National Higher Education & Workforce Initiative
Graduate Education as a Catalyst
for Institutional Innovation

Council of Graduate Schools
Brian Fitzgerald, CEO
December 9, 2016

Creating Solutions. Inspiring Action.®

Overview

The session will explore how:

- BHEF has addressed demand for STEM skills in emerging fields through strategic partnerships

- BHEF's program development in the application of emerging fields has produced both the scientist and the enabled graduate

- Graduate programs and faculty can serve as a catalyst for institution-wide curricular and programmatic innovation

About the Business-Higher Education Forum

The Business-Higher Education Forum (BHEF) is a membership organization of CEOs, college/university presidents, and other leaders who collaborate and form strategic partnerships to develop a highly-skilled future workforce.

BHEF Value

BHEF members work together to:

- Create graduate and undergraduate pathways to increase workforce readiness,
- Improve alignment between higher education and the workforce, and
- Produce a diverse, highly-skilled talent pool to meet demand in emerging fields.

BHEF members gain value from:

- Opportunities to form purposeful peer relationships between business or academic counterparts,
- Access to BHEF's expertise and networks, and
- Actionable insight on high-skill workforce trends, collaboration best practices, and program design.

Builds Action-Oriented Relationships

Strengthens Members' Workforce Initiatives

Helps Practitioners Navigate Emerging Trends and Challenges

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Higher Education and Workforce Initiative Strategy

What are the supply challenges?

- Innovation and competition increasingly rely on new and emerging fields
- There is an increase in competition for talent
- Increased need to recruit and retain a diverse workforce

What is BHEF's strategy?

- Deploy a model of strategic business engagement with higher education to shift from transactional relationships to strategic partnerships to develop talent ecosystems
- Create graduate and undergraduate career pathways that satisfy employer demand for a high-skilled workforce, especially for women, minorities, and veterans

Why does this strategy work?

- BHEF has conducted extensive research to understand the interventions and strategies that work best to support the success of undergraduate students
- BHEF has successfully implemented this strategy, beginning with graduate and undergraduate cybersecurity programs at the University of Maryland

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Strategic Partnership Implementation Process

BHEF partners with academic and business members and utilizes a rigorous methodology to assess workforce needs, identify curricular gaps and co-design programs and courses

Strategic Partnership Process

- Job Market Landscape and Skills Analysis
- Ideal Candidate Profile
- Skills Mapping and Gap Analysis
- Selection of Academic Credential to Pursue
- Integration of High-Impact Practices
- Development/Feedback on Curriculum and Courses
- Roll-out of New Program with Continued Engagement
- Changed Hiring Practices

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DMV Region Leads the Nation in Cybersecurity Demand

- In 2014, there were 33,087 cybersecurity postings in the DMV Region.

- Cybersecurity postings comprised 16% of all IT jobs in the region compared to 9% in the nation.

- Networking roles, which can serve as a talent pipeline for cyber roles comprised another 26% of IT posting.

- Washington, D.C., Virginia, and Maryland have the three highest counts of job postings per capita, respectively, of all states in the nation.

- In 2014, Virginia had the second highest posting count overall in the county with 17,227 postings, behind only California.

Cybersecurity Postings by State (2014)
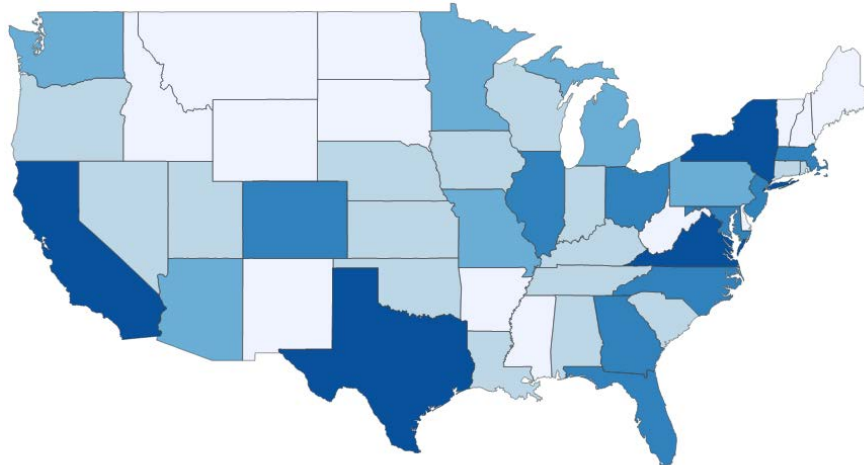
Cybersecurity Postings per Capita (2014)
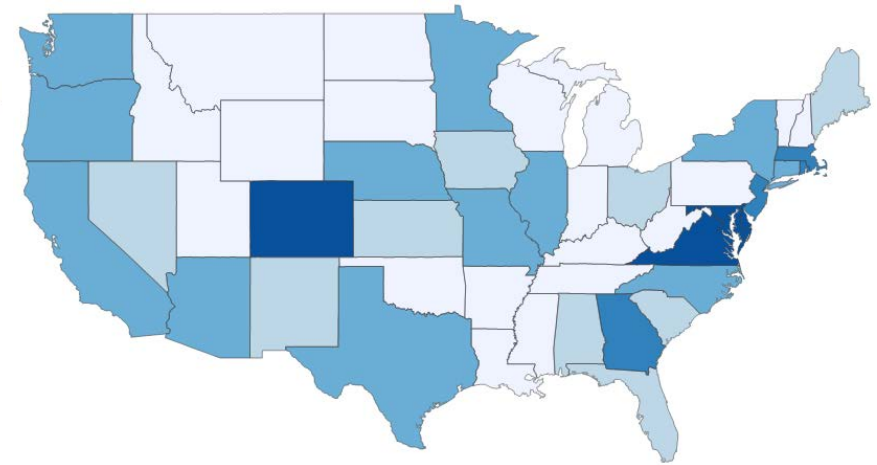
Cyber Postings   0 to 999   1,000 to 2,499   2,500 to 4,999   5,000 to 10,000   10,000+

Cyber Postings Location Quotients   Very Low   Low   Average   High   Very High

The Location Quotient (LQ) measures a state's concentration of cybersecurity jobs relative to the national average.

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Source: Burning Glass Technologies

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BHEF's Data Science and Analytics (DSA) Strategy
Talent Development Models

DSA as a Method of Inquiry

- Integrated into current courses across disciplines
- Faculty empowered to embed DSA in courses, use DSA in research, and ask new set of questions through DSA

DSA as a Core Requirement

- Offered as quantitative sciences course to all first or second year students regardless of major
- Two course sequence – industry-engaged foundations course leading to applied research experience (ICURE)

DSA as New Credentials and Pathways

- Development of new industry-engaged credentials including majors, minors, concentrations, and certificates
- Connection of DSA competencies to domain knowledge
- Credential that industry can recognize and hire against

Employer Engagement

- Articulation of needs across sectors and disciplines
- Input and validation of competency maps and curriculum
- Provide research questions and data sets
- Create a robust talent pipeline aligned to industry needs
- Strengthen higher education partnerships
- Engage human resources to align hiring practices to workforce needs and new education offerings

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Demand for Data Science and Analytics Talent is High

Analysis of job postings in 2015 indicates that while every state demonstrated demand, demand is highest in major metropolitan areas across the country

350,000
200,000
50,000
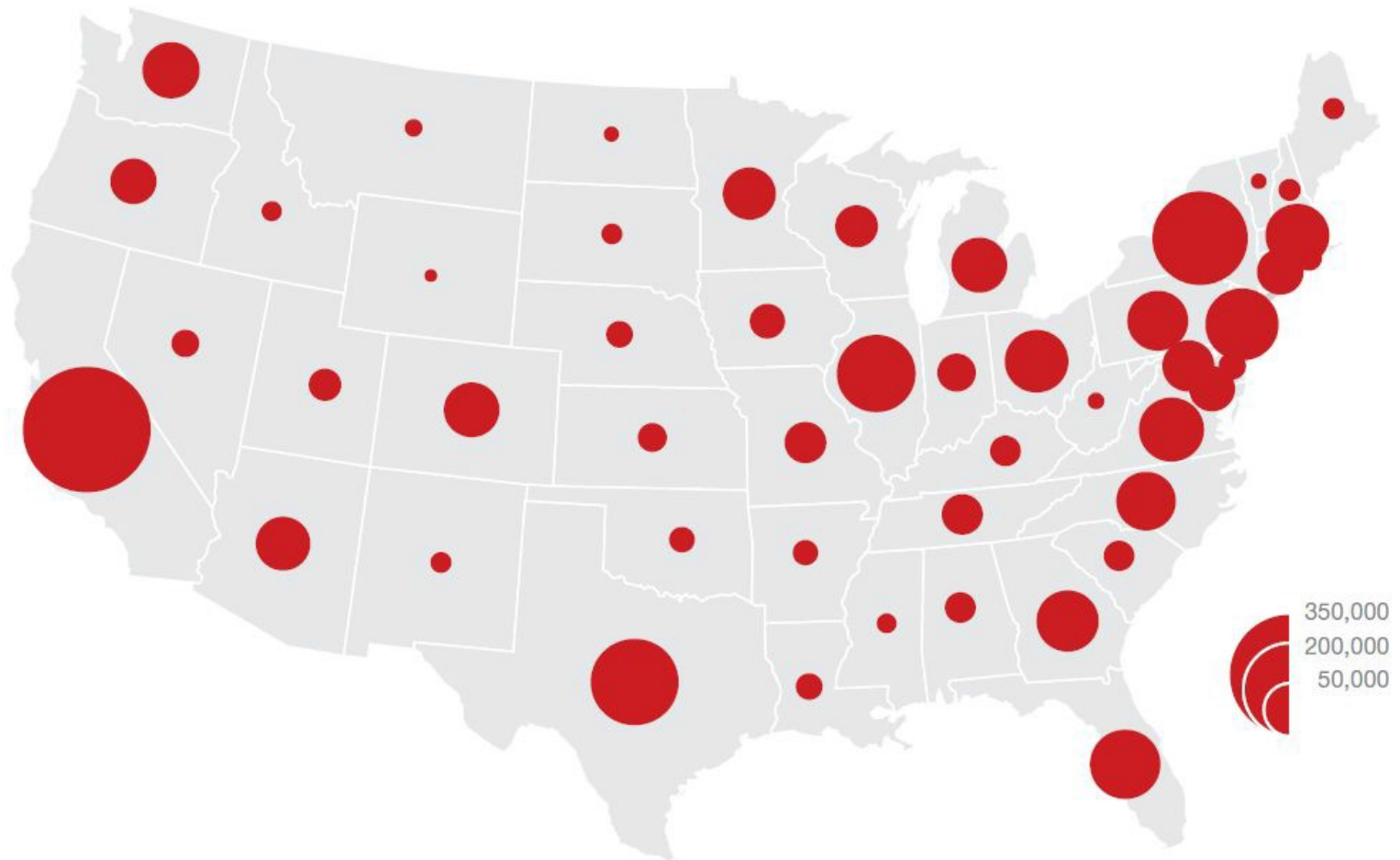
Source: Burning Glass, December 2016.

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Panelists: Maryland Cybersecurity

- ## Chris Valentino
  - Director, Contract Research and Development Cyber Solutions Division, Northrop Grumman Information Systems

- ## Anupam Joshi
  - Director, UMBC Center for Cybersecurity; Department Chair and Professor, Computer Science and Electrical Engineering

- ## Michel Kukier
  - Associate Professor and Associate Director for Education, MC2; Associate Professor of Reliability Engineering, Maryland Cyber Security Center