.499)	*.003 [.008]*
In Prior Quarter 6	.522 (.500)	.524 (.499)	*-.002 [.008]*
In Prior Quarter 7	.553 (.497)	.555 (.497)	*-.002 [.008]*
In Prior Quarter 8	.555 (.489)	.562 (.496)	*-.007 [.008]*
Prior Employment			
In Both Quarters 1-2	.393 (.489)	.391 (488)	*.001 [.008]*
In All Quarters 1-4	.311 (.463)	.309 (.462)	*.002 [.007]*
No Prior Employment			
In Quarters 1-2	.448 (.497)	.450 (.497)	*-.002 [.008]*
In Quarters 1-4	.326 (.469)	.329 (.470)	*-.003 [.007]*
Prior Employment in Healthcare			
In Quarter 1	.202 (.401)	.202 (.402)	*.000 [.006]*
In Quarter 1-4	.282 (.450)	.279 (.449)	*.032 [.007]*
Earnings Amount			
In Prior Quarter 1	1,902 (5,241)	1,878 (5,251)	*24 [86]*
In Prior Quarter 2	1,905 (3,560)	1,897 (3,558)	*8 [71]*
In Prior Quarter 3	2,328 (5,560)	2,377 (5,907)	*-49 [90]*
In Prior Quarter 4	2,216 (4,456)	2,198 (4,320)	*18 [79]*
In Prior Quarter 5	2,380 (5,285)	2,320 (4,582)	*60 [84]*
In Prior Quarter 6	2,348 (4,547)	2,357 (4,509)	*-9 [80]*
In Prior Quarter 7	2,354 (3,718)	2,365 (3,771)	*-11 [70]*
In Prior Quarter 8	2,364 (4,506)	2,364 (3,987)	*0 [78]*

Note: Left-hand and middle columns report mean, with standard deviation in parentheses. The right-hand column reports the treatment-matched comparison group difference, with standard error in brackets. Statistical significance: *** = at the 1 percent level.

Table B: Characteristics of Treatment and Matched Comparison Cases, Advanced Manufacturing

	Treatment Group	Matched Comparison Group	*Difference*
Total Number of Participants	**682**	**42,293**	
Gender			
Men	.657 (.475)	.661 (.473)	*-.004 [.008]*
Women	.343 (.475)	.339 (.473)	*.004 [.008]*
Race			
White	.208 (.406)	.212 (.409)	*-.004 [.006]*
Black	.757 (.429)	.752 (.432)	*.005 [.007]*
Other Race	.035 (.184)	.036 (.185)	*-.001 [.003]*
Missing	--	--	
Education			
No High School Diploma	.292 (.455)	.303 (.459)	*-.011 [.007]*
High School Diploma	.399 (.490)	.391 (.488)	*.008 [.008]*
Associate Degree, Some College	.273 (.446)	.271 (.444)	*.002 [.007]*
College Degree	.037 (.188)	.036 (.444)	*.001 [.001]*
Age			
Less than 25 Years	.213 (.409)	.209 (.407)	*.004 [.006]*
25-34 Years	.302 (.459)	.311 (.463)	*-.009 [.007]*
35-44 Years	.214 (.410)	.209 (.406)	*.005 [.006]*
45-54 Years	.186 (.390)	.184 (.387)	*.002 [.006]*
55-64 Years	.078 (.268)	.080 (.271)	*-.002 [.044]*
65+ Years	.007 (.085)	.007 (.084)	*.000 [.001]*
Missing	--	--	--
Local Workforce Investment Area			
Area 12 (Butler County)	.119 (.324)	.126 (.331)	*-.007 [.005]*
Area 13 (Hamilton County)	.874 (.332)	.867 (.340)	*.007 [.005]*
Other Areas	.007 (.085)	.008 (.087)	*-.001 [.001]*
Program Entry			
Quarter 1, 2010	.018 (.132)	.018 (.133)	*.000 [.002]*
Quarter 2, 2010	.043 (.202)	.043 (.202)	*.000 [.003]*
Quarter 3, 2010	.076 (.266)	.081 (.272)	*-.005 [.004]*
Quarter 4, 2010	.117 (.322)	.116 (.321)	*.001 [.005]*
Quarter 1, 2011	.213 (.409)	.214 (.410)	*-.001 [.006]*
Quarter 2, 2011	.180 (.385)	.182 (.386)	*-.002 [.006]*
Quarter 3, 2011	.128 (.334)	.135 (.342)	*-.006 [.005]*
Quarter 4, 2011	.226 (.418)	.212 (.408)	*.014 [.007]***

(Table continues on next page)

(Table B, continued from previous page)

	Treatment Group	Matched Comparison Group	*Difference*
Total Number of Participants	**682**	**42,393**	
Employment			
In Prior Quarter 1	.287 (.453)	.288 (.453)	*-.001 [.007]*
In Prior Quarter 2	.292 (.455)	.297 (.457)	*-.005 [.007]*
In Prior Quarter 3	.331 (.471)	.334 (.472)	*-.003 [.007]*
In Prior Quarter 4	.323 (.467)	.331 (.471)	*-.008 [.007]*
In Prior Quarter 5	.342 (.475)	.347 (.476)	*-.005 [.008]*
In Prior Quarter 6	.375 (.485)	.384 (.486)	*-.009 [.008]*
In Prior Quarter 7	.380 (.486)	.388 (.487)	*-.008 [.008]*
In Prior Quarter 8	.427 (.495)	.428 (.495)	*-.001 [.008]*
Prior Employment			
In Both Quarters 1-2	.192 (.394)	.195 (.396)	*-.003 [.006]*
In All Quarters 1-4	.139 (.347)	.142 (.350)	*-.003 [.005]*
No Prior Employment			
In Quarters 1-2	.613 (.487)	.609 (.488)	*.004 [.008]*
In Quarters 1-4	.497 (.500)	.492 (.500)	*.005 [.008]*
Prior Employment in Manufacturing			
In Quarter 1	.028 (.165)	.028 (.166)	*.000 [.003]*
In Quarter 1-4	.050 (.218)	.053 (.223)	*-.003 [.003]*
Earnings Amount			
In Prior Quarter 1	787 (2,472)	817 (2,514)	*-30 [59]*
In Prior Quarter 2	1,076 (3,326)	1,127 (3,436)	*-51 [69]*
In Prior Quarter 3	1,348 (3,358)	1,370 (3,336)	*-22 [60]*
In Prior Quarter 4	1,460 (3,452)	1,508 (3,466)	*-48 [70]*
In Prior Quarter 5	1,612 (3,743)	1,634 (3,535)	*-22 [72]*
In Prior Quarter 6	1,672 (3,515)	1,754 (3,757)	*-82 [72]*
In Prior Quarter 7	1,979 (5,222)	1,948 (4,263)	*31 [82]*
In Prior Quarter 8	1,996 (3,679)	2,067 (3,747)	*-71 [72]*

Note: Left-hand and middle columns report mean with standard deviation in parentheses. The right-hand column reports the treatment-matched comparison group difference, with standard error in brackets. Statistical significance: ** = at the 5 percent level.

Table C: Characteristics of Treatment and Matched Comparison Cases, Construction Partnership

	Treatment Group	Matched Comparison Group	*Difference*
Total Number of Participants	**379**	**36,859**	
Gender			
Men	.520 (.500)	.519 (.500)	*.001 [.008]*
Women	.480 (.500)	.481 (.500)	*-.001 [.008]*
Race			
White	.185 (.389)	.187 (.390)	*-.002 [.006]*
Black	.781 (.414)	.778 (.416)	*.003 [.007]*
Other Race	.032 (.175)	.032 (.177)	*.000 [.003]*
Missing	.003 (.051)	.003 (.052)	*.000 [.001]*
Education			
No High School Diploma	.166 (.373)	.167 (.373)	*-.001 [.006]*
High School Diploma	.554 (.498)	.552 (.497)	*.002 [.008]*
Associate Degree, Some College	.245 (.431)	.246 (.430)	*-.001 [.007]*
College Degree	.034 (.182)	.035 (.184)	*-.001 [.003]*
Age			
Less than 25 Years	.311 (.464)	.314 (.464)	*-.003 [.007]*
25-34 Years	.293 (.457)	.294 (.456)	*-.001 [.007]*
35-44 Years	.237 (.426)	.241 (.428)	*-.004 [.007]*
45-54 Years	.127 (.333)	.127 (.333)	*.000 [.005]*
55-64 Years	.021 (.144)	.022 (.145)	*-.001 [.002]*
65+ Years	.003 (.051)	.003 (.052)	*.000 [.001]*
Missing	.008 (.089)	.000 (.000)	*.008 [.001]****
Local Workforce Investment Area			
Area 12 (Butler County)	.140 (.347)	.143 (.350)	*-.003 [.006]*
Area 13 (Hamilton County)	.860 (.347)	.857 (.350)	*.003 [.006]*
Other Areas	--	--	--
Program Entry			
Quarter 1, 2010	.156 (.363)	.155 (.362)	*.001 [.006]*
Quarter 2, 2010	.203 (.403)	.204 (.395)	*-.001 [.006]*
Quarter 3, 2010	.193 (.395)	.194 (.395)	*-.001 [.006]*
Quarter 4, 2010	.198 (.399)	.199 (.399)	*-.001 [.006]*
Quarter 1, 2011	.069 (.253)	.068 (.252)	*.001 [.004]*
Quarter 2, 2011	.065 (.249)	.063 (.244)	*.002 [.004]*
Quarter 3, 2011	.053 (.224)	.054 (.225)	*-.001 [.004]*
Quarter 4, 2011	.063 (.244)	.063 (.244)	*.000 [.004]*

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(Table C, continued from previous page)

	Treatment Group	Matched Comparison Group	*Difference*
Total Number of Participants	**379**	**36,859**	
Employment			
In Prior Quarter 1	.298 (.458)	.302 (.459)	*-.004 [.007]*
In Prior Quarter 2	.346 (.476)	.344 (.475)	*.002 [.008]*
In Prior Quarter 3	.322 (.468)	.323 (.468)	*-.001 [.007]*
In Prior Quarter 4	.343 (.475)	345 (.475)	*-.002 [.008]*
In Prior Quarter 5	.398 (.490)	.397 (.489)	*.001 [.008]*
In Prior Quarter 6	.438 (.497)	.432 (.495)	*.006 [.008]*
In Prior Quarter 7	.451 (.498)	.445 (.497)	*.006 [.008]*
In Prior Quarter 8	.449 (.498)	.446 (.497)	*.003 [.008]*
Prior Employment			
In Both Quarters 1-2	.211 (.409)	.214 (.410)	*-.003 [.006]*
In All Quarters 1-4	.129 (.336)	.131 (.337)	*-.002 [.005]*
No Prior Employment			
In Quarters 1-2	.567 (.496)	.568 (.495)	*-.001 [.008]*
In Quarters 1-4	.443 (.497)	.445 (.497)	*-.002 [.008]*
Prior Employment in Construction			
In Quarter 1	.013 (.114)	.014 (.116)	*-.001 [.002]*
In Quarter 1-4	.018 (.135)	.016 (.127)	*.002 [.002]*
Earnings Amount			
In Prior Quarter 1	1,028 (5,549)	1,045 (5,573)	*-17 [89]*
In Prior Quarter 2	824 (2,046)	836 (2,063)	*-12 [54]*
In Prior Quarter 3	935 (2,369)	952 (2,392)	*-17 [58]*
In Prior Quarter 4	1,095 (2,677)	1,109 (2,704)	*-14 [62]*
In Prior Quarter 5	1,172 (2,448)	1,186 (2,476)	*-14 [59]*
In Prior Quarter 6	1,627 (5,800)	1,645 (5,966)	*-18 [91]*
In Prior Quarter 7	1,460 (2,770)	1,459 (2,908)	*1 [63]*
In Prior Quarter 8	1,451 (2,855)	1,456 (2,867)	*-5 [64]*

Note: Left-hand and middle columns report mean with standard deviation in parentheses. The right-hand column reports the treatment-matched comparison group difference, with standard error in brackets. Statistical significance: *** = at the 1 percent level.

Table D: Characteristics of Treatment and Matched Comparison Cases, WRTP Construction

	Treatment Group	Matched Comparison Group	*Difference*
Total Number of Participants	**1,091**	**29,491**	
Gender			
Men	.905 (.294)	.912 (.284)	*-.007 [.011]*
Women	.095 (.294)	.088 (.284)	*.007 [.011]*
Race			
White	.385 (.487)	.358 (.479)	*.027 [.029]*
Black	.405 (.491)	.389 (.487)	*.017 [.030]*
Other Race	.065 (.247)	.077 (.266)	*-.012 [.020]*
Education			
No High School Diploma	.179 (.383)	.169 (.375)	*.010 [.023]*
High School Diploma	.791 (.407)	.800 (.401)	*-.008 [.024]*
Associate Degree, Some College	.020 (.141)	.020 (.141)	*.000 [.005]*
College Degree	.010 (.100)	.012 (.107)	*-.001 [.004]*
Age			
Less than 25 Years	.196 (.397)	.165 (.372)	*.031 [.019]*
25-34 Years	.333 (.471)	.356 (.479)	*-.023 [.031]*
35-44 Years	.230 (.421)	.262 (.439)	*-.032 [.033]*
45-54 Years	.175 (.380)	.144 (.351)	*.031 [.017]**
55-64 Years	.064 (.245)	.070 (.255)	*-.006 [.013]*
65+ Years	.002 (.043)	.003 (.057)	*-.001 [.001]*
Program Entry			
Quarter 1, 2010	.006 (.080)	.006 (.076)	*.001 [.003]*
Quarter 2, 2010	.020 (.141)	.017 (.129)	*.003 [.005]*
Quarter 3, 2010	.010 (.100)	.009 (.095)	*.001 [.003]*
Quarter 4, 2010	.005 (.074)	.005 (.073)	*.000 [.002]*
Quarter 1, 2011	.188 (.391)	.154 (.361)	*.034 [.018]**
Quarter 2, 2011	.204 (.403)	.184 (.388)	*.020 [.020]*
Quarter 3, 2011	.351 (.478)	.380 (.485)	*-.029 [.033]*
Quarter 4, 2011	.214 (.411)	.245 (.430)	*-.031 [.029]*

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(Table D, continued from previous page)

	Treatment Group	Matched Comparison Group	*Difference*
Total Number of Participants	**1,091**	**29,491**	
Employment			
In Prior Quarter 1	.605 (.489)	.644 (.479)	*-.039 [.026]*
In Prior Quarter 2	.606 (.489)	.624 (.484)	*-.018 [.029]*
In Prior Quarter 3	.604 (.489)	.658 (.474)	*-.054 [.025]***
In Prior Quarter 4	.597 (.491)	.634 (.482)	*-.037 [.026]*
In Prior Quarter 5	.564 (.496)	.592 (.492)	*-.028 [.029]*
In Prior Quarter 6	.586 (.493)	.564 (.496)	*.022 [.031]*
In Prior Quarter 7	.604 (.489)	.582 (.493)	*.022 [.031]*
In Prior Quarter 8	.607 (.489)	.593 (.491)	*.014 [.030]*
Prior Employment			
In Both Quarters 1-2	.520 (.500)	.548 (.498)	*-.029 [.031]*
In All Quarters 1-4	.416 (.493)	.457 (.498)	*-.041 [.033]*
No Prior Employment			
In Quarters 1-2	.309 (.462)	.280 (.449)	*.029 [.022]*
In Quarters 1-4	.232 (.422)	.212 (.409)	*.020 [.018]*
Prior Employment in Construction			
In Quarter 1	.279 (.449)	.323 (.468)	*-.045 [.036]*
In Quarter 1-4	.393 (.489)	.419 (.493)	*-.026 [.035]*
Earnings Amount			
In Prior Quarter 1	3,820 (4,995)	3,977 (4,869)	*-158 [326]*
In Prior Quarter 2	4,201 (5,412)	4,025 (4,924)	*176 [312]*
In Prior Quarter 3	4,410 (5,572)	4,472 (5,257)	*-62 [341]*
In Prior Quarter 4	4,440 (5,919)	4,510 (5,519)	*-71 [402]*
In Prior Quarter 5	4,462 (6,142)	4,387 (5,583)	*75 [436]*
In Prior Quarter 6	4,656 (6,356)	4,173 (5,722)	*483 [446]*
In Prior Quarter 7	4,986 (6,480)	4,831 (6,204)	*155 [540]*
In Prior Quarter 8	4,895 (6,217)	4,717 (6,166)	*179 [556]*

Note: Left-hand and middle columns report mean with standard deviation in parentheses. The right-hand column reports the treatment-matched comparison group difference, with standard error in brackets. Statistical significance: * = at the 10 percent level; ** = at the 5 percent level.

Table E: Characteristics of Treatment and Matched Comparison Cases, WRTP Manufacturing

	Treatment Group	Matched Comparison Group	*Difference*
Total Number of Participants	**86**	**19,844**	
Gender			
Men	.837 (.371)	.836 (.370)	*.001 (.040)*
Women	.163 (.371)	.164 (.370)	*-.001 (.040)*
Race			
White	.291 (.457)	.293 (.455)	*-.002 (.049)*
Black	.581 (.496)	.577 (.494)	*.004 (.054)*
Other Race	.047 (.212)	.048 (.214)	*-.001 (.023)*
Education			
No High School Diploma	.209 (.409)	.206 (.405)	*.003 (.045)*
High School Diploma	.767 (.425)	.770 (.421)	*-.003 (.046)*
Associate Degree, Some College	.023 (.152)	.023 (.151)	*-.000 (.016)*
College Degree	-	-	-
Age			
Less than 25 Years	.128 (.336)	.134 (.340)	*-.006 (.036)*
25-34 Years	.279 (.451)	.280 (.449)	*-.001 (.049)*
35-44 Years	.221 (.417)	.258 (.438)	*-.038 (.046)*
45-54 Years	.256 (.439)	.223 (.416)	*.033 (.048)*
55-64 Years	.116 (.322)	.097 (.297)	*.019 (.035)*
65+ Years	-	-	-
Program Entry			
Quarter 1, 2010	.023 (.152)	.023 (.151)	*-.000 (.016)*
Quarter 2, 2010	.035 (.185)	.035 (.185)	*-.000 (.020)*
Quarter 3, 2010	.267 (.445)	.269 (.444)	*-.002 (.049)*
Quarter 4, 2010	.279 (.451)	.276 (.447)	*.003 (.049)*
Quarter 1, 2011	.221 (.417)	.218 (.413)	*.003 (.045)*
Quarter 2, 2011	.174 (.382)	.178 (.382)	*-.003 (.042)*

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(Table E, continued from previous page)

	Treatment Group	Matched Comparison Group	*Difference*
Total Number of Participants	**86**	**19,844**	
Employment			
In Prior Quarter 1	.488 (.503)	.487 (.500)	*.001 (.055)*
In Prior Quarter 2	.558 (.500)	.557 (.497)	*.001 (.054)*
In Prior Quarter 3	.547 (.501)	.550 (.497)	*-.004 (.054)*
In Prior Quarter 4	.488 (.503)	.492 (.500)	*-.003 (.055)*
In Prior Quarter 5	.535 (.502)	.540 (.498)	*-.005 (.055)*
In Prior Quarter 6	.535 (.502)	.533 (.499)	*.002 (.055)*
In Prior Quarter 7	.558 (.500)	.558 (.497)	*.000 (.054)*
In Prior Quarter 8	.570 (.498)	.570 (.495)	*.000 (.054)*
Prior Employment			
In Both Quarters 1-2	.419 (.496)	.418 (.493)	*.001 (.054)*
In All Quarters 1-4	.279 (.451)	.282 (.450)	*-.003 (.049)*
No Prior Employment			
In Quarters 1-2	.372 (.486)	.373 (.484)	*-.001 (.053)*
In Quarters 1-4	.267 (.445)	.272 (.445)	*-.005 (.048)*
Prior Employment in Manufacturing			
In Quarter 1	.174 (.382)	.176 (.381)	*-.002 (.042)*
In Quarter 1-4	.267 (.445)	.241 (.428)	*.026 (.049)*
Earnings Amount			
In Prior Quarter 1	2,131 (3,058)	2,136 (3,044)	*-5 [333]*
In Prior Quarter 2	2,503 (4,054)	2,484 (4,009)	*19 [440]*
In Prior Quarter 3	2,919 (4,631)	2,945 (4,651)	*-27 [511]*
In Prior Quarter 4	2,486 (3,858)	2,508 (3,840)	*-22 [420]*
In Prior Quarter 5	2,573 (3,676)	2,588 (3,652)	*-14 [401]*
In Prior Quarter 6	2,806 (4,094)	2,787 (4,054)	*20 [447]*
In Prior Quarter 7	3,436 (5,220)	3,313 (4,904)	*124 [570]*
In Prior Quarter 8	3,838 (5,400)	3,755 (5,231)	*83 [594]*

Note: Left-hand and middle columns report mean with standard deviation in parentheses. The right-hand column reports the treatment-matched comparison group difference, with standard error in brackets.

Table F: Characteristics of Treatment and Matched Comparison Cases, Healthcare Alliance

	Treatment Group	Matched Comparison Group	*Difference*
Total Number of Participants	**287**	**8,666**	
Gender			
Men	.056 (.230)	.056 (.230)	*-.000 (.014)*
Women	.944 (.230)	.944 (.230)	*.000 (.014)*
Race			
White	.063 (.243)	.063 (.243)	*-.000 (.014)*
Black	.777 (.417)	.776 (.417)	*.001 (.026)*
Other Race	.143 (.351)	.143 (.350)	*-.000 (.022)*
Age			
Less than 25 Years	.415 (.494)	.402 (.490)	*.012 (.032)*
25-34 Years	.352 (.478)	.343 (.475)	*.009 (.030)*
35-44 Years	.101 (.302)	.141 (.348)	*-.040 (.019)***
45-54 Years	.091 (.288)	.076 (.265)	*.015 (.017)*
55-64 Years	.038 (.192)	.032 (.175)	*.007 (.012)*
65+ Years	.003 (.059)	.006 (.079)	*-.003 (.004)*
Program Entry			
Quarter 1, 2010	.143 (.351)	.146 (.353)	*-.003 (.022)*
Quarter 2, 2010	.369 (.483)	.370 (.483)	*-.001 (.031)*
Quarter 3, 2010	.324 (.469)	.323 (.468)	*.001 (.030)*
Quarter 4, 2010	.164 (.371)	.161 (.367)	*.002 (.024)*

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(Table F, continued from previous page)

	Treatment Group	Matched Comparison Group	*Difference*
Total Number of Participants	**287**	**8,666**	
Employment			
In Prior Quarter 1	.530 (.500)	.530 (.499)	*-.000 (.032)*
In Prior Quarter 2	.589 (.493)	.589 (.492)	*.000 (.031)*
In Prior Quarter 3	.578 (.495)	.579 (.494)	*-.000 (.031)*
In Prior Quarter 4	.589 (.493)	.589 (.492)	*-.001 (.031)*
In Prior Quarter 5	.592 (.492)	.594 (.491)	*-.002 (.031)*
In Prior Quarter 6	.599 (.491)	.600 (.490)	*-.000 (.031)*
In Prior Quarter 7	.606 (.489)	.608 (.488)	*-.001 (.031)*
In Prior Quarter 8	.578 (.495)	.581 (.493)	*-.003 (.032)*
Prior Employment			
In Both Quarters 1-2	.463 (.500)	.463 (.499)	*.000 (.032)*
In All Quarters 1-4	.390 (.489)	.389 (.488)	*.001 (.031)*
No Prior Employment			
In Quarters 1-2	.345 (.476)	.345 (.475)	*.000 (.030)*
In Quarters 1-4	.251 (.434)	.264 (.441)	*-.013 (.027)*
Prior Employment in Healthcare			
In Quarter 1	.199 (.400)	.204 (.403)	*-.006 (.026)*
In Quarter 1-4	.289 (.454)	.278 (.448)	*.012 (.030)*
Earnings Amount			
In Prior Quarter 1	1,308 (1,875)	1,303 (1,864)	*5 [116]*
In Prior Quarter 2	1,598 (2,086)	1,609 (2,087)	*-11 [130]*
In Prior Quarter 3	1,807 (2,295)	1,818 (2,299)	*-11 [143]*
In Prior Quarter 4	1,793 (2,352)	1,815 (2,364)	*-22 [146]*
In Prior Quarter 5	1,878 (2,441)	1,898 (2,444)	*-20 [152]*
In Prior Quarter 6	1,962 (2,532)	1,979 (2,536)	*-18 [157]*
In Prior Quarter 7	1,984 (2,461)	1,939 (2,468)	*-15 [152]*
In Prior Quarter 8	1,923 (2,735)	1,947 (2,748)	*-24 [169]*

Note: Left-hand and middle columns report mean with standard deviation in parentheses. The right-hand column reports the treatment-matched comparison group difference, with standard error in brackets.

Disclaimer

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