Towards
Gender Balance CyberSecurity Workforce

Dr. Ambareen Siraj, Professor, Tennessee Tech

Two Problems with
building EFFECTIVE CyberSecurity Workforce
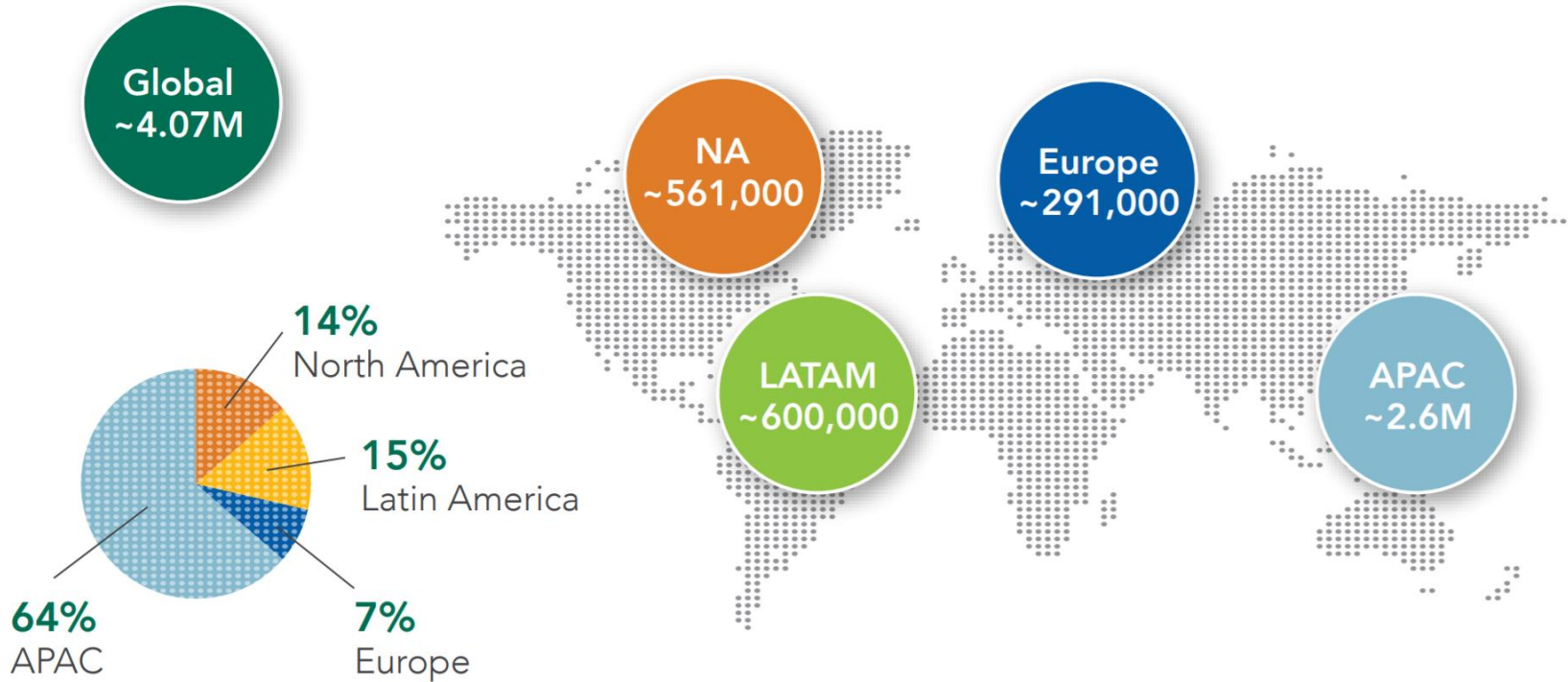
Pipeline

Diversity

Cybersecurity Workforce Gap

* Source: (ISC)^2 Cybersecurity Workforce Study, 2018

Gender Diversity
STEM vs Cybersecurity (2013)

50%   vs.   11%

Gender Balance Challenges

Lack of awareness	Stereotypical notions	Lack of resources
Lack of visibility of role models	Lack of access to mentors	Lack of social support
Inadequate advancement opportunities	Inadequate professional development opportunities	Lack of national/regional/local community

women in cybersecurity
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Paving the Road for
Gender Balance Cyber Workforce

- More awareness of careers in cybersecurity
  - Media campaigns for public

- More resources to offer cybersecurity in colleges (including community colleges)

- Directed efforts in promoting cybersecurity at K12
  - Piggybacking with Computer Science For ALL
  - Teacher training
  - Counselor awareness

Paving the Road for
Gender Balance Cyber Workforce

- Alternate paths to cyber workforce

- Bias-free and inclusive work environment

- Communities/organizations that support diversity and inclusion in cybersecurity

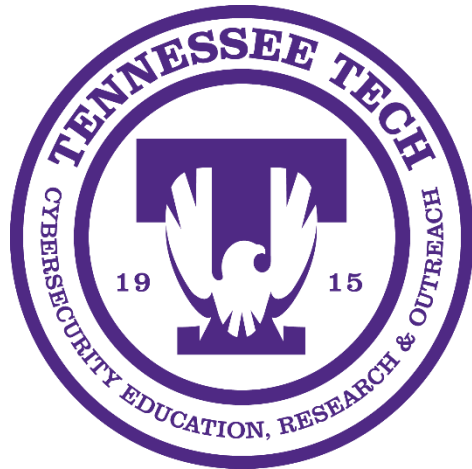- A Story about OR an Example of

  the POWER of Community

COMING TOGETHER IS A BEGINNING;
KEEPING TOGETHER IS PROGRESS;
WORKING TOGETHER IS SUCCESS.

Henry Ford

WOMEN IN CYBERSECURITY
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History of WiCyS

NSF Grant

Tennessee Tech
CYBERSECURITY EDUCATION, RESEARCH & OUTREACH
19 15

Five Years as an Annual Conference

WOMEN IN CYBERSECURITY
WiCyS

National Science Foundation
WHERE DISCOVERIES BEGIN

SEARCH

HOME   RESEARCH AREAS   FUNDING   AWARDS   DOCUMENT LIBRARY   NEWS   ABOUT NSF

Awards

Search Awards

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About Awards

How to Manage Your Award

Grant Policy Manual

Grant General Conditions

Cooperative Agreement Conditions

Special Conditions

Federal Demonstration Partnership

Policy Office Website

Award Abstract #1303441

Collaborative Proposal: Capacity Building in Cybersecurity: Broadening Participation of Women In Cybersecurity through Women in Cybersecurity Conference & Professional Developm

NSF Org:	DGE Division Of Graduate Education
Initial Amendment Date:	September 10, 2013
Latest Amendment Date:	August 7, 2017
Award Number:	1303441
Award Instrument:	Standard Grant
Program Manager:	Victor P. Piotrowski DGE Division Of Graduate Education EHR Direct For Education and Human Resources
Start Date:	September 15, 2013
End Date:	August 31, 2018 (Estimated)
Awarded Amount to Date:	$294,160.00
Investigator(s):	Ambareen Siraj asiraj@tntech.edu (Principal Investigator)

WiCyS Conference Model

- Comparable **students and non-students** ratio

- **Accessible** to students and faculty

- Content focused on
  - education, research, outreach and industry

- **Career/Graduate** school fair

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WiCyS Conference Original Grant Scope (2014-2016)

- $70K
- 250 attendees over 2 years

CONFERENCE

Over SEVEN YEARS…

3.5 million in industry support

6,400 attendees

3,000 student scholarships

340 faculty grants

2014 | Nashville | 350+

2015 | Atlanta | 550+

2016 | Dallas | 800+

2017 | Tucson | 900+

2018 | Chicago | 1,100+

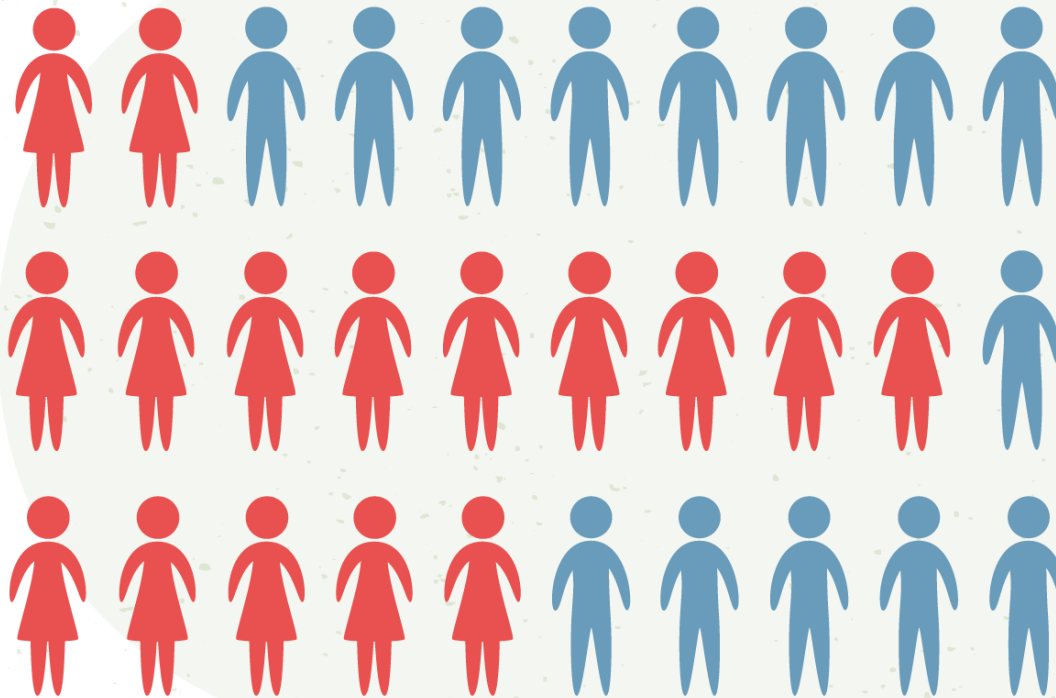2019 | Pittsburgh | 1,300+

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WiCyS Conference Today

- Largest security conference in USA that
  - Ensures comparable representation of students and professionals
  - Ensures comparable representation from academia and industry (public and private)

- Women who are underrepresented are
  - Represented
  - Celebrated

COMMUNITY

#SeeHerAsEqual

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Cybersecurity Gender Demographics

MISSION:

Help build a strong gender-diverse cybersecurity workforce by facilitating…

RECRUITMENT

RETENTION

ADVANCEMENT

for women in the field

Member-based Nonprofit

Over 5K members
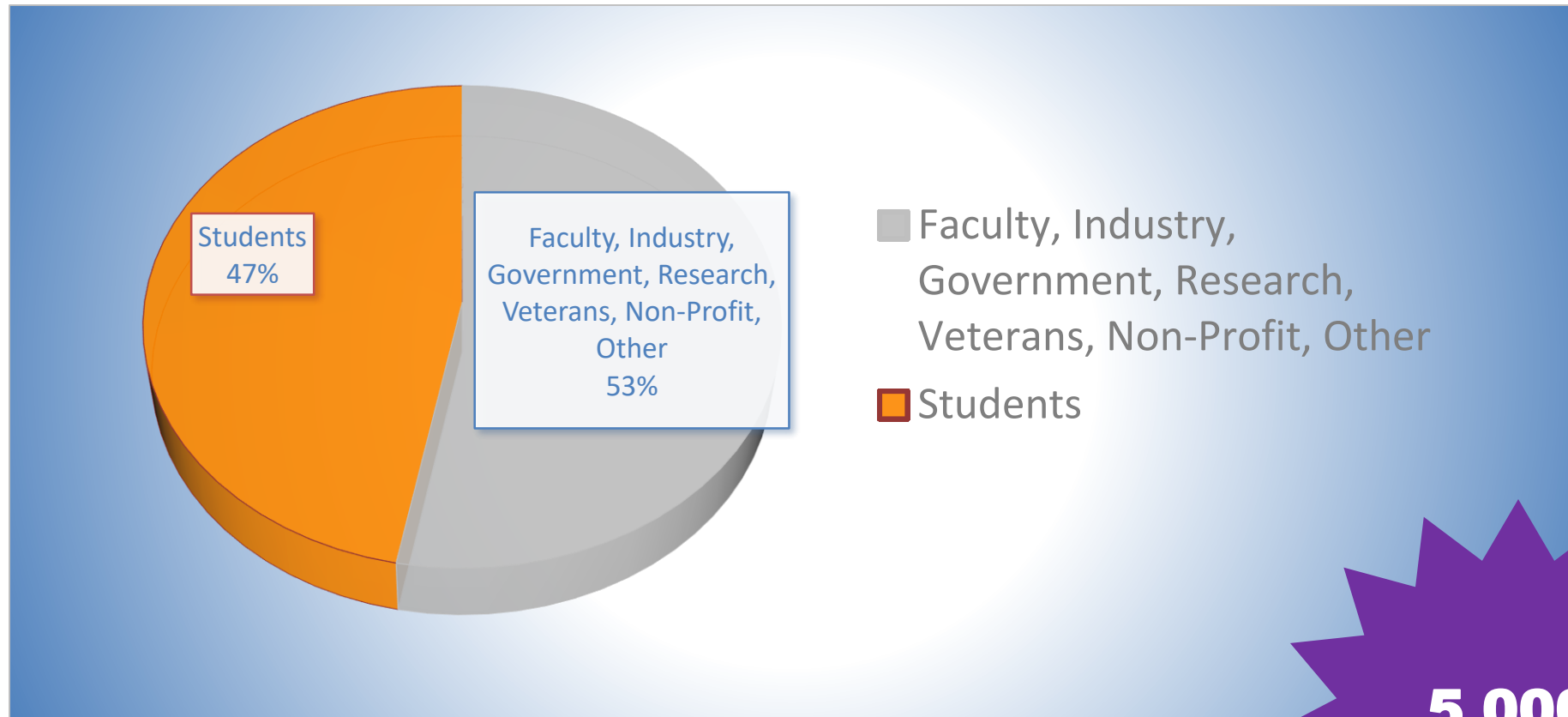→ 47% students
→ 53% professionals

90 student chapter
→ Across 35 stat
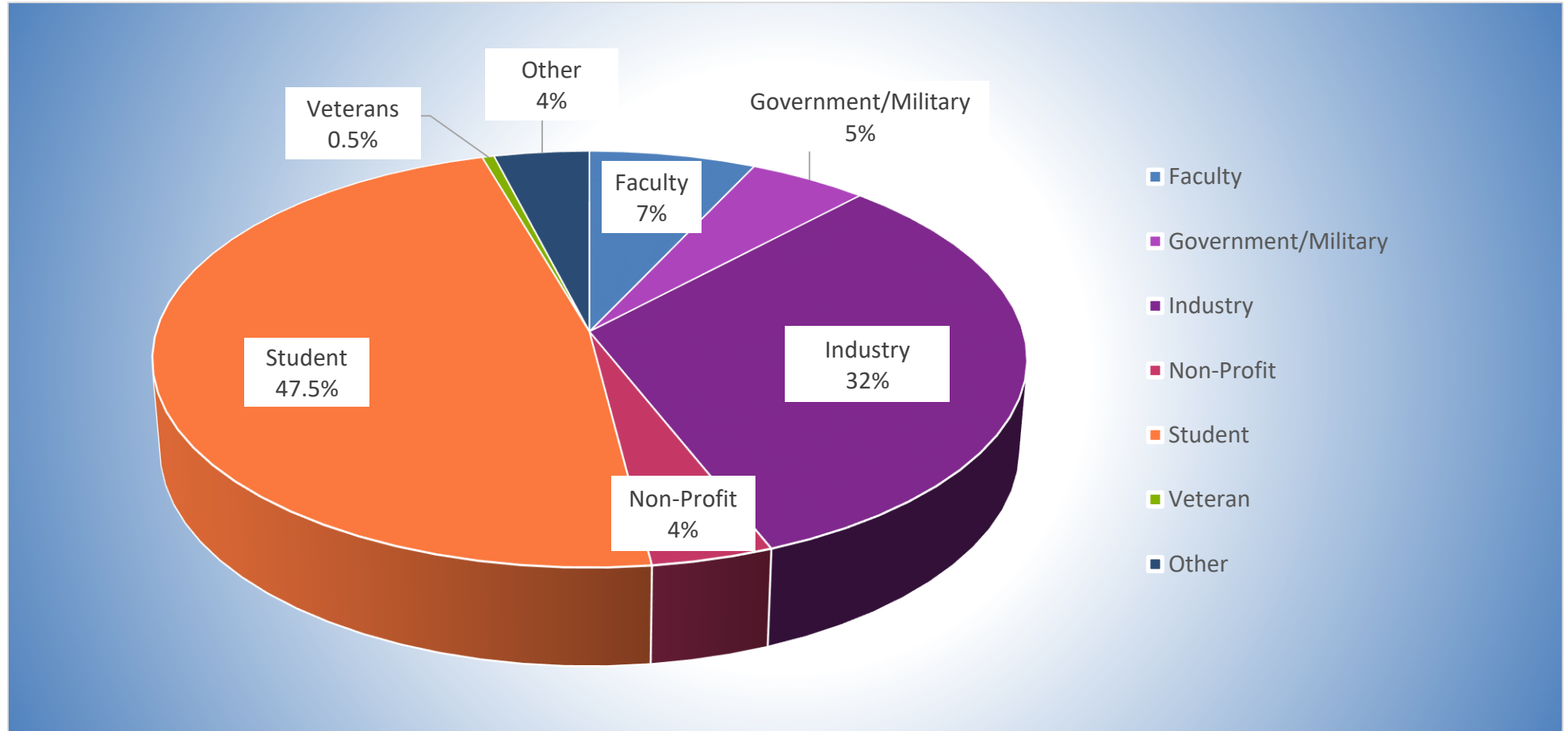
19 professional affiliates
→ Across 26 states

WiCyS Membership Overview

Students
47%

Faculty, Industry, Government, Research, Veterans, Non-Profit, Other
53%

■ Faculty, Industry, Government, Research, Veterans, Non-Profit, Other

■ Students

women in cybersecurity
WiCyS

5,000+
Members

WiCyS Member Profiles

WiCyS Student Chapters - 97

Anne Arundel Community College - MD
Bay Path University - MA
Blue Ridge Community and Technical College - WV
Bowie State University - MD
California State University - San Bernardino, CA
Capitol Technology University - MD
Carnegie Mellon University - PA
Chatham University - PA
Chicago State University - IL
City University of New York at Lehman College - NY
Cochise College – AZ
College Of Southern Maryland - MD
Colorado School of Mines - CO
Coppell High School - TX
DePaul University - IL
Devry University - IL
East Carolina University - NC
Embry-Riddle Aeronautical University - AZ
Florida International University - FL
Florida State University - FL
George Washington University - Washington D.C.
Gwinnett Technical College - Georgia
Hampton University - Virginia
Henry Ford College - Dearborn, MI
Highline College - Des Moines, WA
Hofstra University - Long Island, NY
Illinois Institute of Technology - IL
Indiana University Bloomington – IN
Ivy Tech Community College - Lake County Campus - IN
Ivy Tech Community College - Valparaiso Campus – IN

John Logan Community College - Carterville, IL
Johns Hopkins University - MD
Johnson-Wales University - RI
Kean University - Union, NJ
Keiser University - FL
Lewis-Clark College - Portland, OR
Marshall University - WV
Maryville University - MO
McKendree University - Lebanon, IL
Miami Dade College - FL
Middle Georgia State University - GA
Mississippi State University - MS
NJ Institute of Technology - NJ
Northeastern University - Boston, MA
Ohio State University - OH
Olivet Nazarene University - IL
Pace University - NY
Padua Academy - DE
Penn State University - PA
Pensacola State College - FL
Prince George's Community College - MD
Purdue University - West Lafayette, IN
Rochester Institute of Technology - NY
Roosevelt University - IL
Salve Regina University - Newport, RI
Siena College - NY
Southern Illinois University – IL
St. Cloud State University - MN
St. Petersburg College - FL
Stern School Highlands Ranch - CO
Tennessee Tech University - TN
Texas A&M-San Antonio – TX
Texas State University – TX
The Citadel – SC

Towson University - MD
Universidad Cenfotec – Costa Rica
University At Albany – NY
University at Buffalo, SUNY - NY
University of Alabama - AL
University of California, Irvine – CA
University of California, Santa Barbara - CA
University of Florida - FL
University of Illinois-Urbana-Champaign - IL
University of Louisiana at Lafayette - LA
University of Maine at Augusta - ME
University of Maryland - MD
University of Maryland Baltimore County - MD
University of Maryland Universty College – MD
University of Mississippi - MS
University of New Haven - CT
University of North Carolina Charlotte - NC
University of North Dakota - ND
University of Oklahoma Norman Campus - OK
University of Puerto Rico at Bayamón - Puerto Rico
University of South Florida - FL
University of Tampa - FL
University of Texas-Dallas - TX
University of the Incarnate Word - TX
University of Tulsa - OK
University of Utah - UT
University of Washington Tacoma – WA
University of Waterloo - Ontario, Canada
University of Windsor - Ontario, Canada
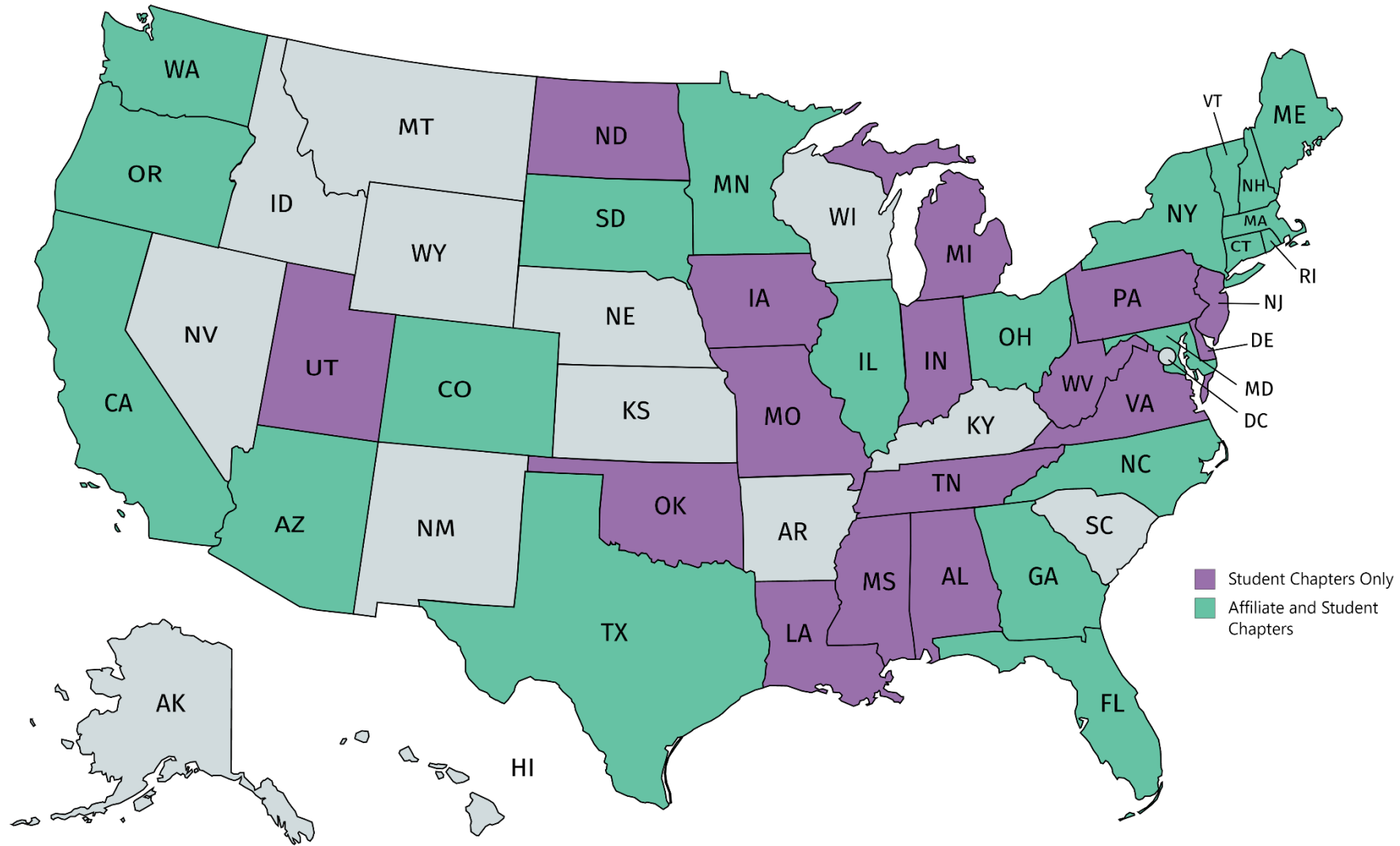VIT Bhopal University - Madhya Pradesh, India
Westchester SUNY Community College - NY
Western Washington University - Bellingham, WA
Whatcom Community College - Bellingham, WA
Worcester Polytechnic Institute - MA

…And 19 WiCyS Affiliates

Annual Fall Virtual Career Fair

WiCyS Webinar Series

Cyber Breach Fatigue

Rhonda Bricco (UnitedHealth Group), Deb Doffing (Optum), Sue Perkins (Optum), Cat Goodfellow (Optum)

Mar 31 2020 | 35 mins

Play

The stream of near constant data breaches has left consumers desensitized to the news their information was lost or stolen. We'll discuss issues around complacency both in consumers and enterprises such as how long the customer cares after a breach occurs, whether data loss is as negatively impactful to an organization's reputation as it used to be,... **more**

Orchestrating Various Roles to Uplift Security at Acquisitions
Ruchi Shah, Sr Security Engineering Manager at Google

Feb 19 2020 | 48 mins

Good vs Bad Metrics
Rhonda Bricco (UnitedHealth Group), Deb Doffing (Optum), Sue Perkins (Optum), Cat Goodfellow (Optum)

Feb 18 2020 | 30 mins

Offensive vs Defensive Security
Rhonda Bricco (UnitedHealth Group), Deb Doffing (Optum), Sue Perkins (Optum),

WiCyS Community Forum

- All members
- Student chapters
- Faculty
- Allies and Advocates for Action
- Strategic partners
- Veterans

women in cybersecurity
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WiCyS Ventures in the Works

- Summer virtual training program
- Summer virtual research experiences
- Veteran assistance program

WiCyS Veteran Assistance Program (VAP)

- Help our female veterans transition into careers in cyber
  - Increase diversity in cyber work roles
  - Increase cyber workforce

women in cybersecurity
WiCyS

VAP Objective

- Assist female veteran members
  - who are in cyber OR who aspire to be in cyber
    - with career development, placement and advancement in cyber
      - using its network of members, partners and sponsors.
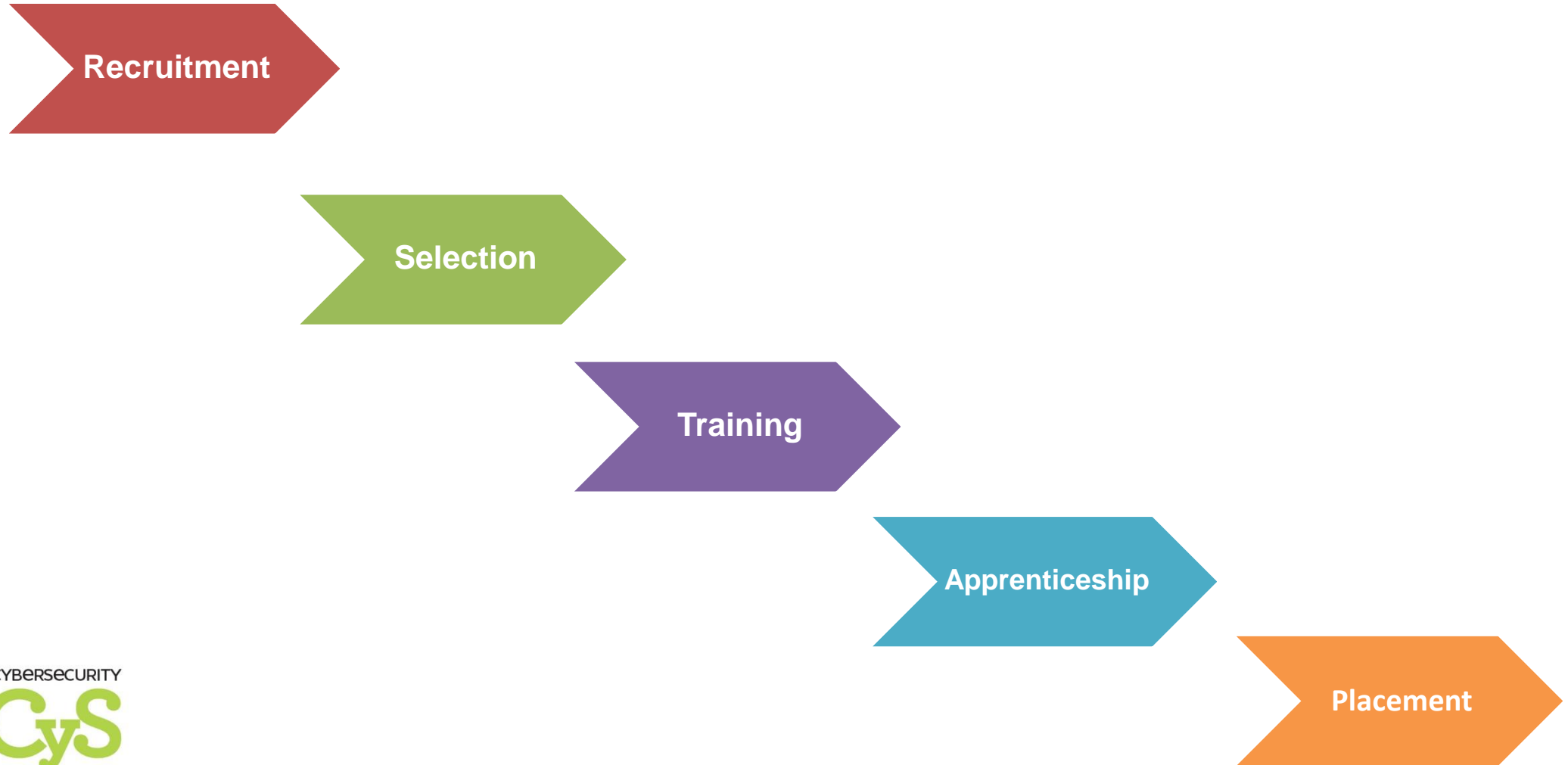
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VAP Activities - 1

- Offer **discounted** subsidized WiCyS organizational **membership** at the student rate to selected eligible veterans

- Provide **fellowship award** to selected eligible veterans to attend the annual WiCyS conference and career fair at no cost

- **Veteran Apprenticeship Program**

Veteran Apprenticeship Program

- Work with our partners and sponsors to provide
  - apprenticeship opportunities to eligible Veterans.
  - job placement opportunities to eligible Veterans.
  - professional development opportunities to eligible Veterans.

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Veteran Apprenticeship Program Components

Recruitment

Selection

Training

Apprenticeship

Placement

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VAP Activities - 2

- An exclusive **private communication platform** for the WiCyS Community of Veterans
- **Directory of WiCyS veterans** for external opportunity and engagement.
- D**irectory of resources** and **opportunities** for veterans among
- Local/regional **meet ups** of WiCyS veterans through local/regional affiliates.
- Work with Military branches and Department of Labor to include **WiCyS as a resource** for Veterans in transition

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Engineering Institute (SEI)
Carnegie Mellon University

Jenn Henley
Vice President - Infrastructure, Technical
Program Management
Facebook

Year-Round Partnerships

#WiCyS2020

1,650 Conference Attendees

750 Student Scholars	**400+** Volunteers
150 Recruiters	**130** Travel Stipends
100+ Sponsors	**80** Veterans
67 Faculty Grants	**55** Technical Sessions
30 Student Research Posters	**26** Veteran Fellowship Awardees
20 Active Military Attendees	**16** Awards
16 Workshops	**15** Community Collaborators
6 WiCyS Communities	**4** Meetups
3 Keynotes	**1** CTF

WHEN LIFE GIVES YOU LEMONS MAKE LEMONADE

WiCyS Virtual 20
April 15-17, 2020
Live... from Everywhere
WiCyS

#WiCySv20

5K+ WiCyS Members	8 Socials
1.6K+ Resumes	7 Keynotes
60+ Sponsored Booths	2 CTF Live Coaching Sessions
22 Presentations	1 Career Fair

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WiCyS Virtual 20
Attendees: 1,104

#WiCySv20 hashtag
Reach: 8 million

WiCyS Virtual 20
Booths: 70
Booth Visits: 12,177
Unique Booth Visits: 9,145

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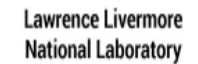
Carnegie Mellon University Information Networking Institute

Georgia Tech Master of Science in Cybersecurity

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SOPHOS

Master of Cybersecurity & Leadership University of Washington | Tacoma

Spectrum

PRAETORIAN

PREMERA BLUE CROSS

Lawrence Livermore National Laboratory

LINCOLN LABORATORY Massachusetts Institute of Technology

IU

Pacific Northwest NATIONAL LABORATORY
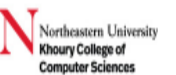
Northeastern University Khoury College of Computer Sciences

WiCyS 2021

March 15-16

Gaylord Rockies Resort, Aurora, Greater Denver Area

1,600 attendees expected

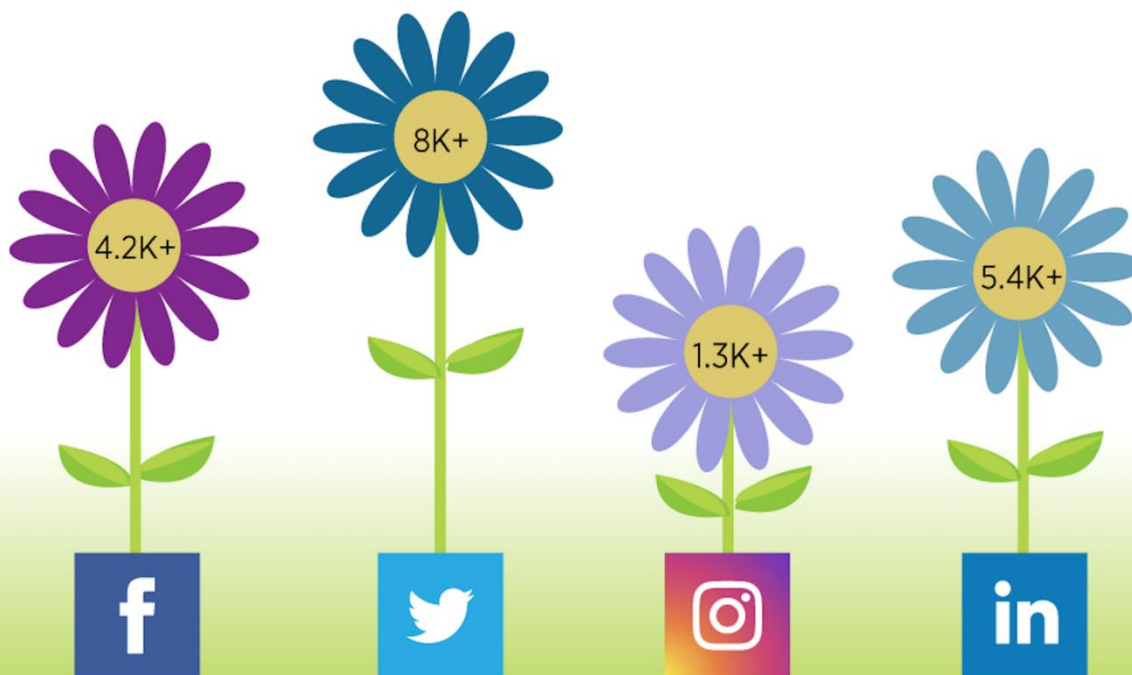# Gender Diversity
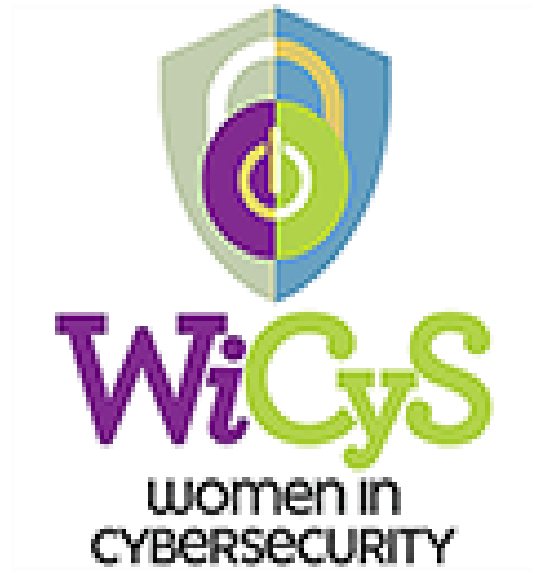# STEM vs Cybersecurity (2019)

50% vs 20-24%

women in cybersecurity
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Subscribe to WiCyS Mailing List – visit the WiCyS website
CONTACT info@wicys.org

www.wicys.org

RECAP: Paving the Road for Gender Balance Cyber Workforce

- More awareness of careers in cybersecurity
  - Media campaigns for public

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Paving the Road for
Gender Balance Cyber Workforce

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- A Story about OR an Example of

  the POWER of Community

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