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Evaluation of the TechHire and Strengthening Working Families Initiative Grant Programs

Two-Year Impacts Report

Submitted to:
U.S. Department of Labor, ASP/CEO
200 Constitution Avenue, NW
Washington, DC 20210

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Evaluation of the TechHire and Strengthening Working Families Initiative Grant Programs: Two-Year Impacts Report

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Executive Summary

In 2016, the H-1B TechHire Partnership Grants (TechHire) and the Strengthening Working Families Initiative (SWFI) were created as part of a broad agenda to reduce employers' need to hire temporary workers from outside the United States through the H-1B visa program. These grant programs aimed to achieve this by funding local organizations to offer accessible training and supports to unemployed and underemployed potential U.S. workers who had barriers to training, creating a pipeline of workers able to fill jobs in the high-tech fields such as information technology, healthcare, and advanced manufacturing that employ large numbers of H-1B workers. The opportunity to develop such programs and apply for TechHire and SWFI grants was open to partnerships consisting of workforce agencies, education and training providers, and business-related nonprofit organizations. In June 2016, the U.S. Department of Labor (DOL) Employment and Training Administration awarded 39 TechHire grants providing services in 25 states, and 14 SWFI grants providing services in 13 states. Programs were expected to operate for 4 years, roughly from July 2016 to June 2020.

In September 2016, the U.S. DOL Chief Evaluation Office awarded Westat, with MDRC, a contract to conduct an evaluation of the 53 TechHire and SWFI programs (the Westat/MDRC team is referred to in this report as the "evaluation team"). The randomized controlled trial (RCT), which includes five grantees, is assessing the extent to which TechHire and SWFI's combination of training, case management, and support services helped people increase their employment and earnings over and above what they would have achieved in the absence of these programs. It is also looking at whether these programs led people to obtain the kinds of middle- to high-skilled jobs that the grant programs intended and to receive more support—including child care—than those who were not in the programs. This report provides analysis of intermediate impacts on participation in and completion of training, receipt of credentials, and use of child care and other services, as well as on longer-term outcomes such as employment and earnings, advancement and job quality, and other, exploratory outcomes such as overall well-being, health, and housing status at about 2 years following random assignment.

Program Overview

TechHire and SWFI attempted to help U.S. residents with barriers to participating in skills trainings access middle- and high-skill, high-growth jobs in H-1B industries. Both programs emphasized demand-driven training strategies, including employer involvement in training, usage of local labor market data, work-based learning, and sectoral partnerships, among other priorities (Smith and Wilson, 2016). A key goal of both programs was to bring the training system into better alignment with types of skills that employers need for open positions. There was also an emphasis on providing access to middle-skill jobs through varied modes of training and nontraditional hiring. Often this meant accelerating the training period for participants and connecting individuals to jobs that usually require postsecondary training by using immersive "bootcamp"-style approaches (as opposed to a traditional, longer-term college education approach).

TechHire grants targeted several hard-to-serve populations: at least 75 percent of 17- to 29-year-olds who are out of school; and 25 percent of other eligible target populations—unemployed, underemployed and incumbent workers age 30 and older; as well as a target population of 50 percent of individuals with barriers that result from disabilities, limited English proficiency, and criminal records; and 50 percent of other eligible target populations.

SWFI grants targeted parents with low incomes for whom child care access was a barrier to investing in education and skills. SWFI partnerships were required to include child care services and a systems-change component to simplify and increase access to child care. SWFI grantees were required to initiate activities that would bring together key stakeholders from various "systems"—such as the child care, workforce, and human services systems—to simplify and streamline access to services and supports that would enable low- to middle-skilled parents to successfully participate in and complete training. These activities are often referred to as "systems-level" or "systems change" activities.

Evaluation Design

The evaluation used a random assignment research design to assess the impacts of the five programs participating in the RCT. Eligible applicants to the programs were assigned at random to one of two groups: The "program group" (referred to here as the "TechHire/SWFI" group) was eligible to receive TechHire- or SWFI-funded program training and services, while the "control group" was not eligible for these services but could receive other training or services available in the community or funded by other sources, such as other federal, state, or local grants. A total of 952 participants were enrolled in the RCT, with a little more than half being assigned at random into the TechHire/SWFI group (518 individuals) and a little less than half into the control group (434 individuals). Enrollment in the RCT started between April 2018 and August 2018 and continued in the last program until early 2020.

The data sources for this report included data from the National Directory of New Hires (NDNH) for 2 years after random assignment, as well as data from a follow-up survey of TechHire/SWFI and control group members conducted at about 18 months after random assignment.

The earlier report on the RCT (Tessler et al., 2021) assessed the programs' implementation and short-term (6-month) impacts. That report indicated that ***the TechHire and SWFI programs increased participation in occupational skills training.*** Specifically, the findings showed that at about 6 months, 43 percent of TechHire/SWFI group members were either currently enrolled in or had completed occupational skills training (the study's confirmatory outcome at 6 months), compared with only 21 percent of control group members.[1] In addition, the TechHire and SWFI programs had impacts on case management support, including receipt of job readiness training and pre-employment services intended to help participants look for and obtain a job and paying for training. The SWFI programs also helped more individuals find child care that was more convenient for them—for example child care that was in a convenient location or available at needed hours. However, this offered support did not translate into an increase in child care use or a reduction in child care barriers. Interviews with program staff indicated that the programs focused on training for entry-level rather than high-skilled jobs; the level of employer engagement was less than planned; and job development was not well developed or integrated into other aspects of the training programs.

Major Finding

At about 2 years after random assignment, ***more TechHire/SWFI participants had completed training than would have without the program***. The program also had impacts on receipt of credentials and a variety of pre-employment services. The size of the impact on training completion

[1] Confirmatory outcomes are specified in advance and used to gauge whether the program is having a positive effect.

was modest compared to similar evaluations of programs that have generated labor market impacts. ***The impact on training completion did not translate into impacts on employment and earnings or other life domains through two years of follow-up.*** While the TechHire/SWFI participants were more likely than the control group to work in jobs that were related to their education or training, the programs did not have an impact on job quality, suggesting that the programs did not promote access to jobs in high-skilled, high-growth industries. The modest impact on training completion combined with the findings from the implementation study that there were challenges with employer engagement and providing job development may have contributed to the lack of impact on employment and earnings at this point. The one subgroup for which the programs had an impact on employment was the long-term unemployed—those who had never worked and those who had been out of work for 7 or more months at study entry.

Overall Impacts

This report describes the effect the TechHire and SWFI programs had on education and training, child care services, and job readiness. It then describes impacts on employment and earnings. Differences in impacts for subgroups are examined for the confirmatory and other key outcomes. Finally, it explores the possible effect of COVID-19 on the impacts.

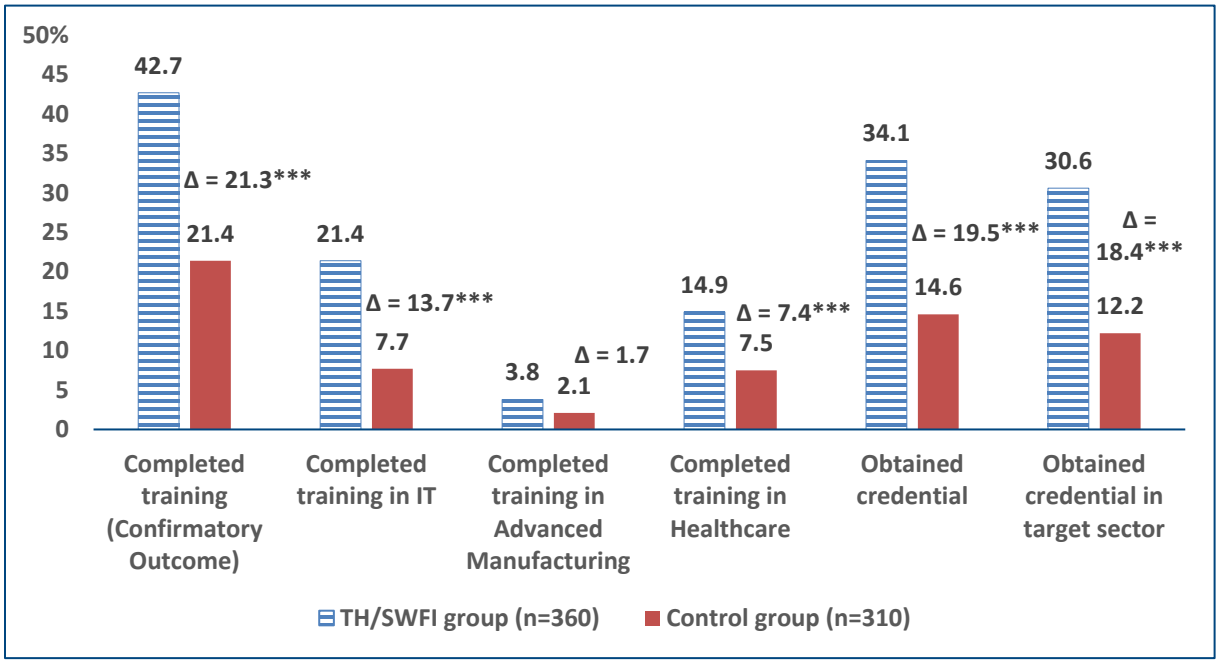
Impacts on Training and Services Participation

A key goal of the TechHire and SWFI programs was to make training more accessible and completion more feasible for populations with specific barriers and needs. Differences in training completion and services received across research groups represent the study's treatment contrast. The larger these differences are between the TechHire/SWFI group and the control group, the more likely the program will make a difference for participants and produce impacts on outcomes like employment, earnings, and other measures.

- ***The TechHire/SWFI programs generated statistically significant impacts on training completion.***

The TechHire and SWFI programs produced a statistically significant impact on one of the study's confirmatory outcomes: as of the Wave 2 survey, 43 percent of the TechHire/SWFI group had completed training versus 21 percent of the control group, a 21 percentage point increase (Figure ES-1). The programs also increased training completion in two of three target H-1B industries—information technology and healthcare—by a statistically significant amount. As expected, given the increase in training completion, there were also statistically significant increases in the likelihood of obtaining a professional certification or license by 20 percentage points and a professional license or certification in the target sector by 18 percentage points.

Figure ES-1. Impacts on key education and training outcomes



Notes: Estimates were regression-adjusted using ordinary least squares, controlling for pre-random assignment characteristics of sample members. See a full list of covariates in Appendix B. Differences in the impact estimates and the differenced TH/SWFI and control group means are due to rounding.

Sample sizes may vary because of missing values. See Table B-11 for full missingness rates.

Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

TH = TechHire; SWFI = Strengthening Working Families Initiative; IT = information technology.

Source: TechHire/SWFI Wave 2 survey.

- ***The TechHire/SWFI programs had statistically significant impacts on receipt of job readiness training, job search assistance, and supportive services.***

TechHire/SWFI group members were 15 percentage points more likely than control group members to have received job readiness training, 14 percentage points more likely to have received career counseling, and 10 percentage points more likely to have received job search assistance. These types of services are important to help participants complete training, find a job, and remain employed. TechHire/SWFI produced an impact on receiving help with support services. Twenty-four percent of TechHire/SWFI group members reported receiving such help compared with 18 percent of control group members, a statistically significant difference.[2]

[2] The percentage of both groups that reported receiving support services is nominally lower in the Wave 2 survey than in the Wave 1 survey. In the Wave 1 survey, 49 percent of TechHire/SWFI group members and 29 percent of control members reported receiving support services. This nominal difference may stem from differences in the wording of the survey questions. The Wave 1 survey included examples of support services such as "…books, uniforms, tools, and other work supplies." It is possible that participants did not count these as support services when answering this question in the Wave 2 survey.

- ***SWFI had a statistically significant impact on the receipt of help finding child care but not on child care arrangements, paying for child care, or barriers to child care.***

SWFI group members were 12 percentage points more likely to have received help finding child care in a convenient location and 7 percentage points more likely to report having received help finding an alternative to regular child care in an emergency than the control group. However, this offered support did not translate into statistically significant increases in child care use or a reduction in child care barriers. SWFI group members and control group members reported similar rates that their youngest child received care from someone other than themselves or their spouse or partner while they were working or in training. Similar rates of SWFI and control group members reported they had problems with work or school due to child care arrangements and did not take a job or start training because they had problems with child care.

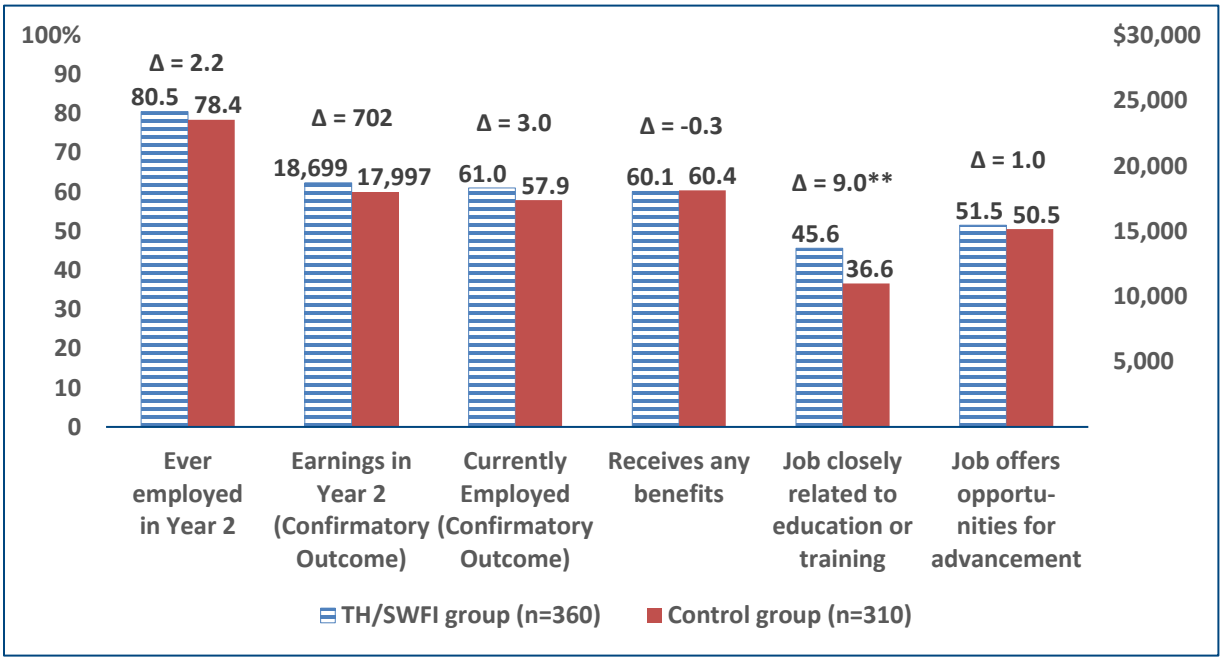
Impacts on Employment and Earnings

Due to the time required to complete training and obtain new employment, the impact of training programs such as TechHire and SWFI is often not immediate. However, the TechHire/SWFI programs did not generate detectable impacts on employment or earnings over the 2-year follow-up period.

- ***TechHire/SWFI did not produce a statistically significant increase in the likelihood that individuals were employed in the second year of follow-up. It also did not increase earnings in the second year by a statistically significant amount.***

As shown in Figure ES-2, in Year 2, average earnings (one of the study's confirmatory outcomes in the current follow-up period) for TechHire/SWFI participants were $18,699 on average, only 4 percent greater than average Year 2 earnings for the control group and the difference was not statistically significant. Sixty-one percent of respondents in the TechHire/SWFI group stated that they were currently employed at the time of the survey (another one of the study's confirmatory outcomes) as compared to 58 percent of control group members. This 3-percentage point impact was not statistically significant. There was also no impact on ever employed in Year 2 as measured by National Directory of New Hires (NDNH) data.

Figure ES-2. Impacts on key employment and earnings outcomes



Notes: Estimates were regression-adjusted using ordinary least squares, controlling for pre-random assignment characteristics of sample members. See a full list of covariates in Appendix B. Differences in the impact estimates and the differenced TH/SWFI and control group means are due to rounding.

Sample sizes may vary because of missing values. See Table B-11 for full missingness rates.

Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

TH = TechHire; SWFI = Strengthening Working Families Initiative.

Source: TechHire/SWFI Wave 2 survey and NDNH.

- ***Despite some reported success by TechHire/SWFI group members in obtaining employment that draws upon their recent education and training, there were indicators that the jobs were not the well-paying, middle- and high-skilled, and high-growth jobs that were aspired to in the funding opportunity announcements for both programs.***

As seen in Figure ES-2 just under 46 percent of respondents in the TechHire/SWFI group reported that their current or most recent job is closely related to their most recent education or training, a figure that exceeds the 37 percent of the control group members that reported the same and a difference that is statistically significant. Moreover, TechHire/SWFI group members were more likely to report having been employed in the healthcare sector (though there was no difference in being employed in the information technology or advanced manufacturing sectors).

Participants that were offered training through the TechHire and SWFI programs were no more likely than the control group to have obtained a quality job with substantive benefits at the 2-year follow-up point. TechHire/SWFI respondents were similarly as likely as respondents in the control group to indicate that they had a regular job and note that they were receiving any benefits[3]

[3] Benefits include paid sick days, health insurance, dental benefits, a retirement plan or 401k, or tuition reimbursement.

(Figure ES-2). Only about half of respondents in both the TechHire/SWFI group and the control group reported that their current or most recent job offers many opportunities for career advancement.

Among TechHire/SWFI group respondents that have encountered difficulty finding a job in their chosen field, more than 70 percent cited a lack of experience as an obstacle. This is substantially more than any other reason cited. Staff members from all five sites noted that employers were predisposed toward potential hires with prior experience rather than candidates fresh from a training course. This insight from site staff in conjunction with evidence provided by the survey suggests that the absence of experiential learning opportunities may have been a notable shortcoming of the TechHire and SWFI programs.

Financial Status and Other Life Outcomes

Income, financial status, housing status, and overall well-being are thought to improve as a result of increases in education and training that lead to more favorable earnings and employment outcomes. Given that the TechHire/SWFI programs did not lead to higher earnings or a greater likelihood of employment through two years of follow-up, it is not surprising that the programs also had few impacts on financial status and other life outcomes at this point.

- ***With one exception, the TechHire/SWFI programs did not produce statistically significant impacts on measures of financial status including income, housing status, or financial well-being.***

The TechHire/SWFI programs had no statistically significant impact on income, with the average monthly income of both groups at about $1,600. The programs had few statistically significant impacts on receipt of public benefits, with the two exceptions that the TechHire/SWFI group received less income through Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) and child care subsidies in the past month. Average financial well-being also did not differ between the groups. There was no statistically significant difference in health insurance, with more than 75 percent of both groups reporting that they were covered by health insurance. The one exception was that TechHire/SWFI group members were less likely to report material hardship in the past month. Forty-nine percent of the TechHire/SWFI group reported that they experienced material hardship in the past month, compared to 57 percent of the control group, a statistically significant difference. There were also no statistically significant impacts on feelings of making progress toward long-range career goals or happiness.

Impacts for Subgroups

Impacts on confirmatory and other key outcomes were estimated for two key subgroups of interest: grant program and level of labor market attachment. TechHire and SWFI share common goals and programs characteristics but differ in terms of their target demographics as well as some of the services that they offer. An analysis by level of labor market attachment at the time of random assignment offers insight as to whether the current and recently employed are better positioned to garner the most benefit from the programs than the long-term unemployed. All of the subgroup analyses are considered exploratory due to small sample sizes.

- ***The variation in impacts across grant program was not statistically significant for any of the outcomes examined.***

The findings showed significant impacts on training completion and receipt of credentials for both TechHire and SWFI. However, there were no significant impacts on employment and earnings or barriers to employment for either grant program. These impact are consistent with pooled sample findings and suggests that both the TechHire and SWFI programs increased training completion but did not have impacts on employment, earnings, or other outcomes.

- ***Earnings and employment impacts indicate that the TechHire/SWFI training programs have been more beneficial for participants that were less attached to the labor market, defined as having been out of work for 7 months or more at the time of study entry, including those who had never worked.***

There is statistically significant variation in impacts across the two labor market attachment subgroups for the Year 2 employment outcome. About two-thirds of the long-term unemployed in the TechHire/SWFI group were employed during at least one-quarter in Year 2 relative to 51 percent in the control group, a statistically significant impact of more than 15 percentage points.[4] Among those that were currently or recently employed at the time of random assignment, the impact on employment in Year 2 is indistinguishable from zero. However, there were no impacts on average quarterly earnings in Year 2 for either labor market attachment subgroup.

COVID-19 Impacts

For almost all participants, the first year following the onset of COVID-19 overlaps with the second year of study follow-up, a period when program impacts may begin to occur. At a time when TechHire and SWFI participants were completing their training or seeking new employment, many workers were losing their jobs or having their hours substantially reduced.

- ***There were no statistically significant impacts on employment and earnings after the start of the COVID-19 pandemic.***

Since the follow-up period included time periods before and after the onset of COVID-19 in March 2020, analysis employing a follow-up period relative to random assignment is poorly suited to investigating program effects during COVID-19. In contrast, analysis of impacts by calendar quarter allows the program and control groups to be compared at the same point in time. This analysis did not reveal any significant differences between the TechHire/SWFI group and the control in the 2 years immediately following the start of the COVID-19 pandemic. Average quarterly employment and earnings fell for both the TechHire/SWFI and control groups in the first year after the start of the pandemic and rose in the second year after the start of the pandemic. Earnings bounced back more quickly after the initial two-quarters of the pandemic, but the bounce back is seen in both groups and there are no statistically significant differences between the groups in any of the quarters encompassing the COVID-19 follow-up period.

[4] The long-term unemployed include individuals who have been unemployed for 7 or more weeks. This definition is roughly based on the Bureau of Labor Statistics' definition of the long-term unemployed: being out of work for 27 weeks and actively searching for a job (Lei, 2013).

Possible Explanations for Findings on Training Completion, Employment, and Earnings

So what might be driving the current patterns of findings on training completion and employment and earnings? A few possibilities emerge based on findings from the implementation research, the Wave 2 survey, and other past research on similar programs. It should be noted that it is still too early to be sure that positive effects on earnings will not emerge, and there have been evaluations that showed impacts emerging 3 years into follow-up.[5]

Despite increasing training completion, less than half of individuals in the TechHire/SWFI group completed training. During interviews, program staff affirmed that persistence in and completion of the training programs was a common challenge for participants. Reasons noted by staff for this include individuals' need or desire for a job, inadequate screening for training interest and fit prior to enrollment, or other reasons (including family obligations, transportation challenges, and child care challenges). Findings from the survey are similar; the most common reasons individuals in the TechHire/SWFI group noted for dropping out of training were personal problems, a need to work, and other reasons.

This relatively low rate of training completion, coupled with the even lower rate of credential attainment (about a third) among individuals in the TechHire/SWFI group may have played a role in the lack of effects observed on employment and earnings through Year 2. Those are both potentially crucial steps in individuals being able to obtain quality, well-paying jobs. It is possible that these relatively low rates were not sufficient to generate employment and earnings increases. Additional factors that may be at play here include some of the trainings offered by the programs lead to only entry-level, lower skilled jobs (rather than middle- and high-skilled jobs, as was surfaced in the implementation research); the programs lacking strong employer partnerships and engagement (as found in the implementation analysis and as has been noted as a key component of the success of similar programs in other research) (Maguire et al., 2010; Hendra et al., 2016), and not enough follow-up currently being available to measure the economic effects of the programs (as has been in the case in other prior research) (Card, Kluve, and Weber, 2018; Miller et al., 2012).

Looking Ahead

The findings presented in this report are an interim look at the effectiveness of the TechHire and SWFI programs at increasing employment and earnings outcomes. It is still too early, however, to definitively conclude whether TechHire and SWFI were able to improve the economic mobility of participants. A future report from the evaluation, showing findings related to employment and earnings through Year 3, will provide more evidence in this area. It will also shed light on whether the programs met their goals of preparing individuals for and moving them into middle- and high-skilled jobs in high-tech industries.

[5] An example is the Bridgeport site in the Work Advancement and Support Center (WASC) demonstration (Miller et al., 2012.).

1. Introduction

The H-1B TechHire Partnership Grants (TechHire) and the Strengthening Working Families Initiative (SWFI) were created as part of a broad agenda to reduce employers' need to hire temporary workers from outside the United States through the H-1B visa program (DOL, 2016a; 2016b). These grant programs aimed to achieve this by funding local organizations to offer accessible training and supports to unemployed and underemployed potential U.S. workers who had barriers to training, creating a pipeline of workers able to fill jobs in the high-tech fields that employ large numbers of H-1B workers. The opportunity to develop such programs and apply for TechHire and SWFI grants was open to partnerships consisting of workforce agencies, education and training providers, and business-related nonprofit organizations. In June 2016, the U.S. DOL Employment and Training Administration awarded 39 TechHire grants providing services in 25 states, and 14 SWFI grants providing services in 13 states. Programs were expected to operate for 4 years, roughly from July 2016 to June 2020.

In September 2016, the U.S. DOL Chief Evaluation Office awarded Westat, with MDRC, a contract to conduct an evaluation of the 53 TechHire and SWFI programs (the Westat/MDRC team is referred to in this report as the "evaluation team"). The evaluation comprises an implementation and outcomes study conducted of all 53 TechHire and SWFI programs as well as a randomized controlled trial (RCT) of a small subset of the programs—three TechHire programs and two SWFI programs. The RCT is assessing the extent to which TechHire and SWFI's combination of training, case management, and support services helped people increase their employment and earnings over and above what they would have achieved in the absence of these programs. It is also looking at whether these programs led people to obtain the kinds of middle- to high-skilled jobs that the grant programs intended and to receive more support—including child care—than those who were not in the programs.[6]

An earlier report shared findings on implementation and short-term impacts at about 6 months after random assignment on education, employment, and related outcomes in the five programs that participated in the RCT (Tessler et al., 2021). This report provides analysis of intermediate impacts on participation in and completion of training, receipt of credentials, and use of child care and other services, as well as on outcomes such as employment and earnings, advancement and job quality, and other, exploratory outcomes such as overall well-being, health, and housing status at about 2 years following random assignment.

This chapter gives an overview of the grant programs (1.1), summarizes the evaluation design (1.2), reviews key findings from the earlier report (1.3), and identifies the major research objectives for this report (1.4).

[6] As discussed in Tessler et al. (2021), "well-paying" and "middle- and high-skilled" are not clearly defined in the Funding Opportunity Announcements for TechHire and SWFI - the closest definition is, "Occupations at H-1B skill levels generally require a bachelor's degree or comparable experience and are middle to-high-skill level." Some programs made clear in their applications that they would be training people for entry-level positions, which was allowable according to the Funding Opportunity Announcements as long as there was a clear, demonstrated pathway to middle- and high-skilled jobs.

1.1 Program Overview

TechHire and SWFI attempted to help U.S. residents with barriers to participating in skills trainings access middle- and high-skill, high-growth jobs in H-1B industries. Both programs emphasized demand-driven training strategies, including employer involvement in training, usage of local labor market data, work-based learning, and sectoral partnerships, among other priorities (Smith & Wilson, 2016). There was also an emphasis on providing access to middle-skill jobs through varied modes of training and nontraditional hiring. The Funding Opportunity Announcement encouraged accelerating the training period for participants and connecting individuals to jobs that usually require postsecondary training via immersive "bootcamp"-style approaches (as opposed to a traditional, longer-term college education approach).[7]

Although the two grant programs had similar objectives and training and employment strategies, there were also substantial differences. Foremost among these were the target populations. TechHire grants targeted several hard-to-serve populations: at least 75 percent of participants had to be 17- to 29-year-olds who are out of school; and another 25 percent had to be other eligible target populations, unemployed, underemployed and incumbent workers age 30 and older; as well as a target population of 50 percent of individuals with barriers that result from disabilities, limited English proficiency, and criminal records; and 50 percent of other eligible target populations (DOL, 2016a).

SWFI grants targeted parents with low incomes for whom child care access was a barrier to investing in education and skills (DOL, 2016b). SWFI partnerships were required to include child care services and a systems-change component to simplify and increase access to child care. SWFI grantees were required to initiate activities that would bring together key stakeholders from various "systems"—such as the child care, workforce, and human services systems—to simplify and streamline access to services and supports that would enable low- to middle-skilled parents to successfully participate in and complete training. These activities are often referred to as "systems-level" or "systems change" activities.

1.2 Evaluation Design

The evaluation used a random assignment research design to assess the impacts of the five programs participating in the RCT. Eligible applicants to the programs were assigned at random to one of two groups: The "program group" (referred to here as the "TechHire/SWFI group") was eligible to receive TechHire- or SWFI-funded program training and services; while the "control group" was not eligible for these services but could receive other training or services available in the community or funded by other sources, such as other federal, state, or local grants. Random assignment research designs are considered the "gold standard" because, when implemented properly, the randomization process creates two groups that are expected to be statistically alike at baseline in terms of background characteristics that could affect participants' experiences in the programs and the outcomes they achieve (Wholey, Hatry, and Newcomer, 2010; Shadish, Cook, and

[7] Bootcamps are "intensive training programs that usually last less than a year and teach a discrete skill or skillset" (J.P. Morgan Chase & Co., 2016). Bootcamps allow students to gain hard skills, like computer programing ("coding") or web development, in a short period of time.

Campbell, 2002).[8] The only expected difference between these two groups is in the program services being evaluated. As a result, any statistically significant differences observed between the two groups, such as differences in average levels of employment or earnings, can very likely be attributed to the program; these differences are called "impacts" or "program effects."

1.2.1 Programs Included in the Evaluation

Evaluation of the TechHire and SWFI Grant Programs

The *Evaluation of Strategies Used in the TechHire and SWFI Grant Programs* includes implementation, outcomes, and impact studies.

Implementation Study. The implementation study examined how all 53 TechHire and SWFI grantees implemented their programs, successes, challenges, and lessons learned. Data sources included review of grantee documents, surveys of grantees and partners, and semi-structured interviews with grantees and partners.

- The results of the study are summarized in a report on implementation across all grantees, and can be found at: https://www.dol.gov/sites/dolgov/files/OASP/evaluation/pdf/TechHire-Implementation-Report-v2.pdf

Outcomes Study. The outcomes study examines training outcomes and employment and earnings for all 53 grantees using program and administrative data.

- A report on early outcomes including training enrollment and completion available using program data is available here: https://www.dol.gov/sites/dolgov/files/OASP/evaluation/pdf/TechHire-SWFI-Outcomes-Report.pdf

Impact Study. The impact study includes an RCT with five grantees to estimate the effects of their programs on outcomes such as skill attainment, employment, and earnings. The impact study also includes more intensive implementation data collection for the five grantees.

- A report on impacts on training enrollment at about 6 months after random assignment and implementation in the RCT grantees can be found at https://www.dol.gov/sites/dolgov/files/OASP/evaluation/pdf/TechHire-SWFI-Early-Impact-Report.pdf

Forthcoming Research

The evaluation will include longer term follow-up for both the outcomes study and RCT. For the outcomes study, a future report will summarize employment and earnings at 2 years after program entry. For the RCT study, a future report will summarize impacts on employment and earnings at 3 years after random assignment.

For More Information on the Evaluation

https://www.dol.gov/agencies/oasp/evaluation/currentstudies/TechHire-and-Strengthening-Working-Families-Initiative

[8] The U.S. Department of Education's What Works Clearinghouse accepts RCTs as meeting its highest level of evidence without reservations. For more information, see https://ies.ed.gov/ncee/wwc/Docs/referenceresources/Final_WWC-HandbookVer5_0-0-508.pdf.

The evaluation includes three TechHire and two SWFI grantees. In consultation with DOL, the five grantees were purposively selected based on the following factors: their program models; the types of training, support services, and, for the SWFI grantees, child care services offered; the number of participants they expected to serve and the types of participants they were hoping to recruit; and their marketing and recruitment plans, among other details. The evaluation team reviewed applications from all 53 TechHire and SWFI grantee organizations and selected a subset of grantees for phone calls with program leadership to learn more about their programs and make sure they would be a good fit for an RCT. The evaluation team then conducted visits to seven programs. After considering and weighing these factors, along with aiming to have some diversity among the programs in geographic location and industry, six programs were selected, and ultimately five programs agreed to be part of the RCT.[9]

The selected grantees and their programs are: East Coast Florida TechHire (led by Daytona State College, with partners Eastern Florida State College and Florida State College at Jacksonville), New York City TechHire (LaGuardia Community College), Tampa TechHire (CareerSource Tampa Bay), Denver SWFI (Community College of Aurora and Community College of Denver), and Vermont SWFI (Vermont Technical College).

The five programs in the RCT varied in their geographic context, sectors of focus, staffing structures, training, other services offered, and strategies for delivering services. They had a variety of arrangements for where their programs were housed and whether their occupational skills training was offered for credit (Appendix A, Table A-1). All but the Tampa program were based in colleges, three on the "academic" (for-credit) side, and one on the "workforce" or "continuing education" (noncredit) side. In Tampa, CareerSource Tampa Bay, the local workforce agency, had partnerships with three colleges to deliver training (noncredit). Several of the community college–based programs delivered some parts of their training in house and partnered with either another college or external training programs to deliver other parts of their training.

The evaluation team developed targets for the number of individuals to be enrolled in the RCT. These targets were based on the number of individuals the programs expected to serve.[10] In total, the TechHire and SWFI programs aimed to enroll nearly 1,500 participants in the RCT. Table 1-1 shows the RCT target sample sizes and the total number of individuals who were ultimately enrolled in the RCT.[11] A total of 952 participants were enrolled in the RCT, with a little more than half being assigned at random into the TechHire/SWFI group (518 individuals) and a little less than half into the control group (434 individuals). Enrollment in the RCT started between April 2018 and August 2018 and continued in the last program until early 2020.

[9] The five programs selected for the RCT are not representative of the full set of 53 TechHire and SWFI grantee organizations. The findings discussed in this report, therefore, and not generalizable to all TechHire and SWFI programs.

[10] During the analysis planning phase, the study team calculated the minimum detectable effect sizes for various expected sample sizes. This was also taken into consideration when developing the sample size targets for each site.

[11] Three programs struggled to meet recruitment targets; thus, the sample for the RCT was one-third smaller than intended.

Table 1-1. Randomized controlled trial program sample sizes and enrollment targets				
Program	RCT Target sample size	Total enrolled in RCT		
		TechHire/SWFI group	Control group	Total
East Coast Florida[a]	240	121	119	240
New York City	250	77	43	120
Tampa[b]	300	150	149	299
Denver[c]	444	129	84	213
Vermont	200	41	39	80
Total	**1,434**	**518**	**434**	**952**

Notes: RCT = Randomized controlled trial. Random assignment occurred from April 2018 to January 2020.

[a] The colleges in this consortium split the target sample size evenly across the three colleges.

[b] The original sample target for Tampa was 600.

[c] The colleges in this consortium split the target sample size evenly across the two colleges.

1.2.2 Hypothesis Testing

Every time an impact on an outcome is estimated, there is a precisely defined probability (conventionally, 10 percent in studies such as the TechHire/SWFI evaluation) of concluding that a program had an impact when the observed difference is simply due to chance. Since researchers typically examine many outcomes, the probability that at least one estimate will be statistically significant, simply by chance, can get very high (Olken, 2015).

One approach to this problem is to conduct fewer impact estimates and to state in advance which tests will be conducted (Olken, 2015). The evaluation team followed this approach, pre-specifying a set of outcomes for the impact analysis and categorizing each of these outcomes as "confirmatory" or "exploratory."

Confirmatory Outcomes. The confirmatory outcomes were chosen because they are directly implicated by the TechHire/SWFI theory of change and capture the key goals of the TechHire and SWFI programs in the time period in which they are measured (DOL, 2016a; 2016b).[12] Based on this and the availability of different data sources covering different time periods, the research team identified three confirmatory outcomes for the 2-year impact analysis in the *Revised Analysis Plan* (Gasper et al., 2022):

- Ever completed occupational skills training (%), as measured by the 18-month survey;
- Currently employed (%), as measured by the 18-month survey; and
- Average annual earnings in Year 2 ($), as measured by administrative earnings data.

[12] A different confirmatory outcome was chosen for the early impact analysis (Tessler et al., 2021) based on the available follow-up period. At that time, the confirmatory outcome was: Currently enrolled in or completed vocational training, as measured by the 6-month survey. Given the average length of training across the grantees, it was expected that some individuals would have completed training by the time of the 6-month survey, but others would still be enrolled in training.

We decided to report the training completion measure at the time of the 18-month survey because, given the average length of training across the grantees, it is expected that impacts on the outcome will have emerged at the time of measurement.[13] The other two confirmatory outcomes were chosen because the ultimate long run goal of the programs is to produce increases in earnings.

A statistically significant impact on the confirmatory outcomes represents the highest level evidence of the success of the programs with the available amount of follow-up data. If the programs do not pass the confirmatory test but produce statistically significant impacts on other measures, it does not mean that the programs were unsuccessful. It simply means that the programs passed a lower standard of evidence, given the available amount of follow-up data.

Exploratory Outcomes. All the other outcomes in the impact analysis covered in this report are considered exploratory. The exploratory outcomes are outcomes that either are not directly targeted by the intervention or outcomes where there is a lower likelihood of detectable impacts given the timing of measurement and given the statistical power of the design. These outcomes can help explain an impact seen on the confirmatory outcome, if there is one. In the absence of impacts on the confirmatory outcomes that can serve as a mediating pathway for impacts on exploratory outcomes, statistically significant findings will have less standing in the analysis.

1.2.3 Data Sources and Analysis Approach

The RCT draws on data from three sources:

- **Baseline Survey.** A baseline survey was administered to all 952 individuals as part of the process to randomly assign eligible individuals to the RCT's TechHire/SWFI group or control group. The baseline survey captured information on participant characteristics—including demographics, prior employment and education, and various other characteristics—at the time of random assignment. The baseline data were used to describe the study sample, refine statistical estimates (covariates), and create subgroups. (See Appendix B for more information.) Random assignment and baseline survey data collection occurred from April 2018 to January 2020.

- **Wave 2 Survey.** The survey asked TechHire/SWFI and control group members about their participation in education and training, use of child care, job readiness and pre-employment services, employment and earnings history, income, financial well-being, housing status, and perceptions of the future since random assignment.[14] The survey also included questions about how the COVID-19 pandemic affected individuals' training, child care, and employment situations. The survey began approximately 18 months after individuals entered the RCT.[15] The average length of time of completion was 20 months after random assignment and

[13] The maximum length of training varies from 6 months to 2 years, with four of five grantees offering training that is 1.5 years or less.

[14] Outcomes related to income, financial well-being, housing status, and criminal justice involvement were not included in the Wave 1 survey for two reasons: (1) that survey was designed to be short and a way to keep in touch with individuals in the study and (2) these outcomes were not expected to be affected in the time period covered by that survey (7 to 14 months).

[15] An earlier report (Tessler et al., 2021) presented findings over a shorter follow-up period based on a 6-month follow-up survey.

ranged from 12 to 25 months. Surveys were completed with 670 individuals with a response rate of 70 percent.[16]

- **National Directory of New Hires.** The NDNH database is maintained by the Office of Child Support Enforcement and contains quarterly wage and employment information collected from state UI records. NDNH excludes earnings from self-employment and informal employment.[17]

Analysis Approach. The main impact analysis was done at the pooled sample level—meaning the impacts were estimated among individuals from all five programs combined into one TechHire/SWFI group and one control group. This was done for several reasons: (1) the TechHire and SWFI programs offered a similar combination of accelerated training in the same high-tech industries with case management and support services, and (2) the number of individuals enrolled into the RCT (known as the "sample sizes") for the TechHire programs alone or the SWFI programs alone was not large enough to be able to detect statistically significant impacts at a commonly accepted level for the two programs separately. (See Appendix B for more information.)

In addition, impacts were also examined for two pre-specified, exploratory subgroups of interest: (1) grant program—impacts were estimated separately for individuals who enrolled in the TechHire programs and for individuals who enrolled in the SWFI programs, and (2) level of labor market attachment—impacts are estimated separately for individuals who were currently or recently employed (defined as working within the prior 6 months, including those who were currently working) when they entered the RCT and for individuals who were considered long-term unemployed (meaning they had been out of work for 7 or more months at the time of random assignment, including those who had never worked). For both subgroups, the pooled sample was divided into two mutually exclusive and exhaustive groups and the impacts were estimated within each subgroup separately. Additionally, Q-statistics were used to test whether impacts differ significantly across subgroups.[18]

Any discussions of program impacts or differences between subgroups are based on the detectability of statistical significance relative to the sample size. For example, if the TechHire/SWFI programs show "no impact" on an outcome, this means the programs show no detectable impact on that outcome. Further, for the exploratory subgroups of interest, if there is "no difference" between the groups within a subgroup, this means there is no detectable difference between them. A lack of statistical significance in either impacts or subgroup differences may simply be due to sample size and a lack of detectability, rather than a true null impact or difference.

1.3 Earlier Findings on the Programs

The earlier report on the RCT (Tessler et al., 2021) assessed the programs' implementation and short-term (6-month) impacts and provides useful context for this report. Understanding the

[16] There was a 2 percentage differential between research groups. The response rate was 69 percent for the TechHire/SWFI group and 71 percent for the control group. See Appendix B for more information on the Wave 2 survey.

[17] More information on the NDNH data can be found here: https://www.acf.hhs.gov/css/training-technical-assistance/guide-national-directory-new-hires

[18] Q-statistics are a measure of heterogeneity across subgroups. For more information, see Greenberg, Meyer, and Wiseman (1994).

implementation is critical to interpreting the impact results. The earlier report measured the program's effects on training enrollment and service receipt, which helps to gauge how different TechHire/SWFI was from what was normally available in the community. This section summarizes key findings from that short-term report.

1.3.1 Earlier Results from the Implementation Study

- ***There was a discrepancy between the skill level of the intended training to "train workers with the skills required for well-paying, middle- and high-skilled, and high-growth jobs," as described in the Funding Opportunity Announcements for TechHire and SWFI, and the relatively low level of skill provided by the training offered.***

All programs in the RCT offered training in "high-tech" industries, including information technology, healthcare, and advanced manufacturing. However, in practice, at three of the programs, most of the training was designed to lead to entry-level jobs within high-tech industries rather than middle- and high-skilled jobs. Individuals with relatively low baseline skills, such as that of the target population for these programs, would likely need considerably more support—possibly in the form of tutoring or a preparatory bridge program—to be successful in training that required a higher level of skill (U.S. Department of Education, 2011). Absent that, it is possible they are more likely to succeed in skills training programs that are closer to their current skill levels, such as those offered by three of the TechHire and SWFI programs.[19]

- ***In most of the TechHire and SWFI programs, the occupational skills training offered was the same, or nearly the same, as what individuals could get outside TechHire or SWFI, sometimes at the same college offering the TechHire and SWFI training***

The services offered to participants by the TechHire/SWFI programs must differ from the services available to the control group either in terms of quality or dosage. Without clear distinctions between training and services received by program group members and control group members, it can be harder for a program to result in positive impacts on employment and earnings. However, there were two notable differences between TechHire or SWFI and other similar training programs. First, although the training offered under TechHire and SWFI was often similar to other training available in the community, the TechHire and SWFI training was offered at no cost to the student. Second, all five of the TechHire and SWFI programs had hired dedicated case managers to provide support to participants.[20] Even where control group members could receive similar or identical training to TechHire and SWFI at the same colleges, they would not have access to the support provided by the programs' case managers.[21]

[19] It is possible that training leading to lower skilled, more entry-level jobs than intended by the TechHire and SWFI grants could result in program group members finding employment in lower-paying jobs than expected, or not finding employment at all, which could dilute the impacts of the program.

[20] At the East Coast Florida program, one of the three colleges in the partnership had a case manager.

[21] Though it is not possible to isolate the effects of case management support from other aspects of the programs, case management support could be an important feature of the programs leading to impacts on participation in training.

- ***Employer partnerships and engagement fell short of program leadership's expectations, especially in the provision of work-based learning and/or providing jobs for training graduates.***

Although the programs developed strong partnerships with employers for training incumbent workers (who were not part of the RCT),[22] the programs were largely unable to induce employers to provide internships or apprenticeships for training participants, nor were employers willing to give hiring preferences to training graduates. Staff members across all five TechHire and SWFI programs noted that employers wanted to hire people with experience, rather than those fresh from a training class. The lack of job developers among program staff in all but one site further limited connections with employers.

- ***For the most part, career awareness, job readiness training, and job development were not fully developed or integrated with other components of the TechHire and SWFI programs.***

Staffing limitations minimized the attention given to preparing and supporting participants in their job searches after they had completed training. Only one program had a dedicated job developer for the duration of its training program. Case managers often handled these functions. Staff members mentioned that some instructors helped students make connections with employers. Staff at the colleges spoke of the difficulty getting participants to communicate with them once training ended. These programs had few opportunities post-training to work with participants and prepare them for employment.

1.3.2 Earlier Results from the Impact Study

The confirmatory outcome at 6 months was currently enrolled in or completed occupational skills training. The early impact analysis also assessed a variety of other education and training outcomes, as well as child care and job readiness services designed to provide an early signal of whether the treatment contrast was large enough to translate into impacts on employment and earnings.

- ***The TechHire and SWFI programs had impacts on outcomes related to the provision of case management support.***

Case management support included receipt of job readiness training and pre-employment services intended to help participants look for and obtain a job. Impacts on receipt of a variety of pre-employment services were statistically significant and ranged from 9 percentage points for receiving help developing a résumé to 22 percentage points for receiving help with job readiness or soft skills training. The programs significantly increased the receipt of such support services by 21 percentage points. Overall, the survey findings showed that TechHire and SWFI significantly reduced the number of people paying for training relative to the control group by 6 percentage points, and the amount paid out-of-pocket by about $500.

[22] Incumbent workers, in TechHire and SWFI, were people who were already employed in the industry and sent to the programs by their employers for training.

- ***The TechHire and SWFI programs increased participation in occupational skills training.***

The findings showed that at about 6 months, 43 percent of TechHire/SWFI group members were either currently enrolled in or had completed occupational skills training (the study's confirmatory outcome at 6 months), compared with only 21 percent of control group members. For the TechHire and SWFI programs, enrolling in and completing training are the first steps toward increasing participants' employment and earnings.

- ***SWFI increased the likelihood of participants receiving help to find or access child care but did not have an impact on the use of child care or on participants seeing child care as a barrier to training or employment.***

There was some evidence the programs achieved their goal of offering support for child care—31 percent of SWFI group members reported receiving help finding child care, a 17 percentage point and statistically significant increase over the control group average. The SWFI programs also helped more individuals find child care that was more convenient for them, for example child care that was in a convenient location or available at needed hours. However, this offered support did not translate into an increase in child care use or a reduction in reported child care barriers.

1.4 Research Objectives and Two-Year Follow-Up

For the RCT, the primary question relates to the "bottom line" effects of these programs on economic and educational outcomes. The RCT allows us to have a platform to rigorously assess the impacts of TechHire/SWFI on meditating outcomes such as

- Take-up and completion of training;
- Skills and credentials; and
- Utilization and arrangements of child care services.

As well as longer-term outcomes such as

- Employment and earnings;
- Advancement (e.g., employed in a job that offers advancement opportunities) and job quality (e.g., employed in a job that offers employer-provided benefits, has a regular work schedule, or that is satisfying); and
- Other, exploratory outcomes such as overall well-being, health, and housing status.

Chapter 2 presents impacts on education, training, and service receipt. Chapter 3 examines impacts on employment and earnings. Chapter 4 looks at impacts on income, financial well-being, and other life outcomes. Chapter 5 examines the influence of the COVID-19 pandemic on impacts. Finally, Chapter 6 summarizes the findings and discusses their implications. Appendices provide supplemental exhibits and additional technical detail on the analysis methods.

2. Impacts on Training and Services Participation

This chapter presents findings on the effect the TechHire and SWFI programs had on education and training, use of child care services, and use of job readiness services. Appendix C presents additional related findings, including additional outcomes for the TechHire/SWFI and labor market attachment subgroups (long-term unemployed versus currently or recently employed). All the outcomes presented in this chapter are based on data collected as part of the Wave 2 survey, administered between April 2020 and March 2021. TechHire/SWFI (program) group and control group members completed this survey between 12 and 25 months after they entered the RCT, with the average survey completed 20 months after random assignment. Survey respondents were asked about their participation in education and training programs, use of child care services, receipt of child care assistance, employment and earnings histories, and overall well-being since the time they entered the study.

Summary of Key Findings: Training and Services Participation Impacts

- **TechHire/SWFI increased training completion.** As of the Wave 2 survey, 43% of TechHire/SWFI group members had completed occupational skills training, compared with only 21% of control group members.
- **TechHire/SWFI had an impact on the receipt of credentials.** As of the Wave 2 survey, TechHire/SWFI group members were 20 percentage points more likely than the control group to have received a professional certification or state/industry license.
- **TechHire/SWFI had impacts on outcomes related to the provision of case management support.** TechHire/SWFI group members were more likely to receive career counseling, job readiness training, job search assistance, job retention assistance, and supports to help manage school or work than the control group.
- **TechHire/SWFI had no impact on participation in on-the-job training or internships.**
- **SWFI had an impact on the receipt of help finding child care but not on paying for child care.** SWFI group members were 12 percentage points more likely to have received help finding child care in a convenient location and 7 percentage points more likely to report having received help finding an alternative to regular child care in an emergency than the control group. However, the SWFI group was no more or less likely to have had help paying for child care or having different arrangements, assistance, or difficulties with child care.

The ultimate goals of the TechHire and SWFI programs were to increase participants' employment and earnings by offering training that will lead to a well-paying middle- or high-skilled job in a high-growth H-1B industry (DOL, 2016a; 2016b). However, one or more conditions must be in place for a program such as TechHire or SWFI to lead to impacts on labor market outcomes. For one, the services offered to participants by the TechHire/SWFI programs must differ from the services available to the control group either in terms of quality or dosage. Next, more TechHire/SWFI group members than control group members must receive those services. Or, in other words, there must be a difference in the rates of participation in key program services (in this case, occupational skills training) between the TechHire/SWFI group and the control group. While a program does not have to lead to a difference in all of these factors, it must have a difference in at least one.

Taken together, these differences in the services available and the rates of services received across research groups represent the study's treatment contrast. Moreover, the evaluation team hypothesized that the larger these differences are between the TechHire/SWFI group and the control group, the more likely the program will make a difference for participants and produce impacts on outcomes like employment, earnings, and other measures.

Comparing the outcomes of TechHire/SWFI and control group members reveals TechHire/SWFI's estimated "impacts" on outcomes. (Box 2.1 explains how to read the impact tables in this chapter while Box 2.2 explains the issue of multiple comparisons among the confirmatory outcomes.)

Box 2.1: How to Read Impact Tables in This Report

Most tables in this report use a similar format, illustrated in the table excerpt below. The table shows two training outcomes for the TechHire/SWFI group and the control group. The top row of the table below, for example, shows that 86% of TechHire/SWFI group members ever started occupational skills training, compared with 32% of control group members.

Because study participants were assigned randomly to either the TechHire/SWFI (program) group or the control group, the effects of TechHire/SWFI can be estimated by the difference in outcomes between the two groups. The "Difference (impact)" column in the table shows the TechHire/SWFI group's training outcomes minus the control group's training outcomes—in other words, TechHire/SWFI's impact on training. For example, the impact on ever started occupational skills training is calculated by subtracting 31.6 from 85.8, yielding 54.2 percentage points.

The "P-value" column gives an indication of how unlikely it is that the impact is due to chance (see Appendix B for more information on how the impacts were estimated). The lower the p-value, the less likely it is that the impact is due to chance. Impacts are considered statistically significant if they have a p-value below 0.100, meaning there is less than a 10% chance that the impact is due to chance (or in other words, meaning there is less than a 10% chance that the true impact is zero). Differences marked with an asterisk are statistically significant. The number of asterisks indicates whether the impact is statistically significant at the 1%, 5%, or 10% level (the lower the level, the more asterisks and the less likelihood that the impact was due to chance). For example, the p-value for the outcome of ever starting occupational skills training is < 0.001. This indicates there is less than a 1% chance of observing an impact of 54 percentage points or larger if TechHire/SWFI had no effect on ever starting occupational skills training. There is less than a 1% chance that this impact of 54 percentage point is due to chance; in other words, there is less than a 1 % chance that the true impact from the TechHire/SWFI programs on ever started occupational skills training is zero" or similar. Three asterisks indicate that this impact is statistically significant at the 1% level.

Outcome	TechHire/ SWFI group	Control group	Difference (impact)	P-value
Ever started occupational skills training (%)	85.8	31.6	54.2***	<0.001
Ever completed occupational skills training (%)	42.7	21.4	21.3***	<0.001

Note: Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

Source: TechHire/SWFI Wave 2 survey.

Box 2.2: Impacts on Confirmatory Outcomes and Multiple Comparisons

In recent years, the issue of multiple test bias has become more prominent in the academic literature and the field of program evaluation. Every time an impact on an outcome is estimated, there is a precisely defined probability (conventionally, 10 percent in studies such as TechHire/SWFI) of concluding that a program had an impact when the observed difference is simply due to chance. Since researchers typically examine many outcomes, the probability that at least one estimate will be statistically significant, simply by chance, can get very high. One approach to this problem is to conduct fewer impact estimates and to state in advance which tests will be conducted (Olken, 2015).

The research team followed this approach, specifying three measures in the analysis planning phase—completed occupational skills training, currently employed at the time of the Wave 2 survey interview, and average earnings in Year 2 —as the most likely to be affected if the program were successful in the current time period. Impact estimates on these measures were subjected to the Benjamini-Hochberg procedure, a tool used to mitigate the false discovery rate.

Statistically significant impacts on these "confirmatory" measures represent the highest level of evidence of the effectiveness of the programs with the available amount of follow-up data. If the program did not pass the confirmatory test but produced statistically significant impacts on other measures, it does not mean that the program was unsuccessful. It simply means that the program passed a lower standard of evidence, given the available amount of follow-up data.

The table below shows that TechHire/SWFI did not produce statistically significant impacts on current employment or average earnings in Year 2. However, TechHire/SWFI increased the likelihood of completing training by 21 percentage points, a statistically significant amount. The impact on completing training is still statistically significant after using the Benjamini-Hochberg procedure. The table displays the p-values before and after the adjustment.

Outcome	TechHire/ SWFI group	Control group	Difference (impact)	P-value	BH-Adjusted P-Value
Ever completed occupational skills training (%)	42.7	21.4	21.3***	<0.001	0.001
Currently employed (%)	61.0	57.9	3.0	0.409	--
Average earnings in Year 2 ($)	18,699	17,997	702	0.534	--

Note: Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

BH = Benjamini-Hochberg.

Source: TechHire/SWFI Wave 2 survey and NDNH.

2.1 Impacts on Education and Training

A key goal of the TechHire and SWFI programs was to make training more accessible and completion more feasible for populations with specific barriers and needs (DOL, 2016a; 2016b). Several earlier studies have demonstrated that attending and completing training can be challenging for many individuals (Gueron & Hamilton, 2002). This may be owing to financial issues (both having to pay for training and potentially needing to reduce work to attend training), lack of academic preparation, or being unable to balance training with other commitments (including caring for children) (Seefeldt, Engstrom, & Gardiner, 2016). The TechHire and SWFI programs

attempted to directly address some of these issues—for example, by offering training to participants at no cost.

- ***The TechHire/SWFI programs generated a statistically significant impact on training completion, one of the confirmatory outcomes, but the rate of training completion in the program group was modest.***

Table 2-1 below presents impacts on training completion and other, related measures of education, training, and financial assistance. The TechHire and SWFI programs produced a statistically significant impact on one of the study's confirmatory outcomes: as of the Wave 2 survey, 43 percent of the TechHire/SWFI group had completed occupational skills training versus 21 percent of the control group, a 21 percentage point increase.[23] The impact on overall training completion is smaller in size compared to other evaluations of training programs with a sector focus.[24] The programs also increased the likelihood that individuals completed training in two of three target H-1B industries—information technology and healthcare—by 14 and 7 percentage points, respectively.

Table 2-1. Impacts on education, training, and financial assistance, 18-month follow-up period

Outcome	TH/SWFI group	Control group	Difference (impact)	P-value
Education and training				
Confirmatory Outcome: Ever completed occupational skills training (%)	42.7	21.4	21.3***	<0.001
Ever participated in (%)				
ESL classes	4.4	5.8	-1.4	0.377
ABE classes	4.7	4.3	0.4	0.800
GED classes	4.0	4.1	-0.2	0.915
College courses for credit	44.1	42.8	1.3	0.731
Ever started occupational skills training (%)	85.8	31.6	54.2***	<0.001
IT	23.1	10.9	12.3***	<0.001
Advanced manufacturing	5.2	2.3	2.9**	0.042
Healthcare	16.7	10.6	6.1**	0.017
Currently enrolled in occupational skills training (%)	8.4	8.3	0.1	0.966
Ever completed occupational skills training (%)	42.7	21.4	21.3***	<0.001
IT	21.4	7.7	13.7***	<0.001
Advanced manufacturing	3.8	2.1	1.7	0.187
Healthcare	14.9	7.5	7.4***	0.002
Ever dropped out of occupational skills training (%)	13.4	2.2	11.2***	<0.001

[23] Table 2-1 reports the p-value for the confirmatory outcome before the Benjamini-Hochberg adjustment was made, as the study was not powered for multiple comparisons.

[24] For example, in the WorkAdvance evaluation, Per Scholas, the only program found to have consistent employment impacts, produced an impact on training completion of 37 percentage points (Hendra et al., 2016). Per Scholas focused on training in information technology. The training completion impacts of the other programs, which did not have impacts on employment or earnings, ranged from 25 percentage points to 28 percentage points. Finally, the Green Jobs and Healthcare Impact Evaluation found an impact on training completion of 24 percentage points (Martinson et al., 2016). The Health Professional Opportunities Grants (HPOG) program, which did not have impacts on employment and earnings, found training completion impact of 12 percentage points (Peck et al., 2022).

Table 2-1. Impacts on education, training, and financial assistance, 18-month follow-up period (continued)

Outcome	TH/SWFI group	Control group	Difference (impact)	P-value
Main reason dropped out of training, among those who dropped out (%)				
Personal problems	*21.6*	*9.2*	*12.4*	*0.528*
Needed to work	*17.5*	*-5.5*	*23.0*	*0.218*
Found a job	*11.6*	*34.9*	*-23.3*	*0.161*
Other	*49.4*	*61.5*	*-12.1*	*0.614*
Ever obtained a professional certification or state/industry license (%)	34.1	14.6	19.5***	<0.001
Ever obtained a professional certification or state/industry license in targeted sector (%)	30.6	12.2	18.4***	<0.001
Earned HS diploma/GED (%)	10.6	11.9	-1.3	0.599
Earned diploma or certificate requiring college credit (%)	20.1	8.0	12.1***	<0.001
Earned Associate's degree (%)	6.6	7.2	-0.6	0.764
Earned Bachelor's degree or higher (%)	7.5	8.8	-1.3	0.528
Ever participated in on-the-job training, an internship, or an apprenticeship (%)	28.8	24.0	4.8	0.172
Currently working in on-the-job training, an internship, or an apprenticeship (%)	6.4	6.1	0.3	0.893
Financial assistance				
Paid for training out-of-pocket or with loans (%)	*50.1*	*75.1*	*-25.0****	*<0.001*
Found it difficult to pay for training (%)	*46.9*	*63.5*	*-16.6****	*0.005*
Sample size	**360**	**310**		

Notes: Estimates were regression-adjusted using ordinary least squares, controlling for pre-random assignment characteristics of sample members. See a full list of covariates in Appendix B. Differences in the impact estimates and the differenced TH/SWFI and control group means are due to rounding.

Sample sizes may vary because of missing values. See Table B-11 for full missingness rates.

Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

TH = TechHire; SWFI = Strengthening Working Families Initiative; ESL = English as a Second Language; ABE = Adult Basic Education; GED = General Educational Development certificate; IT=information technology.

Italics indicate the metric is not among the full sample shown in the table.

Source: TechHire/SWFI Wave 2 survey.

The TechHire and SWFI programs covered most or all of the costs of training for participants. The tuition and fees associated with training programs can be a barrier to potential participants. Those who take out loans to attend can be left with high amounts of debt (Seefeldt, Engstrom & Gardiner, 2016). Among those who started training, TechHire/SWFI reduced both the likelihood that individuals paid for training out-of-pocket or with loans and the likelihood individuals found it difficult to pay for training by a statistically significant amount (Table 2-1). Only 50 percent of TechHire/SWFI group members who started training paid for training compared with 75 percent of control group members who started training, a statistically significant difference. This may be one factor associated with the increase in training completion discussed above.

All of the training the TechHire and SWFI programs offered led to a credential or certification by design. As expected, given the increase in training completion, TechHire/SWFI increased the likelihood of obtaining a professional certification or license by 20 percentage points, a statistically significant difference (Table 2-1). Thirty-four percent of TechHire/SWFI group members obtained a certification or license compared with 15 percent of control group members. However, it does not

seem that the increase in training completion was accompanied by an increase in work-based learning activities. TechHire/SWFI did not have statistically significant impacts on participation in on-the-job training, an internship, or an apprenticeship, though some but not all TechHire and SWFI programs offered these other types of training.

The training-related impacts discussed in this section provide evidence that the RCT achieved a treatment contrast—or in other words, a difference in the rate of TechHire/SWFI and control group members who completed the key program service, occupational skills training. Whether the increase in training completion is large enough to translate into an increase in employment and earnings outcomes is explored in Chapter 3.[25]

2.2 Impacts on Child Care Arrangements and Assistance

As discussed, the SWFI grant program is explicitly intended to address the lack of available, accessible, and affordable child care as a barrier for parents who want to enroll in education or training programs. There have been a few previous studies on how increases in child care coverage are associated with training and employment outcomes, but the impacts on reduction of child care problems and employment are mixed.[26] This section discusses whether the two SWFI programs in the RCT were able to increase access to child care services, the likelihood that individuals received help accessing such services, and whether the programs reduced child care as a barrier to training and employment. Because only the SWFI programs specifically targeted parents and were designed to provide child care assistance to participants, the impacts on child care arrangements and assistance are discussed for both the pooled sample and the SWFI sample.

- ***The TechHire/SWFI programs had no statistically significant impacts on receiving and paying for child care.***

Among individuals at the two SWFI programs, SWFI (program) group members and control group members reported similar rates that their youngest child received care from someone other than themselves or their spouse or partner while they were working or in training (Appendix C, Table C-1). Although individuals had to be parents to be eligible for the SWFI programs, less than half of individuals in both research groups used child care services. There was no statistically significant difference in the rates of child care use for both research groups among the pooled sample (including the TechHire programs) (Table 2-2). About 19 percent of both groups received care for their youngest child while in work or training.

Findings from the implementation analysis showed that one of the SWFI programs in the RCT did not directly pay for continuing child care services while participants were enrolled at the college. The Denver program was able to pay for child care services in some cases—for example, for interim child care participants needed while they were waiting to get approval to receive subsidized child care through the county or to cover child care needed in the evening.[27] In most cases, however, the SWFI programs tried to connect eligible participants to available subsidies offered outside the

[25] As one example, the Health Profession Opportunity Grants (HPOG) Impact Study found that the HPOG programs increased enrollment in or completion of training by 7 percentage points around 1 year after study entry. However, the programs did not lead to an increase in earnings over a 3-year follow-up period (Peck, Werner, et al., 2018; Peck, Litwok, et al., 2019).

[26] See Gennetian and Michalopoulos, 2003.

[27] It is not known how many participants received child care payments in these situations.

programs. The SWFI programs did not have a statistically significant effect on outcomes related to paying for child care. SWFI group members paid for child care for their youngest child and reported being reimbursed for payments made for child care at similar rates to control group members (Appendix C, Table C-1).

Table 2-2. Impacts on child care arrangements and assistance, 18-month follow-up period

Outcome	TH/SWFI group	Control group	Difference (impact)	P-value
Child care arrangements and assistance				
Youngest child received care while working or in training (%)	19.5	18.7	0.7	0.784
At Head Start or Early Head Start	2.3	2.0	0.3	0.801
At preschool, nursery school, or child care center	7.8	6.4	1.3	0.504
At family day care home	1.7	1.9	-0.2	0.878
From relative	8.9	10.3	-1.4	0.514
From non-relative	5.5	5.7	-0.2	0.900
Child cared for him or herself	0.5	0.7	-0.2	0.791
Paid for child care for youngest child (%)	8.4	10.0	-1.6	0.463
Was reimbursed for child care payments for youngest child (%)	3.7	2.3	1.3	0.317
Amount spent on child care depended on income (%)	5.9	8.0	-2.1	0.281
Received help: (%)				
Finding child care	11.5	9.3	2.2	0.326
Finding child care in a convenient location	12.1	7.0	5.1**	0.018
Finding child care at needed hours	9.6	6.9	2.7	0.188
Finding alternative to regular child care in an emergency	6.7	4.0	2.7	0.122
Paying for child care	12.5	10.2	2.3	0.313
Finding or paying for transportation to child care	5.7	4.2	1.6	0.349
Had problem with work due to child care arrangements (%)	15.1	14.8	0.3	0.916
Had problems with school due to child care arrangements (%)	7.4	8.5	-1.1	0.586
Had to quit a job, school, job search, or training due to issues obtaining or keeping child care	6.4	4.8	1.6	0.382
Did not take a job or did not start training due to issues obtaining or keeping child care	9.6	10.0	-0.4	0.847
Has difficulty finding child care he/she wants (%)	6.5	5.3	1.2	0.491
Has difficulty paying for child care (%)	5.8	4.1	1.7	0.306
Sample size	**360**	**310**		

Notes: Estimates were regression-adjusted using ordinary least squares, controlling for pre-random assignment characteristics of sample members. See a full list of covariates in Appendix B. Differences in the impact estimates and the differenced TH/SWFI and control group means are due to rounding.

Sample sizes may vary because of missing values. See Table B-11 for full missingness rates.

Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

TH = TechHire; SWFI = Strengthening Working Families Initiative.

Source: TechHire/SWFI Wave 2 survey.

The SWFI programs helped significantly more individuals access child care that was more convenient for them and find alternate child care in an emergency, by 12 and 7 percentage points, respectively.[28] However, this offered support did not translate into a statistically significant increase in child care use or a reported reduction in child care barriers. Similar rates of SWFI and control group members reported they had problems with work or school due to child care arrangements and did not take a job or start training because they had problems with child care (Appendix C, Table C-1).

2.3 Impacts on Receiving Job Readiness Training, Job Search Assistance, and Support Services

The TechHire and SWFI programs offered a range of other services to participants in addition to occupational skills training, including job readiness training and pre-employment services geared toward helping participants look for and obtain a job. As discussed in the earlier report on impacts at 6 months after random assignment, the specific services offered, as well as how often and by whom, differed across programs.

- ***The TechHire/SWFI programs produced statistically significant impacts on receipt of job readiness training, job search assistance, and supportive services.***

TechHire/SWFI produced statistically significant impacts on all of these outcomes. For example, TechHire/SWFI group members were 15 percentage points more likely than control group members to have received job readiness training, 14 percentage points more likely to have received career counseling, and 10 percentage points more likely to have received job search assistance (Table 2-3). These types of services are intended to help participants complete training, find a job, and remain employed.

The programs also offered support services to encourage participants to remain engaged in the programs and complete the training offered. These supports ranged from paying for or arranging transportation to the training to providing a referral to an outside organization for food or housing assistance. TechHire/SWFI produced a statistically significant impact on receiving help with support services. Twenty-four percent of TechHire/SWFI group members reported receiving such help compared with 18 percent of control group members.[29]

[28] In the Wave 1 survey, SWFI also had impacts on the receiving help finding child care, finding child care at needed hours, and finding and paying for transportation for child care. These impacts were also significant in the pooled sample. The reason for these differences in unclear.

[29] The percentage of both groups that reported receiving support services is nominally lower in the Wave 2 survey than in the Wave 1 survey. In the Wave 1 survey, 49 percent of TechHire/SWFI group members and 29 percent of control members reported receiving support services. This nominal difference may stem from differences in the wording of the survey questions. The Wave 1 survey included examples of support services such as "…books, uniforms, tools, and other work supplies." It is possible that participants did not count these as support services when answering this question in the Wave 2 survey.

Table 2-3. Impacts on job readiness training, job search assistance, and support services, 18-month follow-up period

Outcome	TH/SWFI group	Control group	Difference (impact)	P-value
Job readiness training, job search assistance, and support services				
Received assistance with the following: (%)				
Career counseling	35.7	21.5	14.2***	<0.001
Job readiness training	38.5	23.7	14.9***	<0.001
Job search assistance	34.9	24.9	10.0***	0.006
Job retention assistance	18.7	11.1	7.6***	0.006
Supports to help manage school or work (child care, transportation, housing, or counseling for personal/family problems	24.0	18.3	5.6*	0.059
Sample size	**360**	**310**		

Notes: Estimates were regression-adjusted using ordinary least squares, controlling for pre-random assignment characteristics of sample members. See a full list of covariates in Appendix B. Differences in the impact estimates and the differenced TH/SWFI and control group means are due to rounding.

Sample sizes may vary because of missing values. See Table B-11 for full missingness rates.

Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

TH = TechHire; SWFI = Strengthening Working Families Initiative.

Source: TechHire/SWFI Wave 2 survey.

2.4 Impacts on Training and Services Participation, by Subgroup

Impacts on key education and training, and child care arrangements and assistance were estimated for two key subgroups of interest.[30] All of the subgroup analyses are considered exploratory due to small sample sizes.

Program (Enrolled in a TechHire Program vs. a SWFI Program). The TechHire and SWFI programs both seek to make training for medium- and high-skilled jobs in targeted sectors more accessible for populations that often have difficulty obtaining training. Both programs hold the common goal of increasing training completion rates as well as promoting economic advancement. Yet the programs also differ in terms of their target demographics as well as some of the services that they offer. These variations provide justification to investigate whether impacts differ by grant program.

There are statistically significant impacts on the confirmatory outcome—completed training—and receipt of credentials among both subgroups (Appendix C, Exhibit C-2). Theses impact are consistent with pooled sample findings and suggests that both the TechHire and SWFI programs increased training completion and receipt of credentials. Further, there were no statistically significant differences between these subgroups for these impacts, suggesting that one grant program was not better able to increase training completion and receipt of credentials than the other.

[30] For both subgroups, the pooled sample was divided into two mutually exclusive and exhaustive groups and the impacts were estimated within each subgroup separately. Additionally, Q-statistics were used to test whether impacts differ significantly across subgroups.

Level of Attachment to the Labor Market at Random Assignment. This subgroup splits the sample into two groups: (1) currently or recently employed—those who were employed when they entered the study and those who had been employed within the last 7 months at study entry, and (2) the long-term unemployed—those who had never worked and those who had been out of work for 7 or more months at study entry.[31] Prior studies provide evidence that training program outcomes can vary according to participants' prior employment experiences (Hendra et al., 2016). The TechHire and SWFI programs may be better suited to participants who are currently or recently employed since they are likely to have fewer barriers to obtaining employment or a higher-paying position relative to those who have been out of work for several months. An analysis by level of labor market attachment at the time of random assignment will offer insight as to whether the current and recently employed are best positioned to garner the most benefit from the programs.

There were statistically significant impacts on training completion and credential receipt for both labor market attachment subgroups (Appendix C, Table C-3). These findings suggest that the TechHire/SWFI program were equally effective at increasing training completion and credential receipt for both the long-term unemployed and the currently or recently employed. As was the case for the pooled sample, all of the other impacts examined were not statistically significant in either subgroup, and the impacts did not differ significantly across subgroups.

[31] This definition is roughly based on the Bureau of Labor Statistics' definition of the long-term unemployed: being out of work for 27 weeks and actively searching for a job. Lei (2013).

3. Impacts on Earnings and Employment

This chapter presents findings from the analysis of earnings and employment for the impact sample of the TechHire and SWFI programs. Due to the time required to complete training and obtain new employment, the impact of training programs such as TechHire and SWFI is often not immediate. Prior studies examining similar programs have found that impacts often begin to emerge 1.5 to 2 years following random assignment, with some research suggesting effects may not become evident until Year 3 (Card, Kluve, & Weber, 2018; Miller et al., 2012). Taking this into account, this analysis will examine NDNH outcomes that encompass the first 2 years following the quarter of random assignment, as well as Wave 2 survey data collected from surveys conducted with both TechHire/SWFI and control group members 13 to 27 months after enrollment, with the average survey taking place in month 21.[32]

Summary of Key Findings: Employment and Earnings Impacts

- **TechHire/SWFI had no impact on employment or earnings.** The TechHire/SWFI group was no more likely to be employed than the control group and had similar earnings.
- **TechHire/SWFI had an impact on obtaining employment related to education and training.** In the TechHire/SWFI group 46% of respondents reported that their current or most recent job was closely related to their most recent education or training versus 37% of the control group.
- **TechHire/SWFI did not have an impact on job quality.** TechHire/SWFI respondents were as likely as respondents in the control group to indicate that they had regular jobs and that they were receiving many different types of benefits including paid sick days, health insurance, dental benefits, a retirement plan or 401k, or tuition reimbursement.

The analysis first presents findings derived from NDNH quarterly wage records. This includes earnings in the second year of follow-up, one of the confirmatory outcomes identified for the current follow-up period. (See Box 2.2 and Appendix B for more about estimating impacts on these confirmatory measures.) NDNH data includes records on all employment covered by UI but does not capture earnings from self-employment or informal jobs, nor does it include information pertaining to hours worked, rate of pay, benefits, or field of employment. To supplement the NDNH findings, the analysis turns to data collected from the Wave 2 survey. This includes impact results for a second confirmatory outcome, employment at the time of survey, as well as outcomes related to hours worked, employment benefits, and sector of employment that offer a more comprehensive view of participants' circumstances during the second year of follow-up. Appendix D presents additional outcomes for the TechHire/SWFI, labor market attachment, and site-based subgroups.

3.1 Impacts on Earnings and Employment

The format and length of training varies for the five sites selected for the RCT, and while many training programs did not exceed 6 months, some took as long as 24 months to complete (Tessler et al., 2021). When considering the time required to complete training, attain a credential

[32] Nine-quarters of NDNH records were available for the complete sample. The first quarter, which is the quarter of random assignment, is not used to calculate outcomes. Year 1 comprises quarters 2 through 5 and Year 2 of quarters 6 through 9.

(if necessary), instigate a job search, and finally begin a new job, it is likely that program impacts will not emerge until at least the second year following random assignment. While this section examines outcomes from both Year 1 and Year 2, the Year 2 outcomes, especially the confirmatory outcome of Year 2 earnings, are of particular interest.

- ***TechHire/SWFI did not produce a statistically significant increase in the likelihood that individuals were employed in the second year of follow-up. It also did not increase earnings in the second year by a statistically significant amount.***

Table 3-1 shows earnings and employment outcomes in both the first and second years of follow-up, including average earnings in Year 2, one of the study's confirmatory outcomes in the current follow-up period. The difference in average annual earnings between the TechHire/SWFI group and the control group was not statistically significant in Year 1 or Year 2. Similarly, Table 3-1 does not reveal any statistically significant impacts on employment outcomes in either year. The lack of statistically significant differences offers little evidence that the programs have had an effect on NDNH-based employment and earnings outcomes through the end of the current follow-up period.

Table 3-1. Impacts on employment and earnings

Outcome	TH/SWFI group	Control group	Difference (impact)	P-value
Employment				
Ever employed (%)				
Year 1	80.8	83.2	-2.3	0.301
Year 2	80.5	78.4	2.2	0.384
Average quarterly employment (%)				
Year 1	67.2	68.1	-0.9	0.688
Year 2	64.5	62.8	1.7	0.475
Earnings				
Average earnings ($)				
Year 1	15,338	15,535	-197	0.814
Year 2 (confirmatory outcome)	18,699	17,997	702	0.534
Earned $20,000 or more (%)				
Year 1	31.5	32.6	-1.1	0.683
Year 2	40.2	38.0	2.1	0.468
Sample size	**517**	**432**		

Notes: Estimates were regression-adjusted using ordinary least squares, controlling for pre-random assignment characteristics of sample members. See a full list of covariates in Appendix B. Differences in the impact estimates and the differenced TH/SWFI and control group means are due to rounding.

Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

TH = TechHire; SWFI = Strengthening Working Families Initiative.

Source: NDNH.

As previously noted, research has suggested that impacts for training programs such as TechHire and SWFI may not emerge until the end of Year 2 or perhaps even Year 3 (Hendra et al., 2016; Miller et al., 2012). Quarterly earnings and employment outcomes were examined to determine if program impacts began to emerge late in the follow-up period that were not captured by the Year 2 aggregate measures.

As seen in Table 3-2, quarterly earnings impacts were not statistically significant during any quarter in the 2-year follow-up period. Quarterly impacts on employment were also mostly not statistically significant. While the impact on employment in quarter 7 was positive and statistically significant, the absence of statistically significant employment impacts in quarters 8 and 9 suggests that this may have been an aberration rather than the beginning of a trend. Overall, there is no evidence that impacts emerged late in the second year of follow-up.[33]

Table 3-2. Impacts on quarterly employment and earnings, among full sample

Outcome	TH/SWFI group	Control group	Difference (impact)	P-value
Employment				
Ever employed (%)				
Quarter 2	63.0	67.0	-4.1	0.133
Quarter 3	68.3	70.2	-1.9	0.477
Quarter 4	69.1	69.4	-0.3	0.906
Quarter 5	68.6	65.8	2.8	0.326
Quarter 6	68.0	66.3	1.8	0.537
Quarter 7	66.5	60.5	6.1**	0.037
Quarter 8	63.8	62.8	1.1	0.722
Quarter 9	59.5	61.6	-2.1	0.499
Earnings				
Average earnings ($)				
Quarter 2	3,105	3,439	-333	0.112
Quarter 3	3,680	3,759	-79	0.737
Quarter 4	4,153	4,240	-88	0.745
Quarter 5	4,400	4,097	303	0.297
Quarter 6	4,579	4,290	289	0.344
Quarter 7	4,705	4,421	284	0.380
Quarter 8	4,747	4,732	14	0.967
Quarter 9	4,669	4,554	115	0.745
Sample size	**517**	**432**		

Notes: Estimates were regression-adjusted using ordinary least squares, controlling for pre-random assignment characteristics of sample members. See a full list of covariates in Appendix B. Differences in the impact estimates and the differenced TH/SWFI and control group means are due to rounding.

Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

TH = TechHire; SWFI = Strengthening Working Families Initiative.

Source: NDNH.

Impacts on earnings and employment outcomes created with data from the Wave 2 survey, including the pre-specified confirmatory outcome of employment at the time of the survey, are presented in Table 3-3. The majority of outcomes in this table are drawn from responses provided by respondents pertaining to their current or most recent employment.

[33] For more than half of the sample, the eighth and ninth quarter following random assignment occurred between the second quarter of 2020 and the first quarter of 2021, during the height of the COVID-19 pandemic. Potential implications of the pandemic on earnings and employment impacts will be further examined in Section 5.

- ***Results from the Wave 2 survey indicate that TechHire/SWFI group did not have a statistically significant impact on the likelihood of being employed at the time of the survey.***

Table 3-3. Impacts on employment and earnings, among respondents to the Wave 2 survey

Outcome	TH/SWFI group	Control group	Difference (impact)	P-value
Employment				
Confirmatory Outcome: Currently employed (%)	61.0	57.9	3.0	0.409
Ever employed (%)	81.2	84.7	-3.6	0.216
In IT sector	13.7	12.8	0.9	0.741
In healthcare sector	17.4	12.7	4.7*	0.082
In advanced manufacturing sector	3.8	3.0	0.8	0.569
Currently working 2 or more jobs (%)	9.0	10.5	-1.5	0.507
Percentage of months employed[a]	32.5	38.8	-6.3**	0.035
Earnings				
Average hourly wage ($)	15.67	13.79	1.88	0.336
Hourly wage above $15 (%)	45.1	47.6	-2.6	0.512
Average weekly earnings ($)	485	505	-20	0.589
Sample size	**360**	**310**		

Notes: Estimates were regression-adjusted using ordinary least squares, controlling for pre-random assignment characteristics cTH/SWFI and control group means are due to rounding.

Sample sizes may vary because of missing values. See Table B-11 for full missingness rates.

Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

TH = TechHire; SWFI = Strengthening Working Families Initiative; IT = information technology.

[a] Outcome is among the first 13 months following each individual's month of study entry (the common follow-up period).

Source: TechHire/SWFI Wave 2 survey.

Sixty-one percent of respondents in the TechHire/SWFI group were currently employed at the time of the survey compared with 58 percent of respondents in the control group; this difference is not statistically significant. Respondents in the TechHire/SWFI group were however employed fewer months on average during the 13-month follow-up period (33% of the months vs. 39%) than respondents in the control group. This statistically significant difference is likely explained by program participants deferring employment until their training was complete (as is often the case in similar types of programs; see Hendra et al., 2016 for example). There were no statistically significant differences in hourly or weekly earnings between the two groups.

3.2 Impacts on Job Characteristics and Barriers to Employment

- ***Despite some reported success by TechHire/SWFI group members in obtaining employment that draws upon their recent education and training, there are indicators that the jobs they have attained are not the well-paying, middle- and high-skilled, and high-growth jobs that were aspired to in the funding opportunity announcements for both programs.***

As seen in Table 3-4, just under 46 percent of respondents in the TechHire/SWFI group reported that their current or most recent job is closely related to their most recent education or training, a

figure that exceeds the 37 percent of the control group members that reported the same and a difference that is statistically significant. Moreover, TechHire/SWFI group members were more likely to report having been employed in only one of the sectors that were the focus of TechHire and SWFI programs (Table 3-3): over 17 percent of respondents in the TechHire/SWFI group indicated that they had been employed in the healthcare sector during the follow-up period as compared to only about 13 percent of the control group. This difference was statistically significant.

Table 3-4. Impacts on job characteristics, among respondents to the Wave 2 survey

Outcome	TH/SWFI group	Control group	Difference (impact)	P-value
Current or most recent job characteristic				
Average hours worked per week (#)	27.5	30.0	-2.5*	0.055
Worked full-time (35 or more hours per week) (%)	50.2	57.7	-7.4**	0.044
Receives any employer-provided benefits (%)	60.1	60.4	-0.3	0.941
Paid sick days	40.5	41.8	-1.2	0.741
Paid vacation	44.7	42.5	2.3	0.540
Paid holidays	47.9	45.7	2.2	0.560
Health insurance	46.1	48.7	-2.6	0.488
Enrolled	32.1	30.8	1.3	0.703
Dental benefits	43.8	45.5	-1.8	0.637
Retirement or 401k plan	44.4	45.8	-1.3	0.719
Tuition reimbursement	25.0	28.9	-4.0	0.236
Job type (%)				
Regular permanent job	60.1	65.7	-5.7	0.121
Work for "temp" agency	3.2	3.7	-0.5	0.730
Work for staffing agency	4.8	5.8	-1.1	0.536
Occasional, odd job	5.4	5.8	-0.4	0.811
Work for a friend or family member	4.7	4.0	0.7	0.666
Satisfied with job (%)	48.4	47.7	0.7	0.860
Job is closely related to most recent education or training (%)	45.6	36.6	9.0**	0.019
Job offers many opportunities for career advancement (%)	51.5	50.5	1.0	0.796
Sample size	**360**	**310**		

Notes: Estimates were regression-adjusted using ordinary least squares, controlling for pre-random assignment characteristics of sample members. See a full list of covariates in Appendix B. Differences in the impact estimates and the differenced TH/SWFI and control group means are due to rounding.

Sample sizes may vary because of missing values. See Table B-11 for full missingness rates.

Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

TH = TechHire; SWFI = Strengthening Working Families Initiative.

Source: TechHire/SWFI Wave 2 survey.

Despite TechHire/SWFI group members being more likely to obtain employment that draws upon their recent education and training than control group members, there are indicators that the jobs they have attained are not the well-paying, middle- and high-skilled, and high-growth jobs that were aspired to in the funding opportunity announcements for both programs (Tessler et al., 2021).[34] Table 3-4 shows TechHire/SWFI did not produce statistically significant impacts on having a regular job or on receiving different types of benefits including paid sick days, health insurance, dental benefits, a retirement plan or 401k, or tuition reimbursement.

Additionally, individuals in the control group reported working more hours per week on average (30 versus 28 hours) and were more likely to be employed full-time (58 versus 50 percent), defined as working 35 hours or more per week, with both differences being statistically significant. Since most TechHire/SWFI participants were likely no longer enrolled in training related to the program at the time of their survey (only 8% were, Table 2-1), it is difficult to attribute this difference to active participation in the program. It is notable that TechHire/SWFI did not produce a statistically significant effect on employment, wages, or the likelihood of receiving benefits, yet decreased the number of hours worked. This could be seen as a better quality job, allowing individuals to have more leisure time.

The Implementation and Early Impacts Report notes that the majority of TechHire/SWFI opted for a strategy that offered trainees the skills needed to obtain an entry-level position that would place them on a track to achieve higher earnings in the long-term (Tessler et al., 2021). However, about an equal proportion of respondents in both groups reported that their current or most recent job offers many opportunities for career advancement, suggesting that TechHire/SWFI group members are presently no more optimistic about their long-term prospects in their job than their counterparts in the control group (Table 3-4). However, additional follow-up is required to determine if the training strategy adopted by the sites that offered lower-skill training pays further dividends in the long run.

As shown in Table 3-5, TechHire/SWFI did not produce a statistically significant impact on citing childcare and transportation as obstacles to meeting work, school, and family responsibilities or on finding it difficult to obtain a job in their chosen field. Among TechHire/SWFI group respondents that have encountered difficulty finding employment in their chosen field, over 70 percent cited a lack of experience as an obstacle. This is substantially more than any other reason cited and underscores the need for sites to secure partnerships with employers to provide internship and apprenticeship opportunities (Tessler et al., 2021). Staff members from all five sites noted that employers were predisposed toward potential hires with prior experience rather than candidates fresh from a training course. This insight from site staff, in conjunction with evidence provided by the survey, suggests that the absence of experiential learning opportunities may have been a notable shortcoming of the TechHire and SWFI programs.

[34] As described in Tessler et al., 2021, notably, "well-paying" and "middle- and high-skilled" are not clearly defined in the Funding Opportunity Announcement for TechHire and SWFI - the closest definition is, "Occupations at H-1B skill levels generally require a bachelor's degree or comparable experience and are middle to-high-skill level." The Funding Opportunity Announcements defined "high-growth" jobs as those that "1) are projected to add substantial numbers of new jobs to the economy; 2) are being transformed by technology and innovation that require workers to obtain new skill sets; and 3) have a significant impact on the economy overall or on the growth of other industries and occupations."

Table 3-5. Impacts on barriers to employment, among respondents to the Wave 2 survey				
Outcome	TH/SWFI group	Control group	Difference (impact)	P-value
Barriers to employment				
In the past year, the following sometimes or often interfered with school, work, job search, or family responsibilities (%)				
Child care arrangements	33.1	35.1	-2.0	0.499
Transportation	36.2	39.5	-3.3	0.359
Feels it is somewhat or very difficult to get a job in chosen occupation (%)	68.9	68.1	0.7	0.840
Reason(s) it is difficult to get a job in chosen occupation, among those who feel it is difficult (%)				
Child care arrangements	*22.8*	*25.2*		
Transportation	*18.4*	*17.8*		
Lack of education	*40.7*	*44.1*		
Lack of experience	*70.4*	*63.1*		
Lack of job openings	*34.3*	*38.6*		
Other	*19.2*	*18.4*		
Sample size	**360**	**310**		

Notes: Estimates were regression-adjusted using ordinary least squares, controlling for pre-random assignment characteristics of sample members. See a full list of covariates in Appendix B. Differences in the impact estimates and the differenced TH/SWFI and control group means are due to rounding.

Sample sizes may vary because of missing values. See Table B-11 for full missingness rates.

Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

TH = TechHire; SWFI = Strengthening Working Families Initiative.

Outcomes shown in italics are nonexperimental. Statistical significance tests are not conducted on nonexperimental outcomes.

Source: TechHire/SWFI Wave 2 survey.

3.3 Subgroup Impacts on Earnings and Employment

This analysis examines program impacts for two pre-specified exploratory subgroups:

- Enrollment at a TechHire or SWFI site, and
- Level of attachment to the labor market at the time of random assignment.

In addition, an exploratory analysis of site-level earnings and employment impacts is conducted to examine whether differences in implementation approach among the sites contributed to variation in program outcomes. The analysis of the two pre-specified subgroups examines earnings and employment outcomes created using both the NDNH and Wave 2 survey data. Due to sample size considerations (meaning the small site-level sample sizes), only NDNH outcomes are included in the site-level analysis.

Earnings and Employment Outcomes by Program (Enrolled in a TechHire Program vs. a SWFI Program)

While the TechHire and SWFI programs share characteristics, they also target different populations and were designed to offer somewhat different services. These differences provided justification to investigate if impacts varied by program.

Variation in impacts across subgroups was not statistically significant for any of the outcomes examined, suggesting that there were no meaningful between-groups differences in impacts. The analysis also did not reveal statistically significant NDNH-based earnings and employment impacts among either subgroup for any of the included outcomes (Appendix D, Table D-1). Likewise, responses from the Wave 2 survey also show no differences in program impacts on either earnings and employment or barriers to employment for both subgroups.

Earnings and Employment Outcomes by Attachment to the Labor Market

As discussed in more detail in Chapter 2, it was hypothesized that the TechHire and SWFI programs may offer greater benefit to those who were currently or recently employed at study entry, since they may be better positioned to leverage program services and have fewer barriers to overcome when seeking employment after completing their training, compared to those who were unemployed for 7 or more months at study entry (including those who had never worked).

For all but one outcome, the difference in impacts on earnings and employment across subgroup is not statistically significant (Appendix D, Table D-2). The one exception is Year 2 employment calculated using NDNH data. Nearly 67 percent of TechHire/SWFI group members in the long-term unemployed subgroup were employed in Year 2 as compared to 51 percent of the control group, a statistically significant difference of over 16 percentage points.[35] The impact on Year 2 employment for the currently or recently employed subgroup was not statistically significant. This finding goes against expectations. For all of the other outcomes, including Year 2 earnings and current employment as measured by the survey, TechHire/SWFI did not produce a statistically significant impact among either subgroup.

For those who were unemployed long-term, the TechHire/SWFI programs may have provided an avenue to seek out job opportunities that were formerly unavailable or overcome obstacles to work that had previously precluded employment. By contrast, those that were currently or recently employed may have benefited less from the programs because the types of employment opportunities that became available to them did not surpass the quality of jobs that they already held or that were readily obtainable.[36] Prior studies have provided evidence that attempting to move people into high-demand industries is not sufficient to improve earnings and employment outcomes (Hendra et al., 2016; Peck et al., 2019; Roder & Elliott, 2019). Rather, the jobs must also pay more, offer more hours, or offer better benefits than the jobs that people already have or could obtain on their own. These factors may have reduced the likelihood of impacts for those that were currently or recently employed.

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[35] Average quarterly employment in Year 2 for TechHire/SWFI members in this subgroup was nearly 14 percentage points higher than that of the control group, a large, statistically significant difference (not shown). While both of these impacts appear large, it is important to remember that the subgroup estimates, particularly for the long-term unemployed subgroup, are less precise due to small sample sizes. The minimum detectable effect size for earnings was estimated as $2,804, slightly less than the Year 2 earnings impact of $3,132 for the less attached subgroup.

[36] As noted previously, the majority of the TechHire/SWFI sites offered training that provided the skills needed to secure entry-level jobs. In addition, programs began to offer training amidst a robust economy where unemployment was low and where entry-level jobs could be found that paid well above minimum wage. For example, at the time of study enrollment, unemployment in Vermont was less than 3 percent and site staff at the Denver and Vermont sites reported losing potential enrollees since local entry-level jobs were available that paid substantially over the minimum wage (Tessler et al., 2021).

Earnings and Employment Outcomes by Site

The training offered to participants through the TechHire and SWFI programs varied by site. The sites either placed greater emphasis on offering training that would furnish the skills needed for the well-paying, middle- and high-skilled jobs called for in the TechHire and SWFI Funding Opportunity Announcements, or provided training for more entry-level positions that would set them on the pathway to higher earnings. Sites were also given latitude to interpret aspects of the eligibility criteria as well as how to design screening processes.[37] This may have led to differences in sample composition between sites that may have influenced post-training employment and earnings. It should be noted that due to the small sample size of some sites site-level impacts are estimated with less precision, meaning that these exploratory results should be interpreted with caution.[38]

The analysis shows little cross-site variation in impacts and few impacts for most sites (Appendix D, Table D-3). However, the variation in Year 2 employment impacts across sites is statistically significant. Eighty-six percent of TechHire group members at the New York City site were employed in Year 2, a statistically significant 25 percentage point impact over the control group. The difference was not statistically significant at the other four sites.[39] The New York City site also produced a large, but not statistically significant difference in average annual earnings in Year 2.[40]

As discussed in the Implementation and Early Impacts Report, the implementation of the New York City TechHire program differed from that of other sites in important ways. First, it used a more rigorous screening process to discern if applicants exhibited a clear and genuine interest in training in their field.[41] Next, the site offered training to prepare students for high-skill jobs in the rapid-growth IT sector, as opposed to the trainings for mainly entry-level positions. The site may have been able to do this because participants entered this program with the highest level of education, on average. Lastly, while most sites failed to secure important employer partnerships that could provide students with valuable experiential learnings opportunities, at the New York City site, nearly half of the TechHire group was placed in paid internships.[42] Staff noted that these experiences helped participants gain experience, and in some cases, led to permanent job offers. While it is difficult to know to what degree these program traits contributed to the Year 2 employment impact at the New York City site, the results show that a TechHire program that focuses more on medium- and high-skill training, experiential learning opportunities through employer partnerships, and a more robust screening process, can produce some positive outcomes.

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[37] For example, how to define "barriers to employment" (for TechHire sites) and "training needs" (for SWFI sites) was left to the discretion of the grantees.

[38] Minimum detectable effect size at 80 percent power ranged from .267 to .515 at program sites. While none of these values fell below the .2 threshold of a small effect size all but one site had an effect size of less than .5, which is the common threshold for a medium effect. These thresholds come from Cohen. Cohen defined an effect size of 0.2 as "small," 0.5 as "medium," and 0.8 as "large." See Cohen (1992).

[39] The New York City site was the only site to produce an impact on average quarterly employment in Year 2 as well (not shown).

[40] In Year 2, the $23,875 mean annual earnings of the New York City TechHire group exceeded the average annual earnings of the control group by $3,614. This is nearly two times greater than that of any other site and represents a 15 percent increase in earnings. As noted, sample size limitations make it difficult to detect statistically significant impacts at the site level.

[41] Evaluations of other training program have found that a rigorous screening process can contribute toward a higher rate of training participation, which in turn may affect earnings and employment outcomes (Hendra et al., 2016; Fein & Hamadyk, 2018).

[42] Thirty-five of the 77 New York City program group members were place in a paid internship through the TechHire program (Tessler et al., 2021).

4. Impacts on Financial Status and Other Life Outcomes

This chapter examines whether the TechHire/SWFI programs affected other life outcomes, including those related to income, financial, and housing status, and overall well-being. Appendix E presents additional related findings, including additional outcomes for the TechHire/SWFI and labor market attachment subgroups. Outcomes in these domains are thought to improve as a result of increases in education and training that lead to more favorable earnings and employment outcomes (Wolla and Sullivan, 2017; King, 2021). As discussed in Chapter2, TechHire and SWFI led to increases in training completion and credential attainment. However, as seen in Chapter 3, training did not lead to higher earnings or a greater likelihood of employment. As a result, a weak case seems to exist for impacts on financial status and other life domains.

Summary of Key Findings: Income and Well-Being Impacts

- **TechHire/SWFI had no impact on personal income.** The average monthly income of both groups was about $1,600.
- **TechHire/SWFI had no impact on receipt of most public benefits.** The two exceptions were that the TechHire/SWFI group received less income through WIC and child care subsidies in the past month.
- **TechHire/SWFI had no impact on most measures of financial well-being.** Average financial well-being did not differ between the groups. The one exception is that TechHire/SWFI group members were less likely to report material hardship in the past month.
- **Similar percentages of both groups agreed that they were making progress toward long-range employment goals, felt that they were on a career path, and were very happy.**

4.1 Income

Increases in employment and earnings from job training do not always result in increases in personal income. As individuals earn more money, they may lose eligibility for public benefits (Bloom and Michalopoulos, 2001). The net result may be a net change in household or personal income.

- ***The TechHire/SWFI programs had no statistically significant impacts on personal income or public benefit receipt.***

As shown in Table 4-1, the evaluation did not find evidence of statistically significant TechHire/SWFI program impacts on personal income, with total personal income averaging approximately $1,600 per month for both the TechHire/SWFI and control groups. Additionally, for most of the public benefits outcomes, there were no statistically significant results. There is evidence that the TechHire/SWFI group received less income through WIC during the month of the follow-up survey (10% compared with 17%) and child care subsidies (4% compared with 7%), statistically significant differences.[43]

[43] The TechHire/SWFI program impacts on personal income and public benefits differ from those of a recent evaluation of the Year Up training program (Fien & Dastrup, 2022). The authors found a positive impact on personal income of about $448 a month and found treatment group members were 7 percentage points less likely to received means-tested public benefits.

Table 4-1. Impacts on income, 18-month follow-up period				
Outcome	TH/SWFI group	Control group	Difference (impact)	P-value
Income				
Average total respondent income in prior month ($)	1,687.86	1,635.16	52.69	0.718
Household income source (%)				
Job earnings	63.5	69.5	-6.0	0.101
WIC	10.0	17.3	-7.3***	0.005
Food stamps/SNAP	28.6	29.1	-0.5	0.877
SSI/SSDI	7.3	6.0	1.3	0.481
Public assistance/TANF	5.0	7.0	-2.0	0.248
Housing assistance	8.5	10.2	-1.7	0.432
Unemployment insurance	10.4	9.4	1.0	0.657
Child care subsidy	4.0	6.8	-2.8*	0.094
Other	15.8	18.2	-2.4	0.417
Sample size	**360**	**310**		

Notes: Estimates were regression-adjusted using ordinary least squares, controlling for pre-random assignment characteristics of sample members. See a full list of covariates in Appendix B. Differences in the impact estimates and the differenced TH/SWFI and control group means are due to rounding.

Sample sizes may vary because of missing values. See Table B-11 for full missingness rates.

Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

TH = TechHire; SWFI = Strengthening Working Families Initiative; WIC = Women, Infants, and Children; SNAP = Supplemental Nutrition Assistance Program; SSI = Supplemental Security Insurance; SSDI = Social Security Disability Insurance; TANF = Temporary Assistance for Needy Families.

Source: TechHire/SWFI Wave 2 survey.

4.2 Financial Well-Being and Housing Status

Many workers earning low wages struggle with paying for essentials like housing and food and lack health insurance. These include struggles paying medical bills, rent or mortgage, or running out of food, or affording health insurance even if coverage is available through employers due to high cost (Brockland & Ladha, 2022). In addition, rental housing is unaffordable for workers earning low wages in the 50 most populous metro areas, with the median rent being higher than the wages for workers making the prevailing minimum wage and working 40 hours per week (National Low Income Housing Coalition, 2022). These stresses are compounded by the fact that nearly 72 percent of workers earning low wages are the primary breadwinners in the household. These are considered exploratory outcomes because they are affected only after workers increase employment and earnings.

- ***With one exception, the TechHire/SWFI programs had no statistically significant impacts on measures of financial well-being.***

In general, as shown in Table 4-2, the TechHire/SWFI group's average financial well-being did not differ from the control groups by statistically significant amounts in the 18 months after random assignment. This is consistent with the finding that both groups had similar average personal incomes. The one exception is that the TechHire/SWFI group was less likely to report experiencing

any material hardship in the past year by 8 percentage points, a statistically significant difference.[44] Because the programs did not increase income by a statistically significant amount, the reason for this finding is unclear. One possible explanation is that by covering the costs of training or providing financial supports, the TechHire/SWFI programs reduced material hardship.[45]

Table 4-2. Impacts on financial well-being and housing status, 18-month follow-up period

Outcome	TH/SWFI group	Control group	Difference (impact)	P-value
Financial well-being				
Covered by health insurance (%)	79.3	77.1	2.2	0.485
Agrees financial situation is better now than at study enrollment (%)	60.3	54.0	6.4	0.103
Does not have enough money left over at the end of the month (%)	37.1	42.8	-5.7	0.120
Household sometimes or often does not have enough to eat (%)	15.6	15.9	-0.3	0.919
Experienced any material hardship in the past year (%)	49.1	57.3	-8.2**	0.029
Experienced the following number of material hardships in the past year (#)	1.3	1.6	-0.3**	0.039
Experienced the following types of material hardship in the past year: (%)				
Could not pay full amount of rent or mortgage	24.5	28.2	-3.7	0.269
Could not pay full amount of utility bills	26.8	32.1	-5.2	0.127
Utilities turned off	4.9	6.8	-1.9	0.307
Phone disconnected	14.4	18.0	-3.5	0.209
Could not afford to go to doctor	19.4	23.8	-4.4	0.170
Could not afford to go to dentist	26.1	31.6	-5.5	0.119
Could not afford to fill prescription	14.5	18.6	-4.1	0.155
Housing status				
Current living arrangement (%)				
Rents home or apartment	46.9	47.7	-0.9	0.817
Owns home	12.7	13.7	-0.9	0.702
Lives with friends or family and pays part of rent/mortgage	17.2	23.5	-6.3**	0.043
Lives with friends or family and does not pay part of rent/mortgage	19.1	12.2	6.8**	0.013
Lives in group shelter	0.2	0.4	-0.1	0.752
Ever been homeless or lived in a shelter (%)	7.6	8.8	-1.2	0.566
Sample size	**360**	**310**		

Notes: Estimates were regression-adjusted using ordinary least squares, controlling for pre-random assignment characteristics of sample members. See a full list of covariates in Appendix B. Differences in the impact estimates and the differenced TH/SWFI and control group means are due to rounding.

Sample sizes may vary because of missing values. See Table B-11 for full missingness rates.

Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

TH = TechHire; SWFI = Strengthening Working Families Initiative.

Source: TechHire/SWFI Wave 2 survey.

[44] Material hardships include not paying the full amount of rent or mortgage due; not paying the full amount due for gas, oil, or electricity; having gas, electrical, or oil services turned off; having phone services disconnected because payments were not made; being unable to afford a visit to a doctor or dentist; and being unable to afford filling a prescription when needed.

[45] Similar findings were obtained from the HPOG evaluation. Although the program did not increase household income, it had a statistically significant impact on ""trouble making ends meet." The authors posited that paying for training or emergency assistance may explain the reason for the impact (Klerman et al., 2022). Similarly, Fein and Dastrup (2022) found the Year Up program increased the ability to handle a financial emergency, suggesting also that program supports may reduce material hardship.

4.3 Overall Well-Being and Perceptions of the Future

The TechHire and SWFI programs sought to promote movement along career paths that lead to advancement and higher earnings. Jobs that pay more, offer more hours, or offer better benefits than the jobs that individuals could obtain on their own may have positive cascading effects on overall well-being and perceptions of the future. Again, given that there were no impacts on employment and earnings, the case for impacts on overall well-being is weak. This section explores impacts on several related life domains.

- ***The TechHire/SWFI programs had no statistically significant impacts on measures of overall well-being or perceptions of the future.***

Survey respondents were also asked about their perceptions of the future. TechHire/SWFI did not produce a statistically significant impact on feelings of making progress toward their long-term employment goals or being on a career path (Table 4-3). Overall, just over 80 percent of both groups felt that they were making progress and felt that they were on a career path. TechHire/SWFI also did not produce a statistically significant impact on happiness: similar percentages of both the TechHire/SWFI and control groups felt "very happy" at the time of the Wave 2 survey. Just under 15 percent of both groups said that they were very happy.

Table 4-3. Impacts on overall well-being and perceptions of the future, 18-month follow-up period

Outcome	TH/SWFI group	Control group	Difference (impact)	P-value
Overall well-being and perceptions of future				
Feels he/she is making progress toward long-range employment goals (%)	84.3	80.4	4.0	0.187
Feels he/she is on a career path (%)	84.7	80.8	3.9	0.191
Very happy (%)	14.5	12.7	1.7	0.520
Sample size	**360**	**310**		

Notes: Estimates were regression-adjusted using ordinary least squares, controlling for pre-random assignment characteristics of sample members. See a full list of covariates in Appendix B. Differences in the impact estimates and the differenced TH/SWFI and control group means are due to rounding.

Sample sizes may vary because of missing values. See Table B-11 for full missingness rates.

Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

TH = TechHire; SWFI = Strengthening Working Families Initiative.

Source: TechHire/SWFI Wave 2 survey.

4.4 Subgroup Impacts

Impacts on financial status and other life outcomes were estimated for the grantee (TechHire vs. SWFI) and labor market attachment (long-term unemployed vs. currently or recently employed) subgroups. See Chapter 2 for more details on these subgroups. These subgroup analyses are considered exploratory due to small sample sizes.

TechHire program members were significantly less likely than the control group to receive income from job earnings, but there was no statistically significant impact for SWFI (Appendix E, Table E-1). However, the difference in impacts was not statistically significant. There were no statistically significant impacts on experiencing any material hardship among both groups. The

magnitudes of the differences between the program and control groups are nominally similar to the pooled sample impact magnitude for experiencing material hardship.

There was a statistically significant negative impact on income from job earnings for the recently employed group but not for the long-term unemployed group. This difference in impacts however, was not statistically significant. Similar to the impact for the full sample, there were statistically significant impacts on any material hardship in the past year for both the long-term unemployed and recently employed groups (Appendix E, Table E-2).

5. Effects of COVID-19 on Program Outcomes

In early 2020, the COVID-19 pandemic began to spread across the United States, imposing extensive hardship on households and communities and disrupting the employment landscape. At a time when TechHire and SWFI participants were completing their training or seeking new employment, many workers were losing their jobs or having their hours substantially reduced. Other obstacles resulting from the pandemic, including school closures and substantially reduced childcare options, may have further limited employment opportunities for many TechHire and SWFI participants. It is hard to know what to expect in terms of the impacts of COVID-19. On the one hand, the training and job preparation provided by the programs may have buffered individuals against the worst effects of the economic disruption brought about by the pandemic. On the other hand, the instability of the economic environment may have made it more difficult to translate skills obtained into employment. In addition, there was variation across sites in terms of sector(s) of focus, sample characteristics, and policies enacted by state and local actors in response to the pandemic and, as a result, site-level effects may vary. For example, TechHire/SWFI group members at sites that offered training in fields such as IT may have been more insulated against the economic disruption instigated by the pandemic than at sites that provided training in manufacturing. It is also possible that SWFI sites, which enrolled more participants with children aged 18 years or younger, may have been disproportionately affected by the closure of school and childcare facilities. While all members of the impact sample were likely affected in some way by the economic tumult brought about by COVID-19, these cross-site variations likely influenced the ways and the degree to which people were effected.

Summary of Key Findings: Effects of COVID-19 on Program Outcomes

- **COVID-19 had no effect on the impacts on employment and earnings.** Average quarterly employment and earnings fell for both the TechHire/SWFI and control groups in the first year after the start of the pandemic and rose in the second year.
- **COVID-19 had little effect on the ability of participants to complete training.** Among TechHire/SWFI group members who were enrolled in training at the start of the pandemic, 78% said that they were able to continue training online uninterrupted. This number was similar to the control group.

For almost all participants, the first year following the onset of COVID-19 overlaps with the second year of study follow-up, a period where prior research suggests that program impacts may begin to materialize (Card, Kluve, and Weber, 2018).[46] To explore this dynamic, this chapter examines how individuals in the TechHire and SWFI programs were affected by the upheaval of the economic landscape ushered in by the pandemic. First, it establishes the extent of the effects of COVID-19 on employment and earnings outcomes for the overall sample using NDNH quarterly wage and UI benefits records. This is intended to synopsize the experience of the study population after the onset of COVID-19 in order to provide context for the impact analysis of the pandemic period. Next, impacts on NDNH employment and earnings are presented for the 2 years following the onset of COVID-19. The analysis concludes with a review of responses from the Wave 2 survey that focus on

[46] The second year of follow-up overlapped with the COVID-19 period, defined as beginning in Q2, 2020, and extending through Q1, 2021, for all but one member of the impact sample. There was overlap between the COVID-19 period and at least two quarters of the second year of follow-up for 85 percent of the impact sample.

participant experiences during COVID-19 related to education, training, and access to childcare. Responses pertaining to employment and UI benefit receipt are also examined.

5.1 Pre- and Post-COVID-19 Earnings, Employment, and UI Receipt

To better understand how the study's overall sample—combining individuals in both the TechHire/SWFI and control groups—experienced the economic disruption brought about by COVID-19, this analysis examines changes to earnings, employment, and UI benefit receipt in the period preceding and following the onset of the pandemic at the end of the first quarter of 2020. To account for seasonal and annual variation, the analysis examines the 2 years prior to and immediately following the start of the COVID-19 period, defined as the second quarter of 2020. Since state and local governments enacted different policy responses to address the spread of the virus, and because the challenges and timing of pandemic responses also varied by region, site-level results are presented in addition to those of the overall sample.

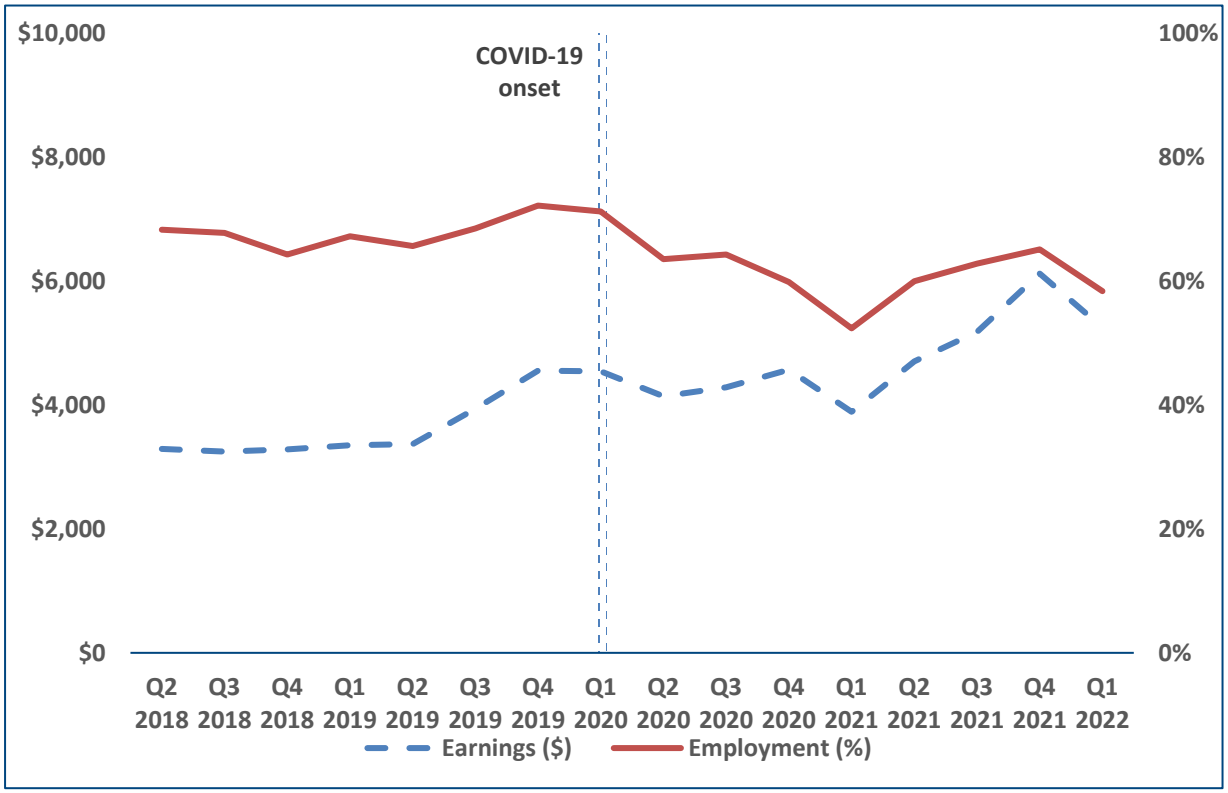
Overall Sample Earnings and Employment

- ***Unsurprisingly, both earnings and employment for the overall sample declined at the start of the COVID-19 pandemic. Both rebounded later in the follow-up period.***

In quarter 2 of 2020, the proportion of the overall sample that was employed fell 7.7 percentage points (which is comparable to the 7.8 percentage point drop in the national employment rate for that same period) (Smith, Edwards, & Duong, 2021). The employment rate continued to fall before reaching its nadir of 52 percent in quarter 1 of 2021 (Figure 5-1). Emerging from the disruption of the pandemic, the employment rate grew steadily through 2021, peaking in quarter 4. Although employment has yet to recover to its pre-pandemic high-water mark of 72 percent, a continuation of the upward trajectory witnessed in 2021 suggests that milestone may soon be achieved.

Similarly, average quarterly earnings decreased from $4,543 in quarter 1 of 2020 to $4,140 in quarter 2 of 2020. However, a modest rebound in quarter 3 of 2020 was the harbinger of an upward trend in quarter-on-quarter earnings that was sustained throughout most of the post-onset period. While the employment rate for the overall sample has yet to reach its pre-COVID-19 level, average quarterly earnings surpassed that threshold in quarter 4 of 2020. These patterns suggest that individuals in the overall sample that remained employed during COVID-19 were able to increase their rate of pay or hours worked, or were able to obtain supplemental employment.

Figure 5-1. Employment and earnings during the 2 years before and 2 years after the onset of COVID-19, all sites



Notes: The sample size for this exhibit is 949 individuals.

Source: NDNH.

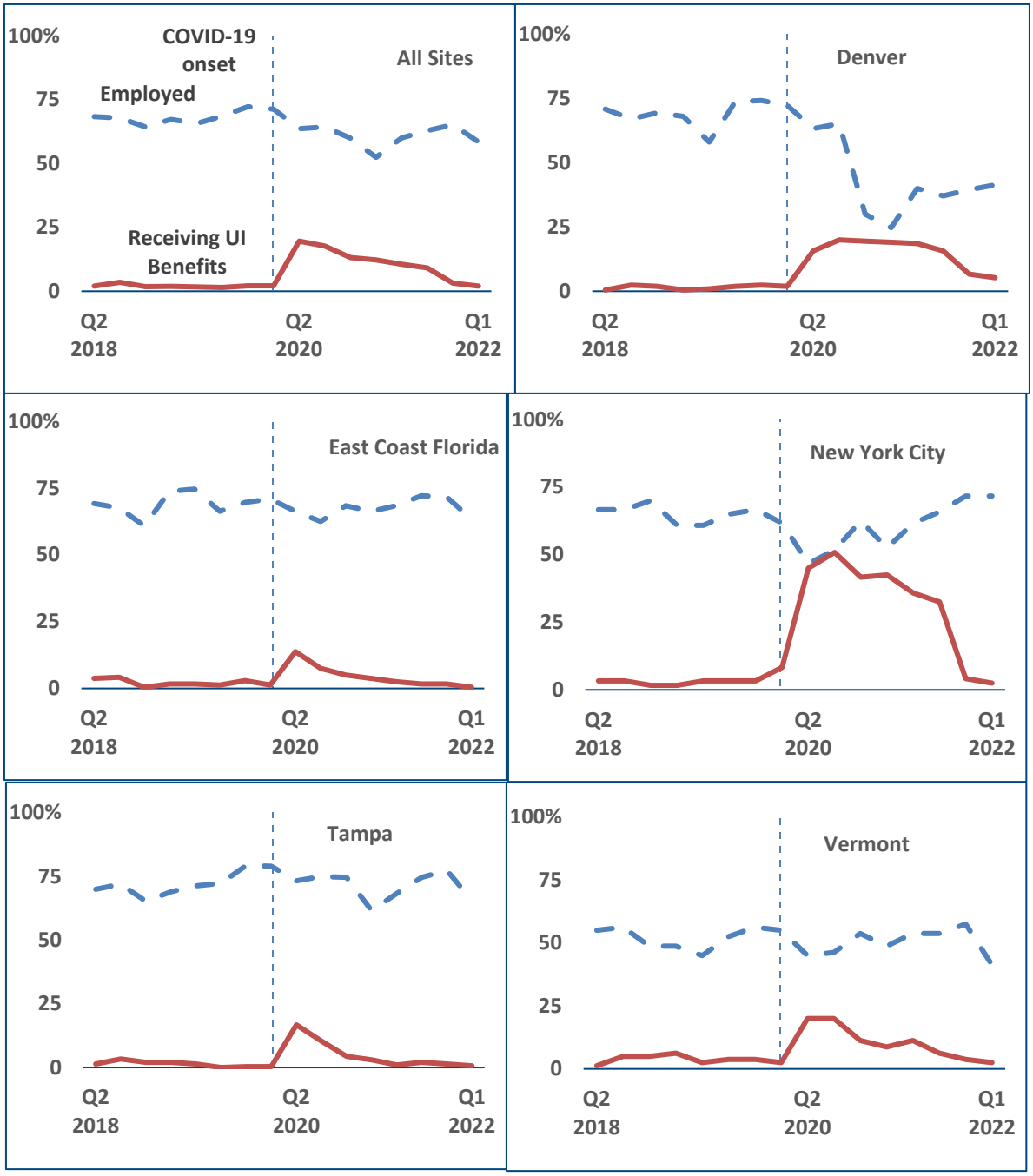
Site-level Employment and Incidence of UI Benefit Receipt

- ***At all sites, employment fell during the initial quarters of the pandemic as all states with a site in the study issued stay-at-home orders in either late March or early April, 2020.[47] In response, the incidence of UI benefit receipt increased sharply at all sites. The rate of UI benefit receipt was highest at the New York City site.***

Figure 5-2 shows site-level differences in employment trends and rates of UI benefit receipt before and after the start of the pandemic. In New York City, which experienced both a large early wave of COVID-19 cases as well as strict stay-at-home orders, quarterly employment fell from 62 percent in quarter 1 of 2020, to 47 percent in quarter 2, a nearly 15 percentage point drop that was the largest among all sites. The drop in employment in Vermont during the early quarters of the pandemic was also substantial (it was also nearly two times larger than the fall in national-level employment). The closures of school and daycare facilities in response to the pandemic may have erected a substantial barrier to employment for Vermont participants (almost all of whom had children 18 years old or younger).

[47] Colorado, New York, and Vermont issued stay-at-home orders by the end of March. Florida followed suit in April, 2020.

Figure 5-2. Formal employment and UI benefit receipt during the 2 years before and 2 years after the onset of COVID-19



Notes: The sample sizes for this exhibit are as follows: All site = 949; Denver = 210; East Coast Florida = 240; New York City = 120; Tampa = 299; and Vermont = 80.

The solid lines in the exhibit show the rate of individuals receiving UI benefits and the dash lines show the rate of individuals who were employed.

Source: NDNH.

Beginning in quarter 2, 2020, the proportion of individuals receiving UI benefits increased across all sites. While this was doubtlessly in part spurred by the loss of employment (as the employment rate dropped beginning in the quarter and the loss of employment is an impetus for applying for UI benefits), the numbers were likely amplified by the Coronavirus Aid, Relief, and Economic Security (CARES) Act. Passed by Congress on March 25, 2020, the CARES act included provisions under the Pandemic Unemployment Assistance (PUA) program that allowed states to extend unemployment benefits to those that would not otherwise be eligible for assistance including the self-employed, gig workers, individuals seeking part-time employment, and the partially unemployed (U.S. Department of Labor, 2020).

The most dramatic increase in the incidence of UI benefit receipt occurred in New York City (from 8% quarter 1 of 2020 to almost 51% by quarter 3).[48] In quarter 2, 2020 and quarter 3, 2020, the rate was similar to the employment rate.[49] The rate of UI benefit receipt remained over 30 percent through quarter 3 of 2021, coinciding with the end of the COVID-19 extended UI benefits program in New York (New York State Department of Labor, 2023).

Site-level Earnings and UI Benefit

- ***Earnings fell across all sites during the initial quarters of the pandemic and were accompanied by a rise in UI benefits. The most notable changes occurred at the New York City site.***

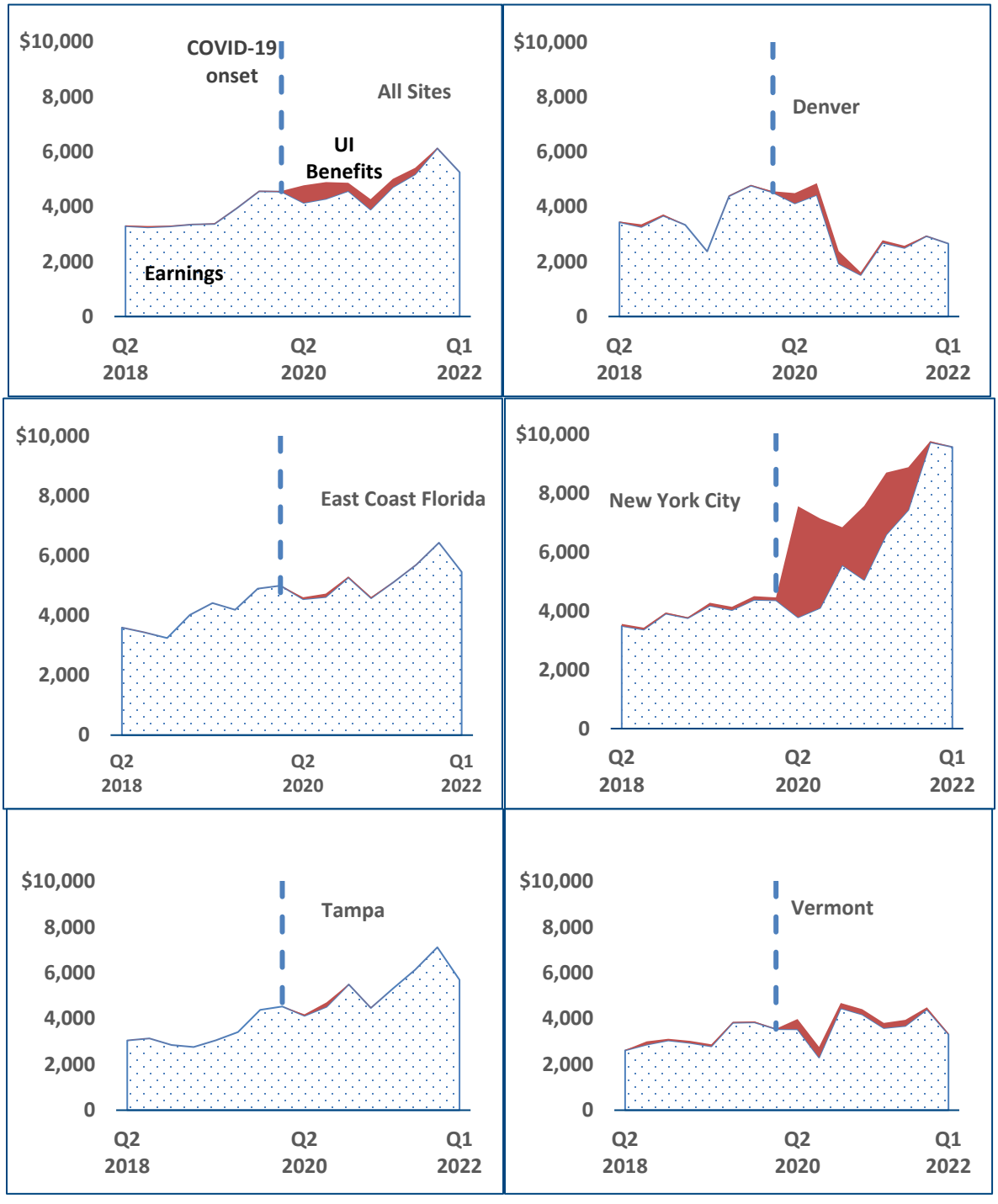
As seen in Figure 5-3, average quarterly earnings declined for all sites beginning in quarter 2, 2020. However, at three of the five sites, this drop was accompanied by a corresponding rise in average UI benefit amount that offset or exceeded the decrease in earnings. Of particular note, at the New York City site, from quarter 1 to quarter 2 of 2020, average earnings fell by $578, while UI benefits increased by $3,670, leaving individuals with more than $3,000 more in income on average than they had in the prior quarter.[50] By the time that UI benefit receipt began to drop in late 2021, average quarterly earnings at the New York site had increased enough that, on average, individuals did not experience a drop in overall income.

[48] In Denver and Vermont, the rate spiked during the opening quarters of the pandemic and remained elevated until mid-to-late 2021. The rise in UI benefit receipt was not as large at the two Florida sites and the increase was not sustained beyond the initial quarters of the pandemic. The return to pre-pandemic rates also occurred earlier, possibly due to Florida granting fewer weeks of unemployment benefits and Florida's UI program being beset by delays, which may have discouraged participation (U.S. Department of Labor Office of Inspector General Audit, 2022).

[49] Although UI benefit uptake appears to be substantially higher than the associated job loss during the initial 2 quarters of the pandemic, this is likely a consequence of the volatility of the employment landscape during the early stages of COVID-19. It is likely that some individuals were employed and receiving UI benefits at different periods during the same quarter. Likewise, partial unemployment, which also potentially qualified one for benefits under PUA, may have been a contributing factor.

[50] Federal Pandemic Unemployment Compensation (FPUC), which provided an additional $600 weekly to those receiving UI benefits expired July 31, 2020, before being renewed December 26 of that year. The fall in average UI benefit in New York City in those quarters may be explained by the gap between when FPUC initially expired and when it was renewed.

Figure 5-3. Formal earnings and UI benefit receipt during the 2 years before and 2 years after the onset of COVID-19



Notes: The sample sizes for this exhibit are as follows: All site = 949; Denver = 210; East Coast Florida = 240; New York City = 120; Tampa = 299; and Vermont = 80.
The dotted areas in the exhibit show the average earnings from employment and the solid areas in the exhibit show the average UI benefits received.
Source: NDNH.

A similar pattern was seen in Denver and Vermont. For example, in Vermont, quarterly earnings surged past pre-pandemic levels by the end of 2020 and remained at that level for the remainder of the post-COVID-19 period. By contrast, average UI benefits did not begin to drop to pre-pandemic levels until late 2021. This resulted in individuals' total income from these sources being higher post-pandemic than pre-pandemic.[51]

Both Florida sites experienced an initial drop in earnings that was comparable to that of the other sites, but had much smaller increases in average UI benefits (less than $200 per quarter compared with increases of between $370 and $3,700 per quarter at the other sites). Individuals also received UI benefits for less time, and average benefit amounts returned to pre-pandemic levels in late 2020, the same time quarterly earnings grew to pre-COVID-19 levels.

The common experience of decreasing employment and earnings and increasing UI benefits receipt across sites provides an important backdrop when interpreting the pooled sample impact results (presented later in this chapter). However, the at times remarkable variation that was observed in employment and earnings and UI benefit receipt across sites also provides an important lens for any site-level analysis.

5.2 Impacts on Earnings and Employment by Calendar Quarter

Study enrollment began in quarter 2, 2018, and extended through to quarter 1, 2020. Since participants were enrolled at different points in time, analysis employing a follow-up period relative to random assignment is poorly suited to investigating program effects during COVID-19, which occurred at a fixed point in time. This analysis examines impacts by calendar quarter so that differences in outcomes between the TechHire/SWFI and control groups can be assessed at the same point in time within the context of the pandemic. The first full quarter of follow-up for everyone in the sample coincides with the first full quarter following the onset of COVID-19 (quarter 2, 2020). Thus, this analysis examines the first 2 years following the start of the pandemic; quarter 2, 2020 through quarter 1, 2022.

- ***There were no statistically significant impacts on employment or earnings in the post-COVID onset years. Both earnings and employment fully recovered, and eventually surpassed, pre-pandemic levels during the second post-onset year.***

The lack of impacts in the first few quarters of the pandemic suggests that the programs neither shielded TechHire/SWFI group members from the resulting economic turbulence, nor left them more vulnerable to it (Table 5-1). Earnings started to rise after the initial two-quarters of the pandemic for both groups, but there were no statistically significant impacts.

During the second year of the pandemic, for both the TechHire/SWFI group and the control group, earnings and employment grew steadily. There were no impacts on employment or earnings in this year, however, indicating that while the training programs did not impede economic recovery, they did not expedite or enhance it either.

[51] Although the increase in average UI benefit received did not completely offset the drop in earnings in Vermont during the earliest quarters of the pandemic, the increased UI benefit likely did stem the material hardship for participants at a site comprised almost entirely of parents with children age 18 and under.

Overall, the degree of economic disruption, particularly in the initial quarters of the pandemic, makes it difficult to posit any strong claims about the TechHire and SWFI programs during this period. In addition, during this period, participants could still be enrolled in training, or could have already completed it or become employed. Nevertheless, the analysis provides no reason to believe that the employment and earnings prospects of TechHire/SWFI group members were better or worse than those for the control group during the pandemic.

Table 5-1. Impacts on employment and earnings in post-COVID-19 period, among full sample

Outcome	TH/SWFI group	Control group	Difference (impact)	P-value
Employment				
Ever employed (%)				
Post-COVID-19 Onset Year 1	79.4	78.6	0.9	0.731
Post-COVID-19 Onset Year 2	76.9	75.3	1.6	0.542
Quarter 2, 2020	64.2	62.8	1.4	0.626
Quarter 3, 2020	63.7	65.0	-1.4	0.648
Quarter 4, 2020	59.3	60.5	-1.2	0.674
Quarter 1, 2021	51.6	53.3	-1.7	0.586
Quarter 2, 2021	61.3	58.4	2.9	0.346
Quarter 3, 2021	63.1	62.5	0.7	0.825
Quarter 4, 2021	66.9	63.0	3.8	0.182
Quarter 1, 2022	60.5	55.8	4.7	0.128
Average quarterly employment (%)				
Post-COVID-19 Onset Year 1	59.7	60.4	-0.7	0.762
Post-COVID-19 Onset Year 2	62.9	59.9	3.0	0.209
Earnings				
Average earnings ($)				
Post-COVID-19 Onset Year 1	16,721	17,083	-362	0.744
Post-COVID-19 Onset Year 2	21,646	20,782	864	0.534
Quarter 2, 2020	4,099	4,188	-89	0.774
Quarter 3, 2020	4,167	4,429	-261	0.406
Quarter 4, 2020	4,648	4,475	173	0.621
Quarter 1, 2021	3,807	3,992	-185	0.586
Quarter 2, 2021	4,803	4,585	219	0.544
Quarter 3, 2021	5,185	5,170	16	0.967
Quarter 4, 2021	6,257	5,956	301	0.494
Quarter 1, 2022	5,401	5,072	330	0.436
Sample size	**517**	**432**		

Notes: Estimates were regression-adjusted using ordinary least squares, controlling for pre-random assignment characteristics of sample members. See a full list of covariates in Appendix B. Differences in the impact estimates and the differenced TH/SWFI and control group means are due to rounding.

Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

TH = TechHire; SWFI = Strengthening Working Families Initiative.

Post-COVID-19 onset year 1 covers quarter 2, 2020 to quarter 1, 2021. Post-COVID-19 onset year 2 covers quarter 2, 2021 to quarter 1, 2022.

Source: NDNH.

5.3 Site-Level Impacts by Calendar Quarter

- ***There is statistically significant variation in employment impacts at the start of the pandemic (measured in calendar quarters) across sites, as well as during the second post-onset year. In both instances, the variation is driven by impacts at the New York City site.***

In the first two years of the pandemic, there were impacts on employment at the New York City site (in the first year) and at the Tampa site (in the second year), but no clear pattern emerged (Appendix F, Table F-1). One interesting finding is the statistically significant site-level variation in employment during the first quarter of the pandemic, driven, in part, by a statistically significant negative impact of more than 20 percentage points in New York City (not shown).[52] While New York City was severely impacted during the opening period of COVID-19 (as seen by the sharp drop in the overall employment rate), the IT and web development jobs that were the focus of the New York City program seem better suited to remote employment that would afford workers more protection during a pandemic (Yadavalli, Buresch, Wong, and McElwain, 2023). It is difficult to know why TechHire group members from New York City fared so much worse than their counterparts in the control group in the first quarter following the onset of COVID-19. Early in the pandemic, Vermont—which focused on the advanced manufacturing sector—experienced a negative $1,393 impact on earnings (in quarter 2, 2020) and a negative 20 percentage point impact on employment (in quarter 3, 2020). Both impacts faded in later quarters (not shown).

The second year following the onset of COVID-19 was a period of economic recovery across sites (as evidenced by the increases in the employment rate and average earnings), however, there was also statistically significant cross-site variation in employment during this period. This variation was again likely driven by New York City, the only site with a statistically significant impact. This impact may be related to the timing of the outcomes—that year aligns with the second year of follow-up, a period in which prior research suggests that impacts for training programs such as TechHire often emerge, for much of the sample—and the more high-skills focus of the New York City program discussed in Section 3.[53] There were no impacts on earnings that year at any of the sites.

Overall, TechHire/SWFI group members at the New York City and Vermont sites appear to have experienced more adverse economic effects during the initial quarters of the pandemic, (as evidenced by the negative and statistically significant effects discussed above) and in the case of New York City, to have fared better during the recovery. The small site-level sample sizes make it difficult to glean a more exact understanding of the potential effects of the program in the context of the pandemic. Due to these limitations, the results of this analysis may be best thought of as a starting point for further inquiry of the effects of COVID-19 on similar training programs.

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[52] During this quarter, mean earnings for the New York City TechHire group were almost $2,000 lower than that of the control group, but the difference was not statistically significant, perhaps due to the small sample size of the site.

[53] Average annual earnings for the New York City TechHire group also rose sharply that year, nearly doubling from $17,610 to $35,633. The difference in annual earnings also changed from negative $2,413 in year 1 to $6,550 in year 2, although neither difference was statistically significant.

5.4 Impacts on Training and Childcare Use During COVID-19

In October 2020, questions pertaining to participant experiences during COVID-19 were added to the Wave 2 survey. The questions were posed as part of surveys to members of the sample who were randomly assigned no earlier than October 2018.[54] The questions covered a range of topics, including education and training, access to childcare, employment, and UI benefit receipt.

- ***The survey responses suggest that amidst the tumult of the pandemic, experiences for the TechHire/SWFI group and the control group were remarkably similar.***

About one-third of TechHire/SWFI group and control group respondents were enrolled in education or training at the onset of COVID-19 (Table 5-2). And the majority of these participants in both research groups were able to continue their training—nearly 78 percent of TechHire/SWFI group respondents and 80 percent of control group respondents that were enrolled in training at the start of the pandemic were able to continue their training online. Among those who were enrolled in education or training at the onset of COVID and were unable to continue their training, a similar proportion of TechHire/SWFI (22 percent) and control group respondents (20 percent) reported that they were unable to continue when the course was moved online or their training was cancelled.

Table 5-2. Impacts on education and training following onset of COVID-19 pandemic, among respondents to Wave 2 Survey

Outcome	TH/SWFI group	Control group	Difference (impact)	P-value
Education and training				
Was enrolled in education or training at the beginning of the pandemic and: (%)				
Training moved online and continued as planned	25.9	26.4	-0.5	0.913
Training moved online and could not continue	5.4	2.8	2.6	0.180
Training was cancelled	2.1	3.6	-1.5	0.354
Sample size	**241**	**206**		

Notes: Estimates were regression-adjusted using ordinary least squares, controlling for pre-random assignment characteristics of sample members. See a full list of covariates in Appendix B. Differences in the impact estimates and the differenced TH/SWFI and control group means are due to rounding.

Sample sizes may vary because of missing values. See Table B-11 for full missingness rates.

Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

TH = TechHire; SWFI = Strengthening Working Families Initiative.

Source: TechHire/SWFI Wave 2 survey.

In response to the onset of COVID-19, many states, local government entities, and businesses effected policies that resulted in school closures, the adoption of full-remote learning, and the closing or limiting the operations of childcare facilities. These measures often applied additional pressures on families that compromised their ability to meet other obligations, such as completing training, pursuing employment opportunities, or going to work. This is particularly true for SWFI

[54] The Wave 2 survey was conducted in three waves with the first taking place in April 2020 and the subsequent two waves occurring in October 2020 and January 2021. Questions relating to COVID-19 were asked of 447 respondent sample members surveyed during the final two waves.

households, where 80 percent of participants had children aged 18 or younger and nearly half cited childcare as a barrier to employment at the time of random assignment.

Table 5-3 shows that only about 19 percent of TechHire/SWFI respondents and just over 13 percent of control group members were using childcare at the start of the pandemic. For both groups, approximately 10 percent of respondents stated that their childcare provider closed due to COVID-19, revealing that a majority of respondents in both groups that had childcare at the start of the pandemic went on to lose access. The 2-percentage point difference among those who reported that they retained access to childcare through their provider but that opted to stop sending their child was statistically significant. However, the number of respondents to whom this scenario applied was very small.

Table 5-3. Impacts on use of childcare following onset of COVID-19 pandemic, among respondents to Wave 2 survey

Outcome	TH/SWFI group	Control group	Difference (impact)	P-value
Childcare usage				
Was using childcare at the beginning of the pandemic and: (%)				
Provider remained open and continued sending child	5.4	3.2	2.2	0.275
Provider remained open but chose to stop sending child	2.1	0.1	2.0*	0.057
Provider remained open but offered limited hours or space	0.9	0.0	0.9	0.173
Provider closed	10.4	9.9	0.5	0.854
Sample size	**241**	**206**		

Notes: Estimates were regression-adjusted using ordinary least squares, controlling for pre-random assignment characteristics of sample members. See a full list of covariates in Appendix B. Differences in the impact estimates and the differenced TH/SWFI and control group means are due to rounding.

Sample sizes may vary because of missing values. See Table B-11 for full missingness rates.

Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

TH = TechHire; SWFI = Strengthening Working Families Initiative.

Source: TechHire/SWFI Wave 2 survey.

The previously examined impacts by calendar quarter revealed no statistically significant differences on earnings and employment outcomes following the onset of COVID-19 (from quarter 2, 2020 through quarter 1, 2022). However, the administrative data is unable to provide information on the circumstances of employment, such as hours worked or whether a job was converted to a remote role, or whether those who were no longer employed left their jobs voluntarily, perhaps because of loss of childcare or other challenges associated with COVID-19, or if their position was furloughed or eliminated.

Results from the Wave 2 survey presented in Table 5-4 show that there were no statistically significant impacts on work status or UI benefit receipt following the start of the pandemic. Just under a quarter of TechHire/SWFI group respondents and control group respondents were employed at the start of the pandemic and continued working as before. TechHire/SWFI did not produce a statistically significant effect on any of the measures of working prior to the beginning of the pandemic and having work circumstances change. Nearly a quarter of respondents in both groups stated that they received UI benefits following the onset of the pandemic.[55]

Table 5-4. Impacts on work status and UI benefits following onset of COVID-19 pandemic, among respondents to Wave 2 survey

Outcome	TH/SWFI group	Control group	Difference (impact)	P-value
Work status				
Was working prior to the beginning of the pandemic and: (%)				
Continued working as before	25.3	23.7	1.6	0.711
Started working from home	8.4	13.2	-4.8	0.113
Started working more hours	3.2	4.8	-1.6	0.401
Started working less hours	9.8	12.6	-2.8	0.362
Was laid off	12.6	11.4	1.2	0.699
Was furloughed	7.3	6.1	1.2	0.636
Voluntarily left job	5.6	2.6	3.0	0.127
UI benefits				
Since the pandemic began, applied and was approved for UI benefits (%)	24.5	24.1	0.3	0.929
Sample size	**241**	**206**		

Notes: Estimates were regression-adjusted using ordinary least squares, controlling for pre-random assignment characteristics of sample members. See a full list of covariates in Appendix B. Differences in the impact estimates and the differenced TH/SWFI and control group means are due to rounding.

Sample sizes may vary because of missing values. See Table B-11 for full missingness rates.

Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

TH = TechHire; SWFI = Strengthening Working Families Initiative; UI = unemployment insurance.

Source: TechHire/SWFI Wave 2 survey.

[55] This number approaches the proportion of TechHire/SWFI respondents that reported that they stopped working and surpasses the rate for the control group, perhaps reflecting policies under the Pandemic Unemployment Assistance program that extended UI benefits to categories of people that otherwise would not qualify, including the partially-employed.

6. Conclusion

The TechHire Partnership Grants (TechHire) and the SWFI were created as part of a broad agenda to reduce employers' need to hire temporary workers from outside the United States through the H-1B visa program. These grant programs aimed to achieve this by funding local organizations to offer accessible training and supports to unemployed and underemployed potential U.S. workers who had barriers to training, creating a pipeline of workers able to fill jobs in the high-tech fields that employ large numbers of H-1B workers. The first step toward achieving these broad aims is to get individuals from the target populations into training and help them complete it. The question then is whether the trainings and credentials offered by the programs led participants to the middle- and high-skilled jobs in information technology, healthcare, and advanced manufacturing that employers often turn to imported labor to fill. The current findings from the RCT begin to speak to this questions by examining whether the programs had an impact on employment, earnings, and other measures of job quality. They also start to shed light on whether the TechHire and SWFI grants were beginning to meet their intended policy goals.

In this concluding chapter, we first summarize the overall findings from the RCT through roughly 2 years of follow-up (Section 6.1). We then discuss TechHire/SWFI in the context of the evaluation literature on similar programs offering training in specific sectors for similar populations of individuals who are unemployed or working jobs with low-wages (Section 6.2), and provide possible explanations for the results to date (Section 6.3). Finally, we explore implications of the study's findings for future research (Section 6.4).

6.1 Summary

Key questions for the impact study include what are the effects of TechHire and SWFI on participation in and completion of training, receipt of credentials, and use of child care and other services? And what are the effects on longer-term outcomes such as employment and earnings, advancement and job quality, and other, secondary outcomes such as overall well-being, health, and housing status?

Overall Impacts. The TechHire/SWFI programs met their goals of making training more accessible and completion more feasible for populations with specific barriers and needs: the programs produced statistically significant impacts on both training enrollment and completion (by 54 and 21 percentage points, respectively; the latter of which is one of the study's confirmatory outcomes in the current follow-up period). Participants were also more likely to receive a credential both overall and in one of the target industries (by around 19 percentage points). These are potentially important first steps toward obtaining quality jobs.

Additionally, TechHire/SWFI group members were more likely than control group members to receive job readiness training, career counseling, and job search assistance (by 15, 14, and 10 percentage points, respectively)—all important services in helping participants complete training, find a job, and remain employed. While these participation-related impacts provide evidence that the study achieved a treatment contrast, they do not necessarily mean the programs would go on to increase individuals' employment or earnings.

As of the end of the current roughly 2-year follow-up period, TechHire/SWFI did not yet have an effect on overall employment (as estimated by the Wave 2 survey) or earnings (as estimated by the

NDNH) (the two other confirmatory outcomes in the current follow-up period). The programs increased the likelihood of working in the healthcare sector, but there was no difference in the likelihood of working in the IT or advanced manufacturing sectors. Based on prior research of other similar programs, it is possible that impacts could emerge on these measures in the third year of follow-up (Card, Kluve, and Weber, 2018).

TechHire/SWFI had few impacts on other outcomes such as income, financial status, housing status, and well-being so far. One main exception is around material hardship; TechHire/SWFI decreased both the likelihood of experiencing any and the number of material hardships experienced in the past year. Given the lack of increases in earnings and income, it is unclear what is driving these impacts.

Perhaps surprisingly, given the SWFI programs' focus on enrolling parents and offering child care services, there were few impacts on child care-related outcomes (among either the pooled sample or the SWFI sample), including the use of child care and barriers to using child care. The one exception is that the programs helped more individuals access child care that was more convenient for them.

Finally, in general, individuals in the TechHire/SWFI group and the control group appear to have similar experiences during the pandemic—in terms of both connections to the labor market and the UI benefit system, and experiences with child care and training. Individuals in both groups, on average experienced initial reductions in employment and earnings, and increases in the take-up of UI benefits and UI benefit amounts.

6.2 Comparing to Other Programs

In this section, we compare the results of TechHire/SWFI on training take-up and completion, as well as on employment and earnings to those from evaluations of other similar programs. These comparisons are used to try to understand whether the TechHire/SWFI findings are consistent with other prior research, or whether there is something unique about the programs themselves or the individuals that were enrolled. The comparisons on training participation are also used as a way to try to understand the current findings around labor market outcomes and to provide evidence on what might be expected in the planned 3-year follow-up. The following programs, which were all evaluated using a rigorous random assignment research design, are included in the comparisons:

- Four programs run by nonprofit organizations that implemented the WorkAdvance model, which provided training and career services in target sectors to individuals who were unemployed or earning low-wages (Hendra et al., 2016).

- The Health Professional Opportunity Grant (HPOG) program provided mostly short-term trainings in healthcare fields to individuals receiving TANF or with low-incomes. Roughly half of the programs were operated by higher education institutions, a little more than a quarter by workforce agencies, and the remainder by government or nonprofit agencies (Peck et al., 2022).

- Four career pathways programs in the Green Jobs and Healthcare evaluation that provided training in healthcare and green-related industries and related supports to individuals who were unemployed and workers who were disadvantaged. Three programs were operated by community colleges and one by a nonprofit organization (Martinson et al., 2016).

TechHire/SWFI led to a 54 percentage point impact on starting training. This is substantially larger than the majority of the impacts in the comparison programs, which ranged from around 7 percentage points to 37 percentage points (one comparison program increased training participation by the same amount). This difference in impacts appears to be driven by differences in the levels of training enrollment for both the program and control groups across the programs. For example, the rate of training start for the program group was higher in TechHire/SWFI than in most of the other programs. And the rate of training take-up for the control group in TechHire/SWFI was lower than for most of the other programs. This suggests that TechHire/SWFI both was better able to help individuals start training, and that individuals in the study may have faced more barriers to enrolling in training on their own than in the other studies (it is possible that there are other explanations for these trends).

The findings around training completion tell a somewhat different story. The training completion rate among the TechHire/SWFI group is generally lower than the completion rates among the program groups in the comparison programs. Further, the TechHire/SWFI training completion impact of 21 percentage points may be characterized as modest and is on the smaller end of impacts relative to the comparison programs. Especially for those programs that have generated earnings and employment impacts. The Per Scholas WorkAdvance program had an impact of 37 percentage points on completing occupational skills training (one of the largest impacts among the comparison programs), and is the only program found to have consistent employment and earnings impacts over time (Hendra et al., 2016). This suggests that the size of the impact on training completion may play a role in generating employment and earnings impacts.

HPOG produced a smaller impact on training completion (12 percentage points) than TechHire/SWFI and has had few to no effects on employment or earnings outcomes. The HPOG evaluation team noted that the lack of labor market impacts for the programs may be related to several factors, including the type of training participants participated in (which was mostly short-term and led to jobs with wages that were similar to the wages of jobs that could have been obtained without the training), the target population (who may have needed additional supports and education/training to obtain jobs above entry-level), and the implementation of the programs (for example, the time-limited nature of the grants and the incentives tied to performance metrics that were created for the programs) (Peck et al., 2022). At least some of these factors may have also been at play in TechHire/SWFI (as discussed more in the next section).

In sum, TechHire/SWFI was successful in helping individuals enroll in training compared to the comparison programs but seemed to have more difficulty getting participants to complete the training. TechHire/SWFI had a lower rate of training completion among the program group, and a similarly sized or smaller training completion impact than was found for the comparison programs. Both of these factors may have played a role in TechHire/SWFI not producing impacts on employment and earnings through 2 years of follow-up.

6.3 Possible Explanations

So what might be driving the current patterns of effects on (1) training completion, and (2) employment and earnings for TechHire/SWFI? This section explores a few possible explanations – selected by the study team based on its interpretation of the study findings and other prior related research for both questions.

1. *What might explain the low rate of training completion among TechHire/SWFI group members (despite the effect on training completion)?*

Qualitative interviews with TechHire/SWFI program administrators and staff conducted for the implementation study affirmed that persistence in and completion of the training programs was a common challenge for participants. Several reasons seemed similar across programs.

A Need or Desire for a Job. Staff from four of the programs mentioned that participants had to stop attending training was because they needed income and had to work. One staff member noted that some TechHire/SWFI trainees were working while in training, and if their employer changed their schedule or asked them to increase their hours, their first obligation was to their employer and they might have to stop going to their classes. Staff from one program often discussed how training participants could get a retail job at a fairly high wage; this dissuaded some potential TechHire/SWFI applicants from even applying, but it also explains why some trainees left training for work: from what they understood of the local labor market, they could get a job without training that would pay almost as much as they would make after completing training. The evaluation was conducted mostly during a period in which the labor market was strong. It is possible that the impacts on training completion may have been larger in a weaker labor market.

Inadequate Screening for Training Interest and Fit. Staff from four programs mentioned that another reason for noncompletion was that participants started in training programs that were not the right fit for them, that they did not fully understand what was going to be required, or that they were interested in some aspects of the training but not others. One staff member mentioned that, especially early in the study enrollment period, his program had younger training participants who were "gung ho on the gift certificate" that was offered for study enrollment, and "gung ho on free training," but who were not fully taking into account what it would take to be successful. When the fit with the training program was not quite right, or the demands exceeded expectations, motivation to persist in and complete the training waned, and participants stopped attending.

Other Reasons. In addition to these common explanations for noncompletion, a variety of other reasons were mentioned by program administrators and staff, some of which were specific to individual training programs or sectors. For example, one program for a Certified Nursing Assistant credential was short (10 weeks), and there was a lot of required paperwork for students to do their clinicals, such as background checks. If students did not submit the clinical paperwork on time, they would be dropped from the class or would have to wait till the next class started. One staff member noted that IT programs, in particular, were quite rigorous, and that if students did not have prior IT experience or some kind of background in IT, it was "an extremely difficult class," leading some to drop out. Across all of the sectors and programs, staff members noted that, as one staff member said, "Life gets in the way." Family obligations, transportation or child care challenges, health problems, and relocating out of the area were commonly mentioned reasons for noncompletion.

2. *What might explain the lack of effects on employment and earnings through 2 years of follow-up?*

Not Enough Participants Completed Training and Obtained a Credential. It is possible that despite the study achieving a treatment contrast, the rate of training completion among the TechHire/SWFI group was not high enough to get a good test of the effectiveness of the programs in generating employment and earnings increases. Training completion and credential attainment are potentially important steps in individuals being able to obtain quality, well-paying jobs (Hendra et al., 2016). With only around a third of participants achieving these goals, not many would have been able to

then find jobs that were higher quality than the jobs others could have obtained without the trainings.

The Trainings Led to Entry-level, Lower Skilled Initial Jobs. The implementation analysis showed that three of the five TechHire/SWFI programs were, for the most part, offering trainings that led to entry-level, lower skilled jobs in high-tech industries, rather than middle- and high-skilled jobs (some of this was due to the target population for these programs having relatively low baseline skills). These entry-level jobs likely did not pay more than most jobs individuals could have obtained on their own, especially during a period of low unemployment, as was the case here. This is corroborated by the current economic impact findings.

The Programs Lacked Adequate Employer Partnerships and Engagement. Related to the point above, findings from the implementation research showed that the programs struggled to develop as meaningful of relationships with employers as initially hoped. All but one of the programs lacked a dedicated job developer, which further limited connections with employers. This may have made it more challenging for participants to find and obtain quality jobs. Strong employer linkages—including having direct connections to employers—have been hypothesized to be one of the key components of the success of sector programs in producing lasting earnings gains. Those connections can help individuals with fewer social ties or who have faced discrimination enter the labor market and specific sectors (Maguire et al., 2010; Hendra et al., 2016). (While the TechHire/SWFI programs are not true sector programs, they do share the same goals of offering training that helps individuals move into jobs in high-demand sectors.)

Not Enough Time has Passed to Measure Effects. It is possible that 2 years of follow-up is not enough time to see the full effects of the TechHire/SWFI programs on labor market outcomes. As mentioned, past research has shown that it can take 2 or more years before effects from similar programs have emerged (Card, Kluve, and Weber, 2018). In the case of the TechHire/SWFI programs, it may be true that the entry-level jobs that the trainings prepared participants for provide better pathways to well-paying, middle- or high-skilled jobs than other entry-level jobs. The results of which would likely not be evident in the current follow-up period. Additionally, the second year of follow-up for most individuals corresponded with the onset of the COVID-19 pandemic, which led to dramatic increases in unemployment across the country, especially within some sectors of the economy. While the initial analyses on the effects of COVID-19 on study outcomes showed no major differences, the follow-up period is relatively short. TechHire/SWFI participants may have been better able to weather the uncertainty of the labor market during and following this period than individuals in the control group.

6.4 Looking Forward

At this point, the story of the TechHire and SWFI programs' effectiveness at improving participants' labor market outcomes is beginning to unfold, but it is still too early to definitively conclude whether TechHire and SWFI were able to increase participants' employment prospects and advancement. A future report from the evaluation will show employment and earnings findings through Year 3 using data from the National Directory of New Hires. Those findings will provide more evidence on TechHire/SWFI's effects on labor market outcomes, and whether the programs met their goals of preparing individuals for and moving them into middle- and high-skilled jobs in high-tech industries. That report will also discuss implications for future policies and programs based on the full set of findings.

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Appendix A

Supplementary Exhibit for Chapter 1

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Supplementary Exhibit for Chapter 1

Table A-1. Program training characteristics

Program	Training length	Training/credentials offered	Training delivery and differences pre- and post-COVID-19 pandemic	Credit or noncredit
East Coast Florida (TechHire)	*Information Technology (IT)*: 6-12 weeks. *Advanced Manufacturing*: 1-12 weeks Many classes were self-paced.	*Advanced Manufacturing*: IPC J-Std. Soldering; IPC 610 Inspection; IPC 620 Cable and Harness; Computer Numerically Controlled (CNC) Machinist; Occupational Safety and Health Administration (OSHA) 10; OSHA 30; OSHA 40; HAZWOPER 40; Certified Production Technician; Manufacturing Skills Standards Counsel (MSSC) Certification; Tier 2 National Incident Management System (NIMS) Certifications (Electrical, Mechanical, Rigging); Basic Soldering; Advanced Soldering. *IT*: Computing Technology Industry Association (CompTIA) Fundamentals; CompTIA A+; CompTIA Network+; CompTIA Security+; Project Management; Microsoft Office Specialist (MOS); Agile; Java SE 8; Oracle Databases; Microsoft Access.	Colleges delivered the training directly. Most classes were online before the pandemic, but all went online afterwards.	Credit

Table A-1. Program training characteristics (continued)				
Program	**Training length**	**Training/credentials offered**	**Training delivery and differences pre- and post-COVID-19 pandemic**	**Credit or noncredit**
New York City (TechHire)	5-9 months	*IT*: Web Development (certification: Completion SE Training); A+Net+ (certifications: CompTIA A+ and Network+).	LaGuardia Community College (LAGCC) partnered with three training providers: General Assembly, Software Guild, and Udacity. Prior to the pandemic, each provider had a different training system: General Assembly was completely classroom-based, Software Guild was a hybrid of in-person and online, and Udacity was fully online. After the pandemic hit, all courses were moved to online.	Noncredit
Tampa (TechHire)	1 week-6 months	*IT*: CompTIA A+; CompTIA A+ Certification; CompTIA A+ Combined; CompTIA Network+; CompTIA Network+ Certification; CompTIA Security+; CompTIA Security+ Certification; Cisco Certified Network Associate (CCNA); Cisco CCNA Certification (CCENT); Certified Internet Webmaster (CIW) Javascript Specialist; Database Analytics Bootcamp; Digital Marketing; HTML 5/CSS3; Intermediate Python Programming; Introduction to Python; Introduction to Programming Using Python Certification; Introduction to Structured Query Language (SQL); Introduction to SQL Database Certification; iOS Application Development; iOS Application Development Fundamentals Certification; Java 8SE; Java 8SE Certification; Java Programming 1 Bootcamp; Java Programming 2 Bootcamp; Microsoft Certification: Python Programming; Programming in HTML5 with Javascript and Cascading Style Sheets Level 3 (CSS3); Python 1 Bootcamp; Python 2 Bootcamp; Web Development Bootcamp; Web Development Program, WordPress Fundamentals.	Partner colleges—Hillsborough Community College, St. Pete College (SPC), University of South Florida (USF)—deliver the training. USF delivers the bootcamps. Since the pandemic, courses have gone online. All USF courses were already either hybrid online/in-person or fully online and other providers had online courses already. IT bootcamp has always been online. The Healthcare program's externships, which are required parts of courses, have not been able to move their externships virtual since the pandemic, which has slowed program completion.	Noncredit

Table A-1. Program training characteristics (continued)				
Program	**Training length**	**Training/credentials offered**	**Training delivery and differences pre- and post-COVID-19 pandemic**	**Credit or noncredit**
Denver (SWFI)	1-4 semesters (10 to 40 weeks) BootUp Camps at Community College of Denver (CCD): 6 days	*Healthcare*: Nurse Aide; Phlebotomy Technician; Emergency Medical Tech; Food, Nutrition & Wellness; Patient Care Tech; Patient Representative; Medical Assistant; Human Services. *Information Technology (IT)*: IT Tech and Support; Creative Tools; Data Analytics; Computer Technology; Office Assistant; Basic Networking & Security; Office Administration; PC Application Specialist; Computer Services and Support; Cyber Security; Network Security; Healthcare Administration; IT in Healthcare; BootUp Camps (A+ I & II); Network+; MOS; Internet Core Competency Certification (IC3). *Manufacturing:* Manufacturing Production Technician; Welding; Welding, Cutting, and Fitting	Community College of Aurora (CCA) and CCD delivered the training directly. In light of the COVID-19 pandemic, Certified Nursing Assistant classroom portions of classes went online but clinical portions could not go online. Advanced manufacturing has ceased altogether because these courses are hands-on.	Credit
Vermont (SWFI)	Welding: 2-6 weeks All other training and credentials: 10-12 months	*Advanced Manufacturing*: Certified Production Technician: Principles of Manufacturing and Manufacturing Technology, Welding, SolidWorks and CNC Machining, Industrial Maintenance credential, Advanced Manufacturing credential, Customer Service Training (workshop).	VTC delivers training, and some training is delivered by the Community College of Vermont. Some courses were already online prior to COVID-19. Others were either halted or transitioned to remote learning once the pandemic hit.	Credit

Appendix B

Collection and Analysis Approaches for the Randomized Controlled Trial Quantitative Data

Appendix B
Collection and Analysis Approaches for the Randomized Controlled Trial Quantitative Data

This appendix describes the collection and analysis approaches for the quantitative data used in this report.

Random Assignment and Baseline Data

After individuals completed the intake process and were deemed eligible for the study, they were randomly assigned using a secure web-based random assignment system managed by MDRC.[56] Individuals also completed a baseline survey at that time. This survey asked individuals about their demographics, prior employment and education, and various other characteristics.

Random Assignment Ratio

The random assignment ratio differed across the TechHire/SWFI programs based on an agreement with each program. Three programs (East Coast Florida, Tampa, and Vermont) used a 50/50 random assignment ratio, one program (Denver) used a 60/40 random assignment ratio, and one program (New York City) initially used a 50/50 random assignment ratio and then later transitioned to a 66/33 ratio.[57]

The average random assignment ratio for the pooled sample is 54/46. Table B-1 shows the enrollment dates and random assignment ratio for each program, along with the number of sample members who were randomly assigned in each program at each ratio.

Table B-1. Random assignment ratios, enrollment dates, and sample sizes, by program

Program	Random assignment ratio	Enrollment dates	Number of individuals randomly assigned
East Coast Florida	50/50	4/23/2018 – 2/4/2019	240
New York City	50/50	9/18/2018	24
	66/33	3/1/2019 – 12/19/2019	96
Tampa	50/50	8/6/2018 – 8/12/2019	299
Denver	60/40	5/30/2018 – 1/3/2020	213
Vermont	50/50	8/22/2018 – 10/1/2019	80

Source: TechHire/SWFI random assignment data.

[56] This system was developed by MDRC and has been successfully used to randomly assign over 60,000 individuals in various studies.

[57] The New York City program used "batch random assignment," meaning the program identified a group of individuals eligible for each training cycle they offered and then the entire group was randomly assigned at once. All of the other programs used continuing, individual-level random assignment.

Baseline Equivalence

The evaluation team conducted a special analysis to check for statistically significant differences in select baseline characteristics by research group. Only one statistically significant difference in the selected baseline characteristics (Asian race) was found. In addition, a logistic regression was run to test whether key baseline characteristics could predict whether a participant was in the TechHire/SWFI group. The model included 21 covariates that were regressed on a TechHire/SWFI group indicator (P = 1 = TechHire/SWFI group; P = 0 = control group). The model is not statistically significant (p-value = 0.315), indicating that TechHire/SWFI and control group members do not differ significantly across the key selected baseline characteristics. See Appendix B's Table B-2 and Table B-3 in Tessler et al., 2021 for more information.

Wave 2 Survey

The evaluation team conducted the Wave 2 survey with RCT study participants starting approximately 18 months after random assignment. The survey was fielded to the full sample of participants randomly assigned to the three TechHire and two SWFI programs. The survey was conducted in two phases. In the first phase, participants were contacted by letter or email asking them to complete the survey on the web. Nonrespondents received weekly letter, email, and text message reminders. In the second phase, nonrespondents were contacted to complete the survey by telephone. On average, surveys were completed 20 months after random assignment. The distribution of survey months was similar between the TechHire/SWFI and control groups.

The Wave 2 survey provides data on study participants' education and training, use of child care, job readiness and pre-employment services, and employment and earnings. This section discusses the nonresponse analysis and weighting adjustments.

Nonresponse Analysis and Weighting

Table B-2 shows the Wave 2 survey response rates overall and by program. Among the 952 participants the evaluation team attempted to contact, 670 completed the survey, for an overall response rate of 70 percent. The response rate ranged from 60 percent (for the Vermont program) to 75 percent (for the Denver and New York City programs). There was a 2 percentage point difference in the response rates between the TechHire/SWFI and control groups overall (69% vs. 71%). To compensate for differential response, the evaluation team conducted a nonresponse bias analysis and created nonresponse-adjusted weights.

Table B-2. Wave 2 survey response rates, overall and by program						
Sample	All programs	TechHire programs			SWFI programs	
		East Coast Florida	New York City	Tampa	Denver	Vermont
Overall						
Sampled (N)	952	240	120	299	213	80
Respondents (N)	670	162	90	211	159	48
Response rate (%)	70	68	75	71	75	60
TechHire/SWFI group						
Sampled (N)	518	121	77	150	129	41
Respondents (N)	360	84	57	101	92	26
Response rate (%)	69	69	74	67	71	63
Control group						
Sampled (N)	434	119	43	149	84	39
Respondents (N)	310	78	33	110	67	22
Response rate (%)	71	66	77	74	80	56

If the survey nonrespondents differ from the survey respondents, nonresponse bias could be introduced into the impact estimates. In addition, if response rates differ between the TechHire/SWFI and control groups, this could also bias the impact estimates. To address this problem, the evaluation team computed nonresponse weighting adjustments based on the relationship between baseline covariates and response propensities using standard methods in survey research. (Table B-3 lists the variables included in the analysis.) These weights take into account how respondents differ from nonrespondents and reweight the respondents accordingly. These weights were applied to the analyses as a sensitivity check. It is important to note that the nonresponse-adjusted weights correct for bias from observable differences between respondents and nonrespondents. As is the case in all impact evaluations, it is not possible to address potential bias from unobservable characteristics.

The following procedures were used to create the nonresponse weights:

- Use separate logistic regressions to predict survey response by TechHire/SWFI and control groups based on baseline characteristics.
- Develop predicted probabilities of response using the logistic regressions identified in the first step above.
- Sort the data based on the response propensity and then divide the sample into deciles by TechHire/SWFI and control groups.
- Create the nonresponse-adjusted weights by taking the inverse of the response rate within each quintile.
- Stratify the nonresponse-adjusted weights to the TechHire/SWFI program and control group sizes and to the education level of the entire sample.

Each step is described in more detail below.

Table B-3. Variables included in nonresponse bias analysis
Age
Female
Hispanic
African American
Parent of any child age 19 or younger
Lives with child ages 1 to 5
Primary language is English
Education is at least some college or higher
Previously received training in the target industry
Limited in amount/type of work by child care arrangements
Currently employed
Currently working full-time
Recently employed
Household receives Supplemental Nutritional Assistance Program (SNAP)
Limited in amount/type of work by transportation-related issues
Site
Random assignment ratio 50/50 at New York City site
Missing data indicator for African American
Missing data indicator for currently working full-time
Missing data indicator for recently employed

Note: Missing data indicators were also included for each baseline characteristic that had missing data.

Age is a continuous variable. Site is a series of dummy variables for each of the five sites. All other variables are binary.

Source: Baseline Information Survey.

Step 1

The evaluation team ran logistic regression analyses, regressing final response status on the baseline characteristics listed in Table B-3. Separate regressions were run for the TechHire/SWFI group and the control group to improve precision of the nonresponse adjustments.

Step 2

Using the logistic regression analyses from Step 1, the evaluation team calculated predicted response propensities as the predicted probabilities from the logistic regressions for the TechHire/SWFI group and the control group.

Step 3

The evaluation team calculated the predicted response propensities from the response status models for both survey respondents and nonrespondents and sorted the data into 10 equal groups, or deciles, based on the response propensities. This was done separately for the TechHire/SWFI group and the control group.

Step 4

Separately by the TechHire/SWFI group and the control group, the evaluation team calculated nonresponse-adjusted weights as the inverse of the response rate within each decile. This method is useful for reducing the effect on the weights of observations with extreme response propensities.

Step 5

Finally, the team calculated normalized weights by dividing each nonresponse-adjusted weight by the mean weight within the TechHire/SWFI and control groups. The team also stratified the normalized weights to the education level of the entire sample. This was done to reduce the difference between respondents and nonrespondents on education that existed after the nonresponse adjustments. Throughout this step, the weights were also stratified to the TechHire/SWFI and control group sizes.

Comparison of Wave 2 Survey Respondents with Survey Nonrespondents

Table B-4 compares the baseline characteristics of survey respondents with survey nonrespondents. The comparisons are conducted with and without nonresponse weights (using a p-value of 0.100). After nonresponse adjustments, two characteristics—having education of at least some college or higher, and English as the primary language—are significantly different between the survey respondents and nonrespondents. Respondents with more education and who reported that their primary language is not English were more likely to respond to the survey. However, these differences were smaller than before weighting and the other characteristics that were statistically significant before weighting were no longer significant after weighting. Overall, while two variables differed significantly after weighting, the weights are effective at making the two samples more similar on all of the baseline characteristics.

Table B-4. Comparison of Wave 2 survey respondents with nonrespondents

Variable	Survey nonrespondents percentage	Unweighted respondents		Weighted respondents	
		Percentage	Chi-square P-value vs. nonrespondents	Percentage	Chi-square P-value vs. nonrespondents
Treatment					
TechHire/SWFI group	56.0	53.7	0.52	53.7	0.52
Control	44.0	46.3	0.52	46.3	0.52
Age (mean)	28.5	29.2	0.26	28.9	0.53
Age 17 to 24	40.4	35.5	0.15	36.6	0.27
Female	52.8	60.1**	0.04	58.6	0.10
Hispanic	21.3	24.8	0.25	24.3	0.32
African American	41.1	39.4	0.62	39.5	0.63
Parent of any child age 19 or younger	37.9	36.1	0.59	37.3	0.85
Lives with child ages 1 to 5	24.1	18.5**	0.05	20.6	0.23
Primary language is English	92.2	87.2**	0.03	88.6*	0.09
Education is at least some college or higher	44.3	63.3***	<0.01	57.7***	<0.01

Table B-4. Comparison of Wave 2 survey respondents with nonrespondents (continued)					
Variable	Survey nonrespondents percentage	Unweighted respondents		Weighted respondents	
		Percentage	Chi-square P-value vs. nonrespondents	Percentage	Chi-square P-value vs. nonrespondents
Previously received training in the target industry	18.1	23.4*	0.07	22.4	0.14
Limited in amount/type of work by child care arrangements	17.7	15.4	0.37	16.6	0.68
Currently employed	47.9	52.7	0.17	51.3	0.33
Currently working full-time	42.9	45.2	0.51	43.9	0.78
Recently employed	80.1	82.5	0.38	82.1	0.48
Household receives Supplemental Nutritional Assistance Program (SNAP)	37.6	32.1	0.10	34.1	0.31
Limited in amount/type of work by transportation-related issues	19.5	16.3	0.23	16.5	0.26

Table B-4. Comparison of Wave 2 survey respondents with nonrespondents (continued)					
Variable	Survey nonrespondents percentage	Unweighted respondents		Weighted respondents	
		Percentage	Chi-square P-value vs. nonrespondents	Percentage	Chi-square P-value vs. nonrespondents
Program					
East Coast Florida	27.7	24.2	0.26	24.7	0.34
Denver	19.1	23.7	0.12	23.3	0.16
New York City	10.6	13.4	0.24	12.5	0.42
Tampa	31.2	31.5	0.93	31.0	0.94
Vermont	11.4	7.2**	0.03	8.5	0.18
Random assignment ratio 50/50 at NY site	1.4	3.0	0.16	2.5	0.31
Missing data indicator for African American	6.0	6.7	0.69	6.2	0.92
Missing data indicator for currently working full-time	11.4	8.7	0.20	9.4	0.35
Missing data indicator for recently employed	9.6	7.0	0.18	7.5	0.29
Sample Size	**282**	**670**			

Notes: Characteristics with missing data were set to zero.

Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

Source: TechHire/SWFI Baseline Information Survey.

The nonresponse weights only adjust for bias in observed characteristics between the respondents and nonrespondents. As is the case in all impact evaluations, it is not possible to guarantee that there are not biases due to unobserved differences between respondents and nonrespondents.

Wave 2 Survey Weighted Impacts

Table B-5 shows impacts on the study's confirmatory and a subset of exploratory outcomes, weighted by the likelihood of survey response. The nonresponse weights were used as an additional sensitivity check to see whether there were any issues with the representativeness of who responded to the survey.

Table B-5. Impacts on education training, employment, and child care arrangements, weighted by likelihood of survey response				
Outcome	**TH/SWFI group**	**Control group**	**Difference (impact)**	**P-value**
Education and training				
Confirmatory Outcome: Ever completed occupational skills training (%)	41.8	20.8	21.0***	<0.001
Ever obtained a professional certification or state/industry license (%)	33.8	14.2	19.6***	<0.001
Child care arrangements & assistance				
Paid for child care for youngest child (%)	8.7	10.9	-2.2	0.353
Received help finding child care (%)	11.8	9.5	2.3	0.330
Child care arrangements & assistance (SWFI Only)				
Paid for child care for youngest child (%)	*17.7*	*25.0*	*-7.3*	*0.226*
Received help finding child care (%)	*22.3*	*16.5*	*5.8*	*0.323*
Employment and earnings				
Currently employed (%)	60.6	58.3	2.3	0.537
Ever employed (%)	80.8	85.5	-4.8*	0.096
Receives any employer-offered benefits (%)	59.8	62.0	-2.1	0.563
Job offers many opportunities for career advancement (%)	51.4	49.9	1.4	0.709
Income, financial well-being, and housing status				
Income from job earnings in prior month (%)	62.6	67.3	-4.7	0.211
Experienced any material hardship in the past year (%)	49.1	58.4	-9.2**	0.013
Sample size	**360**	**310**		

Notes: Estimates were regression-adjusted using ordinary least squares, controlling for pre-random assignment characteristics of sample members. See a full list of covariates in Table B-5.

Sample sizes may vary because of missing values. See Table B-11 for full missingness rates.

Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

TH = TechHire; SWFI = Strengthening Working Families Initiative.

Source: TechHire/SWFI Wave 2 survey.

The results of the weighted analysis are extremely similar to the unweighted impacts. There are statistically significant impacts on almost all of the same outcomes, and the strength of those impacts are very similar. Only the ever-employed impacts have different statistical significances between the unweighted and weighted impacts. The unweighted ever-employed impact was not statistically significant whereas the weighted impact was. This increases confidence that there were not likely any serious issues with the representativeness of the survey sample.

Program-Tracking Data

The evaluation team collected program-tracking data from the Participant Individual Record Layout (PIRL) database maintained by the DOL. All TechHire and SWFI grantees were required to report information on participants in the PIRL database. These data track demographic and socioeconomic characteristics; program entry and exit; participation in training; receipt of credentials, degrees, and diplomas; and receipt of other services, including case management and assessments.

Table B-6 specifically compares the rates of training completion between the PIRL data and the Wave 2 survey data by program for TechHire/SWFI group members. The results show that the PIRL and Wave 2 survey responses are generally consistent. About 63 percent of participants indicated that they either completed training (24 percent) or did not complete training (39 percent), and the PIRL data supported these responses. The percentages of participants who reported completing training only in the PIRL and who reported completed training only in the survey were very similar (18% and 19%, respectively). These discrepancies could be explained by the fact that some respondents may have had challenges recalling that they completed training or the PIRL data may not capture all of the training completions.

Table B-6. Comparison of U.S. DOL PIRL data and Wave 2 survey reports of completion of training since random assignment among TechHire/SWFI Group survey respondents, by program and overall

Outcome	East Coast Florida		New York City		Tampa		Denver		Vermont		All programs	
	N	%	N	%	N	%	N	%	N	%	N	%
Did not complete training as reported by either the survey or PIRL	34	40.5	13	22.8	50	49.5	33	35.9	10	38.5	140	38.9
PIRL-reported completed training only	24	28.6	8	14.0	9	8.9	14	15.2	9	34.6	64	17.8
Survey-reported completed training only	6	7.1	19	33.3	28	27.7	11	12.0	4	15.4	68	18.9
PIRL and survey-reported completed training[a]	20	23.8	17	29.8	14	13.9	34	37.0	3	11.5	88	24.4
Sample Size	84		57		101		92		26		360	

Notes: Sample sizes may vary because of missing values. See Table B-11 for full missingness rates.

SWFI = Strengthening Working Families Initiative; N = number (sample size); PIRL = Participant Individual Record Layout.

[a] This outcome measures the percentage of participants who reported they completed training in both the PIRL and survey. The previous two outcomes measure the percentage of participants who reported they completed training in one source but not the other.

Source: TechHire/SWFI Wave 2 survey and PIRL data.

Estimating the Effects of TechHire/SWFI

Before estimating the effects of the TechHire/SWFI programs, the evaluation team conducted an analysis planning process and drafted an analysis plan that was reviewed by the study's technical working group. All the analytic decisions discussed in this section were prespecified during that planning process and are included in the study's analysis plan, with minor changes noted. Prespecification is a key means of safeguarding a statistical study from drawing false conclusions. By prespecifying, analysts are limited in their ability to "search for impacts" when they may not be present.

Pooling and Minimum Detectable Effects

In any multisite impact evaluation, a key question is whether the impact estimates will be at the site level or whether the sites will be pooled in some way. In the case of the TechHire/SWFI evaluation, the research team considered pooling at the grant level—in other words, pooling the samples from the TechHire sites and the SWFI sites separately—and pooling the sample across all five grantees involved in the RCT.

To determine whether a grant-level analysis was possible, the research team calculated the minimum detectable effects (MDEs).[58] The MDE is the smallest true effect that would yield statistically significant estimated effects 80 percent of the time in the proposed design. MDEs are commonly expressed in effect size units (specifically, in terms of standard deviations) to permit comparisons across outcomes with different units. A common rule of thumb is to ensure that studies have sufficient power to detect impacts at or below an MDE size (MDES) of 0.2, which is a common threshold for a "small" effect size.[59]

Table B-7 shows the MDEs for the pooled sample (combining the samples from the TechHire and SWFI grantees), for the TechHire sample, and for the SWFI sample. For each of these three samples, MDEs are shown based on the final sample size for the Wave 2 survey data.

Table B-7. Minimum detectable effects, by sample for survey outcomes

Sample	Sample size	MDES[a]	MDE employment	
			SD = 0.4	SD = 0.5
Pooled sample	670	0.178	7.1	8.9
TechHire sample	463	0.214	8.6	10.7
SWFI sample	207	0.321	12.8	16.1

[a] MDES is for a two-tailed t-test at 0.10 significance with 80 percent power. These MDES values assume covariates will be used and that they will have a moderate effect (R-squared = 0.15).

Notes: MDES = minimum detectable effect size; MDE = minimum detectable effect; SD = standard deviation; SWFI = Strengthening Working Families Initiative.

Source: Calculations using PowerUP! tool.

[58] MDEs were calculated using the PowerUp! tool. For more information, see Maynard and Dong (2013).

[59] The 0.2 rule of thumb comes from Cohen. Cohen defined an effect size of 0.2 as "small," 0.5 as "medium," and 0.8 as "large." Lipsey, another prominent researcher, sets the threshold lower. To Lipsey, an effect size of 0.15 or lower is small. See Cohen (1992) and Hill, Bloom, Black, and Lipsey (2007).

The MDES for the Wave 2 survey sample size for both the TechHire sample (0.214) and the SWFI sample (0.321) exceed the 0.2 threshold. Assuming that 50 percent of the control group was employed (that is, the standard deviation is 0.5),[60] these MDESs translate into MDEs of between 8.6 and 16.1. These MDEs are *quite high*, and based on past studies it would be unreasonable (though not impossible) to expect impacts this large. Therefore, because the evaluation's confirmatory outcome is a survey-based outcome, the research team felt there was not enough statistical power to do a grant-level analysis.

The MDES for the pooled sample is below the commonly accepted 0.2 threshold (MDES = 0.178). This translates into MDEs of between 7.1 and 8.9 for employment (and other percentage) measures. This sample size seems adequate for the analysis. Therefore, the main impact analysis was done at the pooled level, combining the sample members from the five TechHire and SWFI programs.

As part of the analysis planning process, MDESs were also calculated for the full analysis sample that is used in analyses of administrative data. Those MDES are also below the 0.2 threshold given they are based on a larger sample size and the same other assumptions.

One – Versus Two-Tailed Tests

The study's confirmatory outcomes for the impact analysis presented in this report are:

- Completed training, as measured by the Wave 2 survey (%);
- Currently employed, as measured by the Wave 2 survey (%); and
- Average earning sin Year 2, as measured by the NDNH data ($).

The first outcome was chosen because training take-up and completion is one of the key goals of the TechHire and SWFI programs, and given the average length of training across the grantees, it is expected that most individuals would have completed training by the time they responded to the Wave 2 survey. The study seeks to understand whether the TechHire and SWFI programs increased training completion, and not whether the programs had any effect—positive or negative—on training completion. There is no reason to believe that the TechHire and SWFI programs could lead to a reduction in training completion. Based on this reasoning, the research team decided to use a one-tailed t-test for this confirmatory outcome. Table B-8 below shows that the MDES for the pooled survey sample using a one-tailed t-test is below the 0.2 threshold (MDES = 0.153).

[60] A standard deviation of 0.5 assumes the worst-case scenario. The point of maximum variance for a percentage measure is 0.5 (a control group level of 50%). At that point, an MDES of 0.2 translates into an MDE of 10 percentage points. The further the variance is from 0.5, the smaller the MDE. For example, if the control group level for a measure is 20 percent, the MDE for a study powered at 80 percent would be 8 percentage points.

Table B-8. Minimum detectable effect for the training completion confirmatory outcome				
Sample	Sample size	MDES[a]	MDE completion of training	
			SD = 0.4	SD = 0.5
Pooled sample	60	0.152	6.1	7.6

[a] MDES is for a one-tailed t-test at 0.10 significance with 80 percent power. This MDES assumes covariates will be used and that they will have a moderate effect (R-squared = 0.15).

Notes: MDES = minimum detectable effect size; MDE = minimum detectable effect; SD = standard deviation.

Source: Calculations using PowerUP! tool.

Two-tailed t-tests were used for the other two confirmatory outcomes and all exploratory outcomes. For many of these outcomes, it is possible that the programs could have negative effects. Programs often have unintended consequences and for some exploratory outcomes, the research team did not have a good theory for what to expect.

Impact Model Specification

Results presented in this study are based on "intent-to-treat" impact estimates. That is, the impacts are calculated by comparing all individuals in the TechHire/SWFI group with all individuals assigned to the control group, regardless of whether or how long they were engaged in TechHire/SWFI services. The impact estimates are regression-adjusted using background characteristics of the sample (see the section on covariates below).

For impacts on outcomes, regression models of the following form were estimated, using ordinary least squares.

$$Y_i = \alpha + \beta * P_i + \delta X_i + \varepsilon_i$$

where:

- Y_i is the outcome measure for sample member I;
- P_i is an indicator variable equal to "1" for TechHire/SWFI group members and equal to "0" for control group members;
- X_i is a set of background characteristics for sample member *i*;
- ε_i is a random error term for sample member *i*;
- β is the estimate of the impact of the program on the average value of the outcome;
- α is the intercept of the regression; and
- δ is the set of regression coefficients for the background characteristics.

Covariates

All covariates are based on pre-random assignment characteristics drawn from the TechHire/SWFI baseline survey. Following is a list of the baseline characteristics that were used as covariates in the regression models for survey-based outcomes:

- Age 17–24 (0/1)
- Age (continuous)
- Female (0/1)
- Hispanic (0/1)
- Black/African American (0/1)
- Parent of any children under age 19 or pregnant (0/1)
- Lives with a child ages 1 to 5 (0/1)
- Primary language is English (0/1)
- Has some college/advanced training certification or more education (0/1)
- Previously received training in target industry (0/1)
- Child care arrangements limit the amount or type of work respondent can do (0/1)
- Currently employed (0/1)
- Worked full-time at current or most recent job (0/1)
- Employed within 7 months of random assignment date (0/1)
- Receives food stamps/SNAP (0/1)
- Transportation-related issues limit ability to work (0/1)
- Sample member at East Coast Florida program (0/1)
- Sample member at Denver program (0/1)
- Sample member at New York City program (0/1)
- Sample member at Tampa program (0/1)
- Sample member at New York City program randomly assigned at the 50/50 ratio (0/1)

For the NDNH-based outcomes, the following covariates were also used:

- Ever employed in the year prior to random assignment (0/1)
- Total earnings in year prior to random assignment ($) (continuous)

Outliers

To improve precision, when estimating program effects on the key continuous outcomes (those that would be most affected by outliers, such as dollar-value measures), extreme values were identified as outliers, and for some measures, outliers were recoded based on responses to other survey questions. Table B-10 compares the impacts on hours, hourly wages, weekly earnings, and Year 2 earnings by the level of exclusion of outlier values.

The first row under each measure shows the impact with all values included. The second row shows the impacts with extreme outliers recoded (these are the impacts presented in the main report; the definitions of extreme outliers are shown in the footnotes of Table B-9). Not all measures shown in the table had extreme outliers, and for those measures, the impacts are the same in the first two rows. Some of the details on changes made to outlier values are included in the footnotes in Table B-9. The third row shows the impact after excluding the top 1 percent of values.

The table shows that the findings regarding hours worked, hourly wages, weekly earnings, and Year 2 earnings were robust to outliers. There is a negative impact on hours worked when all values are included and when outliers are removed or excluded, and there are no impacts on the other three outcomes in all three scenarios. Treating outliers this way is consistent with the analysis plan and standard in evaluations of this type.[61]

[61] Walfish, S. (2006). A review of statistical outlier methods. *Pharmaceutical Technology*, 30(11), 82.

Table B-9. Comparison of impacts on wages, hours, earnings, and amount paid for training, by level of exclusion of outlier values					
Outcome	N	SE	TH/SWFI group	Control group	Difference (impact)
Hours worked per week[a] (N)					
All responses	652	1.28	27.5	30.0	-2.5*
Extreme outliers removed	652	1.28	27.5	30.0	-2.5*
Top 1 percent excluded	646	1.23	27.0	29.7	-2.8**
Average hourly wages[b] ($)					
All responses	631	12.953	22.40	36.53	-14.14
Extreme outliers removed	631	1.963	15.88	13.99	1.88
Top 1 percent excluded	625	2.331	15.55	15.00	0.54
Average weekly earnings[b] ($)					
All responses	629	520.5	765	1,419	-654
Extreme outliers removed	629	37.9	493	514	-21
Top 1 percent excluded	623	46.1	476	536	-60
Year 2 earnings[c] ($)					
All responses	949	1,129.4	18,699	17,997	702
Extreme outliers removed	949	1,129.4	18,699	17,997	702
Top 1 percent excluded	940	1,041.9		17,397	442

[a] There were no extreme outliers for this outcome, and therefore none were removed.

[b] Extreme wage and earnings outliers are defined as earning more than $50 an hour, more than $2,000 a week, more than $8,000 a month, and more than $10,400 a year. Extreme wage cases were calculated using the unit of time that appeared to best fit the amount.

[c] Extreme NDNH earnings outcomes are defined as having reported earnings of $50,000 or more per quarter. Earnings values above this amount were set to missing. This did not apply to any of the earnings amounts in Year 2.

Notes: Estimates were regression-adjusted using ordinary least squares, controlling for pre-random assignment characteristics of sample members.

Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

TH = TechHire; SWFI = Strengthening Working Families Initiative; N = sample size; SE = standard error.

The impacts presented in the tables in the main body of the report are the impacts with extreme outliers removed. No extreme outliers were identified or removed from measures except as indicated.

Source: TechHire/SWFI Wave 2 survey and NDNH data.

Confidence Intervals, Standard Errors, and Effect Sizes

Table B-10 displays more detailed statistical data on the impact estimates of the confirmatory and other key outcomes. These details are included to provide more information on the uncertainty associated with specific impact estimates; they may be useful to meta-analysts who are interested in including the TechHire/SWFI findings. For each measure, the first two columns show the lower and upper limits of the 90 percent confidence interval, the third column shows the standard error, and the fourth column displays the effect sizes in absolute values. For each measure, the effect size was calculated by dividing the impact estimate by the standard deviation for the full sample. Effect sizes standardize impact estimates for comparison with impact estimates from other studies.

Table B-10. Confidence intervals, standard errors, and effect sizes for key outcomes

Outcome	90% confidence interval		SE	Effect size
	Lower	Upper		
Confirmatory outcomes				
Ever completed occupational skills training	14.4	28.3	3.55	0.45
Currently employed	-3.0	9.1	3.67	0.06
Average earnings Year 2[a]	-1,156	2,560	1,129.4	0.04
Education and training				
Ever obtained a professional certification or state/industry license	13.1	26.0	3.29	0.45
Child care arrangements & assistance				
Paid for child care for youngest child	-5.8	2.6	2.16	0.05
Received help finding child care	-2.2	6.5	2.20	0.07
Child care arrangements & assistance (SWFI Only)				
Paid for child care for youngest child	-17.1	5.8	5.80	0.14
Received help finding child care	-5.7	16.6	5.66	0.14
Employment and earnings				
Ever employed	-8.3	1.2	2.87	-0.09
Receives any employer-offered benefits	-6.4	5.8	3.69	-0.01
Job offers many opportunities for career advancement	-5.4	7.5	3.92	0.02
Income, financial well-being, and housing status				
Income from job earnings in prior month	-13.1	1.2	3.63	0.13
Experienced any material hardship in the past year	-15.6	-0.8	3.76	0.16
Sample size (total = 670)				

Notes: Sample sizes may vary because of missing values. See Table B-11 for full missingness rates.

Effect sizes are shown as absolute values and were calculated by dividing the impact estimate by the standard deviation for the pooled sample of individuals in both research groups.

SE = standard error.

[a]The sample size for this outcome is 949.

Source: TechHire/SWFI Wave 2 Survey and NDNH data.

For example, for the confirmatory outcome currently employed, the 90 percent confidence interval ranges from -3 to 9. The 90 percent confidence interval is an estimate of the statistical imprecision of the effects of TechHire/SWFI. Specifically, there is a 90 percent chance that the true effect would fall within the 90 percent confidence interval. A narrower confidence interval suggests a more precise estimate than a wider confidence interval (which indicates greater variability and greater uncertainty). Confidence intervals in which zero does not fall between the lower and upper limits—which is not the case for the interval for currently employed—indicate that the impact estimate is significantly different from zero at the 10 percent level of statistical significance. For those outcomes, there is less than a 10 percent chance this estimate would have been seen if TechHire/SWFI made no difference.

The standard error reflects the statistical uncertainty associated with this estimate, factoring in the sample size, the standard deviation, and the unit of measurement. The final element, the effect size (0.06), indicates that the impact on the confirmatory outcome is a small-sized impact based on statistical literature on effect sizes.[62]

Assessment of Possible Effects of Multiple Comparisons

In recent years, the issue of multiple test bias has become more prominent in both the academic literature and the field of program evaluation more generally. The basic issue is well known and not new. Every time one estimates an impact on an outcome there is a precisely defined probability (conventionally 10% in such studies as TechHire/SWFI) of concluding that a program has had a true impact when the observed difference is simply due to chance. Since researchers typically examine many outcomes, the probability that at least one estimate will be statistically significant simply by chance can get very high (Olken, 2015).

A three-part strategy was used to deal with the potential for false positives emerging from analysis of multiple outcome measures:

- Distinguishing between confirmatory and exploratory outcomes of interest and specifying single measures and units for each outcome.
- Limiting the analysis to one to three confirmatory outcomes for each round of the impact analysis.
- Using the Benjamini-Hochberg procedure to adjust for multiple comparisons of the confirmatory outcomes (Benjamini and Hochberg, 1995). The Benjamini-Hochberg-adjusted p-values are shown in Box 2.2 and are discussed in the main report. It should be noted that the study was not powered for multiple comparisons, but the research team wanted to provide information on whether these impacts would still be statistically significant after the adjustment (this is why the Benjamini-Hochberg adjusted p-values are not shown in the main report tables).

Missing Data

Outcomes. Sample members with missing values for dependent variables (outcomes) were excluded from the impact estimates. Appendix Table B-11 shows the percentage of sample members with missing values on the outcomes from the Wave 2 survey. Note that the rates of missingness were very low for the key outcomes across both research groups. The highest rates of missingness were seen in the total income in the prior month outcome, which ranged from 13.2 percent to 16.1 percent. Most other outcomes had missingness rates below 4 percent.

Note that outcomes based on the NDNH data do not have any missing values. Individuals who did not match to the NDNH data overall or in a given quarter were assumed to not be employed and were coded as having $0 in earnings.

[62] The 0.5 rule of thumb comes from Cohen. Cohen defined an effect size of 0.2 as "small," 0.5 as "medium," and 0.8 as "large." Lipsey, another prominent researcher, sets the thresholds lower. To Lipsey, an effect size of 0.15 or lower is small. See Hill, Bloom, Black, and Lipsey (2007); Cohen (1992).

Table B-11. Percentage missing on outcomes		
Outcome (% missing)	TH/SWFI group	Control group
Education and training		
Ever participated in: (%)		
ESL classes	0.3	0.0
ABE classes	0.3	0.0
GED classes	0.3	0.0
College courses for credit	0.3	0.0
Ever started occupational skills training (%)	0.0	0.0
IT	0.0	0.0
Advanced manufacturing	0.0	0.0
Health care	0.0	0.0
Currently enrolled in occupational skills training (%)	0.0	0.0
Ever completed occupational skills training (%)	0.0	0.0
IT	0.0	0.0
Advanced manufacturing	0.0	0.0
Health care	0.0	0.0
Ever dropped out of occupational skills training (%)	0.0	0.0
Main reason dropped out of training, among those who dropped out: (%)		
Personal problems	*0.0*	*0.0*
Needed to work	*0.0*	*0.0*
Found a job	*0.0*	*0.0*
Other	*0.0*	*0.0*
Ever obtained a professional certification or state/industry license (%)	0.0	0.0
Ever obtained a professional certification or state/industry license in targeted sector (%)	0.0	0.0
Earned HS diploma/GED (%)	0.3	0.0
Earned diploma or certificate requiring college credit (%)	0.3	0.0
Earned Associate's degree (%)	0.3	0.0
Earned Bachelor's degree or higher (%)	0.3	0.0
Ever participated in on-the-job training, an internship, or an apprenticeship (%)	0.0	0.0
Currently working in on-the-job training, an internship, or an apprenticeship (%)	0.0	0.0
Services and financial assistance		
Paid for training out of pocket or with loans (%)	*0.0*	*0.0*
Found it difficult to pay for training (%)	*0.6*	*0.0*
Employment		
Currently employed (%)	0.0	0.0
Ever employed (%)	0.0	0.0
Average hourly wage ($)	6.9	4.5
Average hours worked per week (#)	3.3	1.9
Job is regular permanent job (%)	0.8	0.6
Satisfied with job (%)	1.1	0.6
Job offers many opportunities for career advancement (%)	1.1	0.6

Table B-11. Percentage missing on outcomes (continued)		
Outcome (% missing)	TH/SWFI group	Control group
Child care arrangements & assistance		
Youngest child received care while working or in training (%)	2.5	1.0
At Head Start or Early Head Start	2.5	1.0
At preschool, nursery school, or child care center	2.5	1.0
At family day care home	2.5	1.0
From relative	2.5	1.0
From non-relative	2.5	1.0
Child cared for him or herself	2.5	1.0
Paid for child care for youngest child (%)	2.8	1.0
Was reimbursed for child care payments for youngest child (%)	2.8	1.0
Amount spent on child care depended on income (%)	2.8	1.0
Received help: (%)		
Finding child care	2.5	1.0
Finding child care in a convenient location	2.5	1.0
Finding child care at needed hours	2.5	1.0
Finding alternative to regular child care in an emergency	2.5	1.0
Paying for child care	2.5	1.0
Finding or paying for transportation to child care	2.5	1.0
Had problem with work due to child care arrangements (%)	3.1	1.0
Had problems with school due to child care arrangements (%)	3.1	1.0
Had to quit a job/fired, school, or training due to childcare (%)	3.1	1.0
Did not take a job or did not start training due to childcare (%)	3.1	1.0
Has difficulty finding child care he/she wants (%)	3.1	1.0
Has difficulty paying for child care (%)	3.6	1.0
Child care arrangements & assistance (SWFI Only)		
Youngest child received care while working or in training (%)	*2.5*	*0.0*
At Head Start or Early Head Start	*2.5*	*0.0*
At preschool, nursery school, or child care center	*2.5*	*0.0*
At family day care home	*2.5*	*0.0*
From relative	*2.5*	*0.0*
From non-relative	*2.5*	*0.0*
Child cared for him or herself	*2.5*	*0.0*
Paid for child care for youngest child (%)	*3.4*	*0.0*
Was reimbursed for child care payments for youngest child (%)	*3.4*	*0.0*
Amount spent on child care depended on income (%)	*3.4*	*0.0*
Received help: (%)		
Finding child care	*2.5*	*0.0*
Finding child care in a convenient location	*2.5*	*0.0*
Finding child care at needed hours	*2.5*	*0.0*
Finding alternative to regular child care in an emergency	*2.5*	*0.0*
Paying for child care	*2.5*	*0.0*
Finding or paying for transportation to child care	*2.5*	*0.0*
Had problem with work due to child care arrangements (%)	*3.4*	*0.0*
Had problems with school due to child care arrangements (%)	*3.4*	*0.0*
Had to quit a job/fired, school, or training due to childcare (%)	*3.4*	*0.0*
Did not take a job or did not start training due to childcare (%)	*3.4*	*0.0*
Has difficulty finding child care he/she wants (%)	*3.4*	*0.0*
Has difficulty paying for child care (%)	*4.2*	*0.0*

Table B-11. Percentage missing on outcomes (continued)		
Outcome (% missing)	TH/SWFI group	Control group
Job readiness training, job search assistance, and support services		
Received assistance with the following: (%)		
Career counseling	0.0	0.0
Job readiness training	0.0	0.0
Job search assistance	0.0	0.0
Job retention assistance	0.0	0.0
Supports to help manage school or work	0.0	0.0
Income, financial well-being, and housing status		
Total income in prior month ($)	16.1	13.2
Income sources in prior month: (%)		
Job earnings	3.3	0.6
WIC	3.3	0.6
Food stamps/SNAP	3.3	0.6
SSI/SSDI	3.3	0.6
Public assistance/TANF	3.3	0.6
Housing assistance	3.3	0.6
UIB	3.3	0.6
Child care subsidy	3.3	0.6
Other	3.3	0.6
Covered by health insurance (%)	3.3	1.3
Agrees financial situation is better now than at study enrollment (%)	3.9	0.6
Does not have enough money left over at the end of the month (%)	3.9	1.6
Household sometimes or often does not have enough to eat (%)	4.2	1.9
Experienced any material hardship in the past year (%)	3.9	1.3
Experienced the following number of material hardships in the past year (#)	3.9	1.3
Experienced the following types of material hardship in the past year: (%)		
Could not pay full amount of rent or mortgage	3.9	1.3
Could not pay full amount of utility bills	3.9	1.3
Utilities turned off	3.9	1.3
Phone disconnected	3.9	1.3
Could not afford to go to doctor	3.9	1.3
Could not afford to go to dentist	3.9	1.3
Could not afford to fill prescription	3.9	1.3
Current living arrangement: (%)		
Rents home or apartment	1.9	1.0
Owns home	1.9	1.0
Lives with friends or family and pays part of rent/mortgage	1.9	1.0
Lives with friends or family and does not pay part of rent/mortgage	1.9	1.0
Lives in group shelter	1.9	1.0
Ever been homeless or lived in a shelter (%)	2.5	0.6

Table B-11. Percentage missing on outcomes (continued)		
Outcome (% missing)	TH/SWFI group	Control group
Overall well-being and perceptions of future		
Feels he/she is making progress towards long-range employment goals (%)	0.0	0.3
Feels he/she is on a career path (%)	0.8	0.0
Very happy (%)	3.9	1.0
Sample Size	360	310

Notes: TH = TechHire; SWFI = Strengthening Working Families Initiative; ESL = English as a Second Language; ABE = Adult Basic Education; GED = General Educational Development certificate.

Italics indicate the metric is not among the full sample shown in the table.

Source: TechHire/SWFI Wave 2 survey.

Appendix C

Supplementary Exhibits for Chapter 2

Appendix C
Supplementary Exhibits for Chapter 2

Table C-1. Impacts on child care arrangements and assistance, 18-month follow-up period, by TechHire/SWFI subgroup

Outcome	TechHire sample member				SWFI sample member				Sig.
	Program group	Control group	Difference (impact)	P-value	Program group	Control group	Difference (impact)	P-value	
Child care arrangements & assistance									
Youngest child received care while working or in training (%)	8.6	8.1	0.6	0.821	43.5	42.6	0.9	0.904	
At Head Start or Early Head Start	2.1	0.9	1.2	0.307	2.7	4.3	-1.6	0.561	
At preschool, nursery school, or child care center	5.0	3.7	1.3	0.492	12.6	14.1	-1.5	0.773	
At family day care home	0.3	0.1	0.2	0.592	4.4	6.6	-2.2	0.504	
From relative	3.9	3.6	0.2	0.889	20.6	25.1	-4.5	0.460	
From non-relative	2.1	2.3	-0.3	0.837	14.9	11.1	3.7	0.452	
Child cared for him or herself	0.0	0.0	0.0	.	1.8	2.2	-0.5	0.822	
Paid for child care for youngest child (%)	4.1	4.2	-0.1	0.958	17.7	23.4	-5.7	0.330	
Was reimbursed for child care payments for youngest child (%)	1.5	1.2	0.3	0.767	8.3	5.1	3.2	0.396	
Amount spent on child care depended on income (%)	2.9	3.3	-0.4	0.789	12.0	19.4	-7.4	0.171	

Table C-1. Impacts on child care arrangements and assistance, 18-month follow-up period, by TechHire/SWFI subgroup (continued)

Outcome	TechHire sample member				SWFI sample member				Sig.
	Program group	Control group	Difference (impact)	P-value	Program group	Control group	Difference (impact)	P-value	
Received help: (%)									
Finding child care	6.5	5.9	0.6	0.774	22.5	17.0	5.4	0.339	
Finding child care in a convenient location	6.5	4.9	1.7	0.415	23.8	11.9	11.9**	0.029	
Finding child care at needed hours	5.6	4.0	1.6	0.399	18.4	13.3	5.1	0.354	
Finding alternative to regular child care in an emergency	3.7	2.9	0.8	0.604	13.5	6.2	7.3*	0.100	
Paying for child care	6.7	5.6	1.1	0.587	24.7	20.9	3.9	0.524	
Finding or paying for transportation to child care	2.9	1.9	1.0	0.499	12.3	8.8	3.5	0.427	
Had problem with work due to child care arrangements (%)	6.5	5.3	1.2	0.577	34.4	35.7	-1.3	0.846	
Had problems with school due to child care arrangements (%)	4.4	4.5	-0.1	0.970	14.6	17.2	-2.6	0.626	
Had to quit a job/fired, school, or training due to childcare (%)	4.0	2.2	1.8	0.267	11.8	10.8	1.0	0.830	
Did not take a job or did not start training due to childcare (%)	5.2	4.5	0.7	0.720	20.0	21.6	-1.6	0.793	
Has difficulty finding child care he/she wants (%)	3.7	1.5	2.1	0.158	12.4	14.5	-2.1	0.675	
Has difficulty paying for child care (%)	2.5	1.0	1.6	0.220	12.7	12.0	0.7	0.879	
Sample Size (Total = 670)	**242**	**221**			**118**	**89**			

Notes: Estimates were regression-adjusted using ordinary least squares, controlling for pre-random assignment characteristics of sample members. See a full list of covariates in Appendix B. Differences in the impact estimates and the differenced program and control group means are due to rounding.

Sample sizes may vary because of missing values. See Table B-11 for full missingness rates.

Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

Differences across subgroups were tested for statistical significance. Statistical significance levels (Sig.) are indicated as follows: ††† = 1 percent; †† = 5 percent; † = 10 percent.

TH = TechHire; SWFI = Strengthening Working Families Initiative.

Source: TechHire/SWFI Wave 2 survey.

Table C-2. Impacts on education and training, 18-month follow-up period, by TechHire/SWFI subgroup

Outcome	TechHire sample member				SWFI sample member				Sig.
	Program group	Control group	Difference (impact)	P-value	Program group	Control group	Difference (impact)	P-value	
Education and training									
Ever completed occupational skills training (%)	42.8	20.5	22.3***	<0.001	43.3	22.4	20.9***	0.002	
Ever obtained a professional certification or state/industry license (%)	32.2	12.7	19.5***	<0.001	38.6	18.4	20.2***	0.002	

Notes: Estimates were regression-adjusted using ordinary least squares, controlling for pre-random assignment characteristics of sample members. See a full list of covariates in Appendix B. Differences in the impact estimates and the differenced program and control group means are due to rounding.

Sample sizes may vary because of missing values. See Table B-11 for full missingness rates.

Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

Differences across subgroups were tested for statistical significance. Statistical significance levels (Sig.) are indicated as follows: ††† = 1 percent; †† = 5 percent; † = 10 percent.

TH = TechHire; SWFI = Strengthening Working Families Initiative.

Source: TechHire/SWFI Wave 2 survey.

Table C-3. Impacts on education, training, and child care arrangements and assistance, 18-month follow-up period, by labor market attachment subgroup

Outcome	Long-term unemployed				Currently or recently employed				Sig.
	TH/SWFI group	Control group	Difference (impact)	P-value	TH/SWFI group	Control group	Difference (impact)	P-value	
Education and training									
Ever completed occupational skills training (%)	50.6	28.0	22.6**	0.018	42.2	18.5	23.7***	<0.001	
Ever obtained a professional certification or state/industry license (%)	44.5	18.4	26.1***	0.003	33.2	13.9	19.3***	<0.001	
Child care arrangements & assistance									
Paid for child care for youngest child (%)	14.4	13.1	1.3	0.856	6.6	8.4	-1.9	0.397	
Received help finding child care (%)	17.3	9.6	7.7	0.220	10.2	9.5	0.7	0.783	
Child care arrangements & assistance (SWFI Only)									
Paid for child care for youngest child (%)	*21.8*	*26.1*	*-4.3*	*0.785*	*16.0*	*19.5*	*-3.5*	*0.601*	
Received help finding child care (%)	*27.2*	*22.6*	*4.6*	*0.752*	*21.1*	*16.1*	*5.0*	*0.464*	
Sample Size (Total = 623)	**63**	**54**			**268**	**238**			

Notes: Estimates were regression-adjusted using ordinary least squares, controlling for pre-random assignment characteristics of sample members. See a full list of covariates in Appendix B. Differences in the impact estimates and the differenced TH/SWFI and control group means are due to rounding.

Sample sizes may vary because of missing values. See Table B-11 for full missingness rates.

Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

Differences across subgroups were tested for statistical significance. Statistical significance levels (Sig.) are indicated as follows: ††† = 1 percent; †† = 5 percent; † = 10 percent.

TH = TechHire; SWFI = Strengthening Working Families Initiative.

Italics indicate the metric is not among the full sample shown in the table.

The currently or recently employed subgroup includes individuals who were working at study entry and individuals who had been out of work for less than 7 months. The long-term unemployed subgroup includes individuals who had been out of work for 7 or more months at study entry and individuals who had never worked.

Source: TechHire/SWFI Wave 2 survey.

Appendix D

Supplementary Analyses for Chapter 3

Appendix D
Supplementary Analyses for Chapter 3

Table D-1. Impacts on employment and job characteristics, by TechHire/SWFI subgroup

Outcome	TechHire sample member				SWFI sample member				Sig.
	Program group	Control group	Difference (impact)	P-value	Program group	Control group	Difference (impact)	P-value	
Survey employment									
Currently employed (%)	62.1	60.6	1.5	0.731	58.3	51.9	6.5	0.370	
Ever employed (%)	85.4	86.1	-0.8	0.816	74.0	79.4	-5.4	0.366	
Receives any employer-offered benefits (%)	61.4	61.6	-0.2	0.964	57.8	57.1	0.6	0.925	
Job offers many opportunities for career advancement (%)	52.9	52.5	0.4	0.936	47.1	47.7	-0.6	0.940	
Sample Size (Total = 670)	**242**	**221**			**118**	**89**			
NDNH employment and earnings									
Ever employed in Year 2 (%)	84.1	79.5	4.6	0.111	73.6	74.9	-1.4	0.785	
Average earnings in Year 2 ($)	20,638	19,335	1,303	0.370	14,531	14,804	-273	0.871	
Sample Size (Total = 949)	**348**	**311**			**169**	**121**			

Notes: Estimates were regression-adjusted using ordinary least squares, controlling for pre-random assignment characteristics of sample members. See a full list of covariates in Appendix B. Differences in the impact estimates and the differenced program and control group means are due to rounding.

Sample sizes may vary because of missing values. See Table B-11 for full missingness rates.

Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

Differences across subgroups were tested for statistical significance. Statistical significance levels (Sig.) are indicated as follows: ††† = 1 percent; †† = 5 percent; † = 10 percent.

SWFI = Strengthening Working Families Initiative; NDNH = National Directory of New Hires.

Source: TechHire/SWFI Wave 2 survey and NDNH.

Table D-2. Impacts on employment and job characteristics, by labor market attachment subgroup

Outcome	Long-term unemployed				Currently or recently employed				Sig.
	TH/SWFI group	Control group	Difference (impact)	P-value	TH/SWFI group	Control group	Difference (impact)	P-value	
Survey employment									
Currently employed (%)	45.5	45.0	0.5	0.955	65.7	63.4	2.4	0.580	
Ever employed (%)	62.9	71.1	-8.2	0.357	85.1	88.6	-3.5	0.245	
Receives any employer-offered benefits (%)	44.9	31.0	13.9	0.116	64.9	66.9	-2.0	0.633	
Job offers many opportunities for career advancement (%)	38.9	39.7	-0.8	0.932	54.8	52.9	1.9	0.673	
Sample Size (Total = 623)	**63**	**54**			**268**	**238**			
NDNH employment and earnings									
Ever employed in Year 2 (%)	66.9	51.4	15.5**	0.039	84.8	85.0	-0.2	0.947	††
Average earnings in Year 2 ($)	12,176	9,044	3,132	0.209	21,004	20,310	694	0.602	
Sample Size (Total = 876)	**91**	**82**			**383**	**320**			

Notes: Estimates were regression-adjusted using ordinary least squares, controlling for pre-random assignment characteristics of sample members. See a full list of covariates in Appendix B. Differences in the impact estimates and the differenced TH/SWFI and control group means are due to rounding.

Sample sizes may vary because of missing values. See Table B-11 for full missingness rates.

Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

Differences across subgroups were tested for statistical significance. Statistical significance levels (Sig.) are indicated as follows: ††† = 1 percent; †† = 5 percent; † = 10 percent.

TH = TechHire; SWFI = Strengthening Working Families Initiative; NDNH = National Directory of New Hires.

The currently or recently employed subgroup includes individuals who were working at study entry and individuals who had been out of work for less than 7 months. The long-term unemployed subgroup includes individuals who had been out of work for 7 or more months at study entry and individuals who had never worked.

Source: TechHire/SWFI Wave 2 survey and NDNH.

Table D-3. Impacts on employment and earnings, by site					
Outcome	**TH/SWFI group**	**Control group**	**Difference (impact)**	**P-value**	**Sig.**
East Coast Florida					
Employed in Year 1 (%)	81.0	86.6	-5.6	0.194	
Employed in Year 2 (%)	78.9	79.4	-0.5	0.918	†
Average earnings in Year 1 ($)	17,284	16,054	1,230	0.377	†
Average earnings in Year 2 ($)	19,696	18,141	1,555	0.421	
Sample size (Total = 240)	121	119			
Denver					
Employed in Year 1 (%)	84.1	80.9	3.3	0.496	
Employed in Year 2 (%)	77.5	77.9	-0.4	0.946	†
Average earnings in Year 1 ($)	15,402	13,541	1,862	0.208	†
Average earnings in Year 2 ($)	14,973	13,845	1,128	0.565	
Sample size (Total = 210)	128	82			
New York City					
Employed in Year 1 (%)	72.0	78.0	-6.0	0.427	
Employed in Year 2 (%)	85.8	60.4	25.4 ***	0.003	†
Average earnings in Year 1 ($)	14,179	15,199	-1,021	0.714	†
Average earnings in Year 2 ($)	23,875	20,261	3,614	0.440	
Sample size (Total =120)	77	43			
Tampa					
Employed in Year 1 (%)	89.4	86.5	2.9	0.420	
Employed in Year 2 (%)	88.7	83.9	4.7	0.230	†
Average earnings in Year 1 ($)	16,207	15,324	884	0.563	†
Average earnings in Year 2 ($)	20,377	19.378	1,000	0.648	
Sample size (Total = 299)	150	149			
Vermont					
Employed in Year 1 (%)	56.5	68.8	-12.2	0.225	
Employed in Year 2 (%)	60.6	69.6	-9.0	0.378	†
Average earnings in Year 1 ($)	10,154	17,465	-7,310 **	0.020	†
Average earnings in Year 2 ($)	12,877	17,108	-4,231	0.186	
Sample size (Total =80)	41	39			

Notes: Estimates were regression-adjusted using ordinary least squares, controlling for pre-random assignment characteristics of sample members. See a full list of covariates in Appendix B. Differences in the impact estimates and the differenced TH/SWFI and control group means are due to rounding.

Sample sizes may vary because of missing values. See Table B-11 for full missingness rates.

Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

Differences across subgroups were tested for statistical significance. Statistical significance levels (Sig.) are indicated as follows: ††† = 1 percent; †† = 5 percent; † = 10 percent.

TH = TechHire; SWFI = Strengthening Working Families Initiative.

Source: NDNH.

Appendix E

Supplementary Analyses for Chapter 4

Appendix E
Supplementary Analyses for Chapter 4

Table E-1. Impacts on income and financial well-being, 18-month follow-up period, by TechHire/SWFI subgroup

Outcome	TechHire sample member				SWFI sample member				Sig.
	Program group	Control group	Difference (impact)	P-value	Program group	Control group	Difference (impact)	P-value	
Income									
Household income source (%)									
Job earnings	62.2	71.5	-9.3**	0.035	66.6	64.1	2.5	0.718	
Financial well-being									
Experienced any material hardship in the past year (%)	43.5	50.7	-7.2	0.117	62.4	71.0	-8.6	0.210	
Sample Size (Total = 670)	**242**	**221**			**118**	**89**			

Notes: Estimates were regression-adjusted using ordinary least squares, controlling for pre-random assignment characteristics of sample members. See a full list of covariates in Appendix B. Differences in the impact estimates and the differenced program and control group means are due to rounding.

Sample sizes may vary because of missing values. See Table B-11 for full missingness rates.

Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

Differences across subgroups were tested for statistical significance. Statistical significance levels (Sig.) are indicated as follows: ††† = 1 percent; †† = 5 percent; † = 10 percent.

SWFI = Strengthening Working Families Initiative.

Source: TechHire/SWFI Wave 2 survey.

Table E-2. Impacts on income and financial well-being, 18-month follow-up period, by labor market attachment subgroup

Outcome	Long-term unemployed				Currently or recently employed				Sig.
	TH/SWFI group	Control group	Difference (impact)	P-value	TH/SWFI group	Control group	Difference (impact)	P-value	
Income									
Household income source (%)									
Job earnings	57.1	56.6	0.5	0.958	66.0	73.8	-7.8*	0.059	
Financial well-being									
Experienced any material hardship in the past year (%)	51.8	68.0	-16.2*	0.088	48.8	56.4	-7.5*	0.083	
Sample Size (Total = 623)	**63**	**54**			**268**	**238**			

Notes: Estimates were regression-adjusted using ordinary least squares, controlling for pre-random assignment characteristics of sample members. See a full list of covariates in Appendix B. Differences in the impact estimates and the differenced TH/SWFI and control group means are due to rounding.

Sample sizes may vary because of missing values. See Table B-11 for full missingness rates.

Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

Differences across subgroups were tested for statistical significance. Statistical significance levels (Sig.) are indicated as follows: ††† = 1 percent; †† = 5 percent; † = 10 percent.

TH = TechHire; SWFI = Strengthening Working Families Initiative.

The currently or recently employed subgroup includes individuals who were working at study entry and individuals who had been out of work for less than 7 months. The long-term unemployed subgroup includes individuals who had been out of work for 7 or more months at study entry and individuals who had never worked.

Source: TechHire/SWFI Wave 2 survey.

Appendix F

Supplementary Exhibits for Chapter 5

Appendix F
Supplementary Exhibits for Chapter 5

Table F-1. Impacts on employment and earnings in post-COVID-19 period, by site

Outcome	TH/SWFI group	Control group	Difference (impact)	P-value
Denver				
Ever employed (%)				
Post-COVID-19 Onset Year 1	78.0	75.8	2.2	0.714
Post-COVID-19 Onset Year 2	53.3	55.8	-2.4	0.733
Average earnings ($)				
Post-COVID-19 Onset Year 1	12,118	11,798	320	0.848
Post-COVID-19 Onset Year 2	10,792	10,745	47	0.984
Sample size	128	82		
East Coast Florida				
Ever employed (%)				
Post-COVID-19 Onset Year 1	78.3	81.7	-3.4	0.483
Post-COVID-19 Onset Year 2	82.5	84.2	-1.6	0.712
Average earnings ($)				
Post-COVID-19 Onset Year 1	19,157	18,885	272	0.896
Post-COVID-19 Onset Year 2	23,202	22,229	972	0.679
Sample size	121	119		
New York City				
Ever employed (%)				
Post-COVID-19 Onset Year 1	74.4	76.1	-1.7	0.845
Post-COVID-19 Onset Year 2	90.9	69.7	21.2***	0.005
Average earnings ($)				
Post-COVID-19 Onset Year 1	17,610	20,024	-2,413	0.587
Post-COVID-19 Onset Year 2	35,633	29,083	6,550	0.285
Sample size	77	43		
Tampa				
Ever employed (%)				
Post-COVID-19 Onset Year 1	89.4	81.8	7.7*	0.056
Post-COVID-19 Onset Year 2	87.3	84.6	2.6	0.517
Average earnings ($)				
Post-COVID-19 Onset Year 1	19,430	17,792	1,638	0.436
Post-COVID-19 Onset Year 2	24,441	24,117	325	0.900
Sample size	150	149		
Vermont				
Ever employed (%)				
Post-COVID-19 Onset Year 1	61.2	63.9	-2.7	0.799
Post-COVID-19 Onset Year 2	58.2	72.2	-14.0	0.169
Average earnings ($)				
Post-COVID-19 Onset Year 1	12,034	17,055	-5,021	0.145
Post-COVID-19 Onset Year 2	14,562	15,451	-889	0.777
Sample size	41	39		

Notes: Estimates were regression-adjusted using ordinary least squares, controlling for pre-random assignment characteristics of sample members. See a full list of covariates in Appendix B. Differences in the impact estimates and the differenced TH/SWFI and control group means are due to rounding.

Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

TH = TechHire; SWFI = Strengthening Working Families Initiative.

Source: NDNH.