Moving Beyond the Divide

Workforce Development and Upward Mobility in Information Technology

A Policy Brief

PolicyLink

Lifting Up What Works®

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Institute of Urban and Regional Development
University of California, Berkeley

Moving Beyond the Divide:
Workforce Development and Upward Mobility in Information Technology

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Preface

Five years ago, PolicyLink was presented with some of the nation's most exciting research on innovative community-based programs that connected low-income job seekers to professions requiring skills in information technology (IT). *From Promising Practices to Promising Futures: Job Training in Information Technology for Disadvantaged Workers*, authored by Karen Chapple and her colleagues at the University of California, Berkeley, revealed that community-based training programs were extremely effective at creating IT job opportunities for the nation's most disadvantaged workers. As with many successful community endeavors, however, there were few policy initiatives by which to replicate or expand this valuable approach to employment and training. PolicyLink, in turn, published a policy brief of this research, *Promising Futures*, that catalyzed a national dialogue among training providers, funders, and industry leaders on how to grow the scale and capacity of this "cottage industry."

While that first round of research raised the profile of these innovative new training possibilities, two critical questions remained: "Do these newly trained workers stay employed in high technology jobs?" and "Do program participants sustain wage gains over time?" Again, Professor Chapple was prepared to address these questions. With funding from the National Science Foundation, and the sponsorship of the former University of California Institute for Labor and Employment (now the University of California Labor and Employment Research Fund) she conducted the first longitudinal analysis of graduates from community-based IT workforce development programs. The full account of this research has recently been published online by the Institute of Urban and Regional Development at UC Berkeley under the title *Promising Futures: Workforce Development and Upward Mobility in Information Technology* http://www-iurd.ced.berkeley.edu/pub/abstract_mg200501.htm.

The dot.com bubble of the late 1990s has burst, and few of the pioneering IT workforce development programs are training participants for the same types of jobs that were in demand five years ago. However, as technology continues to permeate many different sectors, opportunities for IT work remain, as does the need to nurture effective training practices. The research affirms that program participants remain employed in IT jobs and maintain higher salaries than they would have if they remained in low-skilled occupations. The programs produce wage gains for their graduates that exceed those in other successful sector initiatives, such as in construction or health care, because IT offers potential for career advancement. *Moving Beyond the Divide* captures lessons and insights from these local examples and sheds light on how community-based training programs can be effective in providing a well-trained labor force.

We hope that this brief can restart a national conversation about the important role of local providers in training low-skilled job seekers and can bring these issues to the attention of policymakers, advocates, employers, and training providers.

Angela Glover Blackwell
Founder and CEO
PolicyLink

Introduction

Ruben Díaz worked for ten years as a fast-food chef—twelve hours per day, six days per week—before finally burning out. After quitting his job, he soon lost his apartment in the South Bronx. From a homeless shelter, he was accepted into a computer technician training program at Per Scholas, a Bronx-based nonprofit. The program gave him the skills, confidence, and connections to get his first job in information technology (IT), working at a computer help desk at a nonprofit for $27,500 per year. After three years, Ruben used social networks from his job to move to a larger organization and a new job with more responsibility and pay—$40,000 per year. In four years, with his formal education having ended at high school graduation, he has gone from long hours at a dead-end service job to upward mobility as a knowledge analyst in the New Economy.

Ruben crossed the digital divide because an innovative community-based organization responded to regional labor demand and created a job training program with foundation support. Despite decades of reform in workforce development systems that have gradually shifted responsibility to the local and regional level, such innovative and responsive programs remain the exception, not the rule. Only some regions are able to foster such flexible, responsive, and innovative workforce development institutions; and even fewer can tap into government support.

This brief first outlines the context for IT and workforce development and then analyzes the role of IT programs—why they work, what are the challenges and opportunities, and what upward mobility exists for entry-level workers. The brief concludes with policy implications for employment training.

Overview of the Study

"Technology is what makes people stand out, so it doesn't matter if they're from a certain area anymore. It's the way to progress in the world."
— *Aaron, Training, Inc., graduate*

IT is "the way to progress in the world" not just for Aaron, who is an African American college dropout with no office work experience, but also for Chia, a Laotian high school dropout who wanted "a decent job where you don't have to get on your knees and scrub the floors," and for Jo, a white woman who says she "struggled all my adult life with what I was going to do," despite a master's degree in environmental policy.[1] All three found work in IT after graduating from free short-term IT training programs at nonprofit organizations. And all three contradict the conventional wisdom about the labor market bifurcation that makes knowledge analyst jobs inaccessible to those who may not have both the college education and the social connections to join the IT workforce.

This study examines the potential for individuals in the service economy to cross the digital divide to jobs in the knowledge economy by analyzing the career trajectories of disadvantaged workers who graduated from IT training programs. Using case studies of training intermediaries in the New York, San Francisco, and Washington, DC regions, this study lifts up best practices for helping people cross the digital divide, enter IT, and advance.

Successive interviews were conducted over three years with 93 graduates of these programs. Overall, the research effort included two surveys, with a total of 470 respondents, and in-person interviews with over 200 employers, job seekers, workers, training providers, and workforce development policymakers.

The New York area cases include Per Scholas, in the South Bronx, and Training, Inc., in Newark. Per Scholas is a community-based nonprofit organization founded in 1995 that offers a 15-week PC technician training program, graduating some 100 to 150 students per year. Most students are from extremely disadvantaged groups with very low incomes and little education, such as the homeless or welfare-to-work clients. Training, Inc., (at Essex County College in Newark) is a branch of a national nonprofit job training organization that trains about 150 disadvantaged students per year in 20-week PC troubleshooter and software application courses.

In the San Francisco area, cases included the Bay Area Video Coalition and Street Tech. BAVC was founded in 1975 to serve the nonprofit sector with low-cost technical assistance, equipment access, and training on the newest communications technologies. It graduates about 100 students from diverse racial and economic backgrounds each year from its 16-week web design program.

Street Tech opened its doors in March 2000 as a nonprofit computer training center. Street Tech offers a six-month PC technician training class, each year graduating about 50 adults from extremely disadvantaged communities.

The two Washington, DC, cases, Byte Back and Alexandria Continuing Education and Workforce Development at Northern Virginia Community College, differ from the others by offering little or no formal soft skills[2] training and job placement. Byte Back graduates about a dozen students per year from its intensive yearlong internship program in network administration, programming, database development, web development, and PC hardware. The program at Alexandria offers short-term training in hardware, networking, web design, and database development to 1,200 students per year (since it is affiliated with the community college, it technically is a public provider, not a nonprofit).

STUDENTS ATTEST TO PROGRAM SUCCESS

PER SCHOLAS has had a transformative effect on its students, as the gratitude of a graduate like Fernando testifies: "I love Per Scholas. They are a part of my family; they help me. Here it's very hard [not to] find somebody that will help you, no matter what. [They say,] 'I don't need your money, I want to help you.'"

TRAINING INC.'S strength is soft skills, as graduate Troy confirms: "Training, Inc., wants to change you from who you are to what they say corporate America wants you to be. They help you walk the walk, talk the talk through teamwork, peer support."

BAY AREA VIDEO COALITION: Employers are confident in the BAVC education; as Chandra testifies, "MediaLink gave me legitimacy. Now I could point to technical skills and people would believe that I had them."

"STREET TECH is like a family," says Shandon. "They inspire, push and motivate you. The teachers care; they're there to help you. At college, they don't even care if you show up."

BYTE BACK graduates praise its combined education and work experience approach. As Jamain says, "We were getting a pretty good bargain, because ain't too many other places that you can go to that's gonna pay you, to teach you. It gave us an education and job experience. And it gave me the chance to work under pressure."

The Context for IT and Workforce Development

The conventional wisdom is that the lack of skills entraps workers in dead-end jobs, unable to capitalize on the demand for high-skilled labor in an increasingly networked—and exclusive—society.[3] Theorists also suggest that IT itself acts to exacerbate societal divisions and ultimately income inequality, particularly in high-tech regions, by:

• Driving the bifurcation, or division, of the economy into high-end knowledge analyst and low-skill service jobs, and

• Creating a new networked system of economic organization that has few access points for those who are out of the labor market or are seeking employment.[4]

However, a low-wage future is not inevitable for disadvantaged groups. With less complex skills now required for IT positions, along with the rise of workforce intermediaries, opportunities are being created to move large numbers of low-wage workers into entry-level jobs, particularly during peak business periods. Although some entry-level work is disappearing offshore, the economy still offers opportunities for job seekers with little college education to enter IT and possibly move up. Nonprofit training programs play an important role in making the transition possible for some of those whom the educational system has failed.[5]

The Changing Nature of IT Jobs: A Review of National Trends

The expansion of the information-based economy is producing new opportunities for disadvantaged, low-skilled job seekers to participate in the digital

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CROSSING THE CULTURAL DIVIDE

Jabari grew up playing computer games on a Commodore 128, but didn't really know anybody who used computers at work. Prior to attending Street Tech to learn computer troubleshooting, he had a job as a laborer and had been on crack for a couple years: "I was going southwest and Street Tech put me going north."

After graduating from Street Tech in 2001, Jabari got an internship with city government through the program. The next two years saw him in and out of temporary computer technician jobs, almost all found through Street Tech connections. He has finally landed in a permanent job, paying just $9.50 per hour but with benefits. He goes to college part-time and will graduate in the spring of 2006 with a bachelor's in information technology.

It took intervention from many different mentors to get Jabari into the workforce. In elementary school, he participated in a special program that helps low-income students prepare for college. His parents both pushed him to go to college. At one of his temporary jobs, a mentor also pushed him: "This black dude said I need to get a degree. He was preaching at me so hard to go, I was like, man. People had said that to me before, but you need to know it inside yourself. It's not going to come just from people pushing you. It has to be at the right time."

Street Tech played the pivotal role. As Jabari says, "I wouldn't even have been in this field if I hadn't been in Street Tech. I had no inclination." By connecting him with temporary jobs, Street Tech made sure that he got the work experience he needed to get employed full time. But most importantly, Street Tech showed him that he could do it. In his first job, Jabari found himself the guy in charge, helping managers with their computers. It gave him new confidence: "Their fear of computers, that's why we have a job. So bring it on!" At the same time, it was a tremendous challenge: "Work just felt weird. People accepted me, but as far as me accepting myself there? That was the thing. I wasn't used to it. You have to fake it until you make it…I didn't feel like I could do it. Street Tech is one of the greatest things that ever happened to me."

age. In essence, the bottom rung of the IT job ladder has expanded to include workers with little or no college education.

The career ladder for IT occupations includes a broad group of those who use, maintain, and create information technology. Typically entry-level positions begin with the IT maintainer jobs, such as the computer support specialist, that support computers and networks. These positions require long-term on-the-job training, vocational education and certification, or an associate's degree. In contrast, IT creator jobs, such as computer programming or software engineering, require at least a bachelor's degree.

The maintainer jobs are not the only starting points for pathways into IT careers. There are also IT user positions, low-skill entry-level jobs such as data entry clerks or office clerks, that involve computer use. However, only a small proportion of the five million IT users advance into the more technical maintainer and creator occupations. By 2003, there were 1.2 million workers in IT maintainers occupations, 5.3 million in IT user occupations, and 2.2 million IT creators (Figure 1).

Entry-level IT occupations have matured and are unlikely to expand as rapidly in the future as they did in the 1990s. However, the Bureau of Labor Statistics predicts that the economy will add 39,000 entry-level IT jobs every year until 2012 (for a total of 64,000 jobs per year including new positions and turnover). Although offshore outsourcing is reshaping the IT workforce in the United States, companies continue to keep much of their IT labor here because of increasing productivity, the process of agglomeration, tacit knowledge, and most obviously, the geographic immobility of certain types of tasks, such as hardware repair and networking; and of certain industries, such as hospitals, universities, and utilities.[6]

Figure 1. Change in IT Occupations, 1983–2003
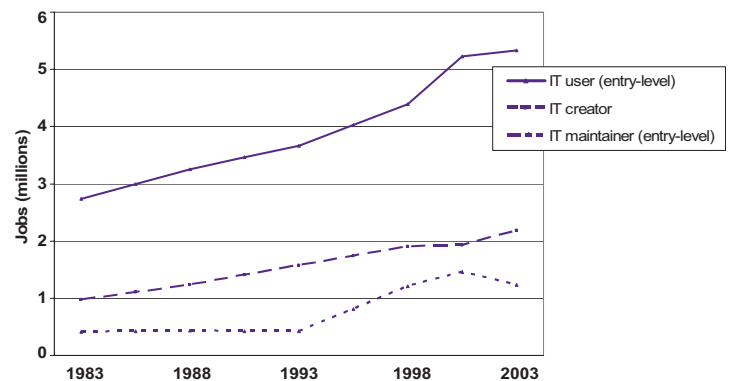
Source: US Bureau of Labor Statistics, Occupational Employment Survey, 1983–2003. Calculations by author.

IT opportunities continue to evolve as technological improvements transform occupations. For example, computer programmers in the 1980s performed help desk functions, but by the mid-1990s, computer support had become its own occupation. Where yesterday's computer support specialist repaired IBM 486s, today's specialist installs home computer networks for the cable company. From security guards to waitresses to warehouse clerks, occupations increasingly require computer technology skills. While technological shifts create uncertainty about skill requirements, they also create a window of opportunity as companies seek employees with the new skills. *Thus, the need arises for short-term training programs that can both respond to the skills employers need and connect graduates with jobs.*

Although various institutions, from large four-year colleges to tiny community-based organizations, conduct job training in IT, the nonprofits are particularly well-equipped to help disadvantaged populations transition into the work as a result of their pro-active role in job placement. As described in the following sections, nonprofits tend to act as facilitators who play an active role in helping job seekers transition to work, while most colleges act more as gatekeepers who provide training with the expectation that job seekers will connect with employers on their own.

The Role of IT Training Programs

How is it possible for disadvantaged workers to cross the digital divide and move up a career ladder in IT? To examine this question, the study relies on successive interviews with 93 nonprofit IT training program graduates. Most interviewees—unlike the overall United States IT workforce—were people of color, female, and had a limited education. (As Table 1 shows, one-third had a high school diploma, general equivalency diploma, or less). Results showed that three to four years after the training program, most (76 percent) of the 64 graduates located were still working in IT. The remaining graduates either lost their first job in IT or did not succeed in securing a first job.

Among those still working in IT, there was an even split between those who held onto their jobs and perhaps improved their wages but were unable or uninterested in moving up further, and those who have added new responsibilities in IT jobs and improved their incomes, typically because of new education. It is possible for workers with little education to move up in IT, but ascending the career ladder typically means going back to school for more training. *The primary role of these programs is to help graduates get in the door, while also teaching them what it will take to advance further in the future, should they so desire.*

The study demonstrated that most graduates are making substantial wage progress as they transition into the IT workforce. From hourly wages in their last jobs—usually in retail, personal services, or construction—to wages at the time of their last interview in 2004, these training program graduates experienced on average about a 56 percent increase in wages, from about $13 to $20 per hour. [7]

Educational attainment through IT training programs makes a substantial difference, especially for less educated people who can benefit the most from increased wages. For those who started with a high school or general equivalency diploma (or less), wages increased by 74 percent; for those with a college degree, wages increased by an average of 60 percent; whereas for those with an associate's degree, wages increased only by 36 percent. *Graduates with little prior education benefit most from these programs, suggesting that programs should avoid the practice of "creaming," or selecting the most advantaged candidates.*

IT Skills and Upward Mobility

Jessica worked as a landscaper for 11 years, never making more than $12,000 per year while raising her daughter alone. When her health would no longer permit her to garden, she found that her GED and work experience left her with few career options. So she went to the MediaLink program at the Bay Area Video Coalition to learn web design.

Graduating in the spring of 2001, she was disappointed to find that no job awaited her: "We had no idea it was going to crash." She made ends meet by working part-time, for $11 with no benefits, teaching at BAVC and continuing to upgrade her skills. Finally, in November 2002, with the help of another BAVC graduate, Jessica found a fulltime job designing online courses for a local college, making $24 per hour. Working in web design gives her new tools to express the creativity she used to use in landscaping: "It's funny because I thought I was going into something totally different from what I was doing before. But just like landscaping, it's about design, creativity, making something people see every day that is beautiful."

By adding to BAVC's four-month training course in HTML with short courses in Java and Flash, and building a career network of BAVC staff and graduates, Jessica was able to parlay her skills into a $50,000/year job with little formal education. "I was one of those people who couldn't do anything…. I always felt like everything happens as a result of something else. But now I can take charge of things."

Table 1. Characteristics of the sample (graduates of training programs).

| Respondent Characteristics		Number	Percent
Race/ethnicity	African-American	38	41%
	First-generation immigrant	19	20
	Latino	10	11
	Other	5	5
	White	21	23
Gender	Female	41	44
	Male	52	56
Educational attainment	Less than HS	4	4
	HS/GED	25	27
	Some 2-year college	20	22
	Associate's degree and/or some 4-year college	21	23
	Bachelor's degree and/or some graduate school	23	25
Age group	19-29	26	28
	30-39	40	43
	40-49	23	25
	50+	4	4
Employment status one year after program	Entry-level IT	59	63
	Entry-level IT related	8	9
	Mid-level or advanced IT	8	9
	Non-IT occupation	8	9
	Unemployed	10	11
Employment status 3-4 years after program	Employed in IT or IT-related	49	78
	Employed, not in IT	12	19
	Unemployed	3	5
Occupation prior to IT	Blue-collar or military	14	18
	Clerical	19	25
	High-end "helping" (e.g., nursing, social work)	7	9
	High-end office	11	14
	Low-end service or retail	25	33
Program	BAVC	19	20
	Byte Back	17	18
	NVCC	15	16
	Per Scholas	20	22
	Street Tech	11	12
	Training, Inc.	11	12

Why IT Training Works

How do job training programs help graduates find their way into IT? Simply put, they use their networks. Nonprofits act as active facilitators, not only by matching graduates to employers through personal connections, but also through training in soft skills. Networking is particularly important for graduates with low educational attainment who lack the credentials to even obtain an interview. The reference from the training program essentially substitutes for work experience, which is critical for those trying to break into IT. As Lucinda from Per Scholas says, "They helped me to get my first job, which is usually really hard because everybody wants you to have experience…It changed my life."

The training provider survey conducted for this study found that public institutions have the broadest networks with employers and nonprofit organizations have the strongest relationships, as opposed to private schools. This suggests that both public and nonprofit providers may have more political connections and institutional credibility than the private providers do. For example, local firms may use nonprofit training providers to meet promises made to city government to hire locally. This helps public and nonprofit providers persuade firms to rely on intermediaries and thus plays a critical part in helping the disadvantaged enter the information economy.

Since politics and trust have an important role in developing relationships with employers, proximity becomes key. Trust comes from the ability to have face-to-face interaction. As a result of proximity, as well as the inability of low-skilled job seekers to commute very far, entry-level labor markets are extremely localized, as reflected in where providers build relationships and place graduates.[8] Map 1 maps the locations of employers where New York area providers have placed graduates. Providers tend to place within a subregion of the metro-politan area; nonprofit providers' networks are particularly localized, public providers' are fairly localized, and private providers' are the most extended. This reflects both the nature of low-wage labor markets and the different target populations for the nonprofit, public, and private provider types.

Map 1. IT Training Providers and Employers Where Graduates Placed, NY Area
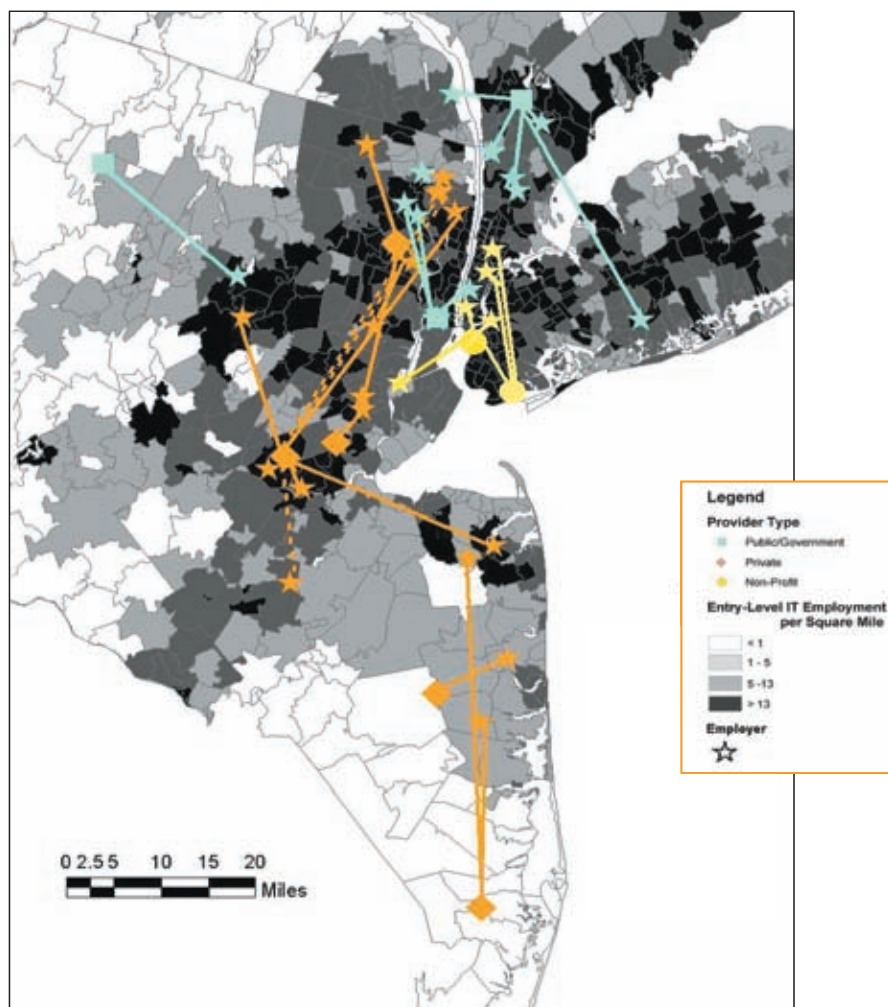
But networking alone is not enough; programs must also prepare their students in soft skills by teaching them ways to convince prospective employers that they "get" IT. As one IT employer told us, "There is a certain type of person I look for, ones that look like they spent their summers at UNIX camp."

Crossing the digital divide is also about becoming comfortable with technology. In their exit interviews three or four years after they finished the program, graduates were most likely to mention exposure to technology—an area they would never have felt comfortable in prior to the program—and new confidence as the biggest

impacts of the programs on their lives. As Marcus, an African American graduate from the Alexandria Workforce Development Center at Northern Virginia Community College, who now earns $85,000 per year as a systems administrator, says:

"I had tried everything else. I was a certified nursing assistant, did construction, worked at Foot Locker, did sales, tried to sell alarm systems, tried to be a teller…. Computer was the only thing that I never tried. Glory be…the computer training I got, it got me in the door and allowed me to see that, with training, I can do more. I saw the opportunities and saw the minimal requirements for opportunities."

Because the programs are hands-on and results-oriented in a way that many community college and trade school courses are not, they give their graduates the aplomb they need to enter technology. Graduates gain confidence from staff and peer support, and also from working on interpersonal skills while in the program. Even Patrick, who didn't make it in IT, says: "Just being able to communicate with people about how to understand something—to ask, relate. I got more out of the life skills, more than anything else."

This study shows that the majority of training program graduates remain in IT three years later, with average wage gains of almost 60 percent and a clear career trajectory ahead of them. The training intermediaries that facilitate upward mobility in IT are effective because they train in IT skills that are useful across a broad array of occupations and sectors, as well as help their students bridge the cultural divide between impoverished communities and corporate America. They provide an important lesson that is likely generalizable across a wide variety of occupations: *If the system is responsive to employer demand, targets occupations with career ladders, trains in soft skills, and connects with employers for placement, then training programs can succeed.*

## Upward Mobility in IT for Disadvantaged Workers

This study shows that crossing the digital divide leads to upward mobility for disadvantaged training program graduates. To what extent is this true generally?

The debates continue about the extent to which it has become more difficult to move up in today's economy, with some finding overall declines in upward mobility and others finding differences in upward mobility by gender, race/ethnicity, and education.[9] This study's analysis of short-term economic mobility from 1996 to 2000 (using the Survey of Income and Program Participation) shows that, overall, 26 percent of U.S. workers in the United States moved down at least one income quintile in that period, while 25 percent moved up

at least one quintile and 49 percent remained in the same quintile. Thus, gains in mobility were essentially offset by losses.

There are, however, clear paths to economic mobility, and they have important implications for employment training in the technology field. Workers who change jobs, in particular those who move from one industry to another, are more likely to move up.[10] Further, this analysis shows that workers who move into technology-related work from non-technology fields are even more successful at improving their economic status.[11] As Figure 2 shows, workers who stay in the same job are not able to improve their wages. But those who change jobs are disproportionately likely to move up—31 percent of all workers and 27 percent of technology workers who change jobs move up. Even more effective is to change industry—31 percent of technology workers who moved from one industry to another while staying in the same occupation moved up an income quintile. *Finally, moving into technology is the biggest guarantee of upward mobility—42 percent of those who entered technology experienced income gains over the four years.*

Figure 2. Economic Mobility for Technology and Non-Technology Workers, 1996–2000
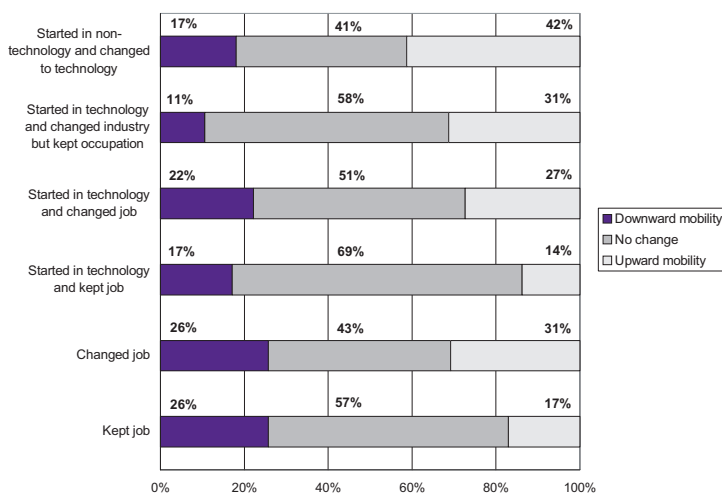
Source: Survey of Income and Program Participation, 1996 and 2000. Calculations by the author.

Looking to the Future

Ideally, a study of career ladders in IT would follow workers for at least a decade. This study was only able to track students for three to four years after their graduation from a short-term training program. In that time, three-quarters remained in the field and half of those students had advanced. The question remains whether they will be able to continue their upward mobility. For most, advancement seems to depend on their ability to obtain a degree, whether a high school diploma or a four-year bachelor's degree in computer science. Without it, IT program graduates living in expensive high-tech regions will likely remain among the working poor.

Can these programs succeed everywhere? A regression analysis conducted for this study shows that much depends on the entry-level job market, which varies by region.[12] First, the metropolitan areas with a less balanced occupational structure—i.e., a disproportionate number of entry-level jobs relative to more advanced IT positions—are more likely to have lost jobs in recent years. Second, entry-level jobs in larger metropolitan areas are particularly at risk. Third, regions of the country differ in economic resilience. Should patterns from before the dot.com bust continue—and there is little reason to expect change, at least in the short-term—metropolitan areas in the Pacific and South Atlantic regions can expect continued IT job growth, while those in the East North Central and Middle Atlantic regions have cause for concern. High-tech regions should continue to generate enough demand for entry-level IT workers to sustain these innovative programs at community-based training organizations.

Although the nature of jobs in technology will undoubtedly shift again, the need for extensive training will not abate. Retiring baby boomers in coming years will create widespread worker shortages, particularly in high-tech metropolitan areas, and reveal considerable skill deficiencies in our workforce.[13] Thus, it is vital that policymakers focus on how to increase access to the system and make it more effective.

Policy Directions

This study demonstrates that nonprofit IT training programs provide an innovative and successful way for disadvantaged individuals to cross the digital divide. Despite growing labor market bifurcation and wage inequality, many are able to access jobs and achieve upward mobility, in part through nonprofit job training programs that help them gain technology skills and network into IT jobs. The emergence of entry-level IT jobs has made this transition possible, and despite recent job losses, the growth of entry-level occupations will likely continue, particularly in high-tech regions with smaller metropolitan areas. *This creates a need to scale-up effective, community-based IT training programs.*

Labor market intermediaries, particularly training providers, play an important role for job seekers whom the K-12 and community college systems fail to serve well. Although this study focused on training for IT occupations, its findings are likely generalizable to others as well. IT skills are critical to an increasingly broad array of occupations, such as nursing and security. Indeed, many of the intermediaries in this study have already shifted into training for different occupations that are using IT skills. *As technology permeates different sectors, there is a window of opportunity for training in new areas.*

Crossing the digital divide requires gaining access to new networks and skills, but most importantly, gaining confidence in using technology and interacting in corporate settings. The majority of training program graduates remain in IT three years later, with substantial wage progress. For many, a clear career trajectory lies ahead. Without the programs, they would never have the opportunity to move up through further training and education. Because they are in technology occupations, upward mobility may be feasible, particularly if they move between industries. *IT training programs are more effective if they are responsive to the regional economy and train in technical and soft skills that are applicable across a variety of job environments.*

These training programs emerged in spite of, not because of, the Workforce Investment Act. Although government funding (such as the H-1B program) supports such programs in some states, these nonprofits rarely qualify for WIA training monies. For instance, Per Scholas, the nonprofit that trained Ruben, the former fast-food chef, is in New York, which provides training for a smaller share of its WIA participants than almost any other state.[14] Such innovation and responsiveness to labor market opportunity is left to foundations to support.

Key to provider effectiveness is responsiveness to employer demand, particularly relationships with employers and ability to train in soft skills. However, WIA does not necessarily reward the most effective programs. Because of its emphasis on "customer choice," it funds training in occupations that may not be in demand in the regional economy. Its requirements make participation onerous for both public and nonprofit providers, which is unfortunate because nonprofit providers not only play a critical facilitator role in helping job seekers transition to work, but also may have stronger relationships to employers, particularly local firms. Finally, it presents incentives to programs to cream, despite the fact that underserved people benefit most from short-term training programs.[15] *Advocating to make these programs eligible for government funding would increase their replicability.*

With the help of training provider intermediaries, disadvantaged job seekers in high-tech regions have genuine opportunities to enter and advance in the IT workforce. But the devolution of workforce development policy under WIA has created a highly differentiated landscape of opportunity across and within regions; some communities have the institutional capacity to innovate training solutions, while others do not. While most agree that the system has eliminated the favoritism and waste under the Job Training Partnership Act, the benefits are not reaching the hard-to-serve as effectively as before. However, by mandating collaboration on Workforce Investment Boards and bringing many different employment services under one roof in one-stop locations, WIA provides an opportunity to bring more partners to the table. Ultimately, these new partnerships and intermediaries may make it possible to integrate the training system more effectively with two- and four-year colleges. Without the foot-in-the-door provided by CBOs and the opportunity to move up through college education, people like Ruben, the former chef, won't ever get that second chance.

Notes

1 All names have been changed herein.

2 Defined as the "skills, abilities, and traits that pertain to personality, attitude, and behavior rather than to formal or technical knowledge." See Philip I. Moss and Chris Tilly, *Stories Employers Tell: Race, Skill, and Hiring in America*. (New York: Russell Sage Foundation, 2003), p. 44.

3 Gary S. Becker, *Human Capital: A Theoretical and Empirical Analysis with Special Reference to Education*, 3rd edition (Chicago: University of Chicago Press, 1994); David M. Gordon et al., *Segmented Work, Divided Workers: The Historical Transformation of Labor in the United States* (Cambridge, England: Cambridge University Press, 1982); Robert B. Reich, *The Work of Nations: Preparing Ourselves for 21st-century Capitalism* (New York, NY: Alfred A. Knopf, 1991).

4 Manuel Castells, *The Rise of the Network Society* (Malden, MA: Blackwell Publishers, 1996); Saskia Sassen, *The Global City: New York, London, Tokyo* (Princeton, NJ: Princeton University Press, 1991).

5 Robert Giloth, ed., *Workforce Intermediaries for the Twenty-First Century* (Philadelphia,: Temple University Press, 2004) p. 13. Giloth calls this the second-chance employment and training system, including GED, ESL, adult and vocational education, job training, and other programs targeted to special populations; he estimates that it serves 15–50 million people.

6 Karen Chapple et al., "Why Some IT Jobs Stay: The Rise of Job Training in Information Technology," *Journal of Urban Technology*, vol. 9, no. 1 (2002): 57-83.

7 This wage gain is comparable to or greater than those in sector initiatives, which are workforce development efforts to both improve firm productivity and benefit low-wage workers in a single industry (rather than in an occupation that cuts across sectors, as IT does). A preliminary evaluation of a cross-section of such initiatives found wage gains of 31% over two years. Lily Zandniapour et al., *Gaining Ground: The Labor Market Progress of Participants of Sectoral Employment Development Programs,* SEDLP Research Report No. 3 (Queenstown, MD: Aspen Institute, 2002). Average wages prior to IT training are relatively high ($13) because of a small number of workers dislocated from high-wage office occupations.

8 Karen Chapple, "Time to Work: Job Search Strategies and Commute Time for Women on Welfare in San Francisco," *Journal of Urban Affairs*, vol. 23, no. 2 (2001): 155-173.

9 Annette Bernhardt et al., *Divergent Paths: Economic Mobility in the New American Labor Market* (New York, NY: Russell Sage Foundation, 2001); and Isabel Sawhill, *Getting Ahead: Economic and Social Mobility in America* (Washington, DC: Urban Institute Press, 1998).

10 Fredrik Andersson et al., *Worker Advancement in the Low-Wage Labor Market: The Importance of 'Good Jobs'* (Washington, DC: The Brookings Institution, 2003).

11 Technology-related work was defined based on a combination of one-digit occupation and one-digit industry SIC codes. Thus, it consists of professionals and technicians in FIRE, business services, professional services, and manufacturing.

12 A regression analysis was performed to determine what explains recent changes (1998-2003) in IT jobs for metropolitan areas. The analysis does not entirely explain recent changes, but it suggests several factors that may be important.

13 Mitra Toossi, "A Century of Change: The U.S. Labor Force, 1950–2050." *Monthly Labor Review*, (May 2002): 15-28.

14 Calculated by author, WIA Standardized Record Data, 2000-2002.

15 SER-Jobs for Progress National, Inc., "WIA Reauthorization: The Community-based Perspective," retrieved from http://www.ser-national.org/Media/wia.pdf. April 2002. Accessed October 2004.

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