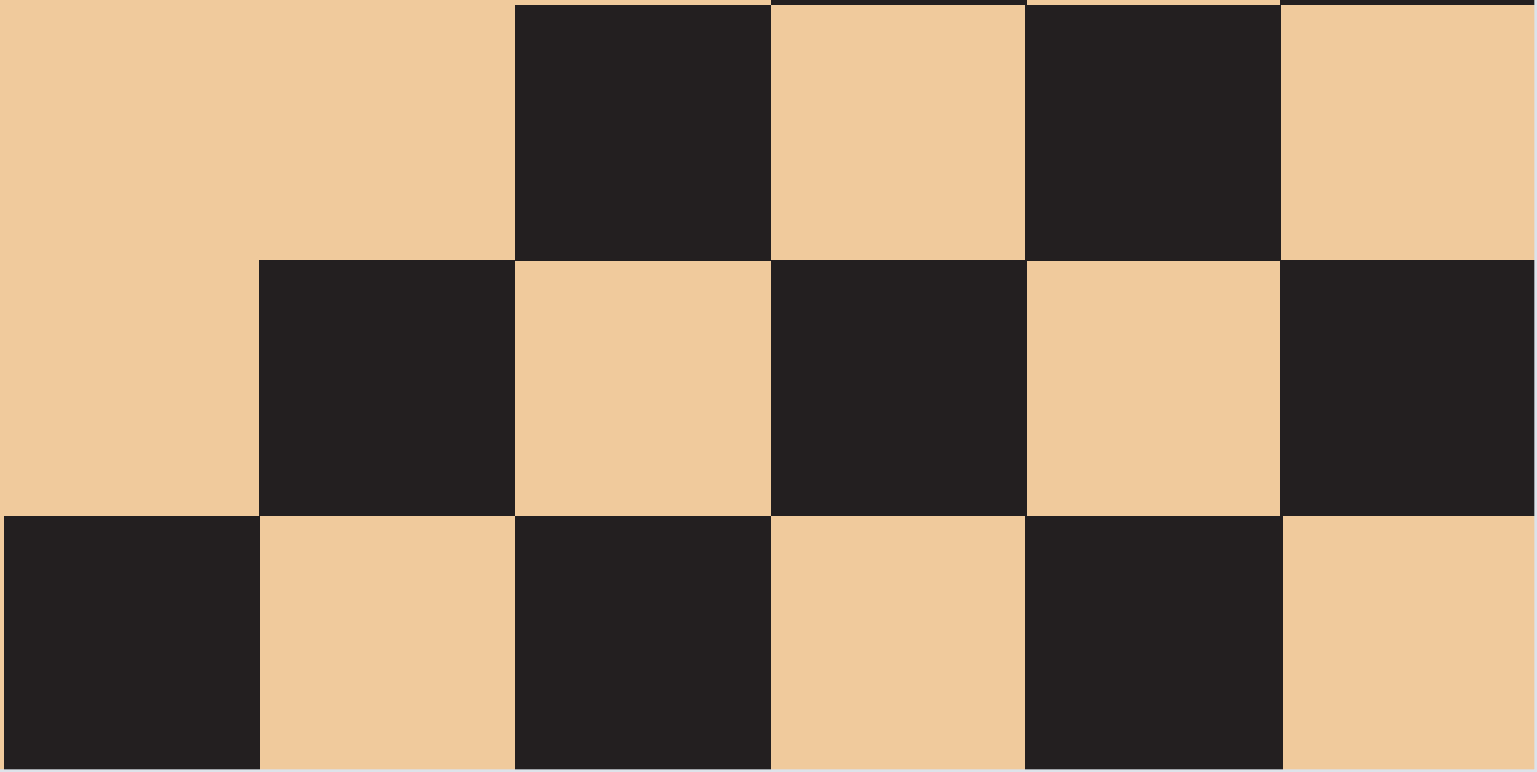




# Career Paths for Entry-Level IT Workers

**Findings from the  
Per Scholas  
WorkAdvance Program**

**OPRE REPORT  
2022-25  
MARCH 2022**





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**OPRE Report 2022-25**

**MARCH 2022**

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# Overview

## INTRODUCTION

The information technology (IT) industry is one of the largest and fastest-growing industries in the country and the median annual wage for jobs in the field is higher than the median annual wage for all jobs described by the U.S. Bureau of Labor Statistics.<sup>1</sup> Given the generally promising industry outlook, it is important to understand whether it offers employment opportunities that could improve the economic mobility of workers with low incomes. This paper highlights a program targeted at such a population: IT training offered by Per Scholas, a national nonprofit training and employment services provider, as part of the WorkAdvance initiative.

WorkAdvance is a sector-focused workforce development model that provides education and employment-related skills to adults looking to advance in the labor market. MDRC previously carried out an evaluation of WorkAdvance, which was funded by a 2010 federal Social Innovation Fund grant to the Mayor's Fund to Advance New York City and the Mayor's Office for Economic Opportunity (NYC Opportunity). An extended follow-up analysis of WorkAdvance was supported by funds provided by Robin Hood. Between 2011 and 2013, four providers, including Per Scholas, implemented the WorkAdvance model. Per Scholas's WorkAdvance program was designed to prepare participants for entry-level IT jobs, including help desk technicians and IT field technician positions, helping them enter and advance in this career field.

As part of the evaluation of WorkAdvance, MDRC assessed the impact of WorkAdvance programs, including Per Scholas, using a randomized controlled trial. The evaluation found that the Per Scholas WorkAdvance program led to large earnings gains over a roughly six- to eight-year follow-up period. These experimental findings suggest that Per Scholas's WorkAdvance program resulted in substantial job and career advancement.

This paper provides further insight into the Per Scholas WorkAdvance program by exploring the opportunities for advancement in two of the IT occupations targeted by the program. The paper describes potential advancement opportunities within the IT sector and documents the career advancement outcomes (as measured by earnings) of program participants. The paper was completed as part of the Building Evidence on Employment Strategies (BEES) project.

The discussion in this paper can help program providers and policymakers better discern whether IT training for entry-level workers is a worthwhile program area in which to invest. However, it is important to note that, unlike the experimental findings from the WorkAdvance evaluation, the participant outcomes discussed in this paper are descriptive and cannot be assumed to necessarily be the result of the Per Scholas WorkAdvance program.

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<sup>1</sup> Bureau of Labor Statistics, *Computer and Information Technology Occupations: Occupational Outlook Handbook* (Washington, DC: U.S. Department of Labor, 2020).

## PRIMARY RESEARCH QUESTIONS

This paper discusses potential career paths within the IT sector and describes the outcomes and employment trajectories of individuals who started a training targeting entry-level IT jobs. The research questions are:

- What are the requirements and prospects for help desk technician and IT field technician jobs?
- What are the characteristics and outcomes for individuals who started a training program targeting entry-level IT jobs?
- What are the potential benefits of offering training to prepare individuals for help desk technician and IT field technician jobs?

## PURPOSE

The promising outlook for the IT field as a sector projected to add jobs makes it important to understand whether there are employment opportunities in IT that could improve the economic mobility of adults who are unemployed or looking for higher-wage jobs. Policymakers and practitioners looking to implement sector programs may learn from this descriptive analysis as they consider whether their programs should also target entry-level IT jobs.

## KEY FINDINGS AND HIGHLIGHTS

Findings from this analysis show:

- **Most help desk technician and IT field technician jobs require some training beyond a high school diploma or GED, but not a college degree.** These education requirements may make these jobs accessible to a wider pool of individuals than other jobs that require more education.
- **Most participants completed Per Scholas's WorkAdvance IT training and obtained an industry-recognized certification.** These are necessary first steps to finding an IT job.
- **However, some participants did not obtain IT jobs.** A little over a third of participants who started Per Scholas's WorkAdvance IT training did not obtain an IT job, including some participants who completed the training and obtained an industry-recognized certification.
- **The IT sector offers many opportunities for advancement.** Workers can follow many different career paths. Additional certifications are typically required to advance into higher-level jobs.
- **Many participants who started Per Scholas's WorkAdvance IT training increased their earnings over time.** These earnings increases were due to participants transitioning from not working to working, working more consistently, or working jobs with more hours or higher earnings.

## **METHODS**

This paper draws on publicly available labor market data and information about IT career requirements and paths. It also uses several sources of data from the WorkAdvance evaluation, including a baseline survey, program tracking data, a two-year follow-up survey, unemployment insurance wage data provided by the New York State Department of Labor, and data from the National Directory of New Hires (a national database of wage and employment information overseen by the federal Office of Child Support Enforcement within the Administration for Children and Families). As noted above, all of the analyses in this paper are considered descriptive and do not represent the causal effects of Per Scholas's WorkAdvance program.

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The Authors

## INTRODUCTION

The information technology (IT) industry is one of the largest and fastest-growing industries in the country. Demand for IT workers is expected to grow by 11 percent between 2019 and 2029, which is forecast to add around 531,200 new jobs during that time. In addition, median annual earnings for IT workers are higher than median annual earnings for all occupations described by the U.S. Bureau of Labor Statistics.<sup>1</sup> A promising outlook for the IT field as a sector projected to add jobs makes it important to understand whether there are employment opportunities in IT that could improve the economic mobility of adults who are unemployed or looking for higher-wage jobs. This paper highlights a program targeted at such a population: the IT training offered by Per Scholas, a nonprofit training and employment services provider in the Bronx, New York, as part of the WorkAdvance evaluation.<sup>2</sup> Policymakers and practitioners looking to implement sector programs may learn from this analysis as they consider whether they should target entry-level IT occupations.

WorkAdvance is a sector-focused workforce development model that provides education and employment-related skills to adults looking to advance in the labor market. The WorkAdvance evaluation was originally funded by a 2010 Social Innovation Fund grant to the Mayor's Fund to Advance New York City and the Mayor's Office for Economic Opportunity (NYC Opportunity) and the model was developed with assistance from MDRC. An extended follow-up analysis of WorkAdvance was supported by funds provided by Robin Hood. This paper is funded by the U.S. Department of Health and Human Services as part of the Building Evidence on Employment Strategies (BEES) project (see Box 1).

Between June 2011 and June 2013, four providers (including Per Scholas), implemented the WorkAdvance model. Their programs were evaluated using a randomized controlled trial in which individual participants were assigned at random to either the WorkAdvance (program) group or the control group. By comparing the outcomes of the two research groups over time, the study could confidently attribute any differences in outcomes to the WorkAdvance programs.

As part of WorkAdvance, the providers chose which sectors to target based on their own experience, local labor market demand, and potential for advancement within the sector. The providers offered occupational skills training to prepare individuals for specific occupations within the sectors they targeted. Per Scholas sought to prepare participants for entry-level IT jobs, including help desk technician and IT field technician positions.<sup>3</sup> Per Scholas had sub-

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1 Bureau of Labor Statistics (2020a).

2 Per Scholas's IT training was the most common training attended by WorkAdvance participants.

3 This paper focuses on these two occupations, which were identified as the main jobs Per Scholas targeted during the WorkAdvance evaluation. Per Scholas targets a few other occupations as well. All of the program's target occupations fall under two major occupation groups as defined by the 2018 Standard Occupational Classification (SOC) system: Computer and Mathematical Occupations (SOC 15-0000) and Installation, Maintenance, and Repair Occupations (SOC 49-0000).

### **Box 1. Overview of the Building Evidence on Employment Strategies (BEES) Project**

As part of the Office of Planning, Research, and Evaluation's (OPRE) Innovative Strategies for Addressing Employment Barriers Portfolio (within the Administration for Children and Families), the BEES Project is actively coordinating with the Next Generation of Enhanced Employment Strategies (NextGen) Project. Through this portfolio, OPRE seeks to build on the lessons learned from and gaps in knowledge revealed through previous or current studies of interventions that connect individuals to the labor force, and identify and rigorously evaluate the "next generation" of employment strategies. As part of this portfolio, OPRE is partnering with the Social Security Administration (SSA) to incorporate a focus on employment-related early interventions for individuals with current or foreseeable disabilities who have limited work history and are potential applicants for Supplemental Security Income. SSA is providing financial and technical support for the evaluation and/or service provision of select interventions within the BEES and NextGen Projects.

stantial experience operating an IT sector training and employment program before joining the WorkAdvance evaluation. For the preceding 10 years, the organization had already been implementing most components of the WorkAdvance model, with the exception of the added career advancement and postemployment services.

Findings from the evaluation's impact analysis showed that Per Scholas's WorkAdvance program led to large earnings gains over a roughly six- to eight-year follow-up period. For example, in the last year of follow-up, individuals in the WorkAdvance group earned \$6,281 more, on average, than individuals in the control group (see Box 2 for more information on the evaluation's impact findings). These findings suggest that Per Scholas's WorkAdvance program resulted in substantial job and career advancement.

This report investigates this question further by describing the opportunities for advancement in two of the IT occupations targeted by the program. It offers an overview of the requirements and prospects for help desk technician and IT field technician jobs. This includes an analysis of the projected demand growth and average earnings for these jobs, their education and other requirements, and further training individuals may pursue to advance into higher paying jobs. A detailed description of the Per Scholas WorkAdvance program follows, describing the characteristics and outcomes of participants who started Per Scholas's training as part of the WorkAdvance evaluation. The final section summarizes the potential benefits of offering training to prepare individuals for these occupations.

## Box 2. Long-Term Economic Impacts of Per Scholas's WorkAdvance Program

The WorkAdvance evaluation rigorously assessed the effectiveness of the Per Scholas WorkAdvance program and found that the program led to sizable long-term earnings gains. Employment and earnings data covering 2017 and 2018 were collected from the National Directory of New Hires for the long-term impact analysis. Depending on when individuals entered the study, this two-year period occurred between four and eight years after they were randomly assigned.\*

Key findings for the Per Scholas WorkAdvance program include:

- WorkAdvance group members at Per Scholas had higher earnings than the control group in 2017 and 2018. In 2018, WorkAdvance group members earned \$6,281 (20 percent) more, on average, than control group members. Earnings gains of this size are rarely seen in random assignment studies of workforce programs.
- WorkAdvance group members were 6 percentage points more likely than control group members to have earned \$30,000 or more in 2018.
- There were no statistically significant impacts on employment in either year. Because Per Scholas's WorkAdvance program increased earnings without increasing employment, it is likely that WorkAdvance group members are advancing into positions with higher wages over time (and were not just more likely to be working), one of the main goals of the WorkAdvance model.

NOTE: \*See Schaberg and Greenberg (2020) for more information.

## OVERVIEW OF HELP DESK TECHNICIAN AND IT FIELD TECHNICIAN JOBS

This section describes the skill requirements and responsibilities of help desk technicians and IT field technicians, provides some projections of demand and average earnings, and highlights career growth possibilities for each occupation.<sup>4</sup>

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4 The target occupations are both commonly referred to by other names. For this paper, these occupations were classified based on the Bureau of Labor Statistics 2018 Standard Occupational Classification (SOC) system. Help desk technicians fall within SOC 15-1232: computer user support specialists and IT field technicians fall within SOC 49-2011: computer, automated teller, and office machine repairers. Bureau of Labor Statistics (2018).

## Job Characteristics

Help desk technicians and IT field technicians are both entry-level jobs in the IT sector. The two positions require similar skills and ask individuals to perform similar tasks, though there are some differences between them.

Help desk technicians provide technical support and troubleshooting directly to computer users. They listen to users' computer issues, try to diagnose problems, and then walk users through the steps needed to fix their problems. Examples include helping connect a computer to the internet or recovering a deleted document. Help desk technicians may also train users on how to use new hardware or software. In many cases, help desk technicians provide remote support to computer users. Help desk technicians work for many types of employers, from large software companies and support services firms to call centers.<sup>5</sup>

IT field technicians also provide technical support and troubleshooting to users, but they often work on-site to help install, repair, and maintain computers and other machines. They diagnose problems and complete repairs themselves. IT field technicians are also often responsible for showing users how to use equipment.<sup>6</sup>

Many help desk technician and IT field technician jobs are full-time and require individuals to work regular daytime shifts. However, since computers and technology are often vital to companies' daily operations, these jobs may require people to work nights and weekends.

## Demand and Average Earnings

Figures 1 and 2 show estimates of the projected demand and average earnings for help desk technicians and IT field technicians.<sup>7</sup> Estimates of average earnings are provided at the national level—to get a sense of the overall trends for these jobs—and for the New York-Newark-Jersey City metropolitan area—because Per Scholas is located in the Bronx, New York.<sup>8</sup> Estimates of projected demand are available at the national level only.

Demand for help desk technicians nationally is projected to grow by 8 percent between 2019 and 2029, faster than the national average for other jobs. However, demand for IT field technicians is projected to decline by around 1 percent within this time period.<sup>9</sup> Help desk technicians earned \$56,550 and IT field technicians earned \$42,070, according to 2019 national average fig-

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5 Bureau of Labor Statistics (n.d.).

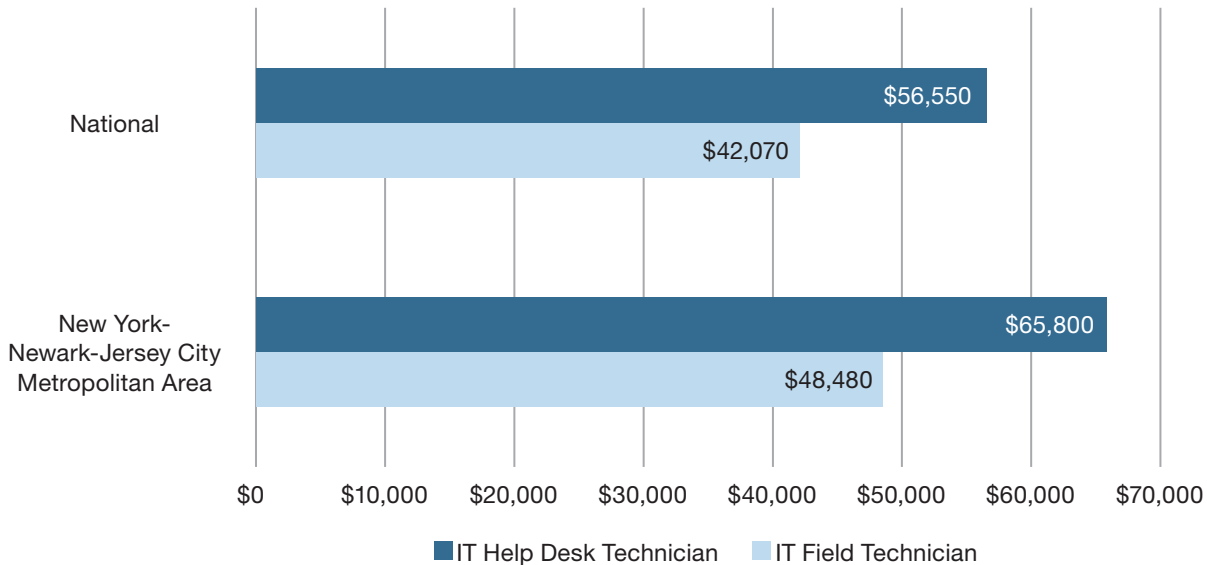
6 O\*NET OnLine (2019).

7 Some of the labor market data used in this section was pulled from O\*NET. Help desk technician is referred to as “Computer User Support Specialist” on O\*NET, and IT field technician is referred to as “Computer, Automated Teller, and Office Machine Repairers.”

8 These estimates are based on the New York-Newark-Jersey City, NY-NJ-PA Metropolitan Statistical Area, as defined by the U.S. Office of Management and Budget.

9 Bureau of Labor Statistics (2020c).

**Figure 1. IT Help Desk Technician and IT Field Technician Average Annual Earnings by Geographic Area**



SOURCES: Data collected from the U.S. Bureau of Labor Statistics (May 2019) and O\*NET.

ures.<sup>10</sup> The differences in demand and earnings across jobs suggest some entry-level IT jobs may be better targets for sector-focused employment programs than others.

## Required Skills and Certifications

Most help desk technician and IT field technician jobs require a basic knowledge of computers and some postsecondary training, but do not require a postsecondary degree.<sup>11</sup> For individuals hoping to enter these occupations, various certifications demonstrate their requisite knowledge to potential employers. These certifications are industry-recognized and can be earned through several vendors; some employers look for candidates with specific certifications.<sup>12</sup> For example, one analysis of job posting data found that one out of every five IT help desk jobs required the CompTIA A+ certification.<sup>13</sup>

In addition to technical skills, these jobs also typically require strong soft skills, such as communication and customer service skills, since individuals are interacting directly with computer users and clients. One analysis showed that in technical fields, including IT, about 25 percent of

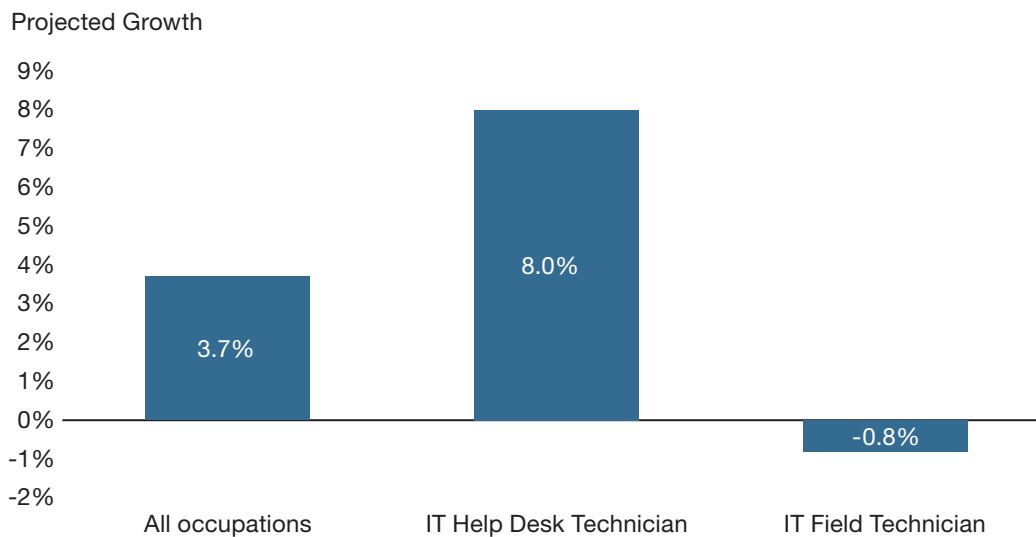
<sup>10</sup> Bureau of Labor Statistics (2020b).

<sup>11</sup> Bureau of Labor Statistics (n.d.) and Restuccia (2016).

<sup>12</sup> There are no state or national requirements for these certifications or occupations.

<sup>13</sup> Markow, Restuccia, and Taska (2017).

**Figure 2. Projected Job Demand Growth, 2019-2029, by Occupation**



SOURCES: Data collected from the Employment Projections program, U.S. Bureau of Labor Statistics and O\*NET.

the desired skills in job postings are soft skills.<sup>14</sup> In general, job candidates cannot demonstrate these skills through professional certifications or credentials.

## Career Paths

Advancement within the IT sector is common, but it depends on frequent acquisition of new skills by IT workers. In most cases, individuals must obtain additional certifications to demonstrate their qualifications to employers and advance into higher paying jobs.

There are several career paths individuals could follow after working as a help desk technician or IT field technician.<sup>15</sup> Appendix Figure A.1 shows an example of one IT career path—the IT Support Specialist Pathway. In this career path, individuals start as help desk technicians or IT field technicians and advance to technical support specialists and eventually to technical support managers (these jobs often go by other titles, as shown in the figure). Median salaries increase at each step along the career path.<sup>16</sup>

<sup>14</sup> Burning Glass Technologies (2015).

<sup>15</sup> At Per Scholas, individuals tend to follow four career pathways: help desk, system administration, security, and cloud pathways. Not all of these pathways were targeted by Per Scholas during the WorkAdvance evaluation.

<sup>16</sup> The earnings shown in Appendix Figure A.1 differ from the earnings shown in Figure 1 because they are based on different data sources. Additionally, Appendix Figure A.1 shows median annual earnings, while Figure 1 shows average annual earnings.



The example career path presented in Appendix Figure A.1 shows professional certifications offered by CompTIA, an IT trade association, which may help workers advance into higher-level jobs.<sup>17</sup> The CompTIA Network+ and CompTIA Security+ certifications may help someone advance from a help desk technician to a technical support specialist. The Network+ certification establishes a foundational understanding of networking concepts and the Security+ certification establishes a foundational understanding of cybersecurity. Individuals can supplement the skills gained in CompTIA courses and certifications with additional certifications offered by Microsoft and ITIL.<sup>18</sup>

## PER SCHOLAS'S WORKADVANCE PROGRAM

Per Scholas is one of four providers that implemented the WorkAdvance model as part of the evaluation. The model has five main components: intensive screening prior to enrollment to ensure applicants have the necessary academic and other skills to complete the training and obtain employment, career readiness services, occupational skills training leading to a credential, job development and placement services, and postemployment retention and advancement services. Per Scholas already implemented most of the components of the WorkAdvance model and added career advancement and postemployment services for the evaluation. This section describes Per Scholas's WorkAdvance program. (See Box 3 for more information about Per Scholas's mission.)

### Box 3. Per Scholas's Mission and Equity Focus

Per Scholas's mission is "to advance economic equity through rigorous training for tech careers, and to connect skilled talent to leading businesses." The organization does this by providing no-cost technical training to individuals and then connecting graduates directly with employers. Per Scholas also seeks to create a more diverse technical workforce by recruiting and training individuals who are currently underrepresented in the industry. According to the organization's internal data, 87 percent of graduates are people of color, one-third are women, and one-third are young adults. For more information about Per Scholas's mission and focus on equity, see the organization's website (<https://perscholas.org/about/>) and its Diverse by Design initiative (<https://perscholas.org/ideas/diversebydesign/>).

**TARGET OCCUPATIONS.** Per Scholas designed its WorkAdvance program and training offerings based on current labor supply, market demand, and knowledge of the IT industry.<sup>19</sup> Two targeted occupations were help desk technicians and IT field technicians. Per Scholas selected these occupations during the WorkAdvance 2010-2013 study planning and intake period, based on

17 In many cases, IT career pathways map to a vendor-specific set of certifications. CompTIA (n.d.-c).

18 ITIL certifications, which are managed by AXELOS, demonstrate skills related to IT service management practices.

19 Hendra et al. (2016).



characteristics including projected growth in demand, opportunities for advancement, job entry requirements (for example, not needing a college degree), pay rates, and benefits.

**INTENSIVE SCREENING.** Per Scholas used some education- and skill-based criteria to screen program applicants. Applicants needed a high school diploma or GED, and Tests of Adult Basic Education (TABE) scores at the tenth grade level or higher.<sup>20</sup> These requirements ensured that applicants had the minimum skills necessary to succeed in the IT industry, as most employers use similar screening criteria. Per Scholas also required applicants to demonstrate that they had the necessary financial support in place to allow them to attend a full-time training program.

**CAREER READINESS SERVICES AND OCCUPATIONAL SKILLS TRAINING.** Once enrolled at Per Scholas, participants attended a full-time 15-week training to learn the requisite skills for their target jobs. For four days each week, participants learned technical skills for core competency including networking, computer hardware, security, and software. The fifth day was dedicated to career readiness training, where participants developed their twenty-first century skills—skills that make for an effective employee. These include time management, communication, and other workplace readiness skills, such as how to write a resume.<sup>21</sup> The training, done at Per Scholas’s office in the Bronx, was grouped by intake cohorts of about 20 students and was led by instructors employed by the organization.

At the end of Per Scholas’s WorkAdvance training, participants took two tests for the CompTIA A+ certification, the starting point for many careers in the IT sector. The tests cover basic skills, such as baseline security skills, basic IT infrastructure and networking, and basic data backup and recovery methods.<sup>22</sup>

**SUPPORT SERVICES.** Per Scholas offered a range of support services to help participants engage in and complete the 15-week training. These services included referrals to outside organizations (for example, for help with services such as clothing, transportation, and credit counseling), as well as ongoing individual coaching. If, for example, participants were showing up late or were not dressed appropriately, staff members worked with them to address the issue. Because Per Scholas’s WorkAdvance training was offered in-house, staff members regularly interacted with participants and supported them directly.

**JOB DEVELOPMENT AND PLACEMENT SERVICES.** In the last few weeks of occupational skills training, job developers—full-time Per Scholas staff members who work on site—began meeting with participants to start preparing them for their upcoming job search. The developers presented participants with job opportunities and helped them schedule interviews. Per Scholas drew on strong relationships with prospective employers and sought individualized job matches between employers and participants. These job developers were a crucial link between the program and employers and helped maximize the chances that participants would find jobs that offered good pay, security, and advancement opportunities.

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20 This cutoff was lowered to the 9.5 grade level halfway through the WorkAdvance study enrollment period. See Tessler et al. (2014).

21 For more information, see Schaberg (2019).

22 CompTIA (n.d.-a).

**POSTEMPLOYMENT RETENTION AND ADVANCEMENT SERVICES.** WorkAdvance was designed to help participants obtain initial jobs within sectors that had viable career paths. Per Scholas continued to work with participants after they obtained jobs by providing postemployment and advancement services. Per Scholas staff followed up with participants via phone calls and one-on-one meetings during the first 90 days of employment, and then quarterly thereafter. Staff members continued reaching out to participants for about two years after they completed the program and remained available to participants who sought additional support after this two-year period. Participants were also invited to on-site workshops and other alumni events.

**CHANGE OVER TIME.** Per Scholas adapted its WorkAdvance training program as the IT industry changed. For example, based on employer and labor market input, Per Scholas developed a unit that trained participants on the repair and programming of handheld devices, such as tablets and smartphones.

## **CHARACTERISTICS AND OUTCOMES OF PARTICIPANTS WHO STARTED PER SCHOLAS'S WORKADVANCE TRAINING**

As part of the WorkAdvance evaluation, 349 individuals were invited to participate in Per Scholas's IT training and to receive all of the other services offered as part of the program.<sup>23</sup> Almost all—334, or 96 percent—of those individuals started Per Scholas's IT training, meaning they attended at least one day of training.

This section describes the characteristics of these individuals at the time they began the Per Scholas WorkAdvance program. This section also presents information on whether individuals completed the training, obtained credentials, and found jobs in the IT sector. These results provide insight into whether this type of training is suitable and obtainable for the population targeted by Per Scholas. Finally, an analysis of participants' employment and earnings trajectories shows whether they were able to increase their wages over time and whether certain types of participants were more likely to experience earnings increases. All of the analyses presented in this section are descriptive (because they are only among individuals who started Per Scholas's WorkAdvance program) and do not represent the causal effects of Per Scholas's WorkAdvance program.<sup>24</sup>

### **Participant Characteristics**

Individuals enter training programs with varying backgrounds and needs. Knowing who is likely to participate in trainings like the one provided by Per Scholas can help policymakers and

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23 Per Scholas randomly assigned 690 individuals as part of the WorkAdvance evaluation. Roughly half (349) were assigned at random to the WorkAdvance program group, and the other half (341) were assigned at random to the control group. WorkAdvance group members were eligible to participate in the Per Scholas program.

24 The analyses presented are not shown relative to the outcomes of a control group, as was done in the evaluation's impact analysis. See Hendra et al. (2016) and Schaberg and Greenberg (2020) for more information on the causal effects of Per Scholas's WorkAdvance program.

practitioners determine the services—including support services—they should offer to meet the needs of the individuals they serve. Per Scholas’s WorkAdvance program targeted adults with a family income below 200 percent of the federal poverty level. These adults had to be currently unemployed or, if employed, had to be earning less than \$15 per hour. As mentioned, Per Scholas imposed a few additional education-based eligibility requirements for entry into its IT training. Appendix Table A.1 shows the characteristics of individuals who started the IT training at Per Scholas as part of the WorkAdvance evaluation.

The average individual was 30 years old, male, and identified as either Latino or Hispanic or Spanish, or Black or African American.<sup>25</sup> Three-quarters of the sample participants had no children at study entry.<sup>26</sup>

Most participants had worked prior to entering the study (95 percent), but only 10 percent were currently employed. Although all participants had the required GED certificate or high school diploma, less than 30 percent had a two- or four-year college degree. This is generally consistent with the educational requirements of the targeted occupations. Few trainees had previous education or work experience in the IT sector: less than 3 percent of participants already had a license or certificate in the IT sector and less than 6 percent had ever had an IT job.

Many individuals also faced barriers to employment. For example, over half of participants had been out of work for more than six months. Some participants had also previously been involved with the criminal justice system: 9 percent had previously been convicted of a crime and 5 percent had previously been incarcerated.

## Participation Outcomes

Appendix Table A.2 shows several participation-related outcomes for the individuals who started Per Scholas’s WorkAdvance training. The first set of outcomes is based on program tracking data provided by Per Scholas and covers the first 18 months after each individual entered the study. The second set of outcomes is based on the WorkAdvance Year 2 survey and covers a roughly two-year follow-up period. Overall, the findings show that most participants completed the IT training and obtained an IT certification, suggesting that this type of IT training is suitable for Per Scholas’s targeted population.

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25 The WorkAdvance Baseline Information Form asked individuals whether they considered themselves to be White, Latino/Hispanic/Spanish, Black or African American, Asian or Pacific Islander, American Indian or Alaska Native, or some other race. Individuals were instructed to select one or more of these categories.

26 The demographic breakdowns of the sample differ somewhat from the breakdowns of workers in New York City’s tech industry more broadly. One analysis found 44 percent of New York City workers in the tech industry were under age 35, 40 percent were female, and 62 percent were White. Forman (2015).

Eighty-two percent of individuals who started Per Scholas's WorkAdvance training completed the 15-week course.<sup>27</sup> Over 75 percent of individuals who started the training obtained the CompTIA A+ certification.<sup>28</sup>

These are relatively high rates of training completion and credential attainment compared with similar programs. For example, an evaluation of a different sectoral training program, Project QUEST, focused on the health care sector, found that 66 percent of participants completed the training and 40 percent earned a health care certification. (There are notable differences between training programs focused on the health care field versus the IT field, such as program prerequisites and skills taught, that could influence completion rates.)<sup>29</sup> The high rates for Per Scholas's WorkAdvance program likely reflect a number of factors, including the program's extensive initial screening for motivation and academic skills as part of the WorkAdvance evaluation; Per Scholas's check that applicants would be able to support themselves financially while in the full-time training; and the fact that Per Scholas delivered training classes on-site, which allowed staff to develop relationships with and provide support to participants.<sup>30</sup>

It is also important to highlight that not all participants reached these milestones. Around 18 percent of participants dropped out of the program after starting occupational skills training but before completing it, and 6 percent dropped out after completing occupational skills training but before obtaining a certification. This suggests Per Scholas and similar programs may need to adjust or enhance their services to help more participants stay engaged in and complete the program.

Some participants went on to obtain higher-level IT certifications beyond the A+ certification. In most cases, these certifications were offered outside of Per Scholas's main WorkAdvance training and participants had to express specific interest in obtaining them. The most common additional certification obtained by participants was the CompTIA Network+ certification, earned by 22 percent of program participants. This certification demonstrates an individual's knowledge of networking concepts, security, troubleshooting, and operations, among other skills, and opens up additional job opportunities.<sup>31</sup> Other certifications less commonly earned by participants included the Microsoft Certified Technology Specialist (MCTS) certification (7 percent) and the Microsoft Certified IT Professional (MCITP) certification (1 percent).<sup>32</sup> It is possible that more participants obtained these and other higher-level IT certifications beyond the 18-month follow-up period captured by the program tracking data.<sup>33</sup>

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27 A separate analysis looking at WorkAdvance group members at Per Scholas who dropped out of any training (and not just the Per Scholas WorkAdvance training) showed the most common reasons individuals dropped out were that they found a job or needed to work. See Table 3.3 in Hendra et al. (2016).

28 Per Scholas covered these exam fees.

29 Roder and Elliott (2019).

30 Tessler et al. (2014).

31 CompTIA (n.d.-b).

32 Microsoft (n.d.-b); Microsoft (n.d.-a).

33 This information is not available from the WorkAdvance Year 2 survey. The survey asked respondents whether they had obtained any IT certification, but did not ask whether respondents obtained specific IT certifications.

## Employment Outcomes

Appendix Table A.3 shows employment outcomes from the WorkAdvance Year 2 survey, which was administered approximately 18 to 24 months after each participant entered the study. These outcomes provide some descriptive evidence on whether individuals were able to obtain jobs—both overall and within the IT sector—and on the types of jobs they obtained.<sup>34</sup> The findings show that many participants obtained IT jobs, suggesting that the services and training offered by the Per Scholas WorkAdvance program are sufficient preparation for entry-level IT jobs.

Almost all—96 percent—of the individuals who started training reported ever working since they enrolled in the study, and over 75 percent reported working around two years after entering the program (Appendix Table A.3). These employment rates include jobs obtained in the IT sector and jobs obtained in other sectors.

Per Scholas’s WorkAdvance program was designed to help individuals not just obtain any job, but rather to obtain a good quality job in the IT sector with high hourly wages (defined in the original evaluation, which ran from 2011-2013, as \$15 per hour or more) and benefits. The findings show that some, but not all, participants obtained such jobs. Around 63 percent of participants reported working in the IT sector; this is lower than the overall rate of employment, meaning some participants got jobs in other sectors.

Some evidence is available on the quality of the jobs obtained by participants. On average, participants worked 35 hours per week (which is defined as full-time in the WorkAdvance evaluation) and had an hourly wage of \$15.70. Around 65 percent of participants had a job with an hourly wage above \$15, the threshold used to indicate quality jobs in the WorkAdvance evaluation. Fewer than half the program participants were offered health insurance through their employer, 74 percent worked a regular shift, and 72 percent worked a regular permanent job.

Figure 3 shows participants’ average annual earnings based on administrative data (state unemployment insurance wage data) in the five years after they entered the Per Scholas WorkAdvance program. Participants earned \$8,843, on average, in the year after they entered the program (“Year 1”). Most participants were likely out of the workforce for at least part of this year, as they were attending the 15-week training and then looking for jobs. As expected, over the following four years (“Year 2” through “Year 5”), a time when most participants were out of training and were instead working and trying to advance, participants’ average annual earnings increased to over \$28,000.

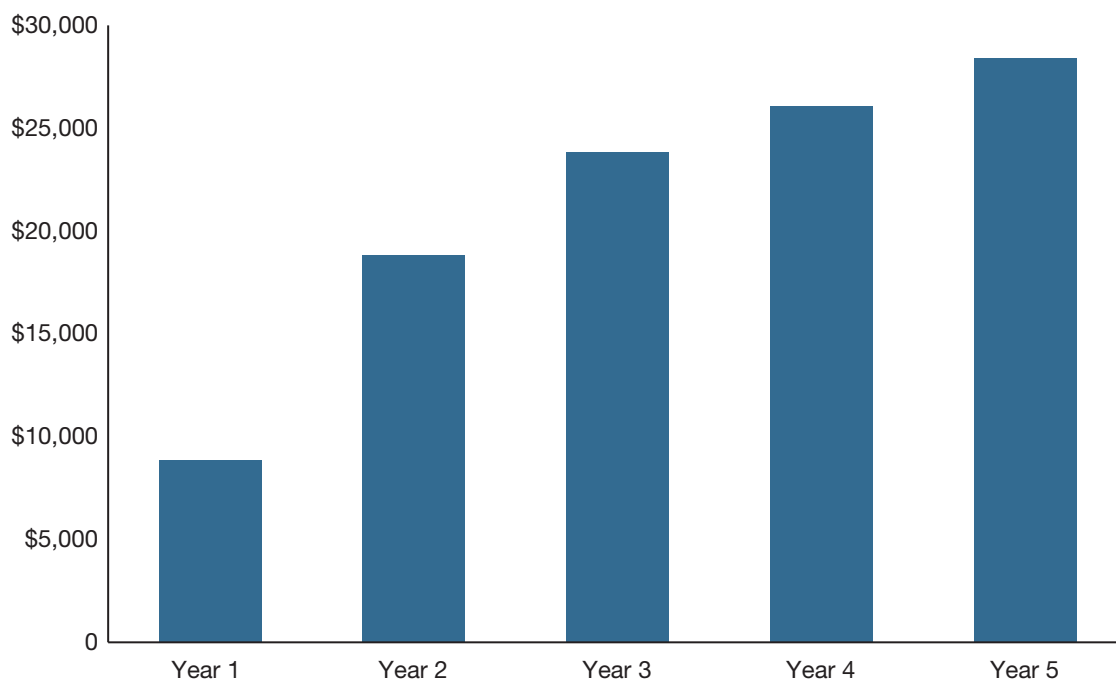
It may be surprising that these annual earnings amounts are not higher given that the average annual earnings for help desk technician and IT field technician jobs in the New York City metropolitan area are both over \$48,000 (as discussed earlier). There are several reasons for this. First, the average earnings presented in this section are among all individuals who started the

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34 These outcomes do not represent the causal effects of Per Scholas’s WorkAdvance program. Still, they provide information on what the average Per Scholas WorkAdvance participant could expect in terms of employment and job characteristic outcomes.

**Figure 3. Average Annual Earnings Among Individuals Who Started Per Scholas's WorkAdvance IT Training**

Average Annual Earnings



SOURCE: MDRC calculations from administrative data provided by the New York State Department of Labor.

Per Scholas WorkAdvance training—that is, individuals who did not work in a given year are counted as having \$0 in earnings in that year. In addition, even among those who were working in a given year, not everyone was working a job in IT. It is possible that some individuals obtained lower paying jobs in other sectors (the administrative data do not provide information on which sector individuals were working in). Finally, most participants who did find IT jobs were still relatively new to the industry, whereas the average earnings for New York City workers overall include both new employees and workers with substantial industry experience. Given these reasons, the observed increase in annual earnings over time is still positive.

## Employment and Earnings Trajectories

The previous section showed that the average earnings for all participants increased from Year 1 to Year 5. This section explores those results in more detail. It shows the proportion of participants who increased their earnings over time, and assesses whether specific participant characteristics are associated with positive earnings trajectories. This analysis compares participants' employment statuses and average annual earnings amounts between two time periods—Year 3 and a longer-term snapshot (a one-year period occurring between Year 5 and Year 8, depending



on when individuals entered the study).<sup>35</sup> During both time periods, participants were expected to be working and also trying to advance into higher-level jobs, perhaps by attending additional trainings or obtaining additional certifications.

Many participants increased their earnings over time. However, the analysis did not find strong evidence that earnings growth varied with participant characteristics. This suggests that training programs focused on the IT sector may be able to help improve the economic mobility of many types of adults looking for work or for jobs with higher wages.

Around two-thirds of participants (68 percent) experienced an increase in their annual earnings between Year 3 and the long-term follow-up period, and 32 percent increased their annual earnings by \$15,000 or more (Table 1).<sup>36</sup> The 11 percent of participants in the “became employed” group transitioned from not working to working. The remainder, however, increased their earnings by obtaining jobs offering higher earnings, working more hours, or working more consistently.

Thirty-two percent of participants did not increase their earnings between Year 3 and the long-term follow-up period: 7 percent did not work in either period, 9 percent moved from employed to not employed, and 16 percent continued working but experienced a decrease in their earnings.

Table 2 presents selected baseline characteristics separately for participants whose earnings increased between Year 3 and the long-term follow-up period and for those whose earnings did not increase. The findings suggest that similar programs seeking to place disadvantaged populations in IT jobs can achieve success with a range of participants.

The table shows that the two groups did not differ, on average, across most of the selected participant characteristics. For example, among those who did not increase their earnings, 13 percent were female, while among those who did increase their earnings, 12 percent were female. The

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35 The long-term follow-up period captures a different relative year of follow-up based on data availability. Enrollment for the study lasted from June 2011 to June 2013. The long-term follow-up period captures outcomes for calendar year 2018. For participants who entered the study in June 2011, 2018 corresponds to the second half of Year 7 and the first half of Year 8. For participants who entered the study between April and June 2013, 2018 corresponds to the second half of Year 5 and the first half of Year 6. The Year 3 outcomes are based on state unemployment insurance (UI) wage records obtained from the New York State Department of Labor. The long-term follow-up period outcomes are based on wage records collected from the National Directory of New Hires (NDNH), a national database of wage and employment information overseen by the federal Office of Child Support Enforcement within the Administration for Children and Families. There are a few differences in coverage between the two data sources. For example, state UI wage data only contain employment and earnings records for employers in that state, while NDNH data contain employment and earnings records for employers in all 50 states. This may lead to reporting differences if many participants work out of state (for example, in New Jersey and Connecticut). Additionally, while both data sources include workers who are covered by unemployment insurance, the NDNH data also include federal workers and, from some states, workers who are self-employed. See Czajka, Patnaik, and Negoita (2018) for more information.

36 All earnings amounts were converted to constant (2018) dollars to control for inflation using the Consumer Price Index Inflation Calculator ([https://www.bls.gov/data/inflation\\_calculator.htm](https://www.bls.gov/data/inflation_calculator.htm)).

**Table 1. Change in Average Annual Earnings Between Year 3 and Long-Term Follow-Up Period, Among Individuals Who Started Per Scholas' WorkAdvance IT Training**

OUTCOME	LONG-TERM FOLLOW-UP PERIOD COMPARED WITH YEAR 3
Average change in earnings (\$)	12,738
No earnings increase (%)	32
Not employed in either follow-up period	7
No longer employed	9
Earnings decreased	16
Earnings increase (%)	68
Became employed	11
Earnings increased by \$1-7,999	16
Earnings increased by \$8,000-14,999	9
Earnings increased by \$15,000 or more	32
Sample size	334

SOURCES: MDRC calculations based on administrative data provided by the New York State Department of Labor and the National Directory of New Hires.

NOTES: The long-term follow-up period is calendar year 2018.  
All earnings amounts were converted to 2018 dollars.

one exception is race and ethnicity. Participants who increased their earnings were more likely to be Black or African American than participants who did not increase their earnings, and less likely to be Latino or Hispanic or Spanish, and White.<sup>37</sup>

## SUMMARY

This paper gave an overview of help desk technician and IT field technician jobs and provided some descriptive evidence on the characteristics and outcomes of participants who attended a training program—Per Scholas's WorkAdvance IT training—to prepare for these occupations. Since the IT industry is among the largest and fastest-growing industries nationwide, it is important to understand the potential benefits of training individuals with low incomes for IT jobs and to assess whether current and future sector programs serving such populations should target entry-level IT jobs.

<sup>37</sup> Participants who identified as Black or African American had lower average earnings in the quarter before they entered the WorkAdvance study and Per Scholas program than participants who identified as Latino, Hispanic, and Spanish, or White.



**Table 2. Baseline Characteristics of Outcome Groups Based on Change in Average Earnings Between Year 3 and the Long-Term Follow-Up Period**

CHARACTERISTIC (%)	OUTCOME GROUP	
	NO EARNINGS INCREASE	EARNINGS INCREASE
Age (years)		
18-24	33	35
25-34	39	38
35-44	15	17
45 or older	13	10
Female	13	12
Race/ethnicity		*
Latino or Hispanic or Spanish	43	36
Black or African American	35	49
White	9	5
Other race <sup>a</sup>	13	10
Highest level of education		
High school diploma/GED	73	71
Associate's degree, bachelor's degree, or higher	27	29
Has a child in the household	17	16
Ever employed	95	95
Currently employed	10	10
Unemployed six months or more	56	52
Sample size (N)	108	226

SOURCES: MDRC calculations based on data collected in the WorkAdvance Baseline Information Survey, and administrative data provided by the New York State Department of Labor and the National Directory of New Hires.

NOTES: The long-term follow-up period is calendar year 2018.

Chi-square tests were used to assess the difference in average characteristics between outcome groups. Statistical significance levels are indicated as follows: \*\*\* = 1 percent; \*\* = 5 percent; \* = 10 percent.

<sup>a</sup>Other race includes sample members who identified as non-Hispanic and listed Asian or Pacific Islander, Alaska Native or American Indian, or Other as their race, including sample members who answered multiracial.

## Important Findings

- **Most help desk technician and IT field technician jobs require some training beyond a high school diploma or GED, but not a college degree.** These education requirements may make these jobs accessible to a wider pool of individuals than some other jobs that require college degrees. Per Scholas’s WorkAdvance program required applicants to have a high school diploma or GED and an interest in the IT sector but did not require any prior education or work experience in the field. By the end of Per Scholas’s WorkAdvance training, participants could earn a professional certification to demonstrate their readiness for entry-level jobs. One analysis identified help desk technicians as one of several promising occupations for low-income individuals to go into based on its short-term education requirements and projected job demand growth.<sup>38</sup>
- **Most participants completed Per Scholas’s WorkAdvance IT training and earned an industry-recognized certification.** Over 75 percent of individuals who started the Per Scholas WorkAdvance IT training completed the training and earned the CompTIA A+ certification. These are critical first steps towards getting an entry-level IT job. This is a relatively low dropout rate compared with similar programs and may reflect the support provided by the Per Scholas WorkAdvance program, including ongoing coaching for participants during training.
- **Not all participants obtained jobs in the IT sector.** Around two-thirds of participants who started the Per Scholas WorkAdvance IT training got an IT job. This is lower than the rate of individuals who earned the CompTIA A+ certification (75 percent), suggesting that obtaining an IT certification did not guarantee placement into an IT job. Future training programs may need to provide additional job placement support and services—above what the Per Scholas WorkAdvance program offered—to help more participants secure IT jobs.
- **The IT sector offers many opportunities for advancement. Additional certifications are typically required to advance into higher-level jobs.** There are many possible career paths for people who take help desk technician and IT field technician jobs, depending on their interests. One analysis classified IT jobs as “springboard jobs,” meaning they offer opportunities for advancement and the foundation of careers.<sup>39</sup> However, the certifications typically associated with higher-paying jobs generally require additional training and come with fees. It may be difficult for some individuals to train for additional certifications without the financial and other supports provided by a program like Per Scholas.
- **Many participants who started Per Scholas’s WorkAdvance training increased their earnings over time.** Over two-thirds of participants increased their earnings between the third year after they entered the study and the long-term follow-up period (a one-year period occurring between five and eight years after participants entered the program, depending on when they entered). Thirty-two percent of participants increased their earnings by at least

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38 Matri (2015).

39 Lamback, Gerwin, and Restuccia (2018).

\$15,000 in that period. This trend is consistent with analyses of advancement among individuals who work as help desk technicians. According to an analysis of resume data, over 20 percent of help desk technicians advance into higher paying jobs in the IT sector within five years.<sup>40</sup>

These findings indicate that IT training programs targeted at entry-level jobs can be used to improve the economic mobility of workers. Future reports will look at the longer-term economic impacts (up to 10 years) of the WorkAdvance programs, including Per Scholas's WorkAdvance program. This research may provide more evidence about whether certain types of workers—including people in groups now underrepresented in the IT industry—are more likely to benefit from IT training programs like Per Scholas's WorkAdvance program.

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<sup>40</sup> Advancement in this analysis is defined as progressing from one occupation to another occupation that has a median salary that is at least 10 percent higher within five years. Lamback, Gerwin, and Restuccia (2018).

# Appendix A

**Appendix Table A.1. Baseline Characteristics of Individuals Who Started Per Scholas’s WorkAdvance IT Training**

<b>CHARACTERISTIC</b>	<b>SAMPLE</b>
Female (%)	13
Average age (years)	30
Race/ethnicity (%)	
Latino or Hispanic or Spanish	38
White	6
Black or African American	44
Other race <sup>a</sup>	11
Parent of one or more children (%)	25
Highest level of educational attainment (%)	
GED certificate	14
High school diploma	23
Some college	35
Associate's degree from 2-year college	11
Bachelor’s degree from 4-year college or more	18
Already has a license or certificate in targeted industry (%)	2
Ever employed (%)	95
Currently employed (%)	10
Unemployed for at least seven months (%)	51
Is or has been employed in targeted industry (%)	6
Previously convicted of a crime (%)	9
Previously incarcerated (%)	5
Sample size	334

SOURCE: MDRC calculations from responses to the WorkAdvance Baseline Information Form.

NOTE: <sup>a</sup>Other race includes sample members who identified as non-Hispanic and listed Asian or Pacific Islander, Alaska Native or American Indian, or Other as their race, including sample members who answered multiracial.

**Appendix Table A.2. Participation in Activities Among Individuals Who Started Per Scholas’s WorkAdvance IT Training**

<b>OUTCOME (%)</b>	<b>SAMPLE</b>
<b>Among all participants</b>	
Participated in any career readiness activity	100
Completed occupational skills training	82
Obtained an IT credential	76
CompTIA A+	76
CompTIA Network+	22
Microsoft Certified Technology Specialist	7
Microsoft Technology Specialist	1
Sample size	334
<b>Among participants who responded to the Year 2 survey</b>	
Participated in an internship	32
Participated in on-the-job training	4
Received a postemployment service <sup>a</sup>	67
Sample size	276

SOURCES: MDRC calculations from program tracking data provided by Per Scholas and responses to WorkAdvance Year 2 Survey.

NOTE: <sup>a</sup>Postemployment services include those received while an individual is employed: Respondent obtained help keeping current or most recent job, or employment service providers contacted the employer about how the respondent could keep the job or advance.

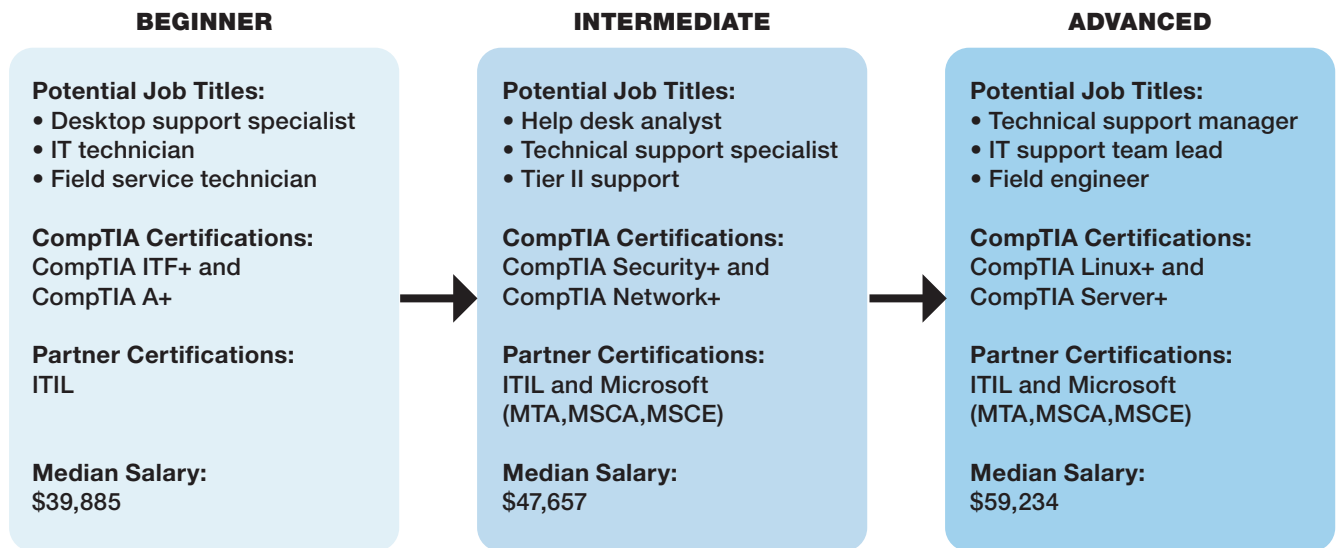
**Appendix Table A.3. Employment Outcomes Among Individuals Who Started Per Scholas’s WorkAdvance IT Training**

<b>OUTCOME</b>	<b>SAMPLE</b>
Ever employed (%)	96
Currently employed (%)	75
<b>Characteristics of current or most recent job</b>	
Employed in IT sector (%)	63
Average total earnings per week (\$)	581
Average hourly wage (\$)	16
Employed and hourly wage above \$15 (%)	47
Average hours worked per week (N)	35
Employer offered health plan or medical insurance (%)	43
Regular shift <sup>a</sup> (%)	74
Rotating, split, or irregular shift (%)	21
Regular permanent job (%)	72
Work for "temp" agency (%)	15
Job title changed since job started (%)	20
Offered many opportunities for career advancement (%)	67
Sample size	276

SOURCE: MDRC calculations from responses to WorkAdvance Year 2 Survey.

NOTE: <sup>a</sup>“Regular shift” is defined as one worked in full during the daytime, evening, or nighttime.

**Appendix Figure A.1. Sample IT Support Specialist Pathway with CompTIA Credentials**



SOURCE: CompTIA website.

NOTES: MTA = Microsoft Technology Associate; MSCA = Microsoft Certified Solutions Associate; MSCE = Microsoft Certified Systems Engineer.

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