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USA 2019
AUGUST 3-8, 2019
MANDALAY BAY / LAS VEGAS

Woke Hiring Won't Save Us: An Actionable Approach to Diversity Hiring and Retention

Becca Lynch
Duo Security

Becca Lynch

- Software Engineer, *Duo Security*
- BSE in Computer Science,
University of Michigan
- Master's student in Data Science,
University of Illinois



What this is **not** about

- Teaching girls to code
- Why you should hire more women
- Blame and shame



Diversity and Teams

- 1400 participants, 100 teams, 21 companies
- Gender balanced teams more likely to
 - **Experiment**
 - **Share knowledge** among teammates
 - **Complete tasks** on time

Diversity and Risk Assessment

- 150 studies on gender and risk found correlation between **women** and **increased perception of risk**¹
- Women perceive risks as higher than men²
- White men perceive risks as **lower than any other group surveyed**

1. Byrnes, J. P., Miller, D. C., & Schafer, W. D. (1999). Gender differences in risk taking: A meta-analysis. *Psychological Bulletin*, 125(3), 367-383.

2. Finucane, Melissa & Slovic, Paul & C.K, Mertz & Flynn, James & Satterfield, Terre. (2000). Gender, race, and perceived risk: The 'white male' effect. *Health, Risk & Society*. 2. 159-172.

The Money

- Strong correlation between increased diversity and increased ROI
- Companies in top quartile for gender diversity **15% more likely to have returns above industry medians**

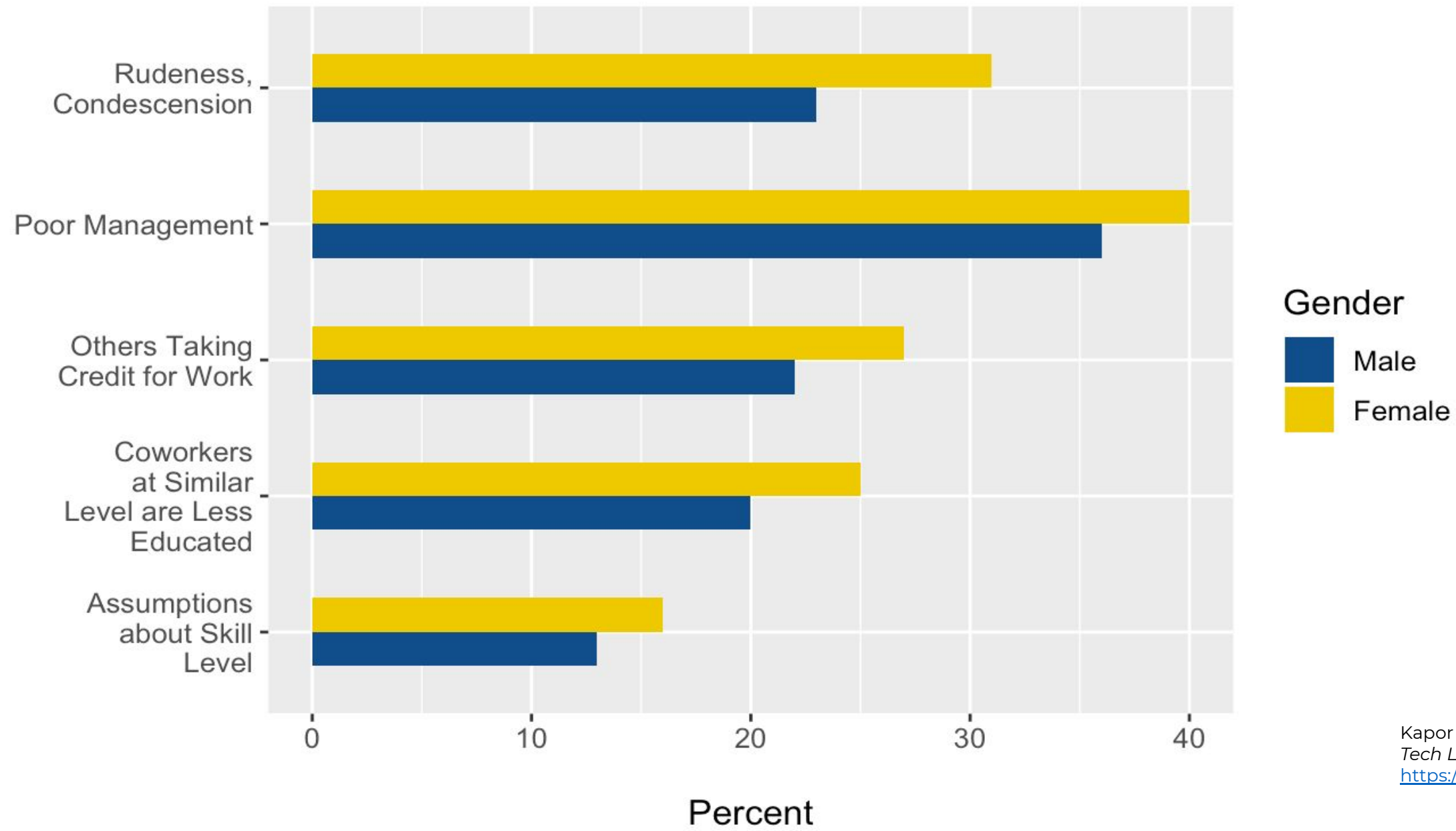
McKinsey & Company (Jan 2018), *Why diversity matters*, Retrieved from:
<https://www.mckinsey.com>

The Cost of Turnover

- **Unfairness** cited as number one reason for leaving company
- **37%** of people leaving said it was the **main factor** in their decision
- **35% were less likely to recommend the company** as a good place to work
- **25% were less likely to recommend the product** itself

Kapor Center for Social Impact, (Apr. 2018), *Tech Leavers Study*, Retrieved from:
<https://www.kaporcenter.org>

Workplace Experiences by Gender



The Cost of Turnover

- Conservative estimate for the cost of turnover due to unfairness at **tech companies alone**:

\$16 billion

Kapor Center for Social Impact, (Apr. 2018), *Tech Leavers Study*, Retrieved from:
<https://www.kaporcenter.org>

Building the Workforce

**Fewer women entering
the workforce**

Hiring

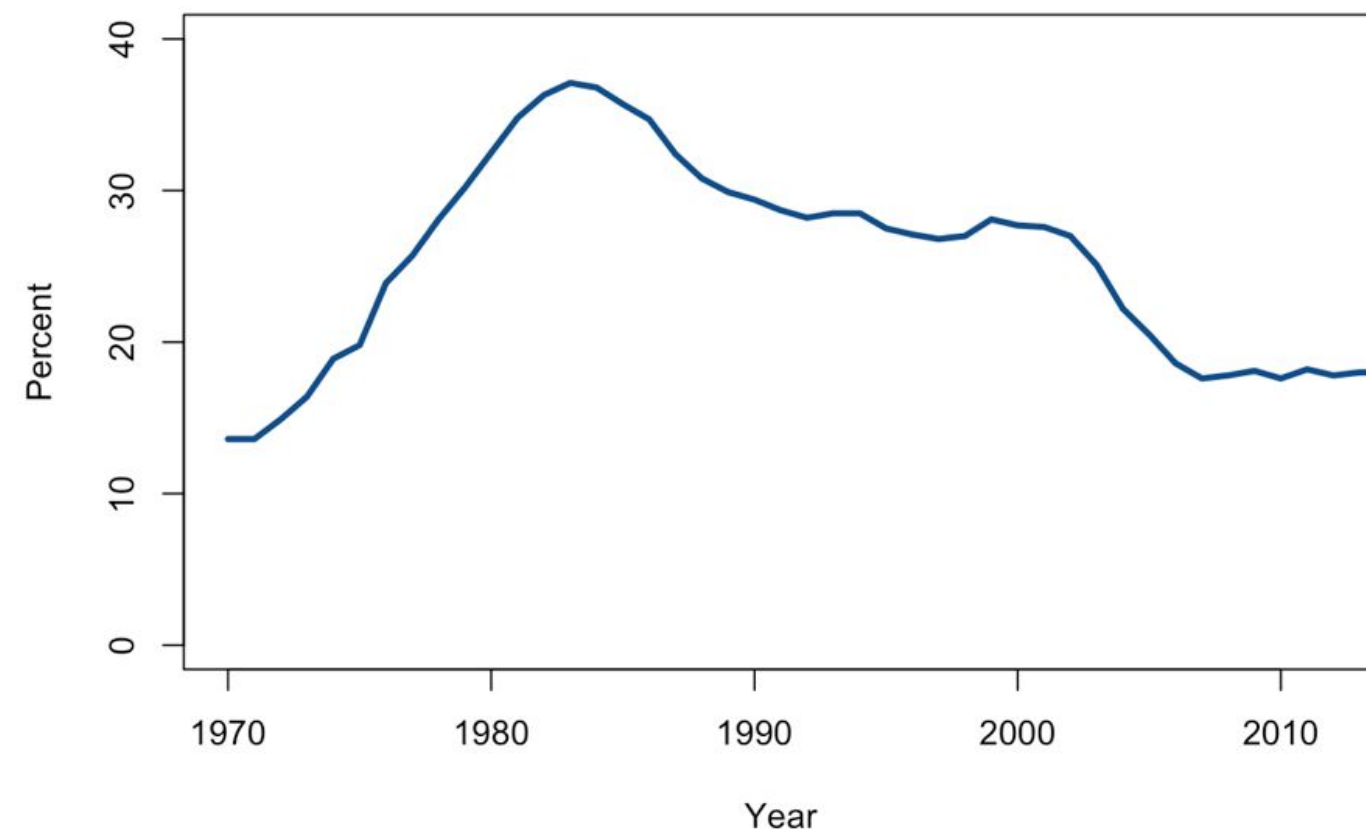
Fewer women remaining
in the workforce



Degrees in Decline

- Steady decrease in women graduating with computer science degrees over 35 years
- One of the only engineering disciplines in steady decline

Percentage of CS Degrees Earned by Women



©NCES, US Department of Education

Attrition in Education

- University of Michigan introductory course almost 40% women¹
- Program overall only 21% women²



CSE @ University of Michigan

1. CSE @ University of Michigan, Retrieved from: <http://www.eecs.umich.edu>
1. EECS @ University of Michigan, Electrical Engineering & Computer Science Undergraduate Workload Survey, Retrieved from: <http://www.eecs.umich.edu>

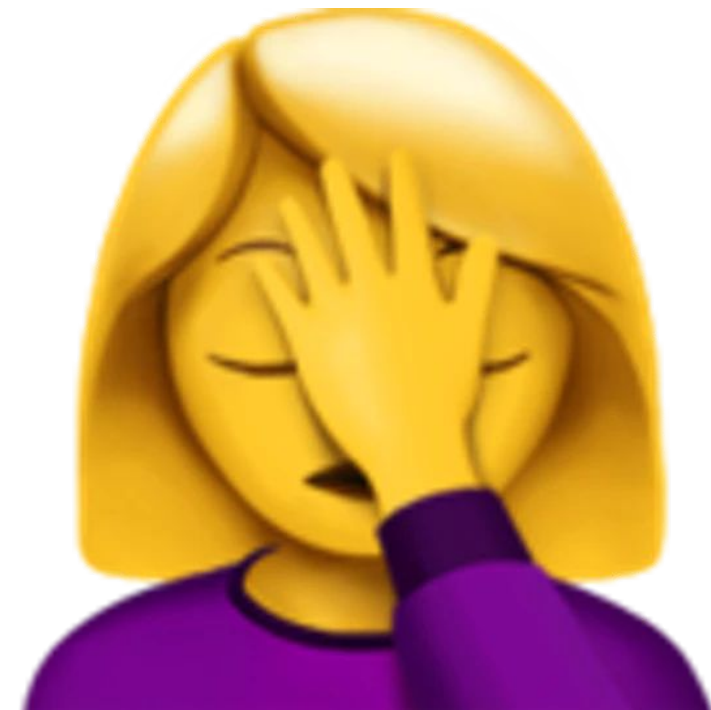
Attrition in Education

- **Attrition highest between 1st and 2nd year** in program¹
- Majority of women cited **“low confidence”** *regardless of whether their performance was lower than peers*¹
- Generally different levels of prior experience
- **Prior experience not a predictor of success**²

1. Marra, R.M., & Bogue, B.Z. (2006). Women Engineering Students' Self Efficacy -- A Longitudinal Multi-Institution Study.
2. Margolis, J. and Fisher, A. (2002). Unlocking the Clubhouse: Women in Computing. Cambridge, MA: MIT Press.

Proposed Solutions

- Teaching girls in different ways
- ***Programming apps for shopping.***¹
- The pink curriculum increased isolation and attrition²



1. Gürer, D.W., & Camp, T. (2003). Investigating the Incredible Shrinking Pipeline for Women in Computer Science.
2. Frieze, C. and Quesenberry, J.L. (2019). How Computer Science at CM Is Attracting and Retaining Women.

What Works? Carnegie Mellon Has Some Ideas

- Building **community** within the university
- Emphasizing **no experience necessary**
- **Visibility** of different paths into the field

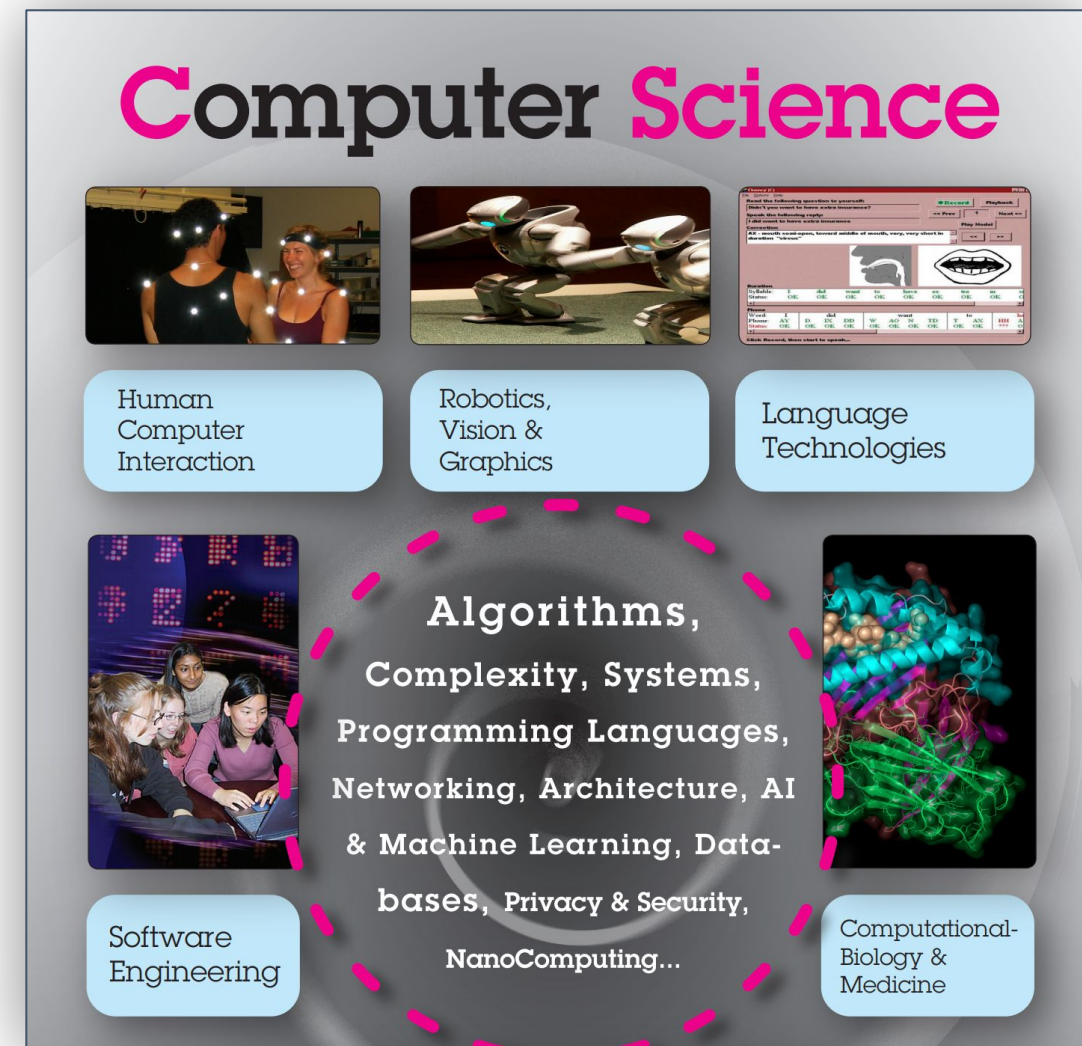
Frieze & Quesenberry (2019)



Carnegie Mellon

Women @ SCS, Retrieved from: <https://www.women.cs.cmu.edu>

Carnegie Mellon: Women@SCS




Women @ SCS, Retrieved from: <https://www.women.cs.cmu.edu>

Carnegie Mellon: Women@SCS

Carnegie Mellon
WOMEN@SCS

About ▾ Programs ▾

Interview with Lorrie Cranor

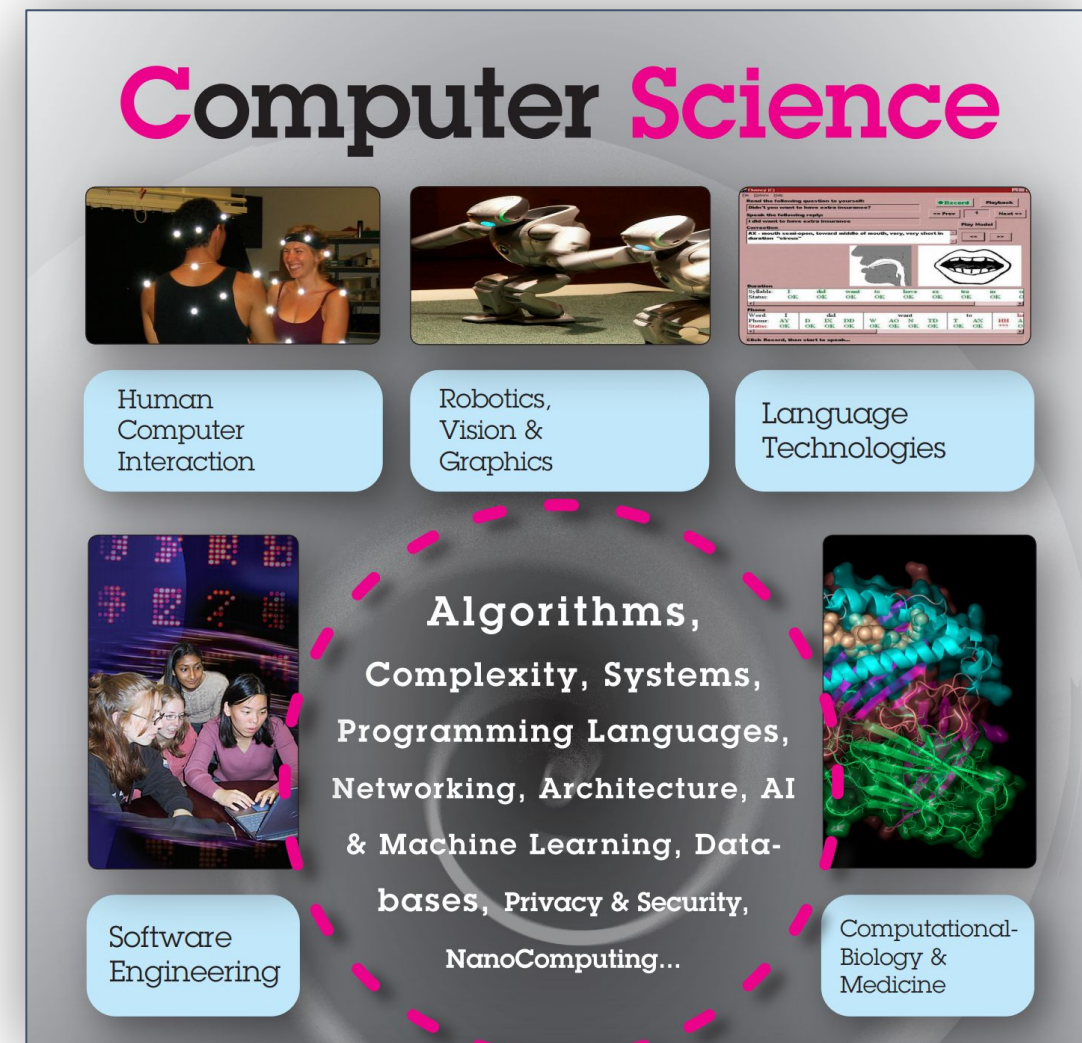


Women@SCS conducted an interview with Jessica Hammer, Assistant Professor, Computer Interaction Institute and the Entertainment Technology Center.

Women@SCS
Can you tell us a little bit about your background and your journey before you came to Carnegie Mellon?

Professor Cranor
I got my DSc from Washington University in St. Louis. And my degree was in engineering. I got a master's degree in computer science along the way. And then I went to AT&T labs, first in the computer science department and then the secure systems research department. And that's when I started doing security research and was involved in the W3C working on a privacy standard, and the effort. And working at AT&T in the research lab was a lot of fun until the telecom industry collapsed. I decided it was time to leave. So I started looking for academic positions and that's when I came to Carnegie Mellon.

Women @ SCS, Retrieved from: <https://www.women.cs.cmu.edu>



Carnegie Mellon: Women@SCS


Carnegie Mellon
WOMEN@SCS

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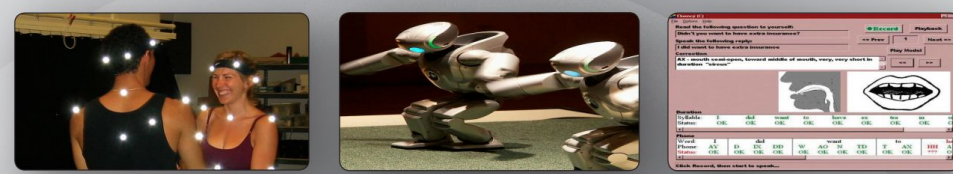
Women@SCS conducted an interview with Jessica Hammer, Assistant Professor of Computer Science.

Some of Our Alumnae



Women @ SCS, R

Computer Science



- Human Computer Interaction
- Robotics, Vision & Graphics
- Language Technologies
- Software Engineering
- Algorithms, Complexity, Systems, Programming Languages, Networking, Architecture, AI & Machine Learning, Databases, Privacy & Security, NanoComputing...
- Computational-Biology & Medicine

Carnegie M

CarnegieMellon WOMEN@SCS Interview



Women @ SCS, R

Opportunities



Computer Science



Computer Interaction

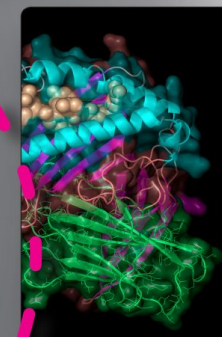
Robotics, Vision & Graphics

Language Technologies



Software Engineering

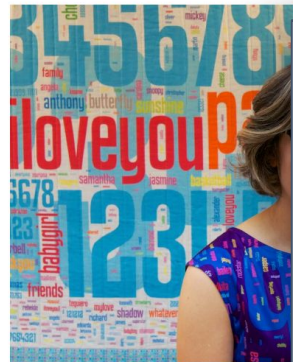
Algorithms, Complexity, Systems, Programming Languages, Networking, Architecture, AI & Machine Learning, Databases, Privacy & Security, NanoComputing...



Computational-Biology & Medicine

Carnegie M

Carnegie Mellon WOMEN@SCS Interview



Women @ SCS, R

Opportunities



Jenny Liao
Class of 2015
Software engineer at
Google

OurCS 2019 (Registration Closed)

What: Workshop for Undergraduate Women in Computer Science
When: October 18th, 19th, and 20th, 2019
Where: School of Computer Science, Carnegie Mellon

Organized by Carnegie Mellon's [School of Computer Science](#) and [Women@SCS](#).

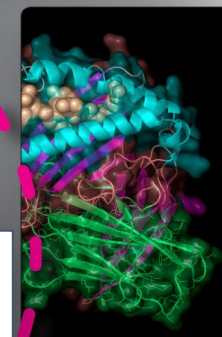
Computer Science



Robotics,
Vision &
Graphics

Language
Technologies

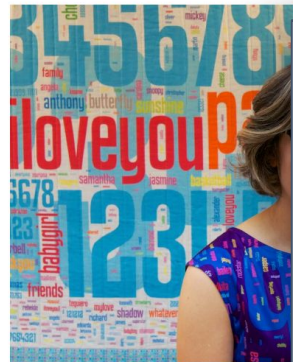
Algorithms,
Complexity, Systems,
Programming Languages,



Computational-
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Medicine

Carnegie M

Carnegie Mellon WOMEN@SCS Interview






Women @ SCS, R

Opportunities



The three primary value propositions for sponsors are:

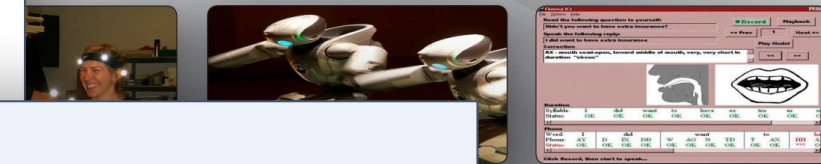
-  Taking a high-profile leadership position in the global effort to recognize and encourage women in computer science
-  Direct connection to a pool of top talent in the field, including access to student resumes (with their permission)
-  Sending a strong message about diversity among your company values

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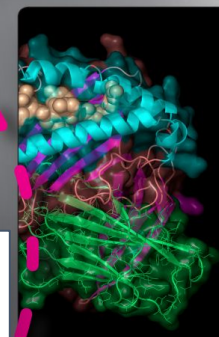
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Computer Science



Language
Technologies

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Computational-
Biology &
Medicine

Carnegie M

CarnegieMellon WOMEN@SCS Interview






Women @ SCS, R

Opportunities



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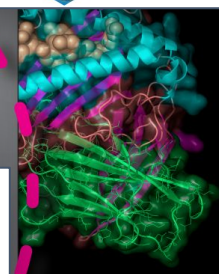
Organized by Carnegie Mellon's [School of Computer Science](#) and [Women@SCS](#).

Faculty Interviews

Find past faculty interviews [here](#).



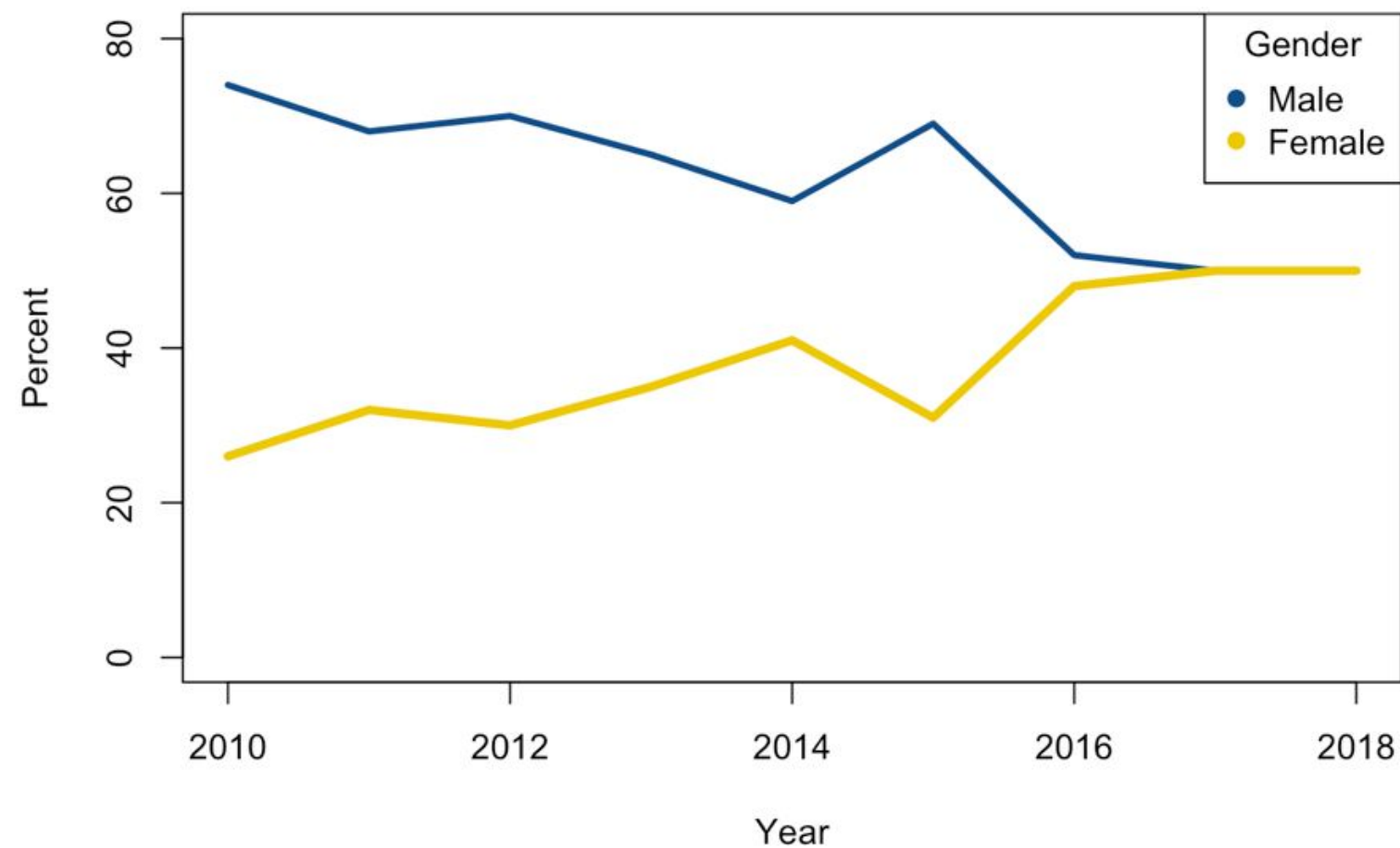
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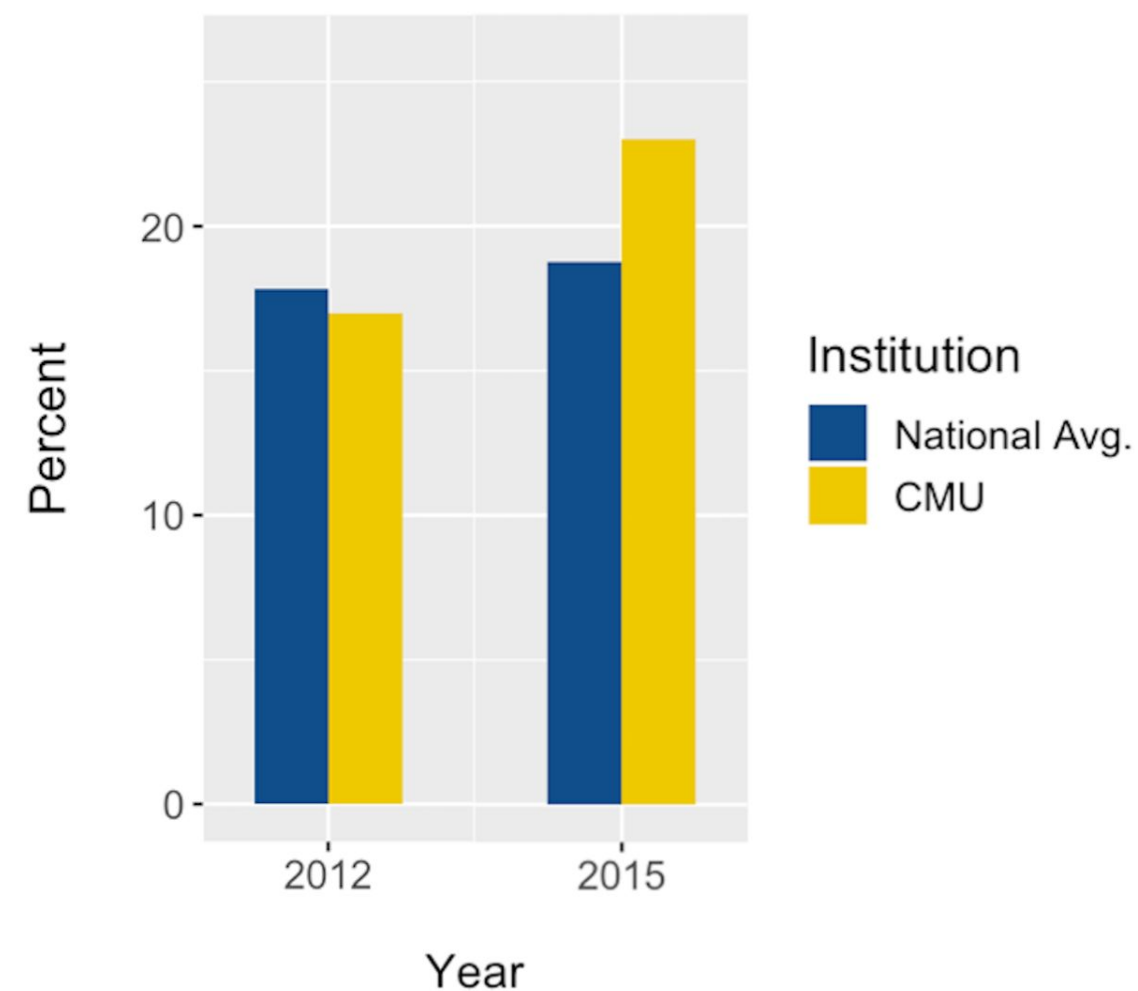
Computational-
Biology &
Medicine

Carnegie Mellon

Gender Breakdown of CS Enrollment at CMU



CS Bachelor's Degrees Conferred to Women



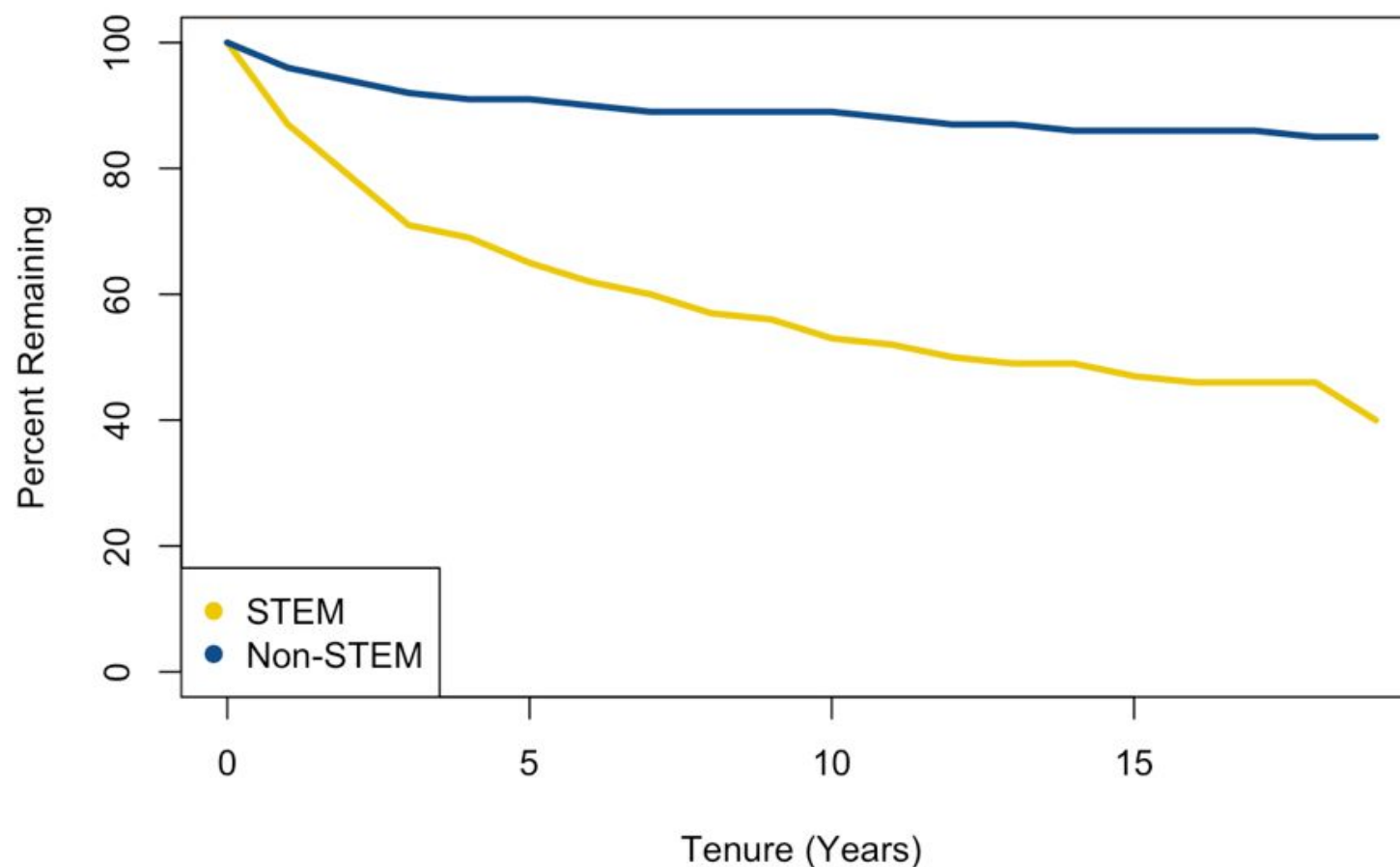
Keeping the Workforce



Attrition in Employment

- Women in STEM see much higher attrition rate than non-STEM professions
- **82%** of women **“love their work”**
- **100%** of women find it **“challenging and intellectually stimulating”**

Women Remaining in STEM vs. Non-STEM Roles



Glass, J. L., Sassler, S., Levitte, Y., & Michelmore, K. M. (2013). What's So Special about STEM? A Comparison of Women's Retention in STEM and Professional Occupations. *Social forces; a scientific medium of social study and interpretation*, 92(2), 723–756. doi:10.1093/sf/sot092

Where Do They Go?

- 77% of those leaving cited
 - Extreme pressure
 - Hostile “macho” culture

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Implicit Bias

Implicit Bias Is Not

- Sexism, racism

Implicit Bias Is

- **Unconscious** product of learned behavior

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Implicit Bias Is Not

- Sexism, racism
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- Fixed with blame and shame

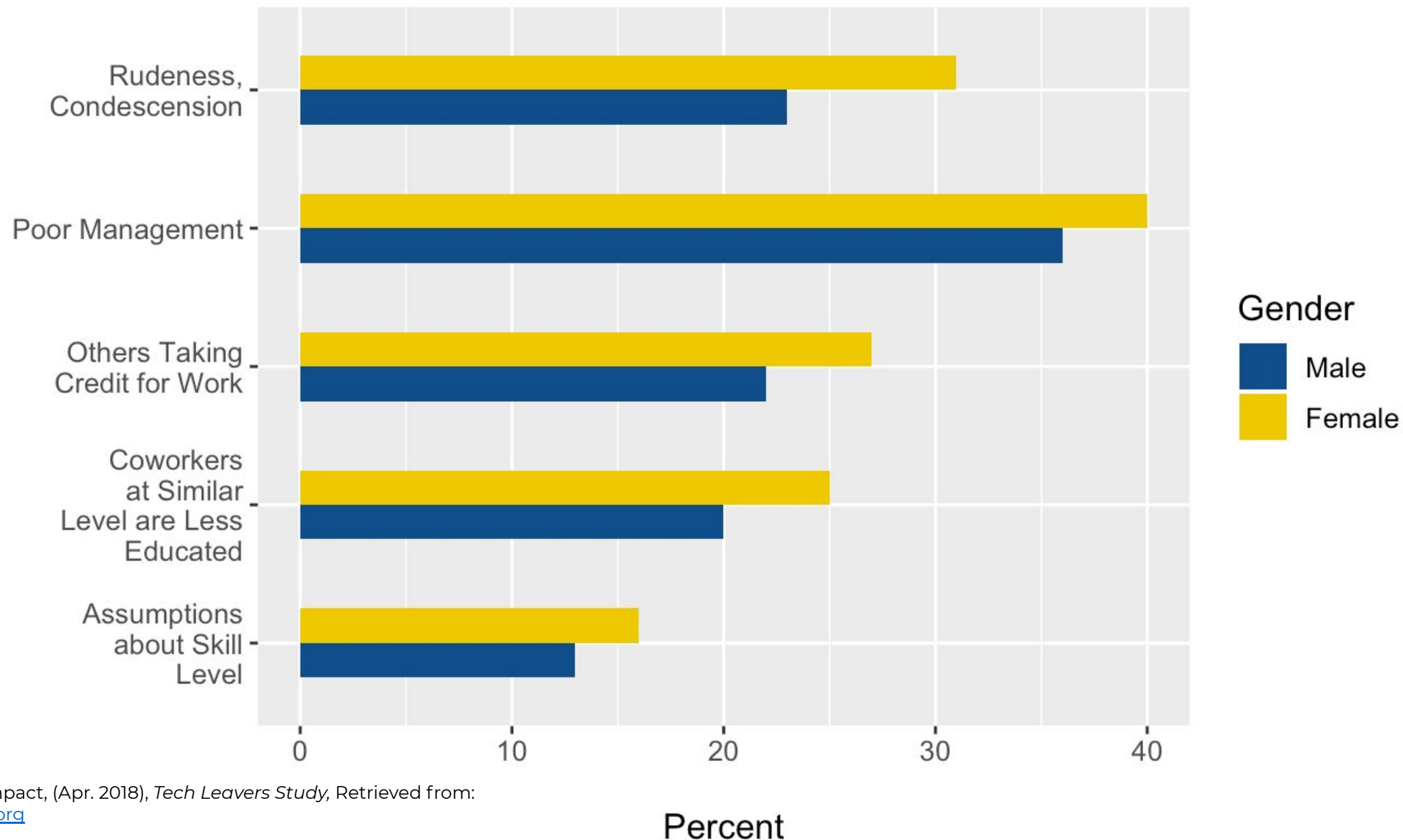
Implicit Bias Is

- **Unconscious** product of learned behavior
- Developed **over time**
- Addressed with conversation and **empathy**

When Implicit Bias Becomes Action

- Using “he/his” when describing hypothetical customers or candidates
- Crediting an idea to someone else
- Making assumptions about someone’s role
- Underestimating others’ abilities

Workplace Experiences by Gender



Approaching Bias

- Ask questions
- Assume positive intent

“She seems
kind of
aggressive”

“What makes
you say that?”

Approaching Bias

- Use it as a learning opportunity
- Address it privately
- Limit the conversation to your perception

“She is very articulate”

“I feel like saying that might imply you assumed otherwise”

Horton, A.P., (2019), *How to confront bias without alienating people*, Retrieved from: <https://www.fastcompany.com>

Stereotype Threat

Stereotype Threat

- Fear that one will fulfill existing negative stereotypes
- Proven to increase anxiety
- Decreases productivity and performance¹



- Increase visibility of women at all levels²
- Convey high value of diversity²
- Convey high standards, frame feedback in the context of high standards³

1. Aronson, J., Fried, C. B., & Good, C. (2002). *Reducing the effect of stereotype threat on African American college students by shaping theories of intelligence*. Journal of Experimental Social Psychology, 38, 113-125.
2. Purdie-Vaughns, V., Steele, C. M., Davies, P. G., Dittmann, R., & Crosby, J. R. (2008). *Social identity contingencies: How diversity cues signal threat or safety for African Americans in mainstream institutions*. Journal of Personality and Social Psychology, 94, 615-630.
3. Cohen, G. L., Steele, C. M., & Ross, L. D. (1999). *The mentor's dilemma: Providing critical feedback across the racial divide*. Personality and Social Psychology Bulletin, 25, 1302-1318.

Sponsorship

Mentorship vs. Sponsorship

Mentorship vs. Sponsorship

A mentor...

- Provides tips, advice

A sponsor...

- Provides public and private endorsement and advocacy

Mentorship vs. Sponsorship

A mentor...

- Provides tips, advice
- Increases confidence and competence, help navigate the company

A sponsor...

- Provides public and private endorsement and advocacy
- Enables career advancement and visibility with leadership

Mentorship vs. Sponsorship

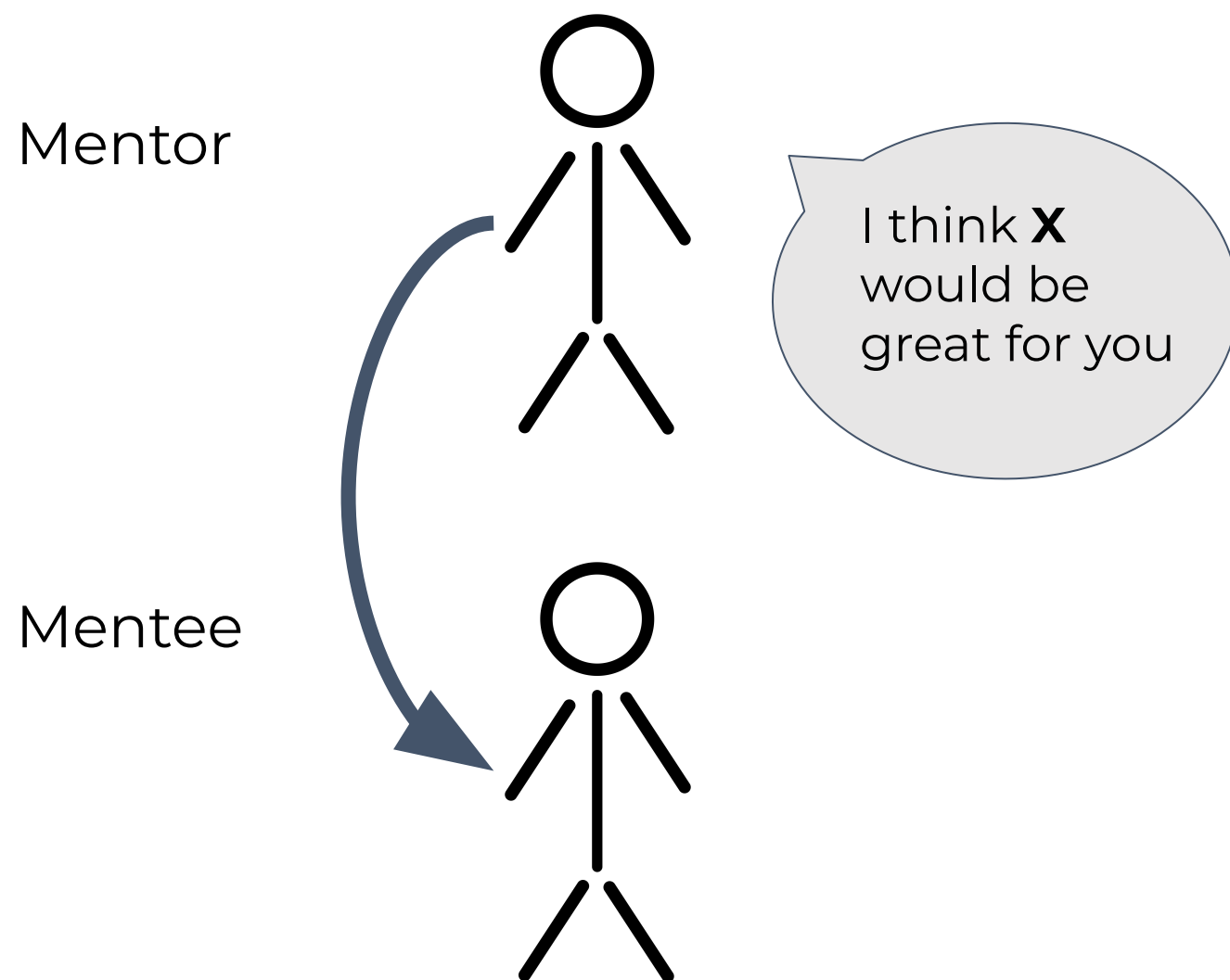
A mentor...

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- Relationship is formed by **request of the mentee**

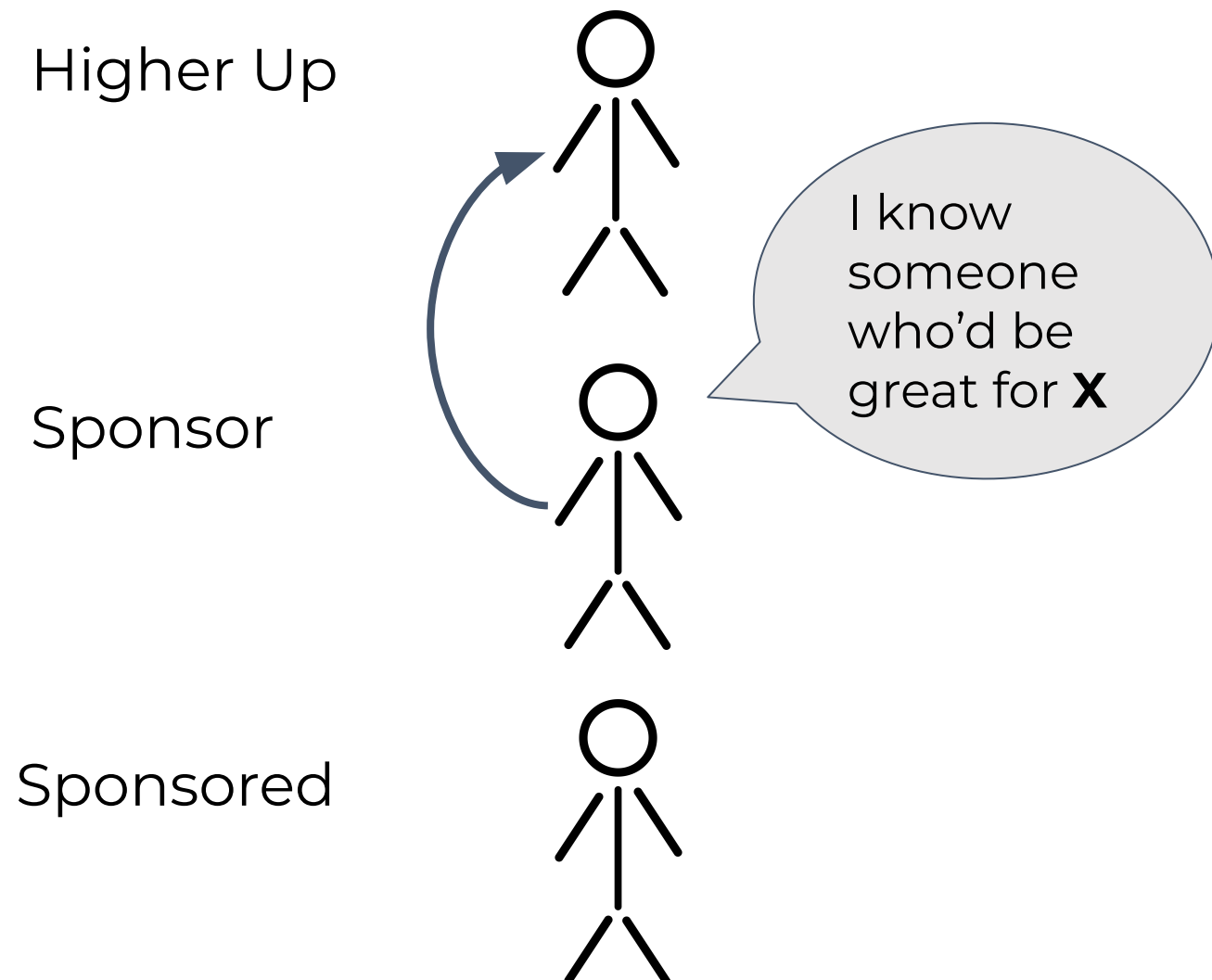
A sponsor...

- Provides public and private endorsement and advocacy
- Enables career advancement and visibility with leadership
- Relationship is formed by **efforts of the sponsor**

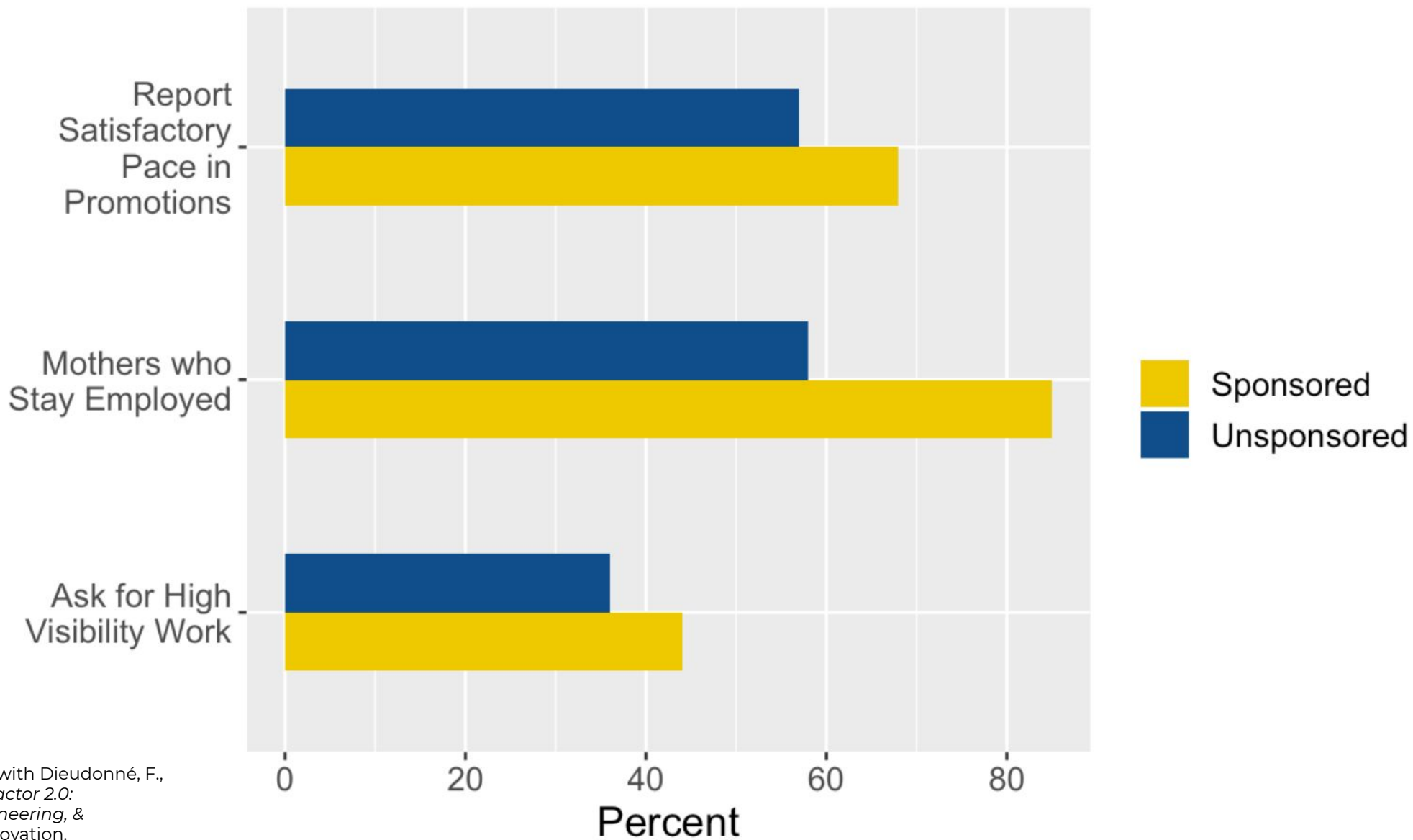
Mentorship



Sponsorship



The Value of Sponsorship







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Resources

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- Hewlett, A., Luce, S., Carolyn & Servon, Lisa & Sherbin, Laura & Shiller, Peggy & Sosnovich, Eytan & Sumberg, Karen. (2008). By RESEARCH REPORT The Athena Factor: Reversing the Brain Drain in Science, Engineering, and Technology.
- Hewlett, S.A., Sherbin, L., with Dieudonné, F., Fagnoli, C., & Fredman, C. (2014). *Athena Factor 2.0: Accelerating female talent in science, engineering, & technology*. New York: Center for Talent Innovation.
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