Understanding Cybersecurity Talent Needs

Findings From Surveys of Business Executives
and College Presidents

Join Us In Creating Solutions

Understanding Cybersecurity Talent Needs: Findings From Surveys of Business Executives and College Presidents provides firsthand viewpoints of the relationship among government, business and higher education sectors in developing a workforce that meets today's cybersecurity skills needs. The findings in this report document opportunities for better alignment among cybersecurity stakeholders to develop the necessary talent to meet the unprecedented level of risks and threats that organizations face.

This report builds upon previous work commissioned by the Business-Higher Education Forum (BHEF) on cybersecurity demand from Burning Glass Technologies, which highlighted both an immediate need for cybersecurity talent and an even greater need to develop a robust talent pipeline for the future. Closing the cybersecurity talent gap — both existing and emerging — will require an expansion of strategic partnerships between business and higher education as well as investments in new talent development and recruitment strategies.

BHEF has catalyzed many partnerships. As the nation's oldest membership organization of Fortune 500 CEOs, college and university presidents, and other leaders dedicated to the creation of a highly skilled future workforce, BHEF and its members form strategic partnerships to build new talent pathways; improve alignment between higher education and the workforce; and produce a diverse, highly skilled talent pool to meet demand in emerging fields. BHEF members are leaders in developing strategic partnerships that have the potential to transform higher education programs to meet employers' cybersecurity talent demands rapidly.

Toward the goal of meeting this U.S. workforce need, BHEF developed this report of the current state of cybersecurity skill demand and higher education's response. We hope the following pages will inspire you to take action and join us in building strategic business-higher education partnerships to develop the cybersecurity talent that our economy needs.

Brian K. Fitzgerald, Ed.D.
CEO, Business-Higher Education Forum

The Business Perspective

> **Companies are challenged to find cybersecurity talent and are open to different ways of building the pipeline.**

Current State

A quarter of companies (25%) strongly agree that they can respond effectively to a significant cyberattack. However, 51% of business executives say their company finds it more difficult to recruit talent for cybersecurity roles than for other positions. Fewer than one in 10 business executives (8%) say it is easier to attract people to fill cybersecurity roles than to fill other positions.

Has it been easier, about the same or more difficult to attract people to fill cybersecurity roles relative to other positions in your company?

Among business executives (n=63)

Easier
8%

About the same
33%
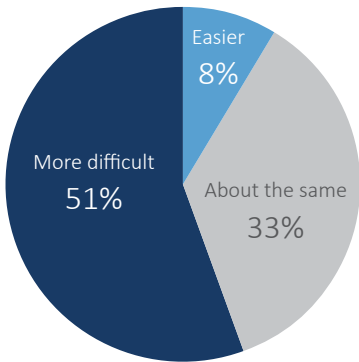
More difficult
51%

Understanding the Cybersecurity Talent Challenge

Gallup asked business executives who said they find it more difficult to fill cybersecurity roles compared with other roles whether certain aspects of their companies contribute to the ease or difficulty of recruiting cybersecurity talent. These executives identified failing to offer competitive compensation, a lack of career advancement opportunities and outdated technology infrastructure as key contributors to organizations' cybersecurity talent challenges.
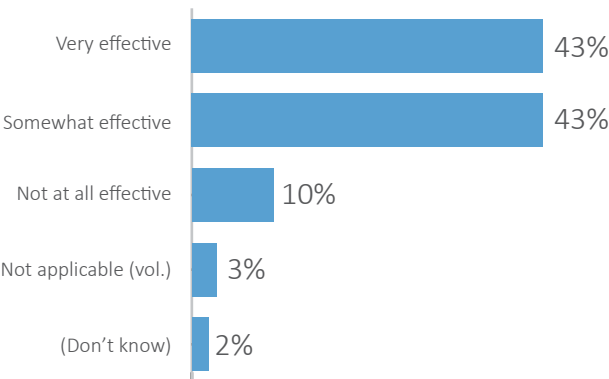
38% of executives who find it more difficult to fill cybersecurity roles say there is a lack of competitive compensation for people in these roles at their company.

Competitive compensation is important for attracting cybersecurity talent. A majority of business executives who find hiring for cybersecurity roles easier than or similar to hiring for other roles say their company offers competitive compensation for people in these roles (73%). Most businesses, particularly those with a highly technical workforce,[1] recognize that offering competitive pay and benefits is an effective strategy for recruiting cybersecurity talent.

Overall, have the following strategies been very effective, somewhat effective or not at all effective for getting the talent your company needs for cybersecurity roles?

Offering competitive salaries and benefits packages
Among business executives (n=63)

Very effective	43%
Somewhat effective	43%
Not at all effective	10%
Not applicable (vol.)	3%
(Don't know)	2%

41% of executives who find it more difficult to fill cybersecurity roles say there is a lack of career advancement opportunities for people in these roles at their company.

Meanwhile, 58% of business executives who find hiring for cybersecurity roles easier than or similar to hiring for other roles say their company offers career advancement opportunities for people in these roles. Data and technology infrastructure plays a smaller role in ease of recruiting talent. Twenty-eight percent of business executives who find it more difficult to recruit talent in these roles say their company has an outdated infrastructure, while 58% of those who find it easier or about the same to hire for these roles say their organization has an updated data and technology infrastructure.

Strategies for Building a Cybersecurity Talent Pipeline

Most companies do not rely on higher education institutions or assistance from government initiatives such as TechHire to meet their cybersecurity talent needs. Only 16% of business executives say hiring directly from colleges is very effective for getting cybersecurity talent, and a quarter of executives (25%) say hiring directly from colleges is not at all effective. Similarly, no business executives say that hiring directly from government-sponsored programs is very effective, and 46% say this strategy is not at all effective. In contrast, 24% of executives say training employees through company-provided workshops and online courses or providing reimbursement for further education is very effective for getting cybersecurity talent.

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1   Science, engineering, architecture, technology, information, communications, transportation, logistics or manufacturing companies

Overall, have the following strategies been very effective, somewhat effective or not at all effective for getting the talent your company needs for cybersecurity roles?

% Very effective
Among business executives (n=63)

43% Offering competititve salaries and benefit packages

24% Training employees through company-provided workshops, online courses or by providing reimbursement for further education

17% Using traditional external recruitment agencies or search firms

16% Hiring directly from colleges and universities

6% Acquiring companies with cybersecurity capabilities

0% Hiring directly from government-sponsored programs such as the federal government's TechHire Initiative or other programs designed to build talent pipelines in communities across the country
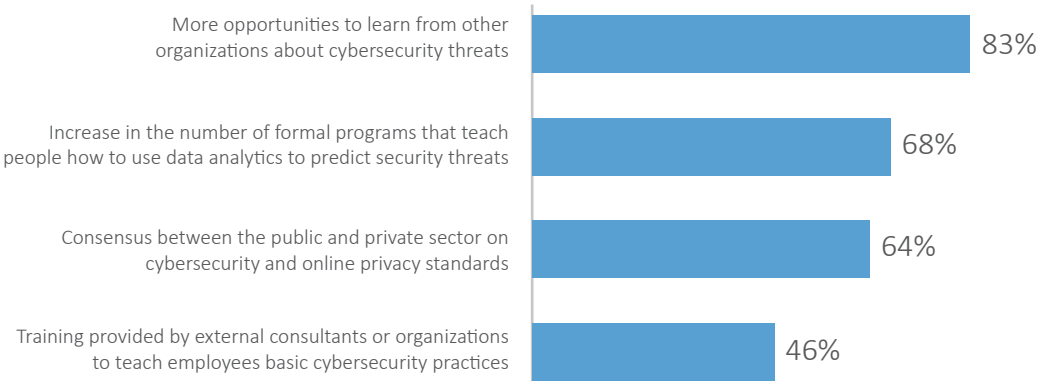
83% of executives say knowledge sharing among companies would be helpful in building a cybersecurity talent pipeline.

Business executives believe multiple strategies could be helpful in building a pipeline of cybersecurity talent. The approach rated most helpful is to have more opportunities to learn from other organizations about cybersecurity threats.

On a five-point scale, when 5 means extremely helpful and 1 means not at all helpful, please indicate how helpful each of the following would be to your company in building a ready and available pipeline of cybersecurity talent.

% Helpful/Extremely helpful

More opportunities to learn from other organizations about cybersecurity threats — **83%**

Increase in the number of formal programs that teach people how to use data analytics to predict security threats — **68%**

Consensus between the public and private sector on cybersecurity and online privacy standards — **64%**

Training provided by external consultants or organizations to teach employees basic cybersecurity practices — **46%**

The Higher Education Perspective

Higher education anticipates an increase in enrollment in cybersecurity programs and recognizes the importance of cybersecurity skills.

Higher education leaders indicate they are responding to employers' demand for cybersecurity skills: 59% of college presidents agree that their institution is accelerating the development of cybersecurity courses or programs because of industry interest. Presidents of two-year institutions seem more aware than presidents of other institutions of the need for cybersecurity talent. Presidents of two-year schools are more likely to say their institution believes it is important that undergraduate students are taught cybersecurity skills (74% vs. 55% of presidents of four-year institutions). They are also more likely to agree that their institution is accelerating the development of cybersecurity courses or programs because of industry interest (74% vs. 51% of presidents of four-year institutions).

61%
of college presidents say it is important that undergraduate students are taught cybersecurity skills.
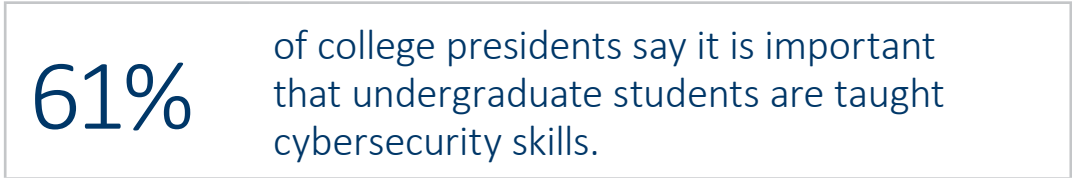
Current State

Currently, a single department coordinates cybersecurity programs at 74% of colleges and universities that offer these programs, and these programs are mostly university-funded. A single department is more likely to coordinate cybersecurity programs at two-year institutions (94% vs. 63% at four-year institutions). A large majority of college presidents anticipate student enrollment in cybersecurity courses will increase over the next three years.

In the next three years, do you expect the number of students who enroll in cybersecurity courses at this institution to ...

Among college presidents (n=127)

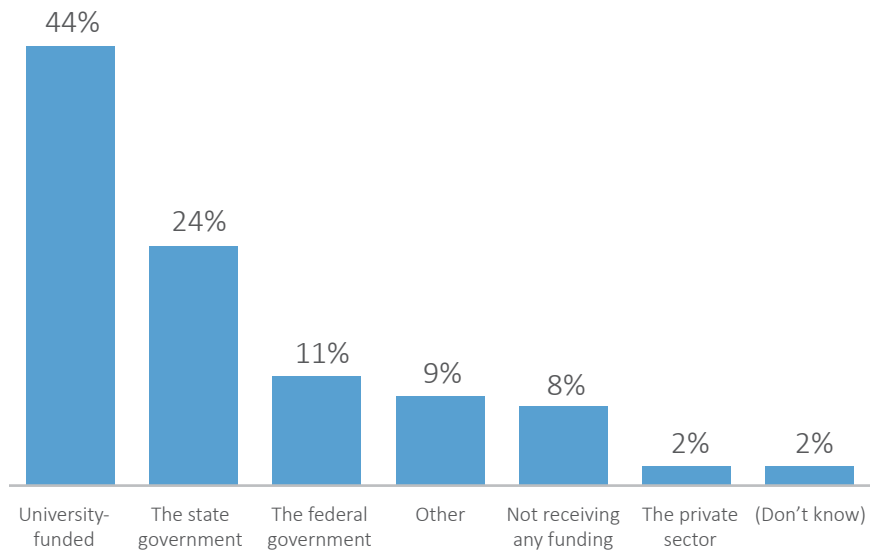| 39%	55%	5%	1%	0%
Increase significantly	Increase somewhat	Remain the same	Decrease somewhat	Decrease significantly

Overall, 44% of higher education institutions are primarily self-funding their cybersecurity programs. However, a majority of cybersecurity programs at four-year institutions are self-funded (56% university-funded, compared with 21% among two-year institutions). State governments are more likely to be the primary funding source of cybersecurity programs at two-year institutions (45% vs. 14% among four-year institutions). The private sector is the primary funding source of only a small percentage of all institutions' cybersecurity programs.

Where is this institution PRIMARILY receiving funding for cybersecurity programs offered to students at your institution?

Among college presidents (n=127)

| University-funded	The state government	The federal government	Other	Not receiving any funding	The private sector	(Don't know)
44%	24%	11%	9%	8%	2%	2%

Evaluating Cybersecurity Programs

Higher education institutions use metrics such as enrollment rates, graduate job placement rates and internship placements to assess their data science and cybersecurity programs.

Please tell me if this institution uses any of the following ways to assess the strength of its data science and analytics and cybersecurity programs.

% Yes
Among college presidents (n=127)

83% Enrollment rates

70% Internship placements

76% Graduate job placement rates

40% Grant funding
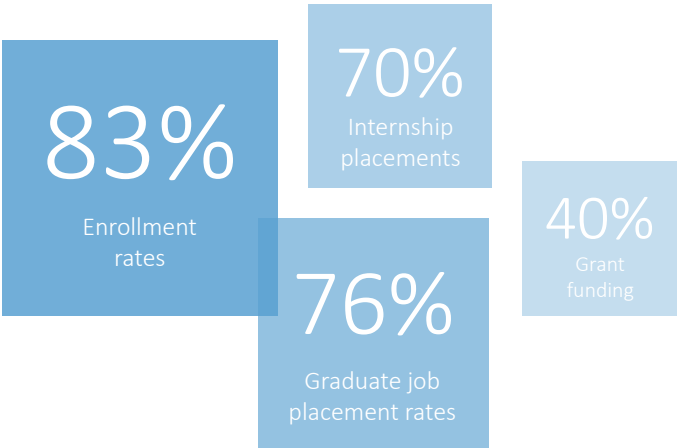
Methodology

Gallup conducted 63 phone interviews from Oct. 31, 2016, to Feb. 27, 2017, with business leaders. The sample consisted of 25,683 chief executive officers, chief information officers, chief technology officers, human resources officers, and vice presidents of human resources and operations at oil and gas, finance, insurance, computer systems, manufacturing, information, biotech, healthcare (HMO medical centers, hospitals and diagnostic labs), retail trade, and transportation and warehousing companies with annual revenues of $10 million or more. The sample of business leaders was obtained from Dun and Bradstreet and is not nationally representative of U.S. companies in these industries, although it is comprehensive.

Gallup also conducted 127 phone interviews from Oct. 31, 2016, to Jan. 5, 2017, with college and university presidents, chancellors, provosts and deans from public, private, two-year and four-year institutions. The sample consists of 2,450 U.S. college and university leaders. The sample of higher education leaders was obtained from Higher Education Publications, Inc. and is not nationally representative of U.S. presidents of colleges and universities, although it is comprehensive.

Question wording and practical difficulties in conducting surveys can introduce error or bias into the findings of polls.

About BHEF

The Business-Higher Education Forum is the nation's oldest membership organization of Fortune 500 CEOs, college and university presidents, and other leaders dedicated to the creation of a highly skilled future workforce. BHEF members collaborate and form strategic partnerships to build new undergraduate pathways; improve alignment between higher education and the workforce; and produce a diverse, highly skilled talent pool to meet demand in emerging fields.

About Gallup

Gallup delivers analytics and advice to help leaders and organizations solve their most pressing problems. Combining more than 80 years of experience with its global reach, Gallup knows more about the attitudes and behaviors of employees, customers, students and citizens than any other organization in the world. Gallup works with leaders and organizations to achieve breakthroughs in customer engagement, employee engagement, organizational culture and identity, leadership development, talent-based assessments, entrepreneurship and well-being. Gallup's 2,000 professionals include noted scientists, renowned subject-matter experts and bestselling authors who work in a range of industries, including banking, finance, healthcare, consumer goods, automotive, real estate, hospitality, education, government and business-to-business (B2B).