CYBERSECURITY WORKFORCE

National Initiative Needs to Better Assess Its Performance

Why GAO Did This Study

A well-trained cybersecurity workforce is essential for government functioning. To bolster that workforce, NIST has developed the National Initiative for Cybersecurity Education (NICE). This program's mission is to foster more education and training through collaborative partnerships with private industry, academia, and government agencies.

GAO was asked to review the progress the NICE program is making against its stated goals and objectives. This report examines (1) the actions NIST has taken through the NICE program to strengthen the cybersecurity workforce and (2) the extent to which NIST established a process to assess the program's performance.

GAO analyzed documents related to NIST's program performance assessments and compared these to selected key performance practices identified in legislation and prior GAO work. GAO also conducted focus group interviews with active program participants about their experiences. Additionally, GAO interviewed NIST officials responsible for the program.

What GAO Recommends

GAO is making eight recommendations to NIST to fully develop goals and performance measures, assess the program's environment and identify strategies, track reliable information and report to stakeholders on results, and use data to assess progress and identify improvement opportunities. The Department of Commerce agreed with the recommendations and suggested wording revisions, which GAO incorporated as appropriate.

View GAO-23-105945. For more information, contact David B. Hinchman at (214) 777-5719, or hinchmand@gao.gov.

What GAO Found

The National Institute of Standards and Technology's (NIST) National Initiative for Cybersecurity Education (NICE) program has taken steps to strengthen the cybersecurity workforce. For example:

- The program established an inventory or "framework" of necessary skills and work roles associated with cybersecurity and expanded it with stakeholder input.
- The program formed public and private collaborations to connect the cybersecurity community and promote cybersecurity training and education. This included working groups and communities of interest run in part by volunteers. These groups created projects based on one of the NICE program's strategic goals or the needs of a specific cybersecurity community.
- The program holds periodic webinars, quarterly forums, and multiple annual conferences to share information on cybersecurity issues.

In focus group discussions with program volunteers from industry, academia, and government, participants cited what they regarded as successes, including robust community benefits. However, some participants noted challenges with the program, such as an unclear scope.

NIST's process for assessing the NICE program included fully implementing the practice of involving stakeholders. However, other key practices for establishing a program-level performance process were not fully implemented. Specifically, of nine selected key performance assessment practices, NIST fully implemented one, partially implemented five, and did not implement three (see figure).

National Institute of Standards and Technology (NIST) Implementation of Selected Key Practices for Establishing a Program Performance Process

Practice	Implementation
Develop measurable outcome-based goals	◐ Partial implementation
Assess the program environment	◐
Identify strategies and resources	◐
Involve stakeholders	● Full implementation
Develop performance measures	○ No implementation
Track information that is timely/accurate/useful	◐
Regularly communicate progress to stakeholders	◐
Use data to assess progress towards goals and identify any gaps	○
Identify opportunities to improve program management and results	○

Source: GAO analysis of NIST information. | GAO-23-105945

For example, NIST did not develop performance measures for the program. According to program officials, they relied on the program's volunteer working groups to develop such measures. However, the variability in skills and approaches of the volunteers made it too difficult to accomplish. As a result, NIST was unable to demonstrate program progress. Without reliable data to manage the NICE program's performance, NIST is not in a position to effectively and efficiently identify obstacles or opportunities to sustain and improve the initiative.

_____ **United States Government Accountability Office**