# Growing the Cybersecurity Workforce:

## Enhancing Career Guidance through Professional Development for Advisors and Counselors

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# The Cybersecurity Workforce Gap

- 1.2 million+ cybersecurity professionals employed in the United States
- 450,000 unfilled cybersecurity positions nationwide
- Limited training for those who guide students (counselors, advisors, educators)
- **Critical barrier**: lack of understanding of cybersecurity work roles and careers

# Research Questions

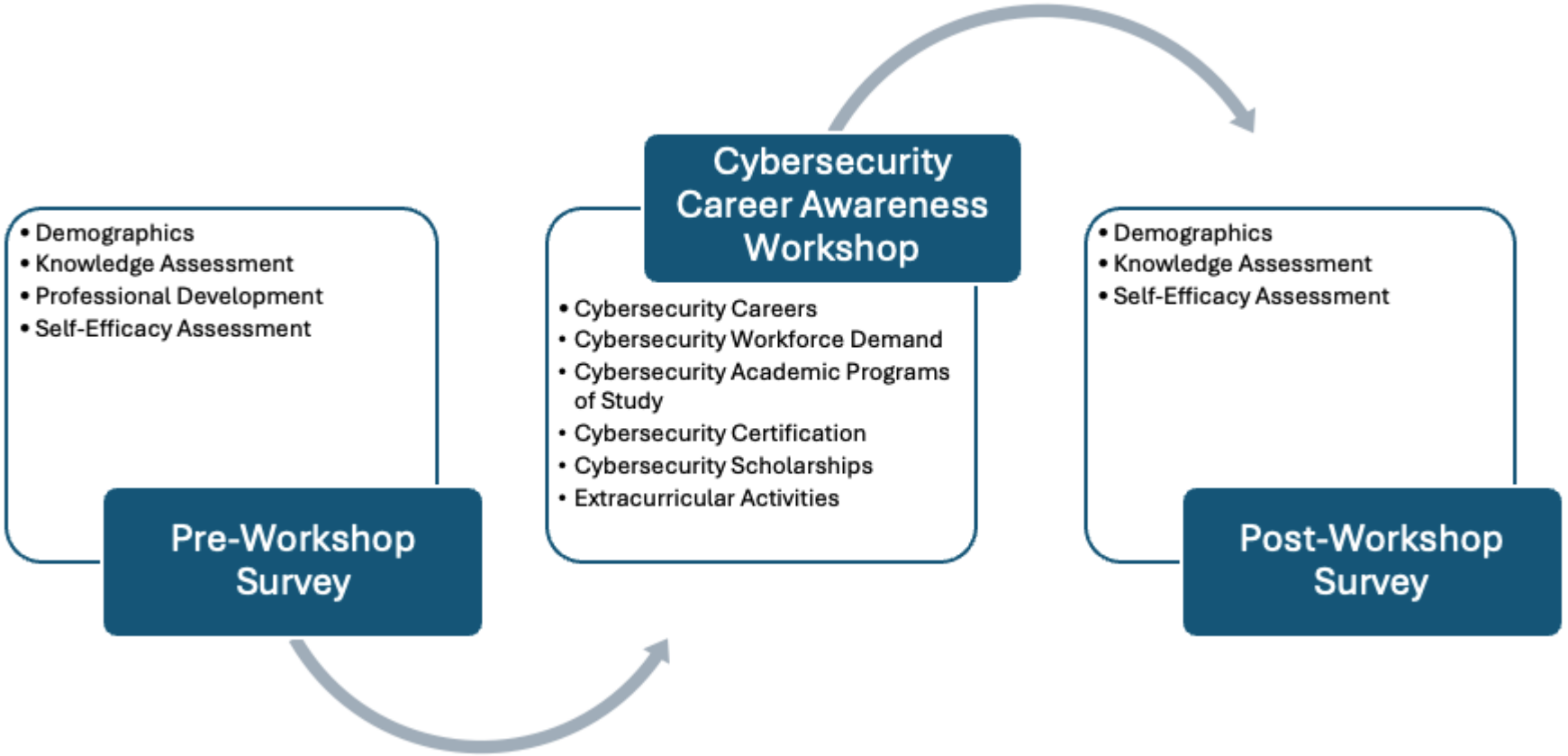
**Primary Research Question**:
How does targeted professional development for academic advisors and career counselors enhance their ability to connect with and guide students effectively toward cybersecurity careers?

**Secondary Questions**:

- What knowledge gaps exist among advisors and counselors?
- Which resources are most effective in building confidence?
- How can improved guidance impact the cybersecurity workforce gap?

# Study Methodology:

Quasi-experimental design



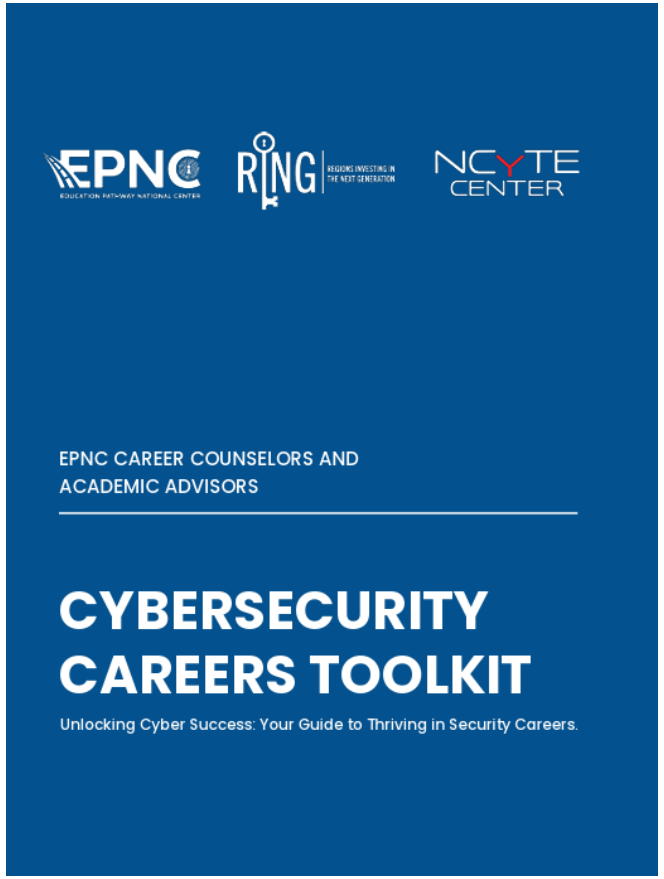
# Cybersecurity Career Awareness Workshop

**The workshop provided:**

- Overview of cybersecurity
- Cybersecurity careers & workforce demand
- NICE Framework & Cyberseek resources
- Centers of Academic Excellence
- Academic pathways and certifications
- Extracurricular activities
- Cybersecurity scholarship opportunities

# Creating Awareness: Counselor & Advisor Toolkit

- **Career Guide** – Supports counselors and advisors in guiding students into cybersecurity careers.
- **Education Pathways** – Covers degrees, certifications, and scholarships.
- **Career Tools** – Features NICE Framework, CyberSeek, and CYBER.ORG resources.
- **Hands-on Experience** – Highlights competitions and workforce readiness programs.




https://www.caeepnc.org/careertoolkit/

# Pre-Workshop Assessment: Knowledge Gaps

- 78.6% had little to no knowledge of the cybersecurity career landscape.
- 72.6% were unfamiliar with cybersecurity work roles.
- 76.2% lacked understanding of cybersecurity academic programs.
- 75% were unaware of industry certifications.
- 57% had no knowledge of transfer agreements.

# Pre-& Post-Workshop Knowledge Assessment

| Knowledge Domain | Pre/ Post | Knowledge Assessment Scale (%) | | | | | Increase in Competency |
|---|---|---|---|---|---|---|---|
| | | None | Beginner | Competent | Proficient | Expert | |
| Cybersecurity Career Landscape | Pre | 25.0 | 53.6 | 13.6 | 6.4 | 1.4 | 30.9% |
| | Post | 15.4 | 32.3 | 38.5 | 12.3 | 1.5 | |
| Cybersecurity Work Roles | Pre | 23.8 | 48.8 | 19.6 | 6.4 | 1.4 | 23.4% |
| | Post | 16.9 | 32.3 | 36.9 | 12.3 | 1.6 | |
| Cybersecurity Academic Programs | Pre | 26.2 | 50.0 | 16.2 | 6.2 | 1.4 | 31.6% |
| | Post | 13.8 | 30.8 | 41.5 | 12.3 | 1.6 | |
| NCAE-C Programs | Pre | 46.8 | 25.8 | 19.8 | 6.2 | 1.4 | 24.9% |
| | Post | 15.4 | 32.3 | 38.5 | 12.3 | 1.5 | |
| Cybersecurity Certifications | Pre | 25.0 | 50.0 | 17.4 | 6.2 | 1.4 | 33.5% |
| | Post | 12.3 | 29.2 | 43.1 | 13.8 | 1.6 | |
| Transfer Agreements | Pre | 57.0 | 21.6 | 13.8 | 6.2 | 1.4 | 20.1% |
| | Post | 20.0 | 38.5 | 30.8 | 9.2 | 1.5 | |

# Pre- & Post-Workshop Self-Efficacy Levels

| Self-Efficacy Domain | Pre/ Post | Confidence Level Scale (%) | | | | | Increase in Confidence - percentage points |
|---|---|---|---|---|---|---|---|
| | | Not at All | Slightly | Somewhat | Very | Extremely | |
| Academic Pathways | Pre | 38.4 | 31.8 | 21.4 | 7.0 | 1.4 | 36.4 |
| | Post | 12.3 | 21.5 | 49.2 | 15.4 | 1.6 | |
| Cybersecurity Pathways | Pre | 39.6 | 31.8 | 20.2 | 7.0 | 1.4 | 32.9 |
| | Post | 13.8 | 24.7 | 46.2 | 13.8 | 1.5 | |
| Knowledge, Skills, and Abilities | Pre | 40.8 | 31.8 | 19.0 | 7.0 | 1.4 | 32.6 |
| | Post | 15.4 | 24.6 | 44.6 | 13.8 | 1.6 | |

# Post-Workshop Knowledge Gains

- 33.5% increase in understanding of cybersecurity certifications.
- 31.6% improvement in knowledge of academic programs.
- 30.9% boost in awareness of career landscape.
- Significant gains in knowledge of NCAE-C programs and cybersecurity roles.

# Confidence in Career Guidance

## Pre-workshop:

- 70.2% were 'not confident' or 'slightly confident' advising cybersecurity pathways.
- 71.4% lacked confidence in explaining cybersecurity careers.

## Post-workshop:

- 66.2% felt 'somewhat confident' or higher advising academic pathways.
- 61.5% had improved confidence in explaining cybersecurity careers.

# Workshop Effectiveness

- Participants demonstrated a 25% overall confidence increase.
- Most substantial gains among those who were initially 'slightly confident'.
- **Key impact**: Increased ability and confidence to connect students with cybersecurity opportunities.

# Challenges & Future Directions

- Persistent knowledge gaps in transfer agreements.
- Limited participation in cybersecurity career training.
- Need for ongoing workshops and accessible online resources.
- **Future research needed**: Long-term impact on student enrollment and retention.

# Conclusion

- Targeted professional development significantly improves advisors' confidence and knowledge.
- Increased awareness of cybersecurity career pathways can help bridge the workforce gap.
- Expanding training opportunities is critical to sustaining cybersecurity workforce growth.

# Access the Most Up-to-Date Slide Deck (Ongoing Updates)

For the most accurate and up-to-date slide deck, please visit the link below. Changes and revisions may be made, so be sure to check back for the latest updates!


https://bit.ly/caepresentations

# Questions?

## Let's Connect!!

# Thank You!

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