

NICE | Conference and Expo 2022

JUNE 6 - 8, 2022 | WESTIN PEACHTREE PLAZA | ATLANTA, GA

DEMYSTIFYING CYBERSECURITY

Integrated Approaches to
Developing Career Pathways

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 **NEW
AMERICA**

Building and Sustaining a Statewide Cybersecurity Education and Workforce Development Ecosystem

Rebekah Michael

Executive Staff Director, Assistant Professor Educator,
Ohio Cyber Range Institute
University of Cincinnati

Ryan Moore

Assistant Professor Educator,
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OHIO CYBER RANGE INSTITUTE

UNLOCKING POTENTIAL,
SECURING THE FUTURE

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Rebekah Michael - Assistant Professor – Educator – School of Information Technology, University of Cincinnati – Executive Staff Director – Ohio Cyber Range Institute

Ryan Moore - Assistant Professor – Educator – School of Information Technology, University of Cincinnati – Lead Educator – Ohio Cyber Range Institute

More than collaboration, it's integration

Agenda Where are we now?

Creating an integrated ecosystem

State Support

Partners

Regional Programming Centers

Building from the ground up

Learning

Trying

Operationalizing

Scaling



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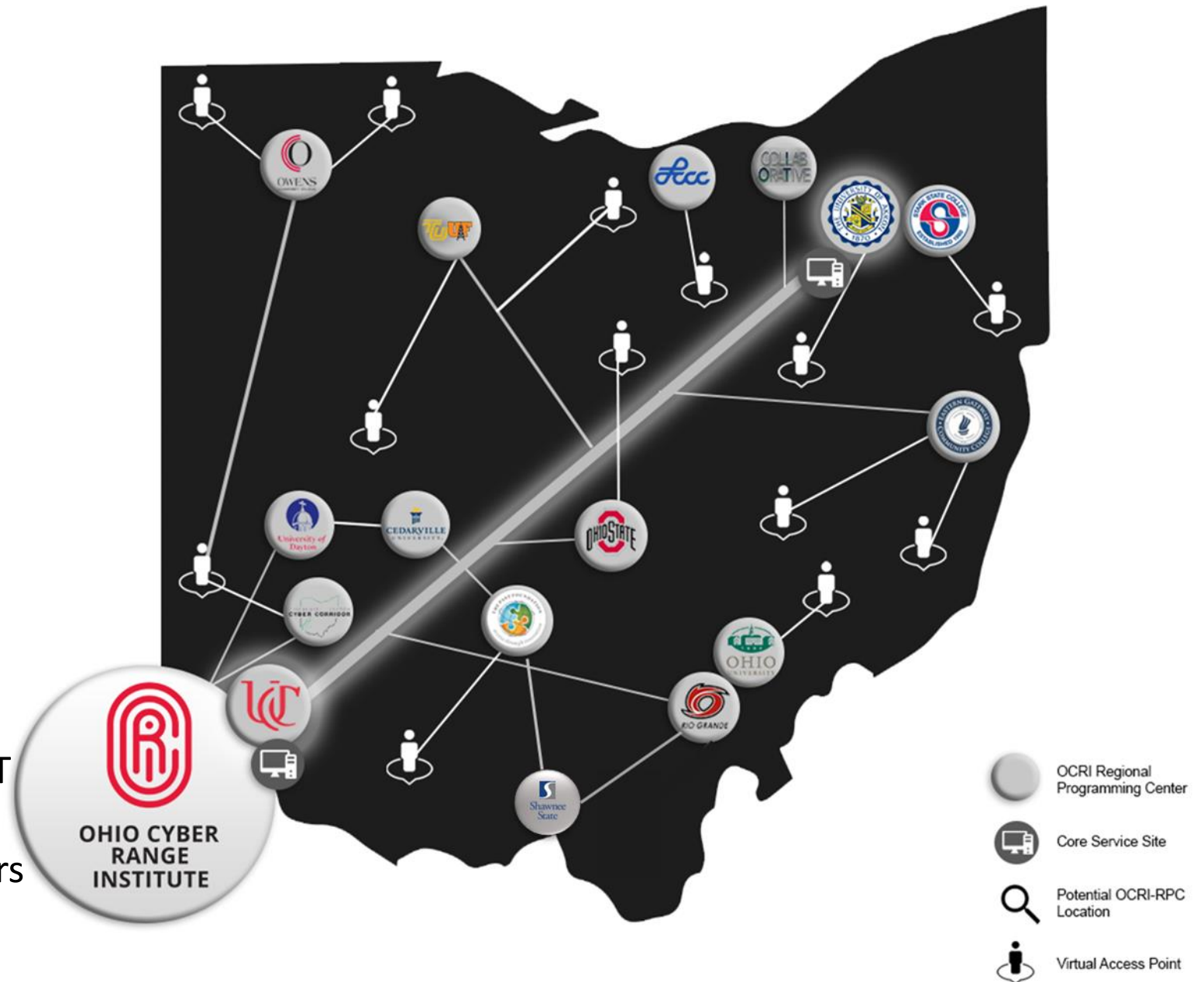
Where are We Now?

Overview

OCRI Ecosystem

RPCs:

- University of Cincinnati
- University of Akron
- Ohio State University
- University of Dayton
- Ohio University
- Rio Grande
- Eastern Gateway CC
- Cin-Day Cyber at SOCHE
- Cedarville University
- Owens CC
- Lorain County CC
- Stark State CC
- PAST Foundation
- Cleveland State/Case Western IoT Collaborative
- Tiffin University & Findlay Partners
- **Shawnee State University**

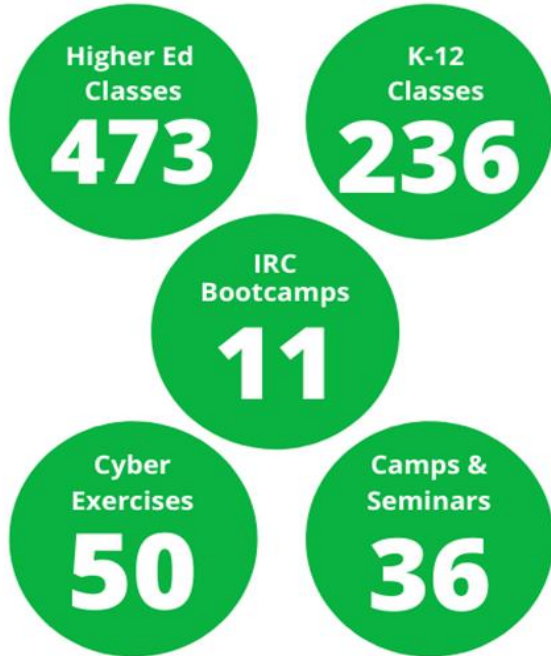


46 Counties Impacted*



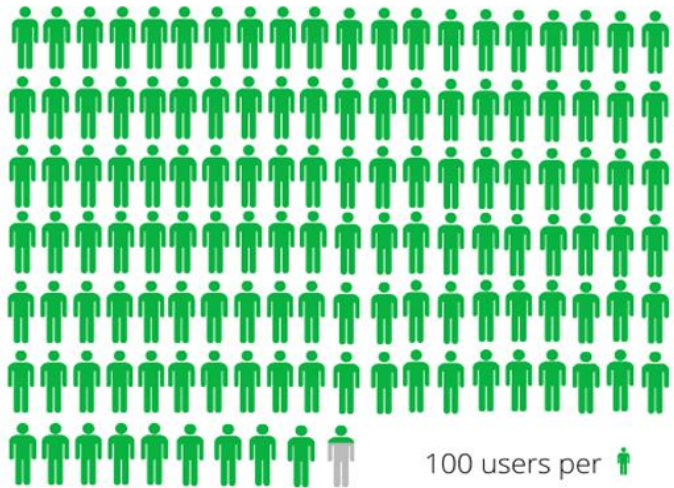
*K-12 & Higher Ed courses tracked at institution county.

Programming

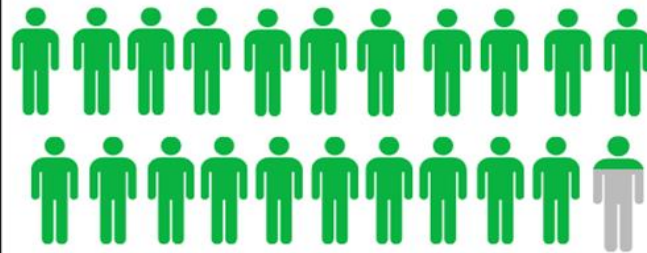


Cumulative Impact Report: Jan 2018 – May 2022

12,926 Cyber Citizen Users



213 Instructors



10 Instructors per

Aligning to & Promoting Standards

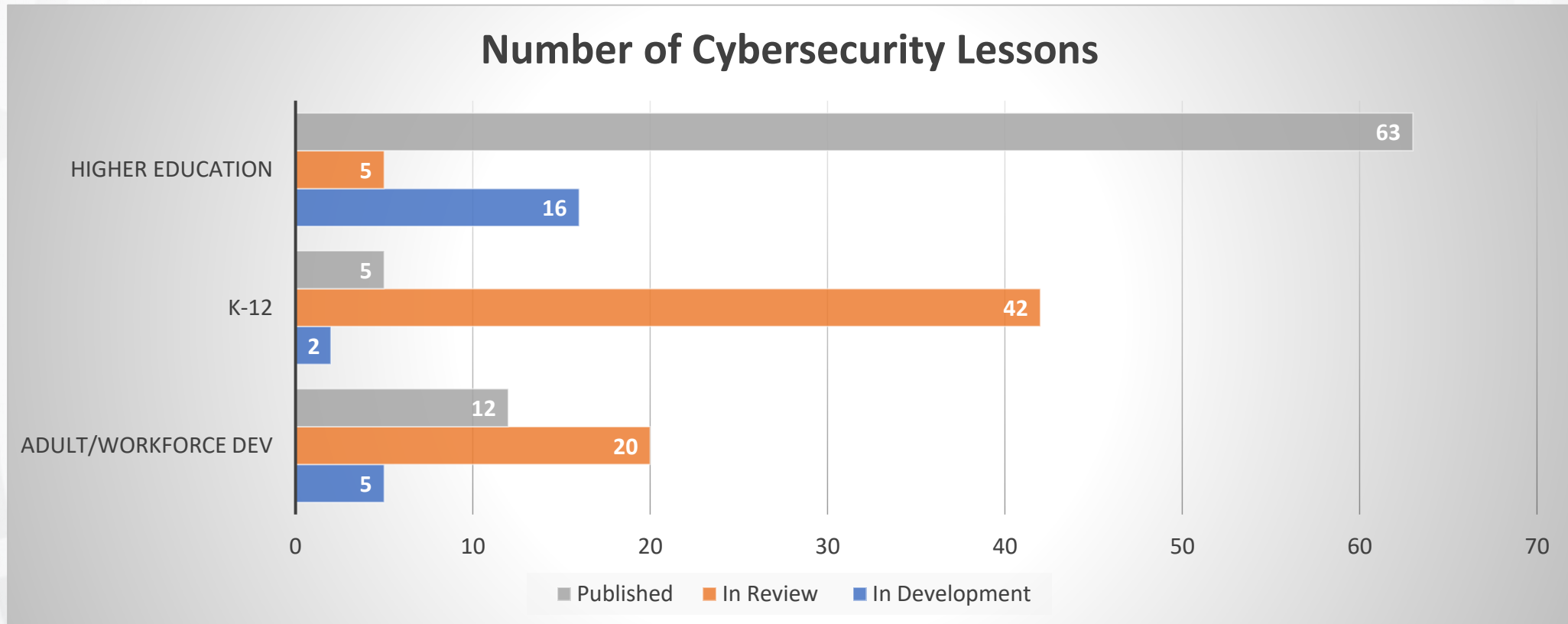


NICE GOALS

Where are We Now?

Education

Educational Content by the Numbers



Teacher Training

GenCyber Teacher Camp

- Funded by the NSA/NSF Partnership
- One-week summer intensives camps with pre-camp and post-camp supports
- **Demonstrated growth** in K12 teachers prepared to teach cybersecurity
- **25** expected in 2022
- **21** in 2021 (from 2020 grant - canceled in 2020)
- **16** in 2019
- **6** in 2018



Early IT Grad Certificate

- 18 credit hour
- Competency based – Summer semester
- Learning groups/mentors
- Curriculum to teach 1st yr BSIT/BSCYBER
- 2nd Yr Fellowship Optional



OCRI– Cyber Exercises

Capture the Flag (CTF)

- 15 Events in 2021-2022

Cybersecurity Contests

- SkillsUSA Ohio State Competition

OpFor vs. Blue w/OH Cyber Reserves

- Pilot Exercise July 14th-17th



Where are We Now?

Workforce
Development



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Industry Recognized Certificate Training

CompTIA Network+ and Security+ Bootcamps

Microsoft Certified Trainer & Certification Classes

- MS Azure Fundamentals
- MS Azure Data Fundamentals
- MS Azure Data Engineering

411 Students Participated in a bootcamp from June 2020-Dec 2021

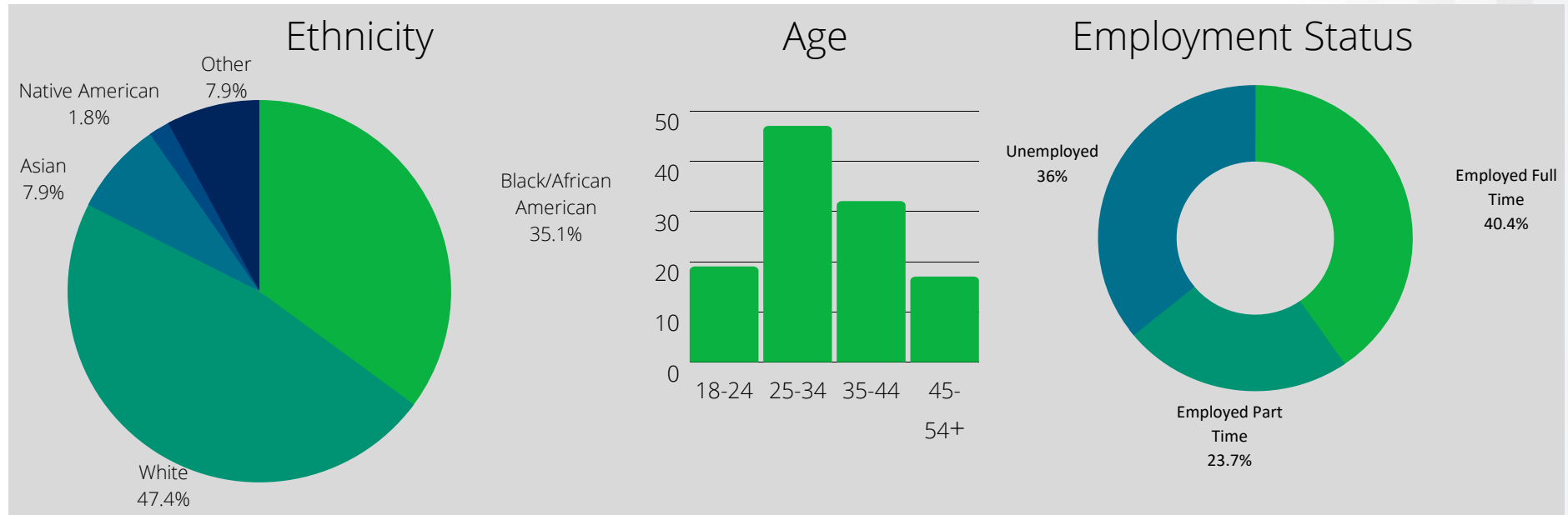
- 5 Bootcamps Fall 2021
- 6 Bootcamps Spring 2022

IRC Bootcamps



144 CompTIA Network+ & Security+ Vouchers Distributed
85 MSFT Azure Vouchers Distributed

CompTIA A+
CompTIA Network+
CompTIA Security+
Azure Fundamentals
Azure Data
Fundamentals
Azure Data Engineer



Co-ops & Internships

Integration with Existing UC Co-op Program

Apprenti Program

Integration with DOL Grant - Workforce Development Career Readiness

OC3 Apprenticeship/Internship Group

Integration with Scholarship for Service grant

Dayton Children's Hospital High School Interns

High School Teacher IT Externships



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Scholarship for Service (SFS) Grant

- **\$4M Federal Grant** 2021-2025
- Funded by the National Science Foundation
- Provides a stipend and scholarship for cybersecurity students with a commitment to work in government positions
- Prepares **30+ scholars** to obtain **government cybersecurity jobs**
 - Federal, State, Local levels
 - No limitation on internships
- Currently have 4 students in Cohort 1, 3 students in Cohort 2, and 1 student from Cohort 1 graduating this semester



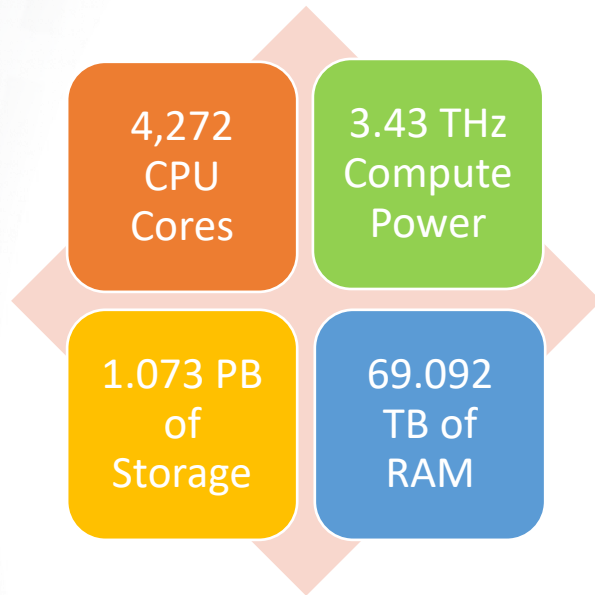
Where are We Now?

Cyber Range
Infrastructure



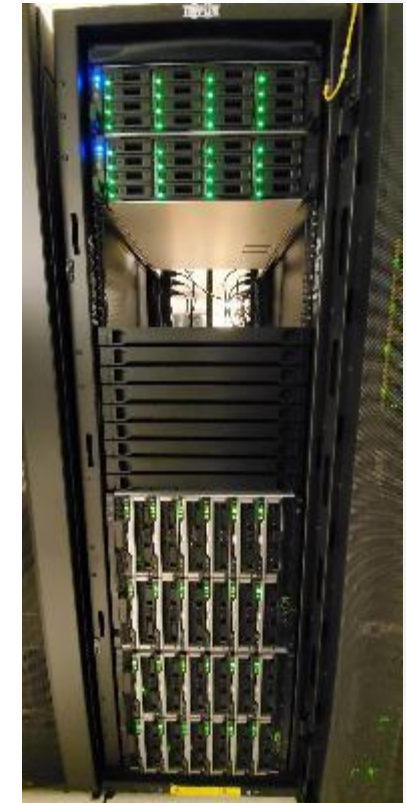
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Ohio Cyber Range



Average Students/semester: 2500-3000

Average Virtual Machines/semester: 4500



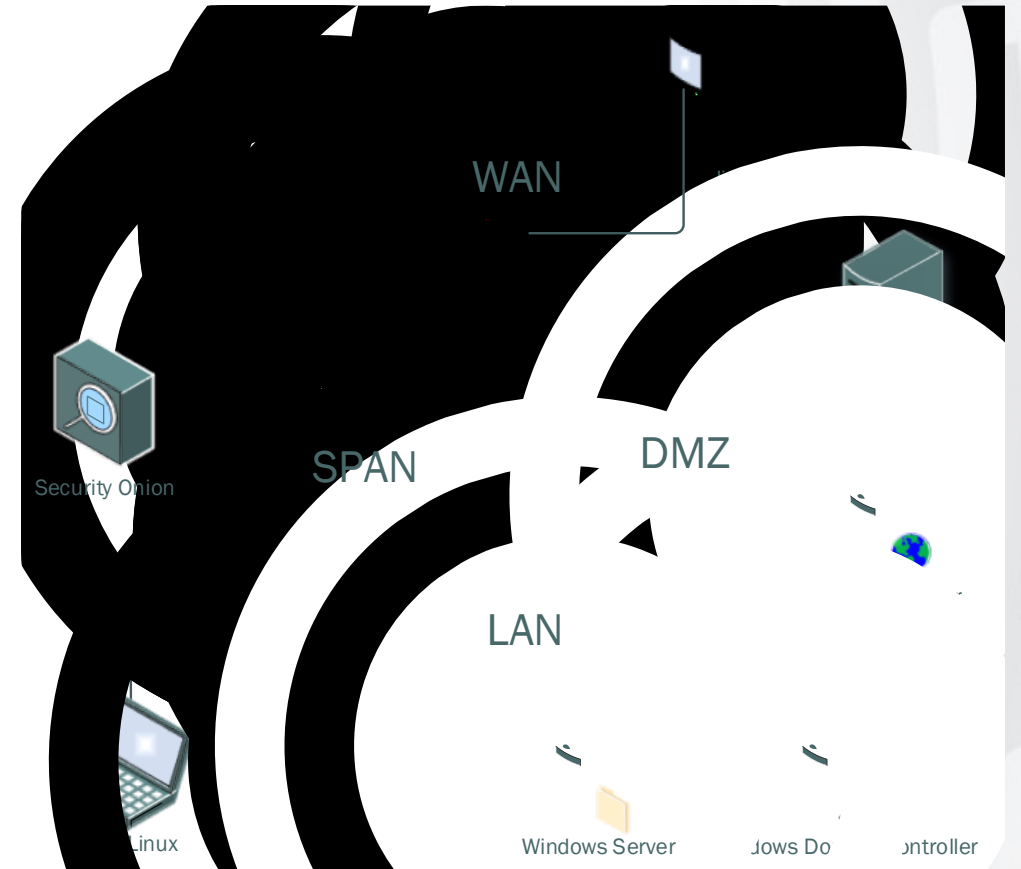
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Virtual Learning Environments

Structured lab environments

Real world examples

Project based learning



OCRI Integrated Ecosystem

State Support



Partners



Regional Programming Centers



Ohio Cyber Range Institute



Ohio Cyber Range



State Support – Executive Committee



Advisory Board/Partners



OCRI ADVISORY BOARD

 MARK BEALES Technical Manager, Global Information Security, The Scott's MiracleGro Company	 MARK BELL OCRI Executive Committee Chair, Cybersecurity Outreach Coordinator, Ohio Adjutant General's Department	 SCOTT BLOUGH Assistant Professor of Criminal Justice & Security Studies, Tiffin University	 DON BOIAN Security Outreach Director, Huntington Bank	 COURTNEY DEORO Sr. Director, Tech Talent, GCP Executive Director, Rite, Greater Cleveland Partnership Rite Board	 ANGELA DUDUIT Director, Career Services and Workforce, Shawnee State University
 BRYAN FITE Global Account Chief, Information Security, BT Global Services	 BRANDON GARDNER Assistant Director, Ohio Homeland Security Public Safety	 TED GRIFFITH Managing Director, Technology, Logistics and Distribution, JobsOhio	 RICHARD HARKNETT Head, Department of Political Science Chair, Center for Cyber Strategy and Policy Co-Director, Ohio Cyber- Range Institute, University of Cincinnati	 DANNY HAYES Information Technology Resource Manager, Cincinnati Insurance Companies	 DAVID HAYNES Manager of Cyber Software from Cincinnati and Beavercreek, Northrop Grumman
 DICK KERR VP, CISO, Eaton Corporation	 RICH KNOLL Principal Aerospace and Defense Analyst, Dayton Development Coalition	 BRIAN LAWHORN Corporate Vice President and Chief Information Officer, The Kroger Co.	 PHILLIP MARCHAL Teacher, Loveland High School	 RYAN MCCLAY Director of Enterprise Technologies, Management Council of Ohio Computer Network (MCOECN)	 GREG MCCLELLAND Cyber Security Instructor Southwestern Career Academy
 BOB PARDEE Senior Security Engineer, Ohio State University	 CHERYL RICE OCRI Advisory Board Chair, Vice Chancellor, Ohio Department of Higher Education	 ERIC RIDDER VP, Data Protection and Insider Threat Management, GE Aviation	 CHARLES SEE Vice Chancellor, Ohio Department of Higher Education	 ANDREW SMITH Deputy Director, Innovate Ohio	 ANUPAM SRIVASTAVA CISO, Department of Administrative Services
 JEFFREY SWEET Director, Security Assessments, AEP	 GARY USLEAMAN Security Architect, RS Global	 JESS WALPOLE VP, Global IT Security and Operations, Lincoln Electric	 MARTIN WHITE Director of Technology, Findlay City Schools	 JOHN WISEMAN Senior Director, Information Security, Wendy's	 CHRIS ZELL Senior Director, Information Security, Wendy's

Ohio Cyber Range Institute

Operational and Administrative Center

Headquartered at the University of Cincinnati

Oversees Core Services Sites at UC and the University of Akron

Collaborates with RPCs, State Agencies, and Partners

Includes Executive Committee, Executive Staff, and Operations Staff

Building the OCRI

Phased
Approach

Phase 1 – Learning

Phase 2 – Pilot

Phase 3 – Operationalize

Phase 4 – Scaling



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Phase 1 – Learning from Others

- Explored what other states and ranges have done
- Partnered with Michigan's Merit Cyber Range
 - CTFs in Ohio
- Determined decentralized, regional model with collaboration



Phase 2 – Pilot

Leveraged existing resources of a University

Mission set focus

- Education
- Workforce Development
- Economic Development

Building the technical infrastructure



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Phase 2 – Outcomes

8 Outcomes

- Technology and Infrastructure
- Cyber Exercises
- Industry Extension
- Best Practice Approach
- Hands-on Labs
- K12 Workforce Dev
- Higher Ed Workforce Dev
- Professional Workforce Dev
- Dissemination

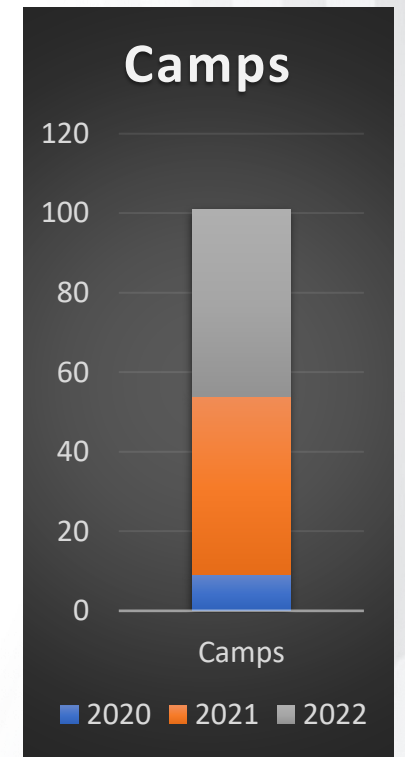
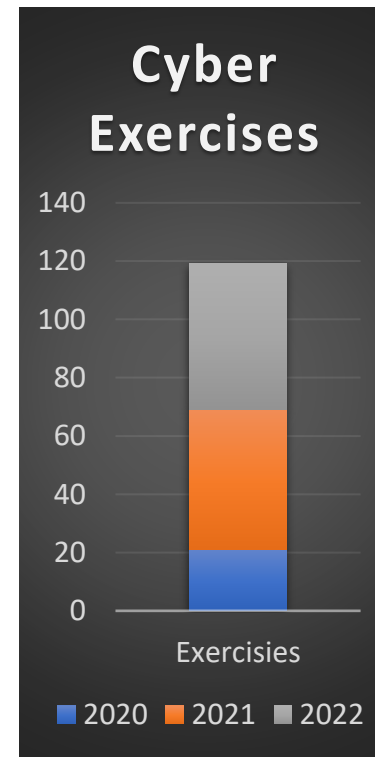
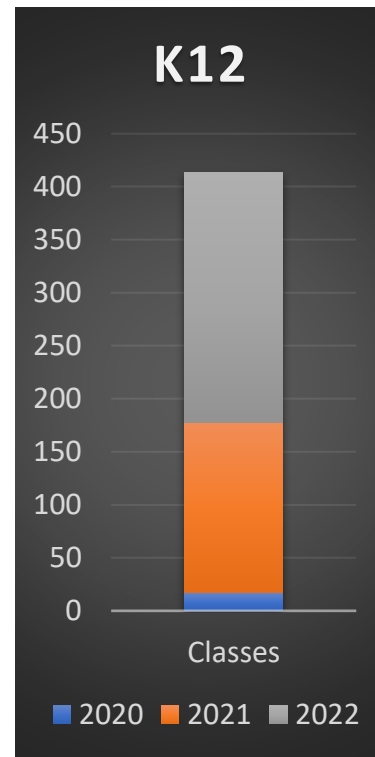
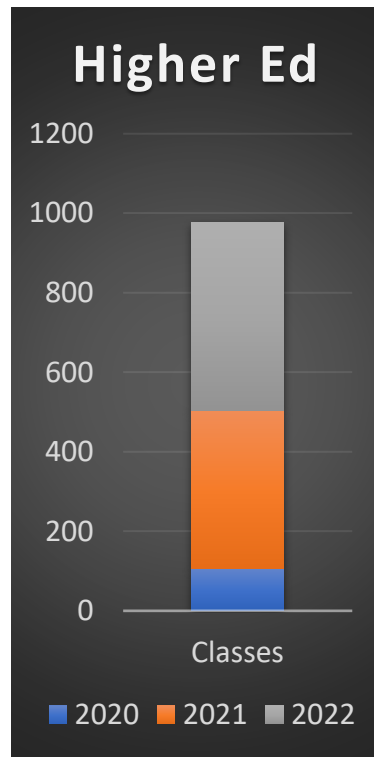
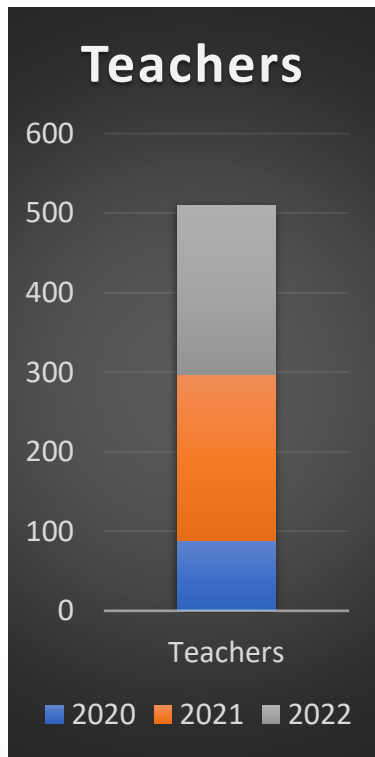
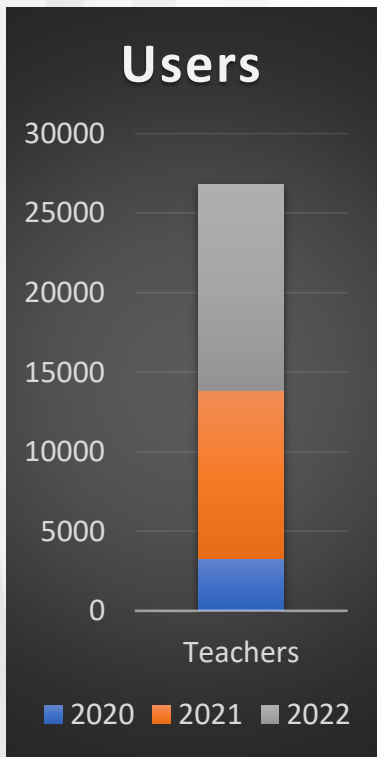
Phase 3 – Operationalize

- Funding-1st Cycle
 - 2 Year Grant
 - Integration with federal and state grants and programs
- Building Partnerships
 - Building the Executive Committee
 - Designating Regional Programing Centers
- Establishing Programs
- Increasing Statewide Participation

Phase 3 – Cutting the Ribbon



Phase 4 – Scale, Grow & Sustain



Phase 4 – Scale, Grow & Sustain

- Developing Processes and Procedures
- Communication & Reporting
- Scheduling Resources
- Line Item in State Budget – Operations & Infrastructure
- Deepening partnerships
- Additional Funding & Alignment of Ecosystem's Efforts

Fourth Annual Cybersecurity Education Symposium Planning Committee

- Sub-committee planning meetings underway between **13 committee members**, with representation from:
 - Cedarville University
 - CinDay Cyber
 - Ohio State University
 - Owens Community College
 - Stark College
 - University of Akron
 - University of Cincinnati
 - University of Dayton
- **Save the Date: October 12th, 2022 at University of Cincinnati**
- Program will include keynote speakers, panel discussion, breakout sessions, CTF exercises, demonstration booths, and RPC highlights
- 12 presentations have been selected for breakout sessions and mainstage activities are in process.

Building a Model for Replication in States

- Building a Center at a University with Statewide Mission
- Integration of Programs & Funding Sources
- Leveraging & Lifting Programs
- Measuring Growth/Reporting Monthly
- Centralize for Cost Savings & Administration & Decentralize for Regional Needs and Leverage Existing Expertise & Successes

THANK YOU!

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OhioCyberRangeInstitute.org



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Breaking Bread: A Recipe for Standing Up an Entry-Level Cyber Talent Program

Clarence Williams

Senior Advisor, Cyber Workforce Management
Department of Veterans Affairs

Sarah Scholl

Cyber Talent Associate
Booz Allen Hamilton

Sharon McPherson

Senior Cybersecurity Specialist, Cyber Workforce
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Matthew Isnor

Chief, Cyber Workforce Development Branch
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BREAKING BREAD: YOUR RECIPE FOR AN ENTRY LEVEL CYBER TALENT PROGRAM

Moderated by Sharon McPherson
Senior Cybersecurity Specialist
VA Cyber Workforce Management

Clarence Williams
Senior Advisor
VA Cyber Workforce Management

Sarah Scholl
Cyber Talent Associate
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Department of Defense, CIO

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Cyber Defense Education & Training
Cybersecurity & Infrastructure Security Agency

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June 7, 2022

VA



U.S. Department of Veterans Affairs
Office of Information and Technology



Recipe for Entry Level Cyber Talent Development Program

You will need:

1 or more Senior/Executive Champion

Heap of talented candidates

Bunch of audience-specific resources

Steps:

1. **Prepare** your **champion**, you'll have to **engage** them throughout
2. **Choose** a target **candidate** pool and make sure they can – and want to – access your program
3. **Consider** the **people** involved in implementing, the **role** they'll play, and the **resources** they may need to play that role

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QUESTIONS?

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Birds of a Feather – K12 Cybersecurity Education

Thomas Trevethan

Cybersecurity Academy Curriculum Manager
and Senior Technical Trainer
Palo Alto Networks

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Investigating Disparities in K-12 Cybersecurity Education: Case Study and Approaches

Johanna Jacob

Graduate Teaching Assistant

University of Texas at San Antonio



Investigating Disparities in K-12 Cybersecurity Education: Case Study and Approaches

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University of Texas at San Antonio



Presentation Breakdown

Introduction

Case Study: CyberPatriot

Preliminary Data Analysis and
Results from Survey

Key Observation and Indicators

Approaches to Increasing Diversity

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