



INSTITUTE FOR
CAREER
DEVELOPMENT

NEW YORK INSTITUTE
OF TECHNOLOGY

Opportunities for Pathways & Collaborations

**Creating a Pipeline of Individuals
with Disabilities for Employment
in the Technology Sector**

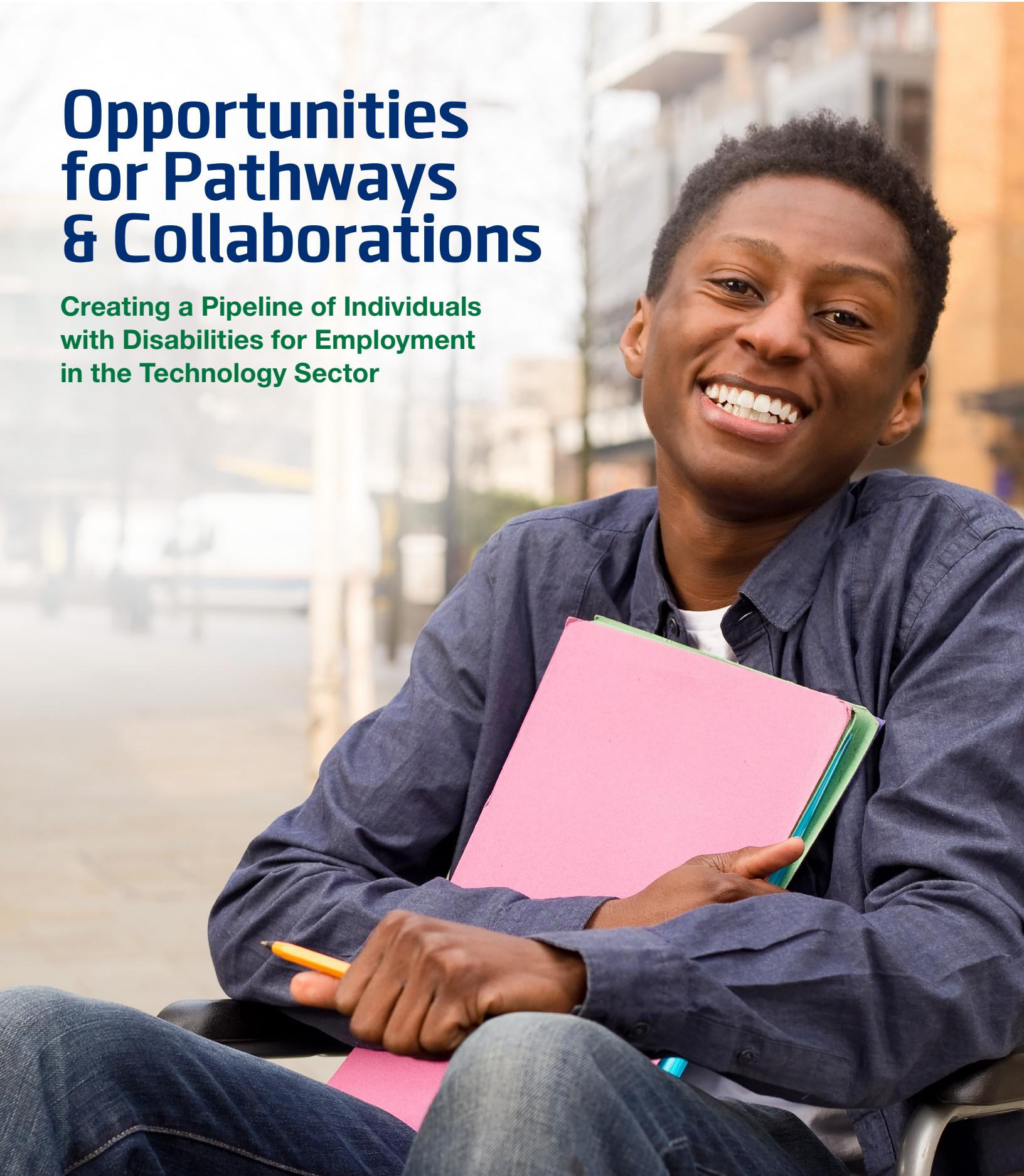


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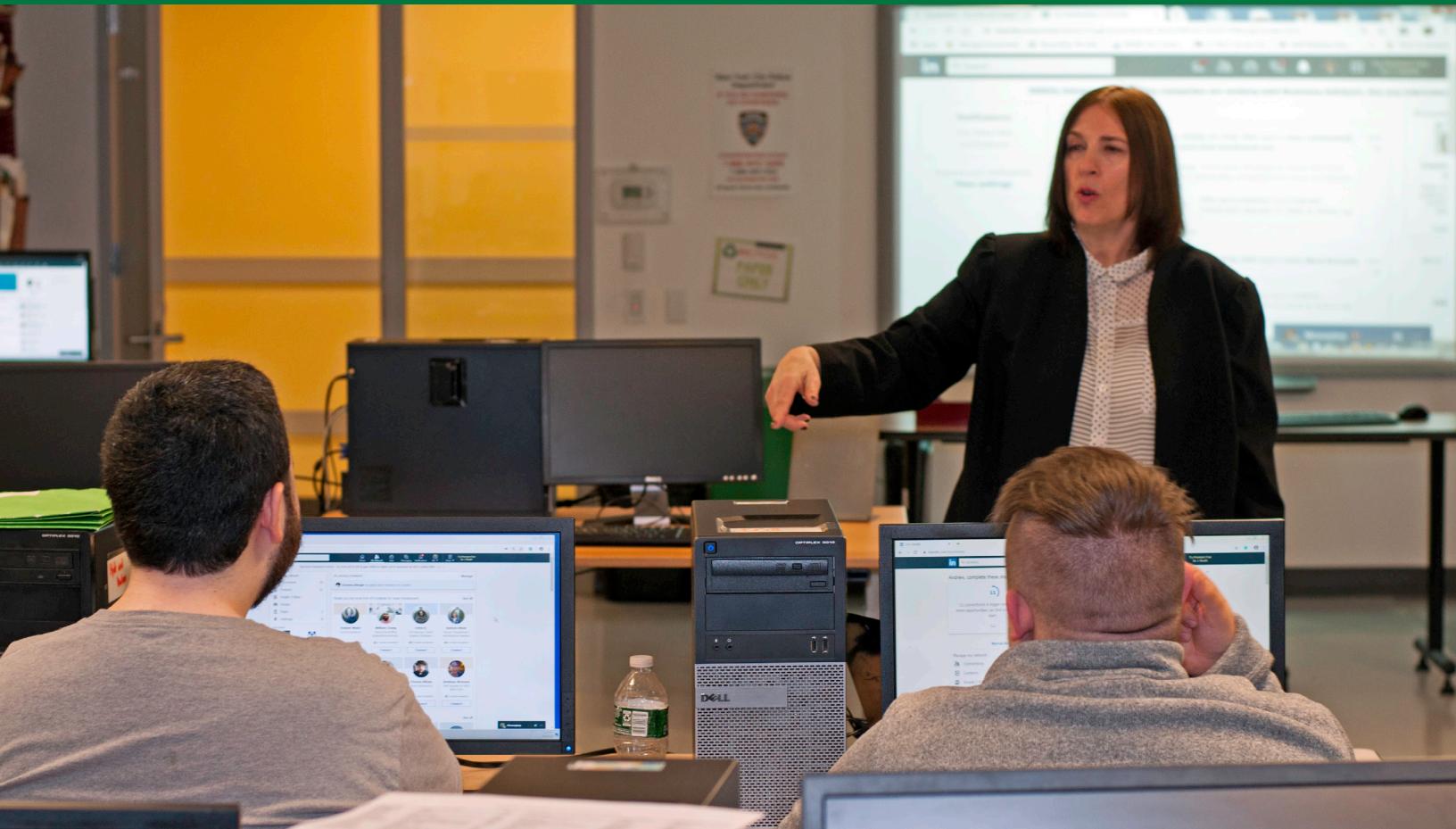
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Get to know ICD Institute for Career Development

We are a New York City-based nonprofit whose mission is to transform the lives of veterans and people with disabilities through employment. Founded in 1917 as the first comprehensive outpatient rehabilitation center in the United States, ICD was established to serve the rehabilitative needs of veterans of World War I and help them re-enter the workforce. For over 100 years, we have impacted the lives of thousands of people with disabilities by disseminating our pioneering innovations in workforce development.

Among ICD's industry-specific job training programs is the first-ever CISCO IT Academy, designed to prepare students with disabilities for jobs in IT networking and security. This unique program offers industry-recognized Cisco certification through a curriculum adapted for students of all learning styles. With the help of our employer partners, the IT Academy readily positions ICD to forge the way to a disability inclusive technology sector.

Visit www.icdnyc.org today to learn more about how you can help us bridge the digital-divide for people with disabilities.

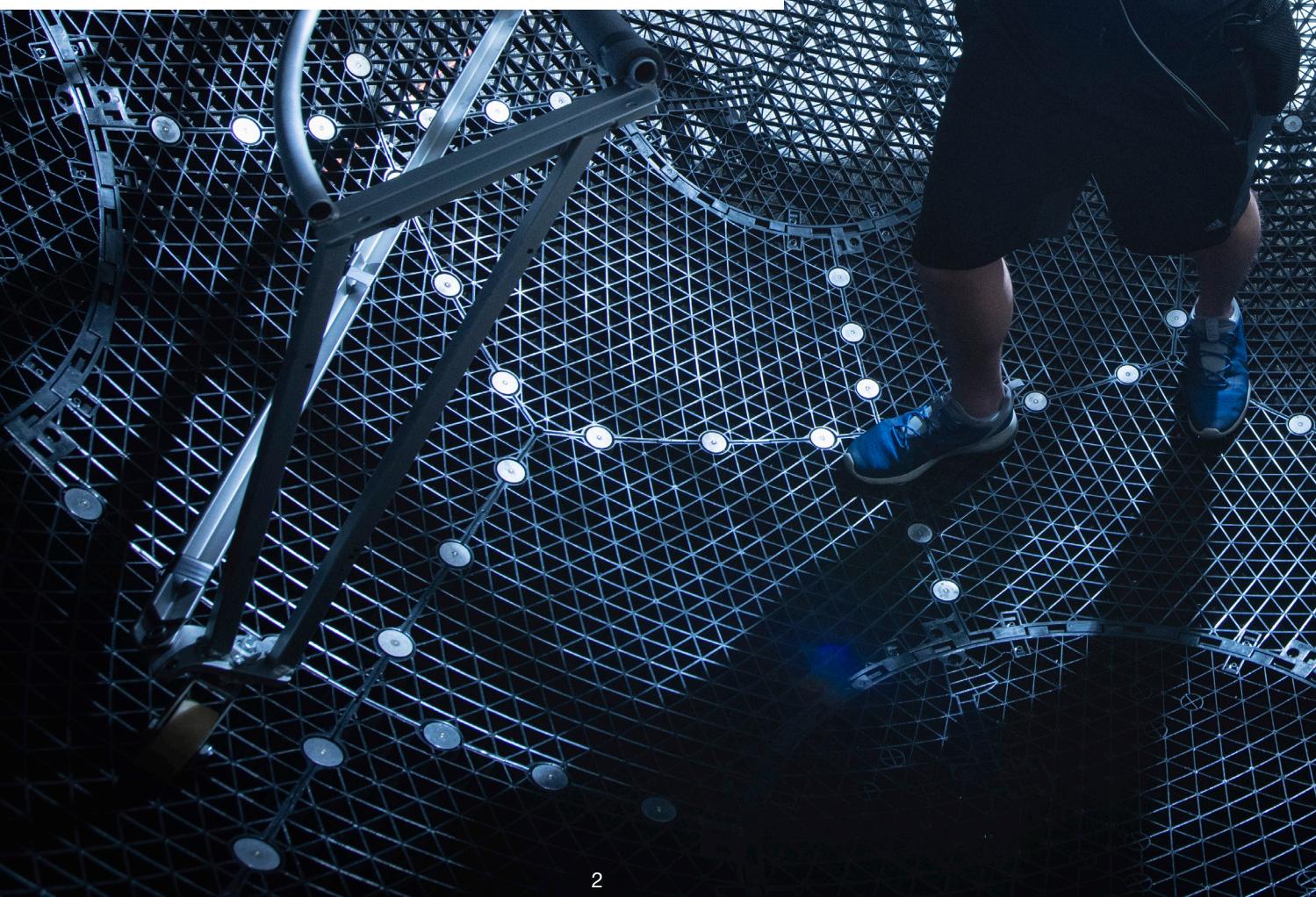


Get to know New York Institute of Technology

We inspire the next generation of doers and makers, innovators and inventors, healers and entrepreneurs.

At New York Tech, our students learn by doing. They have opportunities to tackle real-world problems in the classroom, engage in research, pursue internships, network with leaders, study with experts, start a business, and learn to transform ideas into creative solutions that improve society.

Our community is made up of engaged, technologically savvy physicians, architects, scientists, engineers, business leaders, digital artists, nurses, and more.



The background image shows several people in an office environment, focused on their work at computer stations. One man in the foreground is wearing glasses and a grey hoodie, smiling while looking at a monitor. Other people are visible in the background, also engaged with their computers. Cables and office supplies are visible on the desks.

Executive Summary

This report identifies challenges and opportunities for individuals with disabilities (IWDs) to access and thrive in jobs in the fast-growing technology sector.

INTRODUCTION

Prior to the COVID-19 pandemic, the demand for employees in the technology sector in New York City was steadily growing. Between 2010 and 2019, 46,000 high-tech jobs were added, representing a 6% share of the City's employment growth (Civic Hall Report: NYC's Tech Opportunity Gap, Nov. 2019). When this report was written, COVID-19 had not yet disrupted the low unemployment levels and perceived environment of opportunity for individuals with disabilities (IWDs) to find stable and fulfilling employment in tech. Yet, even at that time, the unemployment rate for IWDs in the U.S. was 2.5 times higher than for those without disabilities. In 2017, only "20.6 percent of people with [a disability] participated in the labor force, compared with more than two-thirds of those with no disability" (Kang, Dunn & Blank, 2018). In New York City, where one in five New Yorkers has a disability, IWDs are one of the largest minority groups.

Recent changes only underscore the imperative to find optimal pathways for moving IWDs into well-designed training programs that create opportunity for employment in technology fields. This study seeks to contribute towards such a goal by identifying the main challenges to accelerating economic opportunities for IWDs. It also offers practical recommendations for employers, training providers, and policymakers to tap into, develop, support, and draw upon the underutilized talents and capacities of IWDs in New York City.

Based on our stakeholder consultation process and a review of available literature, we identified obstacles IWDs face when seeking employment in tech fields including deficits in foundational skills, lack of previous work experience, hiring and interviewing processes that are inadequate for assessing their skills, and many others.

The rapid pace of technical innovation means that jobs in the technology sector are continually evolving. As a result, training providers struggle to regularly upgrade the accommodations and teaching modifications needed to train IWDs in the tech skills that employers seek. This, taken alongside the need to offer practical work experiences to IWDs seeking jobs, suggests a need for employers to develop stronger ties with workforce development initiatives and providers.

Indeed, many of the stakeholders interviewed for this study highlighted the importance of fostering partnerships among employers, training providers, organizations serving IWDs, and government to build a pipeline of qualified IWDs to match the demand for skilled labor in the technology sector. Creative linkages between these parties would allow for demand-driven workforce development in technology fields, along with sharing of training staff and resources, and better information on the knowledge, skills, and abilities trainees need to develop

Technology skills can serve as a great leveler, allowing individuals with a broad array of disabilities to compete on a level playing field. Given the right environment, IWDs have the same potential to succeed in technology jobs as any other group. These positions continue to be a bright spot even in the current economy and demand is likely to grow in coming years. We hope that this report will contribute to the successful inclusion and integration of IWDs in the workplace as part of a post-pandemic "new normal."



Project Summary

PURPOSE

Opportunities for individuals with disabilities (IWDs) to obtain both training and employment in the technology sector are scant, despite growing talent needs and shortages in qualified candidates. The purpose of our research was to identify optimal pathways for moving IWDs through well-designed training programs to well-paid and welcoming environments for employment in the technology sector.

TARGET AUDIENCE

Primarily employers and training providers, particularly mainstream training providers who want to better serve IWDs in their training offerings; and disability serving organizations who need to be able to share resources to offer tech training to IWDs.

Key Findings and Recommendations

ADAPT RECRUITMENT AND HIRING PRACTICES

Traditional interview processes are inadequate for assessing IWD's technology skills and aptitudes, and screening processes tend to be highly inflexible and rely on degrees. Employers should adopt performance based interviewing approaches that put less emphasis on verbal interviews, as well as audit/change job descriptions to limit unnecessary reliance on academic degrees.

INCREASE VISIBILITY OF IWDs IN THE WORKPLACE

Overall, we found that there is a general lack of visibility of IWDs in the workplace that contribute to misconceptions about the abilities of IWDs. As a result, hiring managers are often overly concerned about integrating IWDs into work assignments. Employers should publicly include disability as an aspect of an aspect of diversity and inclusion policy and implement audits such as the Disability Equality Index survey to ensure policy becomes practice.

ACCOUNTABILITY FRAMEWORK

New York City should consider empowering a City agency to provide support and guidance to the charter revision commission to develop oversight, recourse, and accountability measures for disability policy proposals.

Such an agency could assist with a study of occupational disparities in hiring of IWDs in all industries, work with M/WBE members and other government vendors to properly document good faith efforts in recruitment and outreach to disability

METHODOLOGY

The research done for this report is primarily qualitative. Forty people from sixteen different employers, training providers, and job placement services either attended a focus group or were interviewed individually. The team then facilitated discussions on their findings and elicited feedback from a wide range of employers and training providers at three events focused on accessing technology sector jobs.

services organizations, provide IWD hiring legal liability guidelines for employers, and determine the need for and funding of "Bridge Programming" across the spectrum of services provided by community-based disability organizations.

DEVELOP NEW AND INNOVATIVE ENTRY PATHWAYS

Hiring companies find it extremely difficult to reach out to a diffuse network of disability serving organizations to meet their employment needs. For any single disability organization, it is also a significant challenge to provide candidates at the scale employers need. Employers and providers should develop new and innovative entry pathways for high demand job openings, such as paid internship programs and other "try-out" models that allow hiring managers to directly assess the work performance of IWDs.

CREATE A TECHNOLOGY-FOCUSED CENTRALIZED TRAINING AND RESOURCE CENTER (CTRC).

Most disability serving organizations do not have the capacity to offer technology training; and, when they do, they are generally not aligned with tech careers. Likewise, mainstream training programs for technology jobs fail to make training accessible to IWDs, and community based programs serving IWD often lack access to skilled instructors or appropriate curricula. Disability and tech training providers should work together to fund and develop a resource center to foster closer collaboration and better prepare IWDs for tech jobs.

Overall Challenges

Traditional interview processes inadequately assess the aptitudes of individuals with disabilities (IWDs).

Inflexible screening processes and over-reliance on academic degree alone as indicator of technology skills

Misconceptions about the diversity and skills of IWDs.

Lack of visibility of IWDs in the workplace.

A diffuse network of separate disability organizations makes it difficult for hiring companies to meet their employment needs at scale.

Lack of teachers with both the technological and pedagogical skills to teach IWDs.

Providers lack the resources necessary to offer high-tech job trainings that can accommodate the full range of needs of individuals with different disabilities.

Lack of correspondence between the skills offered by supply driven training providers and employers' requirements in demand-driven training.

Overall Recommendations

FOR EMPLOYERS

Develop new and innovative entry pathways for high demand job openings.

Paid internship programs may be offered so that applicants gain access to paid work experiences while employers can assess work performance.

Change hiring practices to be more inclusive of IWDs.

Adopt performance-based interviewing approaches that put less emphasis on verbal skills and change job descriptions to limit unnecessary reliance on academic degrees as job requirements.

Increase visibility of IWDs

Issue specific statements that integrate disability as a part of your diversity and inclusion initiative and educate key staff.

Develop partnerships with centralized community-based training providers.

Formal partnerships between employers and centralized training providers for IWDs could provide pipelines of talent.

FOR MAINSTREAM TECHNOLOGY TRAINING & DISABILITY SERVICE PROVIDERS

Engage colleges with STEM and Education departments to provide accelerated programs for teachers of IWDs

Training programs for tech teachers should provide a deep understanding of the learning modalities of IWDs and the curricular adaptations required to accommodate their needs.

Build partnerships with technology training providers and adapt best practices.

Foster collaborations between agencies and disability-service organizations to build capacity and garner resources for exemplary technology training for IWDs.

Create a technology-focused Centralized Training and Resource Center (CTRC).

Fund and develop a center that serves as a resource to both employers and training providers and focuses on preparing and connecting IWDs with high-demand jobs in technology.

Conduct an accessibility audit.

Tech training providers seeking to train IWDs should undertake a disability audit to identify what they need to do to attract and make their services accessible to IWDs.

FOR POLICY MAKERS

Adapt veteran hiring models to a broader range of IWDs.

To best respond to the employer skills demand, training providers for IWDs may look for inspiration in vocational rehabilitation programs for returning veterans.

Expand and adapt the NYC M/WBE legislation to specifically include IWDs.

The successful Minority and Women Owned Business Enterprises (M/WBE) initiative should be extended to include IWDs as a significantly underrepresented population.

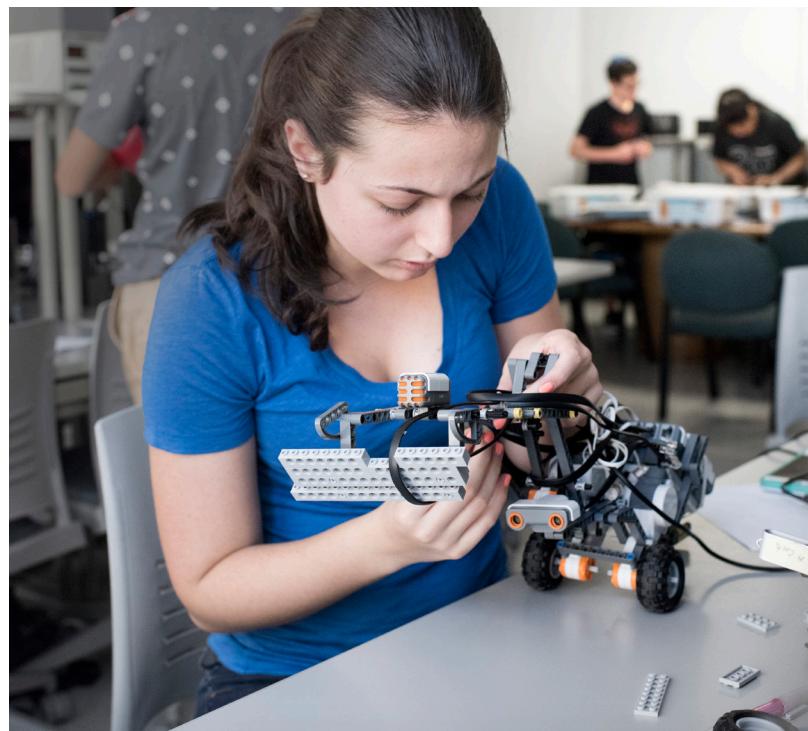
Promote and expand tax incentives for hiring and retaining IWDs.

Fund and develop a public service initiative to inform potential employers of the available Federal and State tax incentives for hiring IWDs.

Create a NYC tax incentive for hiring IWDs building on the Federal Work Opportunities Tax Credit.

Establish an accountability framework

Develop an agency to provide support and guidance to NYC's charter revision commission to develop oversight, recourse, and accountability measures for disability policy proposals.



Overall Report

The report sets out practical recommendations for employers and training providers on how to strategically develop mutually beneficial supports to draw on the underutilized talents and capacities of individuals with disabilities (IWDs) in New York City.

KEY CHALLENGES AND RECOMMENDATIONS FOR EMPLOYERS

To successfully integrate IWDs into high skilled technology jobs, employers must implement best practices that address barriers in three broad areas of employment operations and culture: recruitment practices; lack of cultural recognition and understanding of the strengths and capacities of IWDs in the workplace; and a lack of infrastructure and resources to support IWDs. These barriers may be significantly mitigated through concerted actions and policies by employers. The following sections offer detailed information on challenges, best practices, and recommended actions, with examples of approaches for employers of different scale noted where relevant.²

A. Adapt Recruitment and Hiring Practices

KEY CHALLENGE:

Traditional interview processes are inadequate for assessing the technology skills and aptitudes of IWDs

While technology jobs generally center on a person's ability to perform specific tasks, the typical interview-based process does not always work well for determining the capacities and skills of IWDs. Many people on the autism spectrum, who are increasingly recognized by employers as having a strong aptitude for a range of technology jobs, don't interview well as they don't make

good eye contact and can be overly honest about their weaknesses (Austin and Pisano, 2017).

Programs such as Autism @ Work and Specialisterne recommend non-interview based assessments of candidates that focus on projects and problem-solving activities to evaluate actual work-product skills.



RECOMMENDATION 1:

Expand the use of apprenticeships, internships, and other work “tryouts” as a way for IWD candidates to demonstrate skill.

Direct observation of real work is a significantly better predictor of work performance than the indirect signals that academic degrees provide. “The best predictor of how someone will perform in a job is a work sample test” (Bock, 2005). Paid apprenticeships and internships are the preferred model to demonstrate skills. Unpaid work experiences are problematic for IWDs due to limited financial resources and their familial obligations. Paid apprenticeship programs, whether formerly registered with the State or informal, provide income to the applicant for work performed while allowing the employer to observe both hard and soft skills in the actual job environment. Moreover, the relationships and connections built between current employers and IWDs serve to better inform both parties about actual work duties and performance prior to permanent job offers.

To hire for these roles, employers should consider non-interview based techniques, which have been shown to demonstrate huge value when recruiting workers with high technology skills who happen to be on the autism spectrum.³ The work of Specialisterne in developing a non-interview based assessment and training process can be adapted by employers. Meanwhile, both Google and Marriott have developed pre-interviewing processes that use game versions of the jobs that individuals are applying for. These processes could be adapted to make jobs accessible to IWDs (see Cappelli, 2019). Goldman Sachs has championed asynchronous video interviewing for initial interviews. Applicants record video responses to a set of structured questions—from home, not at the worksite—which may prove beneficial to some applicants with disabilities (see Holmes, 2019).

KEY CHALLENGE:

Inflexible screening processes and over-reliance on degrees to judge skills and aptitude.

A significant challenge faced by IWDs is getting to the interview stage in the first place. Organizations engaged in placing people in technology employment note that IWDs are less likely to have achieved a college degree, and often rely on developing their skills from specialized technology training programs that can accommodate their needs. However, large corporations frequently require a bachelor’s degree as a minimum education

requirement to screen candidates for technology jobs, which results in IWDs being screened out of the interview process.⁴ Moreover, when large companies rely on a highly structured recruitment process, recruiters and hiring managers, who have significant targets to fulfill and can therefore be risk averse, have less room for flexibility.

RECOMMENDATION 2:

Employers should look at skill-based credentials as an alternative to degrees when screening candidates.

There are a growing number of certification-based credentialing programs that can establish and signal a candidate’s competencies for specific tech jobs, and in some cases help to match them with potential employers.

Cisco certifies graduates who develop the skills to diagnose, restore, repair, and replace critical Cisco networking and system devices at customer sites. Launch Code (launchcode.org) pairs free technology training with paid apprenticeship experiences at

partnered companies to help them evaluate potential permanent hires. The OpenTech LA Regional Apprenticeship Collaborative (opentech.la) uses a combination of partnerships with educational facilities and local businesses to develop technology-based talent incubators for disadvantaged job applicants (including youth and IWDs). They have modeled an approach of simultaneous classroom training and apprenticeship programs to meet the needs of employers with hard to fill jobs.

RECOMMENDATION 3:

Employers should be flexible about requiring/using college degrees as an indicator of technology skills.

Employers should avoid using formal education requirements (e.g., B.S. degree) to screen for interviews when jobs do not require such degrees. Civic Hall has made similar

recommendations for other diversity population groups and these practices should be extended to include IWDs (HR&A Advisors, 2019).

B. Open Workplace Culture

KEY CHALLENGE:

Misconceptions about the diversity and skills of IWDs

Employers often underestimate the potential pool of talent or hold negative views about the work-related abilities of IWDs. At the same time, employers overestimate the costs of accommodating IWDs in the workplace. There is also evidence that

smaller companies fear potential litigation, loss of revenue, and difficulties in eliminating or modifying physical barriers that are identified in the workplace (Fraser et al., 2011: 424).

RECOMMENDATION 4:

Make disability a higher priority area of diversity and inclusion.

Employers should strategize on ways to make their workplaces more inclusive. Research has shown that, in general, the actual costs of accommodations for IWDs tends to be minor and can often be offset by resources made available to employers for that purpose.

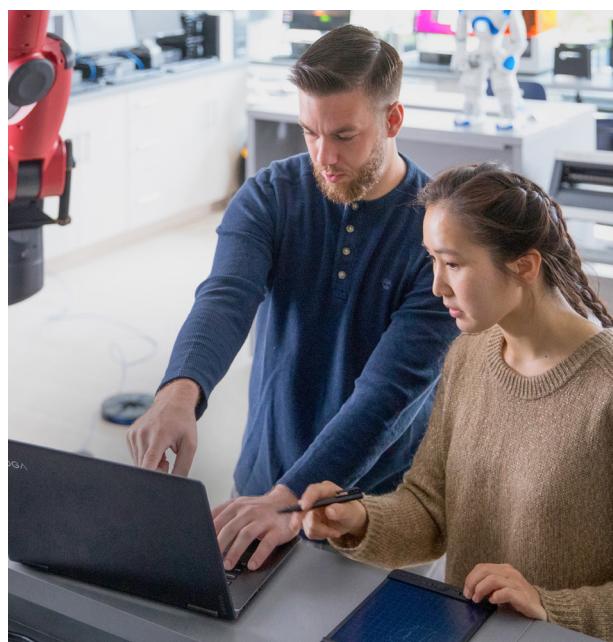
Successful approaches to inclusion are those based on open assessment of and reflection on barriers throughout the employ-

ment cycle, from recruitment to integration in the workplace (Bonaccio, 2019a). Diversity and inclusion policies are most successful when they include explicit organizational goals for recruitment, screening, interviewing, and internship programs and when organizations have developed relationships with community-based organizations.

Practices found to have a positive impact on the hiring of IWDs

Organizations with:	Increased Likelihood of Hiring IWDs:
Targeted internships	5.7 times
Strong senior management commitment	4.8 times
Explicit organizational hiring goals	4.1 times
Active recruitment, screening, and interviewing	3.2 times
IWDs included in their diversity and inclusion plan	3.2 times
Relationships with community organizations	2.7 times

Source: (Erickson et al., 2013)



KEY CHALLENGE:

Lack of visibility of IWDs in the workplace.

Despite growing recognition of diversity and inclusion in U.S. corporate culture, disability is rarely acknowledged explicitly. Misconceptions about the abilities of IWDs are compounded by the lack of visibility of IWDs in the workforce as many avoid disclosing their disability to employers out of fear of being fired or treated differently. However, IWDs are more likely to disclose

their status in a disability-friendly workplace with supportive supervisors, active disability recruitment, knowledge of other IWDs in the workplace, and inclusion of disability in the company diversity statement (Von Shrader et al., 2011).

RECOMMENDATION 5:

Ensure there is buy-in from key operational staff and hiring managers.

To develop buy-in from key operational staff, companies should ensure that:

- Organizational practices match formal policies of inclusion of IWDs;
- Business strategies reflect a commitment to include IWDs in the workforce; and
- Senior management embraces values and strategies that demonstrate a commitment to including and retaining IWDs in the workforce.⁵

Specific strategies could include:

- Issuing clear and company-wide mandates (e.g., by CEOs) for comprehensive and integrated approaches to including more IWDs.
- Having an overall structure in place (e.g., specific written policies, embedded staff training on disability inclusion, hiring practices, designated mentors/coaches, etc.) in order to successfully integrate and support IWDs (Araten-Bergman, 2016).
- Prioritizing disability in diversity and inclusion policy and practices.
- Engaging all staff in implementing strategies, including diversity and inclusion personnel, employee resource groups, operational staff, hiring managers, and other senior staff. Best practices also include regular inclusion trainings to develop awareness about disabilities in the workplace (e.g., communicating with IWDs, myths about IWDs in a workplace, etc.) as well as networking and mentoring events to help IWDs feel welcome in the workplace.

These changes, in turn, help increase the visibility of IWDs, which is key to transforming and sustaining an inclusive culture.



C. Build Capacity: Expand Resource Infrastructure

KEY CHALLENGE:

Reaching out to a diffuse network of independent disability organizations makes it extremely difficult for employers to meet their hiring needs at scale.

It is a challenge for employers to source candidates at scale from any single disability organization.

In addition, while large-size companies have the resources to develop targeted approaches in order to recruit and integrate IWDs, however, they may face challenges in implementing comprehensive inclusion practices. Those we interviewed described their efforts as being a “relatively new movement” and that their practice on IWD inclusion tended to be ‘evolving’ rather than comprehensive (with a few notable exceptions).

Small and medium sized companies tend to have limited resources dedicated to supporting inclusion practices and often lack the knowledge of low cost accessibility accommodation options that may be available to them. Moreover, our research indicates that during their hiring process, these companies find reaching out to a diffuse network of separate disability organizations a challenge to meeting their needs.⁶

RECOMMENDATION 6:

Develop partnerships with centralized community-based training providers.

Formal partnerships between employers and centralized community-based training providers for IWDs could facilitate pipelines of talent equipped with the necessary technology skills that employers require and expect. This is especially important for small or medium sized employers (a growing presence in

the technology sector) and for larger employers with smaller HR functions. Thus, all employers should develop partnerships with a variety of disability service providers. Such partnerships could significantly impact the lack of diversity in technology fields.

Examples of strong community partnerships include:

The Mayor’s Office of People with Disabilities (MOPD) has two separate advisory bodies that make up NYC: ATWORK: the Business Development Council (for profit businesses, non-profit organizations, and government employers) and the Talent Coalition (community-based organizations providing direct service to people with disabilities). MOPD’s job placement initiatives offer a platform for small and medium sized businesses to begin similar initiatives. Moreover, those we interviewed for this report indicated that sometimes the most helpful resources do not have to “break the bank,” but simply offer opportunities to keep learning about disability inclusion.

The National Rehabilitation Information Center offers guidance to employers on ways to improve access and implement accommodations at relatively low costs.

Veteran assistance models create talent funnels that put veterans on the track towards technology careers (e.g., bookkeeping, coding, and data analysis) by working with industries to offer low-cost resources and in-house training. These models often include employer education programs on shifting perceptions, reducing stigma, and understanding accommodations.



KEY CHALLENGES AND RECOMMENDATIONS FOR TRAINING PROVIDERS

Individuals with disabilities (IWDs) seeking to develop technology skills need access to mainstream or specialized technology training that will allow them the best chance of job placement. IWDs frequently face obstacles in being accepted to, or completing programs at colleges.⁷ As an alternative to formal education, IWDs interested in developing their technology skills and getting credentials often rely on either: general technology training providers such as Per Scholas and General Assembly or disability service providers such as ICD-Institute for Career Development and Job Path.

A. Build Capacity For Training Providers

Teachers and instructors who prepare IWDs for employment in tech fields are uniquely qualified. They have the expertise to teach in a particular technology field while also having a deep understanding of the learning modalities of IWDs, and the required curricular adaptations to accommodate their needs.

KEY CHALLENGE:

Limited number of qualified teachers with both the technological and pedagogical skills and expertise to teach individuals with disabilities.

While many IWDs require adaptations in instruction, there are very few technology teachers that have knowledge of the characteristics and needs of students with different types of disabilities. Technology teachers do not necessarily know how to teach students with developmental and other disabilities, while those who have these pedagogical skills often lack the knowledge to teach STEM/technology fields. This is a major issue pointing to the need for capacity building.

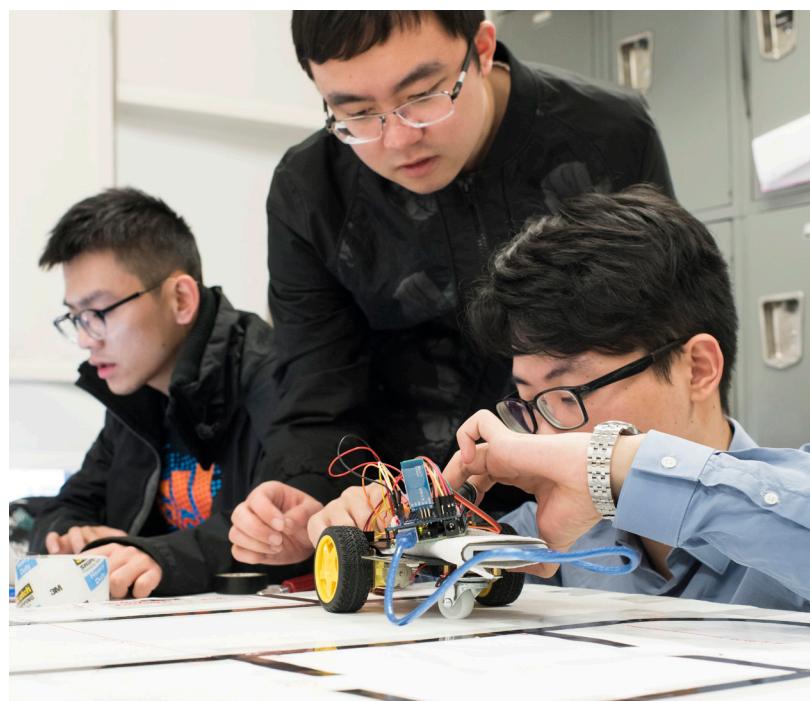
According to recently published research by the Center for an Urban Future in partnership with Tech:NYC (which drew from

more than 130 interviews with tech executives, skills-building program directors, educators, city officials, nonprofit leaders, researchers, and philanthropic funders), “[a]mong free and nonprofit workforce training programs, our research identified just 7 programs out of 158 citywide that offer in-depth, advanced training for coding jobs.” They further state that, among the existing technology training programs, “77 percent of all program locations teach either basic or intro-level skills. In total, 90 percent of program locations teach basic, intro, or entry-level skills.”

RECOMMENDATION 7:

Engage colleges with STEM and Education departments to provide accelerated programs for teachers of IWDs.

In order to meet the need for cross-training in technology and IWD appropriate pedagogy, colleges with strong STEM and Education departments should partner with disability training providers like ICD and tech employers to develop and deliver curricula that strongly link to employment demand as well as to disability and community-based training services. For teachers of IWDs, they may include computer sciences, cybersecurity, networking, and/or IT modules. Training for technology teachers may include pedagogical classes, and how to adapt their instruction and curriculum to accommodate IWDs’ learning modalities.



B. Support the Tech Training Ecosystem for IWDs

Preparing IWDs for employment in technology fields requires a range of services, expertise, resources, and support systems including: assessing candidates' foundational skills; adapting key concepts in the curriculum for IWDs; implementing teaching adaptations (e.g., modalities most effective for different aspects of disability including hands-on learning); mentoring and coaching; providing appropriate equipment, infrastructure, and assistive technologies; referral services and managing relationships with employers to understand their tech talent needs.

KEY CHALLENGE:

Providers lack the resources necessary to offer high-tech job trainings that can accommodate the full range of needs of individuals with different disabilities.

In general, tech training organizations that specialize in advanced technology training often lack the resources, strategies, and infrastructure necessary to accommodate different disability needs, and as a result, their programs are less diverse.⁸ Equally, disability service providers are rarely set up to offer highly specialized technology training. Consequently, their tech

training programs are often limited to basic digital literacy and computer skills. Neither side is providing the robust technology training IWDs need to be prepared for a broad spectrum of careers and become part of a pool of talent that can form a scalable pipeline for employers.

RECOMMENDATION 8:

Mainstream technology training providers should develop partnerships to leverage the resources of the broader community.

Partnerships should be developed across New York's growing technology training and workforce development organizations. These partnerships may include other tech-trainer providers, employers, disability service providers, and local colleges.

Tech Training Providers

According to the report published by the Center for an Urban Future (CUF), "There are now at least 238 tech education and training organizations operating 506 programs in 857 locations across the five boroughs, and that does not include the exciting work underway in city schools to deliver on Mayor de Blasio's commitment to offer computer science in every public school by 2025." There is a great opportunity for technology training and workforce development organizations to partner up to share experience and resources. In fact, the CUF report set a few goals related to the need for the tech ecosystem to share its resources, including, "set[ting] clear and ambitious goals to greatly expand the pipeline of New Yorkers into technology careers,"

and that, "New York City's tech sector should play a larger role in developing, recruiting, and retaining diverse talent."

There is already a wealth of knowledge and resources that can be accessed cost-effectively if tech-training providers network and share them. This is particularly beneficial in the case of costlier resources such as "in-house" experience or expertise about access issues (such as a particular disability or specialized social and emotional support). For example, a tech-training provider we interviewed noted the benefit they would derive from having a social worker with experience in education and disability, but that they could not afford to provide one under their current funding model. MOPD has been at the forefront in developing a network of employers, disability organizations, colleges, and other stakeholders to share resources, develop strategic approaches and referrals, and build up the evidence base of best practice to promote the inclusion of IWDs in the workforce.

Employers

With current and emerging skill shortages in the tech sector, tech-training providers with strong ties to employers can play an important role in demonstrating the efficacy and cost effectiveness of inclusion of IWDs. Such providers noted how they demonstrated to some employers the benefits of inclusivity and a diverse workforce by helping them fill and retain the skilled workers they urgently needed. These partnerships will benefit small size employers who lack the knowledge, policies, or infrastructure available to larger employers via human resources or diversity and inclusion departments.

Networking events with employers can help IWDs develop professional networks and common practice interviewing skills, as noted by a recent study on opportunity gaps in technology jobs in New York City.⁹

Lime Connect is a global not-for-profit organization that is “rebranding disability through achievement.” They have made developing networks among IWDs a cornerstone of their approach to changing the landscape of employment opportunities (see <https://www.limeconnect.com>).

Disability Service Providers

Disability service organizations provide technology training and job placement services to their clients and offer valuable resources and opportunities for joint referrals for tech-training organizations. Significantly, they can assist in adapting the technology-training curriculum and supplementing standard instructional approaches to better meet the needs of students with disabilities so they can fully participate in classroom, complete their training, and be prepared to perform on the job.

The abillTy Cisco Academy or IT Academy (a collaboration between the Institute for Career Development (ICD) and the NYC Mayor's Office for People with Disabilities (MOPD) through their NYC: ATWORK initiative) is a good case study of disability service organizations bringing together an existing tech-training organization and employers to identify

areas of opportunity and then develop accessible tech-training for IWDs to expand the pipeline of potential hires for employers. It is the first-ever program designed to prepare students with disabilities for Cisco certification in Network Security and Administration. ICD designed the program adaptations for IWDs and then hired key staff including a licensed, certified instructor who delivers the curriculum/classwork lesson plans; an assistant teacher/lab instructor who provides individualized test preparation assistance; and a certified rehabilitation counselor who helps address any student issues that arise related to successfully completing the program. Existing staff who provide work readiness/career exploration preparation and assist with internship and permanent employment placement were also engaged.

Local College Computer Science and IT Departments

Some technology training organizations noted that in-demand, highly specialized and specific technology skills are constantly changing and require instructors to continually educate themselves. As a result, they have less time to seek training specific to teaching IWDs. Partnering with local colleges could offer tech-training providers the ability to upgrade the skills of their instructors.

Technology training organizations may benefit from the work of ICD with accommodation specialists from CUNY Disability Services, who offer IWDs tutoring in necessary mathematical concepts and Cisco networking, as well as help instructors optimize their lesson plans to support IWDs.

Cisco's Northeast Academy Support and Training Center in upstate New York offers resources for adapting and teaching the Cisco curriculum to students with disabilities. Their coursework provides instructors with pedagogical techniques, including classroom instruction with online curricula, interactive tools, hands-on activities, and online assessments. All instructors are required to complete coursework and obtain a Cisco Certified Academy Instructor (CCAI) certification.



RECOMMENDATION 9:

Create a technology-focused centralized resource and training center for IWDs.

Fund and/or enact legislation to support the creation of a technology-focused Centralized Resource and Training Center (CRTC) for IWDs. Such a center would facilitate the relationships between training providers, job candidates with a disability, and employers with technology-based jobs interested in hiring them. Three initial services should be considered: demand-driven job placement and training;¹⁰ cohort-based job-seeker network development;¹¹ and development of informational and technical resources for both employers and tech-training service providers.¹²

The CRTC will benefit training providers who face challenges in making their technology training services accessible to IWDs

(e.g., the cost of having “in-house” pedagogical expertise or social and emotional supports and upgrading instructors’ technology skills to meet employer demand).

The CRTC may build on the positive experience of the ability Cisco Academy (or IT Academy) at the Institute for Career Development and be housed there. The Center would focus exclusively on high-demand jobs in technology sectors experiencing the fastest growth in NYC (both entry level jobs and career-track positions) to meet the varying needs and skills of all IWDs.

RECOMMENDATION 10:

Conduct an accessibility audit.

Tech training providers should undertake a disability audit to identify what they need to attract and make their services accessible to IWDs. This would form the basis of a simple strategy to identify what designs and adaptions will have the greatest impact and to see what resources are available to put them into place.

The providers interviewed who had utilized such an audit found that it helped them identify simple but highly effective classroom and teaching adaptations. Strategizing about inclusion of IWDs also enables technology-training providers to reach out to garner the necessary resources, including the expertise of both disability service providers and their peers in the tech-training field.

Key examples of resources that support audits and strategizing include the Disability Equality Index created by Disability:IN in partnership with the American Association of People with Disabilities. The Disability Equality Index may be used as a model for developing a training provider self-audit. The Cornell Yang-Tan Institute on Employment and Disability also provides workplace disability inclusion courses and other useful tools and resources to promote the employment of IWDs



C. Link Training to Employer Demand

The literature indicates that demand-driven job placement is a more successful approach for individuals with a disability than supply-driven approaches, particularly in the tech sector (Rainie & Anderson, 2017). With the rapid change in job characteristics and employment demand in this sector, specific job training has to adapt more quickly than has been traditional in supply-sided workforce development. Therefore, collaborative agreements with employers are increasingly required for placing IWDs in tech jobs.

KEY CHALLENGE:

Lack of correspondence between the skills offered by supply-driven training providers and employers' requirements in demand-driven training.

Any mismatch between the skills and capabilities demanded by an employer and those taught by supply-driven training organizations will limit the ability of IWDs to secure employment.

The main challenges include skill deficits among applicants and lack of appropriate credentials, along with poor information about the job requirements.

RECOMMENDATION 11:

Adapt veteran hiring models to a broader range of individuals with a disabilities.

To best respond to the employer skills demand, training providers for IWDs may look for inspiration in vocational rehabilitation programs for returning veterans.¹³ Veteran assistance models create talent funnels and reduce stigma. They often put veterans on the track towards emerging careers and industries (such as bookkeeping, coding, and data analysis) through low-cost resources and in-house trainings.

Veteran work-training models often include employer education programs around shifting perceptions, reducing stigma, and understanding accommodations. These programs also have specific experience in assisting individuals with mental health disabilities in securing work.¹⁴

New York City is the first city in the United States to create a city agency specifically serving veterans: The New York City Department of Veterans' Services. Training providers and service providers for IWDs can collaborate with this agency to leverage their experience with assisting veterans in obtaining employment in technology jobs. The agency provides business

mentors for veteran applicants; this can be adapted to have veterans with a disability who have obtained work in technology act as mentors for other IWDs seeking employment in the field.

An example of a successful veterans training and certification program that might be used as a model for training programs for IWDs in NYC is the Syracuse University Institute for Veterans and Military Families (IVMF) Onward to Opportunity (O2O) program. This program provides both in-person and online certificate-based training programs that prepare veterans for careers in customer service excellence, information technology, and business management. They are partnered with technology companies such as Google, AWS, Skillsoft, and SAS, CUNY, or other institutes of higher education could be recruited to create a similar program for IWDs based in New York City.



VETERAN HIRING PRACTICES THAT MAY BE ADAPTED FOR IWDs

- 1. Educating Hiring Managers:** Several veteran hiring initiatives go beyond recruitment; they educate managers and peers to welcome and incorporate veterans into the workplace.¹⁵
- 2. Tax Incentives:** Various federal and state programs promote the hiring of veterans through tax incentives. They are effective at increasing the number of hired veterans at a relatively low cost.¹⁶
- 3. Targeted Recruitment for Veterans:** Electronic recruitment sites and job placement aggregators (such as Zip Recruiter) are successful in helping veterans seeking work.¹⁷
- 4. Partnerships with the Private Sector to Capitalize Fund Training Providers** Veteran programs have a history of creating partnerships with companies in need of a supply of trained applicants. This can create a funding stream for training programs.¹⁸
- 5. Mentorships:** Several job-training programs for veterans identify mentoring as successful for job placements, since adjusting to a new work culture is a challenge for individuals coming from a military environment.¹⁹



RECOMMENDATIONS FOR POLICY MAKERS

New York City has the potential to be a major catalyst for promoting access by IWDs to technology jobs through its procurement policies and practices. A number of small and medium technology firms engaged for this project highlighted the power of a city mandate on disability inclusion in procurement for technology services. Policy and practices in workforce diversity have had a positive impact on inclusion for women and people of color in New York and other cities. These could be extended to address the serious disadvantages IWDs face in the workforce.

RECOMMENDATION 12:

Incorporate IWD hiring in M/WBE workforce diversity targets.

Procurement policies and contracts such as the Minority and Women Owned Business Enterprises (M/WBE) Campaign should include mandates for IWD inclusion and explicitly recognize that IWDs are a group facing significant labor market disparities in terms of inclusion in tech jobs and other forms of employment. Philadelphia and Kansas City set 40 percent and 10 percent, respectively, as goals for participation by minority workers (and 2 percent for female workers) in the construction industry, basing those quotas on a study of the ethnicity and gender of its vendors' workers. This type of hiring mandate could be extended to include IWDs by requiring agencies to

include workforce diversity language in standard contracts for both prime and subcontractors.

The City Council should initiate a charter revision commission to create a citywide diversity goal on all contracts, and mandate that employers show their good faith efforts to employ diverse New Yorkers as a pre-requisite of doing business with the City. A mandate to hire IWDs, specifically in tech jobs across all industries, would incentivize those within the M/WBE directory of 9,000+ companies along with all vendors utilized by City government agencies.

RECOMMENDATION 13:

Create additional tax incentives for employers to hire IWDs.

As a way to incentivize employers, the City should create tax incentives to hire IWDs, similar to incentives for New York City employers to hire young people. The NYS Workers (with Disabilities) Employment Tax Credit could be adapted in New York City to reward businesses that employ individuals with disabilities, in particular those receiving vocational rehabilitation

services. The WETC is a New York State tax credit initiative for employers that can result in a \$2,100 credit for each individual hired. There is no limit to the number of hires, employers decide whom to hire, there is minimal paperwork to claim the tax credit, and employers assist job seekers in need of employment.

RECOMMENDATION 14:

Establish an accountability framework.

New York City should consider providing oversight, recourse, and accountability for the above policy proposals. Such accountability framework is not currently under the stated priorities of any City agency, but New York City could empower a particular agency to provide support and guidance to the charter revision commission. It could also assist with completing a disparity study and analyzing the results of occupational disparities in hiring of IWDs in all industries, and work with M/WBE members and all other government vendors to properly document good faith efforts in recruitment and outreach to disability services organizations around job selection and placement.

Likewise, such an agency could act as a resource for small and medium sized companies, by providing legal liability guidelines in hiring IWDs. This is important since smaller companies can be reluctant to hire IWDs due to lack of human resources capacity or general liability concerns. Lastly, this proposed oversight capacity can determine the need for and funding of Bridge Programming across the spectrum of services provided by community-based disability organizations.

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1 The Civic Hall report on opportunity gaps in the technology sector notes that “More than half—57%—of all New York City high technology jobs are in non-technology industries. While the share of high-technology jobs in technology industries has expanded over the past few years, high-technology jobs remain concentrated in non-technology industries by volume, with steady year over year growth.” (HR&A Advisors 2019:23).

2 For the purposes of this report, we define large corporations as those companies, not necessarily technology companies, that have an IT department of 8+ staff that manage the technology of 500+ workers and have offices in the nation’s metropolitan areas. Medium sized companies are defined as those with 100-499 employees and that have an IT department consisting of 3-7 staff. Smaller businesses are defined as those with fewer than 100 employees and that are highly constrained in their budget for technology management and may only employ 1-2 IT staff and/or utilize an IT consultant company to help manage their network and equipment.

3 Specialisterne has assisted companies in creating “hangouts”—comfortable gatherings, usually lasting half a day, in which neuro-diverse job candidates can demonstrate their abilities in casual interactions with company managers. At the end of a hangout, some candidates are selected for two to six weeks of further assessment and training. During this time, they use Lego Mindstorms robotic construction and programming kits to work on assigned projects—first individually and then in groups, with the projects becoming more like actual work as the process continues (Austin and Pisano, 2017, p. 101).

4 This issue has been raised in the recent Civic Hall report on opportunity gaps in the technology sector in New York City, which pointed to an overreliance on degrees to screen candidates and judge aptitude. The report cites evidence that “75% of high-tech jobs have a typical entry-level educational attainment requirement of a bachelor’s degree or higher, versus 56% across the tech ecosystem and 36% across the New York City economy” (HR&A Advisors, 2019:23).

5 Unger, 2002:11 notes which notes the importance of these factors in incentivizing and building the capacity of workplace supervisors in supporting the inclusion of IWDs.

6 Based on the literature research and the feedback from stakeholders engaged in the consultation process, including interviews, focus groups, and targeted meetings.

7 As noted by Friedensen (2018): “National Center for Educational Statistics reports in 2011–12 show that students with disabilities made up 11 percent of students enrolled in postsecondary educational institutions. However, even as these students are an increasing presence on campus, fewer of them persist to graduation relative to their peers without disabilities. And still fewer graduate with science, technology, engineering, or mathematics (STEM) degrees. This finding is particularly notable, as relatively equal numbers of students with and without disabilities enter college with the intention to major in a STEM field—the National Science Foundation shows that about 25 percent of students in each group have a declared STEM major” (2018:1).

8 The lack of access to technology careers for low-income New Yorkers is further elaborated in the report “Plugging In: Building NYC’s Tech Education & Training Ecosystem,” issued by the Center for an Urban Future (2020)

9 The Civic Hall Report indicates that “Centralized networking can improve career access for candidates not coming out of bachelor’s programs who lack networks typically developed in school, while providing exposure to tech cultural norms – how to whiteboard in an interview, what type of work experience is considered valuable, etc. – that are heavily weighted in tech talent recruitment” (Civic Hall Report: NYC’s Tech Opportunity Gap, Nov. 2019).

10 Research has indicated that demand driven job placement is a more successful approach for individuals with a disability than supply driven approaches (see Kessler Foundation, 2018; Ameri et al., 2015; Burke et al., 2013; Katz et al., 2012; Mabe et al., 2012; Unger, 2006).

11 Research shows that networking and social connections are still the surest way for any individual to obtain employment (see Henry et al., 2014; ATIA and USBLN, 2007; <http://coopcareers.org/cohorts>). Research also indicates that individuals with a disability tend to be more isolated than others and that they have less developed social networks (see von Schrader et al., 2013; Langford et al., 2013; Loprest and Maag, 2001).

12 Technology training organizations interviewed in the course of this research identified the need for such support, especially in facilitating the tailoring of their courses to the needs of individuals with different types of disability with which they are unfamiliar.

13 Veteran programs have unique experience in working with individuals with a disability in overcoming stigma, developing transferrable skills to a new environment, leadership, and self-advocacy skills. Existing veteran models are compatible with the cohort networking initiatives identified above.

14 The US Department of Military Affairs has a Veterans Employment Toolkit that discusses using the military model, particularly having to do with communication and expectations, to improve job performance. This approach, and the support for direct supervisors, translates well to IWDs, who may also do best with direct, unambiguous communication and clear, objective expectations. Successful veteran job placement programs have worked with hiring managers to assist them with having a broader understanding of different communication skills and work conception that might be true for veterans. These same approaches can be adapted to programs placing IWDs at work.

15 See <https://ivmf.syracuse.edu/programs/career-training/>.

16. Veteran Employment: Lessons from the 100,000 Jobs Mission (https://www.rand.org/pubs/research_reports/RR836.html)

17. The Effects of Hiring Tax Credits on Employment of Disabled Veterans (https://www.rand.org/pubs/occasional_papers/OP366.htm)

18. Expanding Employment Success for People with Disabilities (<https://benetech.org/about/resources/expanding-employment-success-for-people-with-disabilities-2/>)

19. Onward to Opportunity Program (<https://ivmf.syracuse.edu/programs/career-training/o2o-admission/>) and Open TECH program (<http://opentech.la/>)

20. Mentorship Programs (<https://chronus.com/blog/5-reasons-start-veteran-mentoring-program-workplace>; and <https://www.nextgov.com/ideas/2018/11/how-build-corporate-learning-program-support-veterans-workplace/152675/>)