

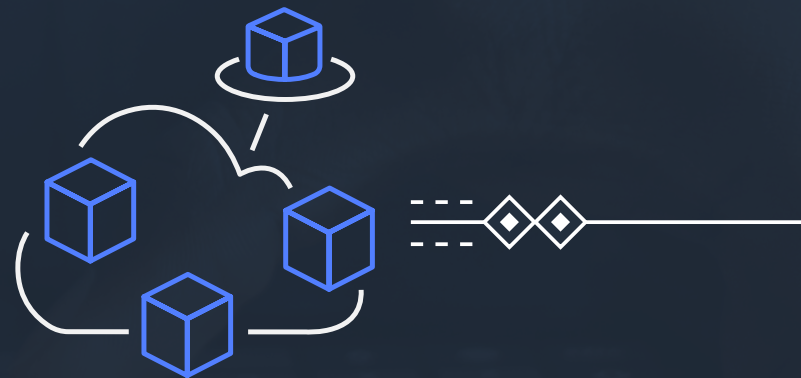
Bridging the digital divide through upskilling and digital inclusion

How governments can be part of the solution

June 2021

Background

The global skills gap affects the economic wellbeing of individuals and communities. Education and industry are mostly tasked with solving it. But how can governments be part of the solution, and why are cloud skills so important? During the height of the COVID-19 pandemic, when economic tensions were at their peak, Amazon Web Services (AWS) conducted a series of conversations about these questions through panel discussions, public webinars, and blogs. This is what we learned.



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What's the problem?

Millions of people lost their jobs because of COVID-19. Some of this employment may bounce back, but the high rate of business bankruptcies means that many of these jobs are gone for good.

This is a broader challenge, as the pandemic is only the latest source of negative pressure on individual employment and business' productivity. Across the economy, from manufacturing to agriculture, enterprises have been increasing automated production methods that, though more efficient, are less reliant on workers. This has hit people with low levels of technology skills hardest. [The Brookings Institution](#) estimates that the number of low-tech jobs in the United States shrank from 56 percent to 30 percent from 2002 to 2016, disproportionately affecting women, people of color, older workers, and workers without college degrees.¹

People living in rural communities are among those seeing their economic prospects receding. According to the [McKinsey Global Institute](#), 30 percent of the population, living and working in 25 mega regions, will generate most of the United States' economic and employment growth by 2030. Meanwhile, the nearly 25 percent of Americans who live in rural areas are losing jobs in traditional sectors such as agriculture and manufacturing, even as high tech companies in urban centers have jobs they cannot fill.

Do the rural unemployed have to move to cities to find good jobs? No. As the pandemic has taught us, telework is a sustainable option, especially when high-speed broadband is available to accommodate rural and remote locations. But we are a long way from meeting the infrastructure needs of all communities. The U.S. Federal Communications Commission estimates that 21 million U.S. residents lack reliable broadband access, but [other estimates](#) put this number much higher.

Infrastructure is not the only thing that is holding individuals back from full participation in the digital workforce. Digital training opportunities still lag behind demand, especially for learners who come from diverse backgrounds. Attitudes about workforce development remain tied to the belief that a high-tech worker must fit a certain demographic profile, e.g. live in a city and have a four-year college degree.²

1 See Elizabeth Lindsey, "Millions are left behind in the digital age," [TEDx](#), (September 2019). See also Byte Back, "[Low-tech jobs are gone. Here's what we can do about it.](#)"

2 The [National Digital Inclusion Association](#) identifies five elements necessary for digital inclusion: 1) affordable, robust broadband internet service; 2) internet-enabled devices that meet the needs of the user; 3) access to digital literacy training; 4) quality technical support; and 5) applications and online content designed to enable and encourage self-sufficiency, participation and collaboration.

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Business case

The skills gap is not just bad for individuals. It's bad for business as well. [The World Economic Forum](#) predicts that by 2022 more than half of employees worldwide will require significant reskilling or upskilling to do their jobs.

Investment in upskilling makes sense. [Accenture](#) estimates that if investment in upskilling does not keep pace with changing technology, business losses could reach \$975 billion in the United States alone.¹ By contrast, companies whose workers have strong digital skills are more than five times more likely than their peers are to project high revenue growth for the upcoming three years.

Hiring managers are running behind demand. A 2020 survey of more than 9,500 information technology executives showed that almost all of them had at least one job they could not fill during the past year, and 69 percent have multiple unfilled positions.² When asked about their most important hiring qualification, 59 percent of IT decision makers identify relevant skills as the top priority.

Information technology companies like AWS currently have thousands of open roles for skilled cloud talent. And the demand goes well beyond the IT sector. Across the economy, business in sectors from auto manufacturing to medical insurance are relying on tech skills such as software development, cloud architecture, data science, and machine learning for efficient service delivery and global business competitiveness.



¹ For the period 2018-2028.

² The [2020 IT Skills and Salary Survey](#) was conducted online from September 2019 with 9,505 IT executive respondents.

Individual opportunity

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Technical skills are the currency for individuals' future opportunity and economic mobility. According to [Accenture](#) (2020), with upskilling, one third of American workers have the potential to access higher income occupations in growth sectors. Importantly, these opportunities are open to low-income workers, some of whom could double their income from these new positions, achieving median salaries of \$35/hour. Virginia's [1901 Group](#)¹, a wholly owned subsidiary of Leidos, has been a leader in rural skill building for employment in cloud technology. One of the myths they have tried to dispel is that rural workers are not well suited for tech jobs. As Brendan Walsh, senior vice president of partner relations, puts it:

*"In rural America, curiosity, an interest in learning, and basic technical know-how are practically prerequisites for survival. Whether people are repairing trucks, running farms, or operating heavy equipment, these technical aptitudes can be applied to technology-oriented career paths."*²

Skills development is not a time-limited, one-time-only transfer of knowledge. Whether you are entering the job market for the first time or you are changing career paths after 20 years, no one is too far behind to catch up.

"We look for inquisitive people who are innovators that don't back down from technology and who want to learn and do. One of the managers at our enterprise IT operations center in Blacksburg, Virginia used to be a professional welder. He started on our help desk and moved his way up an IT career ladder because of his interest in how workflows affected our service delivery, and also because of his really great work ethic."

Brendan Walsh, senior vice president of partner relations at 1901 Group, a Leidos Company

Former U.S. Secretary of Commerce, Carlos Gutierrez, is a proponent of global trade, but he also notes that globalized markets have changed the nature of work and in-demand skills, creating a need for lifelong learning no matter where you are in your career development. He notes, *"Upskilling works, but you have to understand what skills a person needs—what skills are emerging in demand and what skills are sun-setting as the economy changes."*³

1 [1901 Group](#) is a Leidos Company.

2 AWS Public Sector Blog, ["Building Tech Skills and Jobs in America's Rural Communities,"](#) (October 2020).

3 Quoted in World Affairs Council of America panel discussion, ["Overlooked America: Building Jobs and Tech Skills,"](#) (November 2020).

How AWS is bridging the digital skills gap

To accommodate the rapid rate of change, the technology industry is providing extensive training and education resources at low or no cost to learners. But for individuals without tech experience, securing a cloud computing job can seem daunting, especially if they do not hold a four-year degree. Kim Majerus, leader of US education and state and local government at AWS notes:

*"AWS training programs seek to meet learners where they are. Nontraditional pathways that focus on in-demand skills through certifications, associate's degrees, and real-world training programs are critical to building a technical talent pipeline."*¹

Digital inclusion

Community colleges are one way to reach diverse communities and individuals including minority and underrepresented populations with varying skill levels. For example, [AWS Academy](#) and [AWS Educate](#) partnered with the Los Angeles Community College District to offer Cloud Computing Certificate training at 19 LA County community colleges and their sister high schools. To [help expand career opportunities in rural communities, AWS is collaborating with its partners](#) such as [1901 Group](#)² to reach individuals outside of urban centers. For learners who need foundational technical and computer skills, nonprofits such as [ByteBack](#) are helping to close the digital divide so they can pursue more advanced skills.

Pathways to employment

Success in the workforce requires more than just technology know-how. [AWS re/Start](#) is a full-time training program, provided at no cost, to prepare unemployed and underemployed individuals for careers in the cloud. It connects them to potential employers in 12 countries around the world. In the United States, the AWS re/Start team is working to connect graduates to job opportunities in rural and urban areas, from San Jose, California, to Washington, DC, to Martinsville, Virginia. As Tejas Vashi, global lead of AWS re/Start explains, *"The 12-week training and reskilling program provides the basics IT skills, but it also provides employability skills such as time management, teamwork, and presentations."*³

1 AWS Public Sector Blog, "[Creating a Culture of Lifelong Learning for the Workforce](#)," (March 2021).

2 [1901 Group](#) is a Leidos Company.

3 Quoted in AWS Institute panel discussion, "[Building Cloud Skills & Jobs in Rural America](#)," (October 2020).

Opportunities for military families

Veterans' unemployment and underemployment is an endemic but solvable problem. Recognizing that many of the problem-solving and teamwork skills acquired by men and women in the military are ideally suited to high-tech jobs, the [AWS Military Apprenticeship program](#) provides [paid positions](#) to military veterans and their spouses.

"As a result of the AWS Military Apprenticeship program, a U.S. veteran who previously could only find work in an airport cafeteria is today an Amazon software developer."¹

Nick Curry, manager, AWS Military Initiatives and Technical Apprenticeships

Support for lifelong learners

Building skills from within is always more efficient than hiring from outside. In 2019, [Amazon committed to invest \\$700 million to train 100,000 Amazon employees in the U.S. for high-demand jobs](#), and now [AWS will help 29 million people globally grow their technical skills](#) with complimentary cloud computing skills training in more than 200 countries and territories.

A role for governments

State and local governments have an important role to play in the workforce ecosystem. Even though much of the supply and demand function is performed by job seekers, educators, and employers, governments can play a matchmaker role to ensure that job seekers understand what skills are in demand and that educators have the resources they need to deliver them. Examples of such public-private partnerships include AWS initiatives in [Texas](#), [Virginia](#), [Louisiana](#), [Arizona](#), and [Utah](#).

"This new education collaboration will be a great economic benefit to our state as we work together to put Utahns back to work in resilient, high-tech, in-demand jobs and enable more teleworking job opportunities as well. I'm grateful to see AWS invest in the economic future of our state and its people."²

Gary R. Herbert, governor of Utah

¹ Author interview, April 2021.

² Quoted in AWS Public Sector Blog, [Building a cloud-ready workforce: Utah announces plan to train and certify 5000 residents in cloud computing](#), (August 2020).

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Call to action

COVID-19 disruptions make it more important than ever to reach educators, public officials, employers, and individuals interested in IT careers. Meaningful change requires action at a number of levels:

- Making sure that every home in every community has access to reliable broadband internet;
- Dispelling myths that high-skill tech jobs are only available to young, urban college graduates;
- Informing individuals about what education, training, and career path options are available;
- Providing educational opportunities in under-served communities, including support for employment success; and
- Creating skilling and reskilling programs for lifelong learners.

All of this will help strengthen our economy, build a resilient workforce, and help workers get skills for high-paying jobs and, ultimately, thriving careers.

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Summary of programs mentioned:

1. For employers searching for qualified talent: [AWS re/Start](#)
2. For educators and learners interested in no-cost cloud training and content: [AWS Educate](#) and [AWS Academy](#)
3. For learners and job seekers interested in IT and cloud computing careers: [AWS Careers](#), [AWS Military Apprenticeships](#), [AWS re/Start](#), [1901 Group \(Leidos\) Future Workforce](#) and [Careers](#)
4. For public officials interested in examples of worker reskilling programs: [VA Ready](#), and [Virginia Values Veterans V3](#)
5. For state and local government organizations interested in collaborating with AWS to provide cloud computing training and education to citizens: [AWS State & Local Government](#)
6. For underserved communities seeking basic IT skills: [Byte Back](#) (DC and Maryland region only).

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Blogs and videos

- AWS Public Sector Blog by Kim Majerus, [“Creating a Culture of Lifelong Learning for the Workforce,”](#) (March 2021).
- Washingtonian panel discussion, [“How the Tech Sector Is Upskilling the Workforce,”](#) (January 2021).
- World Affairs Council of America panel discussion, [“Overlooked America: Building Jobs and Tech Skills,”](#) (November 2020).
- AWS Institute panel discussion, [“Building Cloud Skills & Jobs in Rural America,”](#) (October 2020).
- AWS Public Sector Blog by Laura Dawson and Brendan Walsh, [“Building Tech Skills and Jobs in America’s Rural Communities,”](#) (October 2020).
- AWS Public Sector Blog by Aaron Osmond and Tasha Zabohonski, [Building a cloud-ready workforce: Utah announces plan to train and certify 5000 residents in cloud computing,](#) (August 2020).

Research reports

- Accenture and Amazon, [“Upskilling for a Post-Pandemic Economy,”](#) (December 2020).
- Saadia Zahidi, [“We Need a Global Reskilling Revolution: Here’s Why,”](#) World Economic Forum, (January 2020).
- McKinsey Global Institute, [“The Future of Work in America: People and Places, Today and Tomorrow,”](#) (July 2019).
- Mark Muro, Sifan Liu, Jacob Whiton, and Siddharth Kulkarni, [“Digitalization and the American Workforce,”](#) Brookings Institution (November 2017).

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Author

Laura Dawson *Principal Program Manager (North America), AWS Institute*

With thanks to our contributors and reviewers

This paper was produced by the AWS Institute. The AWS Institute convenes and engages global leaders who share an interest in solving public sector challenges using technology.

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Acknowledgements

The AWS Institute wishes to thank its collaborators in this project including AWS re/Start, the AWS Partner Network, the AWS state and local government teams, and the Amazon Military Apprenticeships program, as well as external contributors: 1901 Group a Leidos Company, and the World Affairs Councils of America.

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