Kennesaw State University
Coles College of Business
Center for Information Security Education

Industry Priorities for Cybersecurity Competencies

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SunTrust

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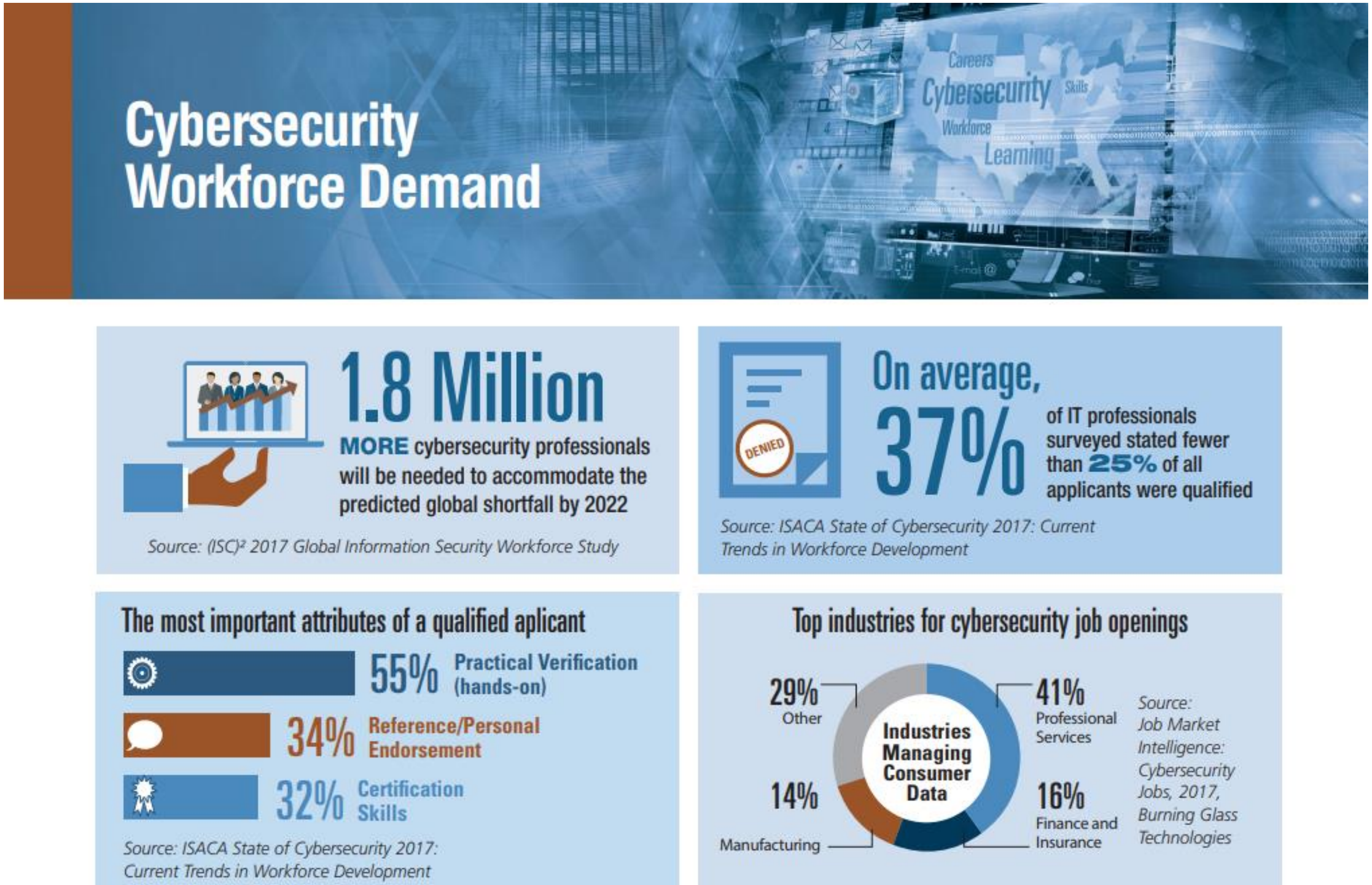
Shortfall Projected



https://www.nist.gov/sites/default/files/documents/2017/11/16/workforce_demand_111617_final.pdf

NICE Cybersecurity Workforce Framework

What are the 31 Specialty Areas?

Each specialty area represents an area of concentrated work, or function, within cybersecurity. The Framework provides the typical tasks and knowledge, skills and abilities (KSAs) within each specialty area.

SECURELY PROVISION

Securely Provision

- Systems Requirements Planning
- Systems Development
- Software Assurance and Security Engineeri
- Systems Security Architecture
- Test and Evaluation
- Technology Research and Development
- Information Assurance (IA) Compliance

OPERATE & MAINTAIN

Operate and Maintain

- System Administration
- Network Services
- Systems Security Analysis
- Customer Service and Technical Support
- Data Administration
- Knowledge Management

COLLECT & OPERATE

Collect and Operate

- Collection Operations
- Cyber Operations Planning
- Cyber Operations

PROTECT &

Protect and Defend

- Vulnerability Assessment and Management
- Incident Response
- Computer Network Defense (CND) Analysis
- Computer Network Defense (CND) Infrastructure Support

INVESTIGATE

Investigate

- Investigation
- Digital Forensics

ANALYZE

Analyze

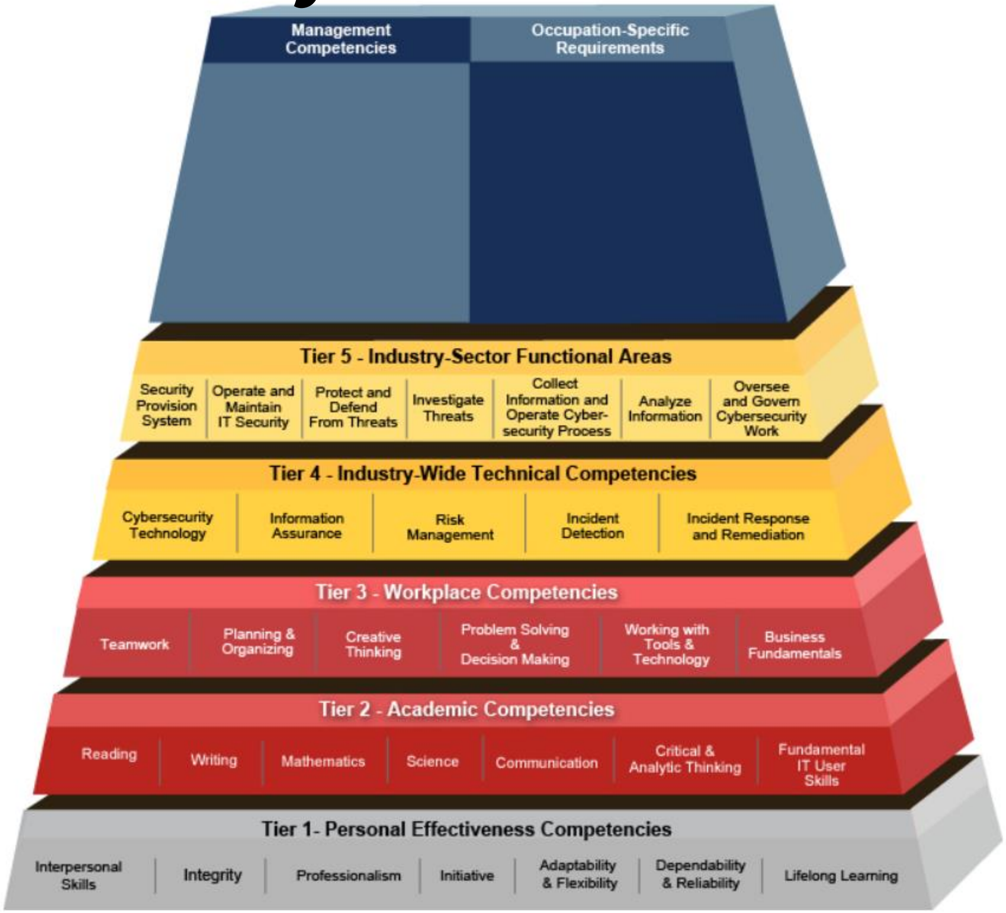
- Threat Analysis
- Exploitation Analysis
- Targets
- All Source Intelligence

OVERSEE & GOVERN

Oversight and Development

- Legal Advice and Advocacy
- Education and Training
- Strategic Planning and Policy Development
- Information Systems Security Operations (ISSO)
- Security Program Management (Chief Information Security Officer [CISO])

DoL Cybersecurity Competency Model



https://www.careeronestop.org/competencymodel/competency-models/cybersecurity.aspx

Research Questions

What are the industry priorities for entry-level cybersecurity professionals for each of the Tiers of the DoL Cybersecurity Competency Model?

Do these preferences vary by industry or organizational size?

Survey Responses

240 responses – 200 useable (> 50% content)

Respondents by region: SE (23%), Global (15%) and Pacific (12%), remainder evenly distributed (4-9%).

Respondents by org: XXL (52%), M (24%), XL (12%), L (8%), S (4%).

Respondents by industry: Ed (16%), Health (16%), Info Svc (16%), Fin (13%), rest evenly distributed (1-5%).

Respondents by role: InfoSec Exec (49%), InfoSec Mgr (22%), IT Exec (9%), Gen Exec (5%) and IT Mgr (5%).

Study Findings

What are the priority of preferences for entry-level cybersecurity professionals for each of the Tiers of the DoL CCM?

Tier 1: Personal Effectiveness Competencies

Personal Effectiveness Competencies:	Mean	S.D.	N	Min	Max
Integrity	6.81	.496	199	4	7
Dependability & Reliability	6.56	.647	199	4	7
Interpersonal Skills	6.29	.986	199	3	7
Adaptability & Flexibility	6.27	.893	198	4	7
Initiative	6.20	.936	199	2	7
Lifelong Learning	6.17	1.034	199	3	7
Professionalism	6.00	1.032	200	3	7

Tier 2: Academic Competencies

Academic Competencies:	Mean	S.D.	N	Min	Max
Critical & Analytic Thinking	6.71	.592	195	4	7
Communications	6.54	.676	194	4	7
Fundamental IT	6.43	.812	195	2	7
Reading	6.37	.784	196	4	7
Writing	6.13	.905	196	2	7
Science	5.10	1.356	193	1	7
Mathematics	4.86	1.461	194	1	7

Tier 3: Workplace Competencies

Workplace Competencies:	Mean	S.D.	N	Min	Max
Problem Solving & Decision Making	6.34	.904	190	3	7
Teamwork	6.27	.926	192	1	7
Working with Tools & Technology	6.03	.997	192	3	7
Creative Thinking	5.95	.986	191	3	7
Planning & Organizing	5.78	1.086	192	1	7
Business Fundamentals	5.08	1.305	190	1	7

Tier 4: Industry-Wide Technical Competencies

Industry-Wide Technical Competencies:	Mean	S.D.	N	Min	Max
Cybersecurity Technology	6.13	1.046	189	2	7
Information Assurance	5.88	1.180	188	2	7
Incident Detection	5.87	1.206	190	1	7
Incident Response	5.84	1.280	189	1	7
Risk Management	5.74	1.369	190	1	7

Tier 5: Industry Sector Functional Area Competencies

Industry Sector Functional Area Competencies:	Mean	S.D.	N	Min	Max
Protect & Defend	5.88	1.258	182	2	7
Analyze Information	5.77	1.380	183	1	7
Investigate Threats	5.60	1.417	181	1	7
Operate & Maintain	5.59	1.220	184	2	7
Collect & Operate	5.35	1.422	184	1	7
Securely Provision	5.19	1.445	184	1	7
Oversee & Govern	4.68	1.826	180	1	7

Study Findings

Do these preferences vary by industry?

In general, no…

Do these preferences for entry-level cybersecurity professionals vary by organizational size?

In general, no…

Conclusions

- Demand for InfoSec/CyberSec Professionals is and will be so great, ALL types of specializations are needed.
- Field of InfoSec/CyberSec is rapidly expanding and becoming increasingly complex and diverse, as its foundations have (SE/CS/IT/IS/MIS).
- Educators should ensure all programs contain critical foundation competencies as specified in the DOL Cybersecurity Competency Model.
- Educators should design programs with an end goal in mind.

Next steps…

A GAP analysis of Academic Supply vs. Demand, comparing the findings of this study with CAE degree programs – categorized into NICE Cybersecurity Workforce categories.

Kennesaw State University Conference on Cybersecurity Education, Research & Practice

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Thank You!

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