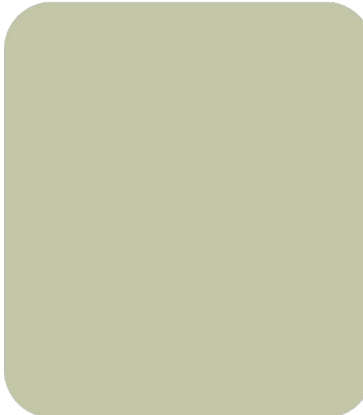


Washington State's Integrated Basic Education and Skills Training (I-BEST) Program

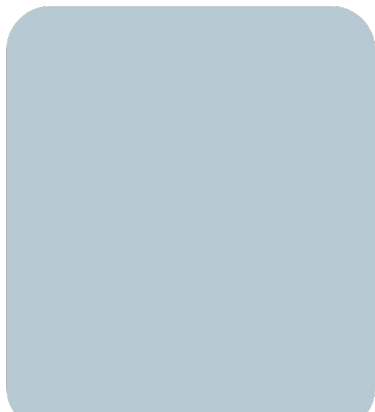


Six-Year Impact Report

OPRE Report 2022-64



February 2022



Washington State's Integrated Basic Education and Skills Training (I-BEST) Program: Six-Year Impact Report

A Pathways for Advancing Careers and Education (PACE) / Career Pathways Long-Term Outcomes Study Publication

OPRE Report 2022-64

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Karin Martinson, Abt Associates; and Asaph Glosser, MEF Associates

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Nicole Constance and Amelia Popham, Project Officers
Office of Planning, Research, and Evaluation
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U.S. Department of Health and Human Services

Contract No. HHSP233201500069I, Task Order HHSP23337007T
Project Director: Larry Buron
Principal Investigator: David Fein; Director of Analysis: David Judkins
Abt Associates Inc.
6130 Executive Boulevard
Rockville, MD 20852

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Overview

This report documents the impacts six years after random assignment for Washington State's Integrated Basic Education and Skills Training (I-BEST) program. I-BEST was designed to increase low-skilled adults' access to and completion of college-level occupational training in a range of in-demand occupational areas. It is one of nine programs using elements of a career pathways framework that are being evaluated as part of the **Pathways for Advancing Careers and Education (PACE)** project, sponsored by the Administration for Children and Families (ACF) within the U.S. Department of Health and Human Services.

The program's signature feature is a team-teaching approach where students receive instruction from two instructors in the same course: one provides job training and the other teaches basic skills in reading, math, or English. To further support students, the I-BEST programs in this evaluation included dedicated advisors to provide students with guidance on academic issues, navigating the college's procedures, and career planning. It also provided "fill-the-gap" financial support beyond typical sources, for training and associated materials. I-BEST was developed by Washington's State Board for Community and Technical Colleges (SBCTC) and has operated statewide since the 2006-07 academic year.

This evaluation of I-BEST used a rigorous experimental design. This report describes I-BEST's long-term, six-year impacts on educational attainment, earnings and employment, and other life outcomes. It extends the analyses of program effects measured 18 months and three years after random assignment.

Research Questions

Six years after random assignment, what were the effects of I-BEST on

- receipt of long-term college credentials?
- earnings?
- employment, job quality, and career progress?
- family economic well-being and child outcomes?

Purpose

I-BEST grew out of a concern that adult students who do not have the skills to directly enter college programs were not advancing beyond basic skills courses to college-level occupational programs, and therefore were not earning credentials. I-BEST aims to teach students basic and occupational skills concurrently so they can move more quickly into higher-paying jobs or college-level courses. Colleges in the evaluation operated I-BEST in one or more occupational areas including Automotive, Electrical, Office Skills, Nursing, Precision Machining, and Welding. This research evaluated whether I-BEST was successful in increasing access to and completion of college-level occupational training for low-skilled adults and whether the program's efforts led to impacts on credentials, earnings, and other life outcomes.

Key Findings

Analyses in this report indicate that after six years, I-BEST

- ***Had no impact on receipt of credentials requiring a year or more of college study, the confirmatory outcome in the education domain for the six-year impact study.*** Thirteen (13) percent of the treatment group received such a credential, compared to 12 percent of the control group.
- ***Had no detectable impact on average quarterly earnings in follow-up quarters 23 and 24, the confirmatory outcome in the employment domain for the six-year impact study.*** The average quarterly earnings for treatment group members were \$5,285, compared to \$5,134 for the control group.
- ***Had no detectable impacts on several measures of positive employment and career progress (secondary outcomes for the study).*** The evaluation detected no impact on being currently employed in a job that was full-time or offered health insurance, paid leave, or retirement or pension benefits. Neither did the evaluation detect impacts on access to a career network. I-BEST did increase the likelihood of working in an occupation related to training.
- ***Had no detectable impact on measures of financial wellbeing.*** The evaluation found no impact on ability to handle an emergency of \$400 or more or financial distress. Nor did I-BEST have a detectable impact on receipt of means-tested public benefits.

Methods

To assess the effectiveness of I-BEST, the PACE project used an experimental design in which program applicants were assigned at random to a treatment group that could access the program or to a control group that could not, then compared their outcomes. From November 2011 to September 2014, I-BEST staff randomly assigned 632 program applicants (315 treatment, 317 control). The six-year impact study used data from a follow-up survey conducted six years after randomization, earnings records from the National Directory of New Hires, and college enrollment data from the National Student Clearinghouse.

Executive Summary

Washington State's Integrated Basic Education and Skills Training (I-BEST) program is designed to increase low-skilled adults' access to and completion of college-level training for a range of in-demand occupations. I-BEST's signature feature is a team-teaching approach in which an occupational instructor and a basic skills instructor teach a college-level occupational course together. I-BEST aims to teach students basic skills and occupational skills concurrently so they can move more quickly into higher-paying jobs or college-level courses. The I-BEST programs in this evaluation also included dedicated advisors to provide students with guidance on academic issues, navigating the college's procedures, career planning, and "fill-the-gap" financial support beyond typical sources for training and associated materials.

Abt Associates is evaluating I-BEST as part of the **Pathways for Advancing Careers and Education (PACE)** project, a multi-site experimental study of nine programs using elements of the career pathways approach. The evaluation is funded by the Administration for Children and Families within the U.S. Department of Health and Human Services. The I-BEST evaluation was conducted at three of Washington's 34 community and technical colleges.

This report describes I-BEST's six-year impacts on educational attainment, earnings and employment, and other life outcomes. It extends the analyses shared in an earlier report of program effects three years after the launch of the study.

Program Overview

I-BEST grew out of a concern that students were often not advancing beyond basic skills courses to college-level occupational programs, and therefore were not earning credentials. Without I-BEST, students whose college entrance test scores were too low for them to enroll directly in their desired occupational training program had been required to enroll in and successfully complete remedial classes to increase their basic skills to the required levels.

Lasting one to three quarters, each I-BEST program offers one or more courses of study within structured pathways, providing credentials and college credits related to in-demand occupations. Below are I-BEST's core components (SBCTC 2017):

- **A team-teaching instructional approach.** With an emphasis on providing contextualized instruction, I-BEST pairs basic skills instructors and occupational training instructors in college-level occupational courses for at least 50 percent of occupational training class time.
- **Attainment of workforce credits and credentials.** Through I-BEST programs, students earn "workforce credits" that lead to "workforce credentials." Focused on developing specific technical skills, these credits and credentials are not transferable to four-year colleges. I-BEST programs generally do not result in academic credits. Further state licensing beyond the workforce credential may be required to practice in some fields (e.g., nursing occupations).

- **Courses that are part of a structured career pathway.** I-BEST programs are required to specify a sequence of courses that leads directly to a postsecondary credential and to jobs that are in demand in the local labor market. If they desire, I-BEST students can progress to additional education and training to receive additional workforce credits and credentials or academic credits and credentials or both.

In addition to these core components, the three colleges in the PACE project received additional funding from the Open Society Foundations for dedicated advisors and financial support for associated costs beyond the standard resources. The enhancements were available only to I-BEST program participants who were part of the study.

Evaluation Design

The research team used an experimental research design to estimate the impact of access to I-BEST on participants' postsecondary education and training, earnings and employment, and other life outcomes. Between November 2011 and September 2014, program staff randomly assigned 631 applicants as study participants – 315 to the treatment group that could access the I-BEST program and 316 to the control group could not access I-BEST but could receive other services in the community.¹ The evaluation captures the impacts of the program overall rather than the separate contributions of its components.² The sample size is smaller than planned, due to difficulty recruiting students who met the eligibility criteria. This sample size allows the study to detect large impacts, but limits the ability to detect moderate impacts on earnings and other labor market outcomes.

The I-BEST evaluation was conducted at three of Washington's 34 community and technical colleges: Bellingham Technical College, Everett Community College, and Whatcom Community College. These colleges operated I-BEST in one or more occupational areas including Automotive, Electrical, Office Skills, Nursing, Precision Machining, and Welding.

The PACE project established three categories of hypotheses: confirmatory, secondary, and exploratory. *Confirmatory hypotheses* focus on two outcomes—one each in the education and employment domains—that indicate whether I-BEST is producing the results expected at six years. *Secondary hypotheses* address an additional, limited set of indicators in the earnings and financial well-being domains, where the team expects program impacts in a specific direction.

¹ This design ensures that estimated effects can be attributed to access to the program and not to unmeasured differences in characteristics or external circumstances between study participants with access (treatment group) and without access (control group) to the program.

² The I-BEST program includes a package of services that they hypothesized were needed to produce desired impacts. Thus, the evaluation focuses on whether the entire package of services produced impacts.

Exploratory hypotheses address a larger number of possible impacts in which impacts could be in either direction.³

Data sources for this report are: a baseline survey administered at the time of study enrollment; 18-month, three-year, and six-year study participant follow-up surveys; school enrollment data from the National Student Clearinghouse; and employment and earnings data from the National Directory of New Hires.

Previous Findings

An earlier report documented that within a three-year follow-up period, most treatment group members attended an I-BEST program (73 percent) and about two-thirds enrolled in subsequent education and training after I-BEST (Martinson et al. 2021). In terms of three-year education impacts, I-BEST did not have a detectable impact on the receipt of a college credential requiring at least one year of college study (the confirmatory outcome). I-BEST did have a positive impact on credits earned (11 credits), though most of the credits were workforce credits rather than academic credits. I-BEST also had a large impact on receipt of any college credential (31 percentage points), primarily workforce credentials.

The three-year impact on credits and credentials did not translate into employment and earnings impacts. Specifically, I-BEST had no detectable impact on average quarterly earnings in the last two quarters of the follow-up period (quarters 12 and 13), the confirmatory outcome in the employment domain. In contrast, the study detected statistically significant positive impacts on earnings based on the NDNH in quarter 11; and based the survey data, sustained earnings impacts in quarters in the last year of the three-year follow-up period. In addition, the study detected an impact on working in a job that paid at least \$14 per hour (a secondary outcome) and working in a job that provided health insurance.

Key Findings from This Report

The six-year impact study addressed the following research questions: relative to the control group, does I-BEST have impacts on receipt of long-term college credentials; earnings; employment in promising jobs; and financial well-being?

I-BEST continued to have no detectable impact on credentials requiring at least a year of full-time college. Exhibit ES-1 shows that at six years after random assignment, about 13 percent of treatment and control group members earned a college credential preceded by eight or more Full-time Equivalent (FTE) months of enrollment by quarter 24. This measure is a proxy for credentials requiring at least a year of full-time college. I-BEST had detectable impacts on the receipt of any college credential of 16 percentage points. No impacts on credential receipt were detected after the third year of follow-up (not shown), thus it is likely that this

³ The research team published the six-year analysis plan for I-BEST and other PACE sites on the Open Science Framework website and registered confirmatory and secondary outcomes before the beginning estimation of six-year impacts: <https://osf.io/s97jt/>. See also <https://www.acf.hhs.gov/opre/report/pace-six-year-follow-up-analysis-plan>

impact at six years is driven by the receipt of short-term credentials that resulted from the one- to three-quarter-long I-BEST programs.

Beginning in the second year of follow-up and continuing into the third, the I-BEST programs in the study did produce small but statistically significant impacts on the receipt of credential requiring at least a year of school (not shown). However, the control group’s receipt of these long-term credentials eventually “caught up” to that of the treatment group, and as result, no overall impacts on longer-term credential receipt were detected (not shown). This indicates that I-BEST did succeed in speeding up *when* participants earn credentials that took more than one year to complete, but that in the absence of the program, they would have received those credentials anyway—but slightly later.

Exhibit ES-1: Impact on College Credentials

Outcome	Treatment Group	Control Group	Impact (Difference)	Standard Error	Relative Impact	p-Value
Credentials						
Confirmatory Outcome: Received a Degree or Some Other College Credential Preceded by 8+ FTE Months of Enrollment by Q24 (%)^a	13.2	12.0	+1.1	2.6	9.5	.331
Received any college credential ^b	44.0	28.2	+15.8***	5.3	56.2	.003

^aSource: National Student Clearinghouse. Sample size is 315 treatment group members and 316 control group members.

^bSource: PACE 6-Year Survey. Sample size is 189 treatment group members and 169 control group members (survey respondents).

Note: Confirmatory outcome bolded. Other outcome is exploratory. Hypothesis tests are one-sided for confirmatory outcome and two-sided for exploratory outcome. Statistics in the Relative Impact column represent the impact as a percentage of the control group mean (i.e., 100 * [impact / control group mean]).

Asterisks indicate statistical significance levels at the: * 10 percent level, ** 5 percent level, *** 1 percent level.

I-BEST’s impact on short-term college credentials did not translate into a detectable impact on average earnings. Treatment group members did not have significantly higher quarterly earnings relative to the control group. Exhibit ES-2 (top row) shows average quarterly earnings in the two final quarters of the six-year follow-up period (the confirmatory outcome), with no difference detected between the groups. Moreover, I-BEST did not produce detectable effects on hours worked or hourly wages by the end of the six-year follow-up period (not shown). Thus, though impacts on some earnings measures were detected at the end of the three-year follow-up period, they were not sustained.

I-BEST did not have detectable impacts on several measures of positive employment and career progress. As Exhibit ES-3 shows, the evaluation detected no impact on being currently employed in a job that was full-time or offered health insurance, paid leave, or retirement or pension benefits. Neither did the evaluation detect impacts on perceived career progress or access to a career network. I-BEST did increase the likelihood of working in an occupation related to training.

Exhibit ES-2: Impact on Average Earnings

Outcome	Treatment Group	Control Group	Impact (Difference)	Standard Error	Relative Impact	p-Value
Confirmatory Outcome: Average Quarterly Earnings in Quarters 23 AND 24 (\$)	\$5,285	\$5,134	+\$152	\$446	3.0	.367
Average total earnings (\$) in follow-up:						
Year 1 (quarters 0-3)	\$7,107	\$7,951	-\$844	\$610	-10.6	.168
Year 2 (quarters 4-7)	\$11,825	\$10,671	+\$1,154	\$1,001	10.8	.250
Year 3 (quarters 8-11)	\$15,292	\$13,485	+\$1,807	\$1,240	13.4	.146
Year 4 (quarters 12-15)	\$16,879	\$15,535	+\$1,345	\$1,279	8.7	.147
Year 5 (quarters 16-19)	\$18,241	\$18,507	-\$266	\$1,485	-1.4	.571
Year 6 (quarters 20-23)	\$21,165	\$19,994	+\$1,171	\$1,638	5.9	.237
Years 1-6	\$90,509	\$86,143	+\$4,366	\$5,728	5.1	.446
Sample size	310	300				

Source: National Directory of New Hires.

^aThe \$6,825 cut-point identifies earnings consistent with full-time employment (35 hours/week) at a career-entry wage level (\$15/hour) throughout the quarter.

Note: Confirmatory and secondary outcomes are bolded. Other rows are exploratory. Hypothesis tests are one-sided for confirmatory and secondary outcomes and two-sided for exploratory outcomes. Statistics in the Relative Impact column represent the impact as a percentage of the control group mean (i.e., 100 * [impact / control group mean]).

Asterisks indicate statistical significance levels at the: * 10 percent level, ** 5 percent level, *** 1 percent level.

Exhibit ES-3: Impact on Positive Employment Outcomes and Career Progress

Outcome	Treatment Group	Control Group	Impact (Difference)	Standard Error	Relative Impact (%)	p-Value
Positive Employment Outcomes					Relative Impact (%)	
Working full-time (35+ hours/week) (%)	49.4	46.4	+3.0	5.3	6.4	.287
Working in a program-target occupation (%)	12.6	5.0	+7.5***	3.2	149.5	.009
Working in a job offering:						
Health insurance (%)	44.8	42.4	+2.4	5.2	5.7	.645
Paid vacation (%)	45.7	47.0	-1.3	5.3	-2.8	.802
Paid holidays (%)	45.4	44.5	+0.9	5.3	2.0	.863
Paid sick days (%)	46.6	47.4	-0.8	5.3	-1.7	.879
Retirement or pension benefits (%)	43.2	42.6	+0.6	5.4	1.4	.910
All five benefits (%)	33.9	31.5	+2.4	5.1	7.6	.320
Career Progress					Effect Size	
Access to career network	2.94	2.91	+0.03	0.23	0.02	.441
Sample size (all survey respondents)	189	169				

Source: PACE six-year follow-up survey.

Note: Rows in **bold** identify secondary outcomes. Other rows are exploratory outcomes. Hypothesis tests are one-sided for secondary outcomes and two-sided for exploratory outcomes. Statistics under Relative Impact represent the impact as percentage of the control group mean (i.e. 100 * [impact / control group mean]). Effect sizes represent the impact as a percentage of the control group standard deviation. Asterisks indicate statistical significance at the: * 10 percent level, ** 5 percent level, *** 1 percent level.

I-BEST did not have a detectable impact on any measure of financial-well-being. The program did not affect financial resilience (i.e., ability to handle an emergency of \$400 or more with cash on hand), debt levels, or financial distress. Similar proportions of treatment group and control group members received means-tested public benefits in the month prior to the survey

(not shown). These results are not unexpected given the lack of a detectable impact on participants' earnings.

Implications of Findings

Since its inception, Washington State's I-BEST model has garnered the attention of educators, policymakers, and researchers as a promising model to support educational and occupational advancement for adults with low basic skills. This report has examined I-BEST's impact on postsecondary education and training, earnings and employment, and other life outcomes six years after random assignment.

The PACE results are the first from an experimental evaluation of the I-BEST model. The study evaluated the I-BEST programs operating in three of Washington State's 34 community and technical colleges and should not be considered representative of the I-BEST program statewide. Moreover, the sample size allows the study to detect large impacts, but limits the ability to detect moderate impacts on earnings and other labor market outcomes.

The study finds that, despite increasing the receipt of short-term credentials, I-BEST had no detectable effect on employment and earnings. While the evaluation has some limitations, the results are consistent with past studies. What accounts for the lack of earnings impacts?

- **Most participants did not achieve educational credentials beyond those provided through the I-BEST program.** The evaluation found that I-BEST increased receipt of short-term workforce credentials and credits, primarily those received through its one- to three-quarter courses. However, it detected no impacts on the receipt of longer-term credentials, or on college enrollment and credential receipt after the third year of follow-up.
- **The control group caught up to the program group in obtaining long-term credentials.** I-BEST did produce early impacts on the receipt of longer-term credentials, particularly in the second year of follow-up. Over time, however, control group members were also able to obtain these credentials. Thus, although the I-BEST program speeded the receipt of longer-term credentials, it did not affect the proportion of who received them overall.
- **The initial jobs targeted by I-BEST may not have paid well enough to appreciably raise earnings.** I-BEST generally appears to have trained participants for jobs with similar levels of pay to jobs that less educated workers are likely to obtain on their own. Some of the I-BEST programs may have intended to target an initial low-wage job with the expectation that students can advance to the next level of training on the pathway, and that training would then lead to better-paying jobs. However, as discussed, the additional training that might have prepared students for higher-paying jobs generally did not occur.
- **The I-BEST programs may need additional strategies to connect graduates with employment or longer-term education programs.** I-BEST programs in the study primarily focused on providing occupational training to obtain credits and credentials. Providing strong employment services to help participants find jobs was not an explicit focus or formal activity. Similarly, though the I-BEST program included student advising, it focused on issues arising during the program; and did not explicitly emphasize transitions to long-term educational programs.

Given the six-year impact findings, how might I-BEST, or other multi-step training programs, support the completion of training and movement into more advanced education and higher-paying jobs? Potential strategies include:

- **Stronger advising and guidance to help students transition from short workforce programs to longer college programs providing college credit and leading to degrees.** This evaluation finds limited transitions from short-term occupational programs to those providing longer-term credentials and degrees that could lead to higher earnings. Beyond I-BEST, and in response to many years of poor student completion rates, strengthened student advising is garnering increased attention as an important strategy in helping community college students attain longer-term education credentials (Bailey et al. 2015; CCCES, 2018; Deutsch et al. 2021). For I-BEST, it may be helpful to build off these existing, systematic efforts to improve supports and guidance in community colleges to improve transitions to college programs providing longer-term degrees.
- **Improved connections between the I-BEST programs and employers.** Strengthening connections with employers, and in particular job placement services in the relevant industries, could benefit I-BEST students, who are primarily focused on earning workforce credits and credentials rather than academic ones. Employment services could involve partnerships with the workforce system and other organizations that bring significant expertise on labor market information and employer needs. In addition, direct engagement with employers hiring workers with those credentials obtained by I-BEST students could help to create a clear path to employment.
- **Targeting high wage, in-demand jobs, particularly for the initial education step.** Because few students progress past the initial education courses and credentials, it may be useful to target jobs with high wages in that first step, rather than targeting jobs that pay well only after receipt of a second and usually longer-term credential. Moreover, a broad range of occupations can be targeted by I-BEST and changes in the demand for workers in specific occupations can occur over time. This indicates that a continual assessment of local employer demand and wage levels and corresponding adjustments to I-BEST offerings may be helpful in improving students' earnings trajectories. While some attention is given to these issues in I-BEST, further consideration may be warranted.

Overall, the findings indicate that enhancements, to the I-BEST approach may be needed to improve the long-term employment and earnings for students, including the ones suggested here. Additional research is needed to determine whether any of these strategies, individually or combination, would improve education and employment outcomes in the I-BEST program.

1. Introduction

This report presents estimates of the long-term impacts of Washington State's **Integrated Basic Education and Skills Training (I-BEST) Program**. I-BEST was designed to increase access to and completion of college-level occupational training in a range of in-demand occupational areas. I-BEST was developed by Washington's State Board for Community and Technical Colleges (SBCTC) and has operated statewide since the 2006-07 academic year in the state's 34 community and technical colleges. This report describes the program's six-year impacts on education, employment, and earnings based on an evaluation conducted in three community and technical colleges in the state.

Workers with only a high school education or less face poor and declining employment prospects (Georgetown University Center on Education and the Workforce 2016; Pew Research Center 2014). Postsecondary training offers one strategy for improving this population's employment opportunities, especially when the training targets occupations where demand for skilled workers is high and growing (Capelli 2014; Conway and Giloth 2014; Holzer 2015).

Despite the potential of postsecondary education for improving earnings, adults with low incomes and low skills face a range of barriers to accessing and completing it (National Center for Education Statistics 1996). Many are older than the traditional college population of 18- to 24-year-olds, are parents, lack adequate basic academic skills, and have few economic resources (Oreopoulos 2021; Evans et al. 2020). If students need to improve their basic skills before they enroll in college courses, educational institutions offer developmental (sometimes called "remedial") education courses that do not result in college credits. However, many of these students never progress to college courses because raising skills sufficiently requires a substantial time investment (Bailey et al. 2010; Rutschow and Schneider 2011). Others drop out due to financial setbacks or difficulties juggling school, work, and family responsibilities. Some have difficulties navigating the college environment, including course sequences and financial aid (Karp 2011).

With a focus on reducing the amount of time students spend in remedial classes, I-BEST aims to teach students basic and occupational skills concurrently, so they can move more quickly into higher-paying jobs or college-level courses. The program's signature feature is a **team-teaching approach** where students receive instruction from two instructors in the same course: one provides job training and the other teaches basic skills in reading, math, or English. To further support students, the three I-BEST programs in this evaluation received funding from the Open Society Foundations to provide dedicated advisors to guide students on academic issues, navigating the college's procedures, and career planning. It also provided "fill-the-gap" financial support beyond typical sources, for training and associated materials. This research was undertaken to evaluate whether I-BEST was successful in increasing access to and completion of college-level occupational training for low-skilled adults and whether the program's efforts led to impacts on credentials, earnings, and other life outcomes.

1.1 The Pathways for Advancing Careers and Education Project

I-BEST is one of nine training programs being evaluated in the **Pathways for Advancing Careers and Education (PACE)** project, sponsored by the Administration for Children and Families (ACF) within the U.S. Department of Health and Human Services.⁴ Abt Associates and its partner, MEF Associates, are evaluating the implementation and impact of I-BEST in three colleges in Washington State. The nine programs variously incorporate elements from a career pathways framework that PACE uses to organize and understand findings. Because the operating organizations and their program models, target populations, and focal occupations and industries vary, PACE evaluates and reports findings for each of the nine programs individually. The box *Programs in PACE* lists them.

The basic assumption underlying the **career pathways framework** is that postsecondary education and training should be organized as a series of manageable steps leading to successively higher credentials and employment opportunities in growth occupations (Fein 2012). The framework identifies services that can help to make these steps manageable and support career advancement, including (1) academic and non-academic assessment; (2) innovative basic skills and occupational skills instruction; (3) academic and non-academic supports; and (4) strategies to connect training participants and employers. Programs within the career pathways framework vary widely in the levels of training they cover. Training steps might range from instruction in basic academic and social skills needed to enroll in occupational training to a four-year college degree and beyond.

Previous PACE reports assessed I-BEST's implementation and early (18-to-24-month) impacts on education and employment-related outcomes and its intermediate-term (three-year) impacts

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 ACF's Health Profession Opportunity Grants (HPOG) Program.

[^]Program partially HPOG funded.

⁴ For more on PACE see <https://www.acf.hhs.gov/opre/project/career-pathways-research-portfolio>.

on educational progress, labor market outcomes, and family well-being.⁵ This report extends the impact analyses to six years, again analyzing impacts on educational progress, employment, earnings, and individual and family well-being.

1.2 The I-BEST Program

I-BEST grew out of a concern that adult basic skills students—adults who do not have the skills to enroll directly in college-level courses—were not advancing beyond remedial courses to college-level occupational programs, and therefore were not earning credentials.

Lasting one to three quarters, each I-BEST program offers one or more courses of study within structured pathways, providing credentials and college credits related to in-demand occupations. Below are I-BEST's core components (SBCTC 2017):

- **A team-teaching instructional approach.** With an emphasis on providing contextualized instruction, I-BEST pairs basic skills instructors and occupational training instructors in college-level occupational courses for at least 50 percent of occupational training class time.
- **Attainment of workforce credits and credentials.** Through I-BEST programs, students earn “workforce credits” that lead to “workforce credentials.” With a focus on developing specific technical skills, these credits and credentials are not transferable to four-year colleges. I-BEST programs generally do not result in academic credits. Further state licensing beyond the workforce credential may be required to practice in some fields (e.g., nursing occupations).
- **Courses that are part of a structured career pathway.** I-BEST programs are required to specify a sequence of courses that leads directly to a postsecondary credential and to jobs that are in demand in the local labor market. If they desire, I-BEST students can progress to additional education and training to receive additional workforce credits and credentials or academic credits and credentials or both.
- **Enhanced funding.** SBCTC reimburses colleges 1.75 times the regular rate for a full-time-equivalent (FTE) student to help cover the costs associated with implementing I-BEST, including development of a curriculum, instructor preparation, and supportive services such as a dedicated program coordinator.

In addition to these core components, the three colleges in the PACE evaluation of I-BEST received additional funding for program enhancements from the Open Society Foundations. The enhancements were available only to I-BEST program participants who were part of the study:

⁵ The early impacts report (Glosser et al. 2018) is available at <https://www.acf.hhs.gov/opre/report/washington-states-integrated-basic-education-and-skills-training-i-best-program-three>; the intermediate-term impacts report (Martinson et al. 2021) is available at <https://www.acf.hhs.gov/opre/report/washington-states-integrated-basic-education-and-skills-training-i-best-program-three-0>

- **Dedicated advising.** Each college provided a dedicated advisor (“navigator”) to guide students on academic issues, navigating the college’s procedures, and career planning.
- **“Fill-the-gap” financial support for training and associated materials, beyond typical sources.** For students who were not able to secure funding through Pell grants, Washington State Opportunity Grants, or other sources, the three colleges covered their tuition costs. They also provided funds for books, tools, other course materials, or transportation.

Within the I-BEST model, each college has flexibility to create programs in occupational areas that fit its students’ needs and interests and the local economy. Colleges must apply to SBCTC to operate a specific I-BEST program at their institution, detailing the local demand for that occupation and providing a roadmap to the career pathway for it.

Prior to the PACE project, non-experimental studies of Washington’s I-BEST program found that it improved some but not other outcomes. Those studies reported that I-BEST had a positive impact on college credit accumulation and gains on basic skills tests, mixed findings on credential completion, and no impact on wages or hours worked (Zeidenberg et al. 2010; Jenkins et al. 2009).

Given its positive effects in previous research, several states and localities over the past decade have replicated the I-BEST program or some of its key components, such as team teaching. *Accelerating Opportunity* was launched in four states in 2011 with funding from the Bill and Melinda Gates Foundation. A study of that replication program found that it consistently increased occupational credit and credential receipt but not employment or earnings. Though no impacts on employment and earnings were detected for the full sample in any of the states, positive results were seen for some subgroups in two states (Eyster et al. 2018).⁶ The *Accelerating Connections to Employment* program was implemented in four states in 2013 with support from the U.S. Department of Labor’s Workforce Innovation Fund. An experimental study of this replication program found positive impacts on credential receipt and short-term (one-year) employment and earnings (Modicamore et al. 2018). A systematic review of evidence on the I-BEST model found consistent effects on credential receipt but mixed effects on employment and earnings (What Works Clearinghouse 2020).

1.3 I-BEST Colleges and Programs in the Evaluation

The PACE project evaluated I-BEST programs at three of Washington State’s 34 community and technical colleges: Bellingham Technical College (BTC), Everett Community College (EvCC), and Whatcom Community College (WCC). BTC and WCC are in Bellingham, which is 90 miles north of Seattle. EvCC is about 30 miles north of Seattle.

⁶ *Accelerated Opportunity* examined earnings for different student subgroups based on how they were referred to the program. Students recruited from adult education in Kentucky and students recruited from career and technical education programs in Kansas experienced positive impacts on earnings. Adult education students from Illinois, Kansas, and Louisiana and developmental education students from Kentucky did not experience positive, statistically significant, or enduring gains in earnings during the follow-up period.

The three colleges are not representative of all community and technical colleges in Washington. They do capture substantial diversity, however, with respect to the age of the students, financial aid use, and size of the school. BTC's students had a median age similar to the statewide median age of 26; EvCC and WCC served a younger population. BTC and WCC had a larger share of students receiving need-based financial aid compared to the share statewide (38 percent), whereas EvCC's share was smaller. EvCC is among the largest in the state (ranked sixth); BTC is among the smallest (ranked 32nd).⁷ None of the three had an especially large I-BEST program: BTC (125 students annually) was similar to the statewide average, whereas EvCC and WCC were smaller (73 and 22 students annually, respectively; Martinson et al. 2021).

The three colleges operated I-BEST in one or more occupational areas that included Automotive, Electrical, Office Skills, Nursing, Precision Machining, and Welding. Compared with I-BEST programs across the state, they operated some of the most common programs, particularly Office Skills, Nursing, and trades (which includes Precision Machining and Welding). The only relatively common occupational areas not captured in the study are Allied Health, and Child Care and Early Education. (See Martinson et al. 2021 for more details.)

1.4 The Evaluation Design

To measure I-BEST's effects, the research team randomly assigned 632 eligible applicants between November 2011 and September 2014 across the three colleges to treatment or control groups and compared their average outcomes over time.⁸ Those we assigned to the treatment groups were allowed to participate in their college's I-BEST program (including the PACE enhancements described above). Those assigned to the control groups could not participate in courses that were part of the I-BEST program at the college where they enrolled, but they could participate in other training programs available in the community, including at other training providers, and in non-I-BEST courses at the three colleges in the study if they met the course requirements.

The team used a random assignment research design to estimate the impacts of access to I-BEST. Such a design ensures that estimated effects can be attributed to access to the program and not to unmeasured differences in characteristics or external circumstances between study participants with access (treatment group) and without access (control group) to the program.

Historically, Washington colleges would identify potential I-BEST students from among those currently enrolled in basic skills or developmental education courses who might have an interest in a more accelerated approach to achieve occupational credits and credentials. For PACE,

⁷ <https://www.communitycollegereview.com/college-size-stats/washington#:~:text=The%20average%20community%20college%20in,Bellevue%20College%20with%2013%2C226%20students.>

⁸ BTC randomly assigned 315 study participants; EvCC, 241; and WCC, 76. One student who was randomized to the control group left the sample at the time that outcomes were measured, resulting in a total of 631 study participants.

each college expanded recruitment to other low-skilled students in the community who qualified for occupational training but who could still potentially benefit from the I-BEST program. Interested program applicants took the Comprehensive Adult Student Assessment System (CASAS) in math and reading to determine whether they were eligible for their I-BEST program of interest.⁹

1.4.1 Hypothesis Testing

An essential principle in the PACE analysis plan is to conduct the statistical tests in a way that minimizes the number of false positive impacts due to chance (i.e., the “multiple comparison” problem). To address this risk, the project established three categories of hypotheses: confirmatory, secondary, and exploratory.

- **Confirmatory hypotheses** focus on a very few outcomes that indicate whether the program is producing the results expected at a given follow-up duration. For this I-BEST six-year follow-up report, the team pre-specified one confirmatory outcome in each of two domains: *receipt of a college credential after eight or more months of full-time equivalent (FTE) college enrollment by the 24th follow-up quarter* (education domain)¹⁰ and *average quarterly earnings in the 23rd and 24th follow-up quarters* (employment domain).
- **Secondary hypotheses** address a limited number of additional important indicators of program success for which we expect effects in a particular direction. The secondary outcomes in the earnings domain are *average quarterly earnings of \$6,825 or more in the 24th and 25th follow-up quarters* (an indicator of full-time employment at \$15/hour) and *average total earnings in follow-up Years 4-6*. Secondary outcomes in the employment domain are *working full-time, working in a program target occupation, and receipt of any of five types of job benefits*. Finally, secondary outcomes in the financial well-being domain are *ability to handle a financial emergency of \$400 from a checking or savings account, total debt, receipt of means-tested public benefits, and extent of financial distress*.
- **Exploratory hypotheses** address a larger number of possible effects of interest. Examples of exploratory outcomes at six years of follow-up are employment and earnings in a variety of other years and quarters; additional measures of college enrollment, credential receipt, and degree attainment; and other measures of financial well-being.

⁹ The three colleges varied slightly in required CASAS reading and math scores to be eligible for I-BEST. At BTC and WCC, students were required to score on both tests between 221 (equivalent to 4th or 5th grade) and 256 (equivalent to 12th grade). The exception was the Nursing Assistant program at BTC, which required only 211 on math (equivalent to 3rd or 4th grade). EvCC required students to score at least 201 on both tests (equivalent to 3rd grade or lower), but typically recommended that students should score above 211 before enrolling in I-BEST.

¹⁰ The team specified this outcome as a proxy for credentials requiring at least a year of full-time college, which the National Student Clearinghouse does not identify directly.

To publicly commit to hypotheses and an estimation approach, we published an analysis plan (Fein, Judkins, and Buron 2021) on the Open Science Framework and OPRE websites and registered confirmatory and secondary outcomes before the research team began estimating six-year impacts.¹¹ Doing so also aligns with ACF's commitment to promote rigor, relevance, transparency, independence, and ethics in the conduct of evaluations.¹²

Influence of COVID-19. Starting in March 2020, a global outbreak of the coronavirus SARS-CoV-2 began to spread rapidly in the U.S. The resulting disease – COVID-19 – created a massive economic downturn. By April 2020, the unemployment rate rose to 14.8 percent, a level not seen since the Great Depression, and remained above 6 percent through April 2021.¹³ The negative effects were particularly heavy for the low-income and minority communities targeted in PACE programs. Many key measures in this report concern outcomes occurring at the end of a six-year follow-up period. About 42 percent of the I-BEST sample enrolled between the first and third quarters of 2014. For this subset of study participants, the six-year follow-up window included at least one quarter in 2020 that was affected by the COVID-19 pandemic. Thus, the six-year earnings outcomes for 42 percent of the sample potentially could have been affected by COVID-19.

If the pandemic influenced program impacts post-onset, then these influences would affect estimated impacts at different sites to varying degrees. To the extent that PACE programs succeeded in increasing employment in targeted occupations and such occupations were relatively resistant to the downturn, treatment group members might fare considerably better than control group members. The main requirement for an investigation of the potential effects of the pandemic on key outcomes was statistically significant impacts on earnings in the period preceding or following the pandemic's onset. If impacts are absent throughout, the question of pandemic-related effects on impacts is moot. As documented in supplemental Exhibit S-1, I-BEST had no detectable impact on quarterly earnings in 2019 or 2020; thus, the evaluation team did not further investigate the pandemic's effects.

1.4.2 Analysis Approach and Data Sources

I-BEST impact analyses use survey and administrative data to measure impacts as differences in mean outcomes between the randomly assigned treatment and control groups. Although random assignment ensures that, on average, sample members in the two groups have similar characteristics at “baseline” (study entry), the analysis nonetheless controls for baseline characteristics to minimize any effects of chance differences arising at random assignment and to improve the precision of impact estimates.

¹¹ <https://osf.io/s97jt/> and <https://www.acf.hhs.gov/opre/report/pace-six-year-follow-up-analysis-plan>

¹² These are the five principles outlined in ACF's Evaluation Policy, which is available here: <https://www.acf.hhs.gov/opre/report/acf-evaluation-policy>

¹³ See <https://data.bls.gov/timeseries/LNS14000000>.

The sample size of 631 individuals randomly assigned is smaller than anticipated when the study was designed. This was due to difficulty recruiting students who met the eligibility criteria. This sample size limits the study's ability to detect all but large impacts.

The data sources for this report:

Baseline survey. All study participants completed a Basic Information Form just prior to random assignment, which captured demographic information, family characteristics, educational history, and work and earnings information. As in prior reports, we used the baseline data for subgroup analyses, nonresponse analysis, and regression adjustment of impact estimates.

18-month and three-year follow-up surveys. The report draws on measures from the short-term (18-month) and intermediate (three-year) follow-up surveys. Some measures blend data from both surveys. For example, the outcome *received any credential since random assignment* combines data from the first follow-up survey (receipt of certifications and licenses from institutions other than schools earned in the short term) with data from the second follow-up survey (school-issued credentials during the first three years and data on credentials issued by other authorities after 18 months but before 36 months) and with data on credentials reported in the third follow-up survey.

Six-year follow-up survey. This survey targeted the full sample of 631 I-BEST applicants randomly assigned for the study. It measured different aspects of employment, educational attainment, student debt, financial well-being, and other life circumstances six years after that random assignment.¹⁴ The response rate was 57 percent overall (60 percent for the treatment group and 54 percent for the control group).¹⁵ In a separate appendix volume, Appendix B.1 provides detailed descriptions for key measures analyzed in this report (Judkins, Roessel, and Durham, forthcoming).¹⁶

Administrative records. The report draws on data from two administrative records systems:

The *National Student Clearinghouse (NSC)* collects data on student enrollment, degrees earned, and other credential completion from most U.S. institutions of higher education.¹⁷ NSC data provide key measures of college enrollment and credential receipt and figure into certain

¹⁴ The full survey instrument is available at https://www.reginfo.gov/public/do/PRAViewIC?ref_nbr=201802-0970-010&icID=227184

¹⁵ The response rate yielded survey responses for 358 study participants (189 in the treatment group and 169 the control group). The median response occurred 70 months after random assignment.

¹⁶ This appendix volume provides details on the common methodology used to report on the six-year impacts of nine programs being evaluated as part of the PACE project. See <https://www.acf.hhs.gov/opre/project/career-pathways-research-portfolio>.

¹⁷ Designed to aid the administration of student loan programs, researchers also use NSC data to study college access, persistence, and credential receipt.

technical data adjustments.¹⁸ Like most administrative data, the data are limited to populations and measures needed to fulfill the system's administrative purpose.¹⁹ This report draws on a February 2021 match of the study sample to NSC records.²⁰

The *National Directory of New Hires (NDNH)* aggregates quarterly wage records reported on a quarterly basis to states by employers per Unemployment Insurance program requirements. These records are a key source for earnings and employment data in this report. Maintained by the federal Office of Child Support Enforcement within ACF, NDNH wage records cover most private employers as well as the federal (civilian and military) workforce. This report draws on a March 2021 match of the study sample to NDNH records.²¹

1.4.3 Characteristics of Study Participants

Exhibit 1-1 below compares characteristics of treatment and control group members at study entry.²² Most I-BEST study participants were not traditional college age; more than half (60 percent) were age 25 or older at the time of study entry. A majority of participants were women (58 percent). Slightly more than half (55 percent) identified as White, non-Hispanic, and about one quarter (26 percent) identified as Hispanic, any race.

¹⁸ In a separate appendix volume, Appendix B.4 describes these technical applications, which mainly involve nonresponse analysis and weighting. See <https://www.acf.hhs.gov/opre/project/career-pathways-research-portfolio>.

¹⁹ For example, because NSC is used mainly to verify federal financial aid eligibility, its coverage is generally very high but lower for private, for-profit colleges that do not rely on federal aid. Federal aid is limited to accredited, degree-granting institutions, so NSC also does not cover other kinds of schools.

²⁰ Although earlier reports used college records data from SBCTC, the agency was unable to provide data for the current report.

²¹ In a separate appendix volume, Appendices D.1 and D.2 provide additional details.

²² As shown, random assignment produced treatment and control groups without significant differences in observed baseline characteristics with three exceptions: age, food assistance receipt, and cash assistance receipt. In conducting impact analyses, we controlled for any bias resulting from these and other differences by using baseline values as covariates to adjust for chance differences.

Exhibit 1-1: Selected Characteristics of the I-BEST Sample at Study Entry

Characteristic	All Study Participants	Treatment Group	Control Group	p-Value
Age (%)				.067
20 or younger	22.2	23.2	21.1	
21 to 24	14.9	11.1	18.6	
25 to 34	29.8	31.4	28.1	
35 or older	33.2	34.3	32.2	
Gender (%)				.231
Women	57.5	55.1	59.9	
Men	42.5	44.9	40.1	
Race/Ethnicity (%)				.346
Hispanic, any race	26.0	28.9	23.1	
Black, non-Hispanic	7.6	6.2	9.1	
White, non-Hispanic	54.9	53.1	56.7	
Another race, non-Hispanic	14.1	13.4	14.8	
Family Structure (%)				.591
Not living with spouse/partner and not living with children	47.2	48.7	45.8	
Not living with spouse/partner but living with children	16.6	14.6	18.6	
Living with spouse/partner and not living with children	17.3	18.2	16.3	
Living with spouse/partner and children	18.9	18.5	19.3	
Living with parents	28.6	27.2	30.1	.412
Current Education (%)				.497
Less than a high school diploma	30.7	28.2	33.1	
High school diploma or equivalent	40.0	42.0	38.0	
Less than 1 year of college	11.1	12.1	10.2	
1 or more years of college	9.5	10.1	8.9	
Associate degree or higher	8.8	7.7	9.8	
Family Income in Past 12 Months (%)				.551
Less than \$15,000	47.3	46.5	48.1	
\$15,000-\$29,999	23.9	26.0	21.9	
\$30,000 or more	28.8	27.6	30.0	
Mean (\$)	\$22,110	\$23,002	\$21,240	.378
Public Assistance / Hardship in Past 12 Months (%)				
Received WIC or SNAP	58.6	55.0	62.1	.092
Received public assistance or welfare	21.3	18.1	24.3	.094
Reported financial hardship ^a	48.5	49.8	47.1	.499
Current Work Hours (%)				.993
0	66.6	66.9	66.3	
1 to 19	8.5	8.5	8.5	
20 to 34	11.7	11.7	11.6	
35 or more	13.2	12.8	13.6	
Sample size	631	315	316	

Key: SNAP=Supplemental Nutrition Assistance Program. WIC=Special Supplemental Nutrition Program for Women, Infants, and Children. Source: PACE Basic Information Form.

^a *Financial hardship* is defined as having ever missed rent/mortgage payment in prior 12 months or reported generally not having enough money left at the end of the month to make ends meet over the last 12 months.

Study participants had low levels of education, with 31 percent reporting less than a high school diploma. Fewer than 20 percent reported having attended one or more years of college. Moreover, sample members had low incomes, with a mean annual income of \$22,110 and 47 percent reporting annual income of less than \$15,000. Two thirds (67 percent) were not working at the time of random assignment, and only 13 percent were working full-time (35 hours or more). Consistent with these low levels of income, 59 percent of study participants received food assistance from the Supplemental Nutrition Assistance Program or Special Supplemental Nutrition Program for Women, Infants, and Children in the 12 months prior to study intake. Some 21 percent of study participants had received public assistance (e.g., Temporary Assistance for Needy Families) at some point in the prior 12 months.

1.5 Findings from Earlier PACE Reports on I-BEST and Implications for the Six-Year Report

The I-BEST *Implementation and Early Impact Report* (Glosser et al. 2018) and *Three-Year Impact Report* (Martinson et al. 2021) provide useful context for the current report. The first report described implementation of I-BEST's program components, impacts on education, and impacts on career pathways employment. The intermediate report documented three-year impacts on educational outcomes, employment, earnings, and individual and family well-being.

Through three years after random assignment the principal findings are as follows:

The implementation study found that I-BEST operated largely as designed. The three colleges varied in how they delivered I-BEST across the different occupational programs they offered, but the implementation study found that the colleges delivered the program largely as planned. All programs included team teaching that paired a basic skills instructor and an occupational instructor in the delivery of occupational training. In addition, all programs used a contextualized instruction approach, where students learned basic skills in their course of occupational study. The programs also provided student advising and financial supports, with a specific focus on attendance and completion of I-BEST. By design, the I-BEST programs did not include structured services to help students find employment, but some instructors provided informal job search assistance.

A substantial majority of treatment group members participated in at least one I-BEST course of study. About three quarters (73 percent) of treatment group members participated in at least one I-BEST course of study, based on SBCTC administrative data. The most common trainings attended were Nursing Assistant (36 percent of treatment group) and Welding (30 percent). Almost two thirds enrolled in subsequent education and training after participating in their I-BEST program.

I-BEST had some positive impacts on education and training. At three years, I-BEST had no detectable impact on receipt of credentials requiring a year or more of college study within the three-year follow-up (the pre-specified confirmatory outcome for education). At three years, I-BEST had a positive impact on credits earned, and most of the credits were workforce credits rather than academic credits. I-BEST had a large impact on receipt of any college credential, reflecting the receipt of short-term workforce credentials earned through completing

occupational courses. Almost half (48 percent) of the treatment group received some type of credential from a college, compared to 17 percent of the control group, a 31 percentage point impact.

I-BEST had no detectable impact on the pre-specified confirmatory outcome for earnings, average earnings in the 12th and 13th follow-up quarters. Impacts were detected on one secondary and a few other exploratory outcomes in this domain, however. Specifically, the study detected statistically significant positive impacts on earnings in quarter 11 based on the NDNH; and based on the survey data, sustained earnings impacts in quarters in the last year of the three-year follow-up period. In addition, the study detected an impact on working in a job that paid at least \$14 per hour (a secondary outcome) and having a job that provided health insurance. I-BEST did not have a detectable impact on confidence in career knowledge and access to career supports or on measures of family economic well-being (health insurance coverage, receipt of means-tested public assistance, unsecured debt of \$5,000 or more, or signs of financial distress).

In summary, I-BEST significantly increased credits earned and receipt of any college credential, primarily short-term workforce credentials, but it did not increase receipt of credentials requiring at least one year of college study. The evidence at three years suggested that these gains in short-term credentials may have had an impact on earnings, but the results were not definitive.

These findings through three years suggest the following research questions for this six-year impact report:

- Will impacts on short-term credentials translate into more completion of more advanced credentials and degrees?
- Will the impacts on earnings grow or diminish?
- What will be the nature of any employment impacts? That is, will I-BEST increase employment in occupational sectors the programs targeted? Will I-BEST have an impact on employment in jobs paying \$15 or more per hour?
- Will impacts on family economic well-being and child outcomes emerge because of impacts on education, employment, earnings, or other factors?

1.6 Organization of This Report

The remainder of this report assesses I-BEST's impacts over a six-year follow-up period. Chapters 2-4 summarize the main findings on impacts in the education, employment, and other life domains, respectively. Chapter 5 summarizes and interprets the findings, and discusses implications of the findings for program operators, policymakers, and other interested stakeholders.

The report references technical appendices in a separate volume (Judkins, Roessel, and Durham, forthcoming) that provides details on the common methodology used to report on the six-year impacts of the nine programs evaluated in the PACE project.

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

Many exhibits in Chapters 2-4 follow a common format in reporting impacts.

The left-most column identifies the **Outcome** whose findings appear in each row.

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**). Regression adjustment corrects for random variation in baseline covariates between the two groups and improves the precision of the estimates.

The next column (**Impact**) is the difference between the treatment and control group means—that is, the impact of being offered I-BEST. The **Standard Error** column is a measure of uncertainty in the estimated impact that reflects 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

This report identifies estimated impacts as statistically significant if their associated p -values are below .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. Asterisks distinguish results that are statistically significant:

* at the 10 percent level ($p < .10$)

** at the 5 percent level ($p < .05$)

*** at the 1 percent level ($p < .01$)

Categories of findings

Tests of statistical significance for confirmatory and secondary outcomes are one-sided tests because their associated hypotheses have direction. The impact tables highlight these outcomes using **bolded text**. Tests of significance for exploratory outcomes are two-sided, because we do not have a directional hypothesis. Tables present these outcomes using regular (not bolded) text.

2. Impacts on Postsecondary Education and Training

This chapter reports I-BEST’s six-year impacts on postsecondary education and training outcomes. The program’s theory of change posits that concurrent teaching of basic and occupational skills, advising, and financial assistance will help participants to enroll in college-level occupational training, obtain credentials with labor market value, and find related employment. This analysis pre-specified *receipt of a college credential after eight or more months of FTE college enrollment by the 24th follow-up quarter* as the confirmatory outcome in the education domain.

This chapter first examines the impact of I-BEST on credential receipt then reports on impacts on college enrollment, including subsequent enrollment after receiving a credential.

2.1 Impact on Credentials

This section describes impacts on credential receipt, beginning with the confirmatory outcome. The section then assesses impacts for receipt of other types of credentials received.

I-BEST had no detectable impact on receipt of a credential after eight or more of FTE months of college. Receiving a college credential after a year of FTE college enrollment was selected as confirmatory because it reflects the I-BEST program’s goal of promoting additional progress in career pathways beyond the initial I-BEST training. Using NSC administrative data, as shown in Exhibit 2-1, the evaluation did not detect an impact on this outcome. At six years after random assignment, about 13 percent of treatment and control group members had received such credentials.

Exhibit 2-1: Impact on Receipt of College Credentials at Six Years, NSC Data

Outcome	Treatment Group	Control Group	Impact (Difference)	Standard Error	Relative Impact	p-Value
Credentials						
Confirmatory Outcome: Received a Degree or Some Other College Credential Preceded by 8+ FTE Months of Enrollment by Q24 (%)	13.2	12.0	+1.1	2.6	9.5	.331
Received AA or higher degree by Q24 (%)	10.7	7.0	+3.7 *	2.2	53.1	.080
Received any college credential after Year 3 (%)	4.7	6.0	-1.3	1.8	-22.4	.465
Sample size	315	316				

Source: National Student Clearinghouse.

Note: Confirmatory outcome is bolded. Other rows are exploratory Hypothesis tests are one-sided for confirmatory outcome and two-sided for exploratory outcomes. Statistics in the Relative Impact column represent the impact as a percentage of the control group mean (i.e., 100 * [impact / control group mean]).

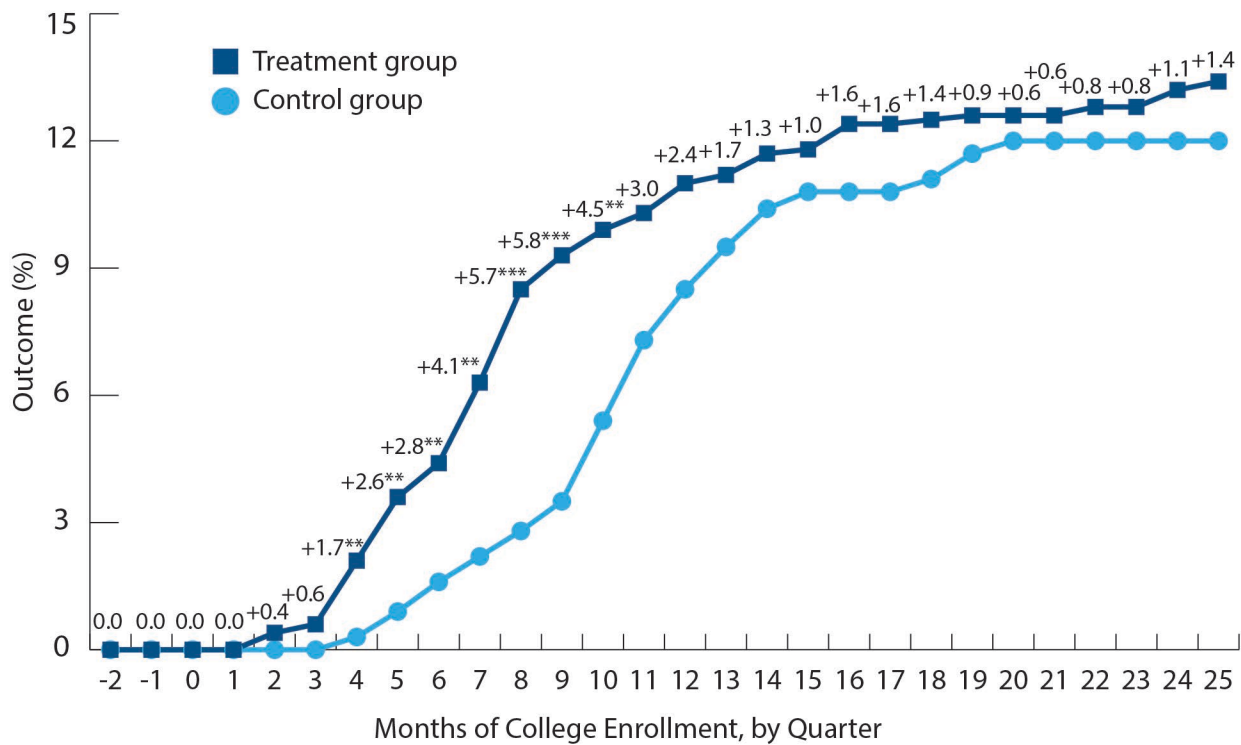
Asterisks indicate statistical significance at the: * 10 percent level, ** 5 percent level, *** 1 percent level.

Also shown in Exhibit 2-1, as measured in the NSC, there is weak evidence that I-BEST produced a small impact of 3.7 percentage points on the receipt of an associate degree (which generally requires two years of full-time coursework). This indicates that a small number of treatment group members appear to move beyond their initial I-BEST courses and attain an

associate degree. However, because only a small proportion of treatment group members attained this degree, while an increasing proportion of the control group received a degree that took a year or more (see below), the study detected no overall impact on the confirmatory outcome. In addition, it detected no impact on receiving a college credential after the third year of follow-up.

Exhibit 2-2 shows impacts by quarter on the confirmatory outcome for education: ever received college credential after eight or more FTE months of college enrollment. The I-BEST programs produced small but statistically significant impacts in Q4 to Q10 after random assignment, but after this point the control group's receipt of credentials "catches up" to that of the treatment group. In particular, impacts on the receipt of long-term credentials increased after Q6 (starting in the second year and continuing into the third year of follow-up).²³ This indicates that I-BEST did succeed in *speeding up* when participants earned credentials that took more than one year to complete, but that in the absence of the program, they would have received those credentials anyway, though slightly later.

Exhibit 2-2: Impact on Percent Ever Receiving a College Credential after 8+ FTE Months of College Enrollment, by Quarter



Source: National Student Clearinghouse.
 Statistical significance levels based on two-sided tests of differences between research groups: asterisks indicate statistical significance at the: * 10 percent level, ** 5 percent level, *** 1 percent level.

²³ This was a period then the control group was embargoed from the I-BEST program (which lasted for three years from random assignment). Thus, it appears that control group members were receiving these credentials through other programs.

I-BEST had a large impact on the receipt of short-term college credentials. Exhibits 2-1 and 2-2 are based on NSC data, but the evaluation also examined receipt of credentials based on responses to the six-year follow-up survey. Based on this survey data, I-BEST produced substantial impact on receipt of *any* college credential (Exhibit 2-3). Similar to the three-year impact report, close to half (44 percent) of the treatment group received some type of credential from a college, compared to 28 percent of the control group, a 16 percentage point impact. Given the lack of impact of I-BEST on longer-term credentials and on impacts after the third year of follow-up, it is likely that this impact at six years is driven by the receipt of short-term credentials that resulted from the one- to three-quarter-long I-BEST programs. Unlike the NSC data (which showed weak evidence), the survey data did not show a detectable impact on receipt of an associate degree.

In addition, based on survey data, the evaluation detected a 13 percentage point increase in certifications or licenses awarded by an outside entity (Exhibit 2-3). About 47 percent of the treatment group received such certifications or licenses within six years of random assignment, compared to 34 percent of the control group. This impact is consistent with some occupations targeted by the I-BEST programs that required students to pass licensing exams to work in specified positions, particularly Nursing Assistant and certain welding positions.

Exhibit 2-3: Impact on Credential Receipt

Outcome	Treatment Group	Control Group	Impact (Difference)	Standard Error	Relative Impact	p-Value
Ever received credential after random assignment from (%):						
A college						
Associate degree or higher	10.8	8.2	+2.6	3.3	31.4	.432
Less than associate degree	41.1	25.1	+16.0 ***	5.3	63.9	.002
Any college credential	44.0	28.2	+15.8 ***	5.3	56.2	.003
Another education/training provider	20.0	19.2	+0.9	4.3	4.6	.839
A college or other training provider	55.1	40.1	+15.0 ***	5.6	37.4	.008
A licensing/certification body	47.2	34.4	+12.8 **	5.9	37.1	.030
Any of the above sources	68.0	53.4	+14.6 ***	5.6	27.4	.009
Sample size (all survey respondents)	189	169				

Source: PACE six-year follow-up survey.

Note: All hypothesis tests in this table are based on two-sided tests. Statistics in the Relative Impact column represent the impact as a percentage of the control group mean (i.e. $100 * [\text{impact} / \text{control group mean}]$). Asterisks indicate statistical significance at the: * 10 percent level, ** 5 percent level, *** 1 percent level.

2.2 Impact on College Enrollment and Multiple Educations Steps

This section describes I-BEST's impact on college enrollment in education and training. College enrollment is an exploratory outcome for the evaluation.

I-BEST increased the number of months enrolled in college. Exhibit 2-4 shows the impact of I-BEST on college enrollment, based on NSC records. By the end of the six-year follow-up period, I-BEST increased FTE months in college by 2.4 months.²⁴ I-BEST also increased total months with any college enrollment (by 3.5 months).

Exhibit 2-4: Impact on College Enrollment

Outcome	Treatment Group	Control Group	Impact (Difference)	Standard Error	Relative Impact	p-Value
Cumulative FTE months of college enrollment across Years 1-6	8.6	6.2	+2.4***	0.8	38.2	.002
Total months with any college enrollment across Years 1-6	12.0	8.4	+3.5***	1.0	41.6	<.001
Total months with any college enrollment in follow-up:						
Year 1 (quarters 0-3)	5.4	2.8	+2.7***	0.3	97.5	<.001
Year 2 (quarters 4-7)	2.9	2.0	+0.9***	0.3	46.6	.003
Year 3 (quarters 8-11)	1.3	1.5	-0.1	0.2	-8.6	.611
Year 4 (quarters 12-15)	1.1	0.9	+0.2	0.2	17.4	.465
Year 5 (quarters 16-19)	0.9	0.8	+0.0	0.2	5.3	.830
Year 6 (quarters 20-23)	0.6	0.7	-0.1	0.2	-8.7	.737
Total months with any full-time college enrollment across Years 1-6	5.7	4.3	+1.5**	0.6	34.4	.019
Total months with any full-time college enrollment in follow-up:						
Year 1 (quarters 0-3)	3.0	1.3	+1.6***	0.2	122.9	<.001
Year 2 (quarters 4-7)	1.5	1.2	+0.3	0.2	29.2	.170
Year 3 (quarters 8-11)	0.5	0.8	-0.3*	0.2	-37.8	.069
Year 4 (quarters 12-15)	0.5	0.4	+0.0	0.1	11.8	.729
Year 5 (quarters 16-19)	0.3	0.4	-0.1	0.1	-30.9	.323
Year 6 (quarters 20-23)	0.2	0.3	-0.1	0.1	-28.2	.484
Any college enrollment after Year 3 (%)	20.7	22.5	-1.7	3.3	-7.7	.597
Sample size	315	316				

Source: National Student Clearinghouse.

Note: All hypothesis tests in this table are based on two-sided tests. Statistics in the Relative Impact column represent the impact as a percentage of the control group mean (i.e., $100 * [\text{impact} / \text{control group mean}]$).

Asterisks indicate statistical significance at the: * 10 percent level, ** 5 percent level, *** 1 percent level.

I-BEST increased college enrollment after the receipt of a short-term credential, indicating that I-BEST resulted in participation in more than one education step. The evaluation assessed the degree to which I-BEST encouraged persistence through multiple steps on an education pathway, one feature of the I-BEST program. Specifically, we examined I-BEST's effect on college enrollment for at least four additional months (roughly a semester) subsequent to receiving a credential. As shown in Exhibit 2-5, some 15 percent of the treatment group enrolled in college for at least four months after receiving any credential (which as discussed were primarily short-term credentials), compared to 6 percent of the control group, a

²⁴ Full-time-equivalent months enrolled in college is a cumulative measure for a follow-up period. It is the sum of values ranging from 0 to 1 for each month, where the value is determined by the fraction of time a student enrolled part-time, or 1 for full-time, or 0 for not enrolled.

9 percentage point increase.²⁵ The evaluation did not detect impacts on subsequent enrollment after receiving a credential that took more than a year to complete. This finding is consistent with the early impact report, which found that almost two thirds of those who participated in an I-BEST program went on to attend additional college courses.

Exhibit 2-5: Impact on Participation in Multiple Education Steps

Outcome	Treatment Group	Control Group	Impact (Difference)	Standard Error	Relative Impact	p-Value
Earned any college certificate or degree and subsequently enrolled 4+ months (%)	15.1	6.0	+9.1***	2.4	150.6	<.001
Earned any college certificate or degree after at least one year of study and subsequently enrolled 4+ months (%)	6.1	5.7	+0.4	1.9	6.8	.841
Sample size	315	316				

Source: National Student Clearinghouse.

Note: All hypothesis tests in this table are based on two-sided tests. Statistics in the Relative Impact column represent the impact as a percentage of the control group mean (i.e., 100 * [impact / control group mean]).

Asterisks indicate statistical significance at the: * 10 percent level, ** 5 percent level, *** 1 percent level.

²⁵ These impact estimates include all treatment and control group members including those who did not receive a credential.

3. Impacts on Earnings and Employment

This chapter presents the impact of I-BEST on earnings and employment for the six-year follow-up period. The program's theory of change posits that impacts on college enrollment and credentials will lead to higher earnings and employment. This analysis pre-specified *average quarterly earnings in the 23rd and 24th follow-up quarters* as the confirmatory outcome in the employment domain.

Chapter 2 shows that I-BEST did not have a detectable effect on its confirmatory outcome in the education domain, receipt of a credential requiring a year or more of school, but had a positive impact on short-term credential receipt. Findings of increased short-term credential receipt raise the question of whether I-BEST succeeded in increasing earnings. The three-year impact report (Martinson et al. 2021) reported some positive but inconsistent results for key outcomes related to earnings and employment. With an additional three years of data, we are able to present more conclusive findings about the extent to which I-BEST had an impact on employment and earnings and whether impacts occurred over the longer follow-up period.

3.1 Impacts on Earnings

This section examines the impact of the I-BEST program on earnings over the six-year follow-up period.

I-BEST had no detectable impact on average quarterly earnings in the 23rd and 24th follow-up quarters, the confirmatory outcome for the employment domain. Exhibit 3-1 shows that treatment group members did not earn significantly more than control group members. However, the 90-percent confidence interval on the point estimate is wide, ranging from -\$582 to \$886 largely because of the relatively small sample size. As a result, it is possible that I-BEST produced a positive but undetected effect. In addition, the evaluation did not detect impacts on earning more than \$6,825 per quarter in follow-up quarters 23-24. This threshold corresponds to earnings consistent with full-time employment (35 hours per week) at an entry-level career track wage of \$15 per hour.

Exhibit 3-1: Impact on Average Earnings in Specified Follow-Up Periods

Outcome	Treatment Group	Control Group	Impact (Difference)	Standard Error	Relative Impact	p-Value
Confirmatory Outcome: Average Quarterly Earnings in Quarters 23 and 24 (\$)	\$5,285	\$5,134	+\$152	\$446	3.0	.367
Average quarterly earnings of \$6,825 or more in quarters 23 and 24 (%)^a	37.0	34.3	+2.7	3.8	7.7	.241
Average total earnings (\$) in follow-up:						
Year 1 (quarters 0-3)	\$7,107	\$7,951	-\$844	\$610	-10.6	.168
Year 2 (quarters 4-7)	\$11,825	\$10,671	+\$1,154	\$1,001	10.8	.250
Year 3 (quarters 8-11)	\$15,292	\$13,485	+\$1,807	\$1,240	13.4	.146
Year 4 (quarters 12-15)	\$16,879	\$15,535	+\$1,345	\$1,279	8.7	.147
Year 5 (quarters 16-19)	\$18,241	\$18,507	-\$266	\$1,485	-1.4	.571
Year 6 (quarters 20-23)	\$21,165	\$19,994	+\$1,171	\$1,638	5.9	.237
Years 1-6	\$90,509	\$86,143	+\$4,366	\$5,728	5.1	.446
Sample size	310	300				

Source: National Directory of New Hires.

^aThe \$6,825 cut-point identifies earnings consistent with full-time employment (35 hours/week) at a career-entry wage level (\$15/hour) throughout the quarter.

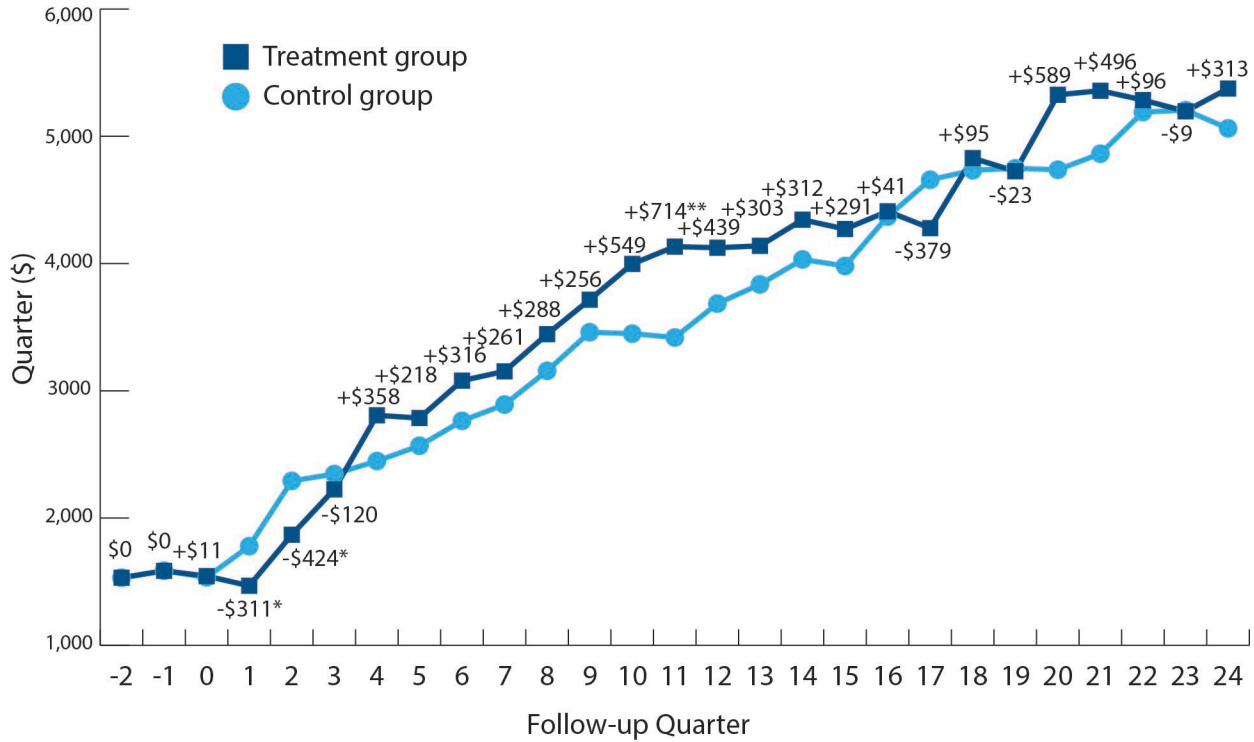
Note: Confirmatory and secondary outcomes are bolded. Other rows are exploratory. Hypothesis tests are one-sided for confirmatory and secondary outcomes and two-sided for exploratory outcomes. Statistics in the Relative Impact column represent the impact as a percentage of the control group mean (i.e., $100 * [\text{impact} / \text{control group mean}]$).

Asterisks indicate statistical significance levels at the: * 10 percent level, ** 5 percent level, *** 1 percent level.

The six-year data show little evidence that earnings impacts observed in the three-year follow-up period were sustained. As shown Exhibit 3-2, although the evaluation finds the evidence of a positive impact in quarter 11 based on the NDNH data, it does not persist or increase.²⁶ Similarly, I-BEST did not produce detectable impacts on earnings for any of the six years in the follow-up period (see Exhibit 3-1 above).

²⁶ The three-year impact report for I-BEST found statistically significant impacts on earnings of \$617 and \$683 at quarters 10 and 11, respectively. The NDNH is updated every quarter with corrections from state unemployment agencies. With these NDNH updates and a revised set of covariates for the regression adjustment (see Appendix Section A.2), the new estimates for these quarters are \$549 and \$714, the first of which is not statistically significant.

Exhibit 3-2: Impact on Quarterly Earnings, by Follow-up Quarter



Source: National Directory of New Hires.

^aThe three-year impact report for I-BEST found a statistically significant impact of \$2,108 on earnings, with a standard error of \$1,263, for the latest available four quarters at that time (Q10-Q13). For this six-year report, the most comparable years are Year 3 (Q8-Q11) and Year 4 (Q12-Q15). Not shown in Exhibit 3-1, we did re-estimate the impact of I-BEST on earnings for the Q10-Q13 span. With the aforementioned NDNH updates and revised covariate selections for regression adjustment, the new estimate for this period is \$2,004, with a standard error of \$1,267. These very slight revisions cause the p-values for the test to slip across the significance threshold, from .096 to .114. Statistical significance levels based on two-sided tests of differences between research groups:

asterisks indicate statistical significance at the: * 10 percent level, ** 5 percent level, *** 1 percent level.

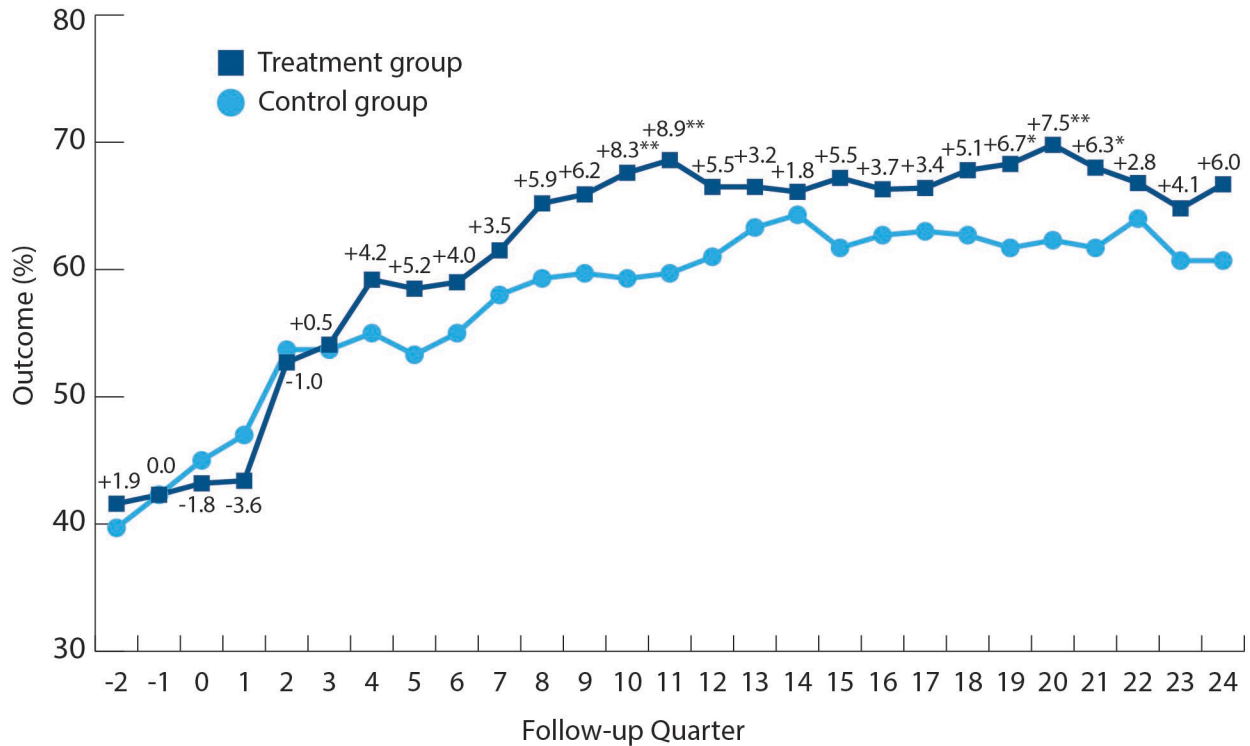
3.2 Impacts on Employment and Job Characteristics

This section summarizes impacts on the overall employment rate and on a series of job-related outcomes including employment in the targeted sectors, job characteristics such as hourly wages and benefits, and self-assessed career progress.

I-BEST produced detectable impacts on employment in some of the 24 quarters following random assignment. Exhibit 3-3 shows that, based on NDNH data, I-BEST generally did not result in detectable impacts on employment during most of the six-year follow-up period.

However, the study detected impacts on employment in some quarters (10, 11, 19, 20, and 21), ranging from 6 to 9 percentage points (all exploratory outcomes). Only in quarter 11 is an impact on earnings detected (see Exhibit 3-3). Given that the impacts on employment are generally positive but only sometimes statistically significant, it is possible that the relatively small sample size made it difficult to detect more consistent impacts.

Exhibit 3-3: Impact on Employment, by Follow-Up Quarter



Source: National Directory of New Hires.
 Statistical significance levels based on two-sided tests of differences between research groups:
 asterisks indicate statistical significance at the: * 10 percent level, ** 5 percent level, *** 1 percent level.

I-BEST did not produce detectable effects on hours worked or hourly wages by the end of the six-year follow-up period. The six-year survey collected information on wages and hours of the current or most recent job of treatment and control group members. On average, both treatment and control group members worked about 25 hours per week (with almost half working 35 hours or more per week) and both groups earned about \$19 per hour among those who worked (Exhibit 3-4). About one third of both groups who worked earned more than \$20 per hour. I-BEST did not produce a detectable impact on being employed at or above any of three wage levels: \$15, \$20, and \$25 per hour. Similarly, impacts of I-BEST on self-reported earnings at the time of the six-year survey interview were not detected (bottom rows of Exhibit 3-4).²⁷

²⁷ Unlike the three-year follow-up survey, the six-year survey did not collect earnings over the entire follow-up period.

Exhibit 3-4: Impact on Hours Worked, Wages, and Weekly Earnings

Outcome	Treatment Group	Control Group	Impact (Difference)	Standard Error	Relative Impact	p-Value
Hours working per week (%)						
Not currently employed	33.7	36.2	-2.5	5.1	-6.9	.620
1-19 hours	6.0	3.7	+2.3	2.4	61.2	.339
20-34 hours	10.9	13.7	-2.8	3.6	-20.3	.438
35+ hours	49.4	46.4	+3.0	5.3	6.4	.575
Average weekly hours	25.2	24.0	+1.2	2.2	5.1	.572
Hourly wages if employed (%)						
\$1-9	3.8	3.3	+0.4	2.5	13.0	.863
\$10-14	21.4	24.4	-3.0	5.6	-12.2	.593
\$15-19	43.2	38.3	+4.9	6.7	12.9	.464
\$20-29	22.1	21.9	+0.2	5.4	0.8	.973
\$30-39	6.7	8.1	-1.4	3.7	-17.6	.696
\$40+	2.8	4.0	-1.1	2.7	-28.4	.681
Total	100.0	100.0				
Average hourly wage if employed (\$)	18.68	19.88	-1.20	1.41	-6.0	.394
Working in a job at or above \$15/hour (%)	49.6	45.7	+3.8	5.4	8.4	.480
Working in a job at or above \$20/hour (%)	19.6	21.5	-1.9	4.5	-8.9	.675
Working in a job at or above \$25/hour (%)	9.8	13.0	-3.2	3.7	-24.4	.387
Average earnings for week prior to interview (\$)	477	476	+2	54	0.3	.977
Median earnings for week prior to interview (\$)	539	460	+79	108	17.2	.465
Sample size (all respondents)	189	169				

Source: PACE six-year follow-up survey.

Note: Rows in *italics* (wage statistics) are conditioned on employment and thus not purely experimental; hence, they are not regression-adjusted. All hypothesis tests in this table are based on two-sided tests. Statistics in the Relative Impact column represent the impact as a percentage of the control group mean (i.e., $100 * [\text{impact} / \text{control group mean}]$).

Asterisks indicate statistical significance at the: * 10 percent level, ** 5 percent level, *** 1 percent level.

In contrast, at the end of three years, the evaluation had detected relatively large impacts on earnings, as well as an impact on those earning more than \$14 per hour, based on the three-year survey. Thus, the six-year survey data (as with the NDNH data) confirm that any increase in earnings detected at the end of the three-year follow-up period did not persist or grow.

I-BEST did not have detectable impacts on several measures of job quality or career progress. The six-year follow-up survey asked study participants about several characteristics of their current job. As Exhibit 3-5 shows, the evaluation did not detect an impact on being currently employed in a job that was full-time or offered health insurance, paid leave, or retirement or pension benefits. Neither did the evaluation detect impacts on perceived career progress or access to a career network. I-BEST did have an impact on working in an occupation targeted by the training, with 13 percent of treatment group members reported doing so compared to 5 percent of control group members.

Exhibit 3-5: Impact on Positive Employment Outcomes and Career Progress

Outcome	Treatment Group	Control Group	Impact (Difference)	Standard Error		p-Value
Positive Employment Outcomes					Relative Impact (%)	
Working full-time (35+ hours/week) (%)	49.4	46.4	+3.0	5.3	6.4	.287
Working in a program-target occupation (%)	12.6	5.0	+7.5***	3.2	149.5	.009
Working in a job offering:						
Health insurance (%)	44.8	42.4	+2.4	5.2	5.7	.645
Paid vacation (%)	45.7	47.0	-1.3	5.3	-2.8	.802
Paid holidays (%)	45.4	44.5	+0.9	5.3	2.0	.863
Paid sick days (%)	46.6	47.4	-0.8	5.3	-1.7	.879
Retirement or pension benefits (%)	43.2	42.6	+0.6	5.4	1.4	.910
All five benefits (%)	33.9	31.5	+2.4	5.1	7.6	.320
Career Progress					Effect Size	
Perceived career progress (mean for 3-item scale w/values ranging 1-4)	3.01	3.03	-0.02	0.11	-0.02	.850
Access to career network (mean number of affirmative responses for 6 Y/N items)	2.94	2.91	+0.03	0.23	0.02	.441
Other Career Indicators					Relative Impact (%)	
Received any promotions in the last 3 years (%)	20.4	26.1	-5.7	4.7	-22.0	.225
Changed employers for better job in last 3 years (%)	10.8	13.2	-2.4	3.8	-18.2	.523
Career connected ^a (%)	55.2	49.9	+5.3	5.4	10.7	.319
Sample size (all survey respondents)	189	169				

Source: PACE six-year follow-up survey.

^a Respondents are defined as "career connected" if they are either: employed full-time, training full-time, or both employed and training at least part-time.

Note: Rows in **bold** identify secondary outcomes. Hypothesis tests are one-sided for secondary outcomes and two-sided for other (exploratory) outcomes. Statistics under Relative Impact represent the impact as percentage of the control group mean (i.e., $100 * [\text{impact} / \text{control group mean}]$). Effect sizes represent the impact as a percentage of the control group standard deviation.

Asterisks indicate statistical significance at the: * 10 percent level, ** 5 percent level, *** 1 percent level.

I-BEST did increase the likelihood of working in an occupation related to training. The evaluation mapped employed study participants' reported occupation of interest at the time of random assignment to the occupation in which they were working when they were surveyed. From this, the percentage of participants working in the target occupational field was calculated. As shown in Exhibit 3-5, among treatment group members, 13 percent were working in a target occupation, compared with 5 percent of the control group members.

As shown in Exhibit 3-6, this difference largely reflects an increased tendency of employed treatment group members to work in healthcare occupations. Among those who were interested in training in healthcare at random assignment, I-BEST increased the fraction working in healthcare six years later (from 14 percent in control group to 27 percent in treatment group). This offsets the reduction in those working in the business and financial field. Previous I-BEST reports note that among training areas included in the I-BEST evaluation, treatment group members most commonly participated in training in healthcare, specifically for a Nursing

Assistant. This is a non-experimental comparison because it includes only treatment and control group members who were working at the time of the six-year survey.

Exhibit 3-6: Percentage of Employed Sample Members Working in the Occupational Field of Interest Reported at Random Assignment

Occupational Field	Treatment Group	Control Group	Impact (Difference)	Standard Error	Relative Impact	p-Value
<i>Information technology</i>	0.5	0.0	+0.5	0.5		.318
<i>Business and financial</i>	8.0	17.7	-9.7*	5.0	-54.9	.053
<i>Office and administrative support</i>	9.1	5.1	+4.0	3.2	77.7	.221
<i>Retail and other sales</i>	9.7	9.3	+0.3	4.0	3.7	.930
<i>Food preparation and serving</i>	4.6	2.9	+1.7	2.5	59.3	.500
<i>Transportation and material moving</i>	7.8	9.9	-2.1	3.8	-20.8	.587
<i>Protective services</i>	2.3	2.0	+0.3	1.8	15.1	.868
<i>Personal care and services</i>	2.9	7.3	-4.3	2.9	-59.5	.143
<i>Healthcare</i>	26.7	13.7	+13.0***	4.9	95.3	.008
<i>Other</i>	28.3	32.1	-3.8	5.4	-11.8	.480
Sample size (employed at follow-up)	137	107				

Source: PACE six-year follow-up survey.

Note: Rows in *italics* are conditioned on employment and thus not purely experimental; hence, they are not regression-adjusted. All hypothesis tests and associated p-values in this table are based on two-sided tests. Statistics in the Relative Impact column represent the impact as a percentage of the control group mean (i.e., 100 * [impact / control group mean]).

Asterisks indicate statistical significance at the: * 10 percent level, ** 5 percent level, *** 1 percent level.

4. Impacts in Other Domains

This chapter presents I-BEST's impact on outcomes in additional domains: financial well-being, other measures of well-being, family structure, and childbearing. To the extent that I-BEST substantially influenced education or economic outcomes, we might expect radiating effects in other domains. However, given I-BEST's limited impacts on employment and earnings (see Chapter 3), impacts on wider aspects of financial well-being seem unlikely. Increases in college enrollment and short-term credential receipt (see Chapter 2) could conceivably affect outcomes in other life domains.

4.1 Impacts on Financial Well-being

This section examines the impact of the I-BEST program on study participants' financial well-being.

I-BEST did not have detectable impacts on a series of measures of financial well-being.

The six-year follow-up survey asked a series of questions about different aspects of financial well-being, such as overall household income, perceived ability to handle a financial emergency of \$400, debt levels, receipt of means-tested public benefits, and financial distress. As Exhibit 4-1 shows, I-BEST did not have a detectable impact on any of these outcomes.

Exhibit 4-1: Impacts on Various Measures of Financial Well-Being at Six Years

Outcome	Treatment Group	Control Group	Impact (Difference)	Standard Error	Relative Impact	p-Value
Income						
Average household income (annualized \$) ^a	48,038	45,003	+3,035	3,650	6.7	.406
Average personal income (annualized \$) ^a	27,011	25,642	+1,369	2,650	5.3	.606
Financial Resilience						
Able to handle a financial emergency of \$400 from savings or checking (%)	50.2	44.3	+5.9	5.5	13.3	.143
Debt						
Debt (average \$)						
Student loans (own name)	2,805	2,661	+145	892	5.4	.871
Student loans (parent's name)	164	6	+158	132	2,627.9	.234
Other debt ^b	8,795	5,283	+3,513	5,489	66.5	.534
Total debt^b	11,852	7,899	+3,953	5,612	50.0	.753
Other Indicators of Need						
Without health insurance (%)	22.4	22.8	-0.3	4.7	-1.5	.944
Extent of financial distress (mean for 9-item Y/N scale)						
Sometimes/often not enough to eat (%)	6.9	7.4	-0.5	2.9	-6.5	.867
Other Sources of Household Support						
Received means-tested public benefits last month (%)	48.5	47.1	+1.5	5.2	3.1	.610
Received Unemployment Insurance or workers' compensation last month (%)	6.1	6.5	-0.4	2.8	-5.8	.894

Outcome	Treatment Group	Control Group	Impact (Difference)	Standard Error	Relative Impact	p-Value
Received Earned Income Tax Credit last year (%)	51.1	42.3	+8.8	5.7	20.7	.127
Sample size (all survey respondents)	189	169				

Source: PACE six-year follow-up survey.

^aEstimate for annualized income obtained by multiplying income for the month prior to the survey by 12.

^bOther debt includes “unsecured” debt (e.g., credit cards) and excludes “secured” debts (e.g., mortgages and car loans).

Note: Rows in **bold** identify secondary outcomes. Hypothesis tests are one-sided for secondary outcomes and two-sided for other (exploratory) outcomes. Statistics under Relative Impact represent the impact as percentage of the control group mean (i.e., 100 * [impact / control group mean]).

Asterisks indicate statistical significance at the: * 10 percent level, ** 5 percent level, *** 1 percent level.

4.2 Impacts on Outcomes in Other Life Domains

This section first reports I-BEST’s impacts on exploratory outcomes related to social supports, stress, and self-reported health. It then examines I-BEST’s impacts on exploratory outcomes related to family structure and childbearing.

I-BEST did not have detectable impacts on social supports, stress, or self-reported health. The evaluation used multi-item scales on the six-year follow-up survey to measure study participants’ self-assessment of their social supports, perceived stress, and life challenges. As Exhibit 4-2 shows, there was no detectable difference between the treatment group and control group on any of these measures. Similarly, there were no detectable impacts on participants’ self-reported health.

Exhibit 4-2: Impact on Other Measures of Well-Being at Six Years

Outcome	Treatment Group	Control Group	Impact (Difference)	Standard Error		p-Value
Challenges, Stress, and Social Support					Effect Size	
Index of life challenges (mean score for 1-5 scale across 5 items)	1.66	1.68	-0.02	0.07	-0.03	.809
Index of perceived stress (mean score for 1-5 scale across 4 items)	2.02	2.04	-0.02	0.09	-0.02	.842
Index of social support (mean score for 1-4 scale across 10 items)	3.62	3.55	+0.07	0.06	0.13	.210
Self-Reported Health					Relative Impact (%)	
Percentage reporting (%)						
Excellent health	15.6	18.2	-2.6	4.07	-14.5	.517
Very good health	49.6	44.7	+4.8	5.60	10.8	.390
Fair health	30.7	32.0	-1.3	5.14	-4.1	.799
Poor health	4.2	5.0	-0.9	2.26	-17.2	.702
All respondents	100.0	100.0				
Sample size (all survey respondents)	189	169				

Source: PACE six-year follow-up survey.

Note: Effect sizes represent the impact as a percentage of the control group standard deviation. All hypothesis tests in this table are based on two-sided tests. Statistics under Relative Impact represent the impact as a percentage of the control group mean (i.e., 100 * [impact / control group mean]). Effect sizes represent the impact as a percentage of the control group standard deviation.

Asterisks indicate statistical significance at the: * 10 percent level, ** 5 percent level, *** 1 percent level.

I-BEST produced few detectable impacts on living situation, family structure, or childbearing. The six-year survey asked study participants questions regarding their living situation and family structure. As Exhibit 4-3 shows, I-BEST resulted in no detectable differences between the treatment and control groups on the living situations of participants or the percentage of participants who became parents since random assignment.

Among those living with a spouse or partner, I-BEST decreased the proportion of those without a child in the household. Given that no effects on marriage (i.e., no change in living with a spouse) or childbearing were detected, this suggests that I-BEST affected the living arrangements for those without children. Specifically, among those with no children, I-BEST resulted in an increase in living on their own rather than with a partner or spouse.

Exhibit 4-3: Impact on Family Structure and Childbearing

Outcome	Treatment Group	Control Group	Impact (Difference)	Standard Error	Relative Impact	p-Value
Living with: (%)						
Parents	19.8	23.9	-4.1	4.7	-17.2	.385
Spouse	36.7	38.6	-1.8	4.9	-4.8	.707
Spouse/partner	47.1	54.5	-7.4	5.2	-13.5	.160
Own/partner's child	49.0	45.8	+3.3	5.4	7.1	.550
Family Structure (%)						
Living with spouse/partner and:						
Own/partner's child	33.4	29.9	+3.5	5.2	11.8	.495
No child	13.7	24.6	-10.9**	4.3	-44.3	.012
Not living with spouse/partner and:						
Own child	15.6	15.9	-0.3	3.6	-1.8	.938
No child	37.2	29.6	+7.7	5.0	25.9	.126
All respondents	100.0	100.0				
Had/partner had birth since random assignment or is currently pregnant (%)	24.2	30.9	-6.7	4.9	-21.7	.173
Sample size (all survey respondents)	189	169				

Source: PACE six-year follow-up survey.

Note: All hypothesis tests in this table are based on two-sided tests. Statistics in the Relative Impact column represent the impact as a percentage of the control group mean (i.e. $100 \times [\text{impact} / \text{control group mean}]$). Asterisks indicate statistical significance at the: * 10 percent level, ** 5 percent level, *** 1 percent level.

5. Conclusion

This report has examined I-BEST's impact on postsecondary education and training, earnings and employment, and other life outcomes six years after random assignment. The study evaluated the I-BEST programs operating in three of Washington State's 34 community and technical colleges and should not be considered representative of the I-BEST program statewide. Moreover, the study's sample sizes limited the ability to detect all but large impacts. This final chapter summarizes key impact findings and discusses possible explanations for them.

5.1 Summary

I-BEST did not produce a detectable impact on the main indicator for college success: *receipt of a credential after eight months of FTE enrollment* (the confirmatory outcome in the evaluation's education domain). Although the program had produced small but statistically significant impacts on such credentials through Q10, but after this point the control group "catches up" to the treatment group. In contrast, impacts were detected on some other outcomes in the education domain. I-BEST significantly increased receipt of short-term college credentials and also increased FTE months of college enrollment. These impacts occurred in the initial three-year follow-up period, with no additional impacts detected beyond that point. Finally, I-BEST increased participation in college enrollment for at least four months (about one semester) after the receipt of a short-term college credential, but this impact did not result in an impact on the receipt of longer-term credentials.

I-BEST did not have a detectable impact on *average quarterly earnings in the 23rd and 24th follow-up quarters* (the confirmatory outcome in the evaluation's employment domain). Thus, though impacts on some earnings measures were detected at the end of the three-year follow-up period, they were not sustained. Although no overall employment was detected, I-BEST did result in a modest shift to jobs in fields targeted in training (primarily to healthcare). Finally, there were no detected impacts on other measures of income and well-being.

These results are generally consistent with past research on Washington's I-BEST program. Non-experimental studies found that the program boosted basic skills test scores, increased college credits, had mixed effects on credential completion, but had no effect on wages or hours worked (Zeidenberg et al. 2010; Jenkins et al. 2009). Studies of replications of I-BEST, with somewhat varying fidelity to the I-BEST model, have also found consistently favorable effects on credit and credential receipt and little evidence of positive employment and earnings impacts (What Works Clearinghouse 2020; Eyster et al. 2018; Modicamore et al. 2018).

5.2 Discussion

Despite increasing the receipt of short-term credentials and college enrollment, I-BEST had no detectable effect on employment and earnings. What accounts for the lack of earnings impacts? Though small sample sizes may have contributed to this result, several other potential reasons for this outcome should also be considered.

Most participants did not achieve educational credentials beyond those provided through the I-BEST program. The evaluation found that I-BEST increased receipt of short-term credentials and college credits, primarily those received through its one- to three-quarter courses. However, it detected no impacts on the receipt of longer-term credentials, or on college enrollment and credential receipt after the third year of follow-up.

The control group caught up to the program group in obtaining long-term credentials. The I-BEST program did result in early impacts on the receipt longer-term credentials, particularly in the second year of follow-up. Over time, however, control group members were also able to obtain these credentials. The findings imply that control group members were eventually able to raise their basic skills, possibly through basic skills courses at the college or elsewhere, sufficiently to enroll college, but doing so took longer than it did treatment group members in I-BEST. Thus, although the I-BEST program speeded the receipt of longer-term credentials, it did not affect the proportion of who received them overall.

Occupations targeted by I-BEST may not have paid well enough to appreciably raise earnings. I-BEST generally appears to have trained participants for jobs with similar levels of pay to those that less educated workers are likely to obtain on their own. For example, the most common program attended in this study was Nursing Assistant, which typically qualifies completers for low-paying positions.²⁸ A program can target an initial low-wage job with the expectation that students can advance to the next level of training on the pathway, and that next training would then lead to better-paying jobs. However, as discussed, the additional training that might have prepared students for higher-paying jobs generally did not occur.

The I-BEST programs may not have done enough to connect graduates with employment or longer-term education programs. I-BEST programs in the study primarily focused on providing occupational training to obtain credits and credentials. Providing strong employment services to help participants find jobs was not an explicit focus or formal activity. As discussed in previous reports, I-BEST occupational training instructors, some of whom had industry experience, sometimes provided informal, individualized job search assistance (Glosser et al. 2018). However, such informal job search assistance was the exception, not the rule. Similarly, though the I-BEST program included student advising, it focused on issues arising during the program; and did not explicitly emphasize transitions to long-term educational programs.

5.3 Implications for Programs

Given the six-year impact findings, how might I-BEST, or other multi-step training programs, support the completion of training and movement into more advanced education and higher-paying jobs? This section offers some possible directions to improve participant outcomes based on the findings.

²⁸ Nursing assistants earned on average \$13.29 per hour in the United States in 2016, equivalent to \$27,650 in annual earnings assuming full-time work (Loprest and Sick 2018).

Stronger advising and guidance to help students transition from short workforce training programs to longer college programs providing regular college credit and leading to degrees. The results from this evaluation show limited transitions from short-term occupational programs to those providing longer-term credentials and degrees that could lead to higher earnings. Beyond I-BEST, in response to generally low student completion rates, improved student advising has gained increased attention as an important strategy in helping community college students attain longer-term education credentials and career goals (Bailey et al. 2015; CCCES 2018; Deutsch et al. 2021). Sometimes called “guided pathways,” these efforts aim to improve guidance and support at two-year colleges to facilitate the transition to the labor market or to four-year colleges (Causey et al. 2020). For I-BEST, it may be helpful to build off these existing, systematic efforts to improve supports and guidance in community colleges to improve student outcomes.

Improved connections between the I-BEST programs and jobs. A range of evidence shows occupational training programs, including those studied as part of the PACE evaluation, often have strong positive education impacts but limited effects on earnings (Peck et al. forthcoming). While the cause for this pattern of impacts is not clear, a lack of strong employment supports has been identified as a potential area for program improvement in some career pathway programs (Gardiner and Juras 2019). This may be particularly true for the I-BEST program, which did not include formal employment services. Strengthening job placement services and connections with employers in the relevant industries could benefit I-BEST students, who are primarily focused on earning workforce credits and credentials. Employment services could involve partnerships with the workforce system and other organizations that bring significant expertise on labor market information and employer needs. In addition, direct engagement with employers hiring workers with those credentials obtained by I-BEST students could help to create a clear path to employment.

Targeting high wage, in-demand jobs, particularly for the initial education step. Providing training for high-demand, well-paying industries is a central tenet of the I-BEST program. However, as discussed, few students progress past the initial education courses and credentials. It may be useful to target jobs with high wages in that first step, rather than for those that pay well after the receipt of longer-term credentials. Moreover, a broad range of occupations can be targeted by I-BEST and changes in the demand for workers in specific occupations can occur over time. This indicates that a continual assessment of local employer demand and wage levels and corresponding adjustments to I-BEST offerings may be helpful in improving students' earnings trajectories. While some attention is given to the issue in I-BEST, these results that further consideration may be warranted.

5.4 Open Questions

Washington State's I-BEST model focuses on helping students with low basic skills advance more quickly to college-level occupational programs. Since its inception the I-BEST program has attracted the attention of educators, policymakers, and researchers as a promising strategy to improve education and employment outcomes for low-skilled adults. Because of this interest

in the model and particularly its team-teaching approach, as discussed above, several states and localities have aimed to replicate the model.

The PACE results are the first experimental evaluation of the I-BEST model. While the evaluation has some limitations, particularly the limited number of participating colleges and the small sample size, the results are consistent with past studies. Overall, the results indicate that enhancements to the I-BEST approach may be needed to improve long-term employment and earnings for students.

Given the limited effects on employment and earnings, this report suggests several changes that might improve program results. These include: (1) strengthened student advising, (2) enhanced job placement efforts and connections with employments, and (3) attention to wage levels and employer demand for the initial job on the pathway. Additional research would likely be needed to determine whether any of these strategies, individually or combination, would improve student longer-term education and employment outcomes in the I-BEST program.

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Supplemental Exhibit

Exhibit S-1: I-BEST Impacts on Earnings Preceding and During COVID-19 Pandemic

Calendar Quarter	Estimated Impact	Standard Error	p-Value
2018 Quarter 1	\$337	\$412	0.414
2018 Quarter 2	\$515	\$425	0.225
2018 Quarter 3	\$297	\$426	0.486
2018 Quarter 4	\$342	\$468	0.465
2019 Quarter 1	\$574	\$444	0.196
2019 Quarter 2	\$221	\$475	0.641
2019 Quarter 3	\$262	\$480	0.585
2019 Quarter 4	\$496	\$510	0.331
2020 Quarter 1	\$360	\$494	0.466
March 2020: World Health Organization declares COVID-19 a pandemic and the President of the United States declares COVID-19 a National Emergency			
2020 Quarter 2	\$501	\$479	0.296
2020 Quarter 3	\$426	\$507	0.401
2020 Quarter 4	\$171	\$571	0.764

Source: National Directory of New Hires.

Sample size: 610.

Note: All hypothesis tests and associated *p*-values in this table are based on two-sided tests.

As discussed in Section 1.4, random assignment began in November 2011 and continued until September 2014. Thus, the calendar quarters in this table represent different follow-up quarters, depending on when participants were randomly assigned. For the earliest enrollees (those enrolled in quarter 4 of 2011), the exhibit represents quarters 25 to 36 since random assignment. For the latest enrollees (those enrolled in the third quarter of 2014), the exhibit represents quarters 14 to 25 since random assignment.