GREATER WASHINGTON WORKS

IT and Health Careers with Promise

WORKFORCE COLLABORATIVE

AN INITIATIVE OF THE COMMUNITY FOUNDATION

dc | montgomery co. | northern va | prince george's co.

JPMorgan Chase & Co.

Welcome

The Community Foundation for the National Capital Region works to ensure equity, access, and opportunity for all residents in the Washington metropolitan area. We are proud to share this report on the state of IT and Healthcare workforce efforts in the Greater Washington region.

Through our Greater Washington Workforce Development Collaborative, we convene local foundations, individual philanthropists, and businesses around a shared vision for a Metropolitan Washington region where every individual has an opportunity to realize their potential, secure a family-sustaining job, and both benefit from and contribute to our regional economic prosperity.

We are grateful to JPMorgan Chase & Co. for their generous gift that supported the development of the Greater Washington Works report, and to the Workforce Collaborative's thirteen other funders whose support and leadership have been critical in supporting this work to grow and thrive. Since its inception in 2007, our collective efforts have helped more than 6,000 Greater Washington residents access job training, build their literacy and workplace skills, earn post-secondary and industry certifications, and launch careers in a diverse set of sectors including green construction and healthcare.

We are thankful to reside in one of the world's largest regional economies supporting more than 3 million workers. But while it is encouraging that our regional unemployment rate has improved to pre-Great Recession levels, we cannot lose sight of the fact that too many of our neighbors are still struggling to make ends meet.

The increase in poverty since the Great Recession has been startling and uneven. Our region can count 100,000 additional residents living below the Federal poverty level since 2009, with 90% of these individuals residing in the District's Northern Virginia and Maryland suburbs. Unemployment levels in the District's Wards 7 and 8 east of the Anacostia River are still three times higher than our region's average.

We also know that nearly 800,000 individuals in our region have no education past high school. This is a particular challenge given our region's highly-skilled economy. With more than 70% of net new living wage jobs in our region expected to require post-secondary education or training, our region's skills gap persists.

It is disturbing to know that if you are an African American or Latino worker in our region, you are three times more likely to earn an income below the poverty level. Addressing our region's race, ethnicity, and gender-based income inequality is a critical challenge for our region to tackle if we want to ensure that all in our region have a fair shot for prosperity.

We believe that this report provides important data for our region's workforce stakeholders—including government, business, nonprofits, and philanthropy—to help support efforts to address the skills gap that is a driver of our region's poverty.

This report is not intended to collect dust on a shelf. **These findings provide the foundation for a new funding initiative—Greater Washington Works—that will invest nearly $1 million over the next two years in work to bridge the skills gap that is keeping workers in low-wage jobs, reinforcing income inequality, and keeping local business from finding the best local candidates for open job opportunities.**

It is our hope that these investments, coinciding with the Workforce Collaborative's 10-year anniversary, will help to close our region's skills gap and set the tone for the next decade of our work to improve economic opportunities for all of our neighbors.

Bruce McNamer
President & CEO, The Community Foundation for the National Capital Region

Acknowledgements

JPMorgan Chase & Co.

Around the world, employers, educators, policymakers, training organizations and others have recognized the critical importance of addressing the skills gap. In 2013, JPMorgan Chase & Co. launched a $250 million, five-year global initiative it calls New Skills at Work to address this important challenge. The firm has directed its resources, expertise and global reach to help inform and accelerate demand-driven workforce development systems, engage employers in sector partnerships, support training programs that align with local demand, and prepare youth and adults for careers in high-demand, middle-skill occupations. To advance this work, the company is supporting data analysis in domestic and international markets, including Chicago, Columbus, Dallas-Fort Worth, Detroit, Houston, Los Angeles, Miami, New York City, San Francisco, Washington DC, France, Germany, Spain and the United Kingdom.

Greater Washington Workforce Development Collaborative

An initiative established by the Community Foundation of the National Capital Region in 2007, the Collaborative is a coalition of local workforce investors who share a common commitment to addressing poverty and income inequality by helping workers advance their skills and credentials so they can earn family-sustaining wages.

Since its launch in 2007, the Greater Washington Workforce Development Collaborative has invested over $8.5 million in local workforce efforts, building a strong reputation for leading lasting, systemic change efforts that expand opportunity and reward hard work. The Collaborative supports programs focused on low-income individuals as well as programs that prepare workers for careers in occupations and industry sectors where there is a strong demand for entry- and mid-level workers as well as opportunities for career advancement. To date, our grantees have:

- Assisted over 6,200 workers and their families.
- Helped regional employers fill 2,370+ job vacancies.
- Empowered more than 1,800 individuals to earn a post-secondary credential.
- Provided professional development workshops for more than 100 workforce practitioners from nonprofits, schools, and government agencies.

Current Workforce Collaborative partners include The Community Foundation, the Morris and Gwendolyn Cafritz Foundation, Capital One, JPMorgan Chase & Co., the Consumer Health Foundation, Kaiser Permanente, the Eugene and Agnes E. Meyer Foundation, the Moriah Fund, Northern Virginia Health Foundation, Patricia Weiss Fagen, the Scheidel Foundation, United Way of the National Capital Area, and the Washington Area Women's Foundation.

Civic Analytics and Oldmixon Consulting

Civic Analytics provides economic research, planning and consulting services to public and private sector groups at the federal, state and local levels in communities across the U.S. With services that span comprehensive economic development strategy work, city and regional planning, geodesign, data visualization and more, Civic Analytics brings to every project a strong emphasis on making data-driven decisions that will benefit communities and economies for years to come. Civic Analytics is based in Austin, Texas.

Oldmixon Consulting provides a range of research and advisory services that help civic, nonprofit, and philanthropic leaders amplify their impact. Sarah Oldmixon specializes in issues related to workforce development, working learners, youth development, and adult basic skills.

Study Participants

Many employers, education and training providers, and healthcare and information technology professionals contributed to this research through surveys, interviews, and focus groups. Participants contributed to the study confidentially and will therefore not be disclosed by name in this report. The researchers and the sponsors of this project thank them for their time and contributions.

Executive Summary

A Growing but Slowing Economy in Greater Washington

The Washington metropolitan area today represents the sixth largest metropolitan economy in the nation and the 14th largest in the world. Following a 15-year period of unprecedented growth, the regional economy has begun to signal slowing growth as the District and its suburban Northern Virginia and Maryland neighbors feel the impact of cuts to federal spending, historically the region's chief economic driver.[1] Continued growth in the region will depend on attracting and expanding other high-demand industries, where job and wage growth can offset less robust hiring in the public sector.

2.5x national population growth rate since 2010[2]

41,990 net new jobs added in 2015, but at a growth rate (1.7%) trailing the overall U.S. rate (2.1%)[3]

3.6% unemployment rate, considerably lower than the U.S. rate (4.7%)[4]

4.0% projected job growth rate during 2014-2025, less than one-half the U.S. rate (9.5%).[5]

4,382,751 residents in the study area:[6]

CFNCR Project Study Area
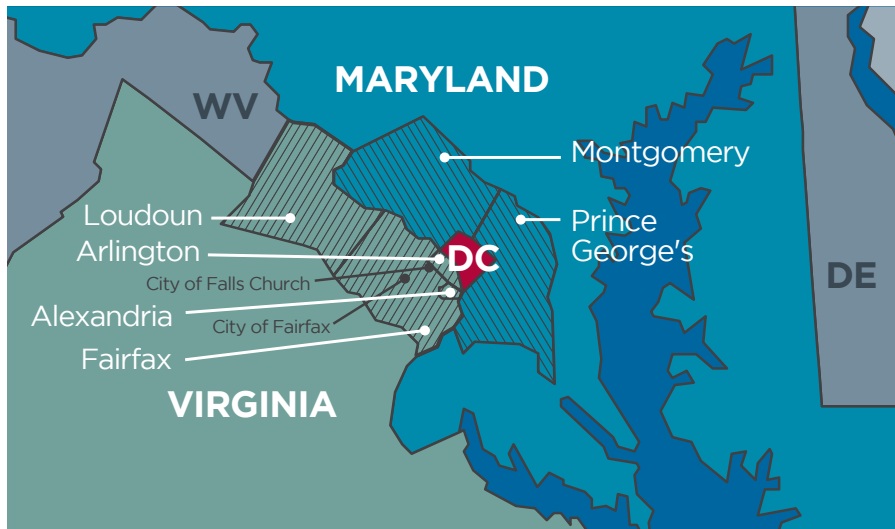
Healthcare and Information Technology as Growth Drivers

Healthcare and information technology (IT) are common designated priorities for economic development and workforce training across Maryland, Virginia, and Washington, DC. Further, the region leads the nation in cybersecurity jobs per capita (those requiring CISSP certification, the field's chief credential). In contrast to relatively flat public sector hiring since 2010, healthcare and IT job growth in the region is expected to keep pace with or slightly exceed projected national job growth. IT contractors may be adversely impacted by cuts to federal spending; however, demand for IT workers is expected to continue at a strong enough pace to justify targeted workforce development investments.

12%
projected growth in healthcare employment during 2016-2021[7]
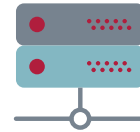
6%
projected growth in IT employment during 2016-2021[8]

3x
growth in cybersecurity jobs during 2010-2014 in D.C., Maryland, and Virginia[9]

$6,500
yearly average salary premium in the nation for cybersecurity specialists compared to other information technology salaries[10]

Targeted Industries in Study Area

Virginia Governor's Diversified High-Growth Industries

- **Advanced Manufacturing**
- **Information Technology**
- **Tourism**
- **Energy**
- **Federal Government**
- **Professional Business Services**
- **Agriculture and Forestry**
- **Healthcare**
- **Logistics**

Maryland Workforce Targeted Industry Sectors

- **Healthcare**
- **Information Technology/Cybersecurity**
- **Biotechnology (Life Science)**
- **Distribution, Warehousing and Transportation**
- **Construction**
- **Agriculture and Forestry**
- **Manufacturing**
- **Hospitality and Tourism**

Middle-Skill Jobs are Critical to Region's Economy

Employers in all industries across Washington D.C., Maryland and Virginia will maintain strong demand in the coming years for "middle-skill" workers – those individuals employed in occupations that require postsecondary education and training beyond high school but less than a four-year degree.

More than 1 in 3 jobs are middle-skill positions in the Washington metro area (2015)

30% of hiring in Washington D.C. is for middle-skill jobs

DC

43% of hiring in Maryland is for middle-skill jobs

MARYLAND

46% of hiring in Virginia is for middle-skill jobs[11]

VIRGINIA

191,599 middle-skill openings in the Washington metro area (2013)

$35.27 median hourly wage for a middle-skill job in the study area, 14% higher than the estimated living wage for a one adult-one child family (MIT Living Wage Calculator).[12]

DC Workforce Investment Council Targeted Industry Sectors

Business Administration and Information Technology
Construction
Healthcare
Hospitality
Security and Law

The goal of this study was to identify high-demand, middle-skill occupations in the healthcare and IT sectors that could form the basis for new workforce development partnerships in the region. The research team, in consultation with the Community Foundation for the National Capital Region (CFNCR) and members of the Greater Washington Workforce Development Collaborative (GWWDC), established several criteria for identifying promising occupations. Specifically, these filters were applied:

- **Geography:** Occupations should be relevant to as much of the study area as possible to be inclusive of employers and workers regionwide. We included only occupations that met the education, wage, and demand criteria in at least seven of the nine targeted local jurisdictions.

- **Education:** More than 70% of net new living-wage jobs require some form of postsecondary education or training. This analysis focused on identifying occupations that, on average, require more than a high school diploma, but less than an associate's degree in order to highlight workforce development opportunities that could be achieved through shorter-term training of approximately one year or less.

- **Wages:** We established a median wage floor of $15 per hour, which is higher than the living wage for one adult in the region (per the MIT Living Wage Calculator) and in line with what many of the region's workforce development boards are using as a floor when approving training investments.

- **Demand:** Targeted occupations should have a positive job growth outlook and sufficient number of job openings to maximize the likelihood that training will lead to employment. We included only those occupations with projected net job growth during 2016-2021 and at least 100 job openings advertised.

Applying the filtering criteria to traditional sources of labor market information and "real-time" indicators of labor demand (job postings) yielded a list of eleven potential occupations. To further narrow the list, the research team analyzed job postings to identify the number of employers hiring for each occupation, postulating that the larger the number of employers in the region hiring for each occupation, the greater the chances of matching individuals to jobs. That process resulted in the identification of five promising occupations:

Healthcare

- Medical Secretaries
- Medical Records and Health Information Technicians

- Licensed Practical and Licensed Vocational Nurses (LPNs)
- Medical Assistants (MAs)

Information Technology

- Computer User Support Specialists

To validate and better understand what was driving the strong hiring for each of these occupations, the researchers conducted a series of interviews, focus groups, and surveys with employers, education and training providers, and workers. These conversations shed further light on the targeted occupations as well as the general skill needs of healthcare and IT employers in the region.

Table 1
Targeted Occupation Candidates for CFNCR Study

Occupation Title	Job Postings (Mar 2016)	Typical Entry Level Education	Median Hourly Earnings	Number Geos Hiring	Firms > 5 Postings
Medical Secretaries	543	High school diploma or equivalent	$17.41	9	23
Medical Records and Health Information Technicians	526	Postsecondary nondegree award	$22.81	9	24
Computer User Support Specialists	3,416	Some college, no degree	$28.29	8	158
Licensed Practical and Licensed Vocational Nurses	476	Postsecondary nondegree award	$24.81	8	15
Medical Assistants	440	Postsecondary nondegree award	$17.53	8	19
Surgical Technologists	191	Postsecondary nondegree award	$28.21	9	11
Health Technologists and Technicians, All Other	146	High school diploma or equivalent	$23.23	9	2
Phlebotomists	126	Postsecondary nondegree award	$18.84	9	3
Medical Equipment Preparers	102	High school diploma or equivalent	$17.93	9	2
Emergency Medical Technicians and Paramedics	144	Postsecondary nondegree award	$24.27	8	10
Dental Assistants	101	Postsecondary nondegree award	$19.17	8	3

Key Findings & Recommendations

Healthcare

Healthcare offers a range of in-demand, middle-skill job opportunities. Demand for the targeted occupations described above varied somewhat by healthcare setting. Employers reported consistent demand for Medical Assistants in primary care settings. They reported limited demand for Licensed Practical Nurses (LPNs) and only in primary care and long-term care settings. Beyond the targeted occupations, hospitals reported strong demand for Patient Care Techs/Clinical Technicians.

Across all types of healthcare settings, interviewees reported strong demand for Medical Records and Health Information Technicians skills – specifically, medical billing and coding skills. Interviewees noted that these jobs are particularly critical because they are directly linked to employers' ability to collect revenue.

Finally, employers reported variable demand for Medical Secretaries, noting that some administrative and reception job duties traditionally assigned to Medical Secretaries have been relegated to other occupations in recent years (e.g., Medical Assistants, Patient Access Representatives).

All of the above occupations represent an opportunity for workforce leaders to engage with employers to better understand their hiring needs and explore creative ways to address demand. Both employers and training providers reported that scheduling clinical placements and practicums for students is a significant constraint on the capacity of training programs, leaving an opening for workforce leaders who can offer innovative solutions.

In addition, our research found that multiple hospitals in the region are providing in-house training for Patient Care Technician occupations, suggesting that there may be an opportunity to aggregate demand and provide joint training for multiple hospitals or systems, potentially creating cost savings for employers as well as opportunities to link that training to broader career pathways for workers (e.g., by awarding college credit or industry-recognized credentials).

Finally, while this analysis focused on occupations that typically require less than an associates degree, it is worth noting that health care employers consistently reported the greatest difficulty hiring registered nurses (RNs), particularly – but not exclusively -- graduates of four-year nursing programs (i.e., BSNs). As such, workforce leaders who wish to engage healthcare employers as partners should be prepared to, when possible, discuss how their efforts either support advancement along career pathways to nursing or advance systemic changes that could help to address the perceived nursing shortage.
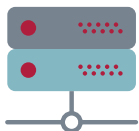
Information Technology

This study focused on identifying living wage IT occupations that 1) On average, require less than an associate's degree; and 2) Can generally be obtained upon successful completion of a short-term (i.e., less than one year) job training program. Based on these criteria, Computer User Support Specialist occupations (e.g., help desk, tech support) appear to offer the most accessible on-ramps to living wage, in-demand IT jobs. While careers in Cybersecurity were initially of interest to GWWDC based on reports of strong demand for cyber skills in the region, our analysis found that the vast majority of cybersecurity occupations require a bachelors' degree or higher and/or significant work-experience, placing them beyond the immediate reach of most short-term job-training programs and middle-skill job-seekers.

Workforce leaders should work with employers to both expand access to and promote advancement through Computer User Support Specialist occupations. Employers reported an interest in further diversifying their workforce and cited local nonprofits as important partners in helping them to identify, prepare, and hire women and people of color to fill their job openings. Presently, these programs are relatively small, suggesting an opportunity to help successful nonprofits scale their programming to serve more individuals, including those who may currently be denied admission due to more significant learning needs (e.g., math or reading skills that need to be further developed).

IT employers also reported significant investments in employee skill development, including in-house training, tuition assistance, and financial incentives for earning certifications. Both self-study and courses at community colleges were cited as important tools for career advancement. Workforce leaders should explore opportunities to aggregate and extend

the reach of employer investments, particularly among small-to-mid-sized firms. There may also be an opportunity to leverage these investments to develop new pathways to worker specialization and advancement, including apprenticeships.

Finally, there appears to be a disconnect between the hiring preferences of frontline managers – which emphasize specific, demonstrated skills and experience – and the filters used by Human Resources staff - typically academic credentials - to narrow the job candidate pool and select finalists. Workforce leaders should work with employers to ensure that hiring practices are not weeding out good job candidates based on the use of academic credentials as a proxy for skills.

Workforce Development Opportunities

Healthcare

Strong Demand for Healthcare Workers, Including Middle-Skill Occupations

As in the rest of the nation, there is strong demand for workers in the healthcare industry in Metropolitan Washington. Key drivers include an aging population and the expansion of healthcare coverage under the Affordable Care Act.

- Healthcare makes up nearly 198,000 jobs in the study area and total employment in the sector is expected to grow by 12% in 2016-2021.

- Healthcare job growth is expected to average at least 1% per year in every jurisdiction in the study area.

- In addition to occupation- and setting-specific skills, minimum universal requirements for employment in the sector include a high school diploma or equivalent, CPR training (or related training like the American Heart Association's Heartsaver CPR AED certification), and a completed background check. Employers did not reveal specific policies for employee background checks other than to confirm they typically include a criminal record review.

- Experience with electronic medical records and insurance processes were also frequently cited as universally sought-after skills. Key soft skills and personal attributes for succeeding in the field include teamwork, customer service, communication, empathy, and inclusiveness.

- Many employers offer tuition assistance. Employers often offer on-the-job training as well, but workers reported that it is sometimes limited to compliance or cultural competency training rather than technical skill development for career advancement.

Targeted Occupation Profiles

The following profiles for the four targeted occupations in healthcare were developed using findings from the labor market analysis and primary research (surveys, interviews, focus groups). Comments on education and experience requirements, skills, and certifications are included where highlighted by participants.

Licensed Practical and Licensed Vocational Nurses (SOC 29-2061)

Care for ill, injured, or convalescing patients or persons with disabilities in hospitals, nursing homes, clinics, private homes, group homes, and similar institutions. May work under the supervision of a registered nurse. Licensing required.

476 Postings March 2016	8,543 Jobs 2016	733 Change (2016-2021)	$24.95 Median Wages	$19.59 Entry Wages
Employer Profile	Primary care settings, long-term care settings, and outpatient clinics.			
Demand Overview	Hospitals generally are not hiring LPNs, but they are still hired in long-term care settings. A primary care clinic reported experimental hires to bolster staff capacity in a nursing shortage. Employers reported no hiring challenges or experiences of note.			

Sample Job Titles: Charge Nurse • Clinic Licensed Practical Nurse (CLINIC LPN) • Clinic Nurse • Licensed Practical Nurse (LPN) • Licensed Practical Nurse • Clinic Nurse (LPN, Clinic Nurse) • Licensed Vocational Nurse (LVN) • Office Nurse • Pediatric Licensed Practical Nurse (PEDIATRIC LPN) • Private Duty Nurse • Triage Licensed Practical Nurse (TRIAGE LPN)

Sample Program Offerings

Washington, DC	Maryland	Virginia
	Prince George's Community College	Northern Virginia Community College-Medical Education Campus

Medical Assistants (SOC 31-9092)

Perform administrative and clinical duties under the direction of a physician. Administrative duties may include scheduling appointments, maintaining medical records, billing, and coding. Clinical duties may include taking and recording vital signs.

440 Postings March 2016	7,371 Jobs 2016	942 Change (2016-2021)	$17.23 Median Wages	$12.25 Entry Wages
Employer Profile	Primary care settings, particularly doctors' offices.			
Demand Overview	While demand is stable, one employer noted concern that supply could become constrained in light of recent closures of a few local MA schools. Wages for an experienced MA were estimated to be as high as $45,000 although average wages are lower. Medical Assistants' flexible skill set drives demand. Some employers reported instances of turnover but generally indicated little difficulty recruiting and hiring for the position.			

Sample Job Titles: Certified Medical Assistant • Chiropractor Assistant • Clinical / Doctor's / Medical Assistant • Medical Office Assistant • Ophthalmic Technician • Optometric Assistant • Optometric Technician • Registered Medical Assistant (RMA)

Sample Program Offerings

Washington, DC	Maryland	Virginia
Latin American Youth Center / LAYC Career Academy PCS SOME Center for Employment Training UDC Community College	Med-Code Data Institute Prince George's Community College Montgomery College	Northern Virginia Community College

Medical Secretaries (SOC 43-6013)

Perform secretarial duties using specific knowledge of medical terminology and hospital, clinic, or laboratory procedures. Duties may include scheduling appointments, billing patients, and compiling and recording charts, reports, and correspondence.

543	6,918	755	$17.40	$12.03
Postings March 2016	Jobs 2016	Change (2016-2021)	Median Wages	Entry Wages

Employer Profile	Physician practices.
Demand Overview	The rise of electronic medical records and automated business processes in healthcare has softened hiring demand for Medical Secretaries, with the exception of physician practices. One hospital reported it now primarily hires Patient Access Representatives, whose expanded skill set allow them to assist with patient registration, scheduling, medical insurance verification, and screening. Elsewhere, some demand may have shifted to Medical Assistants, whose combined clinical and administrative skills allow more staffing flexibility. Employers indicated no recruiting and hiring challenges or experiences of note.

Sample Job Titles: Admissions Coordinator • Billing Coordinator • Health Unit Coordinator • Medical Office Specialist • Medical Secretary • Patient Coordinator • Physician Office Specialist • Unit Secretary • Unit Support Representative • Ward Clerk

Sample Program Offerings

Washington, DC	Maryland	Virginia
SOME Center for Employment Training UDC Community College	Med-Code Data Institute Prince George's Community College Montgomery College	Northern Virginia Community College

Medical Records and Health Information Technicians (SOC 29-207)

Compile, process, and maintain medical records of hospital and clinic patients in a manner consistent with medical, administrative, ethical, legal, and regulatory requirements of the health care system.

526	2,313	196	$22.81	$14.91
Postings March 2016	Jobs 2016	Change (2016-2021)	Median Wages	Entry Wages

Employer Profile	Applicable to most healthcare employers.	
Demand Overview	Employers reported strong demand for individuals with medical billing and coding skills but did not specify any recruiting or hiring challenges.	
Education & Experience	Specific education, training, and skill requirements vary by institution, in part due to skill needs that differ from one proprietary data system to another. Most coding jobs have required two years or less of experience, but some are reportedly increasingly looking for four-year graduates.	
Skills	Medical Records Management Healthcare Hospitalization	Scheduling (Project Management) Coordinating Leadership Literacy
Certifications	Registered Health Information Technician Registered Health Information Administrator	Certified Coding Specialist-Physician-based Certified Professional Coder Certified Coding Associate [12]

Sample Job Titles: Coder • Health Information Clerk / Specialist / Technician (Tech) • Medical Records Analyst • Medical Records Clerk • Medical Records Coordinator • Medical Records Director • Medical Records Technician

Sample Program Offerings

Washington, DC	Maryland	Virginia
SOME Center for Employment Training UDC Community College	Med-Code Data Institute Prince George's Community College Montgomery College	Northern Virginia Community College-Medical Education Campus

Employers Struggle Most to Hire Nurses, yet Other Middle Skill Jobs Are Also in Demand

While this analysis focused on occupations that typically require less than an associates degree, it is worth noting that health care employers consistently reported that the most difficult middle-skill jobs to fill were registered nurses (RNs). However, there are also several high-demand, middle-skill occupations that present lower barriers to entry.

- Two occupations that surfaced in the data analysis and a third that surfaced in employer interviews—Medical Assistants, Medical Records and Health Information Technicians, and Patient Care Technicians, respectively—were affirmed by employers as having strong demand.

- Employers indicated that one key reason they value Medical Assisting positions is the staffing flexibility employees with combined administrative and direct care skill sets afford them. Medical Records and Health Information Technicians (or other job titles with billing and coding skills) are particularly valued because of their critical role in revenue collection.

REPORTED NURSING SHORTAGE FUELED BY DEMAND FOR BSNS

Hiring Registered Nurses (RNs) with a four-year Bachelor of Science in Nursing (BSN) has become a key priority for hospitals seeking to demonstrate their commitment to quality nursing through Magnet designation and/or compliance with the Institute of Medicine's (IOM) "call to action" to increase the proportion of nurses with baccalaureate degrees to 80% by 2020. The Magnet Recognition Program is a project of the American Nurses Credentialing Center (ANCC), a subsidiary of the American Nurses Association.

Hospitals described several strategies they have explored to meet the BSN staffing goal. One system experimented with exclusively hiring BSN nurses for a period, but put this policy on hold when it was unable to meet its hiring needs. Instead, the system is once again hiring some two-year RN graduates, but requires that they actively work toward obtaining a BSN, including making $5,000+ in annual tuition assistance available to support their career advancement.

- One additional middle-skill occupation came up repeatedly in conversations with hospitals: Patient Care Tech occupations (PCTs), whose duties are very similar to traditional Certified Nursing Assistant (CNA) roles but typically with the addition of EKG reading and phlebotomy skills. One hospital system has identified PCTs as one of two priority occupations for workforce planning efforts.

Challenges to Connecting Workers to Careers in Healthcare

Despite strong demand and a range of family-sustaining, middle-skill career options in the healthcare sector, several factors may challenge healthcare workforce development efforts.

- While healthcare institutions are cognizant of workforce challenges, they rarely have significant staff capacity dedicated to identifying and addressing skill needs beyond nurses and physicians. Without dedicated staff in these roles, it may be a difficult for these employers to sustain long-term engagement in workforce partnerships.

- Healthcare employers generally reported that they already have highly diverse workforces, so—in contrast to IT—the possibility of attracting a more diverse candidate pool through workforce efforts offered only limited appeal for interviewees as a reason to get involved with a workforce development initiative.

- Two employers reported that they would like to hire more preceptors (skilled practitioners or faculty members who supervise students in a clinical setting to allow practical experience with patients) and recognize the need to provide more clinical placements for aspiring nurses and other health professionals, but cannot overcome the limitations of physical space, finite numbers of senior staff equipped to serve in these roles, and related expenses.

- Health professionals reported that the healthcare landscape is difficult for career seekers to navigate. One focus group participant reported that they learned after graduation that the for-profit training program they completed was not accredited by the industry-preferred accreditation body, thus limiting the labor market value of their training and credential. In other cases, several professionals reported that they entered the field to pursue one career goal—often nursing—only to later discover that they were better suited to another profession. They reported that they would have benefited from career coaching from the outset to better understand the range of opportunities in the field.

Workforce Development Opportunities

Information Technology

Strong Demand for IT Workers, but with a Limited Range of Middle-Skill Occupations

The Metro Washington region is home to a robust and growing IT workforce. Key drivers of demand reportedly include direct and contract hiring by the federal government and military; state and local government; industries like finance, mechatronics and healthcare that are adding IT professionals to support core lines of business; a growing startup sector focused on creating innovative technology solutions for regulated industries like government, healthcare and education; and a sizable tech support sector that serves many of the region's small businesses, law firms, policy shops, industry associations, and nonprofit organizations.

- Total IT employment in the study area is approximately 275,000 jobs and is expected to grow by 6% during 2016-2021, on pace with the U.S.

- The federal government and military drive hiring demand for many technology occupations through direct hiring as well as hiring by federal contractors.

- Staffing firms play a significant but not dominant role in hiring across the sector.

- Some of the most sought-after skills and credentials include security clearances, coding (Pearl, Python, Java, Ruby on Rails); web and mobile development (iOS, Android); data science and data analysis; TCP/IP and networking, particularly Cisco; Unix; cloud computing (Amazon AWS Certification, Office 365 certifications); and PMP project management certification.

- Hiring for highly-skilled, specialized positions poses the greatest challenge to employers. These positions typically require significant work experience and advanced certifications or credentials.

This study focused on identifying living wage IT occupations that 1) On average, require less than an associate's degree; and 2) Can generally be obtained upon successful completion of a short-term (i.e., less than one year) job training program. Based on these criteria, Computer User Support Specialist occupations (e.g., help desk, tech support) appear to offer the most accessible on-ramps to living wage, in-demand IT jobs. While careers in cybersecurity were initially of interest to GWWDC based on reports of strong demand for cyber skills in the region, our analysis found that the vast majority of cybersecurity occupations require a bachelors' degree or higher and/or significant work-experience, placing them beyond the immediate reach of most short-term job-training programs and middle-skill job-seekers.

Targeted Occupation Profile

The following profile for the targeted occupation in IT was developed using findings from the labor market analysis and primary research (surveys, interviews, focus groups). Comments on education and experience requirements, skills, and certifications are included where highlighted by participants.

Computer User Support Specialists (SOC 15-1151)				
Provide technical assistance to computer users. Answer questions or resolve computer problems for clients in person, or via telephone or electronically.				
3,416 Postings March 2016	**19,390** Jobs 2016	**1,793** Change (2016-2021)	**$28.28** Median Wages	**$16.10** Entry Wages
Employer Profile	Tech support/help desk vendors, Managed Services Providers, and in-house IT support departments within larger firms.			
Demand Overview	Demand favors more specialized jobs but remains steady for entry-level workers as well. Regional employers reported recruiting and retention challenge for specialized jobs. Employers noted they focus their hiring processes on assessing candidates' soft skills.			
Education & Experience	While regional employers expect candidates to have some technical skills and credentials at the time of hire, they regard communication, teamwork, curiosity, problem-solving, critical thinking, and customer service skills as critical. They also commonly require thorough knowledge of Microsoft Windows and Microsoft Office products, and in one case, offer modest salary bumps to workers who complete the Microsoft Office Specialist certification.			
Top Skills	Management Information Security Troubleshooting (Problem Solving) Communications		Scheduling (Project Management) Leadership Coordinating Leading	
Top Certifications	CompTIA A+ Certification Microsoft Certified Professional CompTIA Security+ Certification		CompTIA Network+ Certification Microsoft Certified Systems Engineer	
Sample Job Titles: Computer Specialist • Computer Support Specialist • Computer Technician • Electronic Data Processing Auditor (EDP Auditor) • Help Desk Analyst • Information Technology Specialist (IT Specialist) • Network Support Specialist • Network Technician • Support Specialist • Technical Support Specialist				
Sample Program Offerings				
Washington, DC		**Maryland**		**Virginia**
Byte Back DC Public Schools UDC Community College		Montgomery College Per Scholas Prince George's Community College		Northern Virginia Community College Year Up

Hiring Disconnect Clouds Relative Importance of Degrees, Real-World Experience

Research findings were mixed on the relative importance of four-year degrees for IT career entry and advancement. Hiring processes and varying roles for Human Resources (HR) departments across employers of differing size may explain the divergence.

- Employers indicated many reasonably well paid opportunities on help desks and tech support teams do not require a four-year degree, but that a four-year degree afforded more opportunities for career and wage advancement.

- Outside of the federal government, some employers reported it is possible for workers with less than a four-year college degree to advance to higher-skilled jobs if they have significant work experience, advanced skills, and on-the-job training or other training beyond high school. At the same time, employers said a four-year degree is typically the most direct route to accessing higher-paying jobs, especially given the high concentration of college graduates in the region.

- Employers reported frontline hiring managers and human resources departments work at "cross purposes" in hiring. Whereas frontline hiring managers focus recruiting and hiring on filling immediate skill needs and emphasize real-world experience and demonstrated skills over academic credentials, HR departments often default to academic credentials as a proxy for skills and filter out candidates who do not have a college degree.

- The HR-frontline hiring disconnect may be more pronounced at larger firms - where HR can often play a gatekeeping role in the hiring process - than at smaller firms where frontline supervisors may have more autonomy in making hiring decisions.

FEDERAL CONTRACTING AS A KEY SOURCE OF EMPLOYMENT

While the recent Presidential election casts a level of uncertainty around potential Federal government hiring freezes or budget cuts, the dominance of outsourcing as a means of meeting government IT needs has reportedly emerged in response to several factors. These include outmoded federal hiring practices that fail to attract strong candidates, move too slowly to meet frontline needs, and offer pay scales that don't always compete with private sector compensation. Limited and inconsistent training budgets sometimes mean federal workers lack opportunities to upskill and stay up-to-date on current technologies, leading many agency leaders to prefer to outsource IT services. While contract workers typically work on time-limited assignments that offer less overall job security and perhaps weaker benefits than direct employment in the Federal government, they still obtain, they still obtain valuable work experience, skill development, professional connections, and, typically, competitive compensation.

Strong Employer Interest in Diversifying the IT Workforce

The growing importance of linguistic and cultural competencies and problem solving skills is leading some employers to recruit and hire candidates from a broader range of backgrounds than they have traditionally.

- While demand remains particularly high for job candidates with a four-year BS in Computer Science or other IT-related degree, interest in hiring liberal arts majors has begun to emerge among employers seeking candidates with strong problem solving, critical thinking, and communications skills. Many employers are enthusiastic about short-term IT "boot camp" programs as a vehicle for bringing more liberal arts graduates into the field.

- IT employers frequently reported they have set company goals for recruiting, hiring, and retaining more women and people of color. Motivating factors include broader corporate diversity and corporate social responsibility goals as well as growing recognition that cultural and linguistic competencies impact workers' ability to successfully work with a highly diverse client base.

SECURITY CLEARANCES REPRESENT A MAJOR BARRIER TO IT CAREER ENTRY AND ADVANCEMENT

Hiring demand in the region is particularly high for workers who have or qualify to obtain a security clearance. Some employers recruit college students for internships or co-ops so they can initiate the prolonged security clearance application process prior to graduation and students are fully cleared by the time they advance to a full-time role. Given the time and expense involved in obtaining a clearance, most of these internships go to four-year degree-seeking students. However, the National Security Agency reportedly recently began accepting students from two-year programs for some of its student co-ops. While internships and co-ops may provide an important avenue for some students to obtain a security clearance, such opportunities are too scarce to represent a reliable path for most IT career seekers.

Security clearances also influence the career trajectories of IT workers. Among the IT professionals who participated in this study, one reported that he felt his lack of clearance was limiting his career advancement options, one reported that a clearance obtained early in his career has opened many doors, and a third noted targeting his current job-search specifically toward firms that provide an opportunity to obtain a clearance since he viewed a clearance as the most direct path to higher wages and career advancement.

Technology training providers echo the emphasis employers place on security clearances, reporting that their students tend to be aware of the security clearance requirement but not the potential obstacles to obtaining one. Education and training providers indicate they are attempting to address the lack of awareness among students, including among international students who face unique obstacles to obtaining a security clearance and enter programs with less familiarity regarding what it takes to get one. For example, Montgomery College and Prince George's Community College now offer courses to better inform students of the process and requirements.

GROWING CYBERSECURITY SPECIALIZITION PRESENTS CAREER ADVANCEMENT PROSPECTS

Cybersecurity is a strong and growing area of specialization in Metro Washington. In addition to security-focused occupations, cybersecurity skills and knowledge are increasingly necessary for a wide range of IT jobs. In-demand skills, knowledge, and credentials identified by workers and employers include CompTIA's Security+ certification, (ISC)2's Certified Information Systems Security Professional (CISSP), the Certified Ethical Hacker (CEH) credential, coding skills, familiarity with Unix and networking technologies, data analysis skills, Qualified Security Assessor (QSA) certification, Six Sigma Black Belt certification, Agile software development principles, cloud experience, and Amazon Web Services certification. Most cybersecurity jobs require specialized skills, significant work experience, and multiple advanced certifications or credentials beyond a high school education, typically including a four-year degree. As such, most of these occupations are likely out of reach for new entrants to the field, but they may offer opportunities for advancement to entry-level workers, including Computer User Support Specialists.

Opportunities for Career Advancement

IT employers reported significant investments in employee skill development, including on-the-job training, tuition assistance, and financial incentives for earning certifications. Both self-study (often via online modules) and courses at community colleges were also cited as important tools for career advancement.

- IT employers commonly reported offering ample opportunities for on-the-job training and tuition assistance, motivated by a desire to serve evolving customer needs and engender staff loyalty. Finite training budgets require managers to selectively allocate those opportunities and sometimes favor workers with more advanced, mission-critical skills.

- Self-study for certifications appears to be the preferred strategy for career advancement and is also valued for the commitment and drive it signals to employers.

- The importance of demonstrating skill mastery also makes portfolio development a common strategy for career advancement, at least for occupations related to data analysis, coding, web development, UX, and/or design.

Sector Complexity Obscures IT Career Pathways

There are a number of issues that may complicate efforts to develop career pathways and employer partnerships focused on IT careers.

- Pinpointing demand for specific IT skills and occupations can be challenging due to significant variation in job titles and the large number of credentialing bodies awarding similar certifications.

- Only a portion of IT jobs are housed within the formal "IT industry" and that industry is generally focused on hiring individuals with advanced skills. One important exception is Managed Services Providers and other IT support vendors, which hire large numbers of Computer User Support Specialists. Beyond these vendors, workforce leaders interested in organizing sector partnerships around Computer User Support Specialist jobs are likely to have to convene employers across a range of different industries (e.g., from law firms, small businesses, universities), potentially complicating efforts to identify shared needs and priorities.

Closing Gaps and Advancing Inclusive Prosperity

The region's growth and relative affluence mask persistent inequalities in income, employment, and education that leave some groups unable to access education and training leading to good jobs, while also threatening the prospects of key industries that may be unable to and the workers they need to thrive.

Widespread but Uneven Prosperity Leaves Out Some Residents

Despite widespread prosperity and rates of unemployment and poverty that fall below national averages, the burden of unemployment is unevenly distributed across racial/ethnic groups and geographic territories in the Washington metro area. Disparate economic growth and access to opportunity leaves a large share of residents unable to fully participate in the regional economy.

3X greater likelihood that African Americans and Hispanic residents of the study area earn poverty wages compared to White residents[13]

2X greater likelihood D.C. residents earn poverty wages than their Maryland and Virginia counterparts[14]

89,279 unemployed workers in the study area[15]

Data suggest that both wage and employment inequalities persist for women, people of color, and younger workers. Workers in the region may encounter a variety of barriers to employment and career advancement, such as educational attainment, limited English proficiency, family caregiving responsibilities, excessive commutes and limited access to transit, and criminal records, among others.

CONNECTING YOUNGER WORKERS TO OPPORTUNITY

Many young adults leave high school without graduating and are not employed. Graduation rates vary dramatically across the region, ranging from 64% in the District of Columbia's Public Schools to 99% in Falls Church for the four-year cohort that graduated in 2015. Young people who are most disconnected from economic opportunity are frequently characterized as "opportunity youth," defined as youth aged 16-24 years who are neither connected to school nor to work. Analysis by the Cowen Institute at Tulane University estimated 12.4%, or 65,000, of Metro Washington (MSA) youth fall into this category.[23]

- Both local and state-level data suggest that some populations are overrepresented among the local unemployed. Throughout the region, younger workers and African Americans were more likely to report they were unemployed than their counterparts in 2015.

- Income inequalities among residents of the targeted jurisdictions follow race/ethnicity and gender lines. African Americans and Hispanics were more than three times as likely as Whites to have income below the poverty level ($23,550 for a family of four) in 2013. Median earnings for men outpace earnings for women at the low end (<HS Diploma) and at the high end (graduate or professional degree) of the range. At the low end, male workers in Falls Church earned $19,784, compared to $16,697 for female earners in the City of Alexandria, and the gap widens at the high end. At the high end, men in Falls Church take home $128,011 in median annual wages, compared to $80,904 for the region's highest-earning women in Arlington County.[16]

- Roughly 165,000 residents between 18 and 64 years reported they do not speak English well or at all, an employment factor that most commonly, but not exclusively, impacts Spanish speakers.

- Many working-age individuals have family caregiving responsibilities that influence their career advancement opportunities. Within the study region, an estimated 62,503 women gave birth in the past 12 months, and approximately one in three households have a child <18 years of age present. Nearly 84,000 individuals live with an adult son or daughter.[17]

- Surveys indicate that an estimated 7.4 percent to 12.8 percent of residents in the region are in "Fair" or "Poor" health, suggesting that health issues may be a barrier to work for some residents.

- Criminal records and court involvement can also be a significant barrier to employment. In 2014, there were more than 160,000 individuals under Community Supervision (probation or parole) in DC, MD, and VA.[18]

A Large and Diverse Labor Force, but Too Few Workers Ready for Middle-Skill Jobs

The region boasts a large and diverse working population with one of the highest education levels in the nation, but employers in high-demand industries need more trained workers than the region produces. Many less-educated residents struggle to secure family-sustaining employment, particularly those with a high school diploma or less who lack the technical skills and credentials to command wage premiums key growth sectors offer. Given the strong correlation in the region between educational attainment and income, many of these individuals would likely benefit from additional education and training.

- Approximately 3.1 million working-age residents (15-64) live in the study area.[19] These workers are highly diverse. Among adults (18+), the majority are people of color, over a third were born outside of the United States, and roughly a third speak a language other than English at home.[20]

- The National Skills Coalition has estimated that between 30-46 percent of job openings in the study area during the next five years will be "middle-skill," that is, require more than a high school diploma but less than a four-year degree.

- Throughout the region, earnings correlate with educational attainment. Individuals with "Some College" or more are more likely to earn a living wage.[21]

- An estimated 785,000 residents have not completed education beyond high school, placing them at a distinct disadvantage in the regional labor market.[22]

TRANSPORTATION ACCESS AND TRANSIT TIME

While the region benefits from one of the nation's more admired public transportation systems, workers may still encounter transportation hurdles that limit their access to good jobs. The Washington Metro's aging infrastructure experiences frequent delays and extended closures for repairs, making it a less reliable option. While many workers opt to commute by driving, the expense of car ownership - $2,104-$2,368 per year above and beyond the purchase price - is a major barrier to employment for lower-income workers. Direct care jobs, for example, sometimes require workers to visit the homes of patients who may or may not live near public transportation, effectively requiring workers to have access to their own vehicle. One-way commute times of 45 minutes or more present a challenge for more than 600,000 workers in the region. Long commutes particularly burden workers with family caregiving responsibilities, who both face the added difficulty and expense of securing caregivers to cover long commute times in addition to the loss of 1.5 hours or more of potential wage-earning work hours per day.[24]

State of the Information Technology Talent Pipeline

Healthy training capacity, but a complex path to hiring.

Varied Pathways to Skill Acquisition

- Education and training providers are largely satisfied with enrollment levels for the IT training programs they offer, and are seeing particularly strong demand for cybersecurity offerings.

- Recruiting strategies varied by employer, with many reporting a focus on hiring from four-year institutions while others were looking to their regional tech councils for innovative solutions to their hiring needs or nonprofits like Year Up and Per Scholas to help them attract a more diverse range of entry-level candidates.

- Focus group participants reported no shortages in education and training options, but generally preferred self-study for certifications. However, one participant described returning to school to earn degrees multiple times at points where he felt like he'd maxed out how far self-study and certifications could support his career advancement.

Program Completion Does Not Automatically Lead to Credentials, Jobs

- Students who complete IT training programs at community colleges do not automatically receive industry-recognized certifications upon program completion. Ensuring that students study for and complete 3rd-party validated exams and have the resources to pay for testing are critical steps to ensuring that the full value of these programs is realized.

- Virtually all cybersecurity-focused IT jobs require more work experience or advanced skills and credentials than students can gain by completing a stand-alone, sub-baccalaureate cybersecurity training program. Community college staff reported that, typically, only those graduates with prior IT work experience are moving directly into cybersecurity jobs. Others are often using the program as a stepping-stone to a four-year degree.

The IT Certification Landscape is Complex

- The rapid evolution of disciplines like cybersecurity, the proliferation of competing IT credentialing bodies, combined with a lack of standardization in IT job titles, skill sets, and career pathways has given rise to a confusing and crowded landscape that education and training providers must navigate when determining how to structure their training programs.

State of the Healthcare Talent Pipeline

Provider capacity and employer hiring are generally in sync, but a perceived nursing shortage persists in the region.

Providers Offer an Expansive and Growing Selection of Programs

- Local community colleges offer a wide array of programs, including training for the targeted occupations identified in this study. Some non-credit programs are under-enrolled due to lack of awareness around job opportunities in certain areas of specialization. Providers reported that they are not planning to expand capacity in most existing programs with the exception of nursing programs.

- Providers expressed some interest in further diversifying their offerings. For example, multiple schools are exploring interdisciplinary offerings linking healthcare and IT programs to prepare workers to fill specialized IT jobs in healthcare settings.

With the Exception of Nursing Challenges, Training and Hiring are Generally Well Coordinated

- Despite some difficultly in sustaining engagement with employers over time, healthcare education and training providers reported consistently monitoring labor market data and gathering employer input (typically via advisory boards) to forecast hiring and design program offerings. Well-defined career pathways, standardization in job titles, skill sets, and credentials, as well as ongoing attention to the projected hiring needs of area employers all combine to create a well-functioning talent pipeline through which providers generally satisfy employer hiring demand for middle-skill occupations.

- Education and training providers have responded to employers' need for Registered Nurses with ongoing efforts to add nursing slots, but are constrained by the scarcity of clinical placements. Training providers are also exploring options to train more BSNs to respond to employer demand: Montgomery College has partnered with the University of Maryland to pilot a dual-enrollment program that expedites the path from ASN to BSN, and the State of Maryland is currently considering allowing two-year schools that meet accreditation requirements to offer BSNs programs.

Recommendations

The Greater Washington Workforce Development Collaborative and its partners plan to provide support for industry partnerships that will address the talent needs of local IT and Healthcare employers while also helping workers launch or advance in living-wage careers. Industry partnerships convene a group of employers with similar skill needs to jointly develop and implement solutions to workforce challenges. They can help to coordinate resources and align strategies across a range of workforce development stakeholders, including businesses, education and training providers, the public workforce system, community-based organizations, and philanthropy. Based on this study, some of the potential solutions regional industry partnerships may want to explore include:

Healthcare

Raise Awareness and Provide Navigation Supports
Health professionals reported that the healthcare landscape is difficult for career seekers to navigate and that they would have benefited from career coaching to better understand the range of job opportunities, training options, and career pathways available to them. While hospitals cited some examples of awareness-raising and counseling efforts at local high schools, there appears to be a particular need for outreach to adult learners. By collaborating across multiple employers to carry out this work, an industry partnership could not only realize cost efficiencies, but also help to ensure that students are receiving consistent messages.

Scale up on-ramps to entry-level, middle-skill jobs in areas like medical assisting, medical billing and coding, and patient care support as well as pathways through these jobs to higher-paying, in-demand areas such as nursing or health IT specializations
Aspiring healthcare professionals and career advancement seekers alike often need to enhance their basic skills, secure scholarships, or obtain child care or transportation support to succeed in job training programs. Industry partnerships could blend contributions from employers and philanthropy to address these needs.

Explore Opportunities to Align and Extend the Reach of Existing Employer Training Investments
Many healthcare employers reported offering tuition assistance or in-house training programs (i.e., for Patient Care Techs). When appropriate, cost savings might be realized if multiple organizations co-invested to jointly purchase customized training from a regional community college or other training provider. Employers might also jointly work to develop registered apprenticeships, opening up access to additional government and philanthropic resources to help address their skill needs.

Develop Innovative Solutions to Clinical Placement Challenges
Both employers and training providers reported that scheduling clinical placements for nursing students and other health careers students continues to be a significant challenge. Key barriers cited included the lack of physical space to host more students, the ability of healthcare providers to spare senior staff as preceptors, and the difficulty of scheduling training slots across multiple schools and clinical settings. Rather than attempt to resolve these challenges on an institution-by-institution basis, an industry partnership might convene employer and educational stakeholders from across the region to explore large-scale, systemic solutions.

Information Technology

Build on-ramps to Computer User Support Specialist jobs as well as pathways through these jobs to in-demand areas of specialization, including cybersecurity.
A number of regional employers expressed interest in diversifying their workforce. Several noted that they'd had success attracting more women and people of color to Computer User Support Specialist-type jobs by partnering with community-based organizations like Year Up and Per Scholas. Given that many

Computer User Support Specialists appear to advance into higher-skilled occupations in IT, attracting more diverse candidates to these entry-level jobs could be a promising strategy for ultimately bringing more diversity to the overall field.

Presently, the reach of many IT training programs is limited by their admissions standards (e.g., reading, writing, and math proficiency). These standards help to ensure that program participants are able to complete training successfully, but also constrain programs' ability to scale their offerings so they can serve more workers and businesses. An industry partnership might help these programs scale up by facilitating partnerships between the IT programs and other organizations specializing in basic skills or soft skills development, or by providing resources so that IT training programs can build out their own "bridge" programming to serve a broader range of students in-house.

Finally, there may also be an opportunity to build partnerships between businesses to develop career pathways from Computer User Support Specialist positions to higher-skilled, hard-to-fill positions in areas like cybersecurity. In some regions, businesses have developed career pathways across multiple firms, with the firms seeking higher-skilled workers providing referral fees or assisting with the training costs of partner businesses that help vet, train, and forward along strong candidates who are ready to advance beyond entry-level employment.

Explore Opportunities to Align and Extend the Reach of Existing Employer Training Investments

IT employers reported significant investments in employee skill development, including in-house training and tuition assistance. Workforce leaders should explore opportunities to aggregate and extend the reach of employer investments, particularly among small-to-mid-sized firms with more limited training resources. For example, multiple firms could co-invest and jointly purchase customized training from a regional community college or nonprofit partner. Employers might also jointly work to formalize their training strategies and develop registered apprenticeships, opening up access to additional government and philanthropic resources to help address their skill needs.

Strengthen Hiring Practices

As previously noted, there appears to sometimes be a disconnect between the hiring preferences of frontline IT managers (who emphasize specific, demonstrated skills and experience) and the filters used by Human Resources staff to narrow the job candidate pool and select finalists (who tend to rely upon college degrees

as a proxy for skills). An industry partnership could further explore this phenomenon and redesign hiring practices to ensure they are not weeding out good job candidates. An industry partnership might also pilot one of the many competency-based skill-matching platforms now on the market. These platforms aspire to increase the percentage of successful hires by matching workers with openings based on the specific competencies required for that job. Using these technologies might broaden the pool of workers employers could recruit for hard-to-fill positions.

Foster Coordination and Shared Learning

Finally, there are several IT workforce efforts already underway throughout the region. An industry partnership could promote collaboration and coordination across these efforts with the goals of:

- Encouraging peer-to-peer learning and dissemination of lessons learned across and among initiatives.
- Identifying opportunities for partnership and resource sharing.
- Minimizing duplication of effort.
- Identifying and addressing in gaps in programming.
- Identifying and addressing policy and systems change priorities that various initiatives may want to work jointly to address (e.g., security clearance barriers).

Endnotes

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