
Building a 21st Century Workforce

The 21st century economy requires a workforce equipped with the critical thinking training that lays the groundwork for coding and information management skills. However, our education system is failing to keep pace with the growing demand for American workers with computer science backgrounds and qualifications. While the public knows the story of Silicon Valley, ACT | The App Association's membership of small and mid-size businesses encompasses legislative districts with a majority outside of traditional coastal tech hubs. Although successful developers come from all kinds of educational backgrounds, many of our members report a persistent challenge to find locally cultivated talent and workers with the right training and qualifications. This undermines their ability to create jobs locally while competing globally and threatens economic growth in your state.

Despite providing a median annual salary exceeding \$97,000, more than 500,000 computing jobs remain unfilled across the country. With just 97,047 U.S. college graduates earning computer science degrees in 2021, recent American graduates are filling a mere fraction of the available computing jobs. Moreover, the number of computer and information technology occupations is projected to grow 15 percent from 2020 to 2030, much faster than the average for all

occupations in the United States, with the number of software developing jobs expected to grow by 25 percent in the same period.

This problem is not exclusive to the private sector. Cyberwarfare is an increasingly prevalent threat in foreign affairs, and federal cybersecurity specialists are more important than ever. The Center for Strategic and International Studies projects that only 1,000 security specialists in the United States have the specialized skills to operate effectively in cyberspace compared to a need for 10,000 to 30,000 personnel, and a projection by the National Initiative for Cybersecurity Education found 507,924 cybersecurity openings across the country from June 2019 to May 2020.

The private sector can help, but policymakers must create an environment in which employers and educators can equip those in our current and future workforce with the skills needed to fill and succeed in these positions. Today, only 47 percent of all high schools offer courses for building computer science skills, and these classes continue to lack female-identifying students and those from historically marginalized communities.

To Support the Growth and Potential of the Dynamic American Workforce, We Urge States to:

- **Invest in workforce education training**
 - o States have historically played an important role in pulling together the various stakeholders and interests to ensure that available training, education, and counseling resources meet local workforce needs. However, state legislatures should continue to evaluate these structures to ensure they work well in your state's most dynamic sectors. For example, the legislature could advance legislation bringing together key officials and employers from across the state to assess the state's needs, available resources, and opportunities to expand the local and regional app economies. Similarly, states should pursue opportunities to expand apprenticeship program infrastructures and make them more accessible to smaller companies.
- **Appropriate funding for science, technology, engineering, and math (STEM)**
 - o Schools have fallen short when it comes to providing computer science courses; this shortcoming is partially rooted in a lack of training and professional development for teachers to attain an advanced formal education in teaching computer science. States must adequately resource STEM programs both in schools and in anchoring institutions to prepare students for the jobs of the future and maintain the United States' position as the global leader in tech-driven industries.

¹<https://www.bls.gov/ooh/computer-and-information-technology/home.htm>

²<https://code.org/promote>:

The number of current open computing jobs comes from the sum of the per-state jobs data from The Conference Board's Help Wanted OnLine@service

The projected rate of this job growth comes from the Bureau of Labor Statistics Employment Projections data for 2016-2026, released in 2017. These data predict an employment change of 12.65 percent for computing occupations and an employment change of 7.38 percent for all occupations.

Definitions: For computing occupations, we use SOC codes 11-3021, 15-1100, 17-2061, and 25-1021

³https://nces.ed.gov/programs/digest/d21/tables/dt21_318.50.asp?current=yes

⁴<https://www.bls.gov/ooh/computer-and-information-technology/home.htm>

⁵<https://www.bls.gov/ooh/computer-and-information-technology/software-developers.htm#tab-1>

