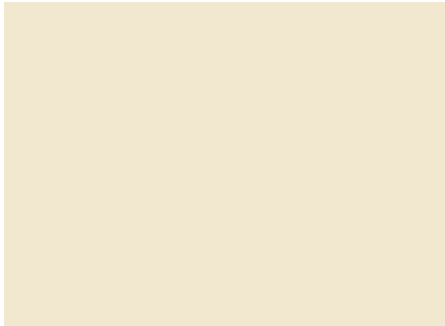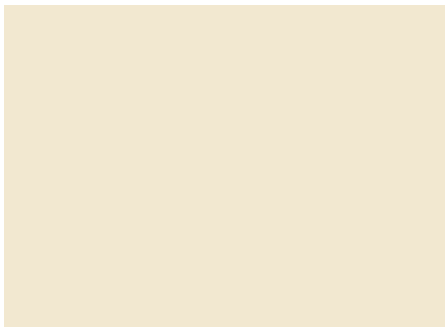# FINDING A SUSTAINABLE CAREER IN
Information Technology:

First-Year Results of the IT-Ready Apprentice Program

IT›READY

CREATING **IT** FUTURES
FOUNDATION

Executive Summary

Despite the country's recent economic recession and associated unemployment, the information technology (IT) industry struggles to fill job vacancies because of a continuing shortage of qualified applicants. Data from the U.S. Bureau of Labor Statistics indicate that growth in IT-related positions will significantly outpace job growth in other fields. These IT positions promise family-sustaining wages and upwardly mobile career paths.

To help address the IT worker shortage, the Creating IT Futures Foundation — the philanthropic arm of CompTIA — launched in 2012 an intensive training and job placement program called the IT-Ready Apprentice Program in two pilot cities.

At the end of the program's inaugural year, 72 percent of IT-Ready graduates were working full time in IT-related positions — a higher-than-average job placement rate for sector-based workforce development programs.
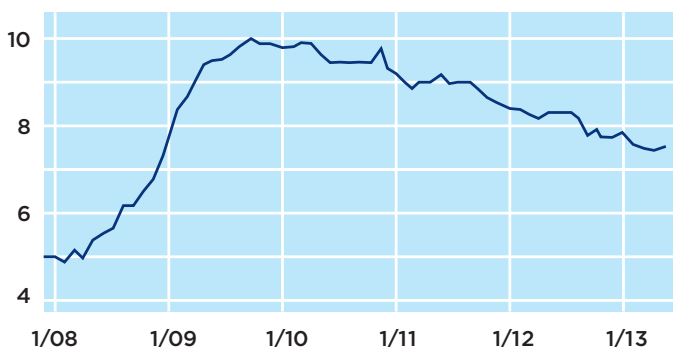
This white paper examines career opportunities available in the IT industry, the need for IT workforce development programs, challenges facing existing programs, the rationale for the structure of the IT-Ready Apprentice Program, and the success of and lessons learned from the program's inaugural year.

As the United States continues to crawl out of its economic doldrums, companies have struggled to recruit work-ready information technology (IT) employees when they need them, whether it's to replace those who leave or to augment their workforce as their business grows. Ever since the Great Recession of 2008, when unemployment for all sectors topped out at about 10 percent in October 2009 and has only improved to 7.5 percent as of April 2013[1] [FIG. 1], unemployment of IT professionals was 5.2 percent at its worst. It is clear that while the overall economic uptick in the

United States continues to be described as a jobless recovery[2], the IT field represents opportunity for job-seekers, as companies must still hire individuals to deploy and maintain the technology that has enabled labor savings in other areas of their businesses. In raw numbers, according to Indeed.com, the IT industry had more than 250,000 openings as of January 2013, placing the IT industry third among all industries on Indeed for unfilled jobs.[3]

> *According to Indeed.com, the IT industry had more than 250,000 openings as of January 2013.*

The Need for More Skilled IT Workers

Much has been written about the skills gap in technology, the assertion that high school and even college graduates lack the technical and soft skills necessary to hit the ground running in a 21st-century, tech-focused career. Most policymakers agree that the nation's education system has not responded to changes in job

[FIG. 1] **Percentage of Americans unemployed since the Great Recession of 2008**

SOURCE: BUREAU OF LABOR STATISTICS, U.S. DEPARTMENT OF LABOR, *LABOR FORCE STATISTICS FROM THE CURRENT POPULATION SURVEY*

requirements demanded by major employers. Take, for example, the changed landscape of manufacturing, traditionally a dependable go-to industry for workers at all educational levels, from high school dropout through graduate degree. Whereas a significant percentage of U.S. jobs were still manufacturing-based in 1980 (20 percent, down from 30 percent in 1950), as of 2012, manufacturing jobs made up just 9 percent of the workforce.[4-5] Low-skill manufacturing jobs have largely moved overseas; the manufacturing jobs that remain involve a higher degree of technical savvy and require more agile on-the-job thinking. But the increased focus on standardized testing in basic math and reading skills through the "No Child Left Behind" Act has only accentuated the disconnect between what and how students learn and the high-level skills employers say they need most from workers. Among the skills employers seek: Critical thinking and problem-solving, initiative and entrepreneurism, and curiosity and imagination[6], skills that arguably are overlooked as schools teach to standardized tests. Even after an employee is hired, the fast pace of technological innovation makes it difficult for employees to keep up with the changes. Employers naturally struggle to provide the continuing education and professional development that their employees require.

Lately there has been a "gap-lash" by those who downplay or even argue away the existence of a skills gap in IT. These critics instead blame the tech worker shortage on companies refusing to raise compensation levels, being unwilling to train workers, or resisting an overhaul of their methods for recruiting workers. In reality, the solution is not so simple. In terms of U.S. salaries, global sourcing of IT labor — which is available to any company's competitors — is mostly to blame for keeping wages down. Similarly, high worker turnover makes large investments in training extremely risky, as a company realistically fears it will end up training its competitor's next star employee on its own dime. Finally, employers have tried a number of different strategies to recruit qualified workers, with little sustainable success. As one IT services company CEO put it at a forum on the IT workforce, when it comes to finding work-ready IT professionals, "Everyone is fishing from the same pond. We need to substantially increase the number of fish in the pond."[7] Despite intriguing attempts to explain away an IT skills gap, most employers and workforce development organizations maintain a gap exists[8] and that the gap is likely to remain a stubborn reality for the foreseeable future.

> *"Everyone is fishing from the same pond. We need to substantially increase the number of fish in the pond."*

How have companies coped? For businesses that can prove a lack of home-grown talent, the H-1B visa program allows talent to be imported from abroad. The other popular response has been to lure workers from other companies with slightly improved pay, work hours and/or benefit packages, only to see those employees jump ship when something better comes along.
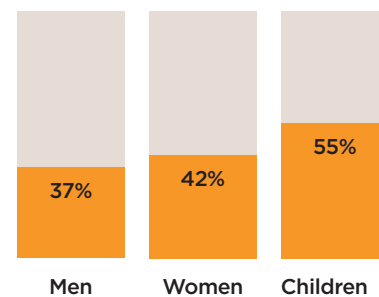
Other Fields Become a Source of Workers

While IT struggles to find workers, other more traditional work fields offer fewer opportunities than they once did. Layoffs, plant closings and decreased labor due to offshoring and automation have resulted in more than 7 million unemployed individuals in the United States (as of January 2013). The retail, manufacturing, food service, and construction fields have seen unemployment levels very near to well above the national average; together, just these four sectors make up more than half of the unemployed in America.[9]

Furthermore, there is a growing *under*employed population — sometimes referred to as the working poor. These are individuals who are unable to save for retirement, can't afford health insurance, and otherwise just can't get ahead. According to Wider Opportunities for Women, 37 percent of men, 42 percent of women and 55 percent of children lack economic security [FIG. 2] as defined by the Basic Economic Security Tables™ (BEST) Index. Again, the problem isn't just unemployment, as those who find themselves in economic insecurity work an average of 37 hours per week. Single mothers are especially likely to lack economic security, at 74 percent of all single mothers, compared to 49 percent of all single fathers. Numbers for single African-American and single Hispanic mothers climb even higher, to 80 percent and 85 percent, respectively.[10]

[FIG. 2] Percentage of Americans who lack economic security

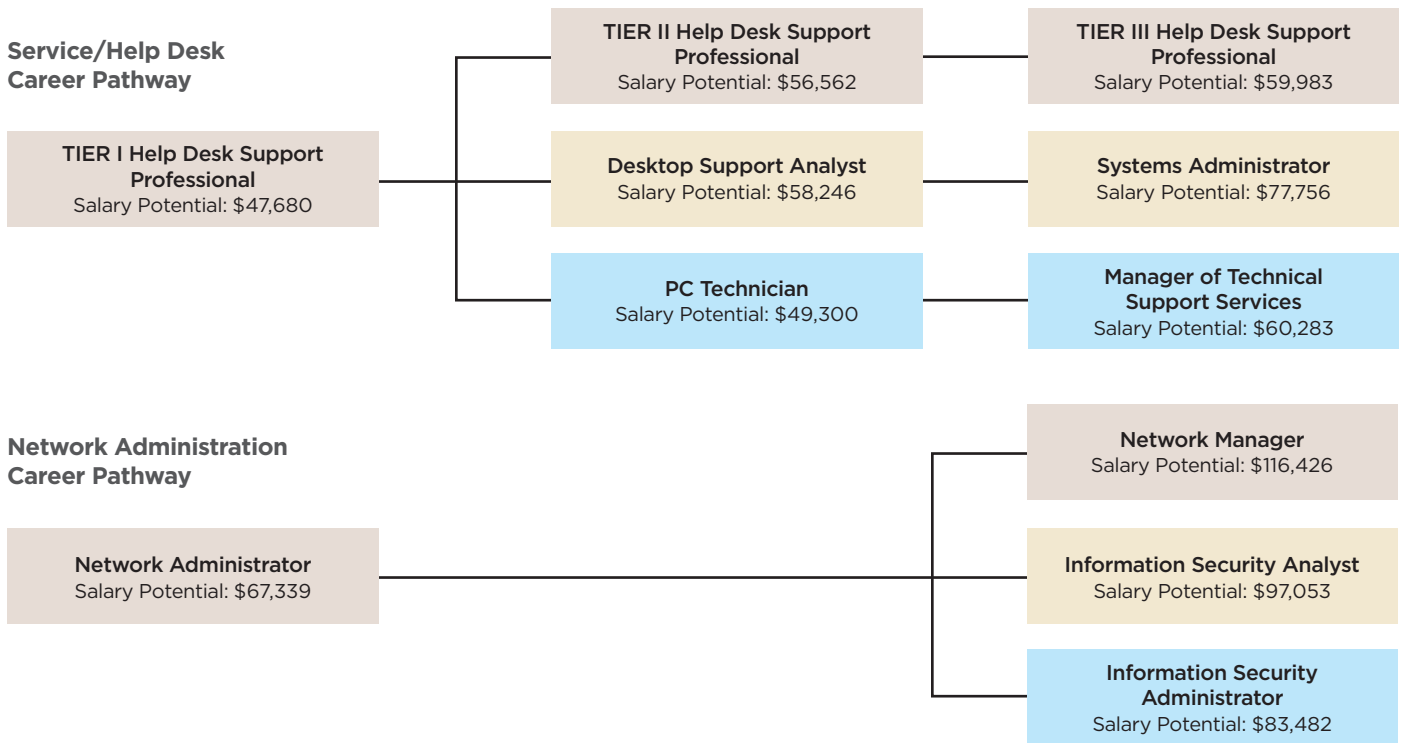| Men	Women	Children
37%	42%	55%

To these numbers of struggling U.S. workers should also be added the number of individuals who drop out of the workforce entirely, a phenomenon that is being manifested by increasingly younger individuals. The U.S. workforce as of March 2013 stood at 63.3 percent of the population, the lowest percentage since 1979.[11] The number of workers ages 20 to 24 also hit a 41-year low. These workforce dropouts are not counted in monthly unemployment figures, casting an invisible shadow over work statistics.

> *The U.S. workforce as of March 2013 stood at 63.3 percent of the population, the lowest percentage since 1979. The number of workers ages 20 to 24 also hit a 41-year low.*

[FIG. 3] **CAREER PATHWAYS IN INFORMATION TECHNOLOGY**

Service/Help Desk Career Pathway

TIER II Help Desk Support Professional Salary Potential: $56,562	**TIER III Help Desk Support Professional** Salary Potential: $59,983

TIER I Help Desk Support Professional Salary Potential: $47,680

Desktop Support Analyst Salary Potential: $58,246	**Systems Administrator** Salary Potential: $77,756
PC Technician Salary Potential: $49,300	**Manager of Technical Support Services** Salary Potential: $60,283

Network Administration Career Pathway

Network Administrator Salary Potential: $67,339

Network Manager Salary Potential: $116,426

Information Security Analyst Salary Potential: $97,053

Information Security Administrator Salary Potential: $83,482

The information technology field, besides offering low unemployment rates and being a source of available jobs, offers a future as well. The availability of skills-based certifications of increasing complexity helps an IT worker plot a career path that includes upward mobility. For example, a service/help-desk career pathway begins with three tiers of help desk/desktop support

> *The information technology field, besides offering low unemployment rates and being a source of available jobs, offers a future as well. The availability of skills-based certifications of increasing complexity helps an IT worker plot a career path that includes upward mobility.*

roles and leads to analyst, technician, administrator and manager occupations. Starting as a tier I help-desk support professional, the employee can move to tier II and then tier III, or move laterally to desktop support analyst or PC technician [FIG. 3]. From there, an employee can become a systems administrator or a manager of technical support services. On the network administration career pathway, a worker can move up to network administrator and then network manager. From these positions, with added

training and certifications, the employee can move on to roles such as information security analyst and information security administrator. And, relatively speaking, even with globalization pressing down on wages, jobs in the IT industry pay better than many other industries: Computer support specialists in 2012 earned a mean annual wage of $53,230. Database and systems administrators and network architects earned upwards of $80,000, with software developers and programmers topping $90,000 annually[12] [FIG. 4].

Will opportunities in the IT field continue to grow? According to predictions by the U.S. Bureau of Labor Statistics, the answer is yes. The agency estimates that more than 750,000 new core IT positions will be created between 2010 and 2020.[13] The bureau

[FIG. 4] **IT INDUSTRY JOBS PAY BETTER THAN MANY OTHER INDUSTRIES**

Computer Support Specialists
Mean Annual Wage: **$53,230**

Database and Systems Administrators and Network Architects
Mean Annual Wage: almost **$80,000**

Software Developers and Programmers
Mean Annual Wage: over **$90,000**

[FIG. 5] **PROJECTED CHANGES IN IT OCCUPATION GROWTH: 2010-2020**
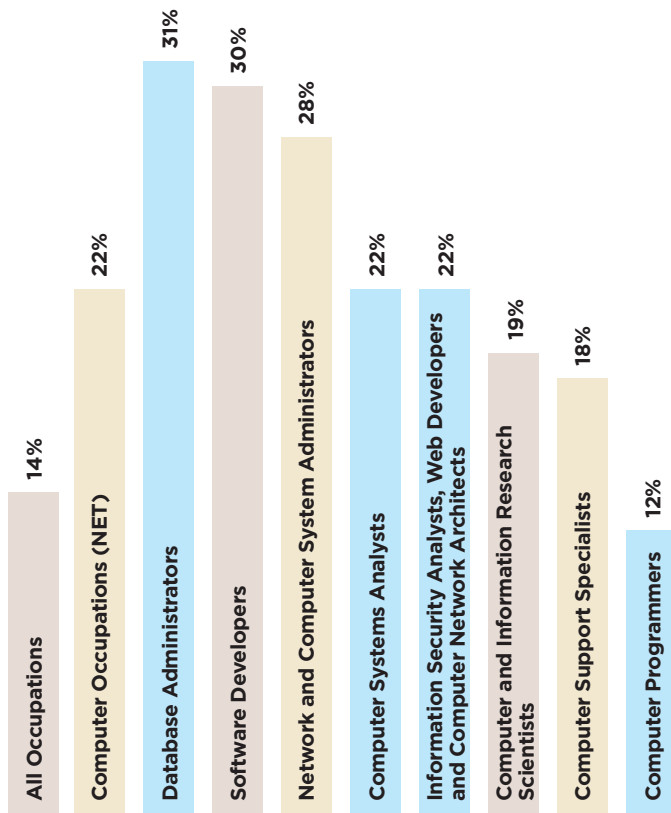
anticipates 22-percent growth in all computer-related jobs during that time, compared to 14-percent growth in all other fields[14] [FIG. 5]. Indeed, the dearth of work-ready IT professionals combined with a workforce glut in other fields begs for a solution that private corporations and the country's education system currently aren't providing. What would it take to transition adult workers from other fields into IT quickly, efficiently and effectively?

In 2012, after more than a year of study, the Creating IT Futures Foundation (the philanthropic arm of CompTIA) launched the IT-Ready Apprentice Program to help address the IT skills gap and worker shortage with motivated adults seeking upwardly mobile, family-sustaining work.

About the Creating IT Futures Foundation

The Creating IT Futures Foundation was established as a 501(c)(3) charity in 1998 by CompTIA, the world's largest IT industry association. Based in CompTIA's headquarters in Downers Grove, IL, Creating IT Futures has a mission of helping populations under-represented in IT — as well as individuals who are lacking in opportunity — to prepare for, secure and be successful in IT careers. Staff work to invent better on ramps to IT careers, then look for the best way to collaborate with other organizations to scale solutions toward significant outcomes on a national scale.

Before the introduction of IT-Ready, the workforce development program maintained by Creating IT Futures incorporated a mainly

online education model. While appropriate for some individuals who were able to springboard into their first paid IT role, the program failed to lead to IT work for most participants for a variety of reasons. The program's online curriculum — which a majority of participants failed to complete — lacked any coaching in job-seeking skills. It also was missing an employer component, and many participants who wanted to work locally lived in rural areas where IT jobs were scarce. Despite a number of success stories among those who completed the online program, Creating IT Futures began seeking in 2010 a more reliable way for its program participants to graduate with a firm foothold in the IT field.

A Solution in Search of a Model

As Creating IT Futures learned after researching workforce programs nationally, identifying best practices for preparing people for IT jobs and careers is no easy task. The obstacles to success are many, including:

- Most workforce development programs do not take a high-skilled, sector-based approach, much less an IT-sector-based approach, even though data shows sector-based programs have higher rates of success than more generalized workforce programs.[15]

- Many college graduates in IT lack professional soft skills — such as communication skills, conflict management, and customer service skills — that are just as in demand by businesses as the technical piece.[16]

Many college graduates in IT lack professional soft skills — such as communication skills, conflict management, and customer service skills — that are just as in demand by businesses as the technical piece.

- 64 percent of youth mistakenly believe every job in IT requires being very good at math and science, while a majority admit to knowing very little about IT at all[17]— perceptions that can persist well into the adult worker population.

- Women and people from ethnic/racial minority groups often fail to see themselves in an IT role. Women make up 46 percent of the total workforce, but hold only 24 percent of jobs in technical or STEM fields[18] [FIG. 6]. In 2010, African-Americans and Latinos together comprised 26 percent of the total workforce, but only accounted for about 12 percent of the IT workforce[19] [FIG. 7].

WOMEN IN THE WORKFORCE

Only 24% in IT → 46% TOTAL
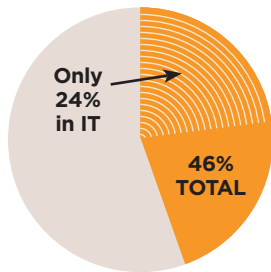
AFRICAN-AMERICANS AND LATINOS IN THE WORKFORCE

Only 12% in IT → 26% TOTAL
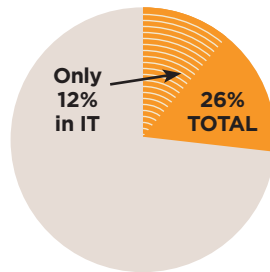
- Veterans often have difficulty figuring out how their technical experience in the military can be parlayed into a civilian job.

- Employers often place a high premium on on-the-job experience over classroom training, making it difficult for newly trained workers to get a foot in the door.

- Certifications could be helpful to many who are looking to gain a foothold in IT, but the overwhelming message is to pursue a degree — a daunting and expensive proposition for many who are capable of learning the necessary skills outside of a traditional degree program.

- Disabled workers may be unaware that IT can be a line of work at which they can succeed.

As a result of these obstacles and others, workforce development programs focused on IT jobs have struggled on a number of fronts. Concentrated training of a week or two may result in a successful score on a certification exam, but it may not produce a worker trained in the full technical and people skills necessary for a successful employment interview, much less a full-time job. Furthermore, programs that could help a large number of people have difficulty recruiting participants due to stereotypes and myths about the IT field.

As staff researched best practices, it became increasingly evident that a job training program must also operate as a job placement program to be successful.

Perhaps most challenging of all, many — if not most — traditional workforce training programs fail to include a job-placement or on-the-job experience component in their models, instead producing trained individuals with no subsequent employment path. As Creating IT Futures staff researched best

practices, it became increasingly evident that a job training program must also operate as a job *placement* program to be successful.

The IT-Ready Apprentice Program Is Born

After consulting with IT workforce training programs around the country, assembling a list of best practices, and speaking with employers — primarily CEOs, HR officials, and IT department heads — Creating IT Futures designed a model for IT job training and placement that included the following high-level approaches to solving the IT worker shortage problem:

1. The content of the training would be based on what employers say they look for in a successful entry-level IT employee.

2. The program would be more than a training program; it would also be an employer-centered, job-placement program, meaning that soft skills and on-the-job experience would be of paramount importance. Every effort would be made to recruit employers so that IT-Ready graduates would have interviews available at the end of their training.

The program would be more than a training program; it would also be an employer-centered, job-placement program, meaning that soft skills and on-the-job experience would be of paramount importance.

3. For the sake of the pilot, recruitment for the program would take a broad approach—targeting unemployed and underemployed persons with an effort to identify within that applicant pool candidates who also were veterans and/or ethnic minorities.

4. The program would require participants to have a GED or high school diploma and use several screening tools to measure their literacy and basic math abilities. By doing this, the program would enlist individuals who had a better chance of success on the job even if they lacked previous significant experience with computers.

5. The program's duration would include enough time to initiate those new to IT, but recognize that those who are unemployed can least afford to spend time in a training program. As a result, eight weeks of full-time, in-person, instructor-led training was identified as an ambitious yet reasonable amount of time to provide participants with the proper skill set for their first entry-level IT position.

6. The program would hold CompTIA A+ certification as evidence of skills mastery — and a requirement for candidates interviewing for apprenticeships. CompTIA industry surveys indicate that 86 percent of hiring IT managers in the United States rank IT certifications as a high or medium priority in their hiring decisions, with 64 percent of hiring IT managers indicating that such certifications have high value on the job.[20]

7. The program would make a six-month apprenticeship a key component, as employers cited on-the-job experience as one of the top criteria for being hired.

8. For the sake of future scalability, the program set a goal of keeping costs below $6,000 per student.

9. The pilot version of the program would be considered a true experiment. Therefore, any misstep wasn't a failure but, rather, an opportunity to learn something new about IT workforce development.

The following program features became part and parcel of the IT-Ready Apprentice Program model:

1. **Recruitment of Applicants.** The URL www.ITready.com was purchased and pointed to a section of the Creating IT Futures Foundation website (www.creatingITfutures.org) that held program information as well as an online application that can be completed in fewer than 15 minutes. Prospective applicants were informed that the program was free, did not include a cash stipend, and required a full-time commitment to eight weeks of training. Enrollment was contingent on the applicant's willingness to engage in a six-month paid, full-time apprenticeship post-training.

2. **Applicant Screening.** Upon their initial qualification, applicants participated in a phone interview so program staff could gauge their motivation and interest. Highly motivated and interested applicants were asked to complete an online Workplace Personality Inventory (WPI) assessment and online Basic Computer Literacy Assessment. Upon successfully passing these assessments, applicants came to the IT-Ready office for written testing in reading and math using the Test for Adult Basic Education™ (TABE), having to score at least at the 10th-grade level. Those who passed were granted a face-to-face interview on the spot, in which they were asked detailed questions about their interest and any barriers to training. Due to reasons of Internet security and other reasons, many employers refuse to hire for their IT departments people convicted of crimes. For that reason, a criminal background check was performed on individuals who passed the interview stage, and those who were free of felony convictions and misdemeanor theft or battery convictions were invited to enroll in the program.

3. **Instruction.** The program set a limit of 25 students per classroom, each of which had a single instructor. Enrolled participants were required to be on time every day (only two excused tardies, one missed day) and dress appropriately (business casual, absolutely no tennis shoes) for a maximum of 40 days of instruction (8 weeks x 5 days per week). Class started at 9 a.m. and ended at 4 p.m., although students could remain until 5 p.m. to work with the instructor or help each other study. In class, each student was given the use of a desktop computer with a Windows 7 or newer operating system. Technical aspects of the curriculum were tailored toward the CompTIA A+ exam and included operating system installation and upgrading, installing and imaging

virtual machines, data storage, peripheral devices, safety and maintenance, assembly and disassembly of hardware, computer networks, Internet security, and troubleshooting. Approximately 20 percent of instruction focused on professional and soft skills. Soft skill training included communication skills, interview skills complete with mock interviews, time management, conflict resolution, customer service, and creative problem-solving.

4. **Mentoring.** Each student was paired with a mentor who is deeply embedded in an IT career. Mentors hailed from all over the country and even internationally. Mentoring was done by email or phone, although a few mentors were located in the same city as their IT-Ready mentees. In addition, Global Mentoring was contracted to provide 24/7 support to IT-Ready participants on classroom learning materials during the eight weeks of instruction.

> *Each student was paired up with a mentor who is deeply embedded in an IT career.*

5. **Certification Exam(s).** IT-Ready students were required to take the CompTIA A+ certification exams (701 and 702) within a week of graduating from the program. They received free exam vouchers and were allowed to retake the exams one time at no cost. Further attempts would be paid for by the student.

6. **Job placement / apprenticeship.** Employers report that job candidates with work experience have a much higher chance of being hired for permanent positions than do candidates with training or education alone. IT-Ready students who passed their certification exams were eligible to interview with companies providing a six-month apprenticeship paying up to $15/hour. Apprentices were effectively employees of their company, either on a temporary, contract, or, in some cases, full-time permanent basis. IT-Ready staff remained in touch with apprentices and company representatives to ensure all went smoothly and to provide advice to apprentices if necessary.

7. **Continuing education.** IT-Ready graduates were invited to use free online training and testing vouchers for other CompTIA certifications — including Network+, Server+ and Security+ — if they accessed these resources within six months of becoming A+ certified. Individuals were given 90 days to complete training upon enrolling in a certification training module.

Program Launch

In Spring 2012, the Creating IT Futures Foundation launched the IT-Ready Apprentice Program model in two pilot locations — Cincinnati and Minneapolis/St. Paul. Both sites were chosen for the

number of IT jobs being created in each area; the relative shortage of nonprofit IT training programs; populations that were seeking work; and the strength of the local philanthropic community. A spring class and a fall class were convened in each location. A third site, Columbus, was launched in Fall 2012 in conjunction with another non-profit organization, Per Scholas. This collaboration is ongoing; the results of the first year of partnership are being collected and will be reported separately. This paper focuses on the results from Cincinnati and Minneapolis/St. Paul.

Creating IT Futures staffed the program as follows:

- A **full-time, on-site Manager** for each location. This individual's role was to network with agencies that could refer applicants to IT-Ready; develop possible funding relationships; supervise the Career Placement Specialist, instructor, and other vendors; and oversee the students' learning during the eight-week class period. For most of 2012, this position went unstaffed in Cincinnati. Instead, Creating IT Futures' Senior Manager of National Workforce Programs managed the Cincinnati site, working from Illinois and making monthly visits.

- A single **Instructor** was hired for each site on a contract basis for the course's eight-week duration. Due to favorable outcomes in the spring, the same instructors were hired for the fall term.

- A **Career Placement Specialist** was hired for each site on a part-time contract basis. The role of this individual was to recruit employers who would interview IT-Ready graduates for apprenticeship positions.

- Supervision of the IT-Ready program and program staff was performed by the **Senior Manager of National Workforce Programs**, based at Creating IT Futures Foundation headquarters in Downers Grove, IL. Periodic support was provided by other Foundation staff in the areas of operations, marketing, fundraising and recruiting.

The Foundation hosted kick-off celebrations in both locations with local press, nonprofits, and other stakeholders in attendance.

The events were held in Minneapolis./St. Paul at the annual Spring conference of the Minnesota High Tech Association on April 25, 2012, and in Cincinnati at the Great American Ballpark on April 30, 2012. A press tour in both cities conducted by the Foundation's Executive Director attracted media coverage of the launch.

2012 IT-Ready Apprentice Program Results

Two classes were convened in each of the two locations in 2012, for a total of four classes. The total number of applicants in 2012 was 1,066, an average of 267 per class. A number of factors disqualified applicants. In many cases, applicants had IT jobs already and simply were looking for a different job. Some lived beyond a 50-mile radius of the class. Others were in school already or over-qualified by having advanced degrees.

About 10 percent of the applicants were invited to move forward in the selection process; ultimately, about 6 percent did. Of those, 85 percent completed the phone interview and online assessment, of whom 90 percent passed and moved forward to in-person testing/interview. About 90 percent of the candidates who tested in person passed their examinations, interviews and criminal background checks, and were invited to enroll.

In 2012, IT-Ready enrolled 62 individuals, of whom 82 percent were classified as unemployed and 18 percent under-employed [FIG. 8]. The average age was 35 and the average class size was 16 students.

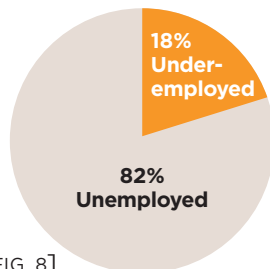The race and gender demographic breakdown was as follows:

Female: 24 percent;
Male: 76 percent [FIG. 9]
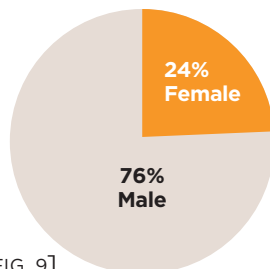
Military veterans:
13 percent [FIG. 10]

■ African-American: 18 percent
■ American Indian: 2 percent
■ Asian: 10 percent
■ Caucasian: 63 percent
■ Hispanic: 3 percent
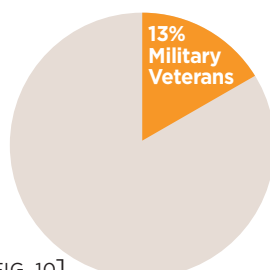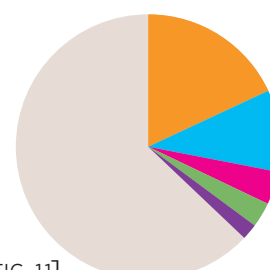■ Other Race: 4 percent
[FIG. 11]

SELECT 2012 IT-READY STATISTICS

18% Under-employed
82% Unemployed
[FIG. 8]

24% Female
76% Male
[FIG. 9]

13% Military Veterans
[FIG. 10]

[FIG. 11]

[FIG. 12] **GRADUATES**

Program Graduates	94%
Graduates with CompTIA A+ Certification	90%

[FIG. 13] **APPRENTICESHIP INTERVIEWS**

Certified Graduates Invited for Interviews	83%

[FIG. 14] **JOB PLACEMENT WITHIN 4 MONTHS**

IT-Ready Graduates	72%
National Average (sector-based programs)	65%
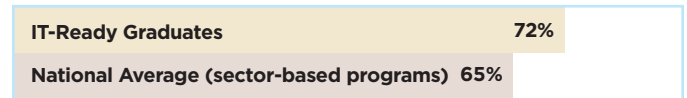
Completing the IT-Ready classroom curriculum earned a participant a graduation certificate. Not all IT-Ready graduates leapt the hurdle of CompTIA A+ certification, a pre-requisite for an apprenticeship. Of the 62 students who started the program, 58 (94 percent) completed the program, with 52 (90 percent) obtaining their CompTIA A+ certification [FIG. 12].

Certification was the primary qualification for being offered an apprenticeship interview: 48 certified individuals (representing 83 percent of all graduates) were invited for an interview [FIG. 13], and 44 (76 percent) accepted.

In the end, 42 IT-Ready graduates (72 percent) were offered and accepted full-time apprenticeship positions within four months of completing the program—a higher-than-average job-placement rate for sector-based workforce development programs, which stands at 65 percent nationally [FIG. 14].[21]

Apprentice performance is being tracked to measure how many individuals complete their six-month apprenticeships and remain employed in the IT field. As of now (June 2013), only two graduates have left their apprenticeship positions without completing them, and all but one graduate completing an apprenticeship remain employed in IT. Notably, most graduates were permanently hired by the same organization that granted them the apprenticeship.

Dropout/Removal Rate

There was a relatively low dropout/removal rate: A total of 4 individuals (6 percent) did not complete the program. Those who voluntarily dropped out of the program (two individuals, or 3 percent) stated that the program was a poor fit. Two individuals (3 percent) were removed from the program by staff because of poor attendance.

There were 4 graduates (7 percent) who were certified but did not interview for apprenticeships. One deferred for personal reasons and another due to living too far from prospective employers. Program staff determined that two individuals lacked professional skills meeting IT-Ready standards and denied them interviews.

An additional 4 IT-Ready graduates (7 percent) were offered interviews but did not attend them; of the 4, two declined to interview for unknown reasons and the other two missed their interviews.

All graduates who interviewed (44 individuals, or 76 percent) were offered apprenticeship positions, but 2 graduates (4 percent) declined the positions. One found a full-time bank position closer to home; the other felt a hearing disability would make it difficult to successfully perform the role offered.

As of June 2013, only members of the Spring 2012 cohort had had time to complete their six-month apprenticeships. Of these individuals who accepted apprenticeships, 95 percent (18 of 19) successfully completed their apprenticeships and 89 percent (17 of 19) were still working in the IT field after apprenticeships. This is a high percentage compared to the 67 percent average retention rate of sector-based placement programs.[22] Tracking of the Fall 2012 cohort suggests that this group's six-month-out numbers also will track much higher than average.

Participant satisfaction was high. A follow-up survey of Spring 2012 IT-Ready graduates found that 92 percent of respondents felt either "very supported" or "extremely supported" by IT-Ready staff during their apprenticeship appointment.[23] Feedback on all aspects of IT-Ready included these comments:

"You learn so much. Every day you have the chance to practice... your customer service skills along with your technical skills."

"Gaining certification was crucial to obtaining [a] permanent position."

"The focus on the participant has been great."

"The amount of communication that tends to keep us informed, and the constant feedback about our progress shows concern and involvement in our success."

"Their positive and encouraging attitude. They are serious about finding an internship for all participants."

"The amount of training available after the A+. I have finished my Network+, I'm working on Server+ and plan on taking the Security+ soon."

"The program has been positive for me by giving me training and helping me find my first job after the training."

"Soft skills. This was the most beneficial to me."

"Everything has been great and I wouldn't change a thing."

"The program gave me the knowledge to enter the IT field and the apprenticeship gave me the experience I desperately needed to get started in this career field."

"I really enjoyed the people I have met and the connections I have made. Keep doing what you're doing."

> *"The program gave me the knowledge to enter the IT field and the apprenticeship gave me the experience I desperately needed to get started in this career field."*

The survey of Spring 2012 graduates also found:

- 66 percent reported that their apprenticeship experiences were "very relevant" or "extremely relevant" in strengthening their professional expertise.

- 50 percent of respondents believe their apprenticeships have already led to meaningful employment, while another 42 percent expect them to.

- 75 percent of respondents felt "very supported" or "extremely supported" by their supervisor at their apprenticeship location.

- 100 percent of respondents would be willing to participate in an alumni program.

Employer satisfaction was high. IT-Ready Apprentices were brought on by a total of 12 employers in 2012. In Minnesota, the companies were Covidien, GED Testing Services, HealthPartners, Medica, Medtronic, Pearson VUE, SecureConnect, TEKSystems, and Virteva.

In Ohio, the companies were Ascendum, MTCI, Pomeroy, and Tata Consultancy Services.

Some of the participating businesses were IT contractors who deployed apprentices to job sites with a number of recognizable, high-profile clients, such as 3M (in Minnesota) and Fifth Third Bank (in Ohio).

Feedback from industry employers included these comments:

"IT-Ready gave us access to low-risk, highly vetted applicants usually only found by accident."

"It's a win-win for us. It's a partnership... We chose to hire them as full-time benefited employers rather than apprentices. That spoke, I think, to the program itself."

"IT-Ready has given us an advantage, to the one percent of the one percent we are looking for."

Lessons Learned

A number of aspects of IT-Ready went as planned, while others showed a need for change. Clear positives that stood out for the IT-Ready program in 2012 included the following:

1) Face-to-face training allowed staff to build camaraderie among students, to foster communication skills, to offer words of encouragement at the right time, to evaluate the soft skills of participants and make corrections, and to come to know personalities in order to make good matches with employers. All of these are functions that online training has trouble reproducing.

2) Building self-confidence and self-efficacy was critical to individual success. Many students initially expressed misgivings, uncertainties, and doubts about their ability to transition into IT. Success on the certification exam gave students confidence heading into interviews, which usually resulted in an offer of an apprenticeship or a permanent job.

3) Most participants rose to the challenge of the program's disciplined structure and rigorous course material. Despite most participants coming into the program without IT job or recent classroom experience, the program prepared them for their first IT role.

4) Eight weeks for training was, on the whole, sufficient for a population that already had some work experience (IT-related or not). A longer program is likely necessary for individuals preparing for their first significant job role.

5) The rigor of the program required each student to take ownership of his or her own IT education, emphasizing the kind of personal responsibility necessary to land and keep a professional job. "A hand up, not a hand out" was the mantra of

staff who enforced a strict dress code, attendance and behavior policy. The working world makes few allowances and won't put up with excuses. IT-Ready shouldn't either.

Several opportunities for improvement were encountered during the pilot year:

- **It proved challenging to generate a large number of applications from specific groups under-represented in IT, such as military veterans, women, and minorities.** In response, IT-Ready will have to find ways to reach out in a more targeted manner to these constituencies.

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- **Applicants had technical difficulty accessing the online computer literacy assessment.** The download process presented by the vendor was convoluted. Because nearly everyone who passed the Workplace Personality Inventory (WPI) also passed the computer literacy assessment, it was decided to drop the computer literacy testing portion altogether beginning in 2013, relying on the WPI as the single online screening tool for the application process.

- **Some students and mentors struggled in their relationships.** Although 90 percent of mentors stated in the Spring 2012 survey that they had a "very positive" experience, 50 percent of mentee respondents stated that they "did not feel supported at all" or felt only "slightly supported" by mentors. Program staff are following up more frequently to make sure mentors and mentees connect early in the class term, receive good background information on each other, and build a beneficial relationship over the course of the class.

- **A small number of students failed to take certification tests in a timely manner or at all.** Those who waited too long to test were more likely to perform poorly. As a result, the program now requires certification testing in the last week of the course.

- **Failure to attract a minimum of $15 per hour for all apprentices.** The going rate of pay for entry-level IT positions was generally lower in Cincinnati than it was in Minneapolis / St. Paul, with a few IT-Ready Cincinnati graduates accepting

apprenticeships that paid as low as $11 per hour in the Spring 2012 cohort and $10 per hour in the Minneapolis / St. Paul Fall 2012 cohort. Starting hourly pay was as high as $17 in a few cases and mode pay was $15, but IT-Ready leadership concluded that a firm $15 requirement of employers was unsupportable, especially in Cincinnati. The primary value of the apprenticeship is not earning power; instead, it's on-the-job experience for the worker's resume — a first step toward permanent employment and an upwardly mobile career in IT. IT-Ready graduates as a whole were delighted to be offered an apprenticeship, even if it paid lower than originally expected.

> *The primary value of the apprenticeship is not earning power; instead, it's on-the-job experience for the worker's resume — a first step toward permanent employment and an upwardly mobile career in IT.*

- **A block in the pipeline of employers in Cincinnati.** In Fall 2012, recruitment of new employers in Cincinnati stalled, while the list grew in Minnesota. A direct mail campaign with follow-up phone calls was executed in Cincinnati in May 2013.

- **Poor initial outreach with stakeholders in the site cities.** IT-Ready struggled to get to know other nonprofit organizations that could provide a steady stream of applicants to the program. Building such relationships and name recognition in a community will take time, possibly years.

Conclusion

Based on initial results from the first four IT-Ready classes in the two pilot locations, the program is a successful model for helping individuals succeed in their first paid role in the IT field.

Maintaining a placement rate of 72 percent of graduates is a good rate of success for sector-based workforce development programs — the national average is 65 percent — and numbers are tracking much higher than average for retention rates (currently 89 percent, compared to an average retention rate of 67 percent for sector-based programs).

> *Based on initial results from the first four IT-Ready classes in the two pilot locations, the program is a successful model for helping individuals succeed in their first paid role in the IT field.*

Most IT-Ready graduates have a work background outside of IT. As a result, the program has the potential to increase the pool of workers available to an industry that reports shortages and has difficulty recruiting individuals with necessary skills.

In 2013, the Creating IT Futures Foundation is refining the IT-Ready Apprentice Program model in a number of ways. Included in these improvements: An online career mapping tool for people contemplating applying to IT-Ready, as well as programming for alumni to keep them engaged for the long term. Many participants and graduates have expressed an interest in giving back to the program and their communities, so we are identifying ways to channel this energy for the benefit of future classes.

In addition, Creating IT Futures is designing related programs to establish a continuum of IT workforce development. That research and development effort, called IT-Ready Labs, is now studying the following initiative proposals:

- **IT-Ready Youth:** An initiative to bring more young people into relevant education and training for IT careers.

- **IT-Ready Boot Camp:** Participants learn the skills needed to be successful in IT-Ready before applying. They can brush up on their basic math and reading skills, learn valuable communication skills, tackle IT jargon, increase basic computer skills, and identify career pathways in IT.

- **IT-Ready 2.0:** A resource for unemployed workers with IT degrees or certifications who need coaching on resumes, interviewing, and other soft skills taught in the IT-Ready Apprentice Program.

Program staff are working to document all aspects of the IT-Ready Apprentice Program model for use by third parties, and the IT-Ready model has already been deployed in Columbus, Ohio, by Bronx-based Per Scholas, with plans to deploy IT-Ready in several more locations over the next four years. Future reports will spotlight the success of this collaboration, as well as the long-term success rates of IT-Ready apprentices in moving up the IT career ladder.

Endnotes:

[1] Bureau of Labor Statistics, U.S. Department of Labor, *Labor Force Statistics from the Current Population Survey*, on the Internet at http://data.bls.gov/timeseries/LNS14000000 (visited 21 June 2013).

[2] Blinder, Alan. "Fiscal Fixes for the Jobless Recovery." *Wall Street Journal* 10 June 2013, on the Internet at http://online.wsj.com/article/SB1000142 41278873238448045785315004453243 48.html (visited 11 June 2013).

[3] "The Value of IT Certifications," a white paper published by CompTIA in March 2013 and accessible by the association's members through the CompTIA website at http://www.comptia.org/research.aspx.

[4] "Maybe it isn't China." *The Economist* 23 August 2010. On the Internet at http://www.economist.com/blogs/freeexchange/2010/08/manufacturing (visited 21 June 2013).

[5] National Association of Manufacturers. "Facts About Manufacturing in the United States." Data from the Bureau of Labor Statistics (2012), with estimate of total employment supported by manufacturing calculated by NAM using data from the Bureau of Economic Analysis (2011). On the Internet at http://www.nam.org/Statistics-And-Data/Facts-About-Manufacturing/Landing.aspx (visited 21 June 2013).

[6] Wagner, Tony. *The Global Achievement Gap.* New York: Basic Books, 2008. Print.

[7] "The Qualities of Job-Ready IT Graduates." Creating IT Futures Blog. 21 March 2013. On the Internet at http://www.creatingitfutures.org/blog/13-03-21/The_Qualities_of_Job-Ready_IT_Graduates.aspx (visited 21 June 2013).

[8] "State of the IT Skills Gap," a white paper published by CompTIA in February 2012 and accessible by the association's members through the CompTIA website at http://www.comptia.org/research.aspx.

[9] Bureau of Labor Statistics, U.S. Department of Labor, A-31. *Unemployed persons by industry, class of worker, and sex. May 2012 and May 2013.* On the Internet at http://www.bls.gov/web/empsit/cpseea31.htm (visited 21 June 2013).

[10] "Living Below the Line: Economic Insecurity and America's Families: 2011." A Project of Wider Opportunities for Women's Family Economic Security Program. On the Internet at: http://www.wowonline.org/documents/WOWUSBESTLivingBelowtheLine2011.pdf (visited 21 June 2013).

[11] Wiseman, Paul. "U.S. Labor Force Participation Rate Lowest Since 1979." *Huffington Post* 6 April 2013. On the Internet at http://www.huffingtonpost.com/2013/04/06/labor-force-participation-rate_n_3028135.html (visited 21 June 2013).

[12] Bureau of Labor Statistics, U.S. Department of Labor, Table 1. *National employment and wage data from the Occupational Employment Statistics survey by occupation, May 2012.* On the Internet at http://www.bls.gov/news.release/ocwage.t01.htm (visited 21 June 2013).

[13] "The Value of IT Certifications."

[14] "Youth Opinions of Careers in Information Technology (IT)," a white paper published by CompTIA in March 2013 and accessible by the association's members through the CompTIA website at http://www.comptia.org/research.aspx.

[15] Clymer, Carol; Sheila Maguire; Marty Miles; Stacy Woodruff-Bolte. "Putting Data to Work: Interim Recommendations From the Benchmarking Project." Public/Private Ventures. 17 Nov 2010. On the Internet at http://www.issuelab.org/resource/putting_data_to_work_interim_recommendations_from_the_benchmarking_project (visited 21 June 2013).

[16] Schultz, Nick. "Hard Unemployment Truths about 'Soft' Skills." *Wall Street Journal* 19 Sept 2012. On the Internet at http://online.wsj.com/article/SB10000872396390444517304577653383308386956.html (visited on 21 June 2013).

[17] "Youth Opinions of Careers in Information Technology (IT)."

[18] Beede, David. "Women in STEM: A Gender Gap to Innovation." U.S. Department of Commerce, Economics and Statistics Administration. *Issue Brief #04-11.* August 2011. On the Internet at http://www.esa.doc.gov/sites/default/files/reports/documents/womeninstemagaptoinnovation8311.pdf (visited on 21 June 2013).

[19] Swift, Mike. "Blacks, Latinos and Women Lose Ground at Silicon Valley Tech Companies." *San Jose Mercury News* 13 Feb 2010. On the Internet at http://www.mercurynews.com/ci_14383730 (visited on 21 June 2013).

[20] "The Value of IT Certifications."

[21] "Putting Data to Work."

[22] "Putting Data to Work."

[23] Barbara Grant Consulting Group. "Creating Futures and Transforming Lives: Spring 2012 IT-Ready Program Summary." An independent study commissioned by Creating IT Futures Foundation and published in March 2013. On the Internet at http://www.creatingitfutures.org/Libraries/Reports/IT_Ready_Spring_2012_Program_Summary_Final.sflb.ashx (visited 10 July 2013).

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