

# Illuminating “Pathways to Prosperity” for ALL Learners: Broadening our Lenses

Friday, August 2, 2013

Innovative Learning Environments Conference

Keynote

Ben Williams, Ph.D.

Coordinator, Special Projects

Ohio STEM Equity Pipeline Project Director

Columbus State Community College

# Objectives

- **Expand the lenses through which we as educators look at higher education and career pathways**
- **Provide recent data that you can share with your colleagues and stakeholders**
- **Provide relevant information and tools to maximize the success of all students**

# Illuminating pathways for all learners

## Engage

- By creating an environment in which students can be active learners
- By helping students to see what is relevant to their future

## Enable

- By providing current information and tools
- By helping students and their families understand how to access and use those tools

## Empower

- By creating an environment in which all students can thrive
- By making pathways transparent and accessible

# Assumptions

- We all want our students to succeed
- We want to equip our students with up-to-date information about careers and pathways to those careers
- We want to educate and enlist the support of our students' parents
- We naturally look at the world through a lens shaped by our experiences
- That world is constantly changing...

# The U.S. Economy will grow from 140 million to 165 million jobs by 2020:

- 55 million job openings in the economy through 2020
  - 24 million new jobs
  - 31 million openings due to baby boomer retirements

Source: Carnevale, A.P.; Smith, N.; & Strohl, J. (2013). Recovery: Job growth and education requirements through 2020. *Georgetown Public Policy Institute*. Georgetown Center on Education and the Workforce. <http://cew.georgetown.edu/recovery2020/>

# Opportunities across post-secondary pathways

**For the next 55 million job openings (until 2020):**

- **35% will require at least a bachelor's**
- **30% will require some college or an associate's**
- **36% will not require education beyond high school**

**Note: The US will fall short by 5,000,000 workers with post-secondary education – at the current production rate**

Source: Carnevale, A.P.; Smith, N.; & Strohl, J. (2013). Recovery: Job growth and education requirements through 2020. *Georgetown Public Policy Institute*. Georgetown Center on Education and the Workforce.

40% of jobs leading to “middle class” incomes require up to and through an associates degree

“There are 29 million ‘middle jobs’...that pay \$35,000 or more on average and don’t require a Bachelor’s degree.”

# Why are we failing to prepare so many youth?

- **Our focus has been too narrow (“one road to heaven” approach)**
- **The transition to adulthood has changed**
- **We need a broader more holistic system of “Pathways to Prosperity”**

Source: Symonds, W.C.; Schwartz, R.B.; & Ferguson, R. (2011). Pathways to Prosperity: Meeting the Challenge of Preparing Young Americans for the 21st Century. *Report issued by the Pathways to Prosperity Project*, Harvard Graduate School of Education.





“ ‘College for All’ needs to be broadened to mean meaningful post-high school credential for all.”  
(William Symonds, NCPN Conference, 10/14/11 )

- **Community colleges**
- **Apprenticeships**
- **The military/community service**
- **Four year college**

# Multiple Pathways into college

## **Traditional 4-year Pathway:**

“Straight on to a bachelors”

- Can take general courses (up to first two years) at CSCC or other community college
- Transfer to 4-year college for major coursework at junior level
- More “traditional” classroom learning, although on-line and other media also available

## **Career & Technical**

**Pathway:** “Work at the certificate or associates degree level with option for a bachelors down the road”

- Stackable certificates
- Articulated technical credits from secondary and adult programs
- Technical training for employment
- More “hands on” learning
- Many options for bachelors degree completion

# Traditional Transfer Model in Ohio

- House Bill 95 – Transfer and articulation
- Ohio Transfer to Degree Guarantee
  - [www.transfercredit.ohio.gov](http://www.transfercredit.ohio.gov)
- The Course Applicability System/U-Select/Transferology ([www.transfer.org](http://www.transfer.org))
- The University System of Ohio ([www.ohiohighered.org](http://www.ohiohighered.org))
- Guiding principles
  - Seamless transfer
  - Treating “transfer as native”
  - Eliminating repetition and duplication of courses
  - A “win-win-win-win” (student-institution-state-taxpayer)
  - 43,471 students in 2012; \$46.1 Million in savings

# What is Career and Technical Education (CTE)?

Today's CTE provides students:

- Academic subject matter taught with relevance to the real world
- Employability skills, from job-related skills to workplace ethics
- Career pathways that link secondary and postsecondary education (“**college readiness**”)
- Education for additional training and degrees, especially related to workplace training, skills upgrades and career advancement

# What is CTE Today?

(from [www.acte.org](http://www.acte.org))

- Average high school graduation rate for CTE students is 90.18% compared to ave. of 74.9%
- A person with a CTE-related associate or credential will earn on ave. between \$4,000-\$19,000 more than a person with a humanities associate
- 27 percent of people with less than an associate degree, including licenses and certificates, earn more than the average bachelor recipient

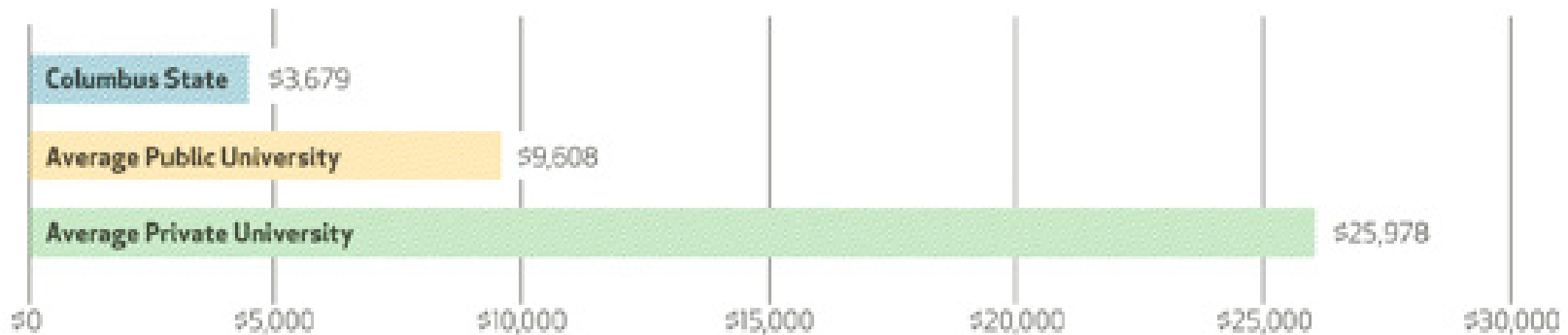
# How about in Central Ohio?

[www.ohiomeanssuccess.org](http://www.ohiomeanssuccess.org)

- Tech Prep students get exposure to specific career pathways in high school, along with beginning credentials
- Tech Prep completers can qualify for
  - College credit in their career pathway
  - Significant scholarships to attend Columbus State
  - Entry level jobs in some career fields
  - [www.csc.edu/techprep](http://www.csc.edu/techprep)
- Cost of Columbus State
  - Approximately \$3,600 per year for tuition, plus books
  - \$1,500 can be covered a year by one scholarship alone
  - In some cases, students can have almost a semester of college work completed when they start

# Cost comparison

## Annual College Tuition and Fees in Ohio



From the Columbus State Community College website – <http://www.csc.edu/about/news-press/2013/debt-free-degree.shtml>



# The Five Ways that pay along the way to the BA

- Certificates
- Employer-based Training
- Industry-based Certifications
- Apprenticeships
- Associate's Degrees

From Carnevale, A.P.; Jayasundera, T.; & Hanson, A.R. (2012). *Career and Technical Education: Five Ways that Pay Along the Way to the B.A.* Georgetown University Center on Education and the Workforce.

# Fastest growing occupational clusters

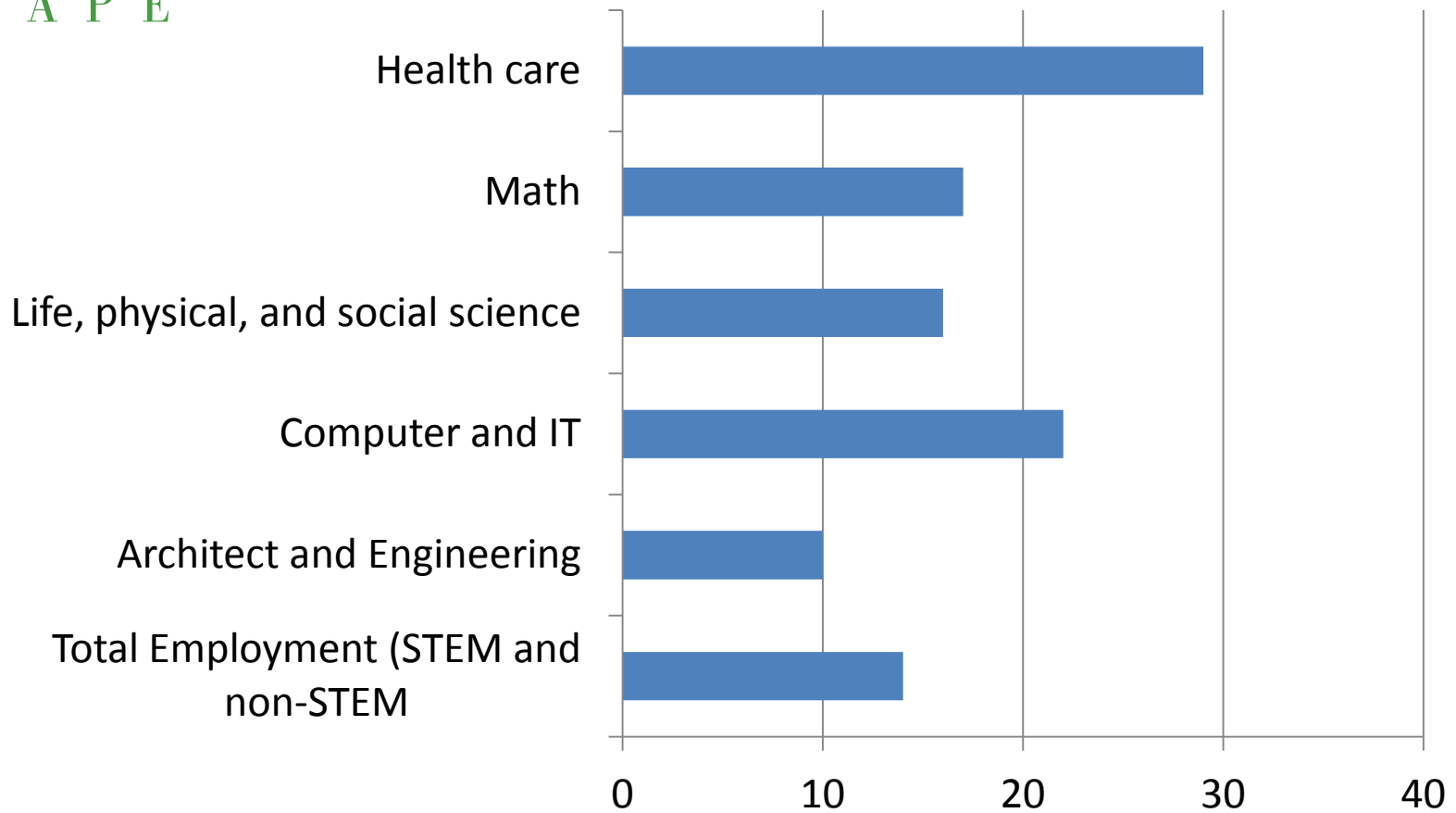
- **Healthcare**
  - **Make up 8 of the 20 fastest growing occupations ([www.acte.org](http://www.acte.org))**
- **Community services**
- **STEM (Science, Technology, Engineering, and Math)**

From “Executive Summary” - Carnevale, A.P.; Smith, N.; & Strohl, J. (2013). Recovery: Job growth and education requirements through 2020. *Georgetown Public Policy Institute*. Georgetown Center on Education and the Workforce.



NAPE

## Projected Growth in Employment in Selected STEM Occupations, 2010-2020



Source: Bureau of Labor Statistics. Chart 5. *Occupational Outlook Handbook, 2011-12 Edition.*

NAPEEF ©  
NAPEEF ©

People with lower levels of education in STEM make more than people with higher levels of education in non-STEM.

- 63 percent of Associate's degrees in STEM earn more than Bachelor's degrees in non-STEM occupations.
- 65 percent and 47 percent of Bachelor's degrees in STEM earn more than Master's degrees and Ph.D. in non-STEM respectively.
- Certificate holders in engineering earn more than Associate's degree-holders in business and more than Bachelor's degree-holders in education.
- **Equity:** For women and racial minorities, STEM is the best equal opportunity employer.
  - Although pay gaps exist between minorities and Whites/Asians and women and men in STEM, they are smaller than in other occupations.



# Defining STEM

- Science, Technology, Engineering and Math
- Agriculture, Food and Natural Resources
- Health Science
- Information Technology
- Manufacturing
- Transportation, Distribution and Logistics
- Architecture and Construction

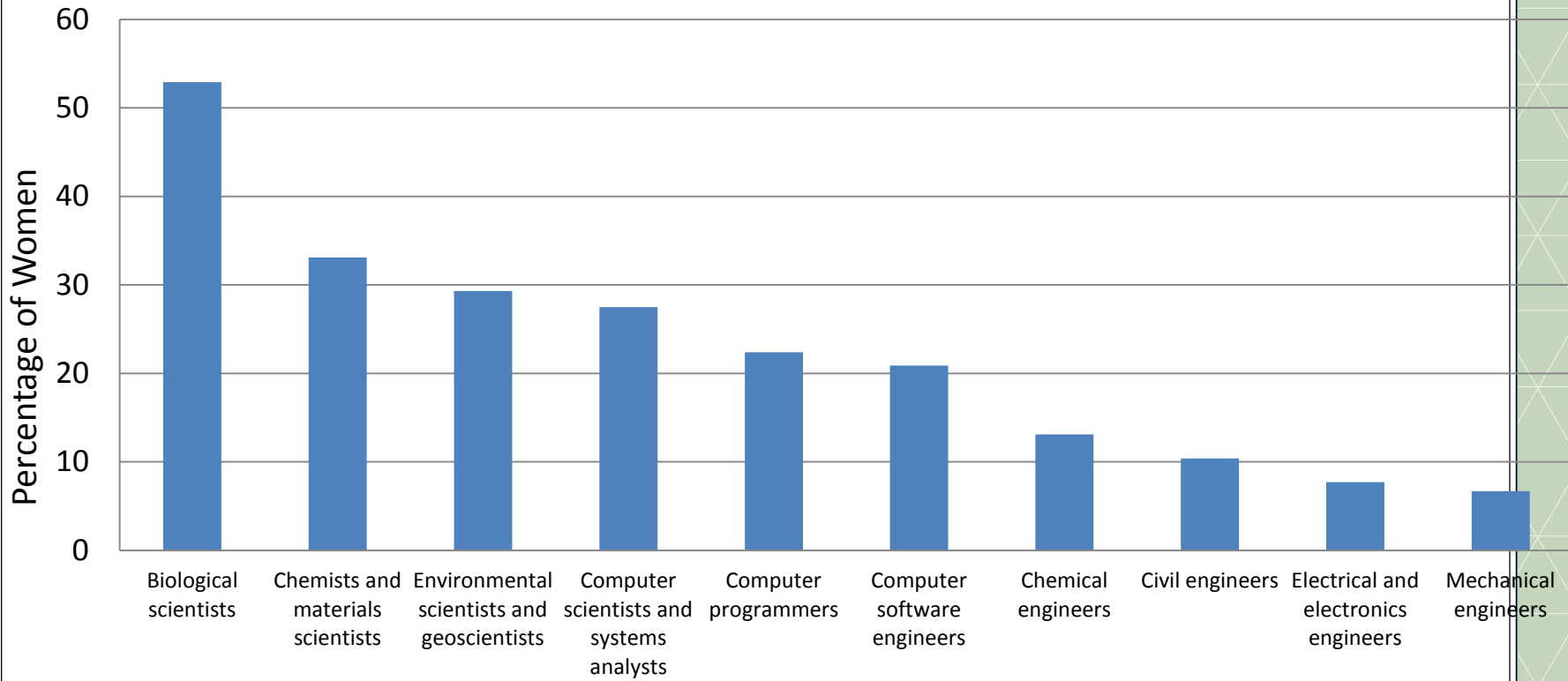
US Dept. of Ed., Office of Vocational and Adult Education STEM Transitions Project –

[www.stemtransitions.org](http://www.stemtransitions.org)



# Gendered Participation in the STEM Workforce at the End of the Core Academic STEM Pipeline

Percentage of Employed STEM Professionals Who Are Women, Selected Professions, 2008



Source: U.S. Department of Labor, Bureau of Labor Statistics, 2009, *Women in the labor force: A databook* (Report 1018) (Washington, DC), Table 11.

NAPEEF ©



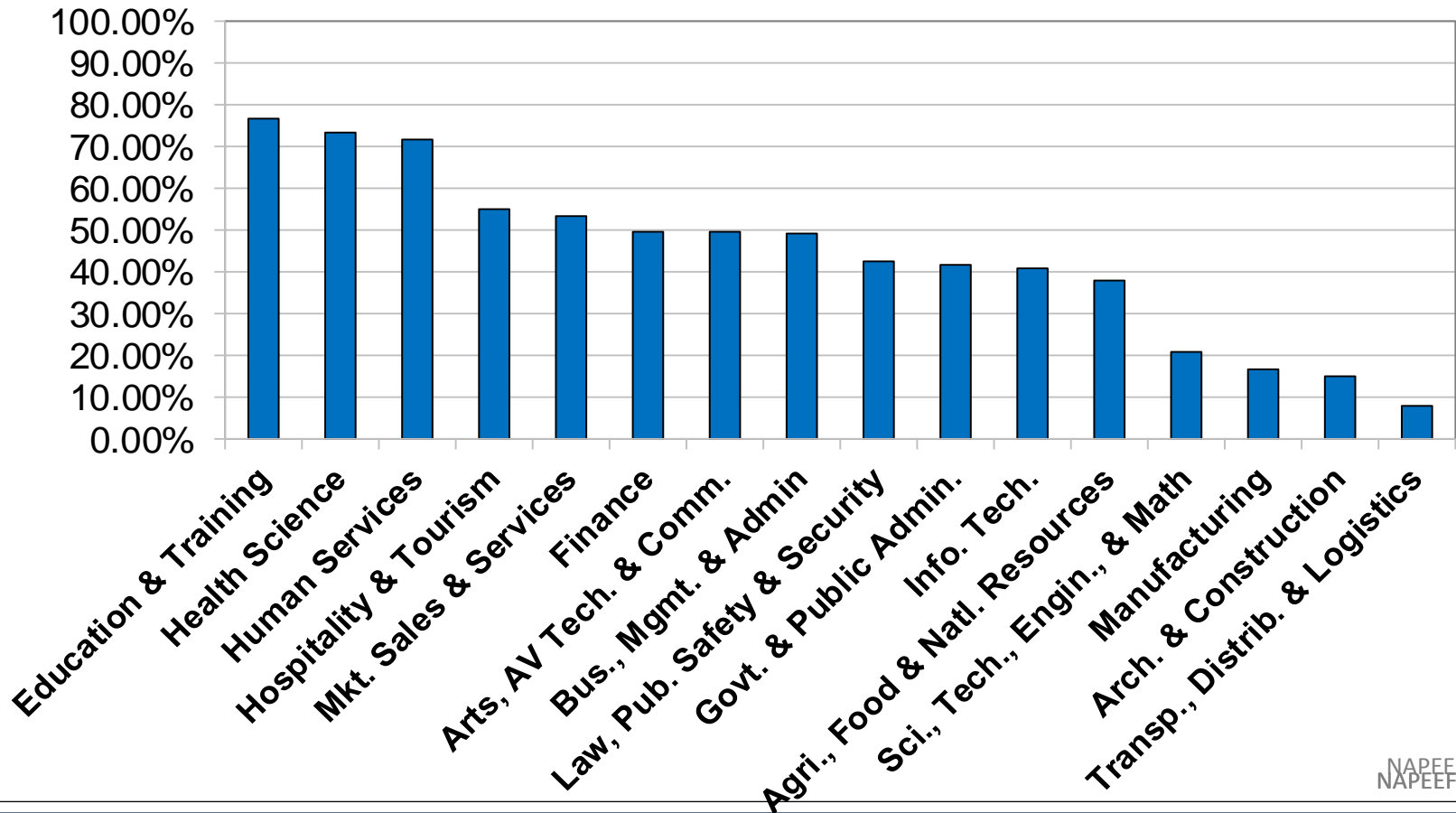
# Can you Define?

- Nontraditional Fields
- [Occupational] Gender (or sex) Segregation
- Under-represented



NAPEE

# Female Participation in Secondary Career and Technical Education 2009-10

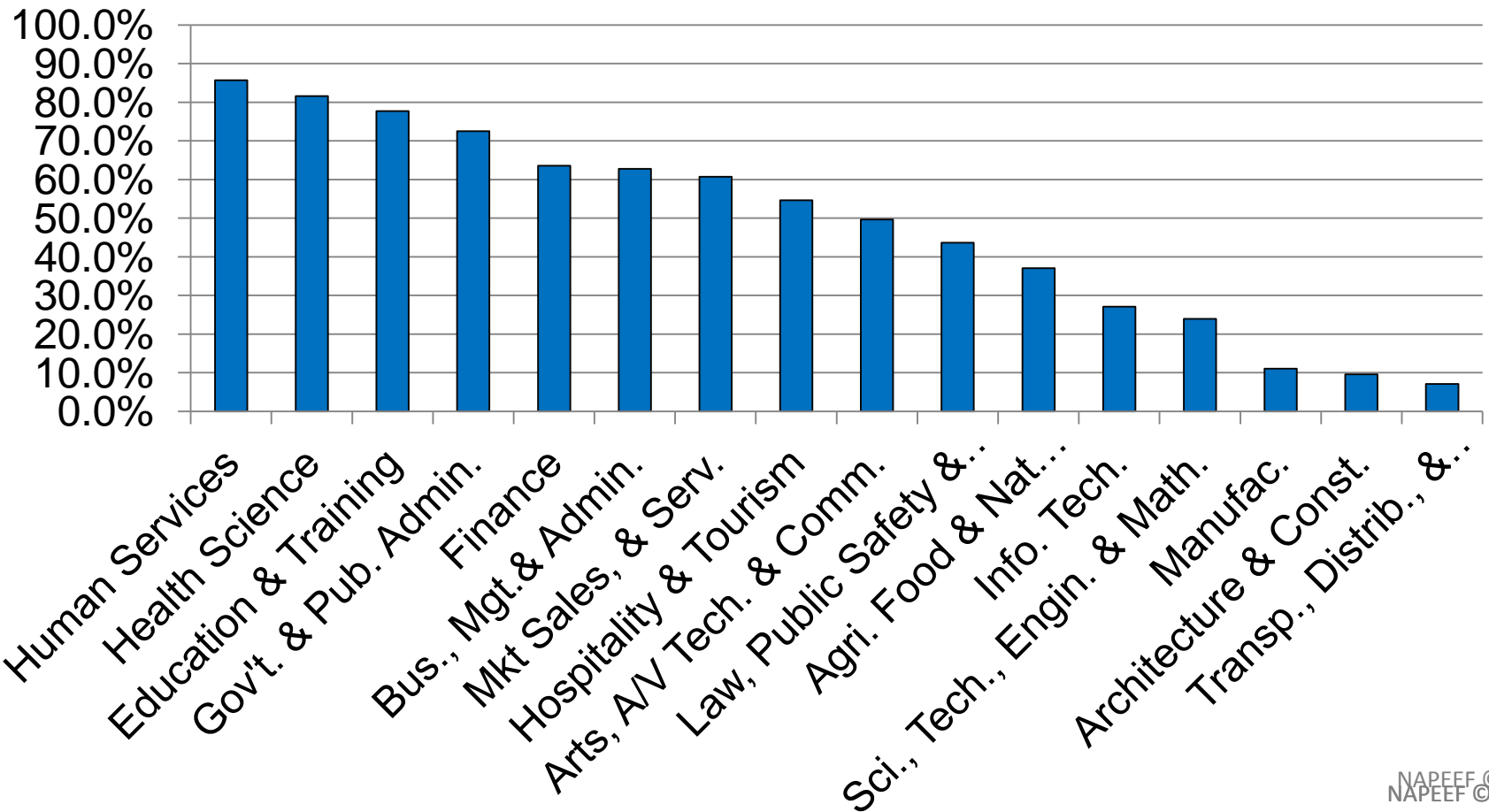




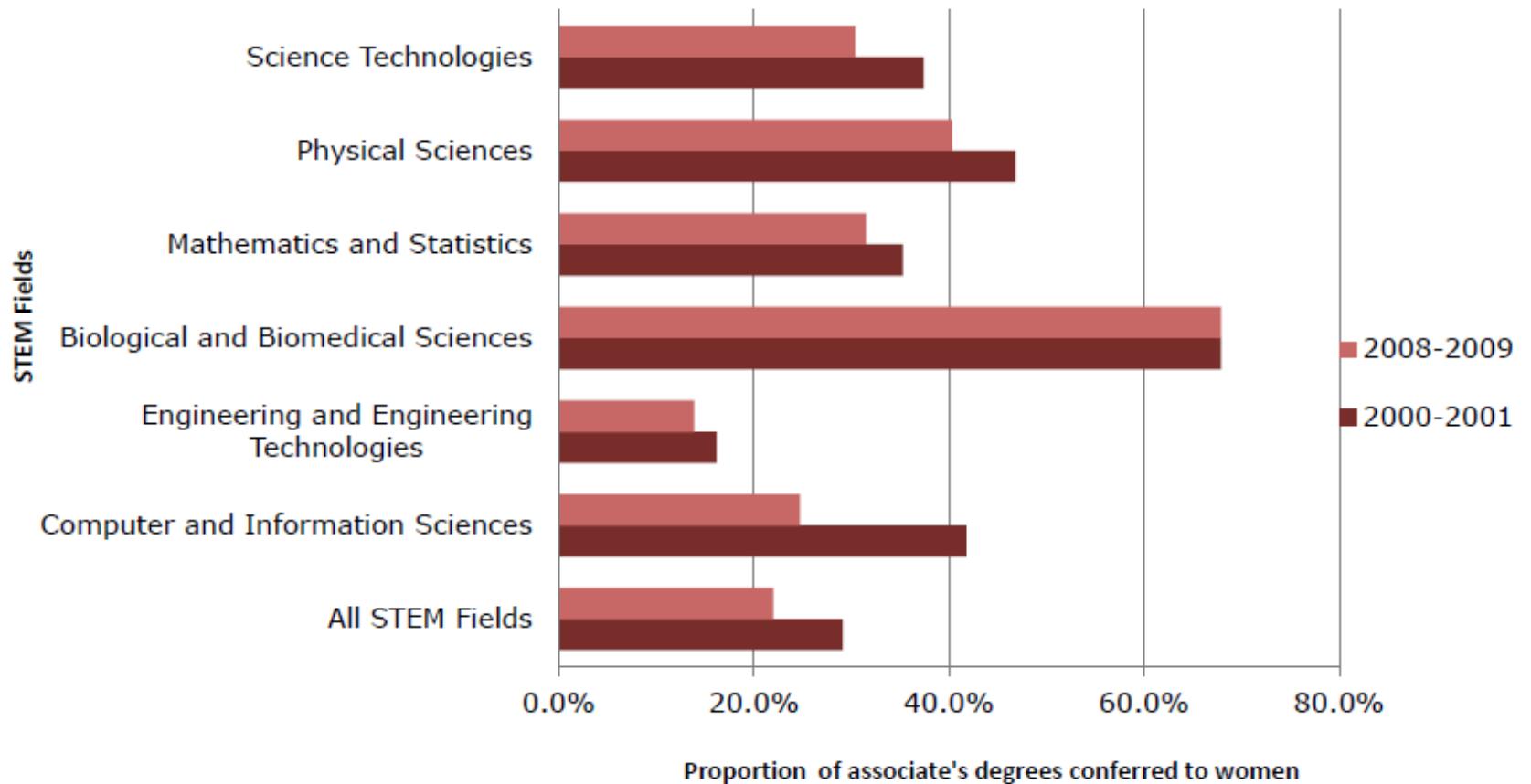


NAPEE

# Female Participation in Post-Secondary CTE Education 2009-10



**Figure 2. Percentage of Associate's Degrees Awarded to Women by STEM Field, 2000-2001 and 2008-09**



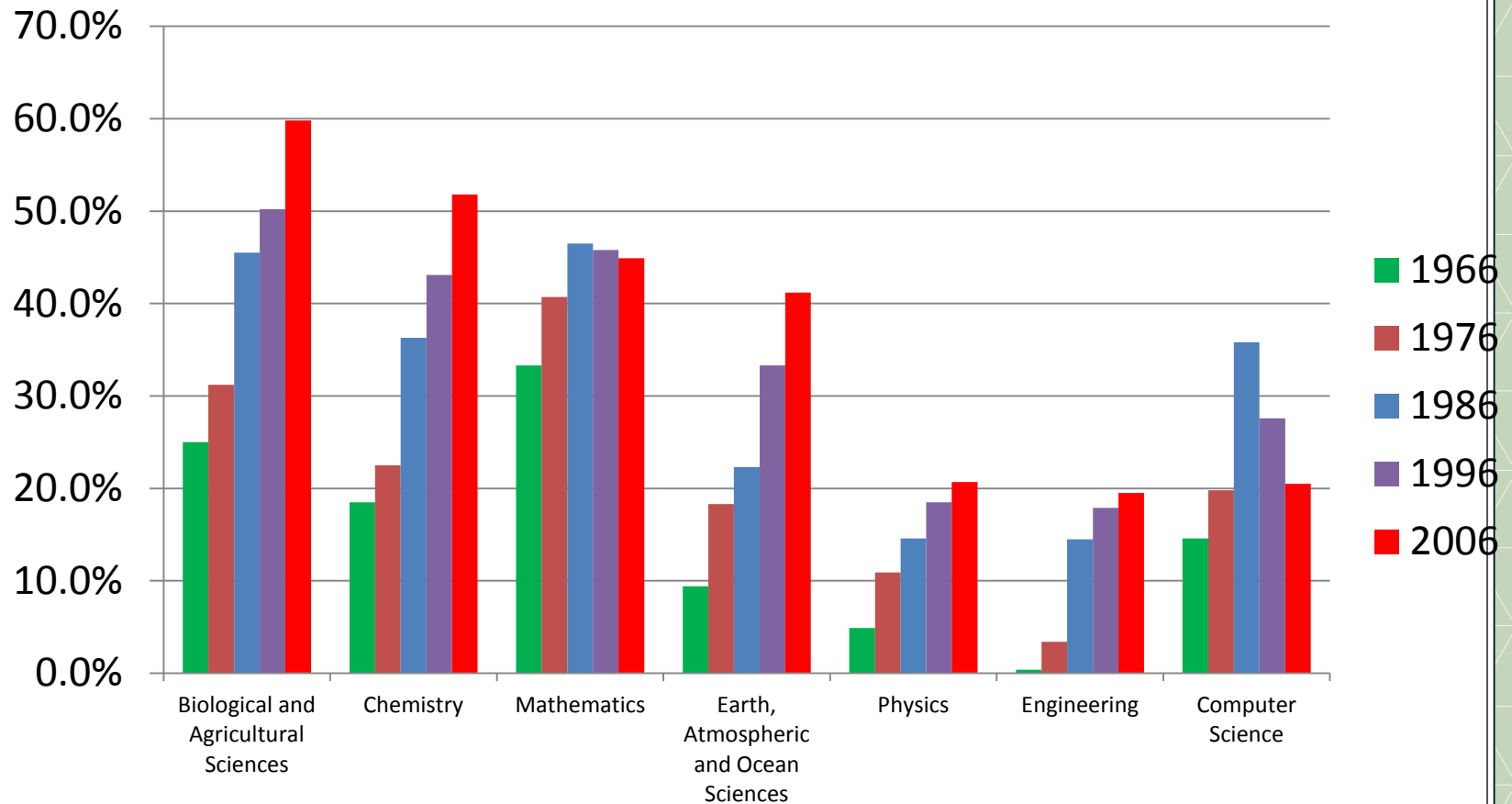
Source: U.S. Department of Education. National Center for Education Statistics. Postsecondary Awards



# Women's Representation among STEM Bachelor's Degree Holders has Improved over Time but Varies by Field

NAPE

Bachelor's Degrees Earned by Women in Selected Fields, 1966–2006



NAPE ©

Source: National Science Foundation, Division of Science Resources Statistics, 2008, *Science and engineering degrees: 1966–2006* (Detailed Statistical Tables) (NSF 08-321) (Arlington, VA), Table 11, Author's analysis of Tables 34, 35, 38, & 39.



# STEM Equity Pipeline Goals

- Build formal education's capacity to provide high quality professional development on gender equity in STEM education
- Institutionalize implemented strategies by connecting outcomes to existing accountability systems
- Broaden the commitment to gender equity in STEM education

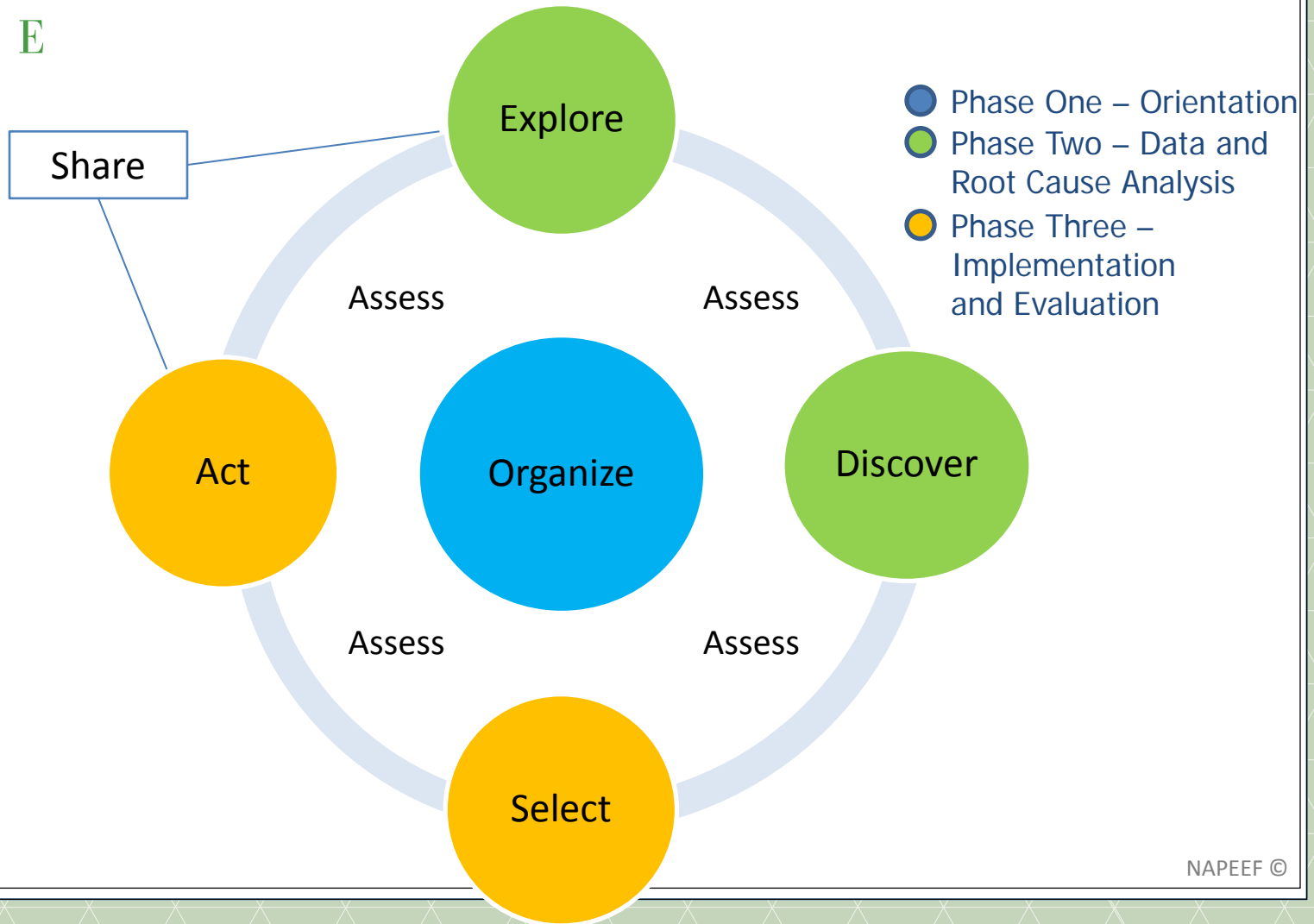
# Ohio STEM Equity Pipeline Project

- Initially part of the The National Alliance for Partnerships in Equity's (NAPE) National Science Foundation-funded STEM Equity Pipeline Project
  - Three pilots in community colleges in FY10–FY12
- Expanded through Ohio Department of Education Office of Career-Technical Education through contract with Columbus State Community College
  - Utilized state *Perkins* funds
  - Eight secondary institutions in FY12–FY13
  - Six additional secondary institutions in FY14–FY15
- Additional projects contracted directly with NAPE in FY13



NAPEE

# Program Improvement Process for Equity™



# Root Causes

- Educational Environment
- Career Information
- Family Characteristics (Family Perceptions)
- Individual Factors
- Societal Issues

Source: Reha; Lufkin, M.; & Harrison (2006). Nontraditional career preparation: Root causes and strategies. NAPE. [www.stemequitypipeline.org](http://www.stemequitypipeline.org)

# Key Themes in PIPE-STEM™ Projects

- **Career Information and Career Characteristics (all stakeholders)**
  - NAPE's new Counselor Toolkit
- **Negative and Outdated perceptions of Career and Technical Education (CTE)**
  - Expand lenses that all stakeholders use to look at college and career pathways
- **Early Intervention (“early and often”)**
  - Career Information
  - Career Development (Connecting classroom to careers)



# Key Themes

- **Parental Influence/Support**
  - Educate parents early and often
- **Individual Characteristics**
  - Self-efficacy
  - Stereotype Threat
- **School/Classroom Climate**
  - Micromessaging to Reach and Teach Every Student™
- **Importance of Mentors/Role Models**
- **Peers**

# Reflections



# Premises: It is critical for...

- Educators to understand the current context in terms of jobs, career pathways, and opportunities through multiple pathways in education/higher education;
- Students and their parents to understand these multiple pathways and the opportunities available to them early and often throughout their education;

# Premises cont.: It is critical for...

- Students and parents to understand how to pursue those pathways towards those eventual career opportunities;
- Students to understand how classroom content relates to their lived experiences and their future jobs/careers; and
- Educators to create an educational environment in which all students can thrive and reach their greatest potential.

# Barriers

- Out-of-date information
- Biases or incorrect assumptions
- Incomplete information when making important decisions
- Lack of understanding of the way systems work and how to take advantages of opportunities within those systems
- Living and working in silos/lack of collaboration across the educational and career pipeline

# Illuminating pathways for all learners

## Engage

- By making students active learners
- By helping students to see what is relevant to their future

## Enable

- By providing current information and tools
- By helping students and their families understand how to access and use those tools

## Empower

- By creating an environment in which all students can thrive
- By making pathways transparent and accessible

## Breakout sessions in morning will focus on Multiple pathways through higher education

- The four ways to get started in high school
- Community Colleges in Ohio in 2013
  - Opportunities
- Key resources that can help educators, students, parents, and others to navigate the higher education landscape

# Helpful websites

- **University System of Ohio**
  - [www.transfercredit.ohio.gov](http://www.transfercredit.ohio.gov)
  - [www.ohiohighered.org](http://www.ohiohighered.org)
  - [www.transfer.org](http://www.transfer.org)
- **Career-Technical Education**
  - [www.acte.org](http://www.acte.org)
  - [www.ohiomeanssuccess.org](http://www.ohiomeanssuccess.org)
- **Equity in STEM**
  - [www.napequity.org](http://www.napequity.org)
  - [www.stemequitypipeline.org](http://www.stemequitypipeline.org)
  - [www.changetheequation.org](http://www.changetheequation.org)



# Questions? Contact Information

**Ben Williams, Ph.D.**

**Coordinator, Special Projects, Admissions;  
Ohio STEM Equity Pipeline Project Director  
Columbus State Community College**

**[bwilli03@csc.edu](mailto:bwilli03@csc.edu); 614-287-5689**

**<http://www.stemequitypipeline.org/StateTeams/OH.aspx>**

**Thank you for your participation this morning!**