SYSTEMS-BUILDING

Redefining Apprenticeship in a modern Economy

NSA – NATIONAL CYBERSECURITY EDUCATION COLLOQUIUM – SEPTEMBER 20TH, 2023

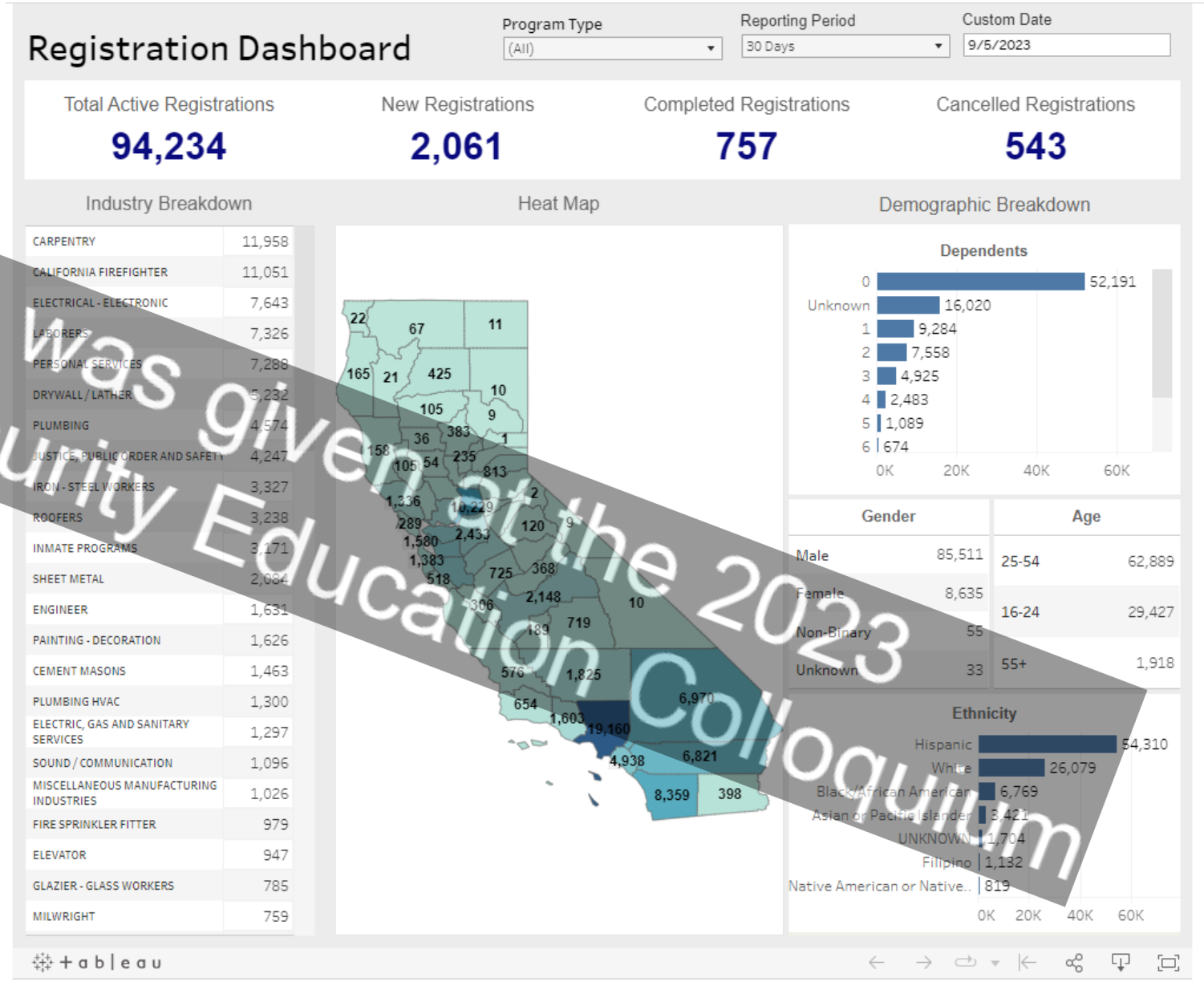
APPRENTICESHIP
THE GOLD STANDARD

This presentation was given at the 2023 National Cybersecurity Education Colloquium

WHY WORKFORCE & EDUCATION PROFESSIONALS CARE:

- **95,000 Californians rely on apprenticeship as a BRIDGE TO MIDDLE CLASS**
  - California leads the nation in apprenticeship training

- Apprenticeships = Jobs
  - Apprentices make
    - **$300k+** over career
    - **Zero** educational debt
    - Businesses more competitive



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LAUNCH

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CENTER FOR APPRENTICESHIP & WORK-BASED LEARNING

THE BIG IDEA

First, we will develop transformation maps for every cluster, industry and region of our state to make sure we're preparing folks for the jobs that actually exist. Working with UC, CSU and most substantively the community colleges, we will overlay industry trends, job availability, and educational data, and then develop relevant curriculum to meet those workforce and skills needs. **We'll also nurture regional and cluster-based collaborations partnering industry, our academic institutions and communities to innovate new ideas and spur economic growth throughout the state.**

Second, we will establish 500,000 earn-and-learn apprenticeships by 2029, creating a new vocational pipeline of high-skill workers. In an increasingly global world, apprenticeships provide the education and training necessary to prepare Californians for the jobs of today and tomorrow.

LAUNCH

WHY THE NEED FOR AN INITIATIVE…

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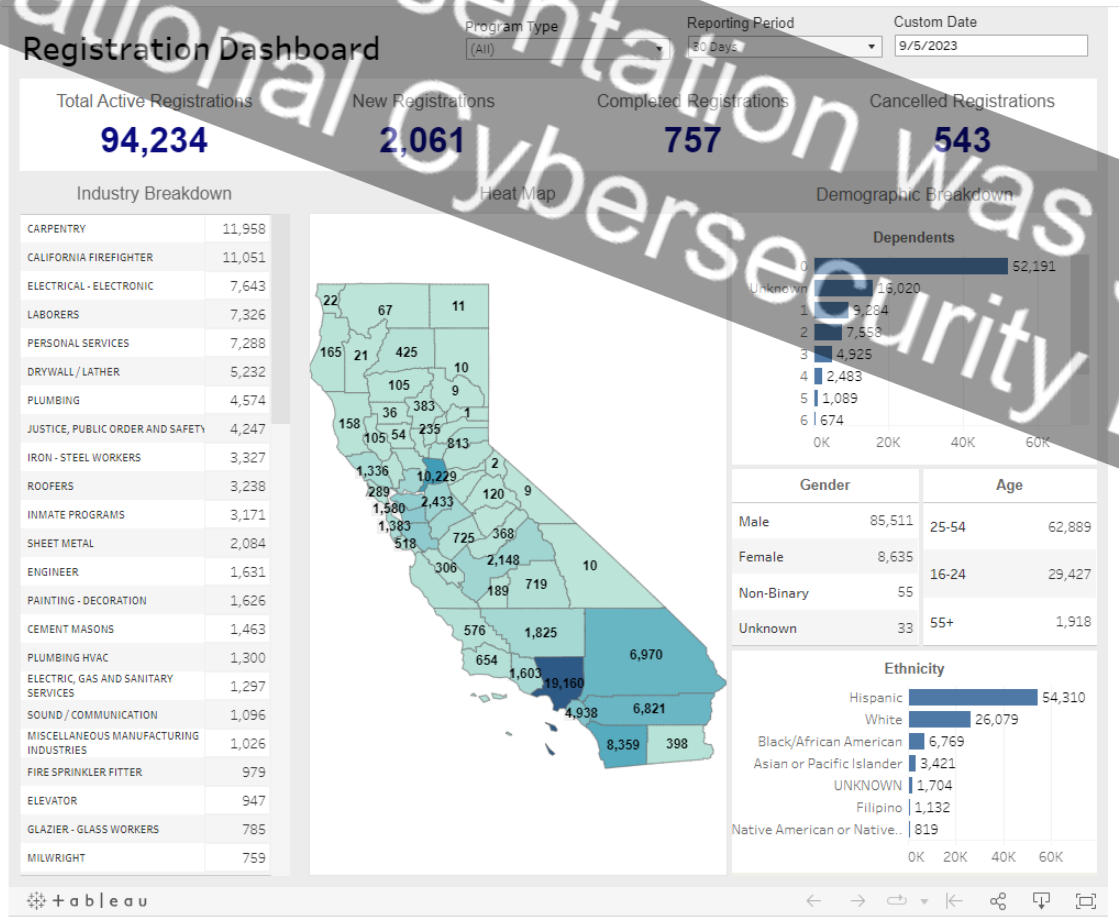

BY THE NUMBERS

- Only **one quarter** of apprenticeship opportunities exist outside of building trades occupations
- Only **9%** of apprentices are women (majority in lower-paying apprenticeships)
- The average starting age of an apprentice is approximately **30 years old**

  (Note: Over **2/3s** of the **400,000** high school graduates in California were identified as socioeconomically disadvantaged, and only **1/3** Californians likely to attain a bachelor's degree)
- **Limited number of** registered apprentices receive higher-education credit locally for their apprenticeship despite completing hundreds of hours annually of high-level education and training

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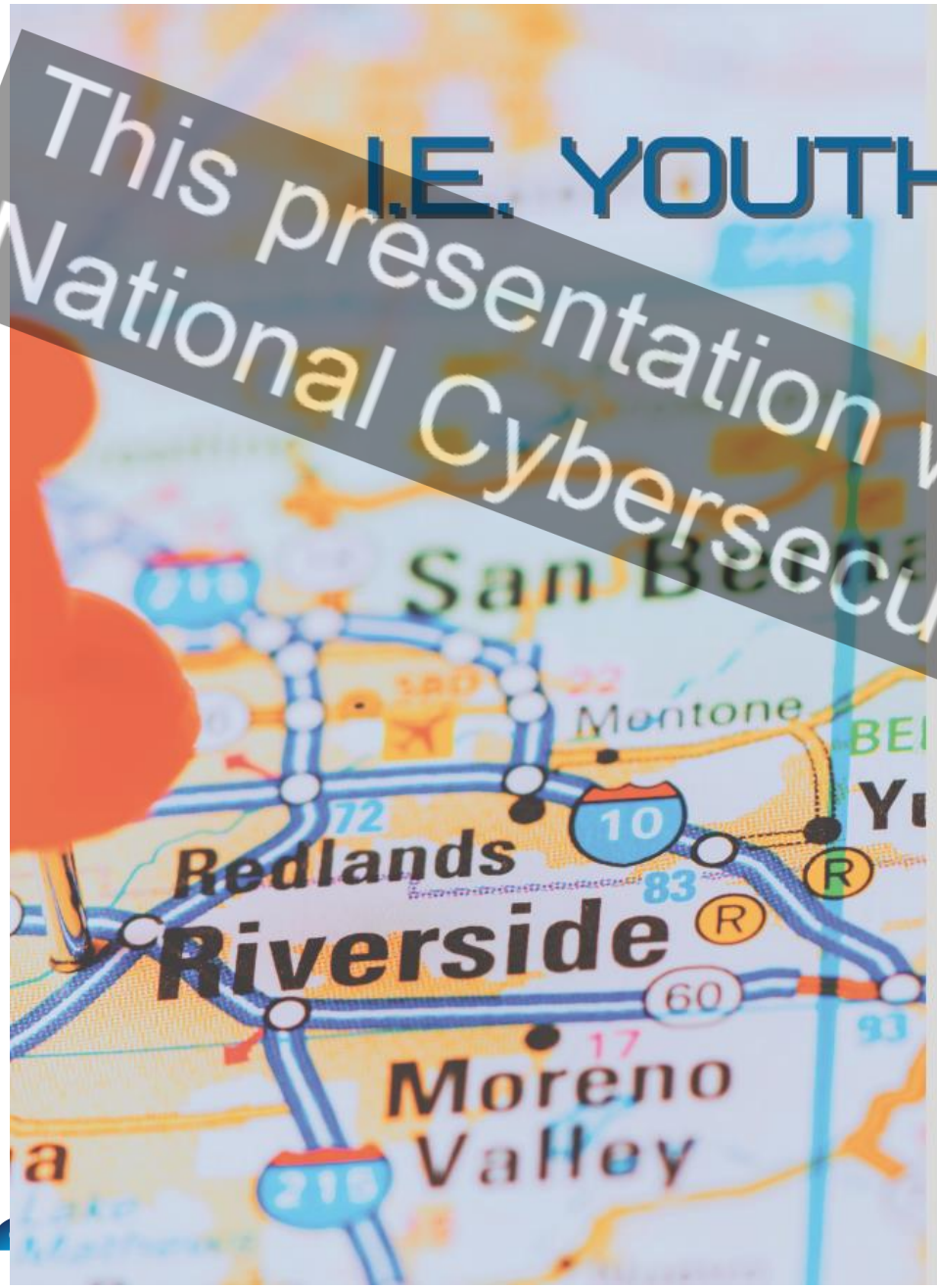
I.E. YOUTH PAYING THE PRICE



14%
83,000

OF THE TOTAL YOUTH POPULATION ARE **DISCONNECTED** - ARE NOT IN SCHOOL OR HAVE A JOB

77%

OF RESIDENTS OVER 25 **DO NOT HAVE A 4-YEAR DEGREE**

$36,406

THE AVERAGE BALANCE OF **STUDENT DEBT** WITH **40%** OF BORROWERS LEAVING COLLEGE BEFORE OBTAINING A DEGREE

REDEFINING THE APPRENTICESHIP FOR A MODERN ECONOMY

From Programs to Apprentice-Centered Systems

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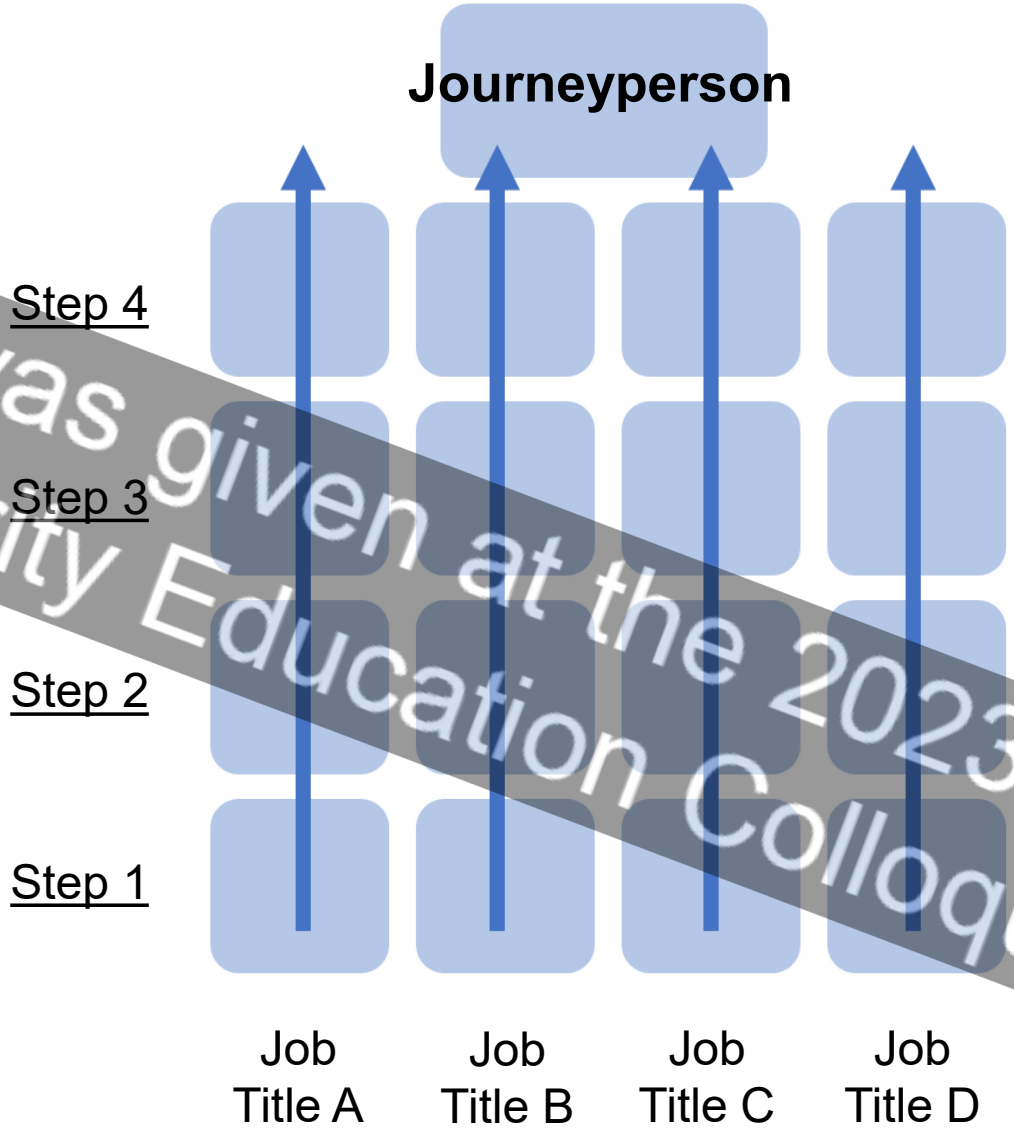
(Old) Occupation-Centered

Apprentices: Individuals enrolled in narrowly-scoped training programs with rigid occupational boundaries.

Apprenticeship Programs: One-size-fits-all on-the-job training and related education pathways reliant on prevailing wage labor configurations.



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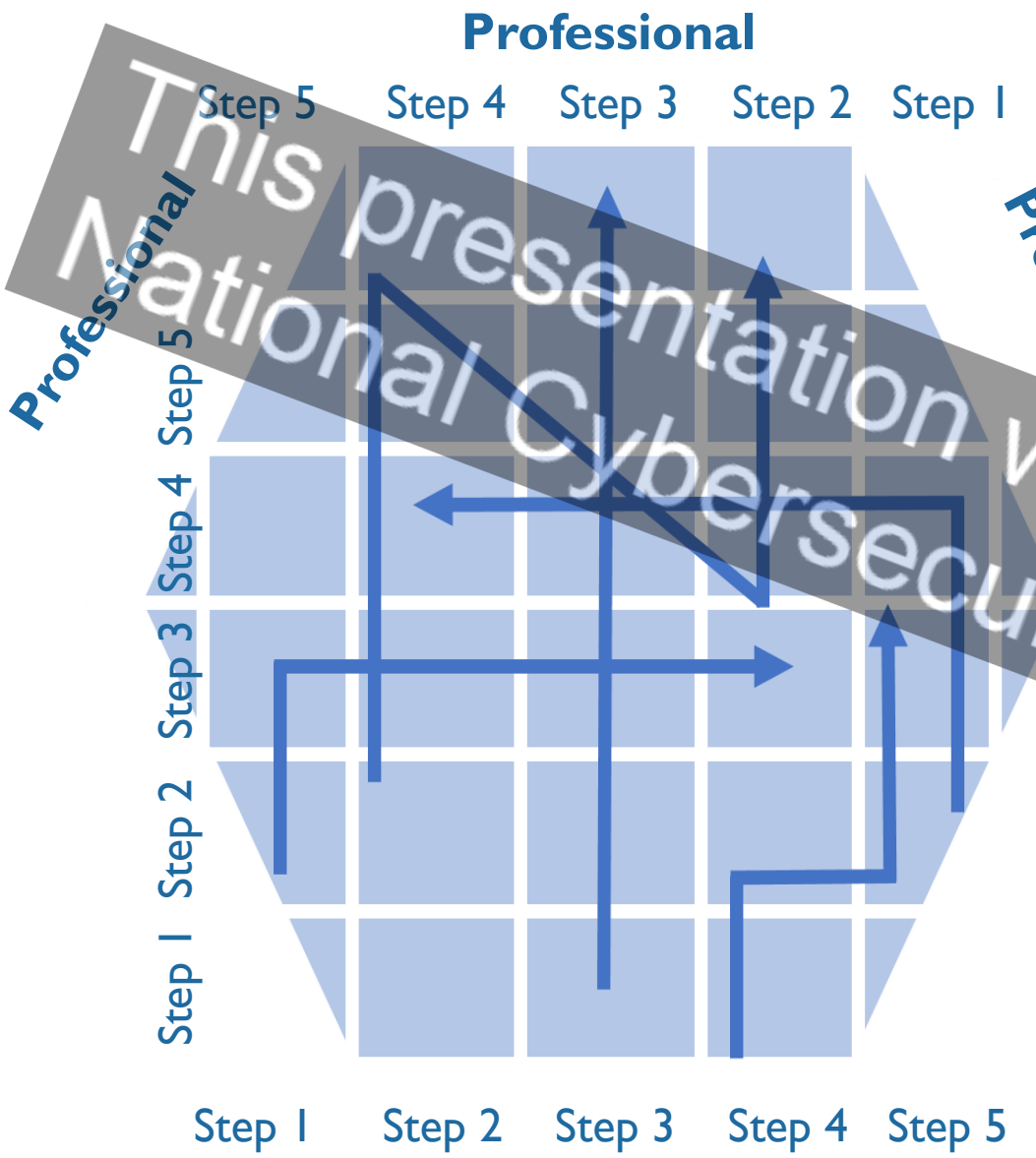

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(NEW) **APPRENTICE-CENTERED**

- **Apprentices:** Individuals enrolled in comprehensive and individualized programs of training and development that leverage work-based learning, life experiences, and education, and multiplies options for later career advancement.
- **Apprenticeship Programs:** Organizations managing partnerships among businesses and education institutions that provide meaningful paid work-based learning opportunities, academic credentials for competency attainment, and career progression pathways.

APPRENTICES LEVERAGE LIFE AND WORK EXPERIENCE

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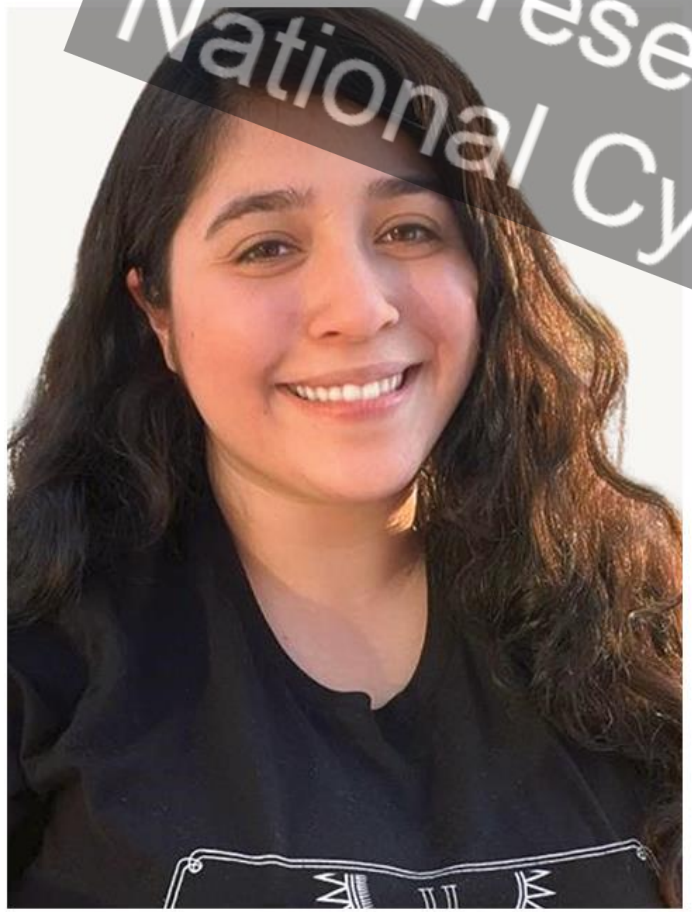

CYNTHIA ROMAN

WHY DO YOU WANT TO WORK IN THIS INDUSTRY?

When I first got into this industry, I thought it only focused on hacking or IT Operations. Reviewing the NIST Frameworks and the fifty-two work roles opened the doors to many possibilities. Furthermore, doing research for a NASA Academy I was a part of introduced me to concepts involving interplanetary internet and delay-tolerant networking. This amazed me because NASA is seen as an aerospace company, but how else can an astronaut be able to connect with us back on earth, with satellites, and that is in the realm of networking. This industry excites me because I can better understand how we are connected and collect data to analyze on establishing efficient solutions to make our lives easier and safer from threat actors.

WHAT IS YOUR MOTIVATION?

Bein able to attain an apprenticeship will provide me with the foundation to build my cyber skills to inform and protect people from harmful social engineering attacks that can cost people millions and their well-being. I remember when my grandfather was scammed for $1,400 through a phone call and the devastating toll it took on my grandparents. I was twelve years old and clueless about what had happened to them, but I knew I never wanted them to feel that despair again.

KEY SKILLS & CHARACTERISTICS

- CSUSB Cybersecurity Pre-apprenticeship Program
- Completed an introductory course to hardware essentials, information security, networking fundamentals, and database theory
- Currently studying for CompTIA A+ certification before it expires
- Built an Onshape, NX, Python, and Raspberry Pi project.
- Completed an internship that focused on STEM concepts.

APPRENTICE INFO

- **Apprenticeship Status:** Active Apprentice
- **Industry Sector:** Information Technology

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Provide soft skills education for apprentices

Educate middle and high school students about apprenticeships

Identify locally in-demand occupations ripe for apprenticeships

Provide or connect apprentices with young kids to childcare services

Evaluate apprenticeship curricula and report quality metrics to DoL

American Apprenticeship Institutes

Recruit employers to start new apprenticeship programs

Guide employers through apprenticeship program design and registration

Provide apprentices with career counseling, mentorship, and tutoring

Match new workers and transitioning workers with apprenticeships

Connect employers with local colleges to provide classroom instruction

Modern Apprenticeship Institutes

Credit Third Way national think tank

INLAND EMPIRE CYBERSECURITY INITIATIVE – APPRENTICESHIP COMMITTEE

- Industry-Led and Apprentice-centered
  - The schools provide the administrative services to register and operate the apprenticeship program.
  - Industry partners provide work-based learning experiences for apprentices through employment and targeted upskilling.
  - The schools provide the related education component.

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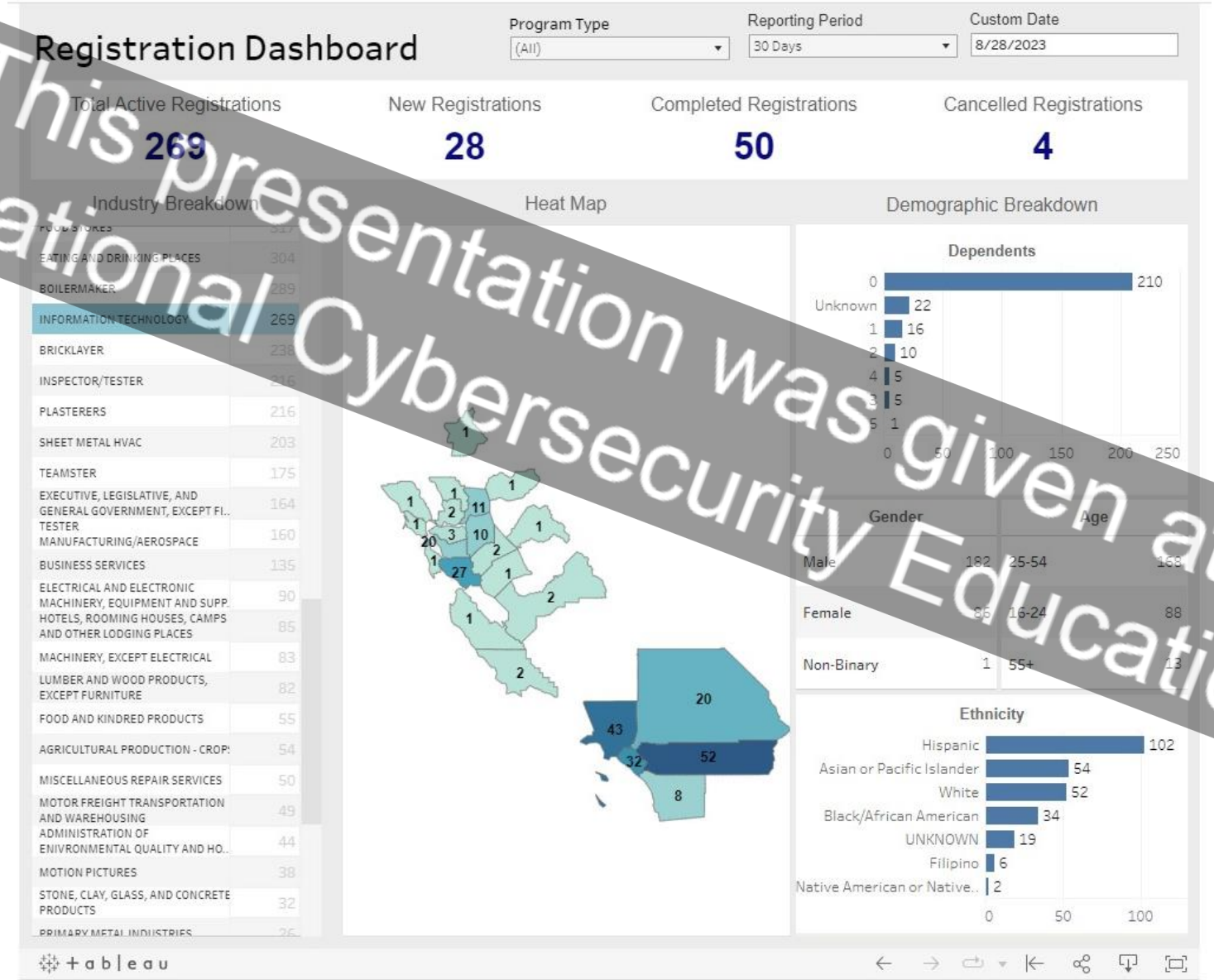

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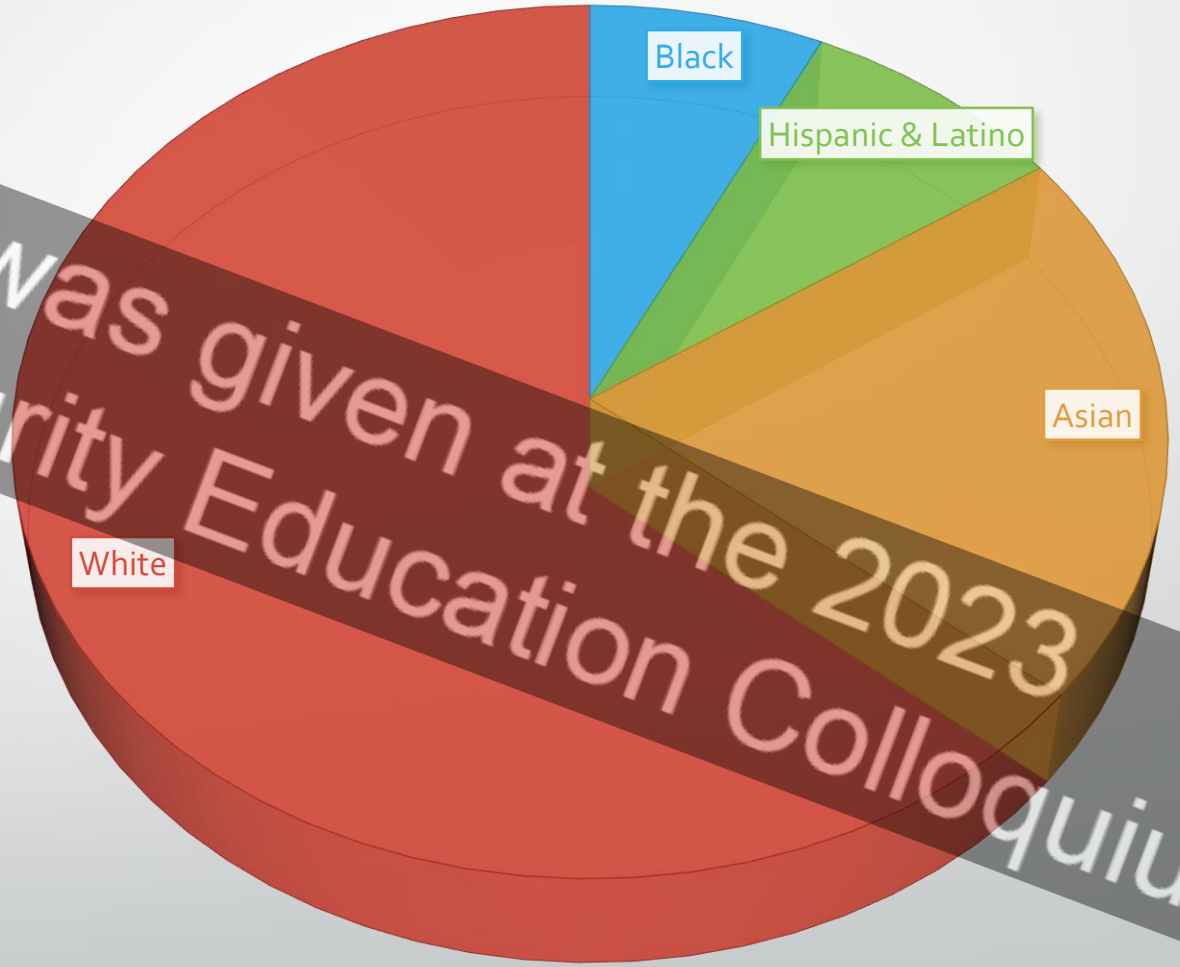
AIMING FOR ECONOMIC IMPACT

Inland Empire

- Greatest number of Cybersecurity Apprentices in state of California
- Earn-and-Learn Pathways starting is HS through Bachelor's and advanced degrees

Serving Industry and Serving Residents

- Publicly supported programs must be publicly accessible
- Industries need help diversifying talent



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Serving Industry and Serving Residents

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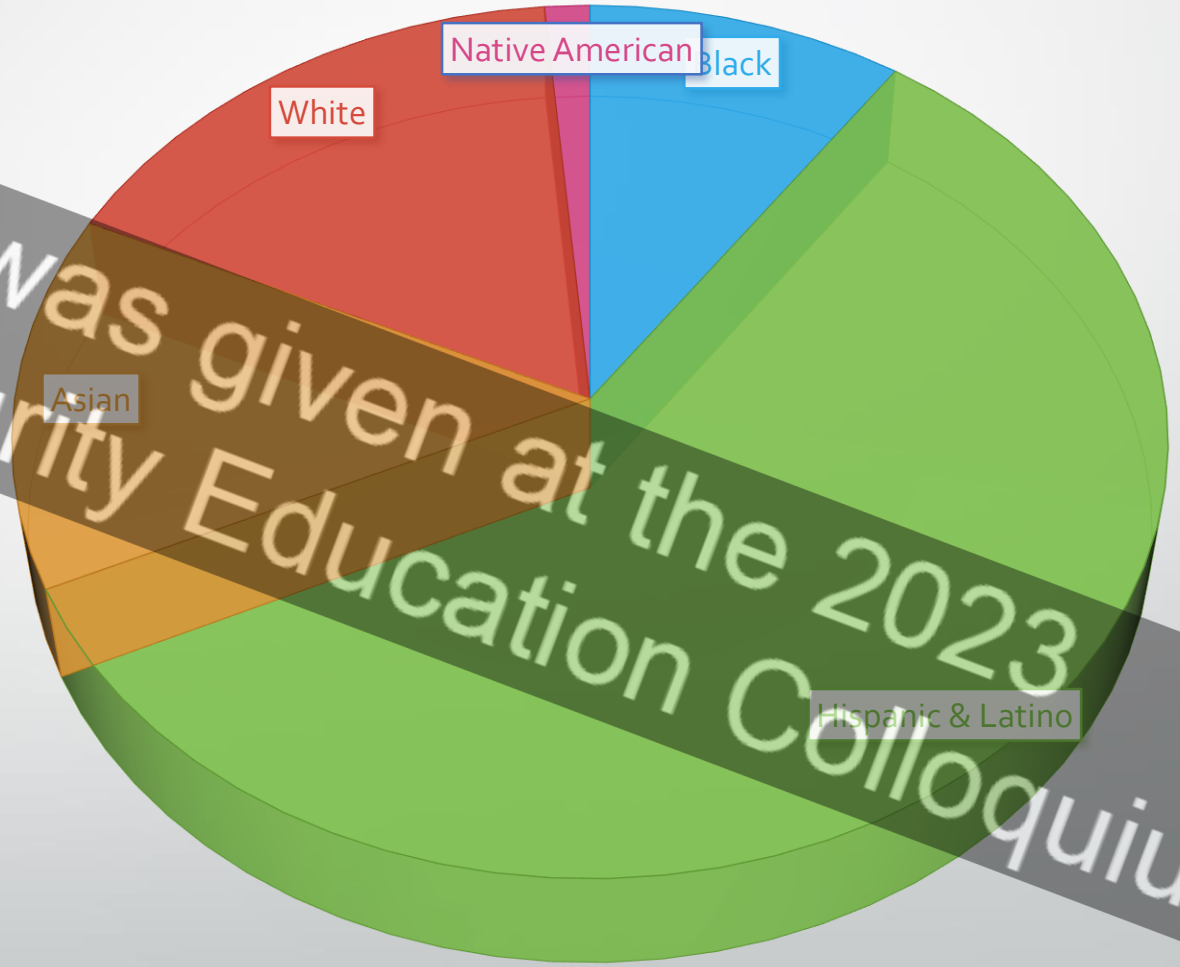
INLAND EMPIRE IT/CYBER APPRENTICES



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QUESTIONS, THOUGHTS & FEEDBACK

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scan me

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