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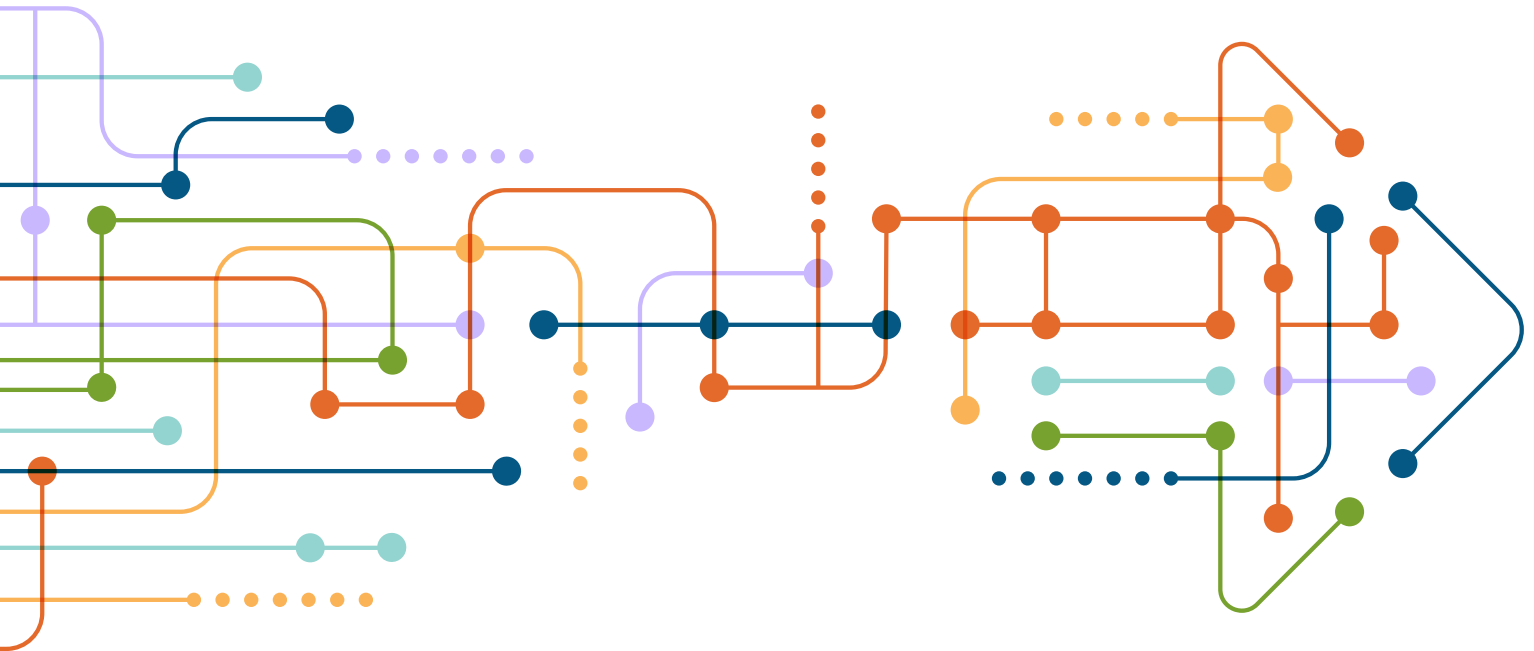
Modernizing to Attract & Retain Cyber Talent

NASCIO-NGA Roundtable on
State Government Cybersecurity Workforce

NASCIO
Representing Chief Information
Officers of the States

**NATIONAL GOVERNORS ASSOCIATION**

Introduction

State governments are facing unprecedented workforce constraints at a critical juncture in time as the Great Resignation, COVID-19 and other economic pressures have drastically altered the labor market. Recruiting and retaining a qualified workforce is increasingly difficult and presents distinct challenges to the cybersecurity industry, an industry that is feeling the impacts of a global shortage of 3.4 million workers.

As part of the 2022 Deloitte-National Association of State Chief Information Officers (NASCIO) Cybersecurity Study, state chief information security officers (CISOs) agreed that an inadequate availability of cybersecurity professionals is the second highest barrier to addressing states' cybersecurity needs. Only legacy infrastructure and solutions to support emerging threats ranked higher. Simply put, states are not poised to face existing and future cybersecurity threats if they cannot first fulfill their workforce requirements. To rise to the challenge, state leaders must collaborate and share ideas to achieve results-driven solutions.

To that end, NASCIO and the National Governors Association (NGA) partnered to assist states in identifying the concrete actions they can take now to bridge the cybersecurity workforce gap. NASCIO and NGA convened Governors' policy advisors, state information technology and cybersecurity leaders, workforce professionals and other experts to provide a forum for sharing experiences and best practices. This publication details the current state of play and summarizes the insights aggregated during this meeting, as well as previous related efforts by NASCIO and NGA to facilitate discussion on this topic.
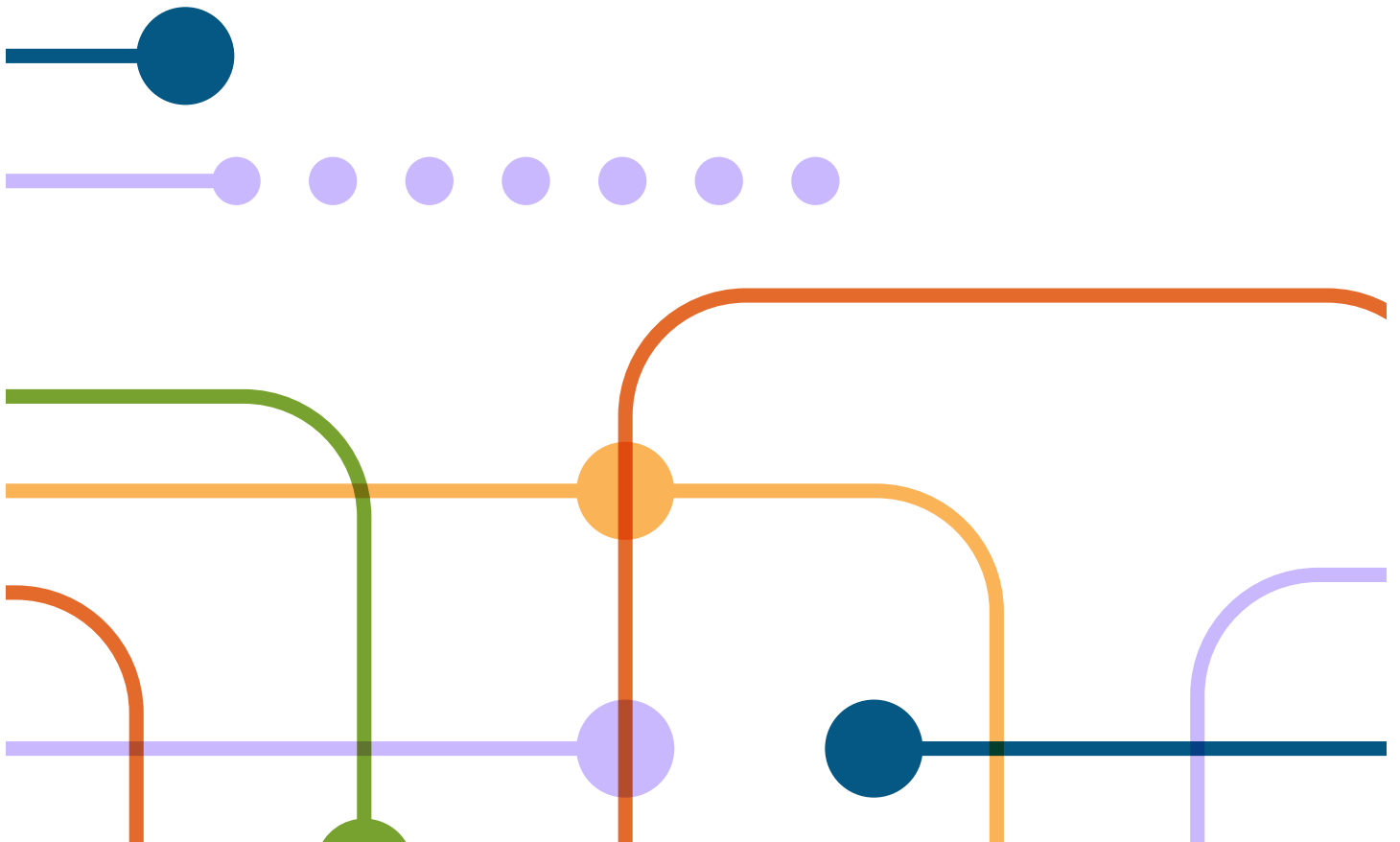
Setting the Stage: The Problem at Hand

A review of the current state of the public sector workforce offers a discouraging outlook. A recent survey conducted by MissionSquare Research Institute found that from December 2021 to February 2022, the state and local government job opening rate was the highest it has been in more than 20 years. In that same report, 54 percent of respondents said their wage compensation is not competitive with the labor market. These findings demonstrate a shared experience in which employees are being strained to take on job functions beyond their scope without a corresponding increase in their compensation. This, coupled with factors such as an increased desire for work-life balance post-COVID-19, has led more than half of state and local workers to consider leaving their jobs voluntarily due to the pandemic, and a quarter are debating leaving the public sector entirely. While COVID-19 has had a major impact on the global workforce, its consequences have been disproportionally placed on workers in the public sector where institutional change is often slow to take root.

One distinct challenge in the public sector is the length of its hiring process. Of the 53 state and territory CISOs that responded to the 2022 Deloitte-NASCIO Cybersecurity Study survey, the vast majority revealed that it takes more than a month to extend job offers to prospective hires. That delay only increases as candidates advance in their careers, with 46 percent of respondents saying director-level vacancies take longer than six months to fill. Not only does this threaten the cybersecurity of the state ecosystem, but it puts states at a serious competitive disadvantage in an already-lucrative industry in which companies are willing to pay top dollar for cybersecurity talent.
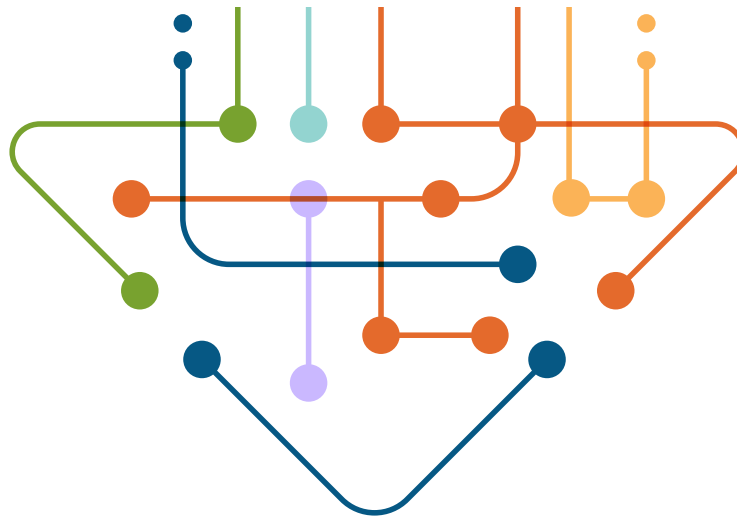
NASCIO and NGA initiated cybersecurity workforce-related efforts in June 2022 by organizing an interactive workshop at the NGA National Summit on State Cybersecurity in Columbus, Ohio. That session highlighted state cybersecurity leaders' considerations when navigating their workforce shortages. Some of the common roadblocks raised during that discussion were:

- Inability or unwillingness to offer remote work options.
- Lack of qualified instructors to train and/or upskill employees.
- Stringent or hard-to-find position requirements.
- Inflexibility around residency requirements.
- Outdated job titles that are not aligned to industry standards.
- Lack of internship pathways available to students and entry-level talent.

The conversation provided space for officials to recognize their shared challenges while also introducing some creative solutions states are taking to minimize the effects of the cybersecurity talent gap.

Roundtable Outcomes

To expand upon the discussion with a mindset toward actionable solutions, NASCIO and NGA convened roundtable participants for an in-person workshop in Charleston, South Carolina, in December 2022. The workshop opened with stating some of the known challenges with state cyber workforce recruiting and retention:

• According to MissionSquare, millennials, who now make up the majority of the U.S. workforce, and traditionally underrepresented groups, view remote and flexible work as a must have, yet only 54 percent of the public sector is offering it. In the Deloitte-NASCIO Cyber Study, 25 percent of state cyber offices report offering remote work options.

• Skills-based hiring, as opposed to only education-based hiring, is a proven way to open up the applicant pool, yet many states still have degree requirements in many job descriptions.

• State chief information officers (CIOs) consistently say that aligning job titles and descriptions more closely with the private sector is one of the top reforms that would help with recruitment, yet many states have not done so.

Besides increased compensation, what single action should be implemented that would be the most impactful in recruiting and retaining the future IT workforce in your state?

	2022	2019	2017
Reskilling current employees to meet modern IT demands	35%	25%	N / A
Aligning IT job titles, classifications and descriptions more closely to the private sector	31%	33%	31%
Increasing remote work options	18%	N / A	N / A
Expanding flexible work schedules	8%	N / A	N / A
Streamlining the hiring process and reducing time to hire	6%	14%	10%
Other	2%	N / A	N / A

• The time it takes to hire talent is delaying the process and putting states at a disadvantage in competing for talent. A 2017 Society for Human Resource Management **report** found that the average time to fill a position is 36 days; however, state cybersecurity positions take a substantially longer amount of time, as indicated by the graph below:

The time taken to hire talent is delaying the process and putting states at a disadvantage

■ Entry-level ■ Mid-level ■ Director-level

Time	Entry-level	Mid-level	Director-level
<30 days	4%	2%	0%
1–3 months	48%	25%	17%
3–6 months	31%	50%	31%
>6 months	12%	21%	46%
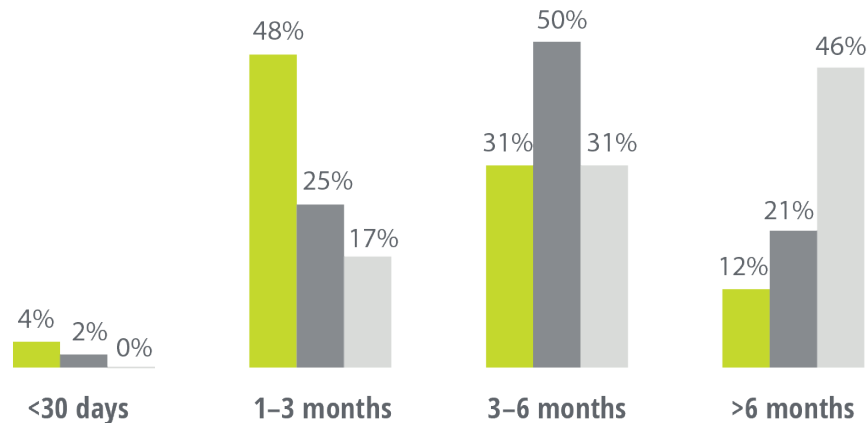
Challenges in state cybersecurity workforce recruitment and retention have been frequently discussed, with increasing focus in the last several years. With these top challenges laid out and agreed upon by participants, the bulk of the workshop was dedicated to finding solutions and sharing ideas. Via working sessions throughout the day, attendees brainstormed ideas to address the state cybersecurity workforce shortage. While these are described in greater detail in the Recommendations section of this document, there were some broad takeaways. At a high level, states should:

• Capitalize on the aspects that make state government an attractive workplace and work to effectively circulate a marketing campaign that speaks to a diverse audience.

• Rework position descriptions to reflect industry-standard job titles and reduce barriers to entry, such as outdated or unnecessary requirements.

• Adapt to the enduring impacts of the COVID-19 pandemic by modernizing the working environment to include flexible schedules, offering remote and work-from-home (WFH) options, and focusing on addressing burnout and employees' mental and emotional well-being.

• Identify the role of other partners—including the private sector, academia, federal government and nonprofits—and embrace models for collaboration and pipeline development.

Workshop participants also shared best practices for what is working in their states and a sampling of examples follow in the next section.
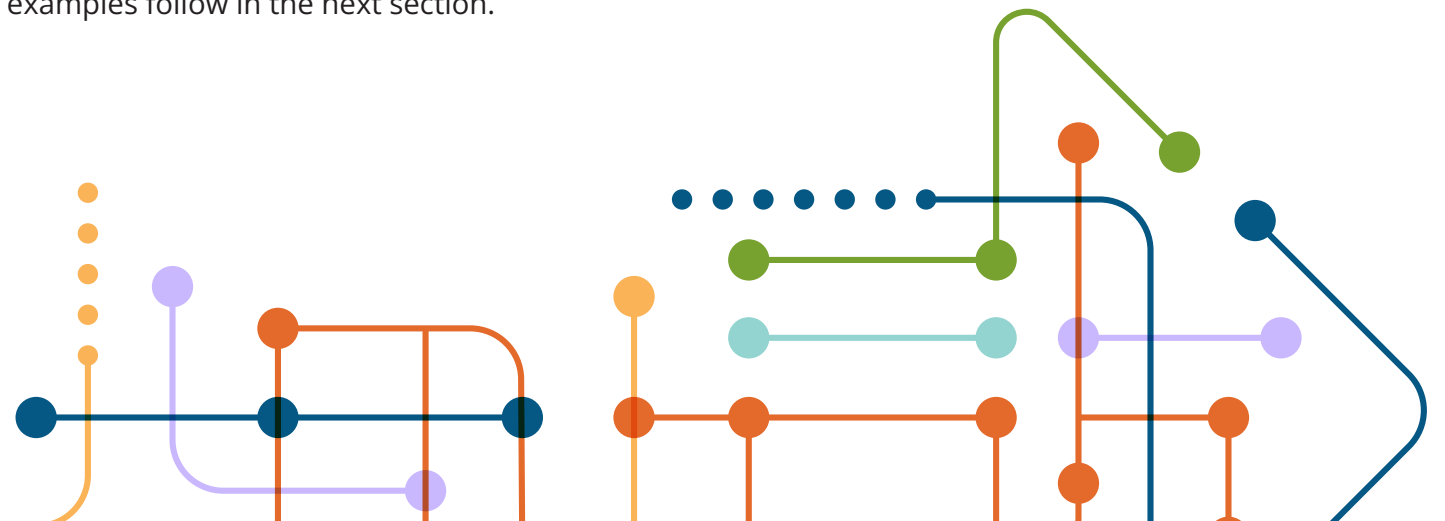
State Stories

There were a number of creative initiatives that attending state officials shared during the roundtable discussion. For example, Kansas is piloting a project with **Kansas City Scholars** to recruit mid-career and second career interns. Texas has increased female hires on the technical side by looking at how job descriptions are phrased. Their job applications include a statement encouraging people to apply for a position even if they believe they do not meet every requirement.

A few additional case studies are detailed below.

Georgia

Georgia is trying a multi-pronged approach to close the cybersecurity professional gap. First, the state is seeking to broaden awareness of cybersecurity professions within the state by developing a speakers' bureau of employee volunteers of all levels who will go out into school systems to increase awareness of cybersecurity jobs. They are also working with Georgia Tech on a public/private fellowship program that includes six months working for state government and six months working for the private sector. The state is also paying for employee certifications and working with in-state technical schools to help fund this initiative. Finally, the state is participating with Morehouse College to produce diverse tech talent. Tamara Mosley, Human Resources Director for the Georgia Technology Authority said, "the U.S. cannot address its computing workforce challenges without a substantial commitment to the equity of education – achieved through expanding the talent pool by investing in the education, training, hiring and promotion of marginalized populations."

Iowa

The Chief Information Security Officer for the State of Iowa drew on his experience in the Air Force that makes clear competency expectations of cyber operators at various levels. This has helped the CISO identify discrepancies in hiring and develop better training plans. A key component is everyone having an opportunity to train another employee which has also helped the trainer get a better grasp of the subject matter.

Maryland

The State of Maryland is piloting a one-way interview process for recruiting state employees. Mark Townend, the recruitment and examination division director in Maryland's Department of Budget and Management Office of Personnel Services and Benefits, described the initiative:

"We were looking for ways to reduce the time it takes for the state to fill vacancies. With an average 'time to fill' of around 90 days for state positions, we determined it was taking two to four weeks for a panel to interview candidates. Scheduling candidates required allowing several days to accommodate their availability and some had problems taking time off from their current jobs to interview."

Maryland employed a one-way video interviewing platform that allows the state to email a link to pre-recorded interview questions to selected applicants. The applicants have a deadline by which they must log in and record their responses to continue being considered for the position.

Townend shared that the platform allows for after-work hours and weekend responses so applicants do not have to take time off work to complete the process. Three staff members on his team became well-versed in how the platform works and coordinated with agencies interested in using it to train agency employees. Townend says this "allowed us to see if the process made sense and brought value to different types of positions."

Besides allowing potential candidates to complete interviews on their own time and not interfere with their existing job, the platform has allowed the state to provide consistent interview experiences to applicants, interview more applicants with a better response rate and more easily narrow down candidates for a second interview. This process also helps applicants avoid the stress of large panel interviews, something that has been especially beneficial to neurodiverse candidates. The primary drawbacks of this platform are that managers lose the ability to ask follow-up questions and not all positions are well-suited for this approach. Maryland also offers candidates the ability to request an accommodation for a live interview and is working to make sure the platform meets all accessibility requirements.

South Carolina

The South Carolina Department of Administration (Admin) launched the state's first-ever careers **website** and statewide recruitment branding, utilizing a statewide media strategy in June 2019. The Admin communications team created and deployed SC Careers social media pages (Twitter and Facebook) and recruited and trained 24 content contributors from 22 state agencies to help supply recruitment related content to share through the social media pages.

The South Carolina Careers website has been an invaluable addition to South Carolina state government recruitment. It has allowed for a consistent message, a one-stop shop for all recruitment activities and a resource to share the benefits of working for state government and serving the citizens of South Carolina. The website was created as a recruitment tool to reach and attract a large candidate population for our current positions and to also create a simplified application process. Admin, which oversees state human resources for South Carolina, included **employee testimonials** to reflect the vast array of job opportunities available in state government. Admin seeks to attract those citizens who are most interested in serving the state and the citizens of South Carolina. The online application system has enabled the state to accept applications easily, streamline the process, filter based on state minimum requirements, collect important Equal Employment Opportunity (EEO) information, track time-to-hire and use data to find the bottlenecks in the state's hiring process.

Recommendations

The top recommendations that attendees discussed are listed below and are identified as the top actions for states to adopt now.

States need to focus on effective marketing and branding of state government as an employer of choice, their mission-driven work and the unique benefits they offer. As one attendee reiterated, "we are not the private sector and are not trying to be like the private sector."

This includes developing a compelling value proposition that, for instance, harnesses a call to public service, the ability to obtain hands-on experience with complex tools and technologies and access to mission-critical leadership. An April 2022 **report** survey conducted by McKinsey & Company found that today's employees are seeking careers that give them a sense of meaning and purpose, which should prove conducive to states' recruitment strategies.

States should also be sure to leverage the non-financial incentives that strengthen workplace morale, such as abundant pathways for growth (both vertically and horizontally), mentorship and work-life balance. As older generations prepare for retirement, state agencies are presented with a need to reevaluate the things that are of value to early career professionals and adjust their benefits packages to be responsive to the changing workforce. McKinsey & Company reports that behind compensation, meaningful work and workplace flexibility were the greatest factors contributing to a worker's decision to stay in their current role. Those with plans to leave most frequently attributed it to a lack of career development opportunities (45 percent of respondents) and dissatisfaction with leadership (42 percent).

Each of these incentives should not only be highlighted during conversations with recruiters and hiring managers, but should be apparent in posted job announcements to attract best-fit candidates and passive jobseekers. Currently, many state government job announcements do not effectively capture jobseekers' attention to the point of completing an application, and **evidence** shows listing an organization's offered benefits forthright can dramatically increase results.

States must adapt to the enduring impacts of the COVID-19 pandemic by modernizing the working environment to include flexible schedules, offering remote and WFH options and focusing on addressing burnout and employees' mental and emotional well-being. The 2022 Deloitte-NASCIO Cybersecurity Study found that despite CISOs having high confidence in the security of their state's remote work arrangement, only a quarter of states allow their employees that option. (As a side note, remote work does not always mean out of state work but means offering a work option outside a central, physical office). Increasingly, jobs today are moving to be entirely remote without plans to return to a traditional office setting. Many companies have **adjusted** to workers' preferences that were exposed by COVID-19 policies, especially after realizing that employees are more productive, happier and healthier when working from home. By offering hybrid and WFH arrangements, employers are also experiencing cost-savings by not paying for physical space or the utilities and materials required to maintain them. States are missing out on qualified talent by not offering flexible work; jobs specified as "remote" receive 300 percent more applicants than those that are not. Just as state agencies are tasked with responding to residents' concerns, they must be receptive to the clear signal workers are sending them.

COVID-19 also brought forth frequent conversations about identifying burnout and how to cope with it. While employees themselves should leverage strategies to reduce the strain of burnout, employers have an important role to play. Because burnout involves a loss of sense of accomplishment and personal identity, it is important for employers to celebrate their team's achievements. In the public sector, where work can often feel thankless, this is particularly relevant; the impacts of state government work are felt far beyond any individual person, and this, too, is important to call out. Feelings of **burnout** can also be alleviated by promoting work-life balance and setting realistic expectations about what can and needs to be accomplished. Acknowledging the seriousness of employees' personal well-being will improve culture, which will have a domino effect on performance, retention and other outcomes.

States must focus on diversity, equity, inclusion and belonging (DEIB) in their recruitment, hiring and retention practices. Companies with inclusive cultures— those in which everyone is heard and has the freedom to express their opinions— **have** 22 percent lower turnover rates, 22 percent greater productivity, 27 percent higher profitability and 39 percent higher customer satisfaction. Despite this, only 21 percent of tech professionals report that their company's leadership teams are more than a quarter people of color. Further, women of color make up only four percent of roles in the computing workforce—almost none of whom possess senior leadership roles. While addressing the current, relatively homogenous demographic breakdown found in the cybersecurity industry is not an overnight fix and requires earlier interventions through education, there are some actions that could be taken to reduce these discrepancies in the short-term.

First, diversity encompasses far more factors than race and gender, such as age, sexual orientation, physical and mental ability, religious affiliation and geographical origin. In cybersecurity, it also means tapping into networks of people with skillsets that are not traditionally associated with cybersecurity. The nature of cybersecurity work is constantly evolving, and many hiring managers have expressed the value of up-to-date industry certifications as a job readiness qualifier. Others still may prefer their employees learn on the job, as they work with very specific tools and technologies. This provides an opportunity for cybersecurity teams to attract individuals who are underrepresented in the cybersecurity sector due to their nontraditional backgrounds.

DEIB cannot be focused only on the recruitment side of the talent lifecycle, but the retention piece as well. "**Employees** who say their organization's senior leaders are diverse are more than twice as likely to feel a strong sense of belonging," meaning that employees need to be able to envision themselves getting elevated to roles they would like to pursue. Equitable outcomes in the workplace lead to more engaged and productive workers, and that energy is contagious; strong retention rates facilitate recruitment efforts. Belonging should also materialize through the ways in which feedback and performance reviews are delivered as well as benefits package offerings, mentorship programs and other resources available to employees that highlight their different identities.

States need to collaborate with key tech and cybersecurity stakeholders, including the private sector, academia, nonprofit organizations, the federal government, minority-serving institutions and professional associations, to provide development opportunities and build workforce pipelines. Cybersecurity is an issue of national security, meaning that states cannot view these other entities as competition, but rather as partners in addressing this critical gap. Working cohesively to strengthen the workforce is a major step to achieving whole-of-state and whole-of-nation cybersecurity.

There are several ways through which this goal can be achieved, and creative avenues should be embraced. Colleges, universities and nonprofit organizations provide students and mid-career professionals with abundant opportunities to acquire in-demand cybersecurity skills. It is recommended that state agencies foster relationships with these entities to create a two-way communication system that ensures training providers are adequately preparing students for the workforce. Agreements to support internships, apprenticeships and other experiential learning opportunities can provide aspiring cybersecurity practitioners with exposure to the industry and create a sustainable pipeline for state workers who are committed to the mission.

The federal government already has a similar program known as **Scholarship for Service**, which provides undergraduate and graduate-level scholarships to students who agree to work for the U.S. government after graduation; however, there are some penalties associated with this arrangement that incentivize universities to promote federal service over state service. By focusing on cybersecurity as a nationwide concern, states, federal government and academia should revisit their partnership structures to devise alternative pathways that are advantageous to all players and prioritize public service, regardless of level.
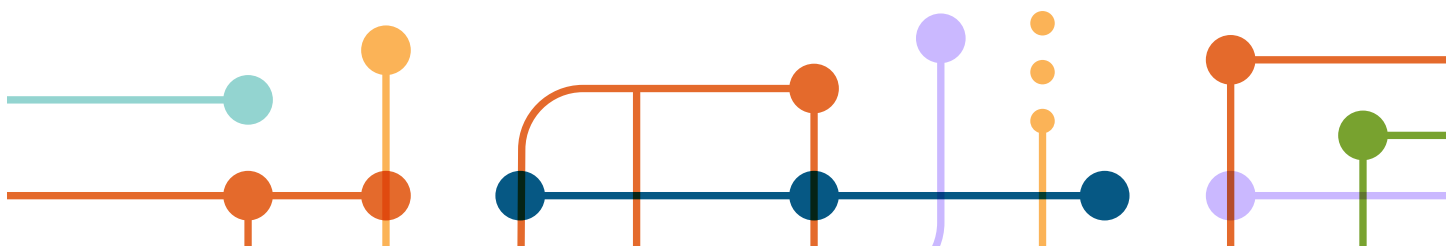
States should rework position descriptions to reflect industry-standard job titles and reduce barriers to entry, such as outdated or unnecessary requirements. Published job descriptions are oftentimes the first impression a candidate has of an organization, which means they need to grab the job seeker's attention quickly. Public sector job posts are known for being verbose, using terminology and classifications that are unfamiliar to candidates who have not worked in government before. Again, this is where value propositions and the agency's mission should be stated at the outset, and some (like **New York**, recently), might find it valuable to disclose the expected salary before the candidate even takes time to apply; this will not only save both parties time and energy, but can aim to address DEIB concerns by attracting job seekers who are working in fields with much lower pay than typically found in cybersecurity.

State government agencies can also benefit from modernizing cybersecurity job titles to be more appealing and intuitive, as well as aligning them to the Workforce Framework for Cybersecurity (commonly referred to as the **National Initiative for Cybersecurity Education**, or NICE, Framework). The NICE Framework provides pathways to develop the tasks, knowledge and skills to successfully perform cybersecurity work. Because so many workers in the contemporary workforce place high value on exposure to professional learning and development activities, the NICE Framework can help states develop curricula that is mutually beneficial to employers and employees, while also making it easier for individuals to move between the public and private sectors through the use of common terminology.

Finally, the cybersecurity workforce gap could be reduced by shifting from a mindset in which requirements are intended to weed out candidates, to one that encourages applications. **Studies** show that women and people of color are less likely to apply to jobs unless they meet every single listed qualification—not because they feel they would be unqualified for the position, but because applying would show they did not follow instructions. Not capturing these populations leaves organizations at a huge disadvantage, for myriad reasons. All employers, including states, should take time to weigh which requirements are absolutely necessary to the successful execution of a job before including them in the initial posting.

Conclusion

Just as cybersecurity is a shared responsibility, so is effective recruitment and retention of qualified state cybersecurity personnel. The consequences of a constrained state cybersecurity workforce are becoming increasingly hard to ignore. Many of the recommendations laid out in this report are not necessarily innovative to the cyber industry as a whole, but to see change, it is critical that there is strong unified support from not only state CIOs and CISOs, but Governors, state legislators and human resources changemakers.
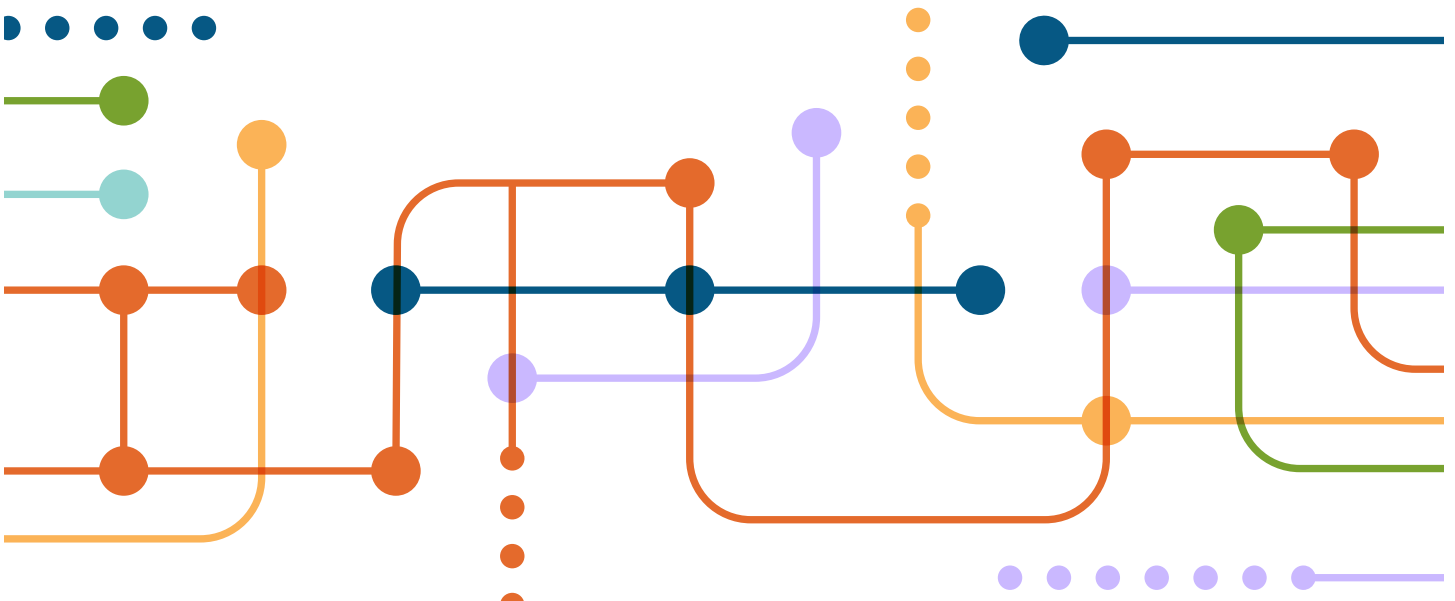
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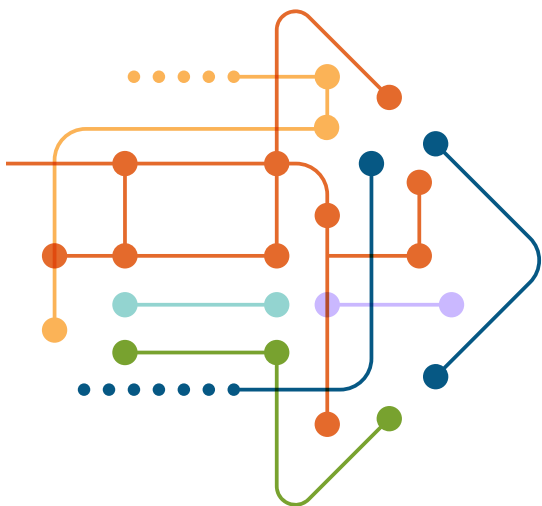Cybersecurity, NGA
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Further Reading

Full return to office is 'dead,' experts say
— and remote is only growing

Inclusive Mobility: How Mobilizing a
Diverse Workforce Can Drive Business
Performance

What is DEIB: a short guide to diversity
& belonging for employers.

About NGA

Founded in 1908, the National Governors Association is the voice of the nation's Governors and one of the most respected public policy organizations in the country. The association's members are the Governors of the 55 states, territories and commonwealths. Members come to the association from across the political spectrum, but NGA itself is boldly bipartisan. Because of that, Governors can share best practices, speak with an informed voice on national policy and develop innovative solutions that improve citizens' lives through state government and support the principles of federalism.

About NASCIO

Founded in 1969, the National Association of State Chief Information Officers (NASCIO) represents state chief information officers (CIOs) and information technology (IT) executives and managers from the states, territories and District of Columbia. NASCIO's mission is to foster government excellence through quality business practices, information management and technology policy. NASCIO provides state CIOs and state members with products and services designed to support the challenging role of the state CIO, stimulate the exchange of information and promote the adoption of IT best practices and innovations. From national conferences to peer networking, research and publications, briefings and government affairs, NASCIO is the premier network and resource for state CIOs. For more information, visit www. Principle Authors NASCIO.org.