Vulnerability Discovery for All: Experiences of Marginalization in Vulnerability Discovery

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The cybersecurity industry is short 3.4 million workers—that’s good news for cyber wages

BY SYDNEY LAKE

October 20, 2022, 9:01 AM
Why does this matter?

• Equity problem
  • Limited opportunities for lucrative careers

• “Given enough eyes, all bugs are shallow.”
  • Diverse perspectives needed to avoid blindspots
  • Homogenous community leads to similar perspectives
Research questions

• How do people from marginalized populations come to participate in vulnerability discovery?

• Do people from marginalized populations feel accepted and supported?

• What challenges do people from marginalized populations face?
Methods

- Conducted 16 semi-structured interviews
  - Self-described work and personal identity
  - Walk us through their career in vulnerability discovery
- Analyzed data using open coding
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Path to Vulnerability Discovery

• Others introduced them

• Tangential activities lead to vulnerability discovery

• Drawn to specific aspect
Learning Resources

• Resources with built-in structure
  • Hacking challenges, Certifications, Online courses

• Unstructured resources
  • On the job learning, YouTube videos, Hacking sites
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Mentoring

• Mentors are essential.
• Mentors provide essential resources:
  • Hands-on help
  • Connections to programs and organizations
  • Sharing relevant resources

"I probably would have...failed...if I was turned loose...and didn't have any support." *More than in other fields.*

Reduces the wide array to manageable/useful amount

Career development came through mentors

Increase in self-efficacy, activity, and expectations after meeting first good mentor.
Representation and diversity

• Perceiving themselves within the community is welcoming
• General sense of diversity is welcoming

“I did feel welcome… because my class was very diverse”
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Challenges

- Education
  - Materials lack clear structure
  - Materials assume technical background
- Competitive landscape
  - Lack of attainable entry positions
  - Outcome uncertainty

[Akgul et al. 2023]
Community

- Difficulty being taken seriously
- Lack of representation and diversity
- Unhelpful mentors
- "Token" mentoring is encouraged
- Causes mentoring by unwilling mentors
- Discrimination
  - Sexism
  - Racism
  - Sexual assault
  - Transphobia
  - Homophobia

"The first time that I went to one of [hacking organization]'s events, I was appalled because I didn't see anyone like me."

"I could tell they weren’t taking me seriously… they saw me and were like, 'What’s she trying to do here?'"
Takeaways

• Mentors were essential
• Help mentees reach willing mentors
  • Mentor/mentee matching programs
  • Open office hours
  • Anonymous mentoring

Questions:
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