



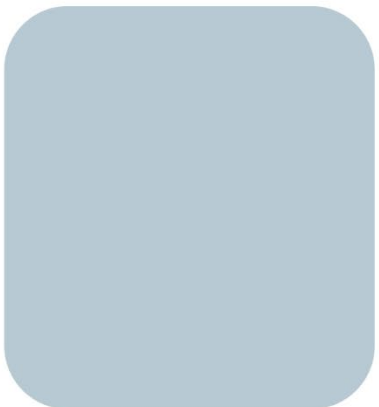
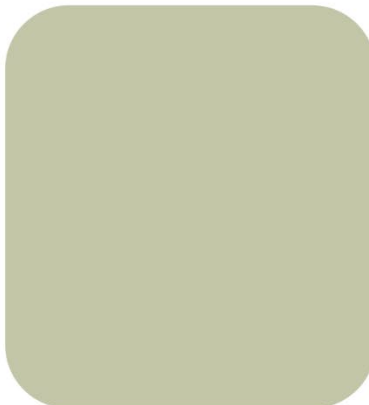
Instituto del Progreso Latino's Carreras en Salud Program

Three-Year Impact Report



OPRE Report 2021-97

May 2021



PACE
Pathways for Advancing
Careers and Education

Instituto del Progreso Latino's Carreras en Salud Program: Three-Year Impact Report

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

OPRE Report 2021-97

May 2021

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Overview

This report documents the impacts three years after random assignment for the Carreras en Salud program, operated by Instituto del Progreso Latino in Chicago, Illinois. Carreras en Salud aims to help low-income, low-skilled Latino adults access and complete occupational training in nursing that can lead to increased employment and higher earnings. 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.

Carreras en Salud consists of five elements:

- 1) a structured healthcare training pathway, starting at low skills levels;
- 2) contextualized and accelerated basic skills and English as a Second Language (ESL) instruction;
- 3) academic advising and non-academic supports;
- 4) financial assistance; and
- 5) employment services.

The evaluation of Carreras en Salud used a rigorous experimental design. An initial study measured short-term impacts at 18 months after randomization. This evaluation, the Career Pathways Intermediate Outcomes Study, extends the follow-up period to three years for programs in the PACE project. Future reports produced as part of the Career Pathways Long-term Outcomes Study will extend the follow-up period further.

Research Questions

Three years after random assignment, what were the effects of Carreras en Salud on

- education outcomes?
- entry into career-track employment and higher earnings?
- individual and family well-being, including income and other life outcomes?

Purpose

Carreras aims to provide training to low-income Latinos with a seven-course pathway that starts with Career ESL and concludes with Licensed Practical Nurse (LPN). It incorporates a range of academic and non-academic services and supports to help participants complete their first course and advance to subsequent ones. This research was undertaken to evaluate whether Carreras was successful in providing training to low-income, low-skilled adults and whether the program's efforts led to impacts on credentials, earnings, healthcare employment, and other life outcomes.

Key Findings

Analyses in this report indicate that after three years, Carreras en Salud:

- ***Increased by 3 percentage points receipt of college credentials requiring at least one year of study, the confirmatory outcome in the education domain for the three-year impact study.*** Twelve (12) percent of the treatment group received such a credential, compared to 9 percent of the control group. LPN is the Carreras course of study that fits this category.
- ***Increased by 12 percentage points receipt of any college credential.*** Twenty-nine (29) percent of the treatment group received a college credential compared to 17 percent of the control group. The Carreras program also increased receipt of a healthcare credential from any type of school by 13 percentage points.
- ***Increased college enrollment in almost every follow-up quarter but had no detectable effect on full-time enrollment.*** Treatment group members were significantly more likely than control group members to be enrolled in a two- or four-year college from quarter 3 onwards, except for the most recent quarter (quarter 13). The quarterly impact ranged from 5 to 10 percentage points. The proportion of study participants enrolled full-time never exceeded 7 percent for the treatment group and 6 percent for the control group.
- ***Had no detectable impact on average quarterly earnings in follow-up quarters 12-13, the confirmatory outcome in the earnings and employment domain for the three-year impact study.*** Carreras did not have a positive impact on average earnings in any quarter in the follow-up period, and it had a negative impact on average earnings in six quarters, including the quarter of random assignment.
- ***Had no detectable impact on employment during the three-year follow-up period.*** The same proportion of treatment and control group members (65 percent) were employed at the time of the three-year follow-up survey.
- ***Had no detectable impact on access to career supports, confidence in career knowledge, or family economic well-being.*** The evaluation found no impact on career knowledge and career supports. Nor were there detectable differences on a variety of measures of family economic well-being, including health insurance coverage from any source, receipt of means-tested public benefits, unsecured debt, or financial hardship.

Methods

To assess the effectiveness of Carreras, 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, Carreras staff randomly assigned 800 program applicants (402 treatment, 398 control). The impact study used data from a follow-up survey conducted three years after randomization, earnings records from the National Directory of New Hires, college

enrollment data from the National Student Clearinghouse, and Instituto program records. The study measured impacts on outcomes three years after random assignment for all measures and as much as four years for select education and earnings outcomes with available administrative data.

Executive Summary

Instituto del Progreso Latino in Chicago, Illinois, implemented the **Carreras en Salud** (“Careers in Health”) program to help low-income, low-skilled Latino adults access and complete healthcare occupational training that could lead to increased healthcare employment and higher earnings. In doing so, Instituto also aimed to increase the supply of bilingual healthcare workers in the Chicago area.

Abt Associates is evaluating Carreras 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. Data sources include baseline surveys; 18-month and three-year follow-up participant surveys; earnings and employment data from the National Directory of New Hires; school enrollment data from the National Student Clearinghouse; and Instituto program records.

An initial report described implementation and short-term (18-month) impacts on education and employment-related outcomes. This evaluation, the Career Pathways Intermediate Outcomes Study, extends the follow-up period to three years for programs in the PACE project, reporting Carreras’s impacts on educational attainment, earnings and employment, and other life outcomes.¹ Future reports produced as part of the Career Pathways Long-term Outcomes Study will extend the follow-up period further.

The Carreras en Salud Evaluation

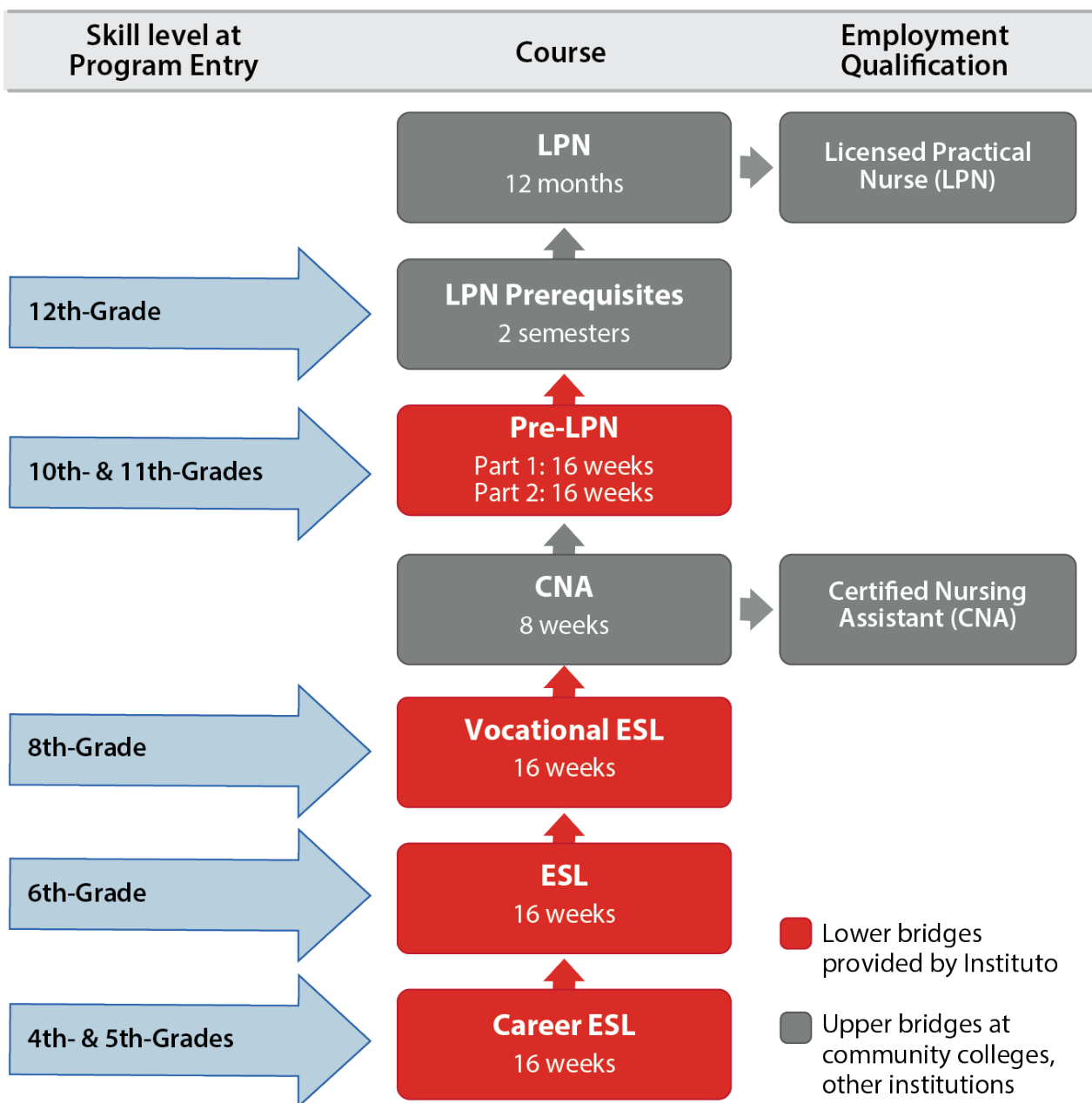
Carreras helps participants improve their basic skills and enroll in occupational training to gain the necessary occupational skills and credentials for jobs as a Certified Nursing Assistant (CNA) and Licensed Practical Nurse (LPN). As shown in Exhibit ES-1, the program features a series of seven pathway steps culminating in the LPN—from basic skills instruction (for participants who need it, designed specifically for those interested in nursing occupations) through college-level instruction leading to the two credentials. The key program features are:

- 1) a structured healthcare training pathway, starting at low skills levels;
- 2) contextualized and accelerated basic skills instruction;
- 3) academic advising and non-academic supports;
- 4) financial assistance; and
- 5) employment services.

Our cost analysis found that the Carreras program spent an average of \$4,949 per treatment group member providing these services and financial assistance.

¹ All outcomes are measured at least three years after random assignment. For some earnings and education outcomes, administrative data are available for four years after random assignment.

Exhibit ES-1: Carreras en Salud Nursing Pathway



PACE Project Evaluation

Abt is using an experimental research design to estimate the impact of access to Carreras on participants' postsecondary education and training, earnings and employment, and other life

outcomes.² Between November 2011 and September 2014, a total of 800 applicants to the program consented to participate in the evaluation and completed baseline surveys. Staff randomly assigned 402 to the treatment group and 398 to the control group. The evaluation was designed to capture the effects of the program overall rather than the separate contributions of its components.³

An initial implementation and short-term impact report at 18 months after random assignment indicated that Carreras operated largely as designed. The “lower bridge” courses (red boxes in Exhibit ES-1) were offered at Instituto using Carreras instructors and specially designed curricula that infused basic skills and English as a Second Language (ESL) education with healthcare content. City Colleges of Chicago campuses provided the “upper bridge” courses (grey boxes in the exhibit) using standard college curricula.

Short-term Findings

Within that short-term follow-up period, 92 percent of applicants randomized to the treatment group participated in the Carreras program. The most common courses were in the middle of the pathway: Vocational ESL, CNA, Pre-LPN, and LPN Prerequisites. Few attended the lower-level ESL courses (Career ESL and ESL) or the upper-level LPN course. About 40 percent of treatment group members progressed from their initial pathway course to a second one, most commonly from ESL or Vocational ESL to CNA or Pre-LPN.

Carreras case managers, academic advisors, and employment specialists worked with treatment group members to arrange support services, address personal issues that could interfere with program completion, and provide academic guidance and tutoring. Responses to an 18-month follow-up survey show that significantly more treatment group members received career counseling, help arranging supports for school/work/family, and job search assistance including from Carreras than control group members received from non-Carreras sources. Still, a minority of survey respondents reported any receipt—17 percent to 38 percent depending on the type of support.

As of 18 months after random assignment, Carreras had a statistically significant effect on the average total hours of occupational training received, the short-term confirmatory outcome selected to assess whether the program was on track to meet its longer-term education and earnings goals. Treatment group members reported attending 210 hours of occupational training, compared with 164 hours for the control group—a statistically significant 46-hour

² Such a research design randomly assigns study participants either to a treatment group that can access the program or to a control group that cannot but can access other services available in the community, then compares their outcomes. Such a design ensures that any estimated impacts can be attributed to program access rather than to unmeasured differences between the treatment group and control group.

³ Designers of Carreras en Salud deliberately included a package of multiple strategies (e.g., assessment, instruction, supports, and employment connections) that they hypothesized were needed to produce desired impacts. Thus, the evaluation focuses on whether the program as a whole, when implemented in real-world conditions, produced an impact.

impact. The program had a positive impact on credential receipt, primarily credentials awarded by a licensing or certification organization. Carreras also decreased reported financial hardship.

Key Findings from the Current Report

This report summarizes the impact of Carreras en Salud on postsecondary training, earnings and employment, and other life outcomes approximately three years after random assignment.

Participation in Education and Training

Of the Carreras nursing pathway courses, two result in credentials (CNA and LPN) and five prepare participants for those two credential-bearing courses.

- ***The treatment group's participation in higher-level courses grew over the three years of follow-up, although remained small overall.***

Carreras had high levels of participation. According to Instituto program records, 93 percent of treatment group members participated in one or more courses during the three-year follow-up period (compared with 92 percent at 18 months), and 44 percent (compared with 40 percent) enrolled in two or more courses. Whereas the short-term report showed that less than 1 percent of participants enrolled in the LPN course within the first 18 months, at three years this proportion had grown to 7 percent. That growth indicates that a subset of treatment group members continued to move up the nursing pathway, in this instance from LPN Prerequisites to LPN. Still, despite large proportions of treatment group members attending the Pre-LPN and LPN Prerequisites courses, few reached the highest-level LPN course within the follow-up period available for this report.

Impacts on Postsecondary Education and Training

Carreras continued to have impacts on credential receipt after the impacts observed at 18 months; that is, the program's impact persisted on receipt of college credentials taking less than a year of study to earn. At three years after randomization:

- ***Carreras had a small, statistically significant impact on receipt of a college credential requiring at least one year of study to earn, pre-selected as the confirmatory outcome in the education domain at this later follow-up point.***

Carreras increased by 3 percentage points the receipt of college credentials requiring a year or more of study, which for Carreras participants is an LPN (Exhibit ES-2 below). Twelve (12) percent of the treatment group received a college credential of this length, compared to 9 percent of the control group.⁴ Carreras had no impact on receipt of associate degrees (an LPN is not an associate degree).

⁴ These impacts on the confirmatory education outcome are estimated based on responses to the three-year follow-up survey. Self-reported credentials requiring at least a year of college to earn could include credentials other than LPN if the study participant opted to enroll in a training program not on the nursing pathway. Thus, the difference between the survey findings (12 percent) and the Instituto program records (7 percent) is due to the different measures and data sources.

Exhibit ES-2: Three-Year Impacts on Credentials

Outcome	Treatment Group	Control Group	Impact (Difference)	Standard Error	Relative Impact	p-Value
Confirmatory Outcome: Received college credential taking 1 or more years of study (%)	12.0	8.8	+3.2*	(2.2)	+36.3*	.078
Received associate degree or higher (%)	5.0	4.2	+0.9	(1.6)	+2.1	.587
Received any college credential (%)	29.0	17.0	+12.0***	(3.2)	+70.5***	<.001
Received exam-based certification or license (%)	40.2	17.6	+22.6***	(3.7)	+128.4***	<.001
Received healthcare credential from a college (%)	25.8	15.1	+10.7***	(3.1)	+70.9***	<.001
Received a healthcare credential from any type of school (%)	33.7	21.3	+12.5***	(3.5)	+58.7***	<.001
Sample size	341	299				

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

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

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

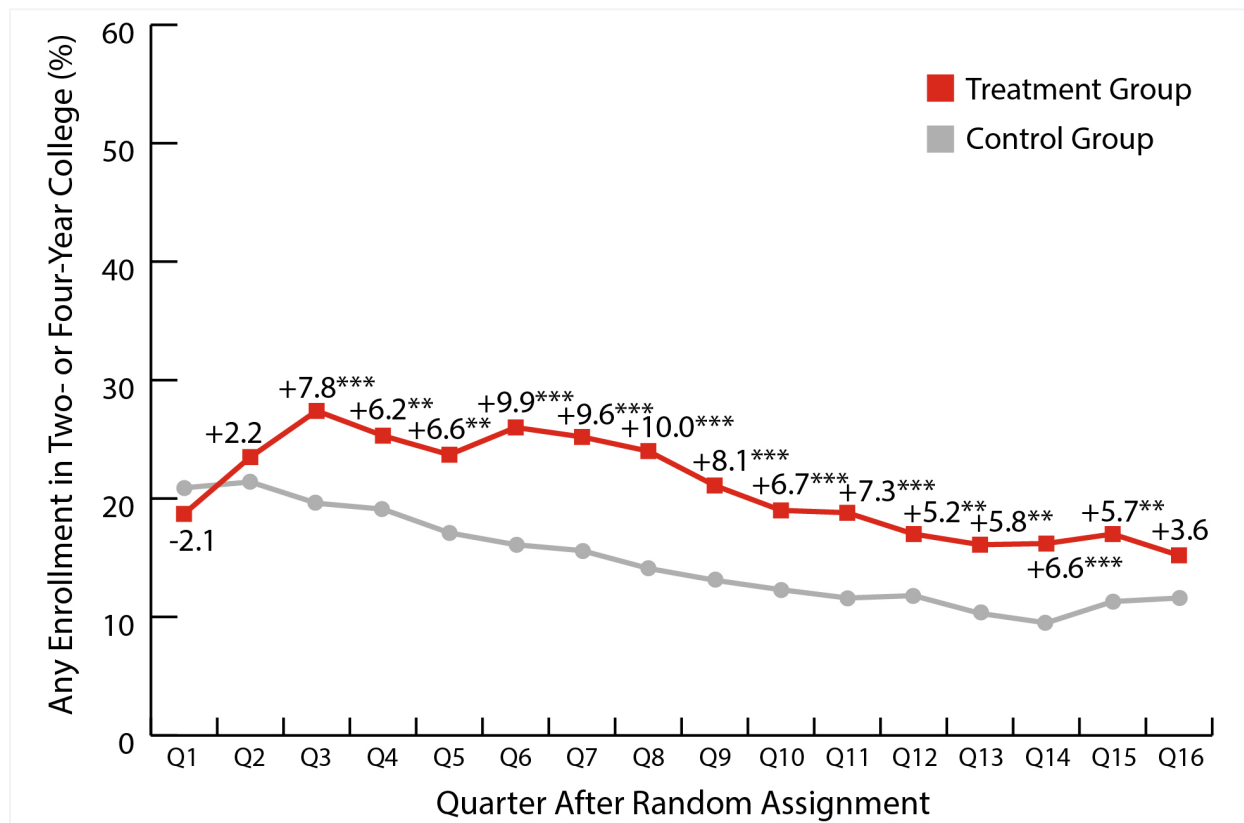
■ ***Carreras had a 12 percentage point impact on receipt of any college credentials.***

Carreras increased receipt of any college credential by 12 percentage points, from 17 percent to 29 percent, a relative impact of 71 percent (Exhibit ES-2 above). The program also increased receipt of a healthcare credential from any type of school by 13 percentage points. Despite these positive gains, though, less than one third of treatment group members earned a college credential. This figure includes longer-term credentials such as LPN, shorter-term ones such as CNA (because Carreras participants enrolled in City Colleges of Chicago for these credentials per the program design, making them college credentials too), as well as various other credentials not related to the Carreras pathway.

Exhibit ES-2 also shows that Carreras had a 23 percentage point impact on receipt of an exam-based certification or license. Both practical nurses and nursing assistants must pass a licensing exam to work as LPNs and CNAs, respectively.

■ ***Carreras had an impact on college enrollment.***

As Exhibit ES-3 below shows, in quarters 3 through 15, significantly more treatment group members enrolled in college than did control group members; that is, they attended upper bridge courses not offered at Instituto. Still, enrollment never exceeded 27 percent for the treatment group and 21 percent for the control group, based on National Student Clearinghouse administrative data.

Exhibit ES-3: Impact on Enrollment in Two- or Four-Year College in Successive Follow-up Quarters, Four Years after Randomization

Source: National Student Clearinghouse.

Sample size: treatment group 401; control group 398.

Statistical significance levels based on two-tailed tests of differences between research groups: *** 1 percent level; ** 5 percent level; * 10 percent level.

■ ***Carreras had no detectable impact on college credits.***

Carreras did not have a detectable impact on the number of college credits earned during the three-year follow-up period. Moreover, the number of credits earned at three years after random assignment is small (averaging 15 credits for the treatment group, 13 for the control group), representing about one full-time semester. The lack of impact on college credits among the treatment group reflects in part the time many participants spent in lower bridge courses provided at Instituto, which are not offered in colleges and thus not college credit bearing.

Part-time college attendance is another reason for limited credit accumulation. Participants who attend part-time accumulate credits more slowly than full-time students do. Treatment and control group members were both enrolled in the equivalent of just five full-time months over the three-year follow-up period.⁵

⁵ The proportion of treatment group members enrolled in college who were part time ranged from 65 percent in Quarter 17 to 85 percent in Quarter 2 (not shown).

Impacts on Earnings and Employment

Carreras's small to moderate impact on credentials generated little detectable impact on employment, earnings, or other life outcomes based on up to four years of follow-up data.

- ***Carreras had no detectable positive impact on average quarterly earnings in follow-up quarters 12-13, the pre-selected confirmatory outcome in the earnings and employment domain at this later follow-up point.***

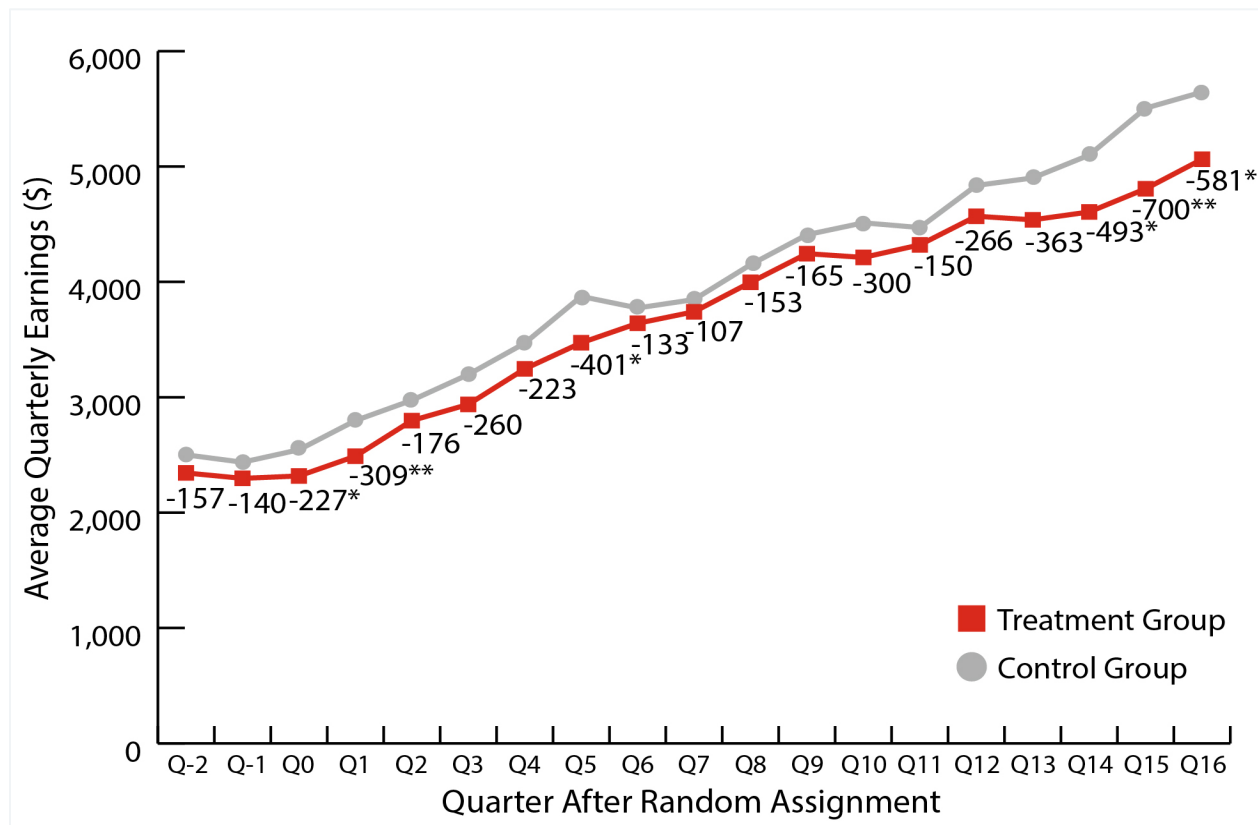
Exhibit ES-4 shows earnings by quarter from before random assignment began through quarter 16, using National Directory of New Hires administrative data. The evaluation did not detect an impact on average quarterly earnings in quarters 12 and 13. Nor did Carreras have a positive impact on earnings in any quarter. In quarter 0 (the random assignment quarter), quarter 1, and quarter 5 there were negative impacts on earnings, ranging from -\$227 to -\$401. This is not unexpected given that more treatment group than control group members were enrolled in training during these quarters.

There were no additional detectable impacts on quarterly earnings until quarters 14 to 16, when again Carreras had a negative impact, ranging from -\$493 to -\$700; again, more treatment group than control group members were enrolled in training during these quarters, and thus likely had less time for work.

- ***Carreras had no detectable impact on employment during the three-year follow-up period.***

The same proportion of treatment and control group members were employed at the time of the three-year follow-up survey (65 percent). There were no detectable impacts on other characteristics of employment. These included jobs that pay at least \$14 per hour,⁶ jobs that require at least mid-level skills, number of hours worked per week, type of shift (straight or varying), availability of health insurance, or a supportive working environment.

⁶ We tested whether the program could generate a moderate initial boost in wages with the expectation for further impact over time (a key assumption in the Carreras theory of change). We defined these jobs using the 60th percentile of the wage distribution for control group members who were employed, which corresponded to about \$14 per hour.

Exhibit ES-4: Impact on Average Earnings in Successive Follow-Up Quarters, Four Years after Randomization

Source: National Directory of New Hires.

Sample size: treatment group: 391; control group: 384.

Statistical significance levels based on two-tailed tests of differences between research groups: *** 1 percent level; ** 5 percent level; * 10 percent level.

Impacts on Other Life Outcomes

- ***Carreras had no detectable impact on access to career supports, confidence in career knowledge, or family economic well-being.***

The research team used multi-item scales on the three-year follow-up survey to measure career knowledge and career supports. There was no detectable difference between the treatment and control group on any of these scales. Nor were there detectable differences on a variety of measures of family economic well-being, including the study's pre-selected secondary outcomes (health insurance coverage from any source, receipt of means-tested public benefits, unsecured debt of \$5,000 or more, or financial hardship).

Possible Explanations for Employment and Earnings Results

The three-year impact study found impacts on training but no impacts on employment and earnings. The report explores several possible explanations:

- **Two steps on the nursing pathway are associated with a credential; a minority of treatment group members earned credentials because most did not reach pathway steps.**

The Carreras program focuses on two credentials: CNA and LPN. Five pathway courses do not result in a credential, instead preparing participants for the college-level CNA and LPN courses. Per the program design, participants enter the pathway based on their skills levels and complete the necessary preparatory courses, before proceeding to a credential-bearing step. To earn a CNA or LPN credential requires completing the course of study and passing the licensing exam. By three years after random assignment, only 40 percent of the treatment group had received an exam-based certification—significantly more than the control group, but still a minority.⁷

- **Few treatment group members earned a longer-term credential associated with well-paying jobs.**

The longer-term credential on the Carreras pathway, an LPN, is associated with much higher wages than is the shorter-term CNA credential. The average LPN earns about \$55,000 per year, or \$26.51 per hour, in the Chicago area, although the starting wage is likely lower.⁸ Significantly more treatment group than control group members earned an LPN (12 percent, compared with 9 percent), but the proportion of the treatment group that did so is small and the resulting 3 percentage point impact is likely too little to produce an earnings impact.

The average CNA earns considerably less than an LPN. The average annual and hourly wages for CNAs in the Chicago area (\$29,000 and \$14.71, respectively) do not differ substantially from annual and hourly wages of entry-level positions outside of the healthcare field, such as in food preparation and serving jobs (\$28,000 and \$13.51, respectively).⁹ Due to the low earnings potential for CNAs, program staff consider it to be only the career pathway's *initial* employment-related credential, not its end point. Given the large number of treatment group members who enrolled in the CNA course relative to the LPN course, and the CNA's associated low wages, an earnings impact of Carreras three years after random assignment is unlikely.

⁷ For many participants, moving from CNA to LPN is challenging. LPN programs take considerably more time to complete (in the case of Carreras, 12 months after completing all pre-requisites). They also require higher skills for admission. The Carreras pathway accounts for this skill differential by building in the lower bridge Pre-LPN course and the upper bridge LPN Prerequisites course. Given that most participants attend training part time, the commitment to prepare for LPN training and then complete it can span several years.

⁸ May 2018 mean annual wage (\$55,140) and hourly (\$26.51) for Chicago-Naperville-Elgin MSA <https://www.bls.gov/oes/current/oes292061.htm>.

⁹ CNA May 2018 mean annual wage for Chicago-Naperville-Elgin MSA (\$29,890) and hourly (\$14.37) <https://www.bls.gov/oes/current/oes311014.htm>. Other occupations May 2018 mean annual wage for Chicago-Naperville-Elgin MSA (\$28,090) and hourly (\$13.51) <https://www.bls.gov/oes/current/oes390000.htm>. Examples include Barbers; Hairdressers, Hairstylists, and Cosmetologists; Manicurists and Pedicurists; Childcare Workers; and Exercise Trainers and Group Fitness Instructors.

- **Impacts on education and training may depress earnings during enrollment.**

Carreras had negative impacts on earnings in six quarters, including the random assignment quarter. While in training or college, people often work less and so earn less money. Carreras's effect on training (increased college enrollment, quarters 3-15) likely has that effect, which explains the program's negative impact on its participants' earnings. In fact, the quarters with negative impacts on earnings were usually the quarters with positive impacts on training.

- **Three years may not be a sufficiently long follow-up to detect longer-term credential and earnings impacts.**

Most treatment group members enrolled part-time in training. Carreras designed the lower bridges provided at Instituto to accommodate working participants, and thus they were part-time. Although the upper bridges provided at City Colleges of Chicago often were full-time, few treatment group members (or control group members) attended college full-time during the three-year follow-up period.

Perhaps longer-term follow-up will show a greater impact on longer-term credentials. At the end of the three-year follow-up period, significantly more treatment group members (20 percent) than control group members (14 percent) were enrolled in college. Moreover, significantly more treatment group members were enrolled in college through most of the three-year follow-up period, including the most recent quarters available. In addition, according to Instituto program records, 10 percent of treatment group members who reached the LPN course were still participating in it at the end of the three-year follow-up period. A few, too, were enrolled in Pre-LPN and LPN Prerequisites, the two courses that prepare students for the LPN course.

Looking Ahead

A future report from the Career Pathways Long-term Outcomes Study will document the impact of Carreras en Salud on training and earnings/employment approximately six years after random assignment, using a combination of six-year follow-up survey data and administrative data. The analyses presented above suggest that there may be additional credential impacts coming. The six-year report also will determine whether enrollment impacts (and associated foregone earnings) decline and additional credential impacts appear—and if so, whether that leads to greater labor market success for program participants.

1. Introduction

The demand for healthcare workers is expected to grow in the years to come. The federal Bureau of Labor Statistics (2019) projects that healthcare occupations will add more jobs through 2026 than any other occupational group, largely due to an aging population. The healthcare sector's projected growth rate, 18 percent, is much faster than any other occupational group's.

Community-based organizations, often in partnership with community colleges and other training providers, are offering a range of training programs tailored to this increased demand in the healthcare sector. Many of these programs are organized as pathways that train students for entry-level occupations, such as Certified Nursing Assistant (CNA), leading to higher-level positions, such as Licensed Practical Nurse (LPN). These programs range in length from a few weeks to two years; and they result in a variety of credentials, from occupational certifications to associate degrees. Moreover, programs aim to enroll a variety of students—in particular non-traditional students, who are older, likely to be combining work and school, parents, and often English language learners. To do so, programs offer accelerated coursework and flexible formats (e.g., online, at locations in the community), and they incorporate contextualized basic skills remediation and English as a Second Language (ESL) courses.

The **Carreras en Salud** (“Careers in Health”) program, operated by Instituto del Progreso Latino in Chicago, Illinois, is designed to help low-income and low-skilled Latino adults improve their basic skills in order to enroll in and complete occupational training to become CNAs and LPNs.¹⁰ Abt Associates is evaluating Carreras as part of the **Pathways for Advancing Careers and Education (PACE)** project. Funded by the Administration for Children and Families (ACF) within the U.S. Department of Health and Human Services, PACE is assessing the implementation and impacts of nine programs aimed at helping low-income adults train for jobs in sectors with potential for career growth (see *Programs in PACE* box).

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

- (1) **Academic and non-academic assessment** to identify student needs and factors that may facilitate or hinder academic success, so staff can make appropriate placements and referrals;

¹⁰ ACF's Health Profession Opportunity Grants (HPOG) Program provides healthcare-related training to low-income adults. A first round of grants was awarded in 2010 (HPOG 1.0). Instituto del Progreso Latino was a sub-grantee to the Will County Workforce Investment Board, and thus was partially funded by HPOG 1.0. For more: <https://www.acf.hhs.gov/ofa/programs/hpog>.

- (2) **Innovative basic skills and occupational skills instruction** to make education and training more manageable for nontraditional students who are likely to be balancing school and work (e.g., accelerated courses) and who may have low levels of basic skills (e.g., contextualization);
- (3) **Academic and non-academic supports** (e.g., academic advising, tutoring, financial support, and referrals to support services) to help students succeed in their current academic step and to proceed to and complete subsequent steps; and
- (4) **Strategies to connect participants and employers** during the program, such as internships, or post program, such as employment workshops.

Because the nine programs vary in their target populations, mix of components, and occupational fields, PACE is evaluating each program separately.¹¹

The research team selected Carreras en Salud for the evaluation because it was an established program (launched in 2005) with a well-defined career ladder linked to specific jobs in the labor market and a clear articulation to the next course. The model grew out of research that found sector-based programs that focus on building skills for industries projected to grow in the region produced strong outcomes in terms of earnings and employment in quality jobs, such as those with health insurance, vacation time, career ladders, and other benefits (Estrada 2010).

This report documents the impact of Carreras en Salud on postsecondary training, earnings and employment, and other life outcomes of participants through approximately three years after study enrollment and random assignment. An initial report, also produced by Abt, shared

Programs in PACE

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

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

[^]Program partially HPOG funded.

¹¹ PACE-related documents, including profiles and implementation and early impact reports for each program, can be found at <https://www.acf.hhs.gov/opre/project/pathways-advancing-careers-and-education-pace-2007-2018> and www.career-pathways.org.

findings on implementation and short-term (18-month) impacts on education, self-assessed career progress, and related outcomes (Martinson et al. 2018).

This evaluation, the Career Pathways Intermediate Outcomes Study, extends the follow-up period to three years for programs in the PACE project. Future reports produced as part of the Career Pathways Long-term Outcomes Study will extend the follow-up period further.¹²

The remainder of this chapter describes Carreras's key components and context (Section 1.1). It then summarizes findings from the short-term impact report as context for this three-year report (Section 1.2). Finally, it provides a roadmap to the remainder of the report (Section 1.3).

1.1 The Carreras en Salud Program

Instituto del Progreso Latino, a nonprofit organization with a history of serving the Latino population in Chicago, launched Carreras en Salud in 2005. The program aims to address the shortage of Latinos in the healthcare field and to help low-income Latinos improve their basic skills and enroll in and complete training for nursing occupations. Instituto staff designed Carreras to prepare participants to be accepted, attend, and complete college-level CNA and LPN training courses. Carreras also developed and provides in-house basic skills instruction courses to prepare participants for college. Finally, program staff organized a range of supports to facilitate program completion and employment.

Instituto is supported by a diverse range of funders including federal, state, and local agencies and philanthropic and individual contributions. Carreras also received funds through the first round of ACF's Health Profession Opportunity Grants (HPOG) Program as a sub-grantee to the Workforce Investment Board of Will County.¹³

Carreras's major program components are:

- **Structured healthcare training pathway, starting at low skills levels.** Program staff constructed the pathway around CNA and LPN courses because these occupations had identifiable gaps for Latinos in Chicago. Each course in the clearly articulated pathway builds to progressively higher skills levels, which in turn lead to higher-paying jobs in the nursing field. There are seven courses, starting at the fourth-grade skill level and continuing through the college level. As Exhibit 1-1 below shows, four courses (called "lower bridges," depicted in red) are basic skills courses taught in-house by Instituto

¹² Pending available funds, analysis of Carreras impacts using administrative data will extend to 10 years.

¹³ For the HPOG grant, the Workforce Investment Board of Will County participated in a collaborative effort of the Workforce Boards of Metropolitan Chicago, a consortium of nine workforce investment boards. This consortium received an HPOG 1.0 grant to provide education and training to Temporary Assistance for Needy Families recipients and other low-income individuals for occupations in the healthcare field that pay well and are expected to either experience labor shortages or be in high demand. In addition to Instituto, several community-based and community college partners received funding through this HPOG grant, including Jewish Vocational Services, Central States SER, the College of Lake County, Joliet Junior College, and McHenry County College. The HPOG 1.0 grant provided funding from October 2010 to September 2015.

instructors.¹⁴ These courses are scheduled for evenings so participants can work during the day. The lower bridges prepare participants to potentially advance to the “upper bridges,” depicted in **grey**. The upper bridges, taught at City Colleges of Chicago campuses, are the CNA, college-level LPN Prerequisites, and the LPN course.¹⁵ With the exception of the LPN program, which reserves 10 to 15 slots for Carreras participants, City Colleges provide no special accommodations for them. Carreras participants enroll as would any student. In 2018, following the conclusion of the PACE project, Instituto launched Instituto College, with plans to bring the college-level courses in-house.¹⁶

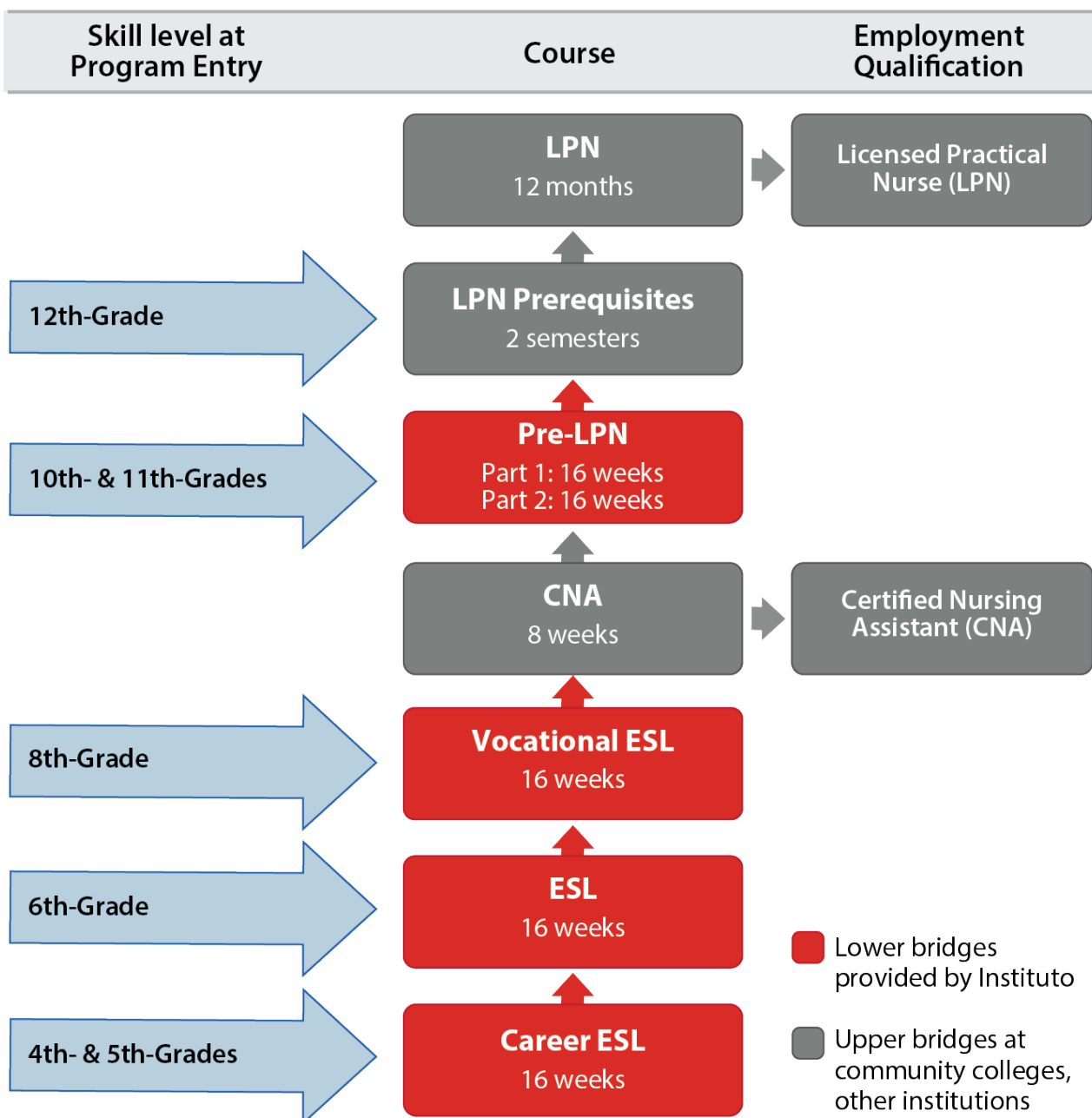
- **Contextualized and accelerated basic skills instruction.** The lower bridge courses provide basic skills instruction within the context of healthcare occupations and vocabulary. This aims to help participants raise their skills to the level required to enroll in the next training course while learning some occupational content. The courses are designed such that participants gain one or two grade levels of proficiency in reading and math in each 16-week course.
- **Academic advising and non-academic supports.** For the lower bridges, Carreras provides one-on-one assistance to address barriers to participants’ enrollment and persistence, including childcare, assistance with transportation and accessing public benefit programs, and academic advising and tutoring. For the upper bridges, Carreras provides academic advising.
- **Financial assistance.** The lower bridges are free to participants. Staff help upper bridge participants apply for financial aid, such as Pell grants, to cover college tuition, but the program provides no direct financial support.
- **Employment services.** Carreras offers participants one-on-one job search assistance and a one-week job readiness workshop. Additionally, Carreras staff identify healthcare-related job openings, promote the program to employers, and help connect employers with participants who complete training.

¹⁴ The three ESL courses teach progressively higher levels of English language, literacy, and math. In two 16-week modules, Pre-LPN improves participants’ reading and math skills to the level needed to pass the Compass exam required to enter City Colleges of Chicago. The second module also provides healthcare training to qualify for and work as a Patient Care Technician.

¹⁵ The CNA is an eight-week course. LPN Prerequisites is two semesters of college-level courses in math, English, biology, physiology, and psychology required for LPN program entry. The LPN course is 12 months.

¹⁶ One reason is to ensure more training slots for its CNA and LPN students. As of March 2021, Instituto College operates an Associate Degree in Nursing program and a Basic Nursing Assistant program. Because the college is accredited, students can seek Pell Grants or other funding sources to pay for tuition.

Exhibit 1-1: Carreras en Salud Nursing Pathway



The Carreras program is designed to be flexible. Participants begin with a course commensurate with their basic skills level. Those who complete training can enroll in the next course on the pathway or enter employment and return at a later date for additional training. Staff note that once participants are in Carreras, they are always part of the program and can return to training even after a significant period of time away from the program.

There are economic reasons to continue along the pathway. The lower bridge courses are not designed to lead to specific occupations; their purpose is to prepare participants for college-

level occupational training programs. Each upper bridge credential course completed is associated with a higher-paying position. In 2018, hourly wages for a CNA in the Chicago Metropolitan Statistical Area (MSA) were \$14.37 per hour and annual wages were approximately \$30,000.¹⁷ This rate was only slightly higher than other entry-level jobs, including personal care services (\$13.51 per hour, \$28,000 annually)¹⁸ and food preparation and serving-related jobs (\$11.98 per hour, \$25,000 annually).¹⁹ Furthermore, \$14.37 is an average wage for a CNA; entry-level wages are likely lower.

Carreras staff explain to prospective participants that the CNA is the pathway's starting credential in the nursing field, but its low pay will not get them much above the poverty level.²⁰ Thus, staff present the whole program so that potential enrollees recognize that the CNA is not the end goal, that as they progress to the LPN, they can expect wage growth. Average wages for LPNs in the Chicago MSA in 2018 were \$26.51 per hour, almost double the average CNA wage.²¹

1.1.1 Eligibility and Study Enrollment

The Carreras target population is Latinos residing in the Chicago metropolitan area who are U.S. citizens or legal residents. To be eligible for the program, applicants must also have family incomes of less than \$35,000 annually, English literacy skills that are at the fourth-grade level or above, be bilingual English/Spanish speakers, and be interested in healthcare careers.

From November 2011 to September 2014, staff randomly assigned 800 eligible applicants who consented to participate in the study and completed two short surveys (the Basic Information Form and the Self-Administered Questionnaire, discussed in Chapter 2). The 402 applicants assigned to the treatment group could enroll in Carreras; the 398 applicants assigned to the control group could not enroll in Carreras but could access other services in the community for which they qualified, including CNA and LPN programs at City Colleges of Chicago.

1.1.2 Characteristics of the Study Sample

Exhibit 1-2 below shows the study sample's characteristics at the time of study entry ("baseline"), both overall and for the treatment and control groups separately. The *p*-values in

¹⁷ May 2018 mean annual wage for Chicago-Naperville-Elgin MSA (\$29,890) and hourly (\$14.37) <https://www.bls.gov/oes/current/oes311014.htm>.

¹⁸ May 2018 mean annual wage for Chicago-Naperville-Elgin MSA (\$28,090) and hourly (\$13.51) <https://www.bls.gov/oes/current/oes390000.htm>. Examples include Barbers; Hairdressers, Hairstylists, and Cosmetologists; Manicurists and Pedicurists; Childcare Workers; and Exercise Trainers and Group Fitness Instructors.

¹⁹ May 2018 mean annual wage for Chicago-Naperville-Elgin MSA (\$24,920) and hourly (\$11.98) <https://www.bls.gov/oes/current/oes350000.htm>.

²⁰ The poverty threshold in 2019 for a family of three with one adult and two children was \$20,598. <https://www.census.gov/data/tables/time-series/demo/income-poverty/historical-poverty-thresholds.html>.

²¹ May 2018 mean annual wage (\$55,140) and hourly (\$26.51) for Chicago-Naperville-Elgin MSA <https://www.bls.gov/oes/current/oes292061.htm>.

the right-most column indicate that the evaluation's random assignment procedure produced treatment and control groups with no significant differences in these characteristics.

Exhibit 1-2 also shows that the Carreras study sample reflected the program's eligibility criteria. Almost all (more than 99 percent) study participants identified as Hispanic of any race. Most were low income: about three quarters (76 percent) reported annual household incomes of less than \$30,000, and slightly more than one third (34 percent) reported incomes of less than \$15,000. More than 40 percent reported receiving Supplemental Nutrition Assistance Program (SNAP) benefits or Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) benefits in the prior year. More than one third (37 percent) reported experiencing financial hardship, which is defined as having missed a rent/mortgage payment or generally not having enough money to make ends meet at the end of the month in the past year.

The study sample were predominantly women (93 percent). Less than half (45 percent) were parents living with children. Slightly more than half (51 percent) of the sample were working at least part-time when they enrolled in the study. More than three quarters (77 percent) expected to be working some number of hours in the following months, including almost one third (31 percent) who anticipated working full-time. Though Carreras is designed to accommodate participants with skills levels as low as fourth grade, only about 10 percent of participants had less than a high school diploma.

Exhibit 1-2: Selected Characteristics of the Carreras en Salud Sample at Baseline

Characteristic	All Study Participants	Treatment Group	Control Group	p-Value
Age (%)				.529
20 or under	17.9	17.4	18.3	
21 to 24	26.6	28.9	24.4	
25 to 34	34.1	33.3	34.9	
35 or older	21.4	20.4	22.4	
Sex (%)				.227
Female	92.9	91.8	94.0	
Male	7.1	8.2	6.0	
Race/Ethnicity (%)				.664
Hispanic, any race	99.4	99.2	99.5	
Black, non-Hispanic	0.0	0.0	0.0	
White, non-Hispanic	0.6	0.8	0.5	
Another race, non-Hispanic	0.0	0.0	0.0	
Family Structure (%)				.209
Not living with spouse/partner and not living with children	43.0	45.0	41.0	
Not living with spouse/partner but living with children	24.1	20.9	27.3	
Living with spouse/partner and not living with children	11.7	12.3	11.1	
Living with spouse/partner and children	21.3	21.9	20.6	
Living with parents	36.1	32.8	34.0	
Current Education (%)				.242
Less than a high school diploma	9.7	9.8	9.6	
High school diploma or equivalent	49.2	47.6	50.9	
Less than one year of college	13.7	16.3	11.1	

Characteristic	All Study Participants	Treatment Group	Control Group	p-Value
One or more years of college	17.4	17.5	17.2	
Associate degree or higher	10.0	8.8	11.1	
Family Income in Past 12 Months (%)				.767
Less than \$15,000	34.4	35.5	33.2	
\$15,000 to \$29,999	41.5	40.4	42.6	
\$30,000 or more	42.1	24.1	24.2	
Mean (\$)	\$21,051	\$20,702	\$21,397	.506
Public Assistance / Hardship in Past 12 Months (%)				
Received WIC or SNAP	42.4	41.8	42.9	.780
Received public assistance or welfare	4.7	4.2	5.2	.505
Reported financial hardship ^a	36.8	35.8	38.1	.469
Current Work Hours Per Week (%)				.953
0	48.9	49.0	48.9	
1 to 19	5.8	5.8	5.8	
20 to 34	20.7	21.3	20.0	
35 or more	24.6	23.9	25.3	
Expected Work Hours Per Week in Next Few Months (%)				.665
0	22.7	23.7	21.9	
1 to 19	6.3	5.9	6.8	
20 to 34	40.0	41.3	38.6	
35 or more	30.9	29.1	32.6	
Sample size	800	402	398	

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.

Note: There are no significant differences at the $p = .10$ level. Some percentages for characteristics do not add up to 100 percent due to rounding: Public Assistance / Hardship in Past 12 Months does not add up to 100 percent because the categories are neither mutually exclusive nor exhaustive. See Appendix A for more details on baseline characteristics.

1.1.3 Local Context

The city of Chicago is ethnically diverse. At the time of the study, Chicago had about 2.7 million residents. Slightly less than half of the population identified as White, non-Hispanic; 32 percent identified as Black or African American, non-Hispanic; and 29 percent identified as Hispanic, any race. The median household income in Chicago was \$47,831, lower than for the United States (\$53,482).^{22,23} Compared to the city as a whole, Pilsen, the neighborhood in which

²² Chicago data from the U.S. Census Bureau's American Community Survey 2010-2014. <https://www.census.gov/acs/www/data/data-tables-and-tools/data-profiles/2014/>.

²³ U.S. data from <https://www.census.gov/data/tables/time-series/demo/income-poverty/cps-hinc/hinc-01.html>.

Instituto is located, was more Hispanic (57 percent) and less Black (18 percent) and the median household income (\$37,300) was lower.²⁴

The unemployment rate in Chicago in 2011 (the start of random assignment) was 8.7 percent. By July 2018 (the end of this three-year report's observation period), it was 4.2 percent.²⁵

1.2 Earlier Findings on Carreras en Salud from PACE

The Carreras en Salud *Implementation and Early Impact Report* (Martinson et al. 2018) provides useful context for the current report. In its initial phase, the evaluation assessed Carreras's implementation and short-term (18-month) impacts. The evaluation's **implementation study** examined the operations of Carreras and analyzed participation patterns of treatment group members in training and other activities. Its **impact study** measured the program's effects on education and training receipt and credentials. In the employment domain, the short-term impact study focused on self-reported employment and career progress, as the PACE research team deemed 18 months after random assignment too early to detect earnings impacts. This section summarizes key findings from that initial report.

1.2.1 Earlier Results from the Carreras Implementation Study

Section 1.1 of this report described the Carreras en Salud program components and the program model (Exhibit 1-1). This section summarizes program implementation and participants' experiences in the program through 18 months after random assignment.

■ *Carreras operated largely as designed.*

The lower bridge courses were provided at Instituto using Carreras instructors and curricula that sought to contextualize basic skills with healthcare content. Case managers, academic advisors, and employment specialists worked with students to arrange support services, address personal issues that could interfere with program completion, and provide academic guidance and tutoring. The upper bridge courses were provided by City Colleges of Chicago campuses, using their standard curricula. Carreras participants who enrolled in those college-level courses could still access the program's academic advising and employment assistance. Instituto provided the lower bridge courses at no cost to participants, whereas Carreras staff assisted participants in the college-level upper bridge courses to access financial aid.

■ *Staff continually sought to improve contextualization in the basic skills courses.*

Basic skills courses included contextualization. However, staff reported that the level of contextualization required ongoing attention. A curriculum specialist identified healthcare-related material to integrate into basic skills courses, met with instructors to help them integrate healthcare-related content, and standardized curricula and instruction across the basic skills courses.

²⁴ Pilsen data from <https://statisticalatlas.com/neighborhood/Illinois/Chicago/Pilsen/Household-Income#top>.

²⁵ Bureau of Labor Statistics, "Local Area Unemployment Statistics, Over-the-Year Change in Employment Rates for Large Metropolitan Areas," <https://www.bls.gov/web/metro/laurgch.htm>.

- ***Carreras served a low-income Hispanic population, but not a particularly low-educated one.***

As intended, the Carreras participants predominantly identified as Hispanic (99 percent) and were low income (mean household income of approximately \$21,000). Only 10 percent of study participants had less than a high school diploma, whereas 41 percent had attended some college. Most treatment group members who enrolled in courses started in the middle of the pathway (Vocational ESL, CNA, or Pre-LPN) rather than lower.

- ***There was a high level of initial engagement in the Carreras program.***

The vast majority (92 percent) of treatment group members participated in at least one Carreras course. Among all treatment group members, about 40 percent progressed from their initial training to a second training, most commonly from ESL or Vocational ESL to CNA or Pre-LPN. Over the follow-up period, about one third of treatment group members attended courses (Pre-LPN and/or LPN Prerequisites) to prepare for the LPN course, but only 1 percent started at the LPN level.

1.2.2 Earlier Results from the Carreras Impact Study

The PACE research team designated a single educational measure—*hours of occupational training*—as the confirmatory indicator of the program’s success at 18 months after randomization. The short-term analyses also assessed a variety of other education outcomes as well as several employment-related outcomes believed to provide an early indication of expected longer-term educational, employment, and earnings impacts.

- ***Carreras had a statistically significant effect on the average total hours of occupational training received, as well as on the hours of basic skills and ESL instruction received.***

Over the 18-month follow-up period, treatment group members attended an average of 210 hours of occupational training versus 164 hours for the control group, resulting in a 46-hour impact. Carreras also produced a 94-hour impact on basic skills instruction attended (135 hours for treatment group members versus 40 hours for control group members), and an impact of 29 hours on ESL instruction. Overall, the Carreras program produced a large increase in the total hours of education and training received: treatment group members participated in occupational training, basic skills, and ESL for a total of 402 hours, whereas control group members did so for 223 hours, an impact of 178 hours (an 80 percent increase relative to control group members).

- ***Carreras had an impact on receipt of a credential, primarily those awarded by a licensing or certification organization.***

The program had an 18 percentage point impact on receipt of a credential (37 percent of treatment group members versus 18 percent of control group members). Likely reflecting the licensing requirements for CNAs and LPNs, the program’s impact on credential receipt was largely due to significant differences in the proportion of treatment group members who received a credential from a licensing/certification body. As more participants enrolled in and completed the CNA course within the follow-up period than they did the longer-term LPN course, many of

these credentials are likely CNAs. The study also found that more than one third of treatment group members (36 percent) were still enrolled in training at the end of the 18-month follow-up period, compared with 29 percent of control group members—a statistically significant impact.

■ ***Carreras produced impacts on receipt of supportive and employment services.***

The program had a 19 percentage point impact on receipt of career counseling (38 percent of treatment group members versus 19 percent of control group members); an 11 percentage point impact on receipt of help arranging supports (17 percent versus 6 percent); and a 19 percentage point impact on receipt of job search assistance (30 percent versus 11 percent)—each significant at the 1 percent level. Still, only a minority of treatment group members reported participating in each service.

■ ***Carreras had no impact on two indicators of career pathways employment.***

The program had no detectable impacts on working at a job paying at least \$12 per hour or working at a job requiring at least mid-level skills.

■ ***Carreras produced decreases in reports of financial hardship.***

Fifty-three percent of the treatment group had a lower financial hardship score than the average member of the control group.²⁶ Carreras also resulted in a 12 percentage point reduction in the proportion of participants who cited financial support as a challenge to attending training (66 percent for treatment group members versus 78 percent for control group members).

1.3 Guide to the Rest of the Report

This report assesses program impacts on training, earnings, employment, and other outcomes three years after study enrollment.

Chapter 2 summarizes the study design and analytic methods, including a discussion of the career pathways theory of change and its implied research questions.

Chapter 3 presents the three-year impact findings on postsecondary training. It reports analyses of how the early gains in training and healthcare credentials evolved between 18 months and three years after study enrollment. With the extra follow-up time allowing study participants the opportunity to complete longer-term training, we identified the *receipt of college credentials requiring at least one year of full-time study* as the most important measure of program success in the education domain at three years.

Chapter 4 presents the three-year impact findings on earnings and employment. The short-term impact study conducted only a limited analysis of impacts on labor market outcomes at 18 months because such impacts were expected to take longer to emerge. This report

²⁶ Carreras significantly reduced the share of individuals who reported experiencing financial hardship in the previous 12 months, a decrease of 0.08 points on a two-item scale (an inability to pay rent/mortgage and not enough money to make ends meet; response categories are either 0=no or 1=yes).

assesses earnings and employment impacts, with *average quarterly earnings in follow-up quarters 12-13* as the most important measure of program success for this follow-up period.

Chapter 5 presents the three-year impact findings on other life outcomes such as career knowledge, availability of career supports, psycho-social skills, family economic well-being, parental engagement, and child outcomes.

Chapter 6 contains the costs analysis. It provides the costs incurred by Instituto del Progreso Latino to operate Carreras as well as the costs to society.

Chapter 7 concludes with a discussion of the findings and open questions for future research.

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

2. Methods

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

2.1 Carreras en Salud Theory of Change

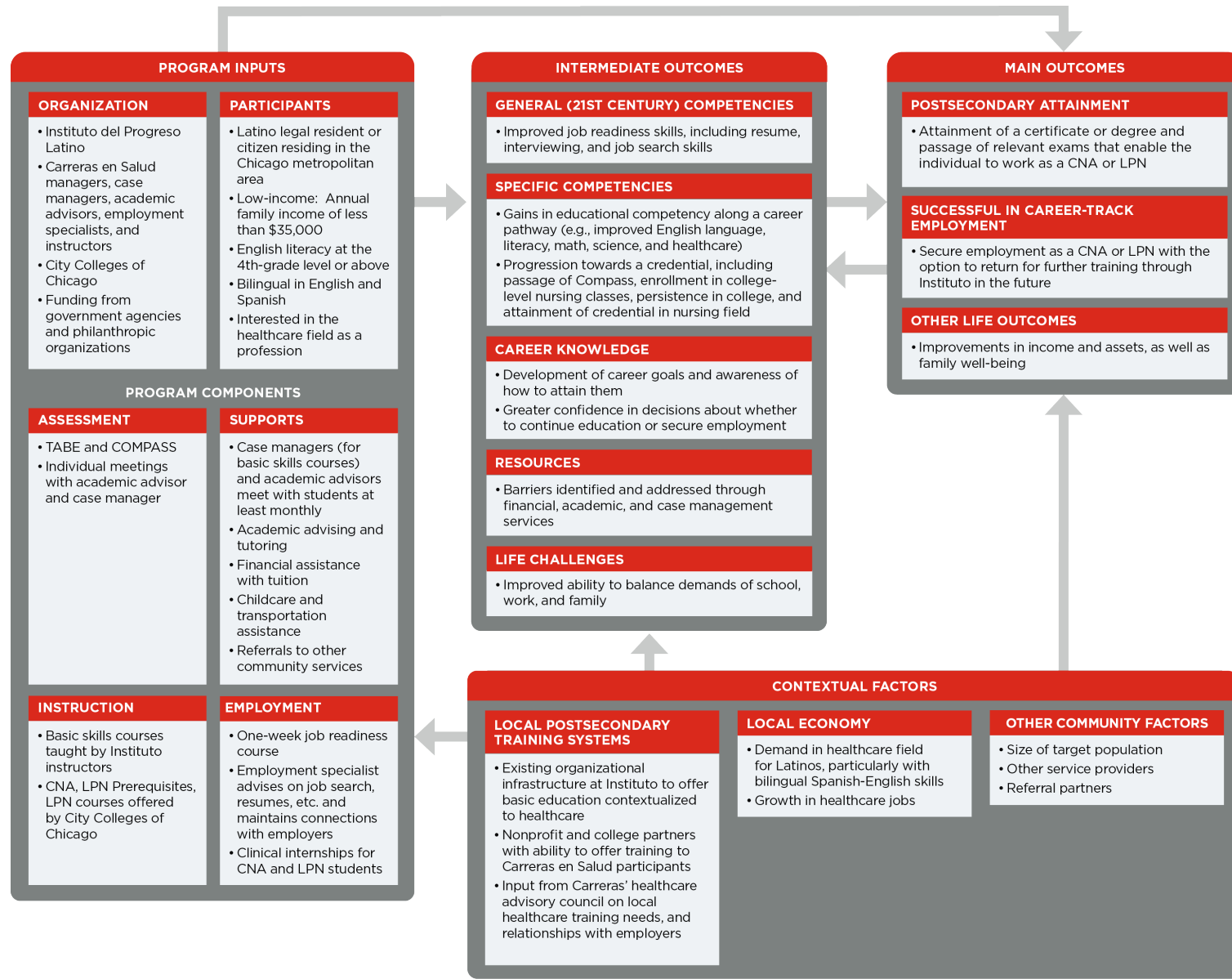
Exhibit 2-1 on the next page depicts the career pathways theory of change as applied to Carreras. It shows in detail how the program is hypothesized to produce effects on outcomes such as career knowledge and resources, which in turn will lead to effects on short-term outcomes such as hours of training and short-term credential receipt, and eventually to longer-term gains in outcomes such as additional credentials, employment, earnings, and other life outcomes.

Starting in the box at the left, the theory of change begins with **program inputs** and **program components**. The short-term report (Martinson et al. 2018) found that these program inputs (Carreras staff and instructors, City College partners, participant characteristics) and program components (assessment, instruction, supports (including financial assistance), and employment connections) were largely operating as planned.

The middle box shows the **short-term “intermediate” outcomes**. Improving participants' competencies and career knowledge, removing barriers to school or work, and addressing life challenges are the theory's necessary precursors to improving the longer-term outcomes of interest. Carreras intended to affect these intermediate outcomes quickly so that participants would be better positioned to engage in education and training. As described in Chapter 1, the short-term report found improvements in some, but not all, of these areas.

The **“main” outcomes**, which are the focus of this three-year impact report, appear in the far-right box. They include additional postsecondary credential attainment, career-track employment, and improvement in other life outcomes such as family economic well-being. These outcomes are most directly connected to the program's goal of improving employment and earnings for participants.

Finally, the exhibit shows that several **contextual factors** can affect impacts, including other available training programs and local economic conditions. The implementation study explored these factors (see Martinson et al. 2018), and we discuss them again in this report when useful for explaining program impacts at three years.

Exhibit 2-1: Career Pathways Theory of Change as Applied to Carreras en Salud

2.2 Research Questions at Three-Year Follow-up

This report addresses the research question, three years after random assignment, what were the effects of Carreras en Salud on

- education outcomes?
- entry into career-track employment and higher earnings?
- individual and family well-being, including income and other life outcomes?

Each of these research questions is addressed, in turn, in the chapters that follow.

2.3 Data Sources

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

2.3.1 Baseline Surveys

This report uses data from the baseline surveys to describe the sample and for regression adjustment. All 800 study participants randomized between November 2011 and September 2014 completed the **Basic Information Form** just prior to random assignment. This form captured demographic information, family characteristics, educational history, and work and earnings information. At this time, study participants also completed a **Self-Administered Questionnaire**, which collected more sensitive personal information such as training commitment and academic confidence.²⁷

2.3.2 Follow-up Surveys

This report focuses on outcomes measured in a three-year follow-up survey, with some reference to 18-month follow-up survey data analyzed in the short-term report.

18-month Survey. The initial follow-up survey provided measures of outcomes that the theory of change indicated Carreras might affect in the short term. Administered by telephone or in person, the 18-month survey had a response rate of 83 percent (86 percent of the treatment group and 79 percent of the control group). Some of the findings summarized in Chapter 1 are based on these data. The other use of the 18-month survey data in this report is to help impute values for missing data on job and education spells from other data sources (see Appendix B).

²⁷ Carreras staff administered the Basic Information Form on paper and then entered it electronically into the study database. Because the Self-Administered Questionnaire asked for personal information (criminal records, psycho-social skills, social support, career orientation and knowledge, and personal and family challenges), study participants filled out a paper form and then placed it in a sealed envelope that program staff sent to Abt Associates for data entry.

Three-year Survey. We designed the three-year follow-up survey to measure outcomes that the theory of change indicated Carreras might affect over a longer time horizon, such as employment and other life outcomes. The survey also captured detail on respondents' educational history, a limited number of psycho-social skills, and their children's experiences with school (as applicable). The response rate for the three-year follow-up survey was 80 percent overall (85 percent in the treatment group and 75 percent in the control group). This rate yielded survey responses for 640 study participants (341 in the treatment group and 299 in the control group). The median response occurred at 38 months after random assignment.²⁸ Appendix B provides detailed descriptions of the outcomes based on the three-year survey used in this report.²⁹

2.3.3 National Student Clearinghouse

In addition to using NSC data to assess two- and four-year college enrollment impacts, this report uses data on college enrollment from the NSC for a number of technical purposes, such as nonresponse analysis and weighting (see Appendix C). NSC is a nonprofit organization that collects data on student enrollment, degrees earned, and other credential completion from most U.S. institutions of higher education. Designed to aid the administration of student loan programs, researchers also use NSC data to study college access and persistence. As in most administrative data systems, data are subject to various coverage and content limitations. Most critically, coverage of private, for-profit colleges is very low. These institutions have a large role in providing CNA and other types of healthcare training. Furthermore, NSC makes no attempt to collect data from schools that are not colleges (i.e., not accredited to grant degrees).

2.3.4 National Directory of New Hires

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

2.3.5 Carreras Program Records

Carreras program records are the data source for the participation analysis. The research team looked at the degree to which treatment group members enrolled in one of the program's seven

²⁸ The median response occurred at 38 months. More than 85 percent of the respondents completed the survey 39 months or less after random assignment. The longest lag between randomization and completion was 44 months. Additional months of follow-up potentially increases recall error and shifts means for time-sensitive variables. However, the lags were well balanced between the treatment and control groups, so this variation in lags between randomization and completion should not lead to false claims of program effects.

²⁹ The full instrument is available at <http://www.career-pathways.org/career-pathways-pace-three-year-instrument/>.

courses, their completion, and enrollment in another course on the pathway. The team also explored the proportion still in training at the end of the three-year follow-up period.

2.4 Evaluation Design and Analysis Plan

The PACE project uses an experimental research design to estimate the impact of access to nine selected programs (of which Carreras en Salud is one) on participants' outcomes. Such an experimental design ensures that any estimated impacts can be attributed to program access rather than to unmeasured differences between eligible study sample members with access (the treatment group) and without access (the control group).

By design, the experiment captures impacts for all sample members, regardless of whether those assigned to the treatment group actually received the program services. In other words, this design—an “intent to treat” approach—assesses whether access to the program led to better outcomes for those offered the chance to participate in it, relative to what they could have obtained without the program. For a voluntary (rather than mandatory) program, the intent to treat estimate is usually the most policy relevant. However, it is important to remember that those offered a slot in Carreras are being compared to those denied a slot but who still had access to other programs and services available in the local area, rather than being compared to no training. In the case of the Carreras evaluation, this included the same CNA and LPN training offered by the same colleges in which treatment group participants may have enrolled.

Another important aspect of the evaluation's design is that the experiment captures the effects of the local program *overall*, rather than the contributions of its individual components. The Carreras designers deliberately included multiple strategies (e.g., assessment, instruction, supports, and employment connections) that they hypothesized were needed to produce desired impacts. As a result, the evaluation focuses on whether the program as a whole, when implemented in real-world conditions, produces an impact relative to other services available in the area.

2.4.1 Hypothesis Testing

The career pathways theory of change as applied to Carreras targets a range of outcomes. The evaluation structures the analysis by establishing three categories of hypotheses:

- **Confirmatory hypotheses** center on the outcome(s) most critical to judging the program's success in achieving its goals within the designated time period. By limiting the confirmatory analysis to a single outcome in each of two separate domains (education and employment/earnings), the research team avoids the statistical problem that arises from “multiple comparisons.”³⁰ For the three-year impact study of Carreras, the team specified two confirmatory hypotheses: (1) *an increase in receipt of a college*

³⁰ Testing for program impacts on so many outcomes causes a statistical problem: it provides the program many chances to demonstrate success; but with enough chances, even an unsuccessful program might appear to have one or two impacts. If the evaluation did not account in some way for the multiplicity of hypothesis tests, some of its findings would reach conventional levels of statistical significance merely by chance, even if there were no real effects on any outcome. This is known as the problem of “multiple comparisons.”

credential that typically takes at least a year of study to earn in the education domain; and (2) *an increase in average quarterly earnings in quarters 12 and 13 after random assignment* in the employment/earnings domain. Because each has a hypothesized direction (an increase in the average level), the team applied a one-tailed test of statistical significance, ignoring possible effects in the other direction.

- **Secondary hypotheses** address a limited set of other important indicators of program success. Secondary hypotheses also posit effects in an expected direction, so the team applied one-tailed tests for statistically significant effects only in the specified direction. Outcomes for these hypotheses at three-year follow-up include *credential receipt, enrollment and number of college credits, employment status and indicators of career pathways employment, indicators of career progress, and measures of financial well-being*. The hypothesized direction is an increase in the average level for all outcomes, other than some measures of financial distress, for which the research team hypothesized a decrease in the average level.
- **Exploratory hypotheses** include a larger number of additional possible effects for related outcomes. They are intended to help improve understanding of findings from the confirmatory and secondary analyses. Exploratory hypotheses may, but do not necessarily, specify the expected direction of effect, and the team therefore applied two-tailed tests. Some examples of outcomes for exploratory hypotheses include *quarterly earnings and employment for each quarter after random assignment*, various measures of *job quality*, and measures of *financial well-being* such as household income.

This classification of hypotheses aligns with the designation of outcomes; throughout this report the research team refers to outcomes as being confirmatory, secondary, or exploratory.

Prior to estimating any three-year impacts for Carreras, the team published an analysis plan specifying key hypotheses and outcome measures (see Judkins et al. 2018). The team subsequently assessed data quality, refined the plan, and publicly registered it on the Open Science Framework website.³¹ The purpose of the analysis plan and registration was to guide the work of the research team and publicly commit to particular hypotheses and an estimation approach and to align with ACF's commitment to promote rigor, relevance, transparency, independence, and ethics in the conduct of evaluations.³²

2.4.2 Impact Estimation Procedures

The research team conducted analyses to estimate the impact of Carreras en Salud on the hypothesized outcomes described above.

Random assignment ensures that there will be no systematic differences between the treatment and control groups at baseline. Random assignment also ensures that measured differences in subsequent outcomes provide unbiased estimates of program impacts. To address any effects

³¹ See <https://osf.io/wex6u/> for the short-term report registration and <https://osf.io/qj7r5/> for the three-year report registration.

³² ACF's Evaluation Policy is available here: <https://www.acf.hhs.gov/opre/resource/acf-evaluation-policy>.

that chance differences arising from random assignment might have on estimates, analysts typically estimate impacts using a procedure that compensates for chance differences in measured baseline characteristics. Such procedures also help to increase the precision of estimates.

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

The team then used a regression-adjustment model—including the identified covariates—to estimate impacts three years out. All analyses of survey data applied weights developed to adjust for differential nonresponse across groups of study participants that have different likelihoods of survey response. Additional details on these and other aspects of the analysis appear in Appendices A and B.

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

How to Read Impact Tables

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

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

The next column (**Impact (Difference)**) is the impact of being offered Carreras en Salud—that is, the difference between the treatment and control group means. The **Standard Error** column is a measure of uncertainty in the estimated impact that reflects both chance variation due to randomization and any measurement error. The column labeled **Relative Impact** presents the impact as a percentage change from the control group mean. It offers a sense of how “big” or “small” the impact of the program on the treatment group is, relative to the control group's level. For outcomes with no natural unit of measurement, we report an **Effect Size** instead of the relative impact. The effect size is a standardized measure that defines impacts as a fraction of the pooled standard deviation across the treatment and control groups. It offers a sense of the size of the impact relative to how much the outcome varies across the full sample and allows for comparison of the size of the impact across scale outcomes.

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

Statistical significance

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

- * for .10 (10 percent level)
- ** for .05 (5 percent level)
- *** for .01 (1 percent level)

Categories of findings

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

3. Impacts on Postsecondary Training

This chapter reports the impact of Carreras en Salud on postsecondary training for the three-year follow-up period. The program theory of change posits that the seven-course nursing pathway, combined with academic supports (including financial assistance), non-academic supports (provided in the lower bridges only), and employment assistance, will prepare participants to enroll in and complete occupational credentials with labor market value and to find related employment. The program is designed so that after receiving the initial credential on the pathway (CNA), participants can work and/or prepare for and seek the next credential (LPN).

Though credential attainment and healthcare employment are the primary longer-term Carreras goals, it seemed likely that a large proportion of students would still be engaged in training 18 months after study enrollment and random assignment. As a result, the short-term impact study selected *hours of occupationally focused training*, including occupational training in the nursing field, as its confirmatory outcome. The short-term impact report also explored secondary educational outcomes, including receipt of any credential.

By three years after random assignment, it is reasonable to expect to see an increase in receipt of a longer-term credential. For the three-year follow-up period, the research team therefore specified the confirmatory outcome for the education domain as *an increase in receipt of a college credential that typically takes at least a year of study to earn*. For Carreras, this means an LPN credential.

This chapter begins with context for interpreting the education impact findings, specifically a summary of participation in the Carreras program by treatment group members three years after random assignment, using Instituto program records (Section 3.1). It then reports impacts on credential receipt (Section 3.2) and college enrollment (Section 3.3), comparing treatment and control group members using responses to the three-year follow-up survey and NSC data.

3.1 Participation in Carreras by Treatment Group Members

As described in Chapter 1, the Carreras nursing pathway comprises seven courses. Two courses result in credentials and five prepare participants for either the CNA course or the LPN one. Thus, impacts on credential receipt will be driven by the extent to which participants move from preparation courses to credential courses. (Similarly, impacts on earnings reported in Chapter 4 will be driven by the extent to which participants earn an LPN or gain work experience to progress to higher-paying jobs.)

Exhibit 3-1 below shows the proportion of all treatment group members who participated (first column), completed (second column), and were still enrolled (third column) in any of the Carreras courses in the three-year follow-up period, based on Instituto program records. As shown, 93 percent of treatment group members participated in one or more courses during the three-year follow-up period. The largest share of treatment group members participated in CNA or one of the LPN preparatory courses (Pre-LPN or LPN Prerequisites). The smallest share of

treatment group members participated in the two lowest-level ESL courses or in the LPN course.

Many of the Carreras courses had high completion rates. About 85 percent of CNA participants and more than three quarters of Pre-LPN participants completed their course within the follow-up period, although only 39 percent of LPN Prerequisite participants did so. Just 1 percent or less of participants in these programs were still participating in their course at the end of the three-year follow-up period. The exception was LPN participants, the only course associated with a credential that takes at least a year of college study to earn. Of the almost 7 percent of treatment group members who enrolled in the LPN course, 11 percent were still participating in that course at the end of the three-year period.

Exhibit 3-1: Treatment Group Participation and Completion of Carreras Courses over a Three-Year Follow-up Period

Course	Participation Rate (%)	Of Those Who Participated in the Course	
		Completion Rate (%)	Still Participating at End of Follow-up Period (%)
Career ESL	6.2	28.0	0.0
ESL	7.7	45.2	0.0
Vocational ESL	29.4	79.7	0.0
CNA	32.9	84.8	0.8
Pre-LPN	34.7	76.3	0.7
LPN Prerequisites	34.4	39.1	1.4
LPN	6.7	77.8	11.1
RN ^a	2.5	20.0	80.0
Any course	92.8	69.9	4.0
Sample size	401		

Source: Instituto program records for treatment group members.

^a RN is not part of the pathway, but because Carreras participants enroll in the course in local colleges, Instituto tracks its participation.

Note: Shares in any column add to more than 100 percent because participants could have participated, completed, and/or continued in more than one course over the three-year follow-up period.

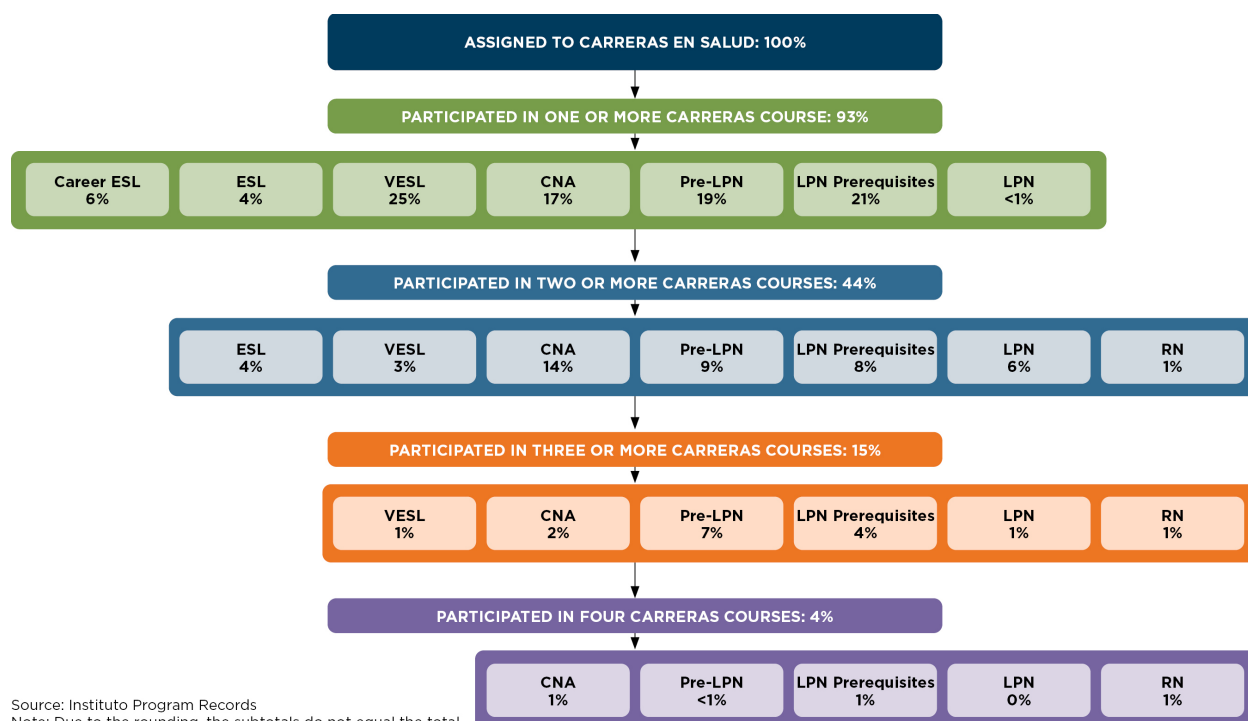
Exhibit 3-2 below shows the proportion of participants who enrolled in one Carreras course in the three years following random assignment, as well as the proportion who enrolled in two courses, three courses, and four courses. As shown, 93 percent participated in at least one course (green bars). Most participants (58 percent) enrolled in a lower bridge course, with Vocational ESL (VESL) the most common one (25 percent of those who enrolled in a course).

The next row (blue) shows that 44 percent of treatment group members participated in at least two courses. Of them, 66 percent enrolled in an upper bridge course at a college (CNA, LPN Prerequisites, LPN, and RN). CNA was the most common second course (14 percent of those who enrolled in a course, or 32 percent of those who enrolled in a second course). CNA would be the natural progression from VESL.

The third row (orange) shows that 15 percent of participants enrolled in at least three courses. Pre-LPN was the most common course (7 percent of participants, or 47 percent of those who enrolled in a third course). Pre-LPN would be the natural progression from CNA.

Finally, the last row (purple) indicates 4 percent of participants enrolled in at least four courses. The participants were evenly distributed across upper bridge courses (CNA, LPN Prerequisites, and RN), with fewer in the Pre-LPN course. LPN Prerequisites would be the natural progression from Pre-LPN.

Exhibit 3-2: Carreras en Salud Treatment Group Enrollment over a Three-Year Follow-Up Period



Overall, this analysis of Carreras participation levels shows that most participants started in one of the five preparation courses; that is, a course not associated with a credential. Over time, a subset of participants continued to enroll in additional courses along the pathway, although a large portion who attended the preparatory courses did not progress to the next level. By three years after random assignment, most participants who were still enrolled were in higher pathway courses, specifically LPN Prerequisites, LPN, or RN. Although most treatment group members had not enrolled in or completed the LPN program by three years after random assignment, it is possible that over time more will do so.

A 2011 study of Carreras provides some insight into both the movement from one course to another and the timeline to reach the next course (Helmer and Blair 2011). In the intervening years, Carreras has changed some of the lower bridge courses, but the analysis is still instructive. Using Carreras program records, the researchers documented the education trajectories for 933 program participants who enrolled between 2005 and 2009. Overall,

24 percent of the participants enrolled in the LPN course. Those who began in the LPN Prerequisites course took a median of 24 months to complete the LPN course. Participants who began in the Pre-LPN course took a median of 43 months to complete the LPN course. Those who began in the CNA course took a median of 46 months to complete the LPN course. Thus, to the extent that treatment group members are working toward LPN credentials, it will likely take them more than three years to reach and complete the LPN course.

3.2 Impact on Credentials

This section first reports the impact on total credentials received after random assignment, beginning with the confirmatory outcome, *an increase in receipt of a college credential that typically takes at least a year of study to earn*. It then describes impacts for receipt of other types of credentials, including any college credential and any exam-based certification or license.

■ ***Carreras had a small impact on receipt of college credentials requiring at least one year of study to earn.***

Carreras increased by 3 percentage points the receipt of credentials from colleges typically requiring a year or more of study, which for Carreras participants is an LPN (Exhibit 3-3 below). Twelve (12) percent of the treatment group received this credential, compared to 9 percent of the control group.³³ Carreras had no impact on receipt of associate degrees. The analysis of Carreras program records described in Section 3.1 suggests that three years is likely not enough time to see movement into and completion of LPNs. Although not a course on the pathway at the time of the study, Associate Degree in Nursing (ADN) is the next logical course after an LPN. (As noted in Chapter 1, Instituto now offers an ADN program through its own college, as well as a Basic Nursing Assistant program.)

■ ***Carreras also had an impact on receipt of any college credentials.***

As predicted by the theory of change, Carreras had an impact on CNA credentials, which require just eight weeks of coursework. For treatment group members who started in lower bridge courses, CNA was the first credential on the pathway that prepared them to obtain employment in the nursing field. Indeed, Carreras increased receipt of any college credential by 12 percentage points, from 17 percent to 29 percent, a relative impact of 71 percent (see Exhibit 3-3 below). The program also increased receipt of a healthcare credential from any type of school by 13 percentage points and receipt of a healthcare credential from a college by 11 percentage points. The impact is greater still for receipt of an exam-based certification or license (23 percentage points), reflecting that both CNA and LPN require a license as well as an educational certificate of completion to work in those occupations.

³³ The confirmatory outcome is based on responses to the three-year follow-up survey. Self-reported college credentials that require at least a year of study to earn could include credentials other than LPN if the study participant opted to enroll in a different occupational area or training pathway (i.e., not nursing). Thus, the difference between the survey findings (12 percent earned a credential) and the Instituto program records (7 percent enrolled in the LPN course) is due to two different data sources.

Exhibit 3-3: Three-Year Impacts on Postsecondary Credentials

Outcome	Treatment Group	Control Group	Impact (Difference)	Standard Error	Relative Impact	p-Value
Confirmatory Outcome: Received college credential taking 1 or more years of study to earn (%)	12.0	8.8	+3.2*	(2.2)	+36.3*	.078
Received associate degree or higher (%)	5.0	4.2	+0.9	(1.6)	+2.1	.587
Received any college credential (%)	29.0	17.0	+12.0***	(3.2)	+70.5***	<.001
Received exam-based certification or license (%)	40.2	17.6	+22.6***	(3.7)	+128.4***	<.001
Received healthcare credential from a college (%)	25.8	15.1	+10.7***	(3.1)	+70.9***	<.001
Received a healthcare credential from any type of school (%)	33.7	21.3	+12.5***	(3.5)	+58.7***	<.001
Sample size	341	299				

Source: PACE three-year follow-up survey for all variables, except exam-based credentials, which uses both the three-year and 18-month follow-up surveys. See Appendix B for detailed description of survey-based measures.

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

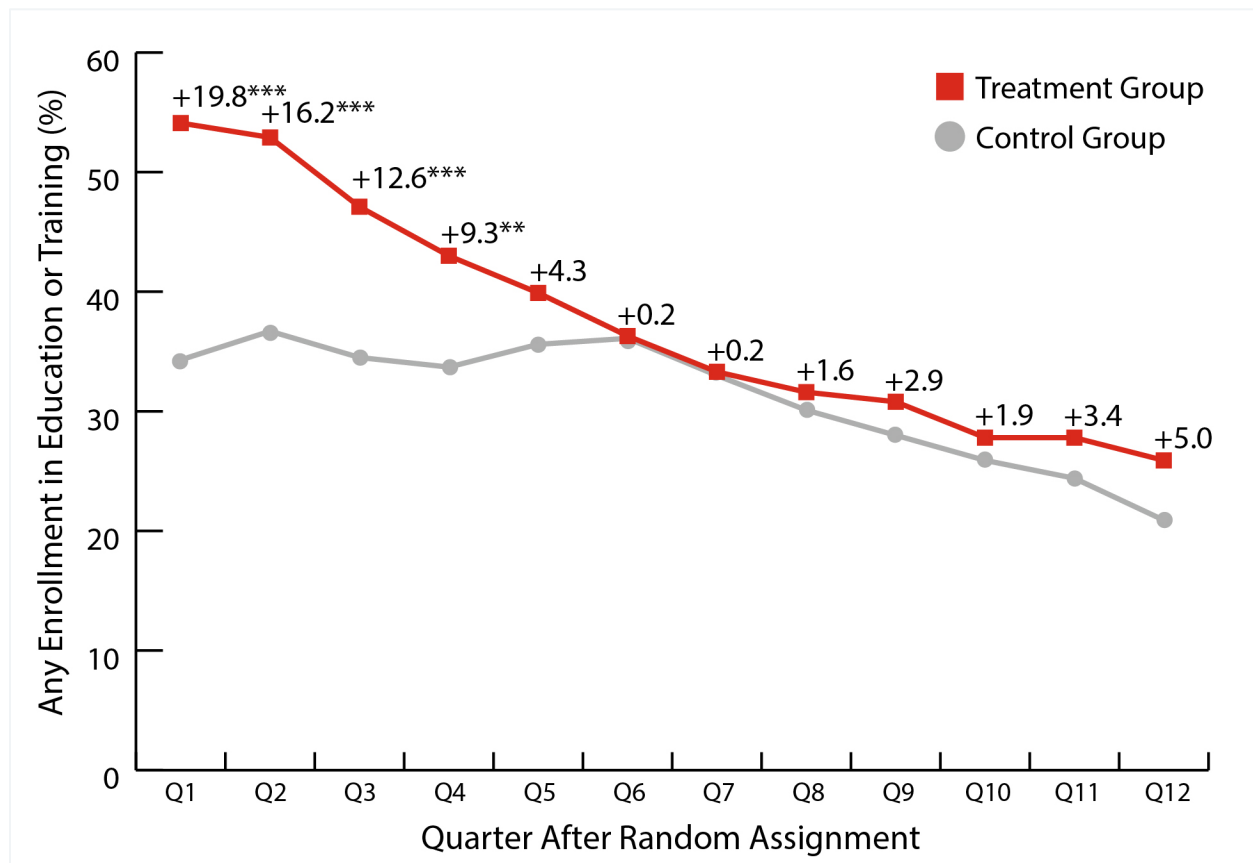
Statistical significance levels based on differences between research groups: *** 1 percent level; ** 5 percent level; * 10 percent level.

3.3 Impact on Enrollment and Credits

This section reports the impact of Carreras on enrollment and receipt of college credits three years after random assignment. It begins with enrollment in any type of school, which captures lower and upper bridge attendance. It then explores enrollment specific to colleges, which captures upper bridge participation only. Finally, it reports on earning college credits.

■ *Impact of Carreras on enrollment in education and training faded over time.*

Carreras had a significant and positive impact on enrollment in any education or training through quarter 4, or about one year after random assignment. This includes enrollment in lower bridge courses at Instituto and City Colleges of Chicago, as well as other schools. In the first quarter after random assignment, 54 percent of treatment group members were enrolled in education or training, compared with 34 percent of control group members, for a 20 percentage point impact (Exhibit 3-4 below). By quarter 4, the impact decreased to 9 percentage points (43 percent of treatment group members versus 34 percent of control group ones). From quarter 5 onward, there was no detectable impact of Carreras on enrollment.

Exhibit 3-4: Impacts on Any Education or Training Enrollment by Quarter, Three Years after Randomization

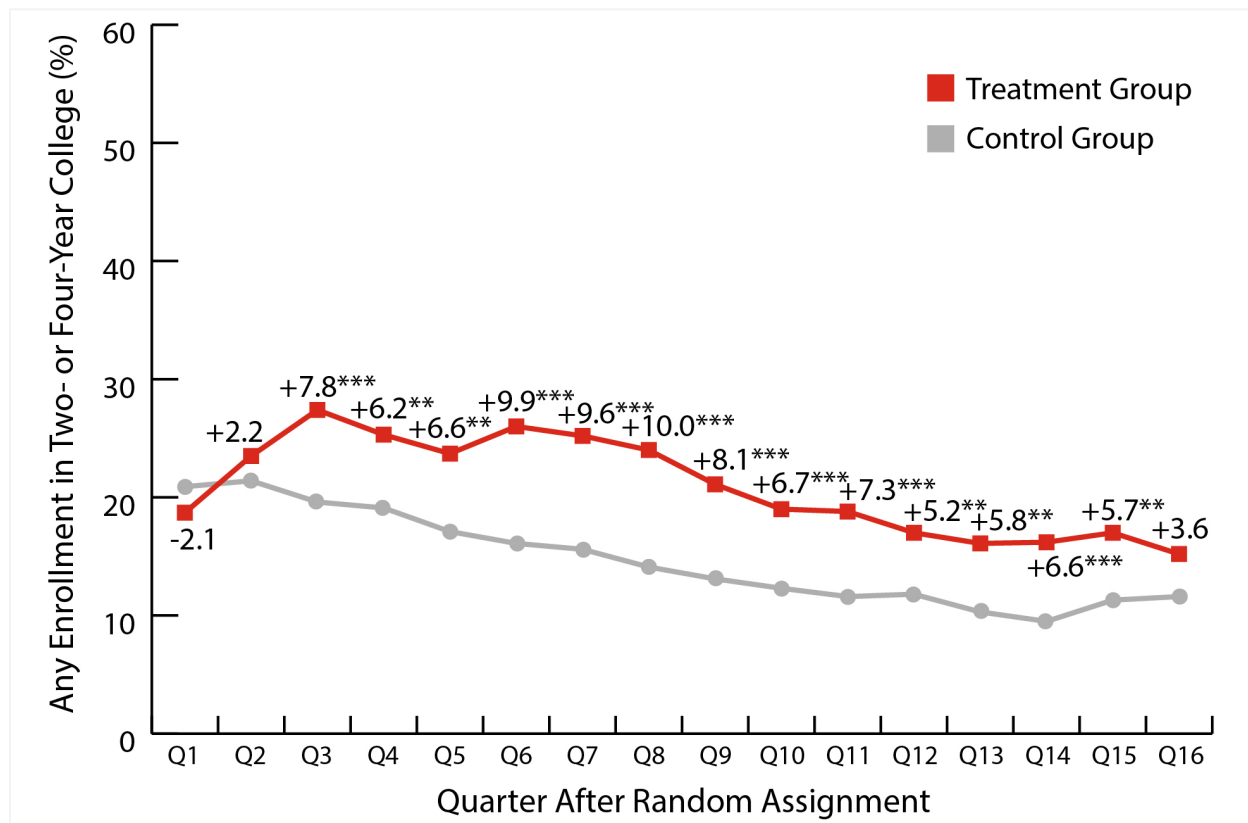
Source: PACE three-year follow-up survey.

Sample size: treatment group 341; control group 299.

Statistical significance levels based on two-tailed tests of differences between research groups: *** 1 percent level; ** 5 percent level; * 10 percent level.

■ **Carreras had an impact on college enrollment.**

Although the proportion of treatment group members enrolled in any education or training declined over time, the proportion enrolled in a two- or four-year college remained more consistent. Exhibit 3-5 below shows levels of enrollment in any two- or four-year college by quarter after random assignment, using NSC data, which are available through quarter 16 (four years) after random assignment. Data show that from quarter 3 onward, in each quarter but one the treatment group members were significantly more likely to be enrolled in college than were the control group. Treatment group college enrollment peaked in quarter 3 at 27 percent, whereas control group enrollment was highest in quarter 2 (21 percent). In quarter 16, however, there was no detectable difference between the treatment and control groups.

Exhibit 3-5: Impact on Enrollment in Two- or Four-Year College by Quarter, Four Years after Randomization

Source: National Student Clearinghouse.

Sample size: treatment group 401; control group 398.

Statistical significance levels based on two-tailed tests of differences between research groups: *** 1 percent level; ** 5 percent level; * 10 percent level.

Three-year follow-up survey data (not shown) show a pattern consistent with the NSC data through quarter 12 (survey data are not available after that time point). However, the proportion of treatment and control group members self-reporting as enrolled in college is higher in each quarter than is reported in the NSC data, reaching 36 percent for treatment group members (quarters 1 and 2), and 30 percent for control group members (quarters 5 and 6). Moreover, according to the survey responses, Carreras had an impact on college enrollment in only six of the 12 quarters. At the time of the survey, though, significantly more treatment group members (20 percent) reported college enrollment than did control group members (14 percent).

■ **Carreras had no detectable impact on full-time college enrollment.**

Part-time college attendance is one possible reason for limited credit accumulation. Participants who attend part-time will accumulate credits more slowly than full-time students. As Exhibit 3-6 above shows, treatment and control groups were both enrolled in the equivalent of just five full-

time months over the three-year follow-up period.³⁴ NSC data show that full-time enrollment never exceeded 7 percent for the treatment group (quarter 4) and 6 percent for the control group (quarter 3) (not shown).

Exhibit 3-6 also shows that Carreras did not have a detectable impact on FTE enrollment in any type of school, which would encompass courses offered at Instituto. This finding, however, is not unexpected, as the lower bridge courses are part-time by design to enable participants to combine work and school.

Exhibit 3-6: Three-Year Impacts on Other Enrollment Measures

Outcome	Treatment Group	Control Group	Impact (Difference)	Standard Error	Relative Impact	p-Value
Number of college credits (#)	14.9	13.2	+1.6	(2.12)	+12.4%	.219
FTE (full-time-equivalent) months enrolled in college (#)	5.1	5.0	+0.1	(0.62)	+2.6%	.420
FTE months enrolled in any school (#)	6.6	6.0	+0.6	(0.65)	+10.0%	.355
Current enrollment in training or education (%)	22.0	17.0	+5.0	(3.1)	+29.0%	.114
Sample size	341	299				

Source: PACE three-year follow-up survey.

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

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

■ Carreras had no detectable impact on college credit receipt.

According to survey responses, Carreras did not have a detectable impact on the number of college credits earned during the three-year follow-up period (Exhibit 3-6 below). Moreover, the number of credits accumulated at three years after random assignment is small (averaging 15 credits for the treatment group, 13 for the control group), representing about one full-time semester.

Putting this number into context, the slow accumulation of college credits among the treatment group reflects in part the time many participants spent in bridge courses provided at Instituto, which are not offered in colleges and thus not college credit bearing. It also suggests that treatment group members are starting with shorter-term credentials. Recall that most treatment group members started on a middle pathway course, which includes Vocational ESL, CNA, and Pre-LPN, with only CNA provided at City Colleges of Chicago.

Finally, the small number of credits is indicative of slow progression through the higher-level LPN credential and its prerequisites. Assuming full-time attendance at a City College of Chicago, the half-semester CNA program results in eight credits, well within the 15-credit

³⁴ *FTE months enrolled in college* is a cumulative measure for a follow-up period. It is the sum of values ranging from zero to one for each month, where the value is determined by either the fraction of time a participant was enrolled part-time, one for full-time, or zero for not enrolled.

average.³⁵ The standard one-semester LPN Prerequisites results in 15 credits;³⁶ thus, the average participant could complete this course, but it would account for all credits of the average. The one-year LPN program is 34 credits, more than twice the average number earned.³⁷ As noted below, few participants enrolled in college full time; also, Carreras students take the LPN Prerequisite course over two semesters.

3.4 Summary of Impacts on Postsecondary Education

In the three years since random assignment, Carreras continued to have impacts on college enrollment and credential receipt after the impacts observed at 18 months. In quarters 3 through 15, significantly more treatment group members enrolled in college than did control group members; that is, they attend upper bridge courses not offered at Instituto. Still, only a minority of participants in both groups enrolled in college (less than 30 percent).

In terms of credentials, Carreras had a small but statistically significant impact on receipt of a college credential requiring at least one year of study to earn, the pre-selected confirmatory outcome in the education domain. As well, the program had significant impacts on receipt of any college credential and receipt of exam-based certificates or licenses. Finally, Carreras had impacts on receipt of a healthcare credential from a college and receipt of a healthcare credential from any type of school.

³⁵ See <https://www.ccc.edu/colleges/malcolm-x/programs/Pages/Basic-Nursing-Assistant-Basic-Certificate.aspx>.

³⁶ See <https://catalog.ccc.edu/academic-program-requirements/practical-nursing-advanced-certificate/#specialadmissionrequirements>.

³⁷ See [https://www.ccc.edu/programs/Pages/Nursing-\(Practical\)-Advanced-Certificate.aspx](https://www.ccc.edu/programs/Pages/Nursing-(Practical)-Advanced-Certificate.aspx).

4. Impacts on Earnings and Employment

The career pathways theory of change as applied to Carreras suggests that positive impacts on occupational training credentials will lead to higher levels of earnings and healthcare-related employment. The short-term report did not include employment and earnings analyses because the research team deemed it too early for impacts in these areas to emerge. However, it seems reasonable to expect impacts after three years because program participants would have had time to complete one or more courses on the pathway, including an LPN, and find employment.

As described in Chapter 3, Carreras had impacts on postsecondary credential attainment, including college credentials that take at least one year of study to earn. However, the proportion of treatment group members earning the longer-term LPN credential associated with higher earnings was just 12 percent, and the impact compared with the control group was only 3 percentage points. As a consequence, it is unclear whether there would be impacts on earnings and other labor market outcomes at three years after random assignment.

This chapter reports whether training impacts translated into impacts on earnings, employment, and job quality. The confirmatory outcome for the earnings/employment domain—that is, the outcome we use to determine whether Carreras is meeting its goals three years after random assignment—is *average quarterly earnings in quarters 12 and 13 after randomization*.

4.1 Impact on Earnings

The research team used NDNH data to determine whether earnings impacts emerged by the end of the three-year follow-up period. Exhibit 4-1 summarizes these findings.

- ***Carreras had no detectable impact on average quarterly earnings in quarters 12 and 13.***

The top row in Exhibit 4-1 shows that the difference in average quarterly earnings in quarters 12 and 13 between the treatment and control groups was not statistically significant. Thus far, the small impact on LPN credential receipt has not translated into earnings impacts.

Exhibit 4-1: Three-Year Impacts on Earnings

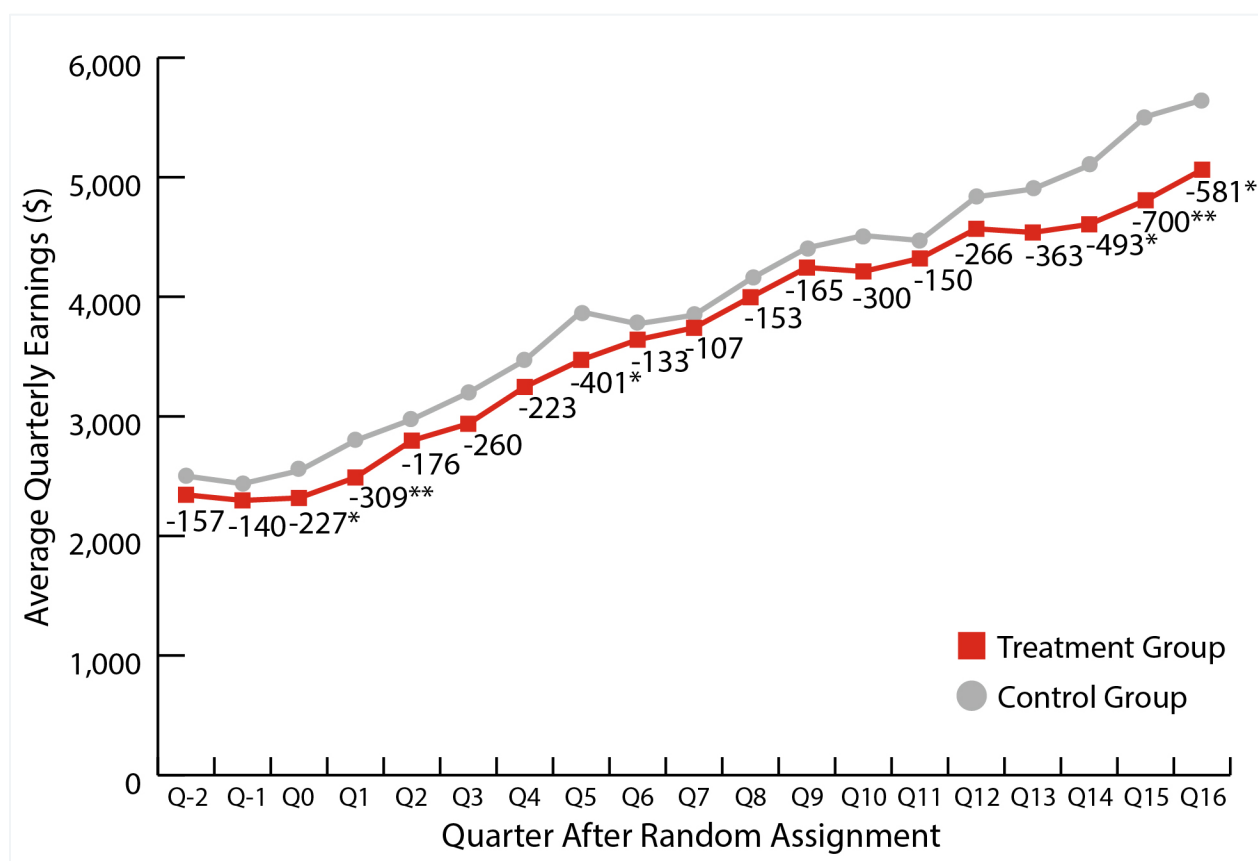
Outcome	Treatment Group	Control Group	Impact (Difference)	Standard Error	Relative Impact	p-Value
Confirmatory Outcome: Average quarterly earnings in follow-up Q12-Q13 (\$)	\$4,554	\$4,868	-\$314	\$264	-6.4%	.883
Total Earnings (\$)						
In last year of follow-up (Q10-Q13)	\$17,641	\$18,719	-\$1,078	\$955	-5.7%	.259
Since randomization (Q1-Q13)	\$48,207	\$51,211	-\$3,004	\$2,239	-5.9%	.180
Sample size	391	384				

Source: National Directory of New Hires.

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

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

Exhibit 4-2 shows earnings by quarter from before random assignment began to quarter 16 (four years) after it. In quarter 0 (the random assignment quarter), quarter 1, and quarter 5 there are negative impacts on earnings, ranging from -\$227 to -\$401. This may be explained by training participation patterns described in Chapter 3 (and shown in Exhibit 3-4). In quarters 1 through 4 after the random assignment quarter, treatment group members were significantly more likely to be enrolled in training at a college or elsewhere. In quarter 5, the difference in training participation is not statistically significant, but more treatment group members report being in training than control group members. Subsequently there are no detectable impacts on quarterly earnings until quarters 14 through 16, when there again is a negative impact on earnings, ranging from -\$493 to -\$700. College enrollment from NSC data (the only enrollment data available after quarter 12) is larger for treatment group members during quarters 14 to 16, but is not statistically significantly different in quarter 16 (see Exhibit 3-5). So enrollment differences are likely part of the explanation for the negative earnings impacts. Employment level and hourly wages were also considered as explanations for the negative earnings impact late in the follow-up period. However, as reported below, there were no significant differences in employment between the groups in quarters 14 through 16, although consistent with the negative earnings impacts, employment levels are slightly smaller for treatment group members during that time. The follow-up survey also found no significant differences in hours worked between employed treatment and control group members and no difference in employment in a middle-skill job that would likely be associated with better wages.

Exhibit 4-2: Impact on Average Earnings in Successive Follow-up Quarters

Source: National Directory of New Hires.

Sample size: treatment group: 391; control group: 384.

Statistical significance levels based on two-tailed tests of differences between research groups: *** 1 percent level; ** 5 percent level; * 10 percent level.

Follow-up survey data available for the 12 quarters after random assignment align with the NDNH trends, although the quarters with negative impacts differ. The survey data indicate negative earnings impacts in quarters 3, 4, and 6, ranging from -\$455 to -\$551 (not shown).

4.2 Impact on Employment and Job Characteristics

This section examines impacts on employment and job characteristics.

- ***Carreras had no detectable impact on employment during the three-year follow-up period.***

The top panel of Exhibit 4-3 shows that the same proportion of treatment and control group members were employed at the time of the three-year follow-up survey (65 percent). NDNH data show a similar pattern (Exhibit 4-4).

Exhibit 4-3: Three-Year Impacts on Employment and Career Progress

Outcome	Treatment Group	Control Group	Impact (Difference)	Standard Error	Relative Impact	p-Value
Employed at survey follow-up (%)	64.7	64.9	-0.2	(3.8)	0.0%	.518
Indicators of Career Pathways Employment						
Employed and: (%)						
Earning \$14 per hour or more^a	27.5	27.1	+0.4	(3.5)	+1.5%	.495
Working in a healthcare occupation ^b	24.6	19.3	+5.3	(3.4)	+27.5%	.115
Currently employed in a job requiring at least mid-level skills^c	20.6	25.5	-5.0	(3.4)	-19.6%	.928
Indicators of Job Quality						
Employed and: (%)						
Working at least 32 hours per week	44.4	48.5	-4.1	(4.1)	-8.4%	.316
Working straight day, evening, or night shifts	54.5	58.3	-3.8	(4.0)	-6.5%	.349
Working in job that offers health insurance	43.2	44.2	-1.0	(4.0)	-2.2%	.806
Working in job that has supportive working environment ^d	31.0	30.8	+0.2	(3.8)	+0.1%	.962
Sample size	341	299				

Source: PACE three-year follow-up survey.

^a \$14 per hour is the 60th percentile of the wage distribution for employed control group members at the time of the follow-up survey.

^b Duties include a role in the diagnosis or treatment of health problems.

^c O*Net Job Zone 3 or higher.

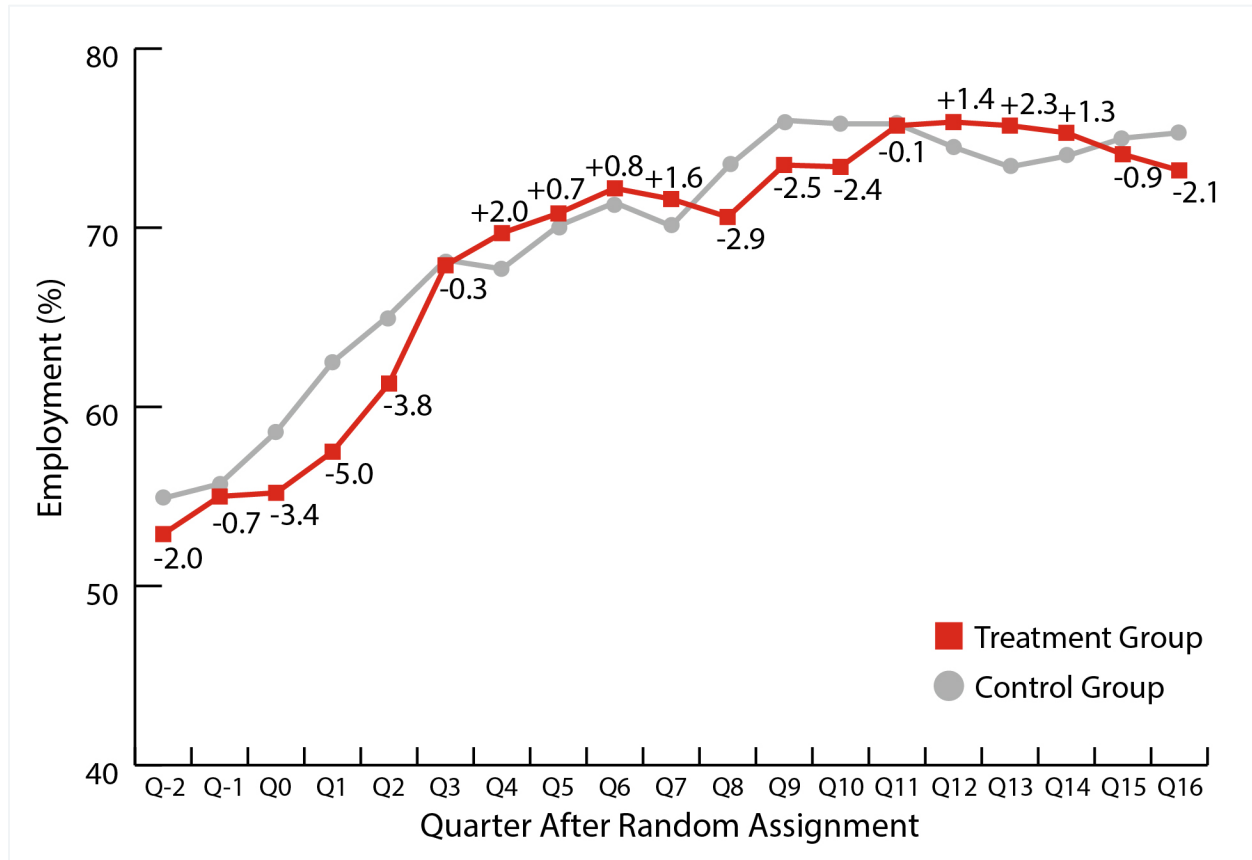
^d A job is considered to have a supportive working environment if the worker reports a rich combination of family-friendly policies, helpful coworkers and supervisors, high job satisfaction, generous fringe benefits, and opportunities for advancement.

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

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

Exhibit 4-4 shows employment patterns using NDNH data. About 75 percent of each group was ever employed during quarter 12. There were no significant differences in employment between the groups either prior to random assignment or at any time during the follow-up period.³⁸ One might expect a significant difference in employment rates between treatment and control group members during the quarters in which treatment group members are significantly more likely to be enrolled in training or education activities, thus potentially reducing their ability to work. However, there are not significant employment differences even in quarters where there are enrollment differences in any type of school or specifically in a college.

³⁸ The difference in employment rates between the survey (65 percent) and NDNH data (75 percent) is likely because the survey is a point-in-time estimate, whereas the NDNH shows whether a study participant was ever employed during the quarter in question. Thus, a survey respondent may have worked at some point during the quarter but was not working at the time of the survey.

Exhibit 4-4: Employment Impacts by Quarter

Source: National Directory of New Hires.

Sample size: treatment group: 391; control group: 384.

Statistical significance levels based on two-tailed tests of differences between research groups: *** 1 percent level; ** 5 percent level; * 10 percent level.

■ ***Carreras had no detectable impact on career pathways employment.***

The second panel of Exhibit 4-3 above shows three different indicators of career pathways employment: working in a job that pays moderate wages, working in a healthcare occupation, and currently employed in a job requiring mid-level skills or higher.

For the first measure, the research team defined moderate wages as the 60th percentile of the wage distribution for control group members who were employed—rounding, that wage is \$14 per hour. The same proportion of treatment and control group members—27 percent—were employed at jobs that paid \$14 per hour or more at the time of the three-year survey.

On the second measure, the survey included three open-ended questions about the kind of work done, usual activities completed, and the job title. Responses to these three questions were converted into a U.S. Department of Labor Standard Occupational Classification (SOC) code and we used that code to classify employment as in the healthcare sector or not (see Appendix B). Using this measure, the team detected no impacts on working in a healthcare occupation.

Finally, there was no difference in the proportion of each group employed in a job that required at least mid-level skills.³⁹ Survey responses suggest that upwards of 75 percent of treatment and control group members are in lower-skilled jobs.

■ ***Carreras had no detectable impact on indicators of job quality.***

The bottom panel of Exhibit 4-3 reports treatment and control group self-assessment of job quality. There were no significant differences between the treatment group and control group in working in a job for at least 32 hours per week, working straight shifts, working in a job with health insurance, or working in a job with a supportive work environment.

The research team further explored job characteristics for study participants employed at the time of the survey.⁴⁰ Carreras had no detectable impacts on the proportion of treatment group members earning more than \$14 per hour (42 percent for both groups). Nor did Carreras have an impact on median wage (about \$13 per hour for both groups) or on the number of hours worked per week (39 for treatment group members versus 40 for control group members) (all not shown).

4.3 Summary of Impacts on Earnings and Employment

Carreras had no detectable positive impact on average quarterly earnings in follow-up quarters 12-13, the pre-selected confirmatory outcome in the earnings and employment domain at this later follow-up point. Nor did Carreras have a detectable positive impact on earnings in any quarter. In six quarters, the program had a negative impact on earnings. This includes the random assignment quarter and following one, when more treatment group than control group members were enrolled in training.

Carreras had no detectable impact on employment during the three-year follow-up period. The same proportion of treatment and control group members were employed at the time of the three-year follow-up survey. There were no detectable impacts on the characteristics of employment, including hourly wage of at least \$14 per hour, jobs that require at least mid-level skills, number of hours worked per week, type of shift (straight or varying), availability of health insurance, or a supportive working environment.

³⁹ O*NET defines occupations in Job Zone 3 as those that “need medium preparation.” Most occupations in this zone require training in vocational schools, related on-the-job experience, or an associate degree. O*NET lists Medical Assistant as an example of an occupation in Job Zone 3 (O*NET 2019).

⁴⁰ The sample size for conditional employment outcomes was treatment group 220; control group 193.

5. Impacts on Other Life Outcomes

This chapter examines whether Carreras en Salud affected other participant life outcomes, including career knowledge and support, family economic well-being, parental engagement, and child outcomes. Its theory of change implies that outcomes in this domain will improve as a result of increases in education and training that lead to more favorable earnings and employment outcomes. As discussed in Chapter 3, treatment group members were significantly more likely than the control group members to earn college credentials. However, training as of three years after random assignment has not translated into career-track jobs with higher earnings, as seen in Chapter 4. As a result, impacts on the more distal life outcomes are unlikely.

5.1 Impact on Career Knowledge and Supports

This section reports Carreras's impacts on self-assessed career knowledge and availability of career supports.

- ***Carreras had no detectable impact on career knowledge or access to career supports.***

The evaluation used multi-item scales on the three-year follow-up survey to measure study participants' assessment of their knowledge and supports. As Exhibit 5-1 shows, there was no detectable difference between the treatment and control group on any measures.

At 18 months, Carreras did have a positive and significant impact on access to career supports, but the impact did not persist. The six-item scale included on the 18-month and three-year surveys has two response categories (1=no, 2=yes), with numbers closer to 2 on the scale score indicating greater access. As Exhibit 5-1 shows, both groups reported similar levels of access to career supports (1.7 out of 2.0). The impact's loss of significance at three years appears driven by a reduction in the treatment group average (from 1.77 at 18 months to 1.70 at three years) rather than by an increase in the control group average (from 1.69 at 18 months to 1.71 at three years) (not shown).

Exhibit 5-1: Impacts on Career Knowledge and Career Supports

Outcome	Treatment Group	Control Group	Impact (Difference)	Standard Error	Effect Size	p-Value
Confidence in career knowledge^a	3.39	3.43	-0.04	(0.04)	-0.07	.819
Career Supports						
Access to career supports^b	1.70	1.71	-0.01	(0.03)	-0.04	.669
Perceived career progress ^c	3.34	3.27	+0.07	(0.06)	0.10	.225
Sample size	341	299				

Source: PACE three-year follow-up survey.

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

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

Note: Secondary outcomes are **bolded** and statistical significance is based on one-tailed tests; exploratory outcomes are not bolded and statistical significance is based on two-tailed tests. "Effect size" represents impacts in column 3 as a fraction of the pooled standard deviation across the treatment and control groups. See Appendix B for a description of outcome measures.

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

5.2 Impact on Family Economic Well-Being

This section reports impacts for several measures of family economic well-being, including health insurance coverage, receipt of means-tested public benefits, amount of unsecured debt and student debt, and signs of financial distress.

■ **Carreras had no detectable impact on measures of family economic well-being.**

The career pathways theory of change as applied to Carreras suggests that several program components would lead to positive outcomes on a range of family economic well-being measures, including receipt of means-tested public benefits, debt levels, and signs of financial distress. These program components include tuition-free education (lower bridges) or assistance securing financial aid (upper bridges), case management (lower bridges), academic advisors (both bridges), and employment assistance (both bridges).

As Exhibit 5-2 below shows, there was no detectable difference in a variety of measures of family economic well-being, including the three-year impact study's secondary outcomes (*health insurance coverage from any source, receipt of means-tested public benefits, unsecured debt of \$5,000 or more, or financial distress*). About 40 percent of both the treatment and control groups reported signs of financial distress overall. There were also no differences between the treatment and control groups in household income, personal income, or adequacy of food for the household.

Exhibit 5-2: Impacts on Varied Measures of Family Economic Well-Being

Outcome	Treatment Group	Control Group	Impact (Difference)	Standard Error	Relative Impact	p-Value
Has health insurance coverage^a (%)	81.3	86.9	-5.7	(2.9)	-16.0%	.973
Receipt of Means-Tested Public Benefits						
Any means-tested public benefits (%)	67.2	58.7	+8.5	(3.7)	+18.0%	.989
SNAP	25.1	20.2	+4.9	(3.1)	+12.0%	.115
Medicaid	36.4	37.7	-1.3	(3.7)	-3.0%	.723
Debt						
Unsecured debt of \$5,000 or more^b	24.4	23.8	+0.6	(3.5)	+2.0%	.855
Average Student Debt Amount (\$)						
Personal student debt	1,140	1,548	-409	(429)	-26.0%	.170
Parental student debt	100	372	-272	(200)	-73.0%	.175
Financial Status						
Any signs of financial distress^c (%)	44.4	40.0	+4.4	(3.9)	+9.0%	.869
Average monthly household income (\$)	2,804	2,772	+32	(149)	+2.0%	.830
Average monthly personal income (\$)	1,388	1,423	-34	(92)	-3.0%	.708
Didn't experience food insecurity (%)	89.6	91.9	-2.3	(2.3)	-8.0%	.315
Sample size	341	299				

Key: SNAP = Supplemental Nutrition Assistance Program.

Source: PACE three-year follow-up survey.

^a *Has health insurance coverage* includes the offer of healthcare by an employer or actual receipt of health insurance if not offered by an employer.

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

^c *Signs of financial distress* is a flag for utility disconnects, delayed health/dental care, hunger, or trouble paying bills or making ends meet.

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

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

5.3 Impact on Parental Engagement and Child Outcomes

This section reports impacts for several outcomes related to parental engagement and child well-being for study participants with children under age 18 at the time they entered the study. Other than childcare for children of parents in the lower-bridge courses, Carreras provided no direct services to children. However, it is plausible that effects might flow to children from parents' experiences with the program and increases in their educational attainment. It is possible that parents who pursue training in a field, complete the training, and move into employment in their field feel they accomplished a big goal, which could more incline them to encourage their children to do well in school and attend postsecondary education—a positive for children. As well, it is possible that parents could model the value of education; for example, by doing homework together with their children—also a positive. Conversely, it is possible that parents who are at school or working have less ability to engage with and supervise their children—a negative for children.

The three-year follow-up survey asked child outcome questions only of parents who had minor children at the baseline interview, and for some questions, only of parents of children in grades

K-12 at the time of the survey. Of the 640 survey respondents, 298 were parents at study enrollment (153 treatment group members and 145 control group members). A subset of parents (232) have children in grades K through 12 at the time of the three-year survey. As a result, this part of the analysis is not well powered to detect small differences in impacts.⁴¹

■ **Carreras had no detectable impact on parental engagement and child outcomes.**

The top panel of Exhibit 5-3 reports impacts for parental engagement with all children, birth to age 18. More than 85 percent of both treatment and control group members believed their children would graduate college. Less than a third of each group report they are always present for meals and other daily family activities. Finally, parents in the treatment and control group reported similar levels of self-efficacy for helping their child navigate school.

The bottom panel of Exhibit 5-3 (below) reflects parental report of child outcomes for children in grades K-12. There were no detectable differences in child outcomes between the treatment and control groups.

Exhibit 5-3: Impacts on Parental Engagement and Child Outcomes

Outcome	Treatment Group	Control Group	Impact (Difference)	Standard Error	Relative Impact	p-Value
All Children						
Parent believes child will graduate college (%)	87.6	85.2	+2.4	(4.3)	2.8%	.575
Parent almost always present for meals and other daily family activities (%)	28.7	31.9	-3.2	(5.4)	-10.0%	.557
Parent self-efficacy for helping child navigate school (7-item, 1-6 scale) ^a (#)	3.29	3.30	-1.0	(0.05)	-0.03 ^b	.823
Sample size	153	145				
Children Grades K-12						
Child repeated any grades (%)	4.2	4.5	-0.3	(3.1)	-6.7%	.916
Days child late for school last month (#)	0.58	0.57	+0.01	(0.18)	1.7%	.939
Days child absent from school last month (#)	0.77	0.93	-0.15	(0.19)	-16.1%	.413
Sample size	116	116				

Source: PACE three-year follow-up survey.

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

^b For the scale variable (parent self-efficacy), we report effect size rather than relative impact. The effect size represents the impact in column 3 as a percentage of the pooled standard deviation across the treatment and control groups for that variable.

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

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

⁴¹ The *Analysis Plan* for this three-year study (Judkins et al. 2018) noted that we would report impacts for all children and children K-12 questions in programs where we had data for at least 200 responses across treatment and control group members. With 298 and 232 parents with children, respectively, Carreras reached that cutoff.

5.4 Summary of Impacts on Other Life Outcomes

There was no detectable difference between the treatment and control group on any of the multi-item scales used to measure career knowledge and supports. Nor did Carreras have a detectable impact on family economic well-being, such as levels of health insurance from any source, means-tested public benefit receipt, debt, and signs of financial distress.

Finally, Carreras had no detectable impact on parental engagement among participants who had children at the time they entered the study. Similar proportions of treatment and control group members reported family engagement, such as being present for meals. Most parents in both groups believe their children would graduate college.

6. Cost Analysis

This chapter presents the costs of services and postsecondary education and training received by Carreras en Salud treatment group members and by control group members. It then calculates the total cost of Carreras as the difference between treatment group and control group costs. This report documents Carreras's costs for two reasons. First, should earnings impacts materialize in subsequent quarters of data collection, the cost estimates presented here will serve as the basis for a full cost-benefit analysis.⁴² Second, documenting intervention costs allows future meta-analyses of education and workforce training initiatives to include the intervention costs along with impact estimates in attempts to draw conclusions on the wider body of research evidence.

The analysis estimates two primary categories of costs—**program services** and **postsecondary education and training**—described in Exhibit 6-1. The cost to Instituto of operating Carreras is the sum of all items in the program services category for the treatment group and is calculated as the cost per treatment group member. Costs to society as a whole are estimated for the program services and education and training categories for each of the treatment and control groups. Cost differences are calculated for each category as the cost per treatment group member minus the cost per control group member. Finally, the total cost to society of the Carreras program is the sum of the cost differences for the two categories.⁴³

Exhibit 6-1: Cost Analysis Elements

Cost Category	Treatment Group	Control Group
Program services	From Carreras en Salud: <ul style="list-style-type: none"> • Assessment • Tuition-free lower bridge courses (contextualized ESL and basic skills instruction, Pre-LPN courses) • Fill-the-gap tuition assistance • Job readiness workshops • Academic advising and tutoring • Non-academic advising and assistance with supports, including transportation and on-site childcare and individualized job search assistance 	Alternatives available in the community (including non-Carreras services available to them at Instituto): <ul style="list-style-type: none"> • Assessment • Standard, stand-alone ESL and basic skills courses • Job readiness workshops • Job search assistance through American Job Centers
Postsecondary education and training	All education and training and related services <i>not</i> provided at Instituto (e.g., upper bridge courses at City Colleges of Chicago)	All education and training and related services not included in the program services category

⁴² The estimates are based on data collected during the PACE and CPIO studies. Documenting the costs here puts the estimates on record while the cost data are available and our questions could be addressed with program staff.

⁴³ Costs reported in this analysis do *not* include indirect costs to participants of their program participation, most notably the cost of foregone earnings (as participation implies lower concurrent levels of employment). See Chapter 4, especially Exhibit 4-2, for an analysis of earnings over the full follow-up period.

Program Services Costs. The program services cost category includes all elements in the top row of Exhibit 6-1 for the treatment and control groups, respectively. For treatment group members, Carreras en Salud provides a range of services, as described in Chapter 1, Section 1.1: academic and non-academic assessment, contextualized basic skills (ESL, GED) and occupational skills instruction (lower bridge), academic and non-academic advising and tutoring, and employment services (see Martinson et al. 2018 for details). Lower bridge courses use Carreras instructors and receive support from Instituto staff, and so are included in this category of costs.⁴⁴ (Upper bridge courses are provided at City Colleges of Chicago and are included in the second cost category.) Some Carreras services are available to all program participants; other Carreras services are specific to upper or lower bridge course participants. The program services cost estimate per treatment group member includes all these services (top row, first column). For control group members, comparable costs in the program services category are estimated for any similar services they receive in the community (top row, second column).

Postsecondary Education and Training Costs. The second cost category includes all postsecondary education and training and related services not already included in the program services category (i.e., not including courses at Instituto or similar stand-alone ESL and basic skills courses at other providers in the community). Both treatment and control group members participate in a variety of mainstream postsecondary education and training. The amount or type of this education and training, and resulting costs to society as a whole, could be affected by Carreras participation. For the treatment group, this category includes the upper bridge courses.

Section 6.1 reports the cost of program services. Section 6.2 reports the cost of postsecondary education and training. Section 6.3 reports the total cost of Carreras to society as a whole. Appendix G provides additional detail, including how costs to society as a whole are distributed across four stakeholder groups: participants, the federal government, state and local government, and the rest of society.

6.1. Program Services Costs

The program services cost for Carreras per treatment group member is \$4,821.⁴⁵ Exhibit 6-2 shows costs for key services elements. The academic and non-academic advisors and instructors for courses provided at Instituto cost \$2,541 per treatment group member. Administrative costs are \$1,518 per treatment group member. Materials, childcare, and transportation assistance (provided to support enrollment in on-site courses), and other

⁴⁴ In Chapter 3, Section 3.3, the lower bridge courses are included in the impact of Carreras in any enrollment analysis, but not in any college credit receipt analysis, because the courses are not offered at colleges.

⁴⁵ To align with “intent to treat” impact estimates, costs are measured for all treatment group members, whether or not they access any Carreras program services. The Carreras program services cost per treatment group member is estimated using expenditure reports for Fiscal Year 2014 (October 2013 to September 2014).

assistance are \$762.⁴⁶ In addition to these program services costs, Carreras provided an average of \$128 of fill-in-the-gap tuition assistance per treatment group member to support their postsecondary education and training, resulting in total costs to Instituto of operating the Carreras program of \$4,949.

Exhibit 6-2: Carreras en Salud Program Services Total Costs per Treatment Group Member

Element of Costs	Cost per Treatment Group Member (\$)
Carreras program services—total ^a	4,821
Academic and career advisors, course instructors for lower bridge courses	2,541
Administration and overhead	1,518
Materials, childcare and transportation assistance, and other assistance	762
Fill-in-the-gap tuition assistance provided by Carreras ^b	128
Costs incurred by Instituto for the Carreras program	4,949

Source: PACE cost-data-related interviews, Carreras program financial records.

^a This is the cost to society as a whole per treatment group member of Carreras program services. It is used to calculate the cost difference in program services received by the treatment group versus the control group.

^b Tuition assistance is not included in the cost of program services because this assistance covers costs of postsecondary education (the other cost category); it is reported here, however, to show the total costs incurred by Instituto for the Carreras program. The costs related to instructional services provided at postsecondary institutions are shown in the next section.

Control group members did not have access to the Carreras program, but they could participate in similar training and job search assistance services available in the community. These included ESL courses, basic skills courses, and training programs in manufacturing and retail offered at Instituto but not part of Carreras. Martinson et al. (2018) document that control group members accessed such supportive and employment services, but at a lower rate than treatment group members did inside or outside Carreras.⁴⁷

Martinson et al. (2018) reports that control group members accessed ESL and basic skills training and career advising and job search assistance at much lower rates than treatment group members. Based on these findings, the cost analysis estimates that control group members used these services at a rate more than 80 percent lower than did treatment group

⁴⁶ See Section 1.1 in this report and Chapter 3 of the earlier *Implementation and Early Impact Report* (Martinson et al. 2018) for a complete listing and description of Carreras program services, all of which are included in this cost.

⁴⁷ The estimate of control group costs also reflects that services accessed by control group members were likely less intensive (e.g., career advising at an AJC is provided in fewer, shorter sessions than Carreras advising is).

members (see Appendix G). The cost of services that control group members accessed in the community is estimated at \$862 per control group member.⁴⁸

- ***The Carreras program services cost difference (treatment – control) is about \$4,000 per treatment group member.***

The cost difference for Carreras program services is \$3,959—the cost of program services per treatment group member (\$4,821) less the estimated cost per participant of services available in the community accessed by control group members beyond what treatment group members accessed (\$862).

6.2. Postsecondary Education and Training Costs

Carreras could affect the cost to society as a whole of postsecondary education and training in two ways.⁴⁹ First, Carreras could change the amount of education and training that treatment group members obtained. Second, Carreras could change the type of institutions where treatment group members enrolled (e.g., two-year or four-year colleges, private or public institutions, for-profit or nonprofit). This section estimates the cost of postsecondary education and training based on the impacts reported in Chapter 3, excluding the cost of the Carreras lower bridge instruction that is included in the program service costs described above in Section 6.1.

- ***The average cost of postsecondary education and training (exclusive of Carreras) is lower for treatment group members than for control group members.***

In the first three years after random assignment, the treatment group costs for postsecondary education and training obtained outside of Carreras (i.e., not including any Carreras lower

⁴⁸ Appendix G documents the sources and assumptions used to make this approximation. In brief, Exhibits 4-6 and 5-2 from the *Implementation and Early Impact Report* (Martinson et al. 2018) are used to estimate the share of control group members receiving services as a percentage of treatment group members receiving services. Costs for similar Carreras services are scaled by this relative percentage. The approximation captures control group member access to community resources beyond what treatment group members accessed in the community (i.e., the cost difference of community resource use), under the assumption that Carreras replaced most use by treatment group members of community resources.

⁴⁹ As discussed in Appendix G, these costs can be borne by participants (tuition and fees), the federal government (Pell grants), state and local government (funding of public postsecondary institutions), and other members of society (philanthropy by private donors).

bridge courses) is \$864 less than the costs for control group members (Exhibit 6-3).⁵⁰ This estimate includes all direct costs associated with the postsecondary education and training.⁵¹

The lower cost for treatment group members is due to a shift in the types of institutions where treatment group members enrolled compared to the control group. Number of FTE months enrolled (other than in Carreras) were nearly the same for treatment group and control group members (Appendix G, Exhibit G-2).⁵² However, the type of institutions where treatment group members enrolled was affected by Carreras. Treatment group members were more likely than control group members to attend public community colleges (specifically, City Colleges of Chicago that offered upper bridge LPN Prerequisites and LPN courses) and less likely than control group members to attend private, for-profit institutions, which typically cost more than public institutions (see Appendix G).

Exhibit 6-3: Cost of Postsecondary Education and Training per Treatment and Control Group Member

Outcome	Cost per Treatment Group Member (\$)	Cost per Control Group Member (\$)	Cost Difference (\$)
Instructional cost of FTE enrollment (excluding the Carreras lower bridge courses) ^a	5,316	6,180	-864

Source: PACE three-year follow-up survey, Delta Cost Project Database, Integrated Postsecondary Education Data System.

^a This includes the costs for the Carreras upper bridge courses at City Colleges of Chicago and all other courses at any postsecondary institution where study participants enrolled. It excludes the costs for lower bridge courses provided at Instituto, which are included in the program services cost in prior Section 6.1.

■ ***On average, treatment group members had fewer out-of-pocket education and training costs than control group members did.***

An additional consequence in this shift of institution type is that treatment group members had fewer out-of-pocket education and training costs than control group members did. The cost analysis finds that, on average, treatment group members have -\$392 in out-of-pocket costs; that is, financial aid exceeds tuition and fees. For Pell grants (the main federal financial aid

⁵⁰ Costs of postsecondary education and training are estimated for the three-year follow-up period, the same period as for the estimated enrollment impacts in Chapter 3. Cost differences between the treatment and control groups for postsecondary education and training could change with additional data collection. Chapter 3, Exhibit 3-4, shows that education and training enrollment measured in the PACE three-year follow-up survey was not statistically significantly different after Q4 after random assignment, suggesting that additional data would not show greater cost differences. However, Exhibit 3-5 shows that education and training enrollment impacts measured using NSC data remain statistically significant through Q15, suggesting that cost differences could increase.

⁵¹ As documented in Appendix G, costs are measured by institution expenses as reported in the Integrated Postsecondary Education Data System. These costs do not include the value of treatment group or control group members' time or most indirect induced costs associated with attending training (living expenses, books, childcare, etc.).

⁵² As defined in Chapter 3, *FTE months enrolled* is a cumulative measure of full-time-equivalent enrollment that is the sum of values ranging from 0 to 1 for each month. The value is determined as the fraction of time a participant was enrolled part-time, or 1 for full-time, or 0 for not enrolled.

program for postsecondary education and training), such a balance remaining after tuition and fees is remitted to the student to help cover living expenses while enrolled in college.⁵³ Control group members have \$32 in out-of-pocket education and training costs. Thus, the cost difference between treatment group and control group is -\$424. (See Appendix G.2 for more detail on out-of-pocket expenses.)

6.3. Total Cost of Carreras to Society

This section sums program services costs and postsecondary education and training costs to calculate the total cost of Carreras per treatment group member to society as a whole.

■ ***Carreras costs about \$3,000 per treatment group member.***

Exhibit 6-4 shows that the total cost of Carreras to society as a whole is \$3,095 per treatment group member. Carreras costs are comparable to other sectoral training programs.⁵⁴

Exhibit 6-4: Total Cost of Carreras

Outcome	Cost per Treatment Group Member (\$)	Cost per Control Group Member (\$)	Cost Difference (\$)
Program Services—from Carreras (treatment group) and alternatives in the community (control group)	4,821	862	3,959
Postsecondary Education and Training—excluding lower bridge courses at Instituto	5,316	6,180	-864
Cost to society for the Carreras program	10,137	7,042	3,095

Source: Exhibits 6-2 and 6-3.

Exhibit 6-4 shows total costs of Carreras en Salud for society as a whole. Considering costs from the treatment group member (i.e., participant) perspective provides additional insight into the program. As detailed in Appendix G, treatment group members bear no financial costs of program services; further, financial aid is, on average, higher than tuition and fees, implying disbursements to treatment group members to cover living expenses while enrolled in college. This results in treatment group members having a cost of -\$552 from Carreras; that is,

⁵³ The analysis assumes that study participants qualify for and receive the average amount of financial aid received by students receiving aid at the institutions where participants enroll.

⁵⁴ A recent study of the relatively low-intensity, national Workforce Investment Act (WIA) and Workforce Innovation and Opportunity Act programs (Fortson et al. 2017) found per-person costs ranging from \$1,127 (core program, which does not include occupational training) to \$2,376 (full-WIA program). Figures are adjusted for inflation to 2014 dollars. Recent cost estimates of sectoral training programs include a cost per treatment group member of \$11,156 for Project QUEST program services and assistance (Roder and Elliot 2019). Carreras costs are similar to (but lower than) the total cost per treatment group member after three years for programs studied in the WorkAdvance demonstration, which ranged from \$6,231 to \$7,929 (Hendra et al. 2016), with cost differences ranging from \$3,581 to \$6,046.

treatment group members have more financial resources available than do control group members.

Appendix G provides additional information about how Carreras costs vary across stakeholder perspectives and cost analysis methods.

7. Discussion and Conclusions

The Carreras en Salud program was designed and is operated by the nonprofit organization Instituto del Progreso Latino. It aims to help low-income, low-skilled Latinos improve their basic skills; enroll in and complete occupational training programs to gain skills and credentials for CNA and LPN positions; and ultimately find jobs in healthcare occupations. The program also seeks to address the demand for bilingual healthcare workers in the Chicago area. This report documents program impacts on postsecondary training, earnings and employment, and other life outcomes three to four years after random assignment.

Carreras increased *receipt of college credentials requiring at least one year of study to earn* by about 3 percentage points: 12 percent of the treatment group attained such a credential, compared to 9 percent of the control group. The program had no detectable impact on *average quarterly earnings in quarters 12 and 13 after random assignment*.

Beyond those two confirmatory outcomes, Carreras increased receipt of college credentials generally (29 percent of treatment group members versus 17 percent of the control group) and exam-based credentials (40 percent versus 18 percent), but had no detectable impact on college credit accumulation.

The program did not affect overall levels of employment; about 65 percent of both groups were employed at the time of the three-year follow-up survey and the average hours worked per week among those employed was about 40. Nor did Carreras generate detectable impacts on other measures of interest, such as perceived career progress, job quality, or family economic well-being. Finally, the program did not have a positive impact on earnings in any quarter, and it had negative impacts in six of the 16 follow-up quarters based on NDNH data, including the last three follow-up quarters (quarters 14-16) in that data.

This concluding chapter explores why the impact on credentials has not translated into a detectable, positive impact on earnings. It ends with questions for future research.

7.1 Possible Explanations for Carreras en Salud Impact Findings

The three-year impact study found impacts on training, whereas employment and earnings impacts were absent. This section explores several possible explanations.

- **Two of the seven steps on Carreras's nursing pathway are associated with a credential; a minority of treatment group members earned credentials because most did not reach these steps.**

The Carreras program produced impacts on training and credential receipt. However, a minority of treatment group members received a credential within three years of random assignment. This is related to the structure of the pathway: of its seven courses, only the CNA and LPN courses are associated with credentials needed to work in the nursing field. Three courses prepare participants for the CNA, and two prepare them for the LPN. That a minority of treatment group members earned either credential helps explain why three fourths of treatment

group members (75 percent) reported on the three-year survey that they are not working in a healthcare occupation.

- **Few treatment group members earned a longer-term credential associated with well-paying jobs.**

Twelve (12) percent of treatment group members received a college credential typically requiring a year or more of study to earn, which for the Carreras pathway is an LPN. This credential is associated with much higher wages than is the shorter-term pathway credential, the CNA. LPN positions pay an average of \$55,000 per year (\$26.51 per hour) in the Chicago area, although the starting wage is likely lower. CNA positions pay considerably less; for this reason, program staff consider the CNA to be only the career pathway's *initial* employment-related credential, not its end point. The average annual wages for CNAs in the Chicago area (\$29,000, or \$14.71 per hour) do not differ substantially from wages that could be earned outside of the healthcare field, such as in food preparation and serving (\$28,000 or \$13.51 per hour). A recent study using data collected for the evaluation of the first round of Health Profession Opportunity Grants (HPOG 1.0) found that CNA completers had lower earnings in the 12 quarters following training than completers of other common HPOG trainings did, averaging \$11.97 per hour and lower than the national average for CNAs (\$13.29) (Loprest and Sick 2018).

Significantly more treatment group members than control group members earned a longer-term credential (LPN), but the impact was only 3 percentage points. Neither the proportion of treatment group members with a longer-term credential nor the differential with control group members would be large enough to produce an earnings impact for the entire sample.

- **Ongoing higher-level training in the treatment group likely depresses earnings.**

Carreras had negative impacts on earnings in six quarters: 0 (the random assignment quarter), 1, 5, 14, 15, and 16. The research team compared each of these quarters to training enrollment data from the three-year follow-up survey and NSC to address whether treatment group members were significantly more likely than the control group to be enrolled in any training (survey data) or college (NSC data). In quarters 5, 14, and 15 significantly more treatment group members were enrolled in college. In quarter 1 they were more likely to be enrolled in any education or training program (including those offered at Instituto). Training impacts for quarter 0 would be unlikely, depending on the date of study participants' random assignment, as they may not have had time to enroll in a course that quarter. Still, it appears that the negative impact in quarter 0 could be due to treatment group members starting training immediately after random assignment, which depressed their earnings.

- **Because many participants start in a lower-bridge course, it may take more than three years to detect long-term credential and earnings impacts for the full sample.**

As described in Chapter 3, most treatment group members enrolled part-time in training. Carreras designed the lower bridge courses provided at Instituto to accommodate working participants, thus they were part-time. Although the upper bridges at City Colleges of Chicago

were full-time, few treatment group members (or control group members) enrolled in college full-time during the three-year follow-up period. The highest proportion was 7 percent for the treatment group (in quarter 4). Given that together the LPN Prerequisites and LPN courses take four full-time semesters, we would not expect many treatment group members to complete the LPN credential within three years. Because most treatment group members attended training part-time, it will likely take many years for them to reach and complete an LPN. Additionally, most participants worked while in training, and among those who worked, most worked close to 40 hours per week (see Exhibit 4-3). Almost half live with children, all of which further limit the time available to enroll in and complete classes (see Exhibit 1-2).

7.2 Implications for Programs

The mixture of positive impacts in the education domain and no detectable impact in the employment domain suggests the following implications for Carreras en Salud and similar multi-step sectoral job training programs.

- **Programs can positively affect enrollment in and progression to higher-level courses, as well as credential receipt, for non-traditional students.**

Carreras targeted low-income, low-skilled Latino adults. Its program records demonstrate that non-traditional students can engage in, persist, and complete programs. More than 90 percent of treatment group members enrolled in at least one course. The design of its nursing pathway ensures that participants can start in a course commensurate with their skills level. Moreover, 44 percent participated in two courses, demonstrating progression on the pathway. The proportion of participants enrolled in the LPN course as a second course (6 percent) was considerably larger than the proportion who enrolled in LPN as a first course (less than 1 percent), indicating that participants are moving to the highest pathway course over time. Carreras also had a positive impact on receipt of college credentials requiring at least one year of full-time study, as well as on any college credentials.

- **Participants may need additional guidance or support to reach higher-level courses.**

One notable Carreras design feature is access to academic and non-academic advisors for lower-bridge participants but only academic advisors for those enrolled in the upper bridges. That upper bridge participants take courses at the City Colleges of Chicago and not at Instituto no doubt limits the program's ability to provide direct services to them. Though a Carreras academic advisor can help participants access resources at their colleges (e.g., tutoring, financial aid), the advisor does not directly help participants alleviate non-academic challenges that can affect program retention, completion, and enrollment in the next course. Continued non-academic supports could help college-enrolled participants access needed resources to help them persist. The launch of Instituto College will likely make provision of supports easier to future students who enroll should the program opt to offer those services.

- **Consideration should be given to providing a range of credential-bearing courses along a pathway, including ones not related to direct patient care.**

Carreras staff describe the CNA credential as a starting point and not an end point. They recognize that given the skills level of the target population, CNA is likely an appropriate initial credential. However, other healthcare-related credentials exist in patient care other than nursing-related ones. Given the low wages associated with CNA positions and participants' limited progression to the LPN course, programs could consider adding other health-related pathways that provide credentials of value in the local labor market and would offer participants more options that could potentially yield better earnings and other outcomes. (Further research would be needed.) Examples of such patient care credentials include Medical Assistant or Emergency Medical Technician. Programs could also consider healthcare-related programs outside of patient care, such as Medical Records Clerk and Technician, or in health information technology.

7.3 Open Questions

Three years after random assignment, Carreras en Salud improved participants' educational progress, specifically receipt of credentials, but did not improve earnings. The coming Career Pathways Long-term Outcomes Study will focus on impacts over a six-year follow-up period. It will assess whether Carreras's impact on education grows (using a 72-month follow-up survey and NSC data), and whether impacts on earnings emerge (using the follow-up survey and NDNH data). This section highlights questions for longer-term research.

- **Will more treatment group members earn longer-term college credentials, particularly the LPN?**

It is possible that longer-term follow-up will show a growing impact of Carreras on longer-term credentials. Significantly more treatment group members (20 percent) were enrolled in college at the end of the three-year follow-up period than were control group members (14 percent). According to Carreras program records, 10 percent of LPN students were still participating in that course at the end of the follow-up period. Some, too, were enrolled in the Pre-LPN course, which is two courses lower than the LPN one. It is not clear, however, if there are enough treatment group members currently in the LPN course or the LPN pipeline to create an earnings impact even if all of them complete, or enroll in and complete, the LPN course.

Additionally, per the flexible design of the program, Carreras participants who leave to work can return to courses anytime and do not need to reapply to the program. The six-year impact study will explore whether some participants do in fact return and attend the LPN course or one of the LPN pipeline courses.

- **Will the launch of Instituto College facilitate future enrollment in and completion of the LPN program?**

After the study ended, Instituto launched its own college in part as a response to the limited number of program slots at the City Colleges of Chicago. As of March 2021, the college offered Associate Degree in Nursing and Basic Nursing Assistant programs. It is possible that, when the LPN course is available, more participants will enroll if they do not need to wait for a slot.

- **Will more treatment group members find employment in healthcare?**

The proportion of treatment group members whose employment was coded as being a healthcare occupation (25 percent) was not significantly larger than the control group (19 percent). There are a number of potential reasons why more treatment group members were not working in the healthcare field at the point of three-year follow-up. As noted above, only two of Carreras's seven nursing pathway courses are associated with credentials (CNA, LPN) that have labor market value. Participants who complete the other five courses do not have the requisite training or credentials for many healthcare jobs.

- **Will impacts on earnings emerge over a longer follow-up period?**

Earnings gains are associated with longer-term credentials, and those longer-term credentials can take time to earn. Treatment group members received college credentials requiring at least one year of study at higher rates than did control group members (12 percent versus 9 percent). Nevertheless, neither the level nor the impact was large.

Three years is likely too early to expect larger impacts on longer-term credentials for a few reasons. First, most treatment group members began two or more courses lower than an LPN. A minority attended two or more courses. Even if participants were to return and continue on the pathway, it would take time to complete the courses to an LPN and then earn the credential. Second, few participants enrolled in college full-time. LPN and the previous course, LPN Prerequisites, are offered at City Colleges of Chicago and not Instituto. Thus, participants who do ultimately reach the LPN course will likely take time to complete it.

A share of treatment group members were still enrolled in the LPN course at the end of the three-year follow-up period. Whether it is enough to produce earnings impacts for the entire sample will be the focus on the next report.

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