DIVERSITY IN COMPUTING

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Diversity in Computing - Outline

- Why should we care?
- What is the problem/status of problem?
- Why is there a lack of diversity in computing?
- What can we do about it?

Diversity in Computing: Why should we care?
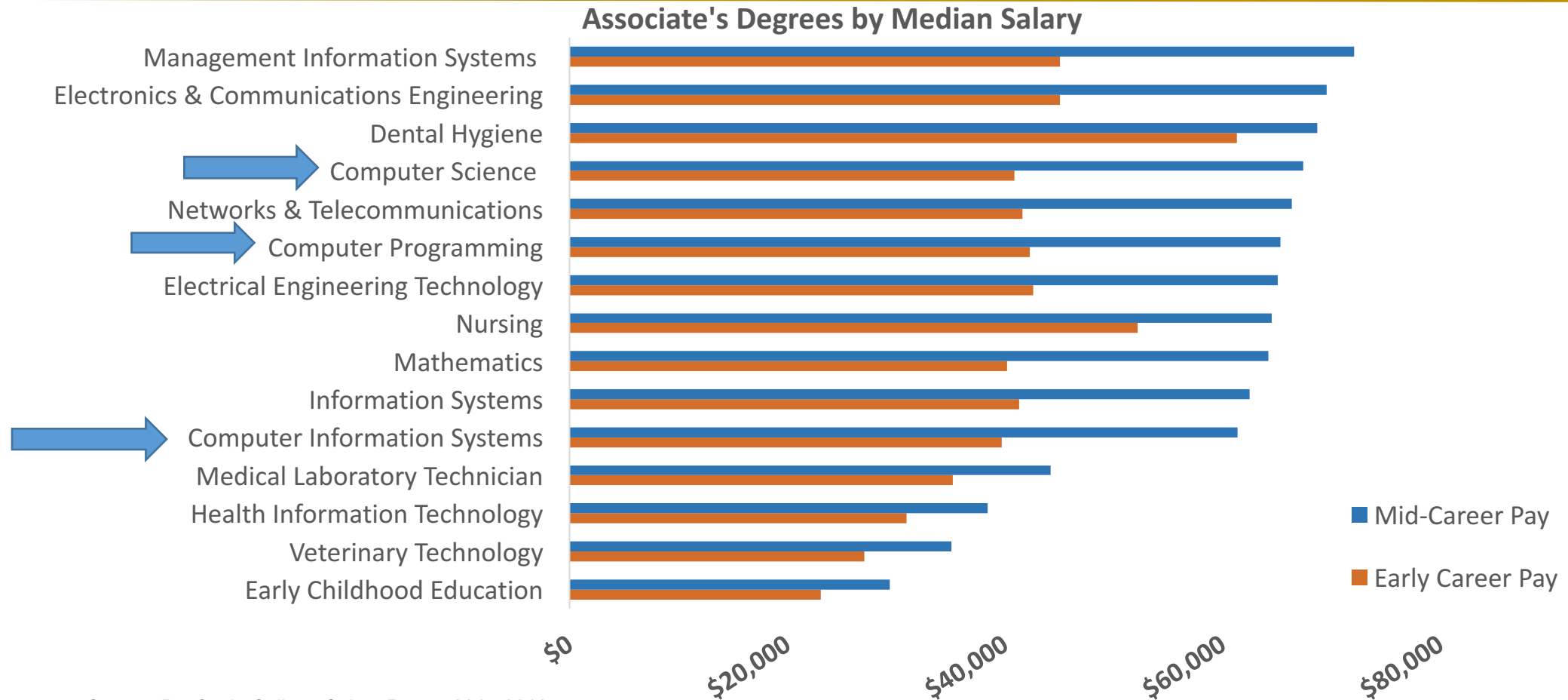
Its where the <u>good</u> jobs are

Jobs are Plenty; Jobs are Satisfying

Best Jobs in America" Reports*

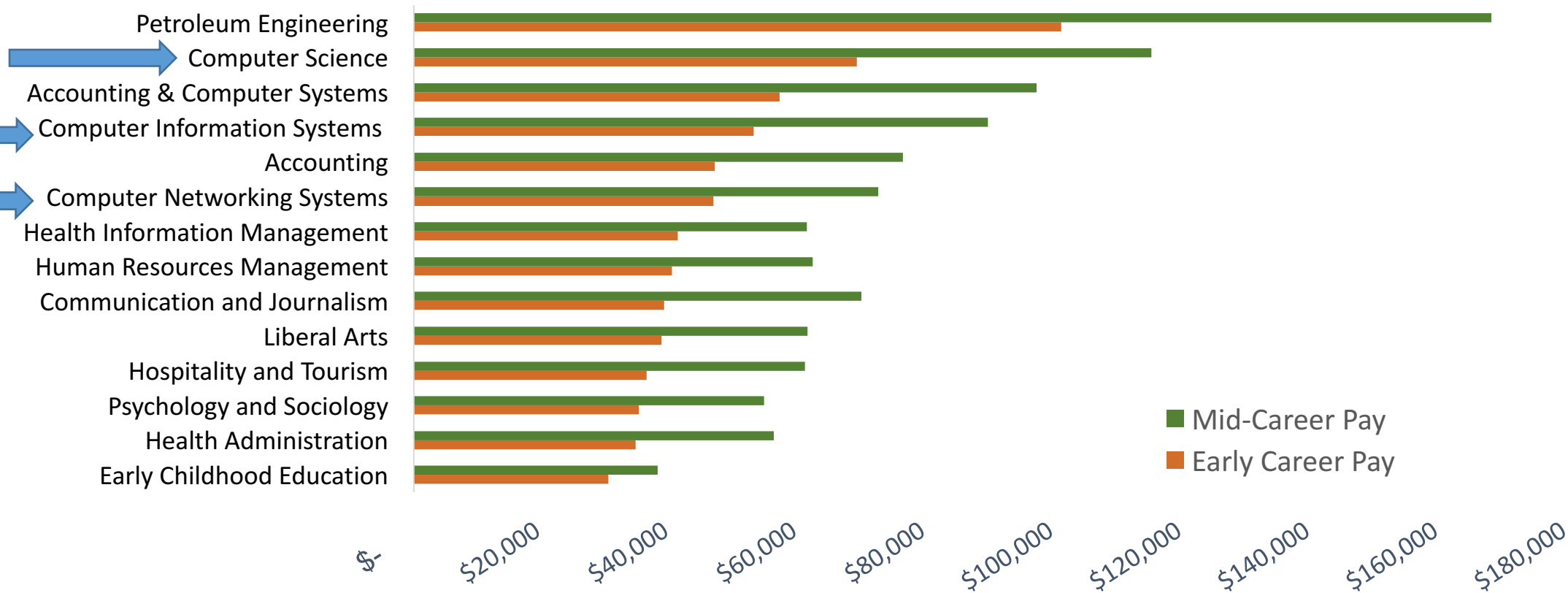|	
US News	**5 of top 15 (including #1 and #2)**
Salary.com	2 of top 10 (including #1)
CNN Money	3 of top 10

*Based on job satisfaction, stability, and salary

Jobs are Well Paid: Associate's Degrees

Associate's Degrees by Median Salary

Degree	
Management Information Systems	
Electronics & Communications Engineering	
Dental Hygiene	
Computer Science	
Networks & Telecommunications	
Computer Programming	
Electrical Engineering Technology	
Nursing	
Mathematics	
Information Systems	
Computer Information Systems	
Medical Laboratory Technician	
Health Information Technology	
Veterinary Technology	
Early Childhood Education	

Legend: ■ Mid-Career Pay ■ Early Career Pay

X-axis: $0, $20,000, $40,000, $60,000, $80,000

Source: PayScale College Salary Report 2015-2016

Jobs are Well Paid: Bachelor's Degrees

Bachelor's Degrees by Median Salary

Legend:
- Mid-Career Pay (green)
- Early Career Pay (orange)

Categories (top to bottom):
- Petroleum Engineering
- Computer Science
- Accounting & Computer Systems
- Computer Information Systems
- Accounting
- Computer Networking Systems
- Health Information Management
- Human Resources Management
- Communication and Journalism
- Liberal Arts
- Hospitality and Tourism
- Psychology and Sociology
- Health Administration
- Early Childhood Education

X-axis: $-, $20,000, $40,000, $60,000, $80,000, $100,000, $120,000, $140,000, $160,000, $180,000

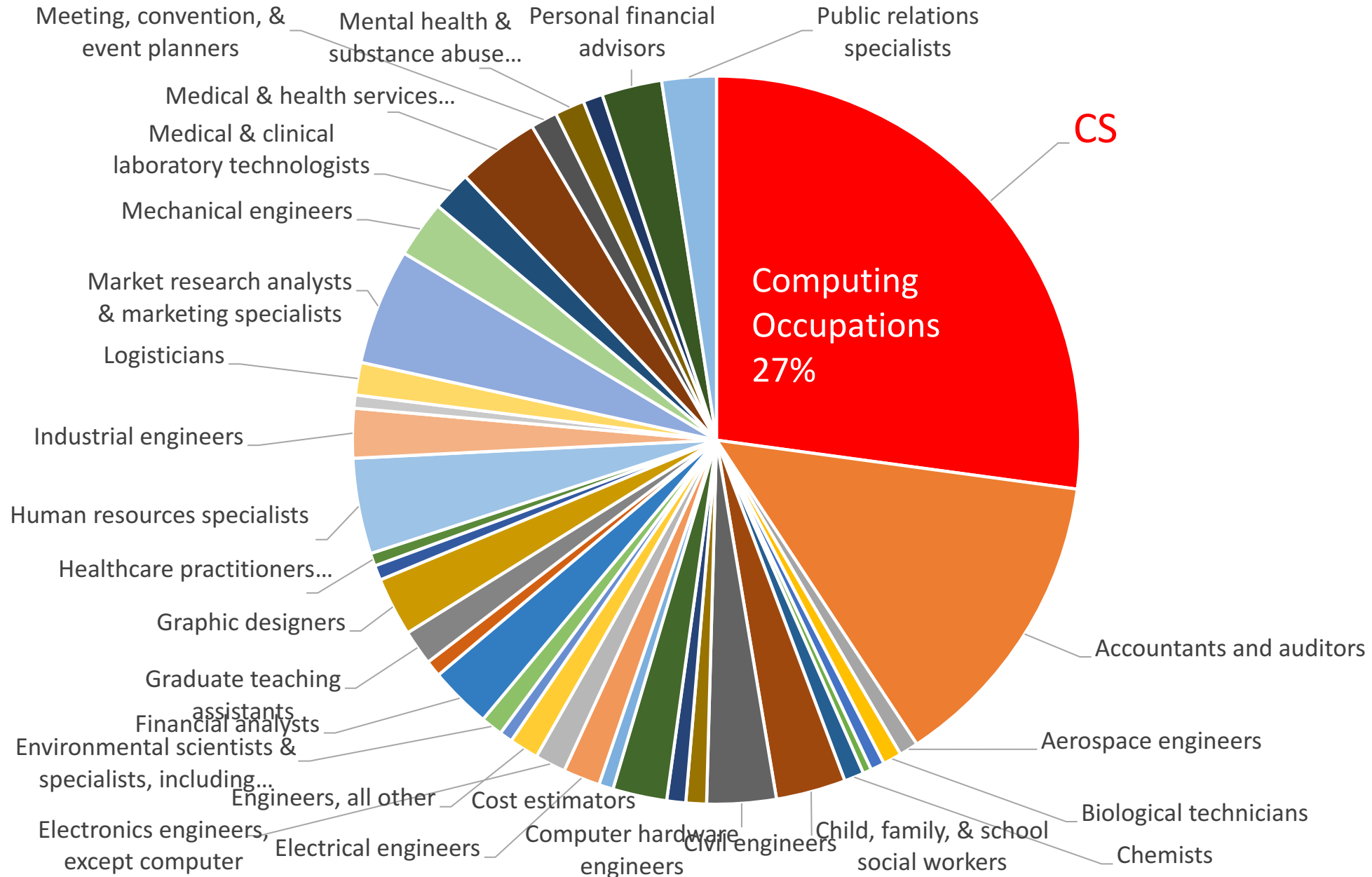Source: PayScale College Salary Report 2015-2016

Computing Jobs Let You Work & Have a Life

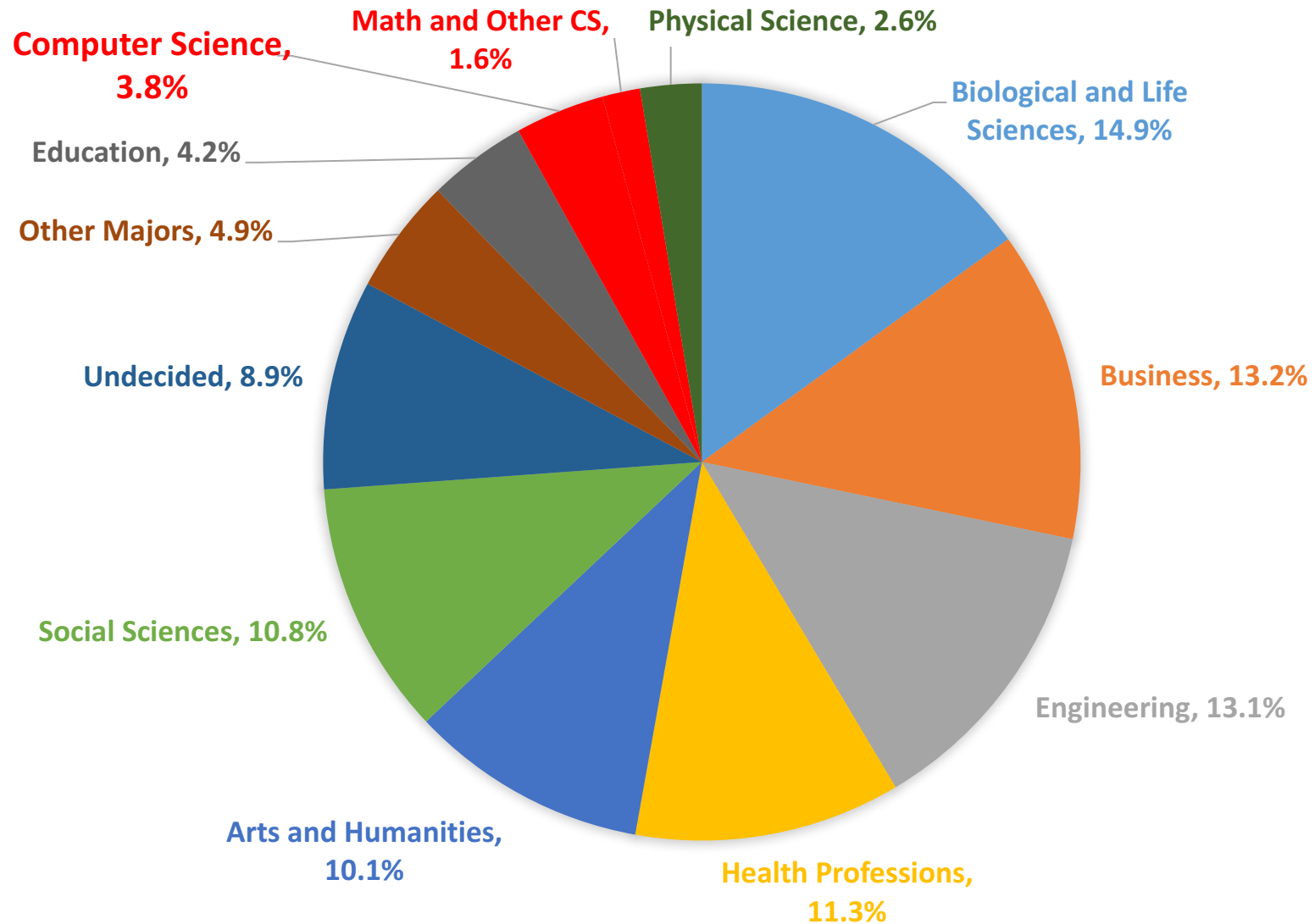Average Hours Per Week for Major Occupational Groups
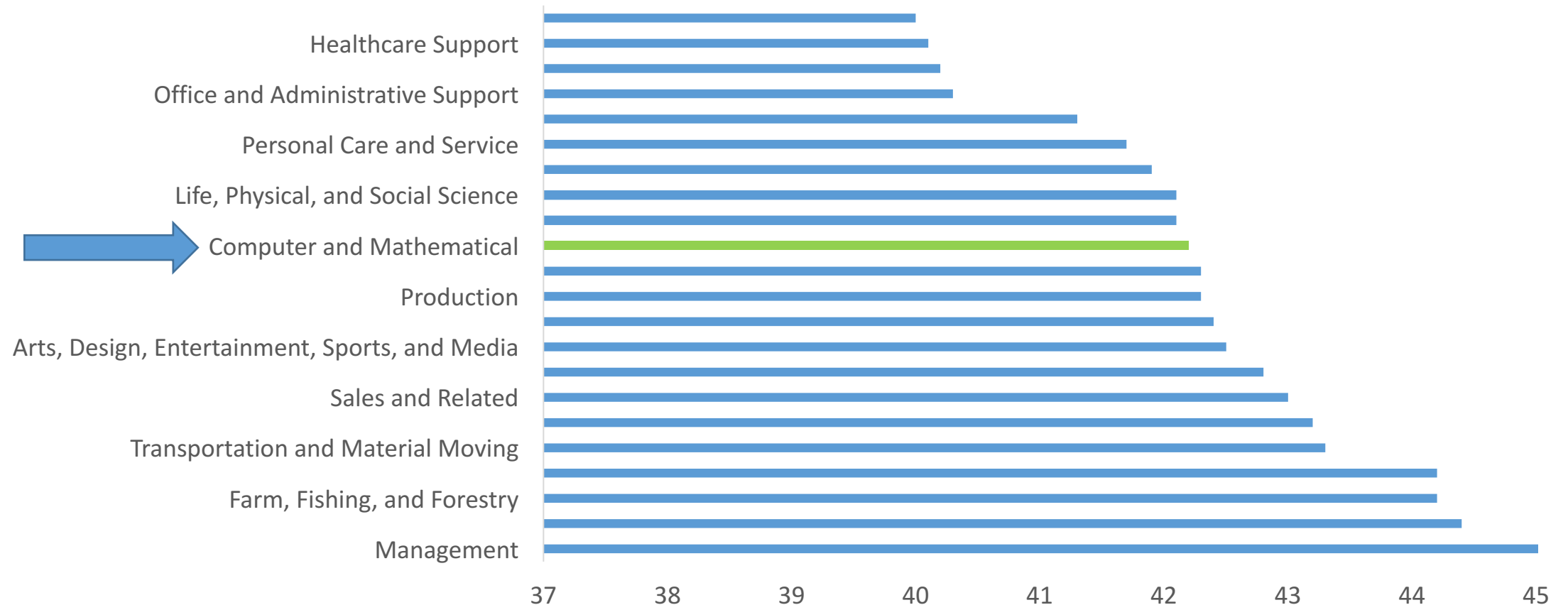
But computing has a problem.
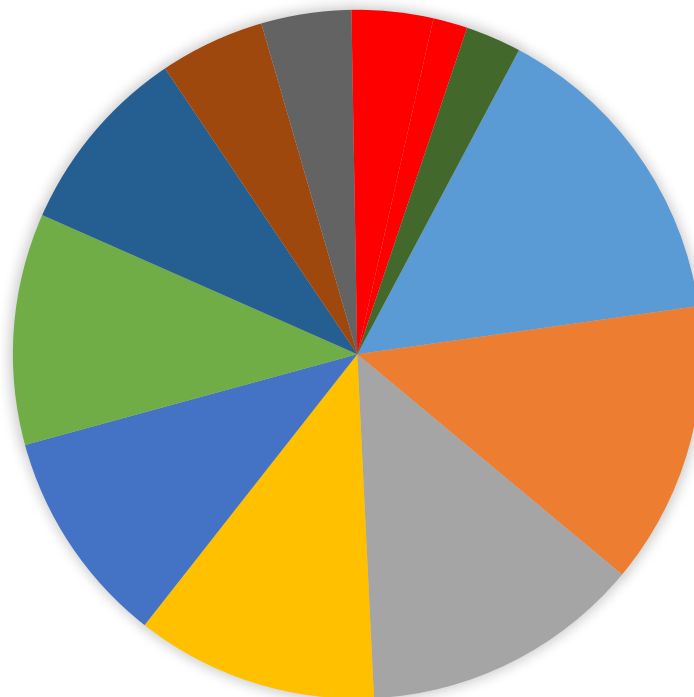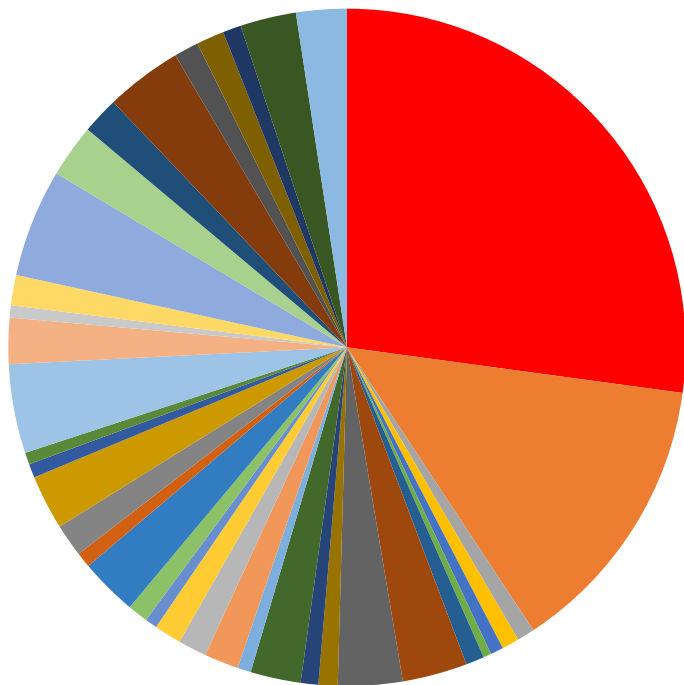It attracts too few people.

BLS Projected 2022 employment: Jobs requiring degree

2015 Intended Major (national sample)

Computer Science, 3.8%

Math and Other CS, 1.6%

Physical Science, 2.6%

Biological and Life Sciences, 14.9%

Business, 13.2%

Engineering, 13.1%

Health Professions, 11.3%

Arts and Humanities, 10.1%

Social Sciences, 10.8%

Undecided, 8.9%

Other Majors, 4.9%

Education, 4.2%

Eagan, K., Stolzenberg, E. B., Bates, A. K., Aragon, M. C., Suchard, M. R., & Rios-Aguilar, C. (2015). *The American freshman: National norms fall 2015*. Los Angeles: Higher Education Research Institute, UCLA.
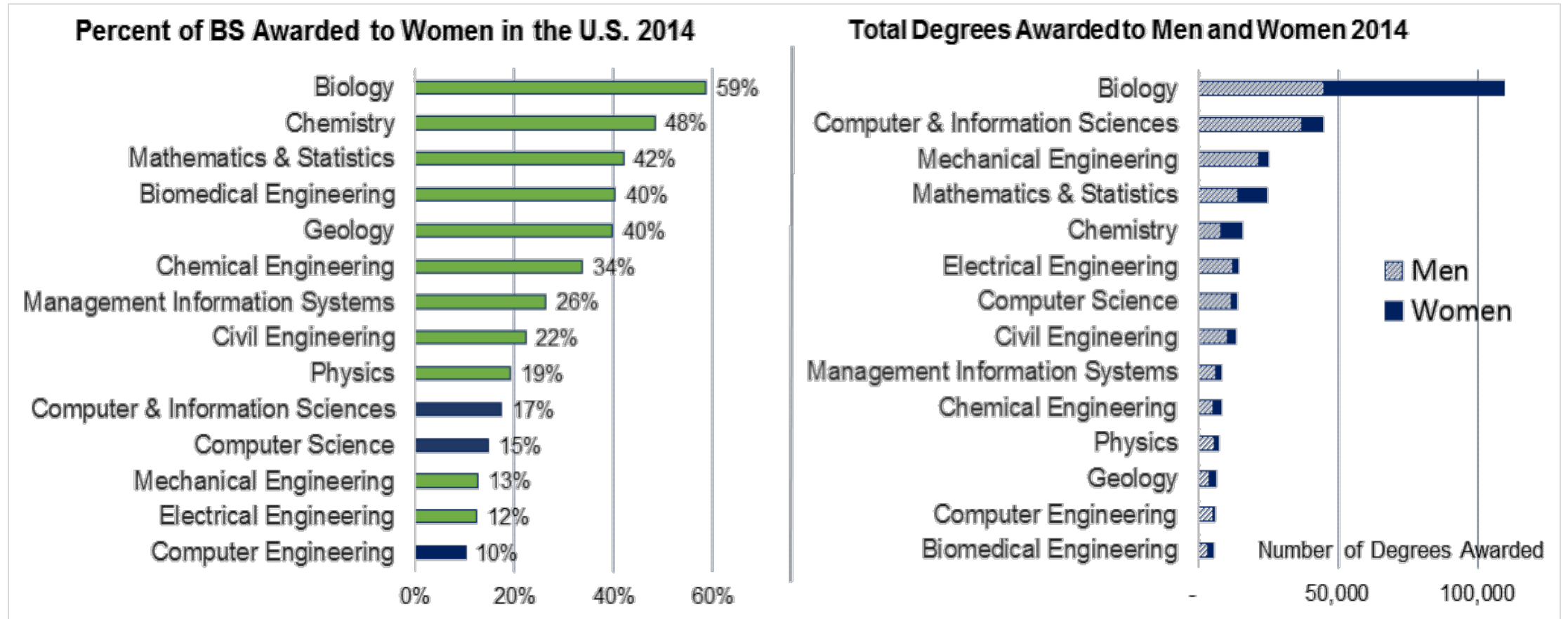
Let's compare…

Demand and low production explains the CS initiatives

- January 30, 2016: President Obama introduced the "Computer Science for All" initiative

- CS curricula will become compulsory in:
  - primary and middle schools in San Francisco
  - primary schools in New York City
  - for high school graduation in Chicago

- High schools in Arkansas, Texas, and New York City now must offer a CS course

But computing has a problem.
It attracts only a narrow range of people.

Women's Presence in STEM Disciplines Varies

Percent of BS Awarded to Women in the U.S. 2014

Discipline	Percent
Biology	59%
Chemistry	48%
Mathematics & Statistics	42%
Biomedical Engineering	40%
Geology	40%
Chemical Engineering	34%
Management Information Systems	26%
Civil Engineering	22%
Physics	19%
Computer & Information Sciences	17%
Computer Science	15%
Mechanical Engineering	13%
Electrical Engineering	12%
Computer Engineering	10%

Total Degrees Awarded to Men and Women 2014

Biology
Computer & Information Sciences
Mechanical Engineering
Mathematics & Statistics
Chemistry
Electrical Engineering
Computer Science
Civil Engineering
Management Information Systems
Chemical Engineering
Physics
Geology
Computer Engineering
Biomedical Engineering

Men
Women

Number of Degrees Awarded

Source: Data Retrieved from National Center for Education Statistics Integrated Postsecondary Educational Data System, 2015.

Percent of Degrees Awarded 2013, Major Occupations: Women and Underrepresented Minority Men
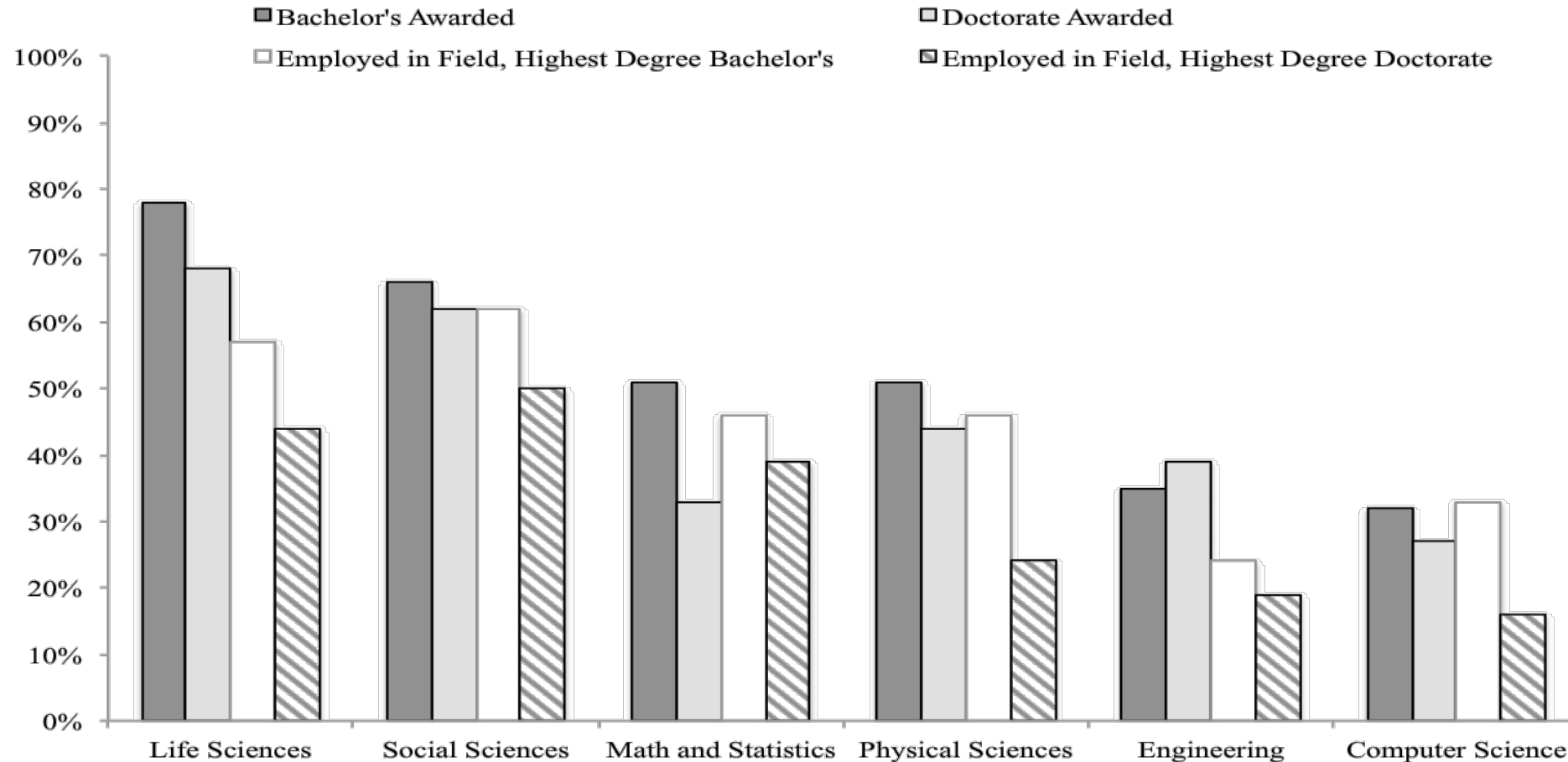
Source for Employment Data: NSF, Women, Minorities, and Persons With Disabilities: 2015, Table 9-7
Source for Degree Data: IPEDS via WebCASPAR, omit for-profits

Diversity in Computing

So, why should that matter?

Why does it matter to you?

The Value of Diversity to Computer Science

- Enhances innovation

- Expands the qualified employee pool

- Improves the bottom line

- Promotes equality/inclusion

- Reflects user/consumer base

- Global competitiveness

ncwit.org/businesscase

Why is there a lack of diversity in computing?

- Lack of knowledge of what computing is
- Misconceptions about what people in computing jobs do
- Stereotypes about who you "need to be" to do well in computing

What can we do about it?

- Actively recruit for diversity
- Utilize research based, best-practice retention strategies that will engage your students and sustain their interest
- Create an environment that fosters interest, confidence, learning, sense of belonging, and occupational identity
- Some examples of what we'll talk about in this workshop:
  - Inclusive pedagogy
  - Implicit bias & Stereotype threat and how to avoid them
  - Case study on implementing workshop strategies

Questions?

Thank You!

What's next?

- ❖ Core Sessions:
  - Active Recruiting
  - Implicit Bias
  - Stereotype Threat & Inoculation
  - Inclusive Pedagogy
  - Chrestomathics
  - Success!
- ❖ Activity Sessions
- ❖ Integration Sessions

Diversity in Computing: Activity

- Explore computing education and workforce data in your area:
- https://goo.gl/forms/4JvHzqBeK8xT5AAy1