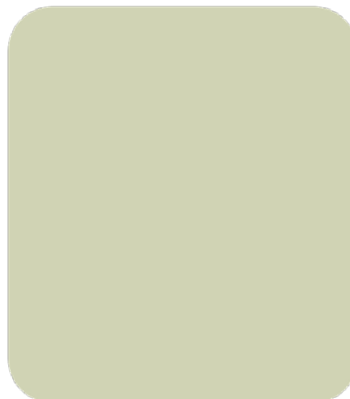


The San Diego Workforce Partnership's Bridge to Employment in the Healthcare Industry Program

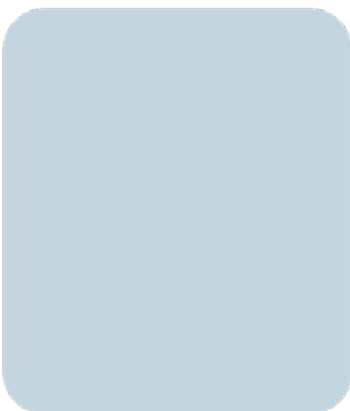


Three-Year Impact Report



OPRE Report 2020-105

August 2020



PACE
Pathways for Advancing
Careers and Education

The San Diego Workforce Partnership's Bridge to Employment in the Healthcare Industry Program: Three-Year Impact Report

A Pathways for Advancing Careers and Education (PACE) / Career Pathways Intermediate Outcomes Study Publication

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Mary Farrell, MEF Associates

Randall Juras, David Judkins, and Samuel Dastrup, Abt Associates

Submitted to:

Nicole Constance and Amelia Popham, Project Officers

Office of Planning, Research, and Evaluation

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Project Director: Larry Buron

Principal Investigator: David Fein; Director of Analysis: David Judkins

Abt Associates

6130 Executive Boulevard

Rockville, MD 20852

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Overview

This report documents the impacts three years after random assignment for the Bridge to Employment in the Healthcare Industry program, operated between 2010 and 2015 by the San Diego Workforce Partnership in San Diego, California. Bridge to Employment aims to help low-income adults, including Temporary Assistance for Needy Families (TANF) recipients, enroll in and complete occupational healthcare training and find healthcare employment.

Bridge to Employment is part of the **Pathways for Advancing Careers and Education (PACE)** project. Funded by the Administration for Children and Families (ACF) within the U.S. Department of Health and Human Services, PACE is a multi-site experimental evaluation of nine programs that incorporate some features of a career pathways framework.

Bridge to Employment combined five key components:

- (1) Formal and informal assessments to help navigator staff determine applicants' eligibility;
- (2) Navigation and case management services to help students choose a healthcare training program (patient care, technical, or administrative) and address barriers;
- (3) Individual training accounts (ITAs) to cover up to \$7,000 (\$10,000 for some occupations) of the cost of training;
- (4) Supportive services to facilitate students' enrollment and persistence; and
- (5) Employment services to help students find employment after training.

This evaluation, the Career Pathways Intermediate Outcomes Study, extends the follow-up period to three years for programs in the PACE project. Future reports produced by the Career Pathways Long-Term Outcomes Study will extend the follow-up period further.

Purpose

The San Diego Workforce Partnership operated the Bridge to Employment program with funding from ACF's Health Profession Opportunity Grants (HPOG) Program. Like all HPOG-funded programs, Bridge to Employment sought to address the dual goals of (1) helping low-income individuals enroll in and complete occupational healthcare training and find healthcare employment and (2) addressing the rising demand for healthcare workers. The program gave students ITA vouchers they could use at any accredited training provider in San Diego, along with case management, supportive services, and employment services.

This research was undertaken to evaluate whether Bridge to Employment was successful in providing training to low-income, low-skilled adults and whether the program's efforts led to impacts on credentials, earnings, healthcare employment, and other life outcomes.

Research Questions

Three years after random assignment,

- What were the effects of Bridge to Employment on:
 - Educational attainment, including healthcare credentials and exam-based certifications received?
 - Entry into career-track employment and higher earnings?
 - Individual and family well-being, including income and other life outcomes?
- Did the benefits of the Bridge to Employment program outweigh the costs from the perspectives of government, treatment group members, and society as a whole?

Highlights

- ***Bridge to Employment increased receipt of postsecondary healthcare credentials and exam-based certifications, but had no detectable impact on average duration of education and training during the first three years after random assignment.***

The program increased receipt of postsecondary healthcare credentials by 16 percentage points (35 percent in the control group versus 51 percent in the treatment group) and increased the receipt of exam-based certifications by 24 percentage points (36 percent in the control group versus 60 percent in the treatment group).

- ***Bridge to Employment had no detectable impact on average quarterly earnings in follow-up quarters 12-13, the study's single confirmatory outcome.***

It is possible that Bridge to Employment had a meaningful impact on this outcome that the study simply did not detect because the variance in earnings was large and the sample relatively small.

- ***Bridge to Employment increased employment in healthcare by 10 percentage points.***

The program did not change the overall employment rate, however.

- ***The program reduced personal student debt by \$919, on average, and family student debt by \$249.***

The program did not, however, have a detectable impact on most other measures of financial well-being.

- ***Because of imprecision in the earnings and educational costs estimates, it is not possible to definitively assess whether the benefits of the Bridge to Employment program are outweighed by the costs.***

Due to uncertainty in underlying estimates, cost-benefit analysis findings indicate that both positive and negative net benefits are plausible.

Methods

To assess the effectiveness of Bridge to Employment, the PACE project used an experimental design in which 1,007 program applicants between July 2012 and October 2013 were randomly assigned to a treatment group (507 members) that could access the program or to a control group (500 members) that could not, then compared their outcomes. The impact study used data from a follow-up survey conducted three years after random assignment and earnings records from the federal National Directory of New Hires. The Bridge to Employment impact study measured impacts on training, employment, and earnings outcomes approximately three years after random assignment for all measures and close to five years after random assignment for earnings. The study included a cost-benefit analysis.

Executive Summary

The San Diego Workforce Partnership implemented the **Bridge to Employment in the Healthcare Industry** program to help low-income adults, including Temporary Assistance for Needy Families (TANF) recipients, enroll in and complete occupational healthcare education and training and find healthcare employment. In doing so, it also aimed to address the rising demand for healthcare workers in San Diego.

Abt Associates and its partner, MEF Associates, are evaluating Bridge to Employment as part of the **Pathways for Advancing Careers and Education (PACE)** project, a multi-site experimental evaluation of nine training programs with career pathways components, funded by the Administration for Children and Families (ACF) within the U.S. Department of Health and Human Services. This report provides analyses of Bridge to Employment's impacts on educational attainment, employment and earnings, and other life outcomes three years following random assignment. It extends analyses conducted previously for an initial report that covered implementation and short-term impacts on education and employment-related outcomes about 18 months after random assignment (Farrell and Martinson 2017).

This evaluation, the Career Pathways Intermediate Outcomes Study, extends the follow-up period to three years for programs in the PACE project. Future reports produced by the Career Pathways Long-Term Outcomes Study will extend the follow-up period further.

About Bridge to Employment

The Bridge to Employment in the Healthcare Industry program used an Individual Training Account (ITA) model to help adults with low incomes, including TANF recipients, pay for healthcare training in the County of San Diego, California. In addition to the ITAs, program participants received case management, supportive services, and employment services from community-based partners. It operated between 2010 and 2015 with funding from ACF's Health Profession Opportunity Grants (HPOG) Program.

Bridge to Employment combined five key components:

- **Formal and informal assessments** to help navigator staff determine whether applicants were eligible for the occupational training program they wanted to enroll in, and then advise students after they enrolled;
- **Navigation and case management services** to help students choose a healthcare training program in one of three occupational groups (patient care, technical, or administrative), and then address their barriers to participation and completion;
- **ITAs** to cover up to \$7,000 (\$10,000 for some occupations) of the cost of training;
- **Supportive services** to cover up to \$1,000 per student over the grant period in expenses for transportation, childcare, temporary housing, and other services that facilitated students' enrollment and persistence in the program; and

- **Employment services** to help students find employment after training, including work readiness training, resume development, and help preparing for interviews. In addition, the program was expected to help students get work experience while in training.

About the Bridge to Employment Impact Study

The study used an experimental design to estimate the impact of access to Bridge to Employment on participants' educational, employment, and earnings outcomes.¹ The research team designed the experiment to capture the effects of the program overall. A total of 1,007 applicants agreed to participate in the study—507 were randomly assigned to the treatment group and offered access to Bridge to Employment, and 500 were randomly assigned to the control group and were not offered access to Bridge to Employment but could access similar training and services in the community on their own. The analysis estimates impacts on each outcome by calculating the difference between average values in the treatment group and the control group.

The short-term report (Farrell and Martinson 2017) found that as of 18 months after random assignment, Bridge to Employment increased the hours of occupational training and increased the receipt of career counseling and employment services. It also increased the percentage of students who earned a credential and the percentage who worked in a healthcare occupation.

Key Findings from the Current Report

This three-year report focuses on the impact of Bridge to Employment on postsecondary training, employment, earnings, and other life outcomes. It also compares the benefits from the program to the costs. The impact study relies on data from two sources: employment and earnings data from the National Directory of New Hires and three-year follow-up survey data. The cost-benefit analysis relies on these data sources as well as program financial records, interviews with program administrators, and estimates of the cost of instruction at institutions study participants attended.

Impacts on Postsecondary Education and Training

Bridge to Employment did not increase the number of months of education and training that treatment group members received during the first three years after random assignment (Exhibit ES-1, left panel). However, it had other favorable impacts on postsecondary education and training.

¹ Such a design ensures that any estimated impacts can be attributed to program access rather than to unmeasured differences between eligible study sample members with access (the treatment group) and without access (the control group).

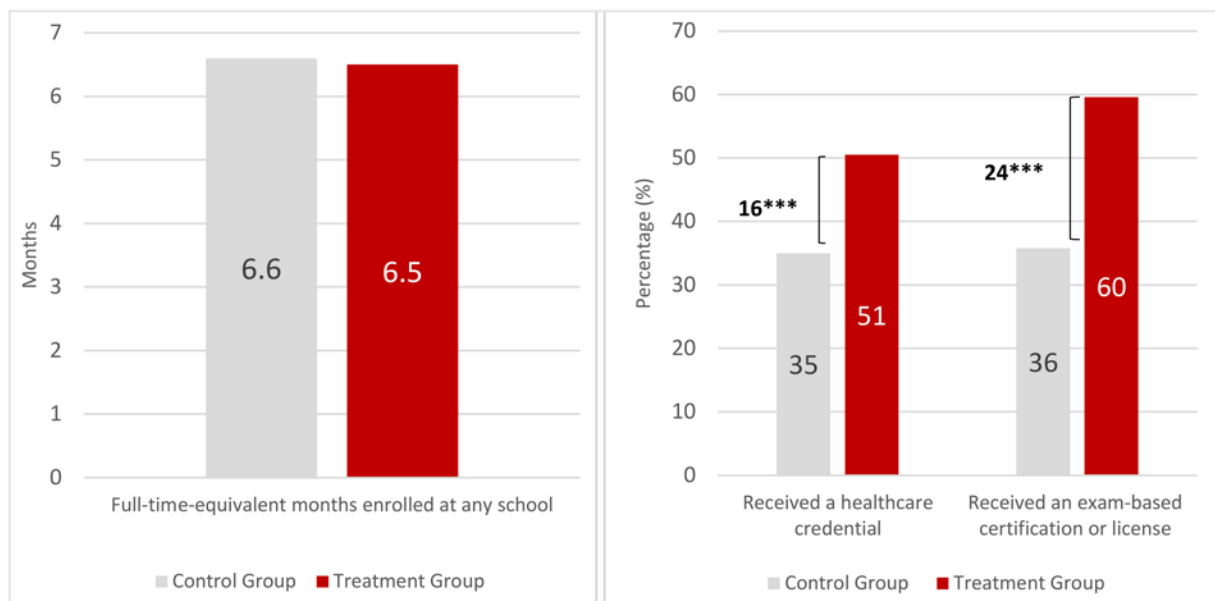
■ **Bridge to Employment increased the receipt of postsecondary healthcare credentials.**

In particular, Exhibit ES-1 (right panel) below shows that by the end of the three-year follow-up, Bridge to Employment increased the receipt of any postsecondary healthcare credential by 16 percentage points.

■ **The program also increased the receipt of exam-based certifications.**

By the end of three years, 60 percent of treatment group members had received a certification or license from an authority other than a school, compared with only 36 percent of the control group, a difference of 24 percentage points (Exhibit ES-1, right panel). The vast majority (90 percent) of these exam-based credentials were in the field of healthcare (not shown in Exhibit ES-1).

Exhibit ES-1: Impacts on Postsecondary Education and Training Outcomes



Source: PACE three-year follow-up survey, except exam-based certification or license is a blended variable from the PACE 18-month and three-year follow-up surveys.

Note: The outcomes in the exhibit are secondary outcomes and thus statistical significance is based on one-tailed tests. Sample sizes: 346 in treatment group and 312 in control group.

Statistical significance levels based on differences between research groups: *** 1 percent level; ** 5 percent level; * 10 percent level.

Impacts on Earnings, Healthcare Employment, and Other Life Outcomes

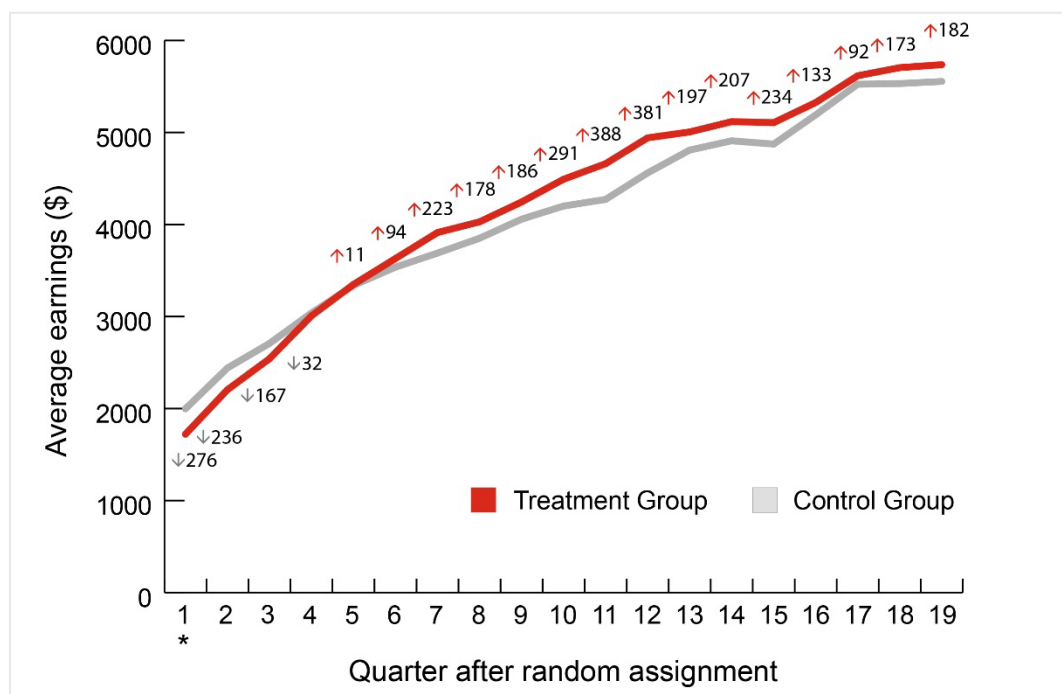
Bridge to Employment's impact on credentials has not, as of three years, translated into detectable impacts on earnings or overall employment. It did, however, have a clear impact on healthcare-related employment. The program did not affect most other life outcomes included in the study by the end of three years.

- **Bridge to Employment did not statistically significantly increase average quarterly earnings in follow-up quarters 12-13, the study's single confirmatory outcome.²**

Findings from the confirmatory analysis showed that the difference in average quarterly earnings in Q12-Q13 between treatment group and control group members was +\$289, but this difference is not statistically significantly different from zero. The margin of sampling error on this estimate was plus or minus \$419; as a result, the data do not yield estimates precise enough to either conclude that the Bridge to Employment program increased earnings three years after random assignment or rule out the possibility of meaningful increases.

Exhibit ES-2 presents earnings for the 19 quarters after random assignment for which we had data. It shows that the treatment group earned less than the control group for about a year after study entry, and then earned more than the control group in each quarter thereafter. The difference between the two groups was statistically significant from zero in quarter 1, but in no other quarter, nor was there a statistically significant increase in cumulative earnings during the 19-quarter follow-up period.

Exhibit ES-2: Impact on Average Earnings in Successive Follow-up Quarters



Source: National Directory of New Hires.

Note: Earnings estimates within each quarter are exploratory outcomes and statistical significance is based on two-tailed tests. Sample sizes: 506 in treatment group and 498 in control group.

Statistical significance levels based on differences between research groups: *** 1 percent level; ** 5 percent level; * 10 percent level.

² Confirmatory hypotheses center on outcomes most critical to judging whether the program seems to be achieving its goals. By limiting the confirmatory analysis to a single outcome, we can avoid the problem of “multiple comparisons.”

- ***Bridge to Employment increased the proportion of treatment group members working in healthcare, but did not affect overall employment.***

Bridge to Employment increased employment in the healthcare field—a broad measure of employment in the industry including ancillary occupations in healthcare settings, such as janitors and file clerks—from 35 percent to 45 percent. This 10 percentage point impact represents a 30 percent relative increase in the treatment group over the control group. Focusing more narrowly on healthcare occupations that involve assisting in some way in the diagnosis or treatment of health problems regardless of setting (e.g., Nursing Assistant, Phlebotomist), the program increased employment from 22 percent to 29 percent, a 32 percent (or 7 percentage point) relative increase. However, there was not a detectable impact on overall employment at the time of the three-year follow-up survey.

- ***Bridge to Employment reduced student and family debt, but had no detectable impact on most other measures of financial well-being.***

At three years out, treatment group members had borrowed \$2,474, on average, whereas control group members had borrowed \$3,393, a statistically significant difference of \$919. Bridge to Employment also reduced the student loan–related debt of treatment group members' parents by \$249. The program did not have a detectable impact on health insurance coverage, receipt of public assistance, financial distress, or other measures of financial well-being.

Findings from the Cost-Benefit Analysis

The cost-benefit analysis estimated the per-person costs of the Bridge to Employment program and the education and training services accessed by the treatment group beyond the estimated costs of similar training and services accessed by the control group. These costs were compared with the *benefits* of the program; that is, increased earnings (adjusted for implied changes in fringe benefits, taxes, and public assistance). If the resulting net benefit (benefits minus costs) is positive, Bridge to Employment provides a gain to society as a whole. The primary focus of the cost-benefit analysis is the net benefit to society as a whole, but it also examines whether net benefits are positive from each of four perspectives: treatment group members, the federal government, California state and local government, and the rest of society.

- ***Because of a wide range of plausible values for both earnings impacts and education costs for the Bridge to Employment program, it is not possible to definitively assess whether the benefits of the program are outweighed by its costs.***

As discussed above, there is considerable uncertainty as to the true impact on earnings, which is the source of benefits in the Cost-Benefit Analysis. At 19 quarters after random assignment, plausible large positive values of increased earnings would imply a positive net benefit, whereas plausible zero (or even small negative) ones would imply a negative net benefit. Positive and negative values of other key cost components are similarly plausible, which also contributes to the uncertainty in the CBA estimate of net benefit. Using the best available point estimates, after almost five years, the per-participant net benefit of the program is small and negative for society as a whole (–\$325) and is moderate and positive for participants (+\$2,451). However, both

positive and negative net benefits are plausible, both from society's perspective and from the participants' because of uncertainty in the underlying earnings and education cost estimates.

Implications

To summarize the main results of this three-year impact analysis, Bridge to Employment increased educational credentials and healthcare employment, but had no clear impact on overall employment or earnings and did not reduce receipt of public assistance or financial distress. The program succeeded in increasing the proportion of treatment group members employed in the healthcare sector. This finding implies that the program is contributing to meeting the demand for healthcare workers.

The report explores several—not mutually exclusive—possible explanations for the lack of conclusive earnings impacts:

- **The study may not have been sufficiently powered.** The variance in earnings was much larger than expected when the study was designed. Given this variance and the available sample size, even if the true effect of the Bridge to Employment program were as large as \$700 per quarter, the estimated impact would not be statistically different from zero.
- **The treatment-control contrast in education and training outcomes may have been too small to influence earnings.** Although Bridge to Employment succeeded in boosting receipt of credentials, it did not engage participants in higher-level trainings. As a result, at the three-year follow-up both treatment and control group members had attended about 6.5 months of school.
- **The program model may not be the right model for helping low-income individuals with barriers to employment.** Bridge to Employment implemented a “consumer choice” model, which empowers participants to determine the training that is best for them and purchase it with a voucher at the provider of their choice. Given this choice, most treatment group members chose short-term trainings that paid low wages after completion. Other models such as Project Quest and Year Up that focus on longer-term training or that move participants up a career ladder have been successful in increasing employment outcomes, though often do so by heavily screening applicants and selecting those who have higher levels of education or higher levels of motivation (Roder and Elliot 2019; Fein and Hamadyk 2018). More research is needed to determine what the most effective models are for training individuals with lower levels of education and more barriers to employment.

Looking Ahead

Additional follow-up of participants in the study will be conducted using administrative data from the National Student Clearinghouse and the National Directory of New Hires. A future report will assess the impact of Bridge to Employment on earnings and achievement of college credentials approximately six years after random assignment.

1. Introduction

The United States is experiencing rising demand for healthcare professionals and a shortage of workers qualified for these jobs. Between 2016 and 2026, some 2.4 million jobs are projected to be added to the healthcare sector at a rate of growth much faster than any other occupational group (Bureau of Labor Statistics 2019). The largest number of new job openings will be for healthcare support occupations such as Home Health Aide and Nursing Assistant (Stevenson 2018). These entry-level positions require some postsecondary education, but the training can be completed in a relatively short period of time.

At the same time, many low-income individuals and individuals receiving public assistance face structural and personal barriers to enrolling in and completing occupational healthcare training and moving into the labor market. Many are “nontraditional” students—that is, older, often parents, lacking adequate basic academic skills, and with few economic resources. Many have families to support and cannot afford to take time out of the labor market to enroll in training, even in cases where the additional costs of school are paid for them.

The **Bridge to Employment in the Healthcare Industry Program** in San Diego, California, sought to address these dual challenges by providing financial support for training, along with case management, supportive services, and employment services, to help low-income adults train for jobs in healthcare. The program was operated by the **San Diego Workforce Partnership (SDWP)**, the local Workforce Investment Board for the County of San Diego.

Abt Associates and its partner, MEF Associates, are evaluating Bridge to Employment as part of the **Pathways for Advancing Careers and Education (PACE)** project. Funded by the Administration for Children and Families (ACF) within the U.S. Department of Health and Human Services, PACE is studying nine programs aimed at helping low-income adults to access career pathways (see *Programs in PACE* box below).

All nine programs include some features of the career pathways framework (Fein 2012). This framework posits that postsecondary education and training should be organized as a series of steps leading to successively higher credentials and employment opportunities in growing occupations. To effectively engage, retain, and facilitate learning in a diverse population, career pathways programs integrate four program components:

- (1) **Academic and non-academic assessment** to identify student needs and factors that may facilitate or hinder academic success, so advisors can make appropriate placements and referrals;
- (2) **Innovative basic skills and occupational skills instruction** to make education and training more manageable for students who are likely to be balancing school and work (e.g., accelerated courses) and who may have low levels of basic skills (e.g., contextualization);

- (3) **Academic and non-academic supports** (e.g., academic advising, tutoring, financial support, and referrals to support services) to help students succeed in their current academic step and to proceed to and complete subsequent steps; and
- (4) **Strategies to connect participants and employers** during the program, such as internships, or post program, such as employment workshops.

Because the nine programs vary in their target populations, mix of components, and occupational fields, PACE is evaluating each program separately.³ This report documents the impact of Bridge to Employment on educational attainment, employment and earnings, and other life outcomes of students through approximately three years after they agreed to participate in the PACE evaluation. An initial report, also produced by Abt and MEF, shared findings on implementation and short-term (18-month) impacts on education, employment, and related outcomes (Farrell and Martinson 2017).

This evaluation, the Career Pathways Intermediate Outcomes Study, extends the follow-up period to three years for programs in the PACE project. Future reports produced by the Career Pathways Long-term Outcomes Study will extend the follow-up period further.

This chapter describes key components of the Bridge to Employment program and summarizes findings from the short-term report as context for this three-year report.

Programs in PACE

- **Bridge to Employment in the Healthcare Industry**, San Diego Workforce Partnership, County of San Diego, CA*
- **Carreras en Salud**, Instituto del Progreso Latino, Chicago, IL^
- **Health Careers for All**, Workforce Development Council of Seattle-King County, Seattle, WA*
- **Integrated Basic Education and Skills Training (I-BEST) program** at three colleges (Bellingham Technical College, Everett Community College, and Whatcom Community College), Washington State
- **Pathways to Healthcare**, Pima Community College, Tucson, AZ*
- **Patient Care Pathway Program**, Madison College, Madison, WI
- **Valley Initiative for Development and Advancement (VIDA)**, Lower Rio Grande Valley, TX
- **Workforce Training Academy Connect**, Des Moines Area Community College, Des Moines, IA
- **Year Up**, Atlanta, Bay Area, Boston, Chicago, National Capital Region, New York City, Providence, and Greater Seattle

*Programs funded through the Health Profession Opportunity Grants (HPOG) Program.

^Program partially HPOG-funded.

³ PACE-related documents, including program profiles and implementation and short-term impact reports for each program, can be found at www.acf.hhs.gov/opre/research/project/pathways-for-advancing-careers-and-education and www.career-pathways.org.

1.1 The Bridge to Employment Program

In 2010, to address the dual goals of providing training opportunities for Temporary Assistance for Needy Families (TANF)⁴ recipients and other low-income adults and of providing a skilled workforce to meet the needs of the healthcare sector, Congress authorized the **Health Profession Opportunity Grants (HPOG) Program**. The ACF Office of Family Assistance, which administers the HPOG Program, competitively awarded a first round of HPOG grants (HPOG 1.0) in 2010 to organizations to provide TANF recipients and other eligible low-income individuals with the opportunity to obtain education and training for occupations in the healthcare field that paid well and were expected to either experience labor shortages or be in high demand.⁵

ACF awarded SDWP a five-year HPOG 1.0 grant to launch and operate the Bridge to Employment in the Healthcare Industry program.⁶ The program combined training, advising, supports, and employment workshops—services the developers hypothesized that low-income adults needed to successfully complete training and transition to employment.

SDWP contracted with three community-based partners (“navigator” organizations) to operate the Bridge to Employment program throughout the County of San Diego. They were Comprehensive Training Services (CTS), North County Lifeline (Lifeline), and Metropolitan Area Advisory Committee (MAAC).⁷ Each organization was responsible for serving a different geographic area of the county. The program operated from 2010 to 2015, ending when the HPOG 1.0 grant did.

1.1.1 Recruitment, Eligibility, and Enrollment

The Bridge to Employment staff at the three navigator organizations conducted outreach and made presentations at local TANF offices, housing organizations, schools, and other agencies

⁴ The TANF program, which is time limited, assists families with children in providing for the family's basic needs. The federal government provides block grants to states to run the TANF program. States have broad flexibility to carry out their programs. States determine the design of the program, the type and amount of assistance payments, the range of other services to be provided, and the rules for determining who is eligible for benefits.

⁵ HPOG was authorized by the Affordable Care Act (ACA), Public Law 111-148, 124 Stat. 119, March 23, 2010, sect. 5507(a), “Demonstration Projects to Provide Low-Income Individuals with Opportunities for Education, Training, and Career Advancement to Address Health Professions Workforce Needs,” adding sect. 2008(a) to the Social Security Act, 42 U.S.C. 1397g(a). Most recently, under the Coronavirus Aid, Relief, and Economic Security Act or the “CARES Act,” 2020, Pub. L. 116-136, the HPOG Program was extended through November 30, 2020. The second round of grant awards (HPOG 2.0) has been extended until September 29, 2021.

⁶ HPOG 2.0 grants were awarded in September 2015. SDWP did not receive an HPOG 2.0 grant.

⁷ In addition, MAAC subcontracted with International Rescue Committee (IRC) to operate a relatively small Bridge to Employment program in San Diego that served a population who were more skilled and educated than the population served by the other navigators; about half of those served were refugees. Because of the unique population served, IRC was excluded from the evaluation.

in the community that served low-income individuals. Staff from these organizations invited interested participants to attend orientations held by the navigator organizations. At the orientations, navigator staff introduced the program, described its services and eligibility requirements, and explained how random assignment would govern admission to the program for the purpose of the evaluation.

The program was committed to engaging a broad, diverse spectrum of TANF recipients and other low-income individuals. To be eligible for the program, applicants had to

- be 18 years of age or older;
- be a recipient of TANF or report having a low income (defined as having a household income below 200 percent of the Lower Living Standard Income Level, which for a household of three was \$35,428 in 2011);
- provide proof of the right to work in the United States;
- possess a GED or high school diploma; and
- depending on the navigator organization, score above a sixth- to eighth-grade level on assessment from either TABE[®] (Tests of Adult Basic Education) or CASAS[®] (Comprehensive Adult Student Assessment Systems).⁸

At the orientations, Bridge to Employment staff screened applicants for eligibility. Eligible applicants who agreed to be part of the study were randomly assigned to either a treatment or a control group.⁹ Between July 2012 and October 2013, program staff randomly assigned 1,007 applicants as study participants; 507 to the treatment group and 500 to the control group. Those assigned to the treatment group were allowed to participate in Bridge to Employment; those in the control group could not, but could access other training and services available in the community.

1.1.2 Program Content

Treatment group members could enroll in healthcare training at any accredited provider in the County of San Diego that offered courses leading to a certificate in the healthcare field, which included adult schools, community colleges, and for-profit training schools.¹⁰

⁸ MAAC and Lifeline administered the CASAS; MAAC required scores above seventh grade, while Lifeline required scores above eighth grade. CTS administered the TABE and required scores above the 6th grade. Navigator staff could make case-by-case exceptions if they judged that an applicant with lower scores was likely to benefit from and succeed in the program.

⁹ In order to receive program services, sample members were required to sign a consent form and complete two study forms (the Basic Information Form and the Self-Administered Questionnaire).

¹⁰ Control group members could enroll at these same providers and in these same classes, but they had to do so on their own and they did not receive the additional services and supports that Bridge to Employment offered the treatment group.

The major Bridge to Employment program components included

- **formal assessments (i.e., tests) and informal assessments (e.g., interviews)** to help navigator staff determine whether applicants were eligible for the occupational training program they wanted to enroll in, and then advise students after they enrolled;
- **navigation and case management services** to help students choose healthcare training programs within three occupational groups (patient care, technical, or administrative) and address their barriers to participation and completion;
- **Individual Training Accounts (ITAs)** to cover up to \$7,000 (\$10,000 for some occupations) of the cost of training;¹¹
- **supportive services** to cover up to \$1,000 per student over the grant period in expenses for transportation, childcare, temporary housing, and other services that facilitated students' enrollment and persistence in the program; and
- **employment services** to help students find employment after training, including work readiness training, resume development, and help preparing for interviews. In addition, the program was expected to help students get work experience while in training.

Bridge to Employment used a “consumer choice” model in which treatment group members could choose their training provider.¹² Soon after participants enrolled in the program, Bridge to Employment navigators met with them to develop their employment and educational goals and discuss the steps needed to achieve those goals. After meeting with their navigator, the students researched at least two providers that offered the training they had selected, outlining the training costs, the admission requirements, the hours of training, and the resulting certification. They then chose one of the providers in consultation with the navigator. Bridge to Employment did not impose a limit on the length of training, except that all training had to be completed by mid-2015.¹³

Once students were enrolled in training, Bridge to Employment required its navigators to check in with each student monthly, in person or by phone or email. Students who needed monthly bus passes or other supportive services were required to meet with navigators in person. During

¹¹ ITA vouchers were used to reimburse training providers that accepted them. These ITAs were similar to those issued to adult and dislocated workers under Title I of the Workforce Investment Act of 1998, which could be used to purchase training services from eligible providers that workers selected in consultation with their case manager. The community college system did not accept the Bridge to Employment ITA vouchers. Instead, program students who were approved to attend a community college program paid for the training themselves and were reimbursed for its costs by Bridge to Employment.

¹² Participants could choose any accredited healthcare training program in the County of San Diego.

¹³ Bridge to Employment did not end until September 2015, but the program wanted to ensure that participants could be provided with post-training job search assistance before the grant ended and therefore required participants to complete training several months before the end of the grant.

the check-ins, navigators asked students for updates on their progress in training and discussed potential supports that could lessen any identified barriers to academic success.

Following the training, Bridge to Employment helped students find employment in the healthcare sector by offering job readiness workshops and assisting them with their job search, discussed further below.

The Bridge to Employment model included several of the components of the career pathways framework described earlier in this chapter. It provided assessments, occupational skills instruction, supports to help students succeed, and strategies to connect participants with employers. However, the program did not consistently promote training involving a series of steps leading to successively higher credentials. Instead, most participants were expected to complete their training and then pursue employment. After the first two years, SDWP and Bridge to Employment management found the labor market for lower-level healthcare jobs to be saturated and program completers faced challenges finding good-paying jobs in their field of study. To help them in the job market, midway through the grant period, program staff began encouraging students to use the ITA funding to concurrently pursue a second (“bundled”) training program or pursue additional training after completing one program if doing so would make them more marketable.

In contrast to what Bridge to Employment offered to treatment group members, control group members could pursue case management services and financial assistance for training available from the local Workforce Investment Act (WIA) program, which operated out of SDWP American Job Centers (AJCs).¹⁴ The availability of WIA funding for ITAs to pay for training fluctuated from year to year, however. Even when funding was available, control group members had no guarantee they would be selected by the WIA program. For those who were selected and enrolled in WIA, the cap on ITAs was \$5,000, which was \$2,000 to \$5,000 lower than the cap in Bridge to Employment (depending on the occupation). Control group members might also receive financial assistance such as Pell grants or student loans or enroll in a community college program that charged enrollment fees (which the state waives for low-income California residents).

1.1.3 Characteristics of the Study Sample

Exhibit 1-1 shows the percentage distributions of the treatment and control group members across a series of characteristics when they were randomly assigned (“baseline”). The *p*-values in the last column test the hypotheses that there are no systematic differences between the groups for these characteristics. As shown, random assignment produced treatment and control groups with no significant systematic differences in observed baseline characteristics.

Exhibit 1-1 also shows that the Bridge to Employment sample recruited for PACE closely reflects the program’s eligibility criteria. At application, sample members had low incomes, with

¹⁴ WIA operated for most of the time that the Bridge to Employment program operated. WIA was replaced on July 1, 2015, by the Workforce Innovation and Opportunity Act (WIOA).

more than 80 percent having incomes below \$30,000. Almost half received benefits from the Supplemental Nutrition Assistance Program (SNAP) or from the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). About half reported experiencing financial hardship in the year before enrollment in Bridge to Employment. Though TANF recipients were a key target group and given priority over other low-income applicants, only about one fifth of the sample was receiving public assistance at program entry.¹⁵

Exhibit 1-1: Selected Characteristics of the Bridge to Employment Sample at Baseline

Characteristic	All Study Participants	Treatment Group	Control Group	p-Value
Age (%)				.252
20 or under	12.3	10.5	14.2	
21 to 24	20.0	19.3	20.6	
25 to 34	32.3	33.5	31.0	
35 or older	35.5	36.7	34.2	
Gender (%)				.689
Female	83.7	83.2	84.2	
Male	16.3	16.8	15.8	
Race/Ethnicity (%)				.757
Hispanic, any race	46.5	46.5	46.5	
Black, non-Hispanic	21.6	22.1	21.1	
White, non-Hispanic	19.5	18.1	20.8	
Other, non-Hispanic	15.0	15.3	14.7	
Current Education (%)				.208
Less than a high school diploma	3.6	4.8	2.4	
High school diploma or equivalent	36.7	34.4	39.1	
Less than 1 year of college	19.4	20.0	18.7	
1 or more years of college	23.3	24.2	22.4	
Associate degree or higher	17.0	16.6	17.3	
Family Income in Past 12 Months (%)				.433
Less than \$15,000	53.1	51.0	55.2	
\$15,000-\$29,999	29.2	30.1	28.3	
\$30,000 or more	17.7	18.9	16.5	
Mean (\$)	\$17,319	\$17,510	\$17,124	.714
Public Assistance/Hardship in Past 12 Months (%)				
Received WIC or SNAP	47.6	46.1	49.2	.346
Received public assistance or welfare	19.9	21.1	18.7	.369
Reported financial hardship	53.8	50.7	57.1	.056

¹⁵ While low, this is somewhat higher than the HPOG Program as a whole. On average, 14 percent of HPOG enrollees reported receiving TANF at baseline (Werner et al. 2018).

Characteristic	All Study Participants	Treatment Group	Control Group	p-Value
Current Work Hours (%)				.850
0	61.9	63.3	60.6	
1 to 19	10.4	9.8	10.9	
20 to 34	16.1	15.3	17.0	
35 or more	11.6	11.7	11.5	
Expected Work Hours in Next Few Months (%)				.959
0	24.4	23.6	25.0	
1 to 19	9.2	9.5	8.9	
20 to 34	29.7	29.7	29.6	
35 or more	36.7	37.1	36.5	
Sample size	1,007	507	500	

Key: SNAP = Supplemental Nutrition Assistance Program. WIC = Special Supplemental Nutrition Program for Women, Infants, and Children.

Source: PACE Basic Information Form.

Note: There is only one statistically significant differences at the $p = .10$ level (Reported Financial Hardship). Appendix A provides more details on baseline characteristics and a fuller set of baseline characteristics that confirm that random assignment generated well-balanced treatment and control groups. Some percentages for characteristics do not add up to 100 percent due to rounding; the category Public Assistance/Hardship in Past 12 Months does not add to 100 percent because the categories are neither mutually exclusive nor exhaustive.

In addition to low incomes, study participants had a number of other characteristics typical of nontraditional students. They were older than traditional college students, with nearly 70 percent age 25 or older and more than a third age 35 or older. Many had prior college experience, and a substantial proportion (40 percent) had attended college for a year or more. Most study participants identified as non-White, with about half identifying as Hispanic/Latinx and about a fifth identifying as Black, non-Hispanic. More than 80 percent of sample members were women.

1.1.4 Local Context

The County of San Diego, the second most populous county in California and the fifth most populous county in the United States, is geographically large (about 4,300 square miles).¹⁶ It was because of the large coverage area, and the desire to have sites that were close to where participants lived, that SDWP contracted with three navigator organizations in different regions of the county to operate Bridge to Employment:

- CTS, located in the City Heights area in the city of San Diego, has a large immigrant and refugee community.
- Lifeline, located in North County, the region north of the city, includes a mix of affluent communities and pockets of poverty.

¹⁶ <http://www.sandiegocounty.gov/economicroundtable/docs/ertfact2014.pdf>

- MAAC, located in Chula Vista to the south of the city of San Diego, has a relatively high percentage of residents who identify as being Hispanic or Latinx.¹⁷

Individuals interested in the Bridge to Employment program could apply at any of the navigator organizations, regardless of which was closest to where they lived. CTS took in almost half of the sample, 489 study participants; Lifeline, 283 study participants; and MAAC, 235 study participants.

Two economic factors affecting employment in the San Diego area provide context for the local environment in which Bridge to Employment operated, for both treatment group and control group members. First, the local economic climate rapidly improved over the study period. Between March 2013 and March 2015, the unemployment rate in the County of San Diego declined from 8.0 to 5.4 percent. By March 2018 (the end of the observation period covered in this three-year report), it had reached 3.2 percent.¹⁸ Second, at the outset of the study, State of California projections pointed to strong future growth in the healthcare sector in the County of San Diego. From a 2014 sector-specific labor market analysis, SDWP estimated that local healthcare employers provided jobs to more than 100,000 workers and that those employers anticipated adding 13 percent more jobs over the next five years.^{19,20} The analysis projected some occupations such as Home Health Aide and Certified Nursing Assistant (CNA) to be in undersupply.

1.2 Earlier Findings from PACE on Bridge to Employment

The earlier PACE report on Bridge to Employment provides useful context for this current report. In its initial phase, the PACE project assessed the Bridge to Employment program's implementation and short-term impacts. Its **implementation study** examined the design and operations of Bridge to Employment and analyzed treatment group members' participation in training and other activities. Its **short-term impact study** measured the program's effects on training, credentials, and self-reported employment and career progress at approximately 18 months after random assignment. This section summarizes their key findings as reported in that earlier *Implementation and Early Impact Report* (Farrell and Martinson 2017).

1.2.1 Implementing Bridge to Employment

Section 1.1.2 described the components of the Bridge to Employment program and its "consumer choice" model. This section briefly summarizes the key findings on how the program was implemented and participants' experiences in the program.

¹⁷ <http://www.census.gov/quickfacts/table/PST045215/0613392>

¹⁸ <http://www.labormarketinfo.edd.ca.gov/cgi/dataanalysis/labForceReport.asp?menuchoice=LABFORCE>

¹⁹ http://workforce.org/sites/default/files/industry_reports/health_care_2014.pdf.

²⁰ From BLS Occupational Employment Statistics, in May 2015 there were 67,530 jobs in healthcare practitioner and technical occupations and 32,260 jobs in healthcare support occupations in the San Diego-Carlsbad Metropolitan Statistical Area, http://www.bls.gov/oes/2015/may/oes_41740.htm.

- ***Most treatment group members enrolled in a healthcare training program, though it was typically short-term training for entry-level jobs.***

Based on HPOG administrative records, about 82 percent of treatment group members participated in healthcare training, mostly in entry-level healthcare programs for occupations such as CNA, Phlebotomist, and Medical Assistant. Among all treatment group members who enrolled in any training, students spent 4.9 months in training on average as of the short-term follow-up.²¹

The implementation study found that though the navigators were available to guide students in their decision-making, most of this guidance was limited to sharing pamphlets and websites where students could research on their own. In part, this may be due to navigators interpreting the “consumer choice” model as meaning they could not offer substantial guidance to clients combined with staff turnover at the navigator organizations. Additionally, some students had been referred to Bridge to Employment by private training providers in order to seek financial assistance, and thus arrived already knowing what they wanted to study and where they wanted to study it. One of the navigator organizations estimated that 40 to 50 percent of the treatment group members it worked with had already selected a particular training program when they enrolled in Bridge to Employment.

- ***The Bridge to Employment treatment group was more likely than the control group to participate in training and more likely to receive this training from private, for-profit schools.***

Based on the 18-month follow-up survey data, the program produced a 17 percentage point difference in the proportion of treatment versus control group members who received training in any subject (75 percent versus 58 percent). Bridge to Employment also produced a 25 point difference between the treatment and control group members who received healthcare-related training (70 percent versus 45 percent).²²

More treatment than control group members attended private, for-profit schools and fewer attended training at two-year colleges. This implies that Bridge to Employment likely led some students to substitute a more expensive private for-profit school education for a less expensive community college education. From the implementation study, we learned that the for-profit schools appealed to study participants for several reasons. The schools accepted the ITA vouchers and had open slots that students could enroll in immediately, whereas community colleges did not accept the vouchers. Students interested in attending a community college

²¹ This estimate includes the total months participants spent in training. About 20 percent of students attended more than one training, often bundled with the first training. Common training bundles included Medical Assistant/Phlebotomy, CNA/Home Health Aide, and CNA/Home Health Aide/Electrocardiogram Technician.

²² These proportions represent the percentage of treatment and control group members who reported on the 18-month follow-up survey that they participated in an education/training program. For the treatment group, this self-reported value differs from Bridge to Employment program data, likely due to variation in the data source (e.g., self-reported measures are subject to recall error).

instead paid for their training out-of-pocket and then requested reimbursement from the Bridge to Employment program, which could be difficult for those with little or no savings. In addition, community colleges could not enroll students in classes immediately; usually, students had to wait for the next semester to start or for a slot to open up if the program had a waiting list. Finally, the training at private, for-profit institutions tended to be shorter, and for that reason appealing to students for whom juggling school with work and other responsibilities was most difficult.

Among the subset of study participants who received any training, treatment group members were more likely to receive financial assistance in the form of grants (Pell Grants, ITAs, or other grants or scholarships) than were control group members (62 percent versus 50 percent). Control group members received loans at more than twice the rate of treatment group members (26 percent versus 12 percent). These two findings suggest that the grants from Bridge to Employment were poised to reduce the treatment group's student loan debt.

- ***Bridge to Employment increased receipt of career counseling and employment services.***

In line with SDWP's status as the local Workforce Investment Board, the Bridge to Employment program emphasized the provision of employment services. Work readiness training, provided by all navigator organizations, covered topics such as resume and cover letter writing, interview practice, job search skills, labor market research, soft skills such as teamwork, and job retention. Each organization had staff who provided employment services. In addition, in year four of the five-year HPOG grant, the program enhanced the services by adding a job developer at each navigator organization to generate job leads for students and conduct at least one "employer social" each quarter. At the socials, employers were invited to discuss job openings and meet with training program completers.

The analysis estimated that at 18 months after random assignment, the program produced impacts of 8 percentage points on receipt of career counseling, 14 percentage points on receipt of help arranging supports, and 17 percentage points on receipt of job search assistance. The impact estimates were all statistically significant at the 1 or 5 percent level.

1.2.2 Impacts on Key Short-Term Study Outcomes

The PACE research team conducting the short-term impact study designated a single measure of *credential receipt* as the confirmatory indicator of the program's success at 18 months. The short-term analyses also assessed a variety of other secondary and exploratory outcomes in the education and employment domains.

- ***Bridge to Employment increased the percentage of treatment group members who received a credential (the confirmatory outcome). The program also increased their hours of occupational training received.***

The program had a 29 percentage point impact on receipt of any credential (64 percent of treatment group members versus 34 percent of control group members). Interestingly, about one quarter of both treatment and control group members reported still being in a training program on the 18-month follow-up survey. Because program records showed that almost all

treatment group members had exited Bridge to Employment, these students were likely pursuing training on their own, without the support of the program.

■ ***Bridge to Employment produced some positive impacts on employment-related outcomes.***

The program achieved impacts on two of the study's three employment outcomes at 18 months after random assignment. It increased by 10 percentage points the share of treatment group members who were working in a job requiring at least mid-level skills (25 percent of treatment group members versus 15 percent of control group members). Bridge to Employment also increased by 9 percentage points the share of treatment group members who were working in a healthcare occupation (26 percent of treatment group members versus 16 percent of control group members). The program did not increase the percentage of treatment group members who were working in a job paying at least \$12 per hour.

The short-term report did not examine employment outcomes such as average rate of employment and average earnings, as those were outcomes that were expected to be affected over a longer term.

1.3 Guide to the Rest of the Report

This report has seven chapters. **Chapter 2 details the Bridge to Employment study design and analytic methods**, including a discussion of the career pathways theory of change and its implied research questions. The chapter also documents how the study implemented random assignment and describes its principal data sources.

Chapter 3 presents the three-year impact study findings on postsecondary education and training. Based on the Bridge to Employment theory of change, the expectation of the PACE research team was that if the program was to achieve its goals, then by 18 months after random assignment there would be positive impacts on occupational training received and credentials attained in the healthcare field. As noted above, after 18 months, Bridge to Employment had increased the share of the treatment group that received training and that received a credential. In this report, we analyze whether those early gains in training and healthcare credentials increase, decrease, or stay about the same three years out and whether there has been any impact on longer-term credentials such as college degrees.

Chapter 4 presents the three-year impact study findings on employment and earnings.

The short-term impact study conducted a relatively limited analysis of impacts on employment and earnings because such impacts were expected to take longer to emerge. However, given that much of the training taken by Bridge to Employment participants was short-term (e.g., a CNA certification requires about 160 hours), it seems reasonable to expect impacts on employment and earnings to emerge within three years. Therefore, in this three-year report, we provide more detail on impacts on employment and can begin to answer whether the occupational training gains that program participants achieved after 18 months translate into economic gains in the workplace in the longer term. At this point in the follow-up we identified *earnings* as the most important outcome measure of program success.

Chapter 5 presents the three-year impact study findings on other life outcomes such as debt, health insurance coverage, and receipt of public assistance. If the Bridge to Employment program has an impact on earnings, it is also expected to affect these life outcomes. Even without an earnings impact, there may be impacts on some of these well-being measures. For example, the financial assistance component of the program may lower school debt levels.

Chapter 6 presents findings from the cost-benefit analysis of the Bridge to Employment program. We compare the costs and benefits of Bridge to Employment with the costs and benefits of services that were accessed by the control group in order to estimate the program's net benefit. We assess whether its benefits outweigh its costs from the perspectives of government, the treatment group, and society as a whole.

Chapter 7 concludes with a discussion of the findings in context of larger policy questions and wider evidence in the literature.

A separate **Appendix** volume provides technical details on analysis methods, data sources, and sensitivity analysis.

2. Methods

This chapter describes the PACE project's design and analytic methods as applied to the Bridge to Employment program three years out. It begins with a discussion of the program's theory of change and associated research questions. It then describes the evaluation design, data sources, and analysis procedures.

2.1 Bridge to Employment Theory of Change

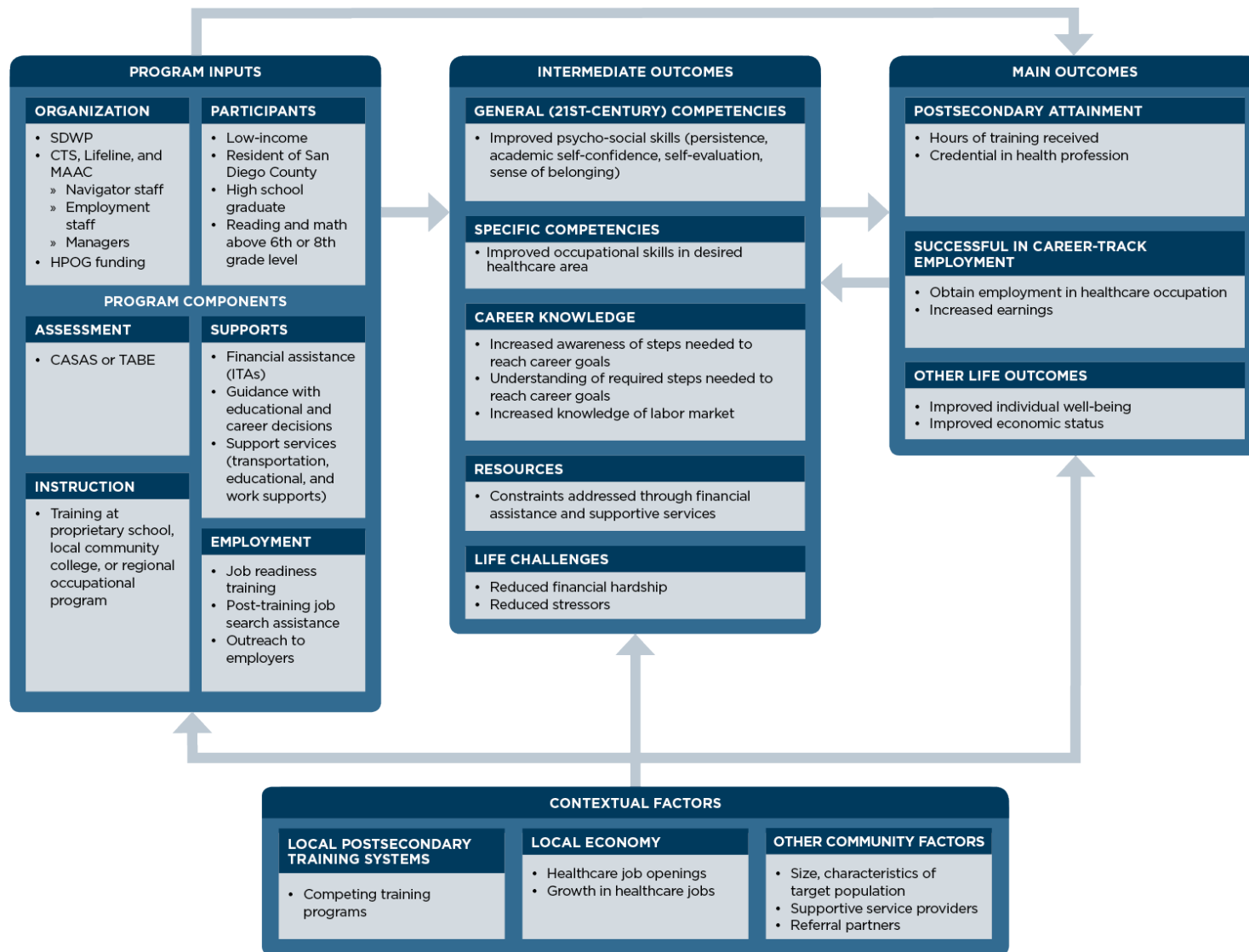
Exhibit 2-1 below depicts the Bridge to Employment theory of change within the career pathways framework. It shows in detail how the program is hypothesized to produce effects on “intermediate” outcomes such as career knowledge and resources, which in turn will lead to effects on “main” outcomes such as hours of training and credential receipt in the short term, and eventually to gains in employment, earnings, and other life outcomes in the longer term.

Starting in the box at the left, the theory of change begins with **program inputs** and **program components**. The short-term report (Farrell and Martinson 2017) found that these program inputs (San Diego Workforce Partnership, navigator organizations, HPOG funding, and participant characteristics) and program components (assessment, instruction, supports, and employment connections) were largely in place and operated as planned. After participants left the Bridge to Employment program, usually within a few months of enrollment, these inputs and components no longer played a key role; as a result, we do not re-assess them now, at the three-year follow-up.

The middle box shows the **intermediate outcomes**. Improving these outcomes was not the ultimate goal of the program, but the theory of change suggests that doing so—that is, improving participants' competencies and career knowledge, removing barriers to employment such as difficulties with childcare or transportation, and addressing life challenges such as alcohol and drug use—was a necessary precursor to improving the main outcomes of interest. The Bridge to Employment program intended to affect these outcomes quickly so that students would be better positioned to engage in education and training. The short-term report found mixed results for these outcomes: the program improved participants' career knowledge and other measures of early career progress and it reduced participants' perceived stress, but it did not have a significant effect on other life stressors.

The **main outcomes, which are the focus of this report**, appear in the far right box. They include postsecondary attainment, career-track employment, and other life outcomes. These outcomes are most directly connected to the program's goal of improving employment and earnings for TANF recipients and other low-income individuals. The short-term report assessed the impact of Bridge to Employment on postsecondary attainment after 18 months. Because the program emphasized rapid training (students spent less than five months in a training program on average), we anticipated that impacts on postsecondary attainment would begin to emerge within 18 months after random assignment. That turned out to be the case.

Exhibit 2-1: Career Pathways Theory of Change for Bridge to Employment



However, because a non-trivial proportion of students in both the treatment and control groups were still enrolled in training at 18 months, educational impacts might have continued to evolve. On that assumption, in this three-year report we re-assess impacts on *postsecondary attainment*. Because most training effects should have emerged within 18 months, however, credential receipt was not considered a confirmatory outcome for the three-year report.

Aside from some measures of career progress and job quality, the short-term report did not assess impacts on *employment and earnings*, anticipating that it was too early to draw conclusions at that time. However, with treatment group members participating in relatively short-duration training programs, it seems reasonable to expect any impacts to emerge within three years. The career pathways theory of change also specifies that if improvements in educational attainment lead to improvements in employment and earnings, then that should in turn lead to improvements in *other life outcomes*. Again, it seems reasonable that these changes should be visible three years out.

Finally, the exhibit shows that a number of **contextual factors** can condition impacts, including other available training programs and local economic conditions. The implementation study explored these factors (see Farrell and Martinson 2017), and we discuss them again in this report when they are useful for explaining three-year program impacts.

2.2 Research Questions at Three-Year Follow-up

The Bridge to Employment theory of change motivates several research questions we addressed in the three-year analysis, summarized as follows:

- Three years after random assignment, what were the effects of Bridge to Employment on:
 - Educational attainment, including healthcare credentials and exam-based certifications received? Specifically, did early impacts on postsecondary education persist at the three-year mark?
 - Entry into career-track employment and higher-wage jobs?
 - Participant and family well-being, including income and material hardship?
- Did the benefits of the Bridge to Employment program outweigh its costs from the perspectives of government, treatment group members, and society as a whole?

Each of these research questions is addressed, in turn, in Chapters 3 through 6.

2.3 Data Sources

Analyses in this report draw on data from several sources: baseline surveys administered to study participants immediately prior to their random assignment; follow-up surveys conducted approximately 18 months and three years after random assignment; earnings and employment data from the National Directory of New Hires (NDNH); and school enrollment data from the National Student Clearinghouse (NSC). We describe each of these data sources below.

2.3.1 Baseline Surveys

The study randomized 1,007 study participants between July 2012 and October 2013. All study participants completed a **Basic Information Form** just prior to random assignment. This form captured demographic information, family characteristics, educational history, and work and earnings information. Study participants also completed a **Self-Administered Questionnaire** at baseline, which collected sensitive personal information such as training commitment and academic confidence.²³ This report uses data from those baseline surveys to describe the sample, for defining subgroups of interest, and for regression adjustment.

2.3.2 Follow-up Surveys

This report focuses on outcomes measured in a three-year follow-up survey, with some reference to 18-month follow-up survey data previously analyzed in the *Implementation and Early Impact Report* (Farrell and Martinson 2017).

18-month Survey. The first follow-up survey provided measures of outcomes that the theory of change indicated Bridge to Employment might affect in the short term. The findings summarized in Chapter 1 are based on these data. The other use of the 18-month survey data in this report is to help impute values for missing data on job and education spells from other data sources. Administered by telephone or in person, the survey had an overall response rate of 72 percent (76 percent in the treatment group and 68 percent in the control group). Administration began at 15 months after random assignment, and the median response occurred at 18 months.

Three-year Survey. We designed the second follow-up survey to measure outcomes that the theory of change indicated Bridge to Employment might affect over a longer time horizon, such as employment and other life outcomes. The survey also captured detail on respondents' educational history to date, a limited number of psycho-social skills, and their children's experiences with school. The response rate for the three-year follow-up was 66 percent overall (68 percent in the treatment group and 63 percent in the control group). Administration began at 36 months after random assignment, and the median response occurred at 38 months.^{24,25}

²³ Navigator staff administered the Basic Information Form on paper and then entered it electronically into the study database. Because the Self-Administered Questionnaire asked for personal information (criminal records, psycho-social skills, social support, career orientation and knowledge, and personal and family challenges), study participants filled out a paper form and then placed it in a sealed envelope that Bridge to Employment staff sent to Abt Associates for data entry.

²⁴ More than 75 percent of the respondents completed the survey 41 months or less after random assignment. The longest lag between randomization and completion was 46 months. Additional months of follow-up potentially increases recall error and shifts means for time-sensitive variables. However, the lags were well matched between the treatment and control groups, so this variation in lags between randomization and completion should not lead to false claims of program effects.

²⁵ Appendix B provides detailed descriptions of the outcomes based on the three-year survey used in this report. The full instrument is available at <http://www.career-pathways.org/career-pathways-pace-three-year-instrument/>.

2.3.3 National Directory of New Hires

Wage records from the NDNH are a major data source for earnings and employment analyses in this report. Maintained by the federal Office of Child Support Enforcement in ACF, the NDNH includes quarterly earnings measured by state Unemployment Insurance systems and earnings of federal civilian and military employees provided by various federal agencies. The PACE project had access to these data for study sample members for two years prior to their random assignment through the end of the evaluation period.

At the time this three-year impact report was written, NDNH data were available for 19 quarters after random assignment; however, the pre-specified confirmatory and secondary outcomes in this report use only the first 13 quarters of those 19.²⁶

2.3.4 National Student Clearinghouse

This report uses data on college enrollment from the NSC for a number of technical purposes, such as nonresponse analysis and weighting (see Appendix Section B.3). NSC is a nonprofit organization that collects data on student enrollment, degrees earned, and other credential completion from most U.S. institutions of higher education. Designed to aid the administration of student loan programs, researchers also use NSC data to study college access and persistence. As in most administrative data systems, data are subject to various coverage and content limitations. Most critically, coverage of private, for-profit colleges is very low.

Because a large number of Bridge to Employment participants used their ITAs to enroll in private, for-profit institutions, we could not reliably use NSC data to measure impacts on education outcomes. Instead, we base impacts on postsecondary attainment in this report on the three-year survey data.

2.4 Evaluation Design and Analysis Plan

The PACE project is using an experimental research design to estimate the impact of access to its nine programs (of which Bridge to Employment is one) on participants' outcomes. When properly implemented, such a design ensures that any estimated impacts can be attributed to program access rather than to unmeasured differences between eligible study sample members with access (the treatment group) and without access (the control group).

As designed, the experiment captures impacts on all sample members, regardless of whether those assigned to the treatment group actually received the program's services. In other words, this design—an "intent-to-treat" approach—assesses whether the existence of the program led to better outcomes for those offered the chance to participate in it, relative to what they could have obtained without the program. For a voluntary (rather than mandatory) program, the intent-to-treat estimate is often the most policy relevant. However, it is important to remember that those offered a slot in Bridge to Employment are being compared to those denied a slot but who

²⁶ Additional detail is provided in Appendix C.

still had access to other programs and services available in the local area (described in Section 1.2), rather than being compared to those receiving no training.

Another important aspect of the PACE research design is that the experiment captures the effects of the program *overall*, rather than the contributions of its components. As described above, designers of Bridge to Employment (and the other programs in the PACE project) deliberately included multiple strategies (e.g., assessment, instruction, supports, and employment connections) that they hypothesized were needed to produce desired impacts. To determine which of these components are important contributors to the overall impact would take a study sample at least 10 times larger than this study's sample and require multi-armed randomization. The PACE project does not try to address that question. Instead, it focuses on the first-order question of whether the program as a whole, when implemented in real-world conditions, produces an impact. If the answer is affirmative, then follow-on studies could be designed to explore the contribution of various program components or strategies.

2.4.1 Hypothesis Testing

The theory of change for Bridge to Employment targets a range of outcomes of interest to policymakers, program operators, and researchers. Testing for program impacts on so many outcomes causes a statistical problem: it provides the program many chances to demonstrate success; but with enough chances, even an unsuccessful program might appear to have one or two impacts. In other words, if the evaluation did not account in some way for multiple hypothesis tests, some of its findings would reach conventional levels of statistical significance merely by chance, even if there were no real effects on any outcome. This is known as the problem of “multiple comparisons.”

To avoid overinterpreting the many false positives that could arise, the PACE evaluation structures program analyses by establishing three categories of hypotheses: confirmatory, secondary, and exploratory.

- **Confirmatory hypotheses** center on the outcome(s) most critical to judging whether a program seems to be achieving its goals within the designated time period. By limiting the confirmatory analysis to a single outcome, we can avoid the multiple comparisons problem entirely. For the three-year impact study of Bridge to Employment, we specified a single confirmatory hypothesis: *an increase in average quarterly earnings in quarters 12 and 13 after random assignment.*²⁷ Because this hypothesis posits an expected direction for the impact (an increase in the average level), we applied a one-tailed test for statistical significance only in the specified direction, ignoring the possibility of an effect in the other direction.

²⁷ Five of the nine PACE three-year impact studies have two confirmatory outcomes: one outcome in the education domain and another outcome in the labor market domain. For reasons described in the analysis plan (Judkins, Fein, and Buron 2018), the Bridge to Employment research team specified a single confirmatory outcome for the program, which is in the earnings domain.

- **Secondary hypotheses** address a select set of other important indicators of program success. Like confirmatory hypotheses, secondary hypotheses posit effects in an expected direction—that is, either an increase or decrease in the average level of each outcome. For this reason, we again apply one-tailed tests for statistically significant effects only in the specified direction. Secondary hypotheses for Bridge to Employment at the three-year follow-up include an *increase in credential receipt, improvements in employment status and career pathways employment, improved career progress, and improved financial well-being*.
- **Exploratory hypotheses** include a larger number of additional possible effects for related outcomes. They are intended to help improve our understanding of findings from the confirmatory and secondary analyses. Exploratory hypotheses do not necessarily posit the direction of effects, and therefore we apply two-tailed tests. Some examples of exploratory hypotheses for Bridge to Employment include changes in *quarterly earnings and employment for each quarter after random assignment*, various measures of *job quality*, and measures of *financial well-being* such as living arrangements. Comparisons of program impacts between *subgroups* of study sample members are also exploratory hypotheses.

This classification of hypotheses aligns with the outcomes designation, and throughout this report we refer to outcomes as being confirmatory, secondary, or exploratory.

Prior to running and inspecting results for tests of these hypotheses, we published an analysis plan specifying key hypotheses and outcome measures (see Judkins, Fein, and Buron 2018). The team subsequently assessed data quality, refined the plan, and publicly registered confirmatory and secondary hypotheses on the OSF website.²⁸ The purpose of the registration was to guide the work of the research team and publicly commit to particular hypotheses and an estimation approach, in accordance with ACF's commitment to promote rigor, relevance, transparency, independence, and ethics in the conduct of evaluations.²⁹ Consistent with the short-term impact study, we did not register exploratory hypotheses.

2.4.2 Impact Estimation Procedures

We conducted analyses to estimate the impact of Bridge to Employment on the hypothesized outcomes described above and for selected subgroups.

Random assignment ensures that, on average, study sample members in the treatment and control groups will have similar characteristics at baseline. Random assignment also ensures that measured differences in subsequent outcomes provide unbiased estimates of program impacts. To address any effects that chance differences arising from random assignment might have on estimates, analysts typically estimate impacts using a procedure that compensates for

²⁸ Previously the Open Science Framework; see <https://osf.io/4ve26/>.

²⁹ See <https://www.acf.hhs.gov/opre/resource/acf-evaluation-policy>.

chance differences in measured baseline characteristics. Such procedures also help to increase the precision of estimates.

To select baseline characteristics and estimate impacts, the PACE project's research team developed an approach that respects the conservative tradition of including out-of-balance characteristics, no matter what, in addition to empirically selected covariates, but without incurring large losses in precision. We describe details of this approach, a recently developed technique called “least absolute shrinkage and selection operator (LASSO),” in Appendix Section A.3.

After identifying covariates, we used a regression-adjustment model to estimate impacts three years out. All analyses of survey data applied weights developed to adjust for differential nonresponse between the treatment and control groups. (Additional details on these and other aspects of the analysis appear in Appendices A and B.)

The text box *How to Read Impact Tables* below describes how to navigate and understand the tables in the impact chapters.

How to Read Impact Tables in This Report

The exhibits in Chapters 3-5 show the outcome measure in the left-most column (**Outcome**).

The next column (**Treatment Group**) presents the treatment group's regression-adjusted mean outcome, followed in the next column by the control group's actual mean outcome (**Control Group**). The regression adjustments correct for random variation in baseline covariates between the two groups (and thus differ slightly from the raw means) and improve the precision of the estimates.

The next column (**Impact (Difference)**) is the impact of being offered Bridge to Employment—that is, the difference between the treatment and control group means. The **Standard Error** column is a measure of uncertainty in the estimated impact that reflects both chance variation due to randomization and any measurement error.

The column labeled **Relative Impact** presents the impact as a percentage change from the control group mean. It offers a sense of how “big” or “small” the impact of the program on the treatment group is, at least relative to the control group's level. For outcomes with no natural unit of measurement, we report an **Effect Size** instead of the relative impact. The effect size is a standardized measure that defines impacts as a fraction of the pooled standard deviation across the treatment and control groups. It offers a sense of the size of the impact relative to how much the outcome varies across the full sample and allows for comparison of the size of the impact across scale outcomes.

The final column, **p-Value**, is the probability that the observed or a larger difference between the treatment and control groups would occur by chance, even if there was in reality no difference between the two groups.

Statistical significance

There are several common standards for judging statistical significance. In this report, tests are considered statistically significant and highlighted in tables if the *p*-value is less than .10. The smaller the *p*-value, the more likely that the observed difference between the treatment and control groups is real, rather than occurring by chance. Tests with *p*-values of less than .10 are separately flagged:

* for .10 (10 percent level)

** for .05 (5 percent level)

*** for .01 (1 percent level)

Categories of findings

Tests of statistical significance for confirmatory and secondary outcomes are one-sided tests because we have a directional hypothesis for these impacts. The confirmatory and secondary analyses are reported using **bold text** in the tables. Tests of significance for exploratory outcomes use a two-sided test, a test we use because we do not have a directional hypothesis. Exploratory analyses are reported using regular (not bolded) text in the tables.

3. Impacts on Postsecondary Education and Training

This chapter reports and discusses Bridge to Employment's impacts on postsecondary achievement three years after random assignment. The primary purpose of assessing these impacts at the three-year follow-up is to determine whether the early educational gains found at 18 months persisted or whether they diminished—due to some treatment and control group members still being enrolled in training, rather than having completed training. At 18 months, about a quarter of students in both groups were still enrolled in training. So it was conceivable that control group members might catch up with the treatment group members in credential receipt over a longer time horizon.

Using data from 346 treatment group and 312 control group respondents to the three-year follow-up survey, this chapter shows that Bridge to Employment's impact on credentialing persisted, but its short-term impact on length of enrollment did not.

Outcome Measures in Chapter 3

All education outcomes reported in this chapter were measured using the three-year follow-up survey.

- This report estimates impacts on both *credentials* in general and *receipt of postsecondary healthcare credentials* specifically. The receipt of a credential (in any field) was the confirmatory outcome in the short-term report.
- The *number of full-time-equivalent months enrolled at any school* is based on dates of attendance and status while enrolled. The short-term report looked at the total hours of occupational training. Because we expected survey respondents to have difficulty recalling such specific information after three years, we used the number of months enrolled as proxy.

- ***Bridge to Employment did not affect the average duration of education and training that treatment group members received during the first three years after random assignment.***

As shown in Exhibit 3-1 below, there was not a statistically significant difference in average duration of training received during the first three follow-up years: treatment group members attended 6.6 months, compared with 6.5 months for the control group.

- ***The program increased the receipt of credentials, and healthcare credentials in particular. It also increased receipt of exam-based certifications.***

Exhibit 3-1 below shows that Bridge to Employment had a positive impact on the receipt of postsecondary healthcare credentials. By the end of the three-year follow-up period, half (51 percent) of treatment group members had received a postsecondary healthcare credential, compared with only 35 percent of control group members. The program also increased the

receipt of exam-based certifications or licenses.³⁰ By the end of three years, 60 percent of treatment group members had received a certification, compared with only 36 percent in the control group, a difference of 24 percentage points. Additional analysis of the survey data (not shown) found that the program's impact was largest on vocational credentials requiring less than one year of credits, which were the types of credentials targeted by Bridge to Employment.

Exhibit 3-1 shows the source of postsecondary healthcare credential receipt for treatment and control group members. Similar to the short-term findings at 18 months after random assignment, Bridge to Employment had a very strong effect on the receipt of credentials from training providers other than colleges. This is likely because students commonly used their ITA vouchers to attend private, for-profit schools or adult high schools, such as a regional occupational program, rather than community colleges.

Exhibit 3-1: Three-Year Impacts on Education Outcomes

Outcome	Treatment Group	Control Group	Impact (Difference)	Standard Error	Relative Impact (%)	p-Value
Full-time-equivalent months enrolled at any school (#)	6.59	6.49	+0.10	(0.72)	+1.5	.444
At a college	4.35	4.86	-0.51	(0.68)	-10.5	.452
At another school	2.24	1.63	+0.61	(0.38)	+37.4	.110
Received any type of credential from any school (%)	52.8	40.6	+12.2***	(4.0)	+30.0	.003
From a college	19.4	22.1	-2.7	(3.3)	-12.2	.411
From another school	37.4	21.3	+16.1***	(3.6)	+75.6	<.001
Received a healthcare credential from any school (%)	50.5	35.0	+15.5***	(3.9)	+44.3	<.001
From a college	18.3	17.6	+0.7	(3.1)	+4.0	.813
From another school	35.4	19.2	+16.2***	(3.6)	+84.4	<.001
Received an exam-based certification or license (%)	59.6	35.8	+23.8***	(4.2)	+66.5	<.001
Enrolled in education or training at survey follow-up (%)	12.6	17.7	-5.1*	(2.9)	-28.8	.077
Sample size	346	312				

Source: PACE three-year follow-up survey, except exam-based certification or license is a blended variable based on 18-month and three-year follow-up surveys.

Note: Secondary outcomes are bolded and statistical significance is based on one-tailed tests; exploratory outcomes are not bolded and statistical significance is based on two-tailed tests. "Relative Impact" represents impacts in column 3 as a percentage of the corresponding control group mean (i.e., $100 \times [\text{impact/control group mean}]$).

Statistical significance levels based on differences between research groups: *** 1 percent level; ** 5 percent level; * 10 percent level.

³⁰ Not shown; the vast majority (90 percent) of these exam-based certifications or licenses were also healthcare related.

- ***More control group members than treatment group members were still enrolled in education or training at the time of the three-year follow-up survey.***

As discussed above, by the time of the three-year survey, treatment and control group members had similarly spent about 6.5 months enrolled in school. Because control group members were 5 percentage points more likely than treatment group members to be enrolled in education and training at three years (Exhibit 3-1), it is possible that Bridge to Employment's impact on credential receipt may diminish over time.

4. Impacts on Employment and Earnings

One of the main goals of the Bridge to Employment program was to improve participants' long-term employment-related outcomes. For that reason, this three-year report estimates impacts on a variety of measures of earnings, employment, and job quality. The short-term report at 18 months after random assignment found occupational training gains for treatment group members and some indications of early career progress (i.e., greater perceived career progress, confidence in career knowledge, and access to career supports). These gains persisted after three years; however, this chapter shows that those gains did not translate into detectable impacts on employment and earnings outcomes.

The three-year impact study's confirmatory outcome is *average quarterly earnings in follow-up quarters 12-13*.³¹ This outcome captures Bridge to Employment's goal of helping participants obtain better jobs with higher pay and job satisfaction than they otherwise could. In contrast to other employment-related outcomes, earnings captures the net effects of any changes in hours worked and hourly wages during these two quarters—important measures that are also analyzed separately.

The chapter's first two sections present results for earnings and employment, respectively. A third section tests for differences in earnings impacts across subgroups.

³¹ Averaging over two quarters improves statistical power slightly and aligns better with the three-year follow-up survey (mostly completed in the 12th and 13th quarters after randomization) than does any single quarter.

Outcome Measures in Chapter 4

The outcomes reported in this chapter were measured using both administrative and survey data.

- NDNH data were available for the full sample for 19 quarters after random assignment. We used data from NDNH to measure earnings over three time periods aligned with the three-year follow-up survey results, which had a median completion in the 13th quarter (38 months) after random assignment. These three time periods, which were pre-specified in the study's registration, are (a) *total earnings over the first 13 quarters after random assignment*; (b) *total earnings during the last year of follow-up* (beginning in quarter 10, after most students should have exited the program, and ending in quarter 13); and (c) *average quarterly earnings during quarters 12 and 13* (the last two quarters of follow-up at this time point and the pre-specified confirmatory outcome).
- We also used data from NDNH to estimate the impacts on *earnings* (\$) and employment (yes/no) during each quarter of follow-up for all 19 quarters of available NDNH data.
- We used data from the three-year follow-up survey to measure all other outcomes in this chapter, including *employment* (yes/no) at the time of the survey.
- The three-year survey provided several indicators of career pathways employment: *employed at \$15 per hour or above* (one of the program's performance goals), *employed in a job requiring at least mid-level skills* (based on federal standards), and *employed in the healthcare field* (because increasing the supply of healthcare workers was one of the goals of the HPOG Program that funded Bridge to Employment).

4.1 Impact on Earnings

The Bridge to Employment program's theory of change outlined in Chapter 2 suggests that treatment group members may earn less than their counterparts in the control group for some time after random assignment because treatment group members are more likely to participate in training rather than working or looking for work. It assumes that in time, because they gain experience, earn credentials, and benefit from job placement services, treatment group members should see their prospects for employment and higher earnings improve. As a result, the net effect on quarterly earnings should become positive in the longer term.

To explore whether earnings evolve over time in the manner suggested by the theory of change, we used administrative data to assess several different measures of earnings over the three-year follow-up period.

- ***Bridge to Employment did not significantly increase average quarterly earnings in follow-up quarters 12-13, the study's single confirmatory outcome.***

The difference in average quarterly earnings in Q12-Q13 between treatment group and control group members was positive—\$289 (top row in Exhibit 4.1)—but this difference is not statistically significant. In other words, the data do not yield estimates precise enough to conclude that the Bridge to Employment program increased earnings three years after random

assignment.³² A 90 percent confidence interval for the estimated impact runs from –\$129 to +\$707, meaning that we cannot rule out either modest, favorable impacts or small, unfavorable ones. As a result, the three-year study cannot provide definitively answer whether the Bridge to Employment program provided a meaningful boost to participants' earnings.

Exhibit 4-1: Three-Year Impacts on Earnings

Outcome	Treatment Group	Control Group	Impact (Difference)	Standard Error	Relative Impact (%)	p-Value
Confirmatory Outcome: Average quarterly earnings in Q12-Q13	\$4,974	\$4,686	+\$289	(254)	+6.2	.128
Total earnings						
In last year of follow-up (Q10-Q13)	\$19,103	\$17,847	+\$1,256	(944)	+7.0	.184
Since randomization (Q1-Q13)	\$47,749	\$46,512	+\$1,238	(2,190)	+2.7	.572
Sample size	506	498				

Source: National Directory of New Hires.

Note: Confirmatory and secondary outcomes are bolded and statistical significance is based on one-tailed tests. Exploratory outcomes are not bolded and statistical significance is based on two-tailed tests. "Relative Impact" represents impacts in column 3 as a percentage of the corresponding control group mean (i.e., $100 \times [\text{impact}/\text{control group mean}]$).

Statistical significance levels, based on differences between research groups: *** 1 percent level; ** 5 percent level; * 10 percent level.

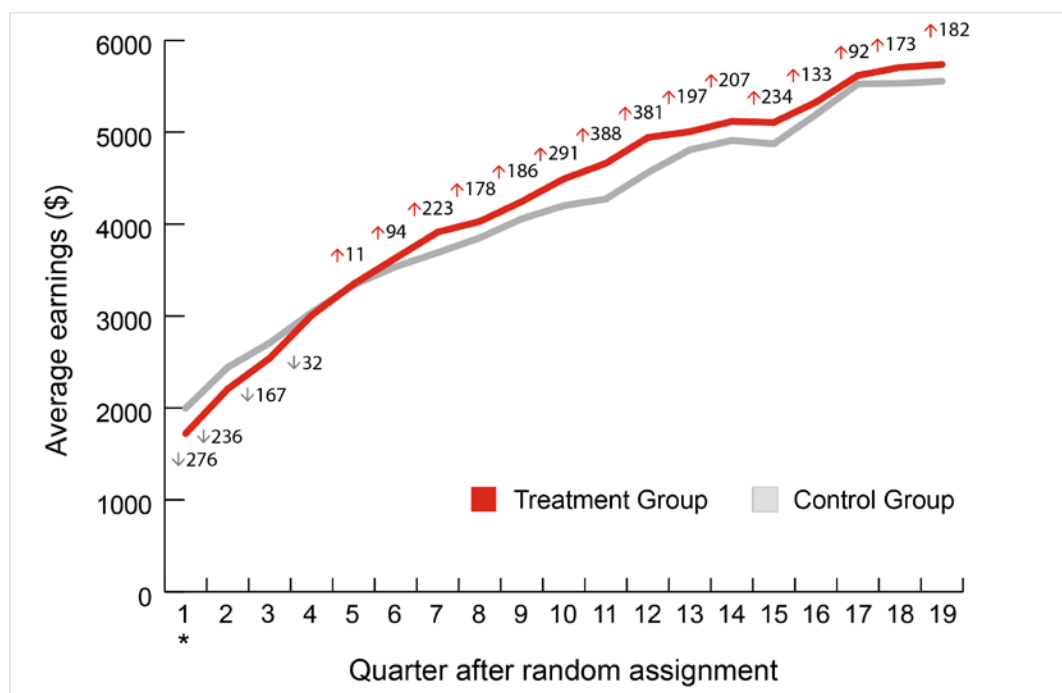
- **The time path of earnings is consistent with the theory of change: a small decrease during the training period followed by an increase thereafter. However, the difference between the treatment and control groups was not statistically significant in any quarter after quarter 1.**

Exhibit 4-2 below presents earnings for the 19 quarters after random assignment. It shows that, as hypothesized, members of the treatment group appear to have earned less than the control group for some time after random assignment and then earned more than the control group in each quarter thereafter. The differences between the two groups, however, are not statistically significant in any quarter after quarter 1, nor was there a significant increase during the last year of follow-up (see Exhibit 4-1 above) or during the 19 quarters after random assignment as a whole (not shown in Exhibit 4-1).³³

³² The variance in earnings was larger than anticipated when the study was designed. As a result, the study's *statistical power* (i.e., the probability that the study can detect impacts of a certain size, for a given sample size and level of desired statistical significance) was low. The impact that can be detected with 80 percent probability, or *power*, is called a "minimum detectable impact" (MDI). Calculating power/MDIs requires an assumption about the standard deviation of the outcome, which we assumed to be \$150 for quarterly earnings. This was a good assumption for quarter 1, but not for subsequent quarters: it was \$254 for quarters 12-13, and as high as \$724 in quarter 9. As a result, the study's MDI was \$540 for earnings in quarters 12-13, compared with an anticipated MDI of \$323.

³³ In the full 19 quarters after random assignment, treatment group members earned an estimated \$80,517, whereas control group members earned an estimated \$78,131. The impact of \$2,386, favoring the treatment group, was not statistically significant ($p = .505$).

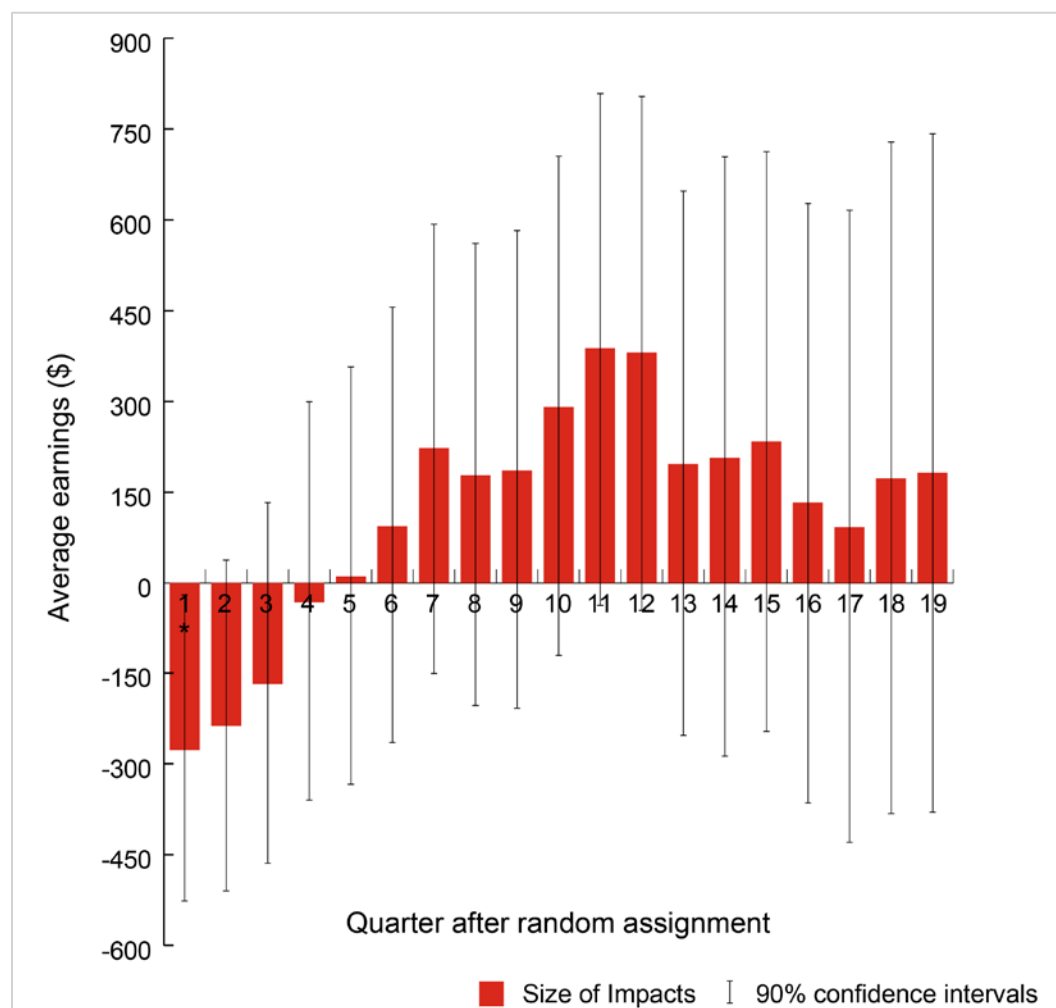
Exhibit 4-2: Impacts on Quarterly Earnings



Source: National Directory of New Hires.

Statistical significance levels, based on differences between research groups: *** 1 percent level; ** 5 percent level; * 10 percent level.

Again, the 90 percent confidence intervals on these estimates include both large positive and small negative values for many quarters after the first year (Exhibit 4-3 below). This means that large positive values (more than \$500 per quarter) are plausible in many quarters, as are zero values and even small negative ones. As a result, the findings are not definitive as to whether Bridge to Employment produced meaningful improvements in earnings over this period of time.

Exhibit 4-3: Quarterly Earnings Impacts with Confidence Intervals

Source: National Directory of New Hires.

Statistical significance levels, based on differences between research groups: *** 1 percent level; ** 5 percent level; * 10 percent level.

4.2 Impact on Employment

The Bridge to Employment program was designed to improve participants' long-term employment-related outcomes and career prospects, not just earnings. In this section, we present impacts on a variety of measures of employment, job quality, and perceived career progress.

We measured employment-related outcomes using both NDNH and three-year survey data. Data from NDNH provide information on employment by quarter, whereas the survey captures employment at the time of the survey. However, the three-year follow-up survey captures information on aspects of employment such as fringe benefits and indicators of job quality that are unavailable in the administrative data.

- **Bridge to Employment increased the proportion of treatment group members working in healthcare, but did not have detectable impacts on other measures of employment and job quality.**

Exhibit 4-4 below presents findings for several measures of employment. The program achieved impacts on two of these measures: Bridge to Employment increased employment in the healthcare field by some 30 percent (10 percentage points), and it increased employment in a healthcare occupation by 32 percent (7 percentage points).

Like all HPOG-funded programs, Bridge to Employment was an effort to meet the dual policy goals of increasing the supply of healthcare workers while also improving the employment prospects of low-income adults. Thus, the findings indicate that even if it did not succeed in increasing earnings three years out, the program appears to have succeeded in furthering the important goal of increasing the supply of healthcare workers in the San Diego area.

The two measures of healthcare employment are slightly different. *Employment in the healthcare field* is a broad measure of employment in that industry and could include ancillary occupations in healthcare settings such as Personal Care Aide,³⁴ Janitor, Receptionist, and File Clerk. *Employment in a healthcare occupation* is a narrower measure that indicates involvement in the diagnosis or treatment of healthcare patients, regardless of setting. We estimated impacts on both measures because training for healthcare industry jobs (e.g., Billing Assistant and Medical Records Technician) and healthcare occupations were allowable under HPOG.

As Exhibit 4-4 below shows, fewer members of either the treatment or control group were working in healthcare occupations than were employed in the healthcare industry (i.e., more study participants were working in the healthcare field than were working directly with patients). However, Bridge to Employment's relative impact on the two categories of healthcare-related work was similar.

³⁴ We used the 2010 Standard Occupation Coding System (https://www.bls.gov/soc/2010/2010_major_groups.htm#31-0000), under which Personal Care Aide is in "major group" 39, *Personal Care and Service Occupations*, which is not considered healthcare work. This major group also includes Childcare Worker, Barber, and Hair Stylist. In the 2018 revision to this system (https://www.bls.gov/soc/2018/major_groups.htm), Personal Care Aide was transferred to major group 31, *Healthcare Support Occupations*, making it a healthcare occupation, but we continued to use the 2010 classification system. Many of the duties of Personal Care Aides and Nursing Assistants overlap, but Personal Care Aides do not take vital signs or administer medicines. Based on self-described duties, many graduates of Bridge to Employment are working as Personal Care Aides rather than Nursing Assistants, so impacts are sensitive to the decision whether to use the 2010 or 2018 system.

Exhibit 4-4: Three-Year Impacts on Employment

Outcome	Treatment Group	Control Group	Impact (Difference)	Standard Error	Relative Impact (%)	p-Value
Employed at survey follow-up (%)	72.5	68.3	+4.2	(3.7)	+6.1	.127
Works at least 32 hours per week (%)	50.2	46.5	+3.7	(4.1)	+8.0	.377
Indicators of Career Pathways Employment						
Employed and: (%)						
Paid \$15 per hour or above	25.5	26.9	-1.4	(3.6)	-5.2	.648
Working in a job requiring at least mid-level skills ^a	22.2	25.9	-3.7	(3.5)	-14.3	.856
Working in the healthcare field (includes ancillary occupations in healthcare settings)	44.9	35.3	+9.6	*** (4.0)	+27.2	.003
Working in a healthcare occupation (duties include a role in the diagnosis or treatment of health problems)	28.8	21.9	+7.0	* (3.6)	+32.0	.055
Indicators of Job Quality						
Employed and: (%)						
Working straight day, evening, or night shifts	58.2	57.2	+1.0	(4.1)	+1.7	.800
In a job that offers health insurance	45.0	46.6	-1.6	(4.1)	-3.4	.696
Has a supportive work environment ^b	35.0	36.2	-1.2	(3.9)	-3.3	.770
Sample size	346	312				

Source: PACE three-year follow-up survey.

Note: Secondary outcomes are bolded and statistical significance is based on one-tailed tests. Exploratory outcomes are not bolded and statistical significance is based on two-tailed tests. "Relative Impact" represents impacts in column 3 as a percentage of the corresponding control group mean (i.e., $100 \times [\text{impact}/\text{control group mean}]$).

^a O*net Job Zone 3 or higher.

^b A job is considered to have a supportive working environment if the worker reports a rich combination of family-friendly policies, helpful coworkers and supervisors, high job satisfaction, generous fringe benefits, and opportunities for advancement.

Statistical significance levels, based on differences between research groups: *** 1 percent level; ** 5 percent level; * 10 percent level.

Exhibit 4-4 above shows that Bridge to Employment did not substantially affect other measures of employment, career pathways employment, or job quality three years out.³⁵

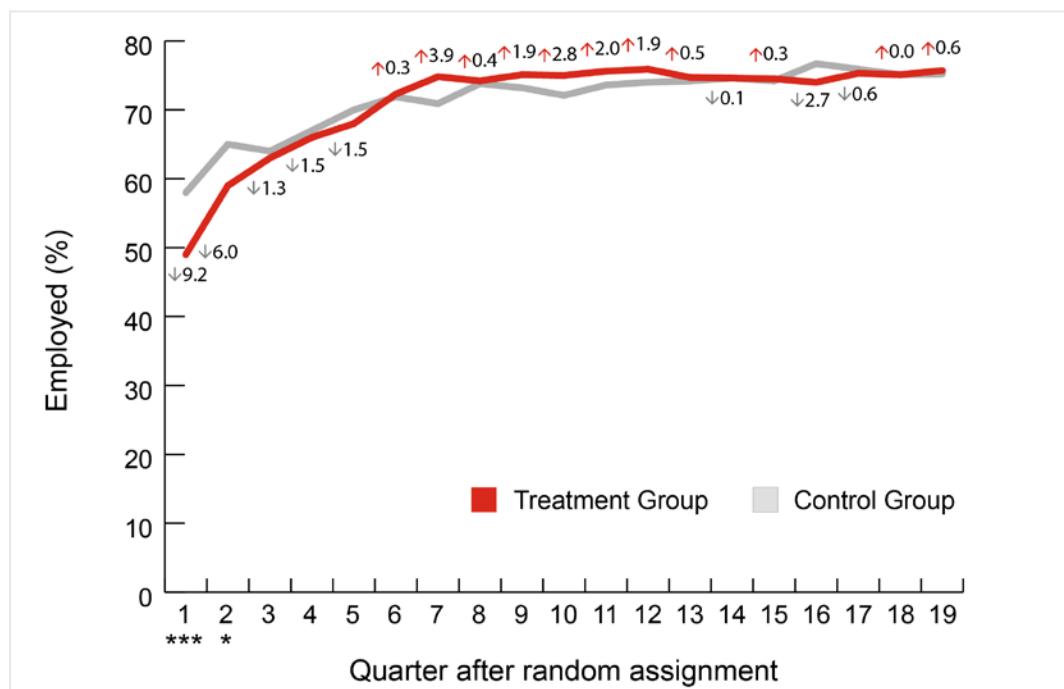
It should not be surprising that increases in healthcare employment were not associated with statistically significant improvements in other measures of job quality such as hourly pay and required skills. As described in the short-term report, entry-level healthcare jobs in the County of San Diego typically pay less than \$15 per hour, with CNA jobs generally starting at \$10 to \$11 per hour; middle-skilled jobs typically require more than the 6.5 months of training received by the average participant in Bridge to Employment.

³⁵ The short-term report used \$12 per hour as the threshold for good hourly pay, which was the 60th percentile of wages for employed people in the control group at that time. At three years, the 60th percentile was \$14.76 per hour. This aligns well with Bridge to Employment's internal performance indicator for monitoring its navigator organizations, which specified that 70 percent of program participants should be in a job paying at least \$15 per hour.

- **There were few statistically significant impacts on employment during the first 19 quarters after random assignment.**

Looking at employment impacts over time (Exhibit 4-5), the Bridge to Employment program appears to have had a negligible—and statistically insignificant—effect in most quarters. As with earnings, employment levels in the treatment group were below those in the control group during the period of training; the difference was statistically significantly lower in Q1 and Q2.

Exhibit 4-5: Impacts on Quarterly Employment



Source: National Directory of New Hires.

Statistical significance levels, based on differences between research groups: *** 1 percent level; ** 5 percent level; * 10 percent level.

- **Bridge to Employment did not improve most measures of early career progress.**

Though not associated with higher earnings, increased employment in healthcare nonetheless might have helped to set up study sample members to more confidently pursue careers. We examined three indicators of whether this might be the case. Bridge to Employment did not have a detectable impact on either of two secondary outcomes—*confidence in career knowledge* and *access to career supports*—three years after random assignment (Exhibit 4-6 below).

It had only a small effect on the exploratory measure *perceived career progress*, which improved by 0.11 points on a four-point scale. This impact (an effect size of 0.14) is likely not large enough to signal a meaningful improvement in career prospects, especially given the lack of improvement on the related secondary measures.

Exhibit 4-6: Three-Year Impacts on Career Knowledge and Supports

Outcome	Treatment Group	Control Group	Impact (Difference)	Standard Error	Effect Size	p-Value
Confidence in career knowledge ^a	3.42	3.40	+0.02	(0.04)	+0.03	.340
Access to career supports ^b	1.72	1.75	−0.03	(0.03)	−0.08	.845
Perceived career progress ^c	3.29	3.17	+0.11*	(0.06)	+0.14	.078
Sample size	346	312				

Source: PACE three-year follow-up survey.

Note: Secondary outcomes are bolded and statistical significance is based on one-tailed tests. Exploratory outcomes are not bolded and statistical significance is based on two-tailed tests. "Effect Size" represents impacts in column 3 as a fraction of the pooled standard deviation of the treatment and control groups.

^a Seven-item scale tapping self-assessed career knowledge; response categories range from 1=strongly disagree to 4=strongly agree.

^b Six-item scale tapping self-assessed access to career supports; response categories range from 1=no to 2=yes.

^c Three-item scale on whether reaching long-range education goals and employment goals and whether on career path; response categories range from 1=strongly disagree to 4=strongly agree.

Statistical significance levels based on differences between research groups: *** 1 percent level; ** 5 percent level; * 10 percent level.

4.3 Differences in Impact on Earnings across Subgroups

We estimated program impacts on *average quarterly earnings during quarters 12 and 13* (the three-year confirmatory outcome) separately for a variety of subgroups that theory or prior evaluations suggest might experience differential program effects.

The HPOG 1.0 Impact Study—which pools across 23 HPOG grantees operating 42 programs, including Bridge to Employment—looked at short-term impacts about 18 months after random assignment for a number of potentially policy-relevant subgroups across all of the HPOG 1.0 study sites.³⁶ Such subgroups were of particular interest because the variation in findings across them could suggest specific changes in program design, implementation, or policy: “A program cannot change a person’s age, but it could choose to target people who have more or less education; for example, as fitting to program goals” (Peck et al. 2018, p. 63).

When deciding which subgroups to examine for the Bridge to Employment program, we used the findings from the broader HPOG 1.0 Impact Study to suggest which subgroups may potentially be associated with Bridge to Employment’s impact on earnings.³⁷

The HPOG 1.0 Impact Study found differences in short-term impacts for at least some outcomes across potentially policy-relevant subgroups: those based on baseline receipt of public assistance, baseline employment status, baseline barriers to school and work, and baseline educational attainment. In particular, TANF and WIC/SNAP recipients experienced

³⁶ More information on the HPOG 1.0 Impact Study can be found at <https://www.acf.hhs.gov/opre/research/project/health-profession-opportunity-grants-hpog-impact-studies>

³⁷ HPOG 1.0 had a consistently favorable impact on educational progress across subgroups defined by several demographic characteristics, such as age, race/ethnicity, and presence of dependent children. Because there was no evidence their impacts differed in HPOG 1.0, we elected not to examine those subgroups for Bridge to Employment.

larger impacts on educational progress than did study participants who were not receiving any assistance; those who were not employed at baseline experienced more favorable impacts on employment in healthcare than did those who were employed; those with no barriers experienced more favorable impacts on quarterly earnings than did those with any barriers; and those who entered with some college or a degree at baseline experienced more favorable impacts on job quality.

In the PACE three-year impact study, we examined similarly defined subgroups to see whether subgroup differences in earnings impacts were present in the Bridge to Employment sample. For each policy-relevant subgroup (public assistance receipt, baseline employment status, life challenges, and educational attainment), we report impacts for the confirmatory outcome of *average quarterly earnings during quarters 12 and 13*.

We also compared two cohorts of study sample members defined by the timing of their entry (early versus late) into the Bridge to Employment program: In the last two years of its HPOG 1.0 grant, the program began to focus more on helping students attain jobs that used their training. We hypothesized this change might lead to larger impacts later. For example, at the start of its fourth year of operations, SDWP gave each of its three navigator organizations additional funding to hire a job developer to meet with employers and develop job leads as well as help students with their job searches.

Finally, for this three-year report, we assessed whether there were any differences across the three navigator organizations, to see if the differences observed in the short term had persisted.

Because the sample sizes for subgroups are smaller than the overall sample size, the analysis was not well powered to detect differences in impacts across subgroups. Only exceptionally large differences in impacts between treatment and control group members in a subgroup were likely to be flagged as statistically significant. Indeed, although the estimated differences in impacts across subgroups shown in Exhibit 4-7 below sometimes seem rather large from a policy perspective, none of them is statistically significant. This statistical imprecision means that such differences—even when they appear large—should be viewed with caution because they might not be replicated in future studies of similar programs. However, these analyses suggest that similar subgroup analyses might be useful to revisit in future studies with larger samples.

■ ***We found no detectable differences in earnings impact across subgroups.***

The largest—but not statistically significant—difference was between sample members with no life challenges (e.g., difficulties with childcare or transportation, alcohol/drug use, or health issues), who saw a 9 percent earnings gain on average, versus sample members with one or more challenges, who saw a 13 percent earnings *reduction* on average (Exhibit 4-7 below). This finding, while imprecise, is consistent with the HPOG 1.0 Impact Study's findings. Differences between subgroups based on baseline public assistance receipt and employment status were smaller, but again none was statistically significant. There was not a statistically significant difference in impacts between the early and late cohorts. Nor did we find evidence three years out of differences in impacts on earnings across the three navigator organizations (not shown in Exhibit 4-7).

The short-term report had found a statistically significant difference in the impact on credential receipt (the short-term confirmatory outcome) by navigator organization, with MAAC having the largest impact of the three organizations and CTS and Lifeline having smaller (but still significant) impacts. It does not appear that these differences in credentialing translated into differences in impacts on students' labor market outcomes three years out.

Exhibit 4-7: Three-Year Impacts on Average Quarterly Earnings in Q12-Q13, by Subgroup

Subgroup	Treatment Group	Control Group	Impact (Difference)	Standard Error	Relative Impact (%)	p-Value	Treatment Group Sample Size	Control Group Sample Size
By Public Welfare Receipt <i>p-Value for difference in impact between subgroups: $p = .496$</i>								
Household receiving welfare/public assistance or WIC/SNAP	\$4,646	\$4,190	+\$455	(337)	+10.9	.176	244	250
Household not receiving welfare/public assistance or WIC/SNAP	\$5,314	\$5,204	+\$110	(381)	+2.1	.773	262	248
By Baseline Employment Status <i>p-Value for difference in impact between subgroups: $p = .224$</i>								
Not working	\$4,345	\$4,292	+\$53	(317)	+1.2	.867	319	302
Working	\$5,997	\$5,299	+\$699	(425)	+13.2	.101	187	196
By Life Challenges <i>p-Value for difference in impact between subgroups: $p = .147$</i>								
No life challenges	\$5,198	\$4,775	+\$422	(280)	+8.8	.132	438	400
At least one life challenge	\$3,788	\$4,330	–\$543	(605)	–12.5	.370	68	98
By Baseline Education <i>p-Value for difference in impact between subgroups: $p = .871$</i>								
High school equivalent or less	\$4,791	\$4,620	+\$171	(352)	+3.7	.627	199	211
Some college but no degree	\$4,754	\$4,478	+\$276	(370)	+6.2	.442	223	203
Associate degree or higher	\$6,010	\$5,367	+\$643	(831)	+12.0	.439	84	84
By Cohort <i>p-Value for difference in impact between subgroups: $p = .808$</i>								
Early (before May 2013)	\$4,732	\$4,381	+\$351	(343)	+8.0	.306	255	249
Late (May 2013 or later)	\$5,215	\$4,989	+\$226	(378)	+4.5	.550	251	249

Source: National Directory of New Hires.

Note: All of the subgroup analysis is exploratory and statistical significance is based on two-tailed tests. “Relative Impact” represents impacts in column 3 as a percentage of the corresponding control group mean (i.e., $100 \times [\text{impact}/\text{control group mean}]$).

Statistical significance levels based on differences between research groups: *** 1 percent level; ** 5 percent level; * 10 percent level.

5. Impacts on Other Life Outcomes

As discussed in Chapters 3 and 4, treatment group members were more likely to complete their training and receive a healthcare credential than were control group members. Treatment group members were also more likely to find employment in the healthcare field, and there is some evidence that they were more optimistic about their career prospects. However, these positive impacts did not translate into a detectable favorable impact on earnings three years after random assignment.

The theory of change hypothesizes that an increase in earnings and family income would lead to improvements in other life outcomes. Given that Bridge to Employment did not achieve such increases, we might expect the program to have caused few if any impacts on financial and other life outcomes. Still, the program might have affected these outcomes through other mechanisms.

This chapter explores whether Bridge to Employment led to any impacts on other life outcomes.

Outcome Measures in Chapter 5

The outcomes reported in this chapter were measured using responses to the three-year follow-up survey. Key measures include these:

- *Student debt* (for both the sample members and their parents, measured as a dollar amount).
- *Health insurance coverage* (either offered health insurance by employer or received insurance from another source).
- *Receipt of public assistance* (SNAP, WIC, public assistance, or welfare) in prior month by someone in the household.
- *Any signs of financial distress* in past 12 months (a scale based on signs of financial distress including delayed utility payments/cutoff, telephone disconnection, foregone medical/dental care, foregone prescription drugs, often not having enough food to eat, or not having enough money to make ends meet). We also separately measured not having enough money to make ends meet in the past 12 months.

5.1 Impact on Family Economic Well-Being

This section examines results for several measures of family economic well-being, including debt, health insurance, public assistance, and financial distress.

■ *Bridge to Employment reduced personal and family student debt.*

Given the prominent role of enhanced financial support in Bridge to Employment's theory of change, reduced student debt seemed a likely effect, and we treated it as a secondary hypothesis in the analysis. However, control group members might have accessed other financial assistance to pursue training. For example, some control group members might have accessed ITAs from the WIA program—though the availability of funding for ITAs fluctuated from year to year, and even when available, there was no guarantee that WIA would accept all

control group members who applied for its assistance. Additionally, the State of California will waive community college enrollment fees for low-income California residents, and more control group members attended community colleges than did treatment group members. Finally, some control group members might have received Pell grants if they attended institutions that participated in the Federal Student Aid programs.

Though other assistance was available to control group members, at the 18-month follow-up, control group members had received loans at more than twice the rate of treatment group members (26 percent versus 12 percent). As shown in Exhibit 5-1, at three years out, treatment group members had borrowed \$2,474 on average, and control group members had borrowed \$3,393, a statistically significant difference of +\$919.

As shown in Exhibit 5-1, Bridge to Employment also reduced the student loan–related debt of treatment group members’ parents by \$249.

Exhibit 5-1: Three-Year Impacts on Family Economic Well-Being

Outcome	Treatment Group	Control Group	Impact (Difference)	Standard Error	Relative Impact (%)	p-Value
Debt						
Personal student debt (\$)	2,474	3,393	–\$919*	(694.5)	–27.1	.093
Parental student debt	\$65	\$314	–\$249**	(111.9)	–79.3	.027
Unsecured debt of \$5,000 or more (%) ^a	35.1	37.3	–2.2	(4.0)	–5.9	.590
Other Measures of Financial Well-Being						
Has health insurance coverage (%)^b	87.5	84.5	+3.0	(2.8)	+3.6	.144
Received public assistance (%)	63.9	62.8	+1.1	(3.8)	+1.8	.616
Any signs of financial distress (%)^c	54.3	52.2	+2.1	(3.8)	+4.0	.705
Trouble making ends meet (%)	23.2	27.8	–4.7	(3.4)	–16.9	.171
Earned Income Tax Credit claimant (%)	59.8	61.2	–1.3	(4.0)	–2.1	.736
Dependent on family (%)	11.4	15.9	–4.5	(2.8)	–28.3	.104
Homeowner (%)	10.4	9.7	+0.7	(2.6)	+7.2	.774
Homeless (%)	0.3	1.1	–0.8	(0.6)	–72.7	.154
Sample size	346	312				

Source: PACE three-year follow-up survey.

Note: Secondary outcomes are bolded and statistical significance is based on one-tailed tests. Exploratory outcomes are not bolded and statistical significance is based on two-tailed tests. “Relative Impact” represents impacts in column 3 as a percentage of the corresponding control group mean (i.e., $100 \times [\text{impact/control group mean}]$).

^a Unsecured debt is debt other than student debt and secured debt (mortgages and title loans). Spousal debt is included.

^b Has Health Insurance Coverage means either offered health insurance by employer or has health insurance coverage from another source.

^c Any Signs of Financial Distress is a financial hardship measure. It is a flag for whether any of the following is reported: utility or telephone disconnects, delayed health/dental care, hunger, trouble paying bills, or making ends meet.

Statistical significance levels based on differences between research groups: *** 1 percent level; ** 5 percent level; * 10 percent level.

- ***A sizeable proportion of both treatment and control group members had health insurance coverage; differences in coverage rates were not statistically significant.***

As Exhibit 5.1 above shows, about 87 percent of treatment group members and 84 percent of control group members had health insurance coverage, accessible through either their job or another source such as Medicaid. Slightly more than half of sample members with health insurance coverage received it through their job (not shown).

- ***Bridge to Employment had no detectable impacts on public assistance receipt.***

A substantial portion of both sample groups—64 percent of treatment group members and 63 percent of control group members—received assistance from at least one of the public assistance programs. These programs include TANF, SNAP, WIC, Medicaid, Subsidized Child Care, Section 8 or Public Housing, Low Income Home Energy Assistance, and the free or reduced-price lunch program. Given that average earnings at the three-year follow-up were less than \$20,000 annually (which is about 100 percent of the federal poverty level for a family of three in 2017; see Exhibit 4-1), it is not surprising that a substantial percentage of both groups received public assistance.

- ***Bridge to Employment had no detectable impact on financial distress at the three-year follow-up point.***

Though Bridge to Employment reduced student loan debt of treatment group members, this effect did not translate into a reduction in signs of financial distress. As shown in Exhibit 5-1 above, slightly more than half of both treatment and control group members reported signs of financial distress. The most common reasons reported for facing financial distress included not being able to afford a needed dentist visit; followed by not being able to make ends meet at the end of most months or not being able to pay for a gas, oil, or electric bill at some time in the past 12 months (not shown). Roughly one quarter of both the treatment and control group members reported not being able to make ends meet.

Interestingly, the HPOG 1.0 three-year impact study found similar differences—24 percent of the treatment group reported generally not having enough money to make ends meet, compared with 27 percent of the control group (Peck et al. 2019). That difference of 3 percentage points in the HPOG study was statistically significant, perhaps because of its much larger sample size.

- ***Bridge to Employment had no detectable impacts on other measures of financial well-being at the three-year follow-up point.***

The impact analysis examined a range of measures related to participants' financial well-being. We found no statistically significant differences between treatment and control group members in any of the measures.

5.2 Impact on Child Outcomes and Parental Engagement

This section assesses impacts on several outcomes related to child well-being and parental engagement. The Bridge to Employment program provided no direct services to children, but

the career pathways theory of change hypothesizes that any effects are to flow from parents' experiences with the program and increases in their educational attainment, employment, or income. It is possible that parents who pursue training in a field, complete the training, and move into employment in that field feel they have accomplished a life goal, which could more incline them to encourage their children to do well in school—a positive for children. Additionally, children's outcomes might improve if their parents' pursuit of more education and better work opportunities serves as a role model. Conversely, it is also possible that parents who are at school or working are less able to engage with and supervise their children—a negative for children.

Note that the three-year follow-up survey asked these questions only of parents with minor children at baseline and, for some questions, of parents with children in grades K-12 at the time of the survey. Because not all sample members were parents at baseline and the sample for this subgroup is smaller than the overall sample, the analysis is not well powered to detect small differences in impacts.

■ ***Bridge to Employment may have had a negative impact on parental engagement three years out.***

Treatment group members were less likely to be engaged in the family's daily activities than were control group members (Exhibit 5.2 below). High parent engagement is defined as being present for meals and other daily family activities. At the time of the three-year follow-up survey, 20 percent of treatment group members were highly engaged parents, compared with 31 percent of control group members, a statistically significant difference of 11 percentage points. As was shown in Exhibit 4.4, treatment group members and control group members were employed at similar rates, though treatment group members were more likely to be employed in the healthcare field, which may require evening and weekend shifts, reducing the amount of time at home with their children.

As shown in Exhibit 5.2, scores on the parent self-efficacy scale, which measures the degree to which parents feel they are able to help their children in school, was similar for both groups.

This outcome and the other outcomes presented in Exhibit 5.2 are exploratory. The likelihood of finding at least one statistically significant effect, and therefore rejecting the null hypothesis of no impact, increases with the number of tests. Additionally, as noted above, the sample size is very small and not well powered to detect small differences in impacts. We conclude, therefore, that the analysis *suggests* the program had a negative impact on parental engagement, though this is not a conclusive finding.

■ ***Bridge to Employment had no detectable impacts on children's performance in school.***

There were no statistically significant differences in the average number of days children were late for or absent from school by research group. Given the small sample size, it is unlikely we would have detected any impacts on children's performance in school.

Exhibit 5-2: Three-Year Impacts on Child Outcomes (Parent Reports) and Parental Engagement

Outcome	Treatment Group	Control Group	Impact (Difference)	Standard Error	Relative Impact (%)	p-Value
All Children						
Parent believes child will graduate college (%)	84.9	76.1	+8.8	(6.4)	+11.6	.165
Highly engaged parent (parent almost always present for meals and other daily family activities) (%)	20.0	30.7	-10.7*	(6.2)	-34.9	.087
Parent self-efficacy for helping child navigate school (6-point scale) ^a	3.50	3.48	+0.02	(0.09)	+0.04 ^b	.792
Sample size	102	104				
Children Grades K-12						
Child repeated any grades (%)	7.9	4.2	+3.7	(4.2)	+88.1	.379
Days child late for school last month	0.97	0.74	+0.23	(0.27)	+31.1	.401
Days child absent from school last month	0.77	1.15	-0.38	(0.32)	-33.0	.235
Sample size	78	82				

Source: PACE three-year follow-up survey.

Note: All of the subgroup analysis is exploratory and statistical significance is based on two-tailed tests. "Relative Impact" represents the impact (column 3) as a percentage of the corresponding control group mean (i.e., $100 \times [\text{impact}/\text{control group mean}]$).

^a Parental self-efficacy based on seven items (e.g., "I know how to help my child in school") rated from 1=disagree very strongly to 6=agree very strongly. See Appendix Exhibit B-5 for more details on child outcome measures.

^b For the scale variable (parent self-efficacy), we report effect size rather than relative impact. "Effect Size" represents impacts in column 3 as a fraction of the pooled standard deviation of the treatment and control groups.

Statistical significance levels based on differences between research groups: *** 1 percent level; ** 5 percent level; * 10 percent level.

6. Cost-Benefit Analysis

This chapter presents a cost-benefit analysis (CBA) for the Bridge to Employment program through 19 quarters after random assignment.³⁸ Following the analysis plan for the CBA presented in Dastrup, Burnett, and Buron (2017), the CBA estimates the financial **benefits** from the Bridge to Employment program and compares them to the increased **costs** incurred to produce the benefits. A program with benefits greater than its costs—a positive **net benefit** (total benefits minus total costs)—is considered a gain; a program with benefits less than its costs is considered a loss.

Bridge to Employment's primary intended *benefit* is higher participant earnings. The CBA considers two primary categories of *costs*: direct costs associated with operating the Bridge to Employment program and costs of participants' subsequent education and training. For both benefits and costs, the CBA considers the *difference* between the treatment and control group.

Because of the uncertainty in estimated earnings impacts, it is not possible to offer a definitive assessment of whether the benefits of the Bridge to Employment program outweigh its costs. As discussed in Chapter 4, there is considerable uncertainty as to the true impact on earnings (i.e., the benefit in the CBA). At 19 quarters after random assignment, plausible large positive values of increased earnings would imply a positive net benefit, whereas plausible zero (or even small negative) ones would imply a negative net benefit. Positive and negative values of key cost components are similarly plausible, and they also contribute to the uncertainty in the CBA estimate of net benefit.

Key Terms in the Cost-Benefit Analysis

- **Cost:** The average cost per treatment group member minus the average cost per control group member for a given component.
- **Total cost:** The sum of all cost components.
- **Benefit:** The average benefit per treatment group member minus the average benefit per control group member for a given component.
- **Total benefit:** The sum of all benefit components.
- **Net benefit:** Total benefits minus total costs; the final combined outcome of the cost-benefit analysis.
- **Perspective:** Our primary focus is the net benefits to *society as a whole*. We also consider costs and benefits as they accrue separately to four societal subgroups: *study participants*, *the federal government*, *California state and local government*, and *the remainder of society*.

³⁸ We use 19 quarters of earnings—the longest time period available among the exploratory outcomes for earnings—to calculate benefits in the CBA. We use three years of education and training—the longest time frame available—to calculate costs. We argue below that costs beyond three years after random assignment are likely zero, so our calculated net benefit is not affected by the difference in the time frames of available data for benefits and costs.

Section 6.1 provides an overview of the cost-benefit framework, listing all components of the analysis and briefly noting the data sources used to estimate each cost and benefit. Section 6.2 discusses estimates of costs and Section 6.3 discusses estimates of benefits. Section 6.4 calculates the net benefit per participant (i.e., treatment group member) of the Bridge to Employment program and discusses potential costs and benefits that are not included in the analyses.³⁹ A summary discussion in Section 6.5 concludes the chapter. Supplemental findings and methodological details, including a detailed discussion of data sources and necessary assumptions and approximations, are available in Appendix F.

6.1 The Cost-Benefit Framework

The cost-benefit framework applied in this chapter involves assessing costs and benefits per treatment group participant, from the perspectives of specific stakeholder groups, and across society as a whole (i.e., across all stakeholders). Costs and benefits represent *differences* in average values between the treatment group and the control group—that is, the amount Bridge to Employment adds or subtracts to each cost or benefit component. Costs and benefits are expressed per treatment or control group member (as opposed to, for example, per Bridge to Employment ITA recipient) to align with the intent-to-treat impact estimates (see Section 2.4). For each perspective, Bridge to Employment’s **net benefit** is the difference between benefits and costs from that perspective.

The CBA’s primary focus is whether benefits of Bridge to Employment are greater than its costs for society as a whole. However, whether or not the net benefit of an intervention is positive varies with which stakeholder group perspective we consider: program participants, the federal government, California state/local government, or the rest of society.

As detailed in the analysis plan for the CBA (Dastrup, Burnett, and Buron 2017), costs and benefits are subject to three types of uncertainty: sampling variability, measurement error, and a multiplicity of options for elements and parameters that must be assumed. To characterize the uncertainty associated with estimated costs and benefits, the CBA reports plausible ranges, together with the specific values estimated where this is possible (i.e., for costs and benefits

More Key Terms

Net present value: The value in today’s dollars of a series of monetary benefits and costs, realized at different points in time.

The CBA calculates costs and benefits as net present values at the *time of random assignment*. Costs and benefits accruing in years after random assignment are discounted by 3 percent per year to account for the general principle that opportunities to spend today are more valuable than opportunities to spend tomorrow. Thus, we assumed that \$1 at random assignment is valued equivalently to \$1.03 a year later. The net present value is the discounted values summed across years.

See Dastrup, Burnett, and Buron (2017) for further motivation and discussion, and Appendix F for sensitivity analysis.

³⁹ As discussed in Section 6.4, these additional costs and benefits not included are not readily monetized or we do not observe them and have no basis for approximating them. Examples include radiating benefits of education and training and increased income, such as improved psycho-social well-being and improved outcomes for future generations.

estimates generated using a statistical model based on study participant-level data). Appendix F includes additional sensitivity analyses using a range of alternate values for key assumed parameters. These alternate specifications do not affect the CBA's main conclusions.

As summarized in Exhibit 6-1 below, the remainder of this section briefly defines the key costs and benefits considered in the analysis, noting how each appears from relevant perspectives. Brief notes about data sources and methods are included, with details left to Appendix F. Some components affect only one group of stakeholders, whereas others represent transfers from one group to another. In rendering an overall judgment on whether a program is cost-beneficial, policymakers often put most emphasis on the implications for society as a whole—that is, the sum of costs and benefits across all stakeholders.

The first and second panels of Exhibit 6-1 identify the costs and benefits assessed in the analysis, respectively, broken out by stakeholder perspective. Each cost and benefit component is defined and detailed in Appendix F. The overall implications for costs and benefits appear in **bolded** rows in these first and second panels, respectively.

The first panel of the exhibit shows costs, which are broken into (1) costs of services (essentially, the costs of providing case management and other direct Bridge to Employment services plus other administrative expenses, in excess of the costs incurred by control group members for similar services) and (2) costs of postsecondary education and training received (essentially, institution expenses or inclusive tuition charges). The second panel of the exhibit shows earnings and fringe benefits, the primary benefit considered in the CBA. It also shows that increased earnings result in changes in taxes and public assistance.

Exhibit 6-1: Hypothesized Costs and Benefits Assessed in the CBA

Component	Perspective				
	Participants	Government, Federal	Government, State/Local	Rest of Society	Society as a Whole (sum)
Costs					
Bridge to Employment services ^a	–	+	0	0	+
Postsecondary education and training	+	+	–	?	+
Total Costs	–	+	–	?	+
Benefits					
Earnings and fringe benefits	+	0	0	0	+
Taxes	–	+	+	0	+
Public assistance	–	+	+	0	+
Total Benefits	+	+	+	0	+
Overall Gain (+) or Loss (–)					
Net Benefit = Total Benefits – Total Costs	+	–	+	?	?

Source: Abt Associates.

^a Individual Training Accounts are included as a negative cost to program participants that offsets a positive cost to the federal government. Participants' use of ITAs is captured as a positive cost of education and training

Note: Costs and benefits represent *differences* in average values between the treatment group and the control group—that is, the amount Bridge to Employment adds or subtracts to each cost or benefit component. Symbols in each cell indicate whether the expectation is for a net increase (+), net decrease (–), zero effect (0), or uncertain effect (?) in costs or benefits from specified perspectives. Taxes and public assistance are estimated based on earnings and fringe benefits.

Total costs to program participants and state/local government should decrease and costs to the federal government should increase. Changes in costs to the rest of society (e.g., private education and training institutions) are indeterminate, depending on how shifts in the types of institutions that study participants attend affect costs of education and training. The overall implication for society as a whole is increased costs, because increased costs for Bridge to Employment services and program participants' education and training outweigh decreases in other costs. Total benefits should be positive for all perspectives (except the rest of society, which is zero).

The last panel of Exhibit 6-1 summarizes the expected **net benefit** from each perspective, assuming that Bridge to Employment successfully increases earnings, but leaving open the question of how the size of the increase compares to increases in costs resulting from the intervention. *Program participants* and *state/local government* should be unambiguously better off. The *federal government* should experience a net loss, as the cost of the program outweighs increased tax revenue and decreased spending on public assistance. In this analysis, the *rest of society* is affected only through possible changes in costs of private subsidies to education and training. Whether the net benefit for *society as a whole* is a gain or a loss depends on whether total benefits to society as a whole, which primarily result from earnings impacts (and implied fringe benefits), are larger than total costs that result from Bridge to Employment.

6.2 Costs of Bridge to Employment

Exhibit 6-2 below reports estimated costs for each major cost component and the overall cost total. The bottom panel shows estimated total costs for the treatment group and control group, respectively, of \$12,941 and \$9,923, resulting in an estimated total cost (the difference attributable to Bridge to Employment) of \$3,018. Because the component cost estimates are subject to uncertainty, this total cost of Bridge to Employment is also imprecise. This section discusses each cost component and how costs are allocated across perspectives.

Exhibit 6-2: Bridge to Employment Costs per Participant at Three Years

Component	Cost Per Treatment Group Member—Bridge to Employment	Cost Per Control Group Member—Approximated Alternative Services Accessed	Bridge to Employment Cost (Treatment – Control)
Bridge to Employment Services (\$)			
Total	5,670	2,337	3,333
ITAs ^a	2,459	945	1,514
Non-ITA elements (assessments, navigators, employment services, supportive assistance, administrative costs)	3,211	1,392	1,819
Postsecondary Education and Training (\$)			
Postsecondary education or training (includes ITA-funded tuition)	9,730	8,531	1,199 ^b
Total Cost (\$)			
(Non-ITA elements + Postsecondary Education and Training)	12,941	9,923	3,018

Source: PACE cost data interviews and Bridge to Employment program financial records; PACE 18-month and three-year follow-up surveys; research team approximations of costs of alternative services accessed by the control group; Delta Cost Project Database, Integrated Postsecondary Education Data System; ITA payment records; research team investigation.

^a ITAs are used to pay tuition and fees, which are included in the cost of postsecondary education and training.

^b The standard error of this estimated impact is \$1,052, with a *p*-value of .255.

Note: Details on approach to approximating the control group costs are provided in Appendix F.

6.2.1 Costs of Bridge to Employment Services and Control Group Alternatives

The average cost of the Bridge to Employment services per treatment group member was +\$5,670.⁴⁰

Control group members did not have access to Bridge to Employment, but they could participate in training, financial assistance, and job search assistance available in the community, notably through the local AJCs. Sections 3.1.3 and 4.5 of the *Implementation and Early Impact Report* (Farrell and Martinson 2017) document that control group members accessed supportive and employment services, but at a lower rate than treatment group members did. Based on this lower rate of service receipt, the CBA approximates that the average cost per control group member of alternative services accessed was +\$2,337.

■ **The cost of the Bridge to Employment program was \$3,333.**

Cost of Bridge to Employment is calculated as the difference between the observed average program cost per treatment group member and the approximated average cost of similar

⁴⁰ We report average cost *per treatment group member* whether or not an individual received services, to align with the intent-to-treat impact estimates. The average cost for individuals actually receiving services—defined as total costs divided by the number of unique ITA recipients—is +\$8,880. Program costs are measured with uncertainty. Because we estimate program-level costs for a single program, we cannot quantify this uncertainty. However, our cost estimates would have to err by 10-20 percent (about \$1,000) to meaningfully alter our assessment of the costs of the program.

alternative services accessed by the control group. The top panel of Exhibit 6-2 builds up the calculation of this cost, to which ITA and non-ITA elements contribute roughly equally.

Considering the Bridge to Employment program in the context of workforce programs generally, costs of its program services appear to be high relative to recent estimates of the costs of other workforce programs⁴¹ and the average cost per adult served by all SDWP programs.⁴² These cost differences are not unexpected. Possible explanations include that Bridge to Employment served individuals with higher need for employment services than the general population, SDWP provided more intensive services than those provided by the other programs, and San Diego is a relatively high cost area.

Individual Training Accounts

ITAs are a primary cost driver of the Bridge to Employment program.

- Bridge to Employment ITAs covered up to \$7,000 (\$10,000 for some occupations) of the cost of job training courses. However, program data indicate that the median ITA was approximately \$2,500, with about 75 percent of ITAs less than \$5,000. Approximately 85 percent of ITAs covered the entire reported cost of the training course.
- Under its “consumer choice model,” Bridge to Employment participants could use their ITA at any accredited training provider. Because they could generally enroll in private, for-profit training programs more quickly and complete them in less time, treatment group members were more likely to choose these programs over community colleges than were control group members. Additionally, community colleges did not accept ITAs to pay tuition directly, thus Bridge to Employment participants enrolled in a community college needed to pay upfront and get reimbursed by the program.
- WIA ITAs that covered up to \$5,000 of the cost of job training courses were available to some control group members, although availability was generally limited.

Appendix F provides a detailed description of how ITAs figure into the calculation of costs and benefits.

6.2.2 Costs of Postsecondary Education and Training

Enrollment in the Bridge to Employment program is expected to affect enrollment in education and training, which results in a change in costs to society.⁴³ The Bridge to Employment program could increase costs of education and training in two different ways: it could increase the

⁴¹ Fortson et al. (2017) conducted a study of 28 WIA programs around the country and found that the most intensively served group had average costs of \$2,407 per participant, excluding their out-of-pocket costs of \$1,702. Our estimates also exclude out-of-pocket costs of training.

⁴² The San Diego Workforce Partnership 2013-2014 *Annual Report* (2014) estimates expenditures on all adult programs (including subsidized employment, the Bridge to Employment program, and America’s Job Center of California sites) and adults served. These imply an approximate cost of \$1,750 per adult served.

⁴³ As shown below, this can include costs to participants (tuition and fees), to the federal government (primarily through Pell grants), to state and local government (the primary funders of public post-secondary institutions), and to other members of society (private donors).

amount of education and training obtained, and/or it could change the type of institutions attended (e.g., public or private, less than two-year or two-year, college or non-college). The program directly increases the use of education and training primarily through ITAs. Indirect changes are implied by the career pathways theory of change as increased awareness of steps needed to reach career goals can increase subsequent education and training.

- ***The average cost of education and training was \$1,199 higher for treatment group members than control group members in the three years after random assignment.***

Costs for education and training were +\$9,730 per treatment group member, compared with +\$8,531 per control group member, as of the three-year follow-up (second panel of Exhibit 6-2).⁴⁴ Because the costs of education and training are based on survey-reported enrollment outcomes combined with institution-level cost of enrollment estimates, they are estimated imprecisely. The 90 percent confidence interval of this estimate spans from -\$534 to +\$2,930.⁴⁵

- ***Differences in costs of education and training were attributable to the type of institution attended.***

As reported in Chapter 3, Bridge to Employment did not affect the average duration of education and training that treatment group members received during the first three years after random assignment. It did, however, affect the type of institutions attended. Exhibit 3-1 shows that the program shifted treatment group members toward training that provided credentials, particularly in healthcare and exam-based certifications. Differences in costs were thus attributable to the type of institution attended, not to differences in the amount of education and training received. Treatment group members were less likely to attend a two-year college than were control group members, but more likely to attend a higher-cost private, non-degree-granting school or adult high school or adult learning courses. Such institutions most readily accepted the ITAs (Farrell and Martinson 2017). Examples of the institutions most frequently attended are listed and discussed in Appendix F.

6.2.3 Costs of Bridge to Employment by Perspective

Exhibit 6-3 reports costs by perspective. For Bridge to Employment services, the federal government incurs the costs of non-ITA services; ITAs are also funded by the federal government and shown as a negative cost to program participants, who use the funds as tuition in the education and training component.

⁴⁴ To calculate a net present value of costs comparable to earnings, we discount inflation-adjusted education and training costs by 3 percent annually to account for the time value of money.

⁴⁵ This substantial variation reflects substantial underlying variation in the amount, and cost, of postsecondary education and training received. About 42 percent of the treatment group and 58 percent of the control group report no postsecondary education and training, and thus have zero costs for this component. Meanwhile, estimates over the three-year follow-up period include treatment and control group members with more than \$60,000 in estimated postsecondary education and training costs (these individuals attended private, for-profit training institutions).

Exhibit 6-3: Costs of Bridge to Employment from Different Perspectives

Component (\$)		Perspective				
		Participants	Government, Federal	Government, State/Local	Rest of Society	Society as a Whole (sum)
Bridge to Employment services	Total	-1,514	3,333	0	0	1,819
	Non-ITA elements	0	1,819	0	0	1,819
	ITAs	-1,514	1,514	0	0	0
Postsecondary education and training		617 ^a	771	-301	112	1,199
Total Cost (Non-ITA elements + postsecondary education and training)		-897	4,104	-301	112	3,018

Source: PACE cost data interviews and Bridge to Employment program financial records; PACE 18-month and three-year follow-up surveys; research team approximations of costs of alternative services accessed by the control group; Delta Cost Project Database, Integrated Postsecondary Education Data System; ITA payment records; research team investigation.

^a Education and training costs from the participants perspective include ITA payments.

Note: Details on approach to approximating the control group costs are provided in Appendix F.

Sources of funding vary by institution type, so the shift in institution types that treatment group members attended affects which stakeholders bear the cost of that education and training. Major sources of funding for education and training are federal, state, and local governments and students' own resources. Institutions that treatment group members more frequently attended (as compared to control group members) relied more heavily on student tuition and fees as a funding source (e.g., non-college schools); control group members more often attended institutions that relied more on state and local appropriations (e.g., community colleges).

- **On average, treatment group members spent \$617 more on direct costs (tuition and fees) for education and training than did control group members. Factoring in ITAs received, treatment group members paid, on average, \$897 less than control group members.**

With this shift of the treatment group away from two-year colleges, the CBA estimates that they incurred more in tuition and fees for postsecondary education and training than control group members did. These expenses were largely paid using the Bridge to Employment ITAs.⁴⁶ Because the ITAs more than offset the higher out-of-pocket tuition and fees, treatment group

⁴⁶ As documented in Farrell and Martinson (2017), "at private training institutions, program participants enrolled in training and provided the ITA voucher in lieu of paying the tuition directly." Thus, ITAs functioned like an out-of-pocket tuition payment at the institutions where treatment group members used them most. The CBA analyzes ITAs as transfers from the federal government to program participants, which are then used to pay tuition and fees. The system was more complicated at community colleges, requiring participants to make out-of-pocket payments: "The community college system did not accept the vouchers at enrollment. Instead, participants approved by the program to attend a community college paid out of pocket for the training, and the tuition was reimbursed by the program."

members ultimately paid less out of pocket as a result of Bridge to Employment. (Detail supporting these conclusions is provided in Appendix Exhibits F-6 and F-7.)

Because Pell grants may be used at many of the non-college institutions that rely more on tuition and fees, education and training costs also increase for the federal government, resulting in a +\$4,104 per participant total cost of Bridge to Employment for this perspective.⁴⁷ State/local government has a small reduction (–\$301) in costs of education and training, as control group participants are more likely than treatment group participants to attend institutions that receive state and local government appropriations (e.g. community colleges). Costs to the rest of society perspective (+112) represent education and training at institutions that rely on other types of revenue such as private philanthropy and endowments.

■ ***The estimated cost to society as a whole of Bridge to Employment is \$3,018, but this estimate is imprecise.***

Summing across perspectives, Bridge to Employment has an estimated cost to society as a whole of +\$3,018. Again, because of uncertainty in each of the component costs, this estimate is imprecise. For example, the 90 percent confidence intervals for postsecondary education and training costs indicate that total costs as low as +\$1,285 and as high as +\$4,749 are plausible. As detailed in Appendix F, these confidence intervals are driven by sampling variability in the underlying enrollment data (as reported in Chapter 4) and the institution-level cost measures of that enrollment.⁴⁸ Like the measured earnings impacts, the underlying variance and relatively small sample size may not be large enough to precisely measure costs.

A key question for interpreting the cost-benefit analysis findings is whether all costs associated with the intervention have been incurred. Specifically, the CBA is based on three years of information on education and training receipt, which is compared to 19 quarters of earnings information. If costs resulting from random assignment to the treatment group continued to accrue beyond three years, the CBA would be understating costs. However, our analysis concludes that all Bridge to Employment–related costs were incurred within three years of random assignment (see Appendix F for details).

6.3 Benefits of Bridge to Employment: Earnings Impacts

Earnings increases over the 19-month follow-up period represent the primary potential benefit of Bridge to Employment.

⁴⁷ Some of the private institutions that treatment group members were more likely to attend, which are key to this result, are eligible to receive Pell grants.

⁴⁸ The other component, the costs of the Bridge to Employment program, has measurement error associated with being based on a single observation of data and a multiplicity of options for elements that cannot be estimated, but must instead be assumed.

- **The net present value of treatment group members' total earnings through Q19 was \$1,846 higher than control group members'. However, this estimate is imprecise because it inherits the uncertainty of the earnings impact reported in Chapter 4.**

The first row of Exhibit 6-4 reports the net present value (at random assignment) of earnings impacts through 19 quarters after random assignment for treatment and control group members.⁴⁹ This section reports earnings through Q19 here, and Section 6.4 provides additional discussion of how future earnings differences could affect the CBA's conclusions.

Exhibit 6-4: Net Present Value of Quarterly Earnings after Random Assignment

Component (\$)	Perspective				
	Participants	Government, Federal	Government, State/Local	Rest of Society	Society as a Whole (sum)
Net present value of total earnings after random assignment (Q1-Q19)	1,846 ^a	0	0	0	1,846
Fringe benefits	611	0	0	0	611
Taxes	-587	650	78	0	141
Public assistance	-316	411	0	0	95
Total Benefit	1,554	1,061	78	0	2,693

Source: National Directory of New Hires; National Bureau of Economic Research TAXSIM model (Feenberg and Coutts 1993); California Department of Tax and Fee Administration; Consumer Expenditure Survey by Income Quintiles (Table 1203). See Appendix F for public assistance estimation sources.

^a This impact estimate has standard error of \$3,058, and an associated *p*-value of .546.

The analysis in Chapter 4 found a positive, but not statistically significant, impact on earnings. This imprecision of the estimate implied that the true impact could range from a small negative impact to a relatively large positive impact. The CBA re-estimates this impact using the net discounted sum of total earnings (which places greater value on early earnings differences than did the impact reported in Chapter 4). The resulting estimate is +\$1,846, with the earnings gains accruing to both the society as a whole and the participants perspectives. The 90 percent confidence interval for this estimate spans from -\$3,188 to +\$6,881. This range includes values that result in total benefits that are clearly greater than Bridge to Employment's total cost of \$3,018, as well as values that are less than the program's total cost.

The estimate implies an additional +\$611 in the value of fringe benefits that accompany these earnings gains.

⁴⁹ This number differs from the number reported in Section 4.1 because of discounting of a total 5 percent a year: 3 percent for the time value of money plus 2 percent for inflation.

- **Treatment group members' earnings gains are somewhat offset by a resulting increase in taxes and decrease in public assistance, which have a combined value of -\$903.**

Changes in earnings affect the receipt of public assistance and payment of taxes. From a society as a whole perspective, public assistance and taxes represent transfers from one subgroup of society (e.g., \$587 in taxes paid by participants) to another (\$587 received by government), and so mostly net each other out. The rows reporting the estimates of taxes and public assistance in Exhibit 6-4 above show a gain to society of \$141 from increases in the employer portion of payroll taxes, and a gain to society of \$95 from savings in costs of administering public assistance. From a participant's perspective, increases in earnings imply a total \$903 decrease in personal resources (marginal effective tax) due to increased taxes and decreased public assistance. (Additional details on our approach to estimating these marginal effective taxes are provided in Appendix F.)

6.4 Net Benefit of the Bridge to Employment Program

Through 19 quarters—nearly five years—after random assignment, the results of the cost-benefit analysis are inconclusive. The CBA's best estimate is that the net benefit to society as a whole of the Bridge to Employment program—the sum total of its costs and benefits—is -\$325 per treatment group member (i.e., a loss). However, because there is considerable imprecision in some of the underlying estimates, *the CBA does not provide clear evidence on the sign and magnitude of net benefit.*

Exhibit 6-5 below builds up this estimate from component costs and benefits introduced in prior sections. The total benefit to society of the Bridge to Employment intervention is \$2,693. Compared to the total \$3,018 cost, this results in an overall estimated loss to society of \$325 per treatment group member.

Exhibit 6-5: Cost and Benefit of Bridge to Employment through Q19 after Random Assignment: Net Benefit

Component (\$)	Perspective				
	Participants	Government, Federal	Government, State/Local	Rest of Society	Society as a Whole (sum)
Total Cost	-897	4,104	-301	112	3,018
Total Benefit	1,554	1,061	78	0	2,693
Net Benefit = Total Benefit – Total Cost	2,451	-3,043	379	-112	-325

Source: Exhibits 6-3 and 6-4.

Some of the uncertainty in individual costs and benefits estimates can be characterized by 90 percent confidence intervals (where these intervals can be estimated).⁵⁰ The +\$3,018 total cost to society as a whole includes the education and training cost of +\$1,199, which is estimated with a 90 percent confidence interval ranging from -\$534 to +\$2,930. On the benefits side, the earnings impact estimate of +\$1,846 has an associated 90 percent confidence interval ranging from -\$3,188 to +\$6,881. Values near the end-points of these ranges carried through to estimate Bridge to Employment's net benefit could result in meaningfully large losses (negative net benefit) or large gains (positive net benefit). For example, recalculating the net benefit at the ends of the 90 percent confidence interval for earnings results in a net benefit of -\$7,670 on the low end and +\$7,020 on the high end.⁵¹

■ ***Estimates of quarterly earnings in the final quarters of this three-year analysis suggest the possibility that benefit could eventually equal or exceed cost.***

Increases in earnings due to educational attainment may take several years to accrue. Might a longer period of time over which to observe earnings impacts show that the estimated net benefit eventually turns positive? Analysis of the most recent quarters of education and training costs suggests the per treatment group member cost of the Bridge to Employment intervention is unlikely to change much.⁵² In contrast, confidence intervals for recent quarterly impacts on earnings include both large, positive values and zero or even small, negative values (see Exhibit 4-3). In the final eight of the 19 available quarters of NDNH data, treatment group members averaged \$200 per quarter higher earnings than control group members. Either earnings on the high end of the confidence interval or additional quarters of earnings near the point estimate would result in an estimate that Bridge to Employment's benefits are greater than its costs.

Of course, no quarterly earnings impact estimates after Q1 were statistically different from zero, which results in considerable uncertainty in the true size of the estimates and, as a result, whether the net benefit estimate will become positive with additional earnings data.

⁵⁰ We are able to estimate confidence intervals for these elements of our analysis because our estimates of earnings impacts are made using study participant-level data and our estimates of education and training costs are made with participant-level data on reported enrollment combined with institution-level cost estimates. Additional sources of uncertainty include measurement error in estimates for which we cannot estimate the magnitude of the error. Such error is inherent in cost analyses that measure the cost of a single program and approximations based on point estimates and population frequencies (as detailed in Appendix F).

⁵¹ This simple recalculation applies the average ratio of fringe benefits, taxes, and public assistance shown in Exhibit 6-4 to the alternative earnings impact estimates and leaves costs unchanged. A more sophisticated analysis would simultaneously account for the uncertainty in both benefit and cost component estimates and correlation between costs and benefits. Such an analysis would not alter the conclusion that the uncertainty in the underlying component estimates precludes definitive findings about the sign and magnitude of net benefit.

⁵² That is, the data do not indicate that the intervention will result in future differences in costs of education and training between the treatment and control groups. Bridge to Employment program activities themselves are completed, so there is no scope for additional costs of the program itself.

- ***The estimated net benefit to participants was \$2,451 in the 19 quarters after random assignment.***

The CBA estimates that Bridge to Employment results in a positive net benefit from the participants perspective. However, because of uncertainty both in education and training costs and in earnings benefits, both positive and negative values are plausible, and so these findings are not definitive.

- ***These estimates include only components of costs and benefits that the CBA can observe or approximate from survey responses and that can be readily monetized.***

In addition to effects on earnings and related implications for taxes and public assistance, it may be that the Bridge to Employment intervention has intangible benefits that are not monetized through increased earnings (see the theory of change, Exhibit 2-1). The impact analysis included some shorter-term benefits that the CBA does not attempt to monetize. As reported in Chapter 5, the Bridge to Employment program did not affect parental engagement (being present for meals and other family activities) or children's performance in school (number of days children were late to or absent from school), but it did reduce treatment group members' personal and family student debt by \$919 compared with control group members (see Exhibit 5-1). Although treatment-control differences in a participant's out-of-pocket costs of education and training are already reflected in the analysis above, this debt carries borrowing costs with a net present value of about \$212,⁵³ and there could be intangible emotional or psychological costs associated with indebtedness.

It is also possible that Bridge to Employment participants benefit from higher job quality, if, for example, healthcare jobs have more regular, predictable schedules than other jobs. These intangible benefits are not included both because they are difficult to monetize and because the study does not measure every dimension of job quality.

The study does consider whether the Bridge to Employment program had an impact on health insurance coverage, and it finds that treatment and control group members had similar levels of health insurance coverage (87 percent and 84 percent, respectively; see Exhibit 5-1). However, decomposing insurance coverage into private and public sources and monetizing any observed differences is beyond the scope of the CBA.

There are other items that could be included in the CBA but were not measured by the PACE study. Examples include changes in access to additional public assistance (such as subsidized childcare, free and reduced-price school lunch), state and local programs to assist low-income individuals, and longer-term changes in the generosity of payments from Unemployment Insurance or Social Security. Similarly, spill-over benefits to the rest of society that are not measured or monetized could occur. Examples include benefits to the local health system of having more trained healthcare workers.

⁵³ Assumes a 10-year loan with a real interest rate of 5 percent.

Finally, we do not include some technical adjustments that are sometimes included in cost-benefit analysis, because these adjustments would be trivially small in this analysis and would not alter conclusions. These include changes in overall economic efficiency due to changes in government spending (marginal excess tax burden, or deadweight loss) and adjustments to participant earnings to account for decreased leisure time or costs associated with increased employment (e.g., for childcare, transportation, or wardrobe; treatment group members did not experience differential incidence of employment). See the analysis plan (Dastrup, Burnett, and Buron 2017) for additional discussion.

6.5 Summary of Cost-Benefit Analysis

The CBA is based on imprecise impact estimates for earnings and the costs of education and training. Absent more precise estimates of those impacts, it is not possible to offer a definitive assessment of whether the benefit of the Bridge to Employment program is greater than its cost.

To give a sense of the range of uncertainty, using the high end of the margin of error for earnings for the 19 quarters of available NDNH data, after almost five years, the net benefit to society as a whole per treatment group member would be moderately large and positive (+\$7,020). Using the low end of the range, the net benefit to society as a whole per participant would be moderately large and negative (−\$7,670). The range of plausible estimates is similar to estimates from cost-benefit analyses of other evaluations of workforce training programs.⁵⁴

In sum, our best estimate for per-participant net benefit of the Bridge to Employment program is small and negative for society as a whole (−\$325) and moderate and positive for participants (+\$2,451), but neither perspective is based on precise enough estimates to conclude that the program's benefit is greater than its cost.

⁵⁴ Examples include estimated net losses to society per program participant of \$5,203 for WIA-funded training (observed over 30 months) and net gains of \$8,840 for WIA intensive services and \$3,636 for WIA-funded intensive and training services together (Fortson et al. 2017). In contrast to our findings to date for Bridge to Employment, some workforce training programs have found large and positive effects. Although costs outweighed benefits for the overall Job Corps sample, larger sustained earnings gains for older youth (ages 20 to 24) resulted in a \$26,229 net gain to society (Schochet et al. 2006). A recently published analysis of WorkAdvance found that three of four sites had positive net benefits to society over a five-year observation period: Towards Employment produced a net benefit of \$5,487; Madison Strategies Group, \$12,363; and Per Scholas, more than \$25,959 (Schaberg and Greenberg 2020). (These results are adjusted to 2014 dollars for comparability with results for Bridge to Employment in this chapter.)

7. Conclusions

When the San Diego Workforce Partnership applied for an HPOG grant, it stated that the purpose of its proposed program was to advance the economic well-being of low-income residents in San Diego while also addressing the workforce development needs of the local healthcare industry. After three years, these dual goals were only partly achieved. Its Bridge to Employment in the Healthcare Industry program made progress on the goal of increasing the number of workers in the healthcare industry, but it did not have a detectable impact on earnings or employment.

Over the three-year follow-up period covered in this report, we cannot definitively say whether or not Bridge to Employment produced meaningful impacts on overall levels of employment and earnings. The estimated impact is not statistically significantly different from zero, but the variance in earnings within both the treatment and the control groups was much larger than expected, limiting our ability to rule out undetected effects of noteworthy magnitude.⁵⁵ In quarters 12 and 13, treatment group members averaged \$289 more in earnings each quarter than control group members did. However, the 90 percent confidence interval for earnings is between $-\$129$ and $+\$707$. That is, even if the true impact was as large as \$707, it would not be surprising, given the large standard error reflected in the confidence interval, if this evaluation failed to detect a statically significant effect.

In contrast, 45 percent of treatment group members were employed in the healthcare field, compared with 35 percent of control group members—a 10 percentage point increase (a 30 percent relative increase). This finding demonstrates that programs such as Bridge to Employment may represent a viable strategy for addressing potential shortages in the healthcare workforce, even if they do not boost earnings for program participants.

Because of the uncertainty around estimates (prominently earnings and postsecondary education and training costs), the cost-benefit analysis does not provide clear evidence that benefits are greater than costs. Through 19 quarters after random assignment, the CBA estimates that combined costs of the Bridge to Employment program are slightly larger than its benefits from a societal perspective, though net benefit was positive from the participants perspective. However, uncertainty in the estimates indicates that large and positive or large and

⁵⁵ After covariance adjustment, the standard deviation on quarterly earnings at Q12-Q13 in each group was on the order of \$4,000. In designing the evaluation, we had anticipated an adjusted standard deviation on the order of \$2,400. The higher-than-expected value is partially due to lower-than-expected explanatory power by the baseline covariates, but mostly due to much greater-than-anticipated natural variability. Many members of both groups had very high earnings whereas many others had no earnings at all. In retrospect, a sample size of 1,007 was too small to give a definitive answer. Given the large variability in earnings from one group member to the next, a sample size of 2,600 would have been required to yield definitive answers.

negative net benefits are both plausible. Absent more precise estimates of impact, definitive cost-benefit estimates are not possible.

In this concluding chapter, we first put the findings in the context of recent evaluation findings of similar programs. We then re-examine the program's theory of change and pose possible explanations for the impact findings, finally identifying questions that could be addressed by future research.

7.1 Findings in the Context of Recent Research

The San Diego Workforce Partnership—the local Workforce Investment Board for the County of San Diego that developed the Bridge to Employment program model and oversaw program operations—borrowed many of the components of that model from the WIA program. Therefore, it is useful to look at prior evaluations of the WIA program and compare impact findings from those evaluations to findings from the Bridge to Employment program. Additionally, Bridge to Employment received funding from HPOG and is part of that larger evaluation (HPOG 1.0 Impact Study); findings across the 23 HPOG 1.0 grantees that participated in the impact study are available for this same three-year time period. Finally, evaluations of other sectoral training programs that serve low-income adults are useful to consider.

All of the programs reviewed in this section were evaluated using an experimental research design. Though the evaluations examined a range of outcome measures, for consistency we focus on two key outcomes: *percentage of sample members who completed the training and received a certificate or credential* and *average quarterly earnings*.

- ***Two national evaluations of programs that funded short-term occupational training, case management, and employment services had results that are consistent with the results from the Bridge to Employment impact study.***

The first evaluation, the WIA Adult and Dislocated Worker Programs Gold Standard Evaluation, funded by the U.S. Department of Labor (DOL), assessed the effectiveness of three tiers of services offered by WIA: (1) *core* services, consisting mainly of information and online tools available to everyone at AJCs; (2) *intensive* services, which included more staff-assisted employment services; and (3) *training* services, the majority of which were funded through ITAs (Fortson et al. 2017).⁵⁶ The study randomly assigned eligible individuals into one of three study groups: (a) the full-WIA group, who were offered all three tiers of services; (b) the core-and-intensive group, who could receive core and intensive services only; and (c) the core group, who could receive core services only. The array of services offered to the full-WIA group is

⁵⁶ WIA was replaced on July 1, 2015, by the Workforce Innovation and Opportunity Act.

closest to the services offered by Bridge to Employment, making the full-WIA group versus the core group the most apt comparison to impacts from Bridge to Employment.⁵⁷

The second and most relevant evaluation of healthcare training is the HPOG 1.0 Impact Study. SDWP was one of three HPOG 1.0 grantees that, given its size, also could be evaluated as a standalone program, separate from the HPOG 1.0 Impact Study, as part of PACE. For its analysis, the HPOG 1.0 Impact Study pooled all study sample members from a large and diverse set of 23 grantees, operated by community and technical colleges, workforce agencies, nonprofit institutions, and government agencies. A large majority of HPOG 1.0 participants (84 percent) participated in short-term trainings, such as Nursing Aide, Orderly, and Attendant; only 16 percent participated in longer-term trainings, such as Registered Nurse. In most HPOG 1.0 programs—similar to the Bridge to Employment program—treatment group members had access to more financial and support services than did the control group members.

The WIA Gold Standard Evaluation, HPOG 1.0 Impact Study, and this Bridge to Employment impact study all achieved very similar impacts on **receipt of credentials**—14 percentage points for the full-WIA group after 30 months, 12 percentage points for the HPOG 1.0 Impact Study after three years, and 12 percentage points for the Bridge to Employment study after three years.

Differences between treatment and control group **earnings** were also similar across studies. The WIA Gold Standard Evaluation found an impact on quarterly earnings in only Q5 (+\$543),⁵⁸ and the HPOG 1.0 Impact Study found an impact only in Q7 (+\$140).⁵⁹ As reported in Chapter 4 of this report, Bridge to Employment had no detectable impact on earnings in any quarters after Q1. Estimated earnings impacts in most quarters were consistent with those found in the HPOG 1.0 study, but the smaller sample size in the Bridge to Employment study means that estimates of similar magnitude are not detectable.⁶⁰

⁵⁷ There are two key differences between the Gold Standard Evaluation and this PACE study of Bridge to Employment. The WIA Gold Standard's core group members were expected to access core services from the AJCs, whereas Bridge to Employment's control group members could access these services anywhere in the community, though they had to find services on their own. Additionally, Bridge to Employment's control group was not restricted from accessing training funded by WIA, though they had to seek out this funding and there was no guarantee they would receive it.

⁵⁸ The Gold Standard Evaluation also estimated quarterly earnings from its survey data and found impacts in three of 12 quarters.

⁵⁹ The HPOG 1.0 short-term impact report (Peck et al. 2018) found an impact of \$127 on Q5 earnings, at which point, as a secondary outcome, Q5 earnings was subject to a one-tailed hypothesis test. For the three-year impact report (Peck et al. forthcoming) that Q5 earnings became an exploratory outcome subject to a two-tailed test, which failed to show a detectable impact.

⁶⁰ The WIA Gold Standard Evaluation and the HPOG 1.0 Impact Study both had substantially larger sample sizes: respectively, 4,777 clients for the 30-month survey and 33,771 clients for the NDNH analysis versus 10,027 participants for the three-year survey and 13,716 for the NDNH analysis.

- ***In these models, the case management services and other supports may be just as important (or more important) than the training itself.***

The WIA Gold Standard Evaluation found that compared with the core-only group, the intensive-only group achieved the same earnings gains as the full-WIA group that received both core and intensive services and training. That finding led the authors to conclude that any increase in earnings for the full-WIA group compared with the core-only group should be attributed to the intensive services, rather than to the WIA-funded training. Translated into a cost-benefit analysis, core-only services resulted in net losses to society, whereas net gains were estimated for WIA-funded intensive services only (\$8,840) and intensive and training services (\$3,636).

Another prominent DOL-funded WIA evaluation compared three approaches to ITAs, varying the level of customer choice and the dollar amount at which ITAs are capped (Perez-Johnson, Moore, and Santillano 2011). It found that clients who received more-structured guidance and higher-valued ITAs were more likely to complete their training, to earn a credential in the field of their training, to be employed in the occupation for which they trained, and to have higher earnings, compared with those who received less-structured guidance and lower ITA amounts. The findings suggest that more-structured navigation has positive effects over less-directive assistance, though higher ITA amounts also may have contributed to better outcomes. However, the ITA evaluation's implementation study reported that staff found it challenging to implement the structured guidance as planned, instead often deferring to clients' preferences.

Both the WIA Gold Standard Evaluation and the ITA evaluation attest to the importance of staff assistance and navigation support, which aligns with the Bridge to Employment program model. Though the Bridge to Employment's training provides students with the certificates they need to find employment in some occupations, the Gold Standard Evaluation and the ITA evaluation suggest that a key component of a program such as Bridge to Employment is the navigation and employment supports it provides. However, similar to staff in the ITA evaluation, Bridge to Employment's navigators reported finding it challenging to provide more than limited guidance within its "consumer choice" model.

- ***Studies of other occupational training programs that targeted a more motivated or educated population found larger impacts.***

A few relevant studies provided training to low-income adults, but only after screening applicants for motivation and readiness. This differed from Bridge to Employment, which screened out few applicants.

For example, Project QUEST—which operates in San Antonio, Texas—targeted adults from low-income households who were interested in attending one of its healthcare career-track programs full-time after completing any necessary remedial and prerequisite classes. Its training programs included Licensed Vocational Nurse; Registered Nurse; Medical Records Coder; and Radiography, Respiratory, Sonography, and Surgical Technicians. Most of these programs took one to two years after students met prerequisite requirements (Roder and Elliot 2018). The evaluation found that QUEST treatment group members earned about \$20,000 more than control group members in the nine years after random assignment; in year 9 alone, QUEST

treatment group members earned more than \$5,000 more than control group members (Roder and Elliot 2019).

WorkAdvance consisted of four separate programs that specialized in specific sectors (information technology, environmental remediation, transportation and manufacturing, and healthcare). It implemented a rigorous screening process that included several steps and required interested individuals to report to the provider on multiple occasions. The training was relatively short term—lasting four weeks to 32 weeks, depending on the program—but WorkAdvance increased earnings for the treatment group pooled across the four programs by about \$1,865 (12 percent) over the control group average in year 3 (Schaberg 2017). One of the programs, Per Scholas, increased earnings by \$4,829 in year 3.

Year Up provided six months of full-time training in the information technology and financial service sectors, followed by six-month internships. It also administered an intensive, multi-stage assessment and screening process that involved assessing applicants' abilities and skills through individual and group activities, followed by one-on-one interviews with program staff. Year Up increased average quarterly earnings by \$1,895 (53 percent) in the sixth and seventh quarters after random assignment (Fein and Hamadyk 2018).

Most of these other programs offered training for higher-paying jobs that required more education and skills, and which may have required more screening and assessment to ensure applicants could succeed in the programs. It is not possible to disaggregate the effect on the programs' impacts of the screening versus the type of training offered.

7.2 Possible Explanations for Bridge to Employment Impact Findings

Chapter 2 illustrated the Bridge to Employment's theory of change (see Exhibit 2-1). It hypothesizes that program **inputs** (San Diego Workforce Partnership, navigator organizations, HPOG funding, and participant characteristics) and **components** (assessment, instruction, supports, and employment connections) affected **intermediate outcomes** (improved participants' competencies and career knowledge, reduced financial constraints, and reduced financial hardship and stressors), leading to an improvement in the **main outcomes** of interest (postsecondary attainment, career-track employment, and improved life outcomes).

We expected impacts on postsecondary attainment to emerge within 18 months and impacts on healthcare employment, increased earnings, and other life outcomes to emerge within three years. Summarizing the findings to date:

- The Bridge to Employment program provided case management supports, training, and employment assistance, the key components outlined in its theory of change. As described in the short-term impact report (Farrell and Martinson 2017), more than 80 percent of treatment group members enrolled in healthcare training. In addition, Bridge to Employment produced sizable impacts on the receipt of supportive and employment services. Two caveats are worth mentioning from the implementation study: (1) navigators interpreted the “consumer choice” model to mean they could not offer substantial guidance to clients; and (2) two of the three navigator organizations experienced considerable staff turnover during the study period.

- The Bridge to Employment program achieved some of the theory of change's intermediate outcomes, but not all. First, providing ITAs reduced treatment group members' student debt and reduced parents' borrowing, presumably for the participants' educational costs, which was a financial gain to participants and their families. However, the program did not have an effect on confidence in career knowledge. The program increased participants' perceived career progress, though this measure is exploratory, and not enough by itself to suggest participants' career success.
- In terms of the theory of change's main outcomes, Bridge to Employment increased the receipt of healthcare credentials and healthcare employment (secondary outcomes), but this did not lead to increased earnings (confirmatory outcome) or improvements in other well-being measures.

As noted above, these findings align with research findings from evaluations of other similar program models. We posit three possible explanations for the results: (1) the program had an impact on overall earnings, but the study was not sufficiently powered to detect a difference between the treatment and control groups; (2) control group members received similar education and training services in the community, resulting in a treatment-control contrast that was too small to influence earnings; and (3) the program model used by Bridge to Employment is inadequate to assisting low-income adults with barriers. We discuss each of these possibilities in turn below.

7.2.1 Was the Study Not Sufficiently Powered?

Chapter 4 presented earnings over time, by quarter, for 19 quarters after random assignment. After the first year, though the treatment group members earned more than control group members did in each quarter, the differences in earnings by quarter or overall were not statistically significant.

However, it is possible that the lack of statistically significant earnings impacts was an artifact of the study's modest sample size, rather than reflecting a true lack of impacts. When the study was designed, we anticipated that it would be able to detect impacts of approximately \$325 in average quarterly earnings, based on the anticipated sample size and other statistical assumptions. In reality, these assumptions proved to be overly optimistic, and in practice the study was only equipped to detect earnings impacts of \$500 or more per quarter. For most measures of earnings, the 90 percent confidence intervals (one way to conceptualize the plausible range of impacts) include impacts of both \$0 and values large enough to be clearly policy relevant (e.g., the Q5 impact of +\$543 in the WIA Gold Standard Evaluation; the Q7 impact of +\$140 in the HPOG 1.0 Impact Study; and the +\$555 average impact per quarter in the Project QUEST evaluation).

For this three-year study's single confirmatory outcome (*average quarterly earnings in Q12-Q13*), the upper end of the 90 percent confidence interval is +\$707 and the lower end is -\$129. This considerable uncertainty in the true size of impacts means that we cannot rule out the possibility that Bridge to Employment had a meaningful impact, and perhaps was comparably effective to other recently evaluated programs that were considered successful.

7.2.2 Was the Treatment-Control Education and Training Contrast Too Small to Influence Earnings?

As discussed in Chapter 1, control group members could obtain financial assistance for training from other sources, including ITAs from the local WIA program, Pell grants, and student loans. In addition, the State of California waives the enrollment fees charged by community colleges for low-income California residents. This might help explain why there was little difference in the average duration of training the treatment and control groups received. At the three-year follow-up, both treatment and control group members had attended about 6.5 months of school. In fact, by the time of the three-year follow-up survey, more control group members than treatment group members were still in training.

Despite this lack of any clear impact on training duration, treatment group members were much more likely to receive a credential from their training, which might reflect the emphasis of the program on trainings resulting in a certification. So there does seem to have been a meaningful treatment-control contrast in training experiences.

7.2.3 Was the Model Used by Bridge to Employment Insufficient to Help Low-income Adults with Barriers Benefit from the Training Received?

Bridge to Employment implemented a “consumer choice” model, which is a central feature of providing ITAs under WIOA. This model empowers students to determine the training that is best for them and purchase it with a voucher at the provider of their choice. Given this choice, most study participants chose short-term trainings. After completion, these short-term trainings often led to jobs that paid lower wages. Dadgar and Trimble (2015) using nonexperimental methods found that short-term credentials from community colleges may not translate into measurable earnings impacts. Almost nothing is known about the value of short-term credentials from other types of schools.

Other models such as Per Scholas (Schaberg 2017) and Year Up (Fein and Hamadyk 2018) that focus on more-intensive, longer-term training or that move participants up a career ladder—albeit in occupations other than healthcare—have been successful in improving labor market outcomes. Such programs often heavily screen applicants and select those who have higher levels of education or higher levels of motivation before investing heavily in their training. Encouraging low-skilled participants to return for longer-term training may be particularly challenging for programs such as Bridge to Employment that focus on the healthcare field, where the jump from entry- to mid-level occupations requires substantial investment. For example, a newly minted CNA seeking advancement would need to take Licensed Vocational or Licensed Practical Nurse or Registered Nurse training, which takes from one to four years. This commitment may be unrealistic for many participants. Moreover, participants with a CNA may need to increase their basic skills levels or take academic prerequisites before even starting additional training.

7.3 Open Questions

The Bridge to Employment findings at three years after random assignment raise a number of interesting questions for longer-term research. Some of these questions concern possible

effects that could still arise and will be addressed by future research on Bridge to Employment and other PACE programs. Other questions would require mounting tests of revised models.

7.3.1 Future Research of Bridge to Employment

- ***Over a longer follow-up, will treatment group members have higher earnings than control group members?***

A future PACE follow-up impact study report covering six years after random assignment will have at least nine more quarters of NDNH wage records with which to analyze longer-term differences in earnings of Bridge to Employment's treatment and control groups. Though this three-year report found no statistically significant differences between the two groups after 19 quarters, impacts could emerge after six years. Treatment group members are more likely to be employed in the healthcare sector, which could provide more steady employment or higher wages relative to other sectors that employ control group members. On the other hand, a higher share of control group members were still in school at three years and may graduate and find higher-paying jobs relative to the treatment group.

7.3.2 Questions to Be Addressed by Further Research

The implementation, short-term impact, and three-year impact findings of the Bridge to Employment evaluation offer considerations for policymakers. These findings suggest that this type of program model can be used to alleviate shortages in the healthcare industry, but policymakers might select other models if the priority goal is to improve the program participants' economic well-being. Additional research may be needed to address the following related questions.

- ***What are promising approaches to counseling students to help them get the most return from their training?***

The Bridge to Employment and ITA experiment identified challenges to implementing a staff-driven model in which staff guide customers to high-return training. Strategies that provide navigators and counselors with tools and knowledge about the healthcare labor market may help them better guide participants to training leading to higher-wage occupations. Strategies to help staff guide participants to higher-quality training programs and models that include more career planning and follow-up services could enhance these programs. Future studies might test new approaches to providing more counseling or coaching to students enrolled in sectoral training.

- ***How can programs best help workers in entry-level healthcare jobs advance in their careers?***

It can take two to four years for a CNA to become a Licensed Vocational Nurse or Registered Nurse—enough time to gain the academic prerequisites and complete the training. This may not be realistic for program applicants who lack the academic aptitude or the ability to be out of the workforce for that period of time. Programs that target workers already in the healthcare field and help them advance to higher-paying positions, by providing financial, academic, or other supports, might be tested to determine whether they help those workers move up the career ladder.

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