Who's Filling Up Those Seats in Computing Classes? New Insights on Undergraduates in Computing

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Gender Trends in STEM: 1971-2011

BRAID Initiative to Study Diversity in Computer Science, 2015-2018

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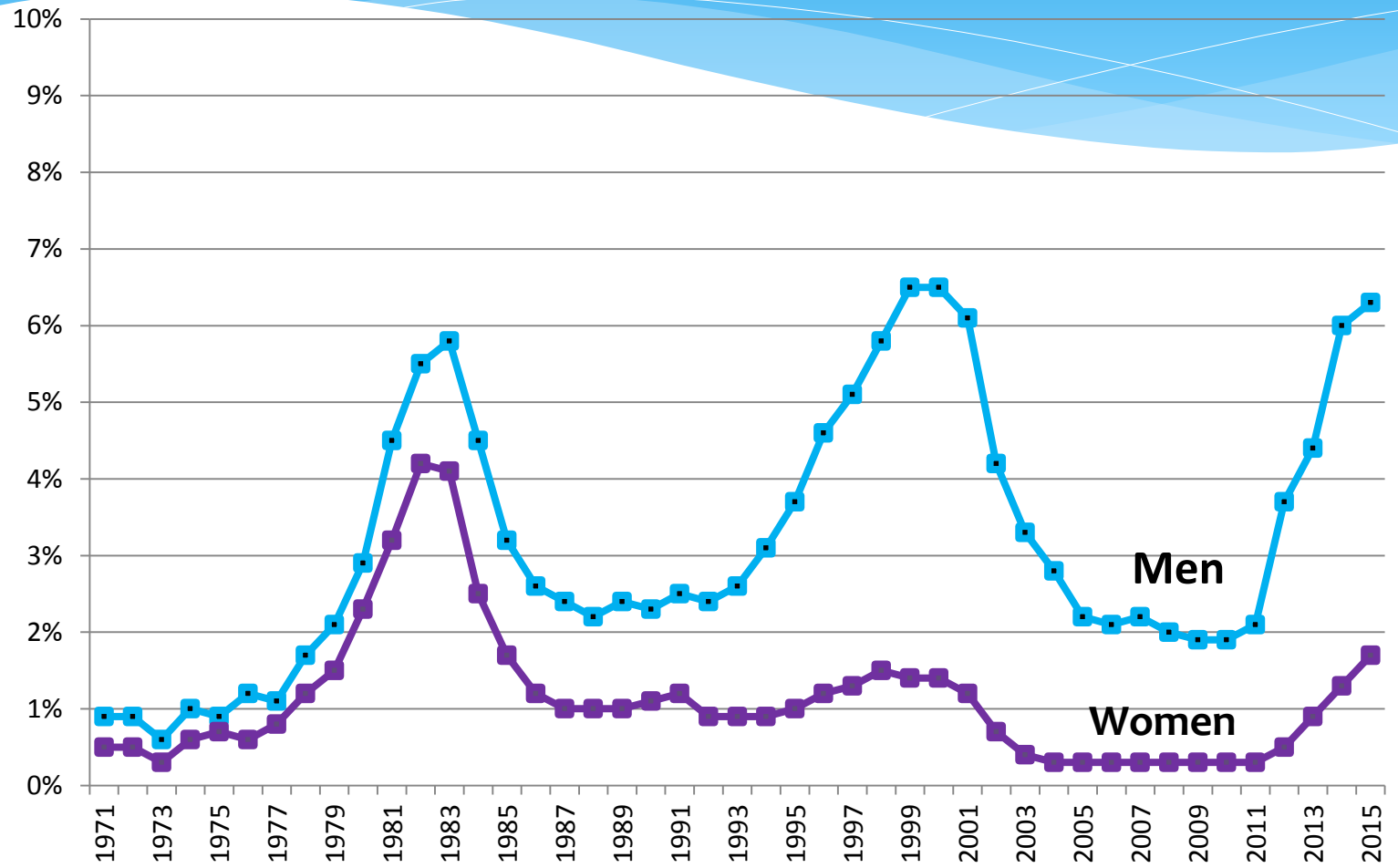
Building Recruiting And Inclusion for Diversity

Intent to Major in Computer Science Among Students Entering Four-Year Colleges and Universities Nationwide



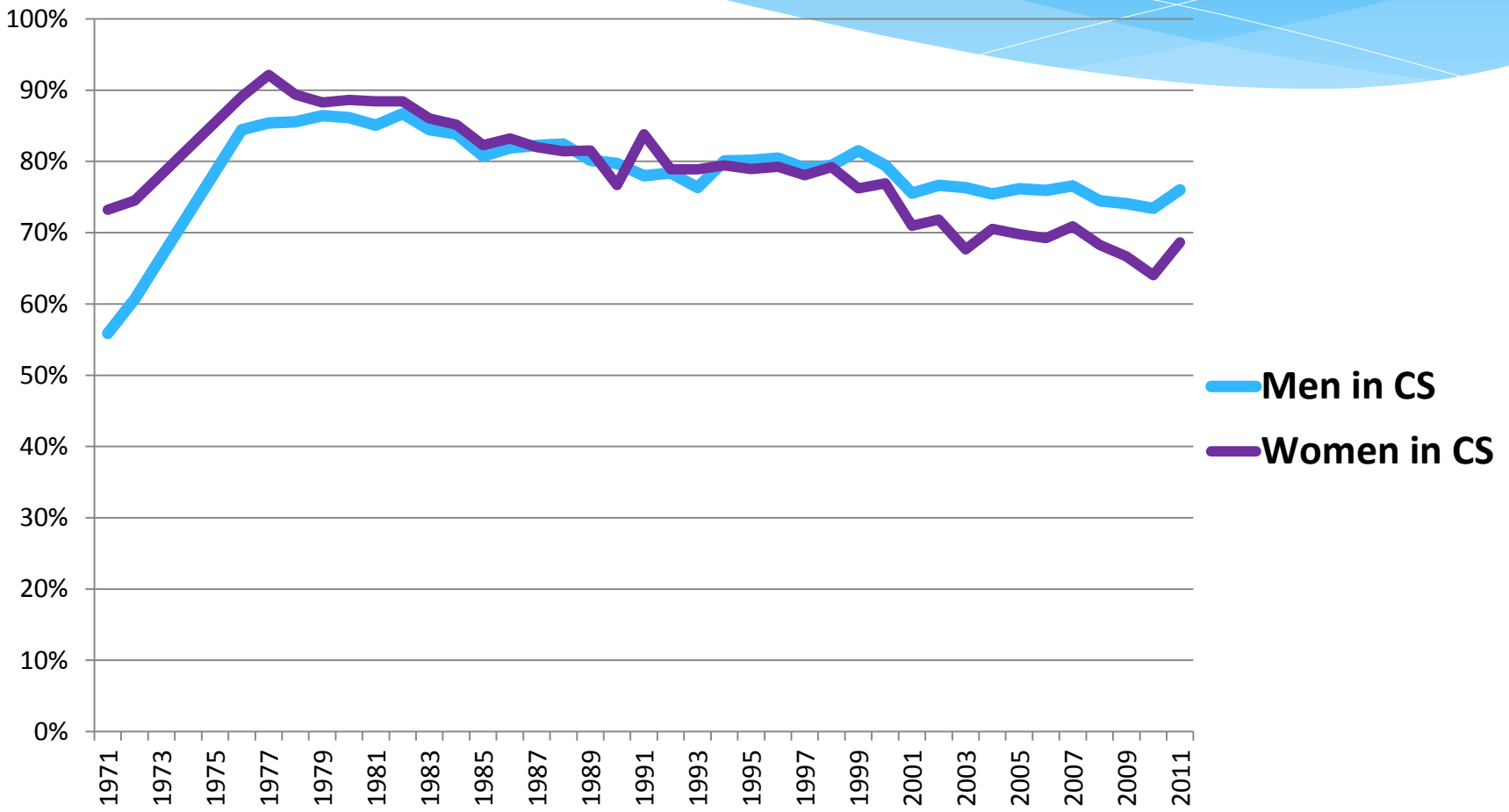
Source: Cooperative Institutional Research Program Freshman Survey, Higher Education Research Institute, UCLA

Not Just "How Many?", But "Who" are Computer Science Majors?

(NSF HRD #1135727)

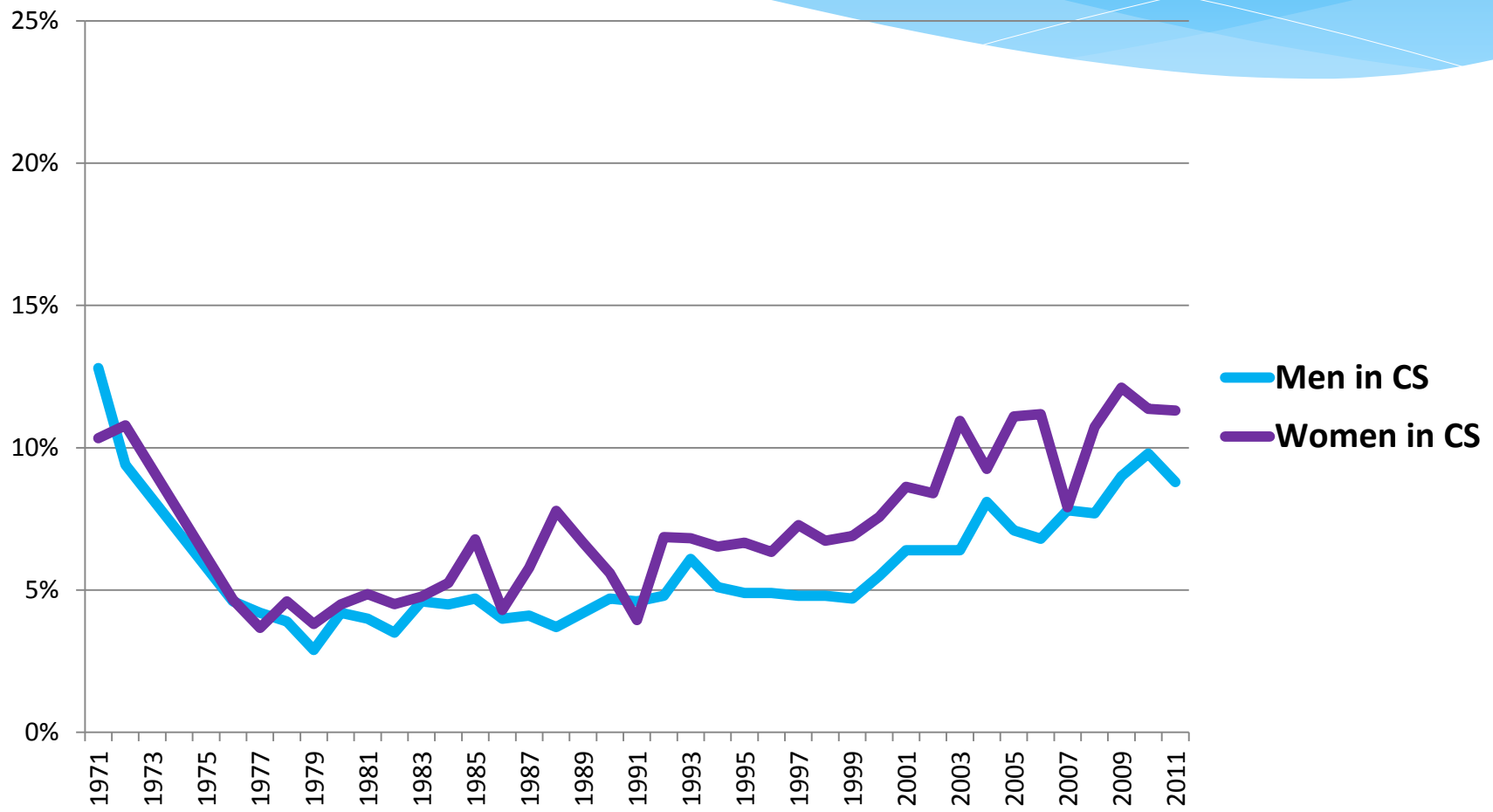
- What are the characteristics of women and men who intend to major in computer science?
  - Demographics, career plans, self-ratings, values, etc.
- How do they compare with men and women in other STEM majors?
- How have they changed over four decades?
- CIRP Freshman Survey STEM sample (1971-2011)
  - 54,845 women and 149,766 men planning to major in CS
  - 1.7 million students planning to major in other STEM fields (biological sciences, physical sciences, math/stats, and engineering)
- Selected Findings

Proportion of Entering CS Majors Who Aspire to be Computer Programmers (1971-2011)



Source: Cooperative Institutional Research Program Freshman Survey, Higher Education Research Institute, UCLA

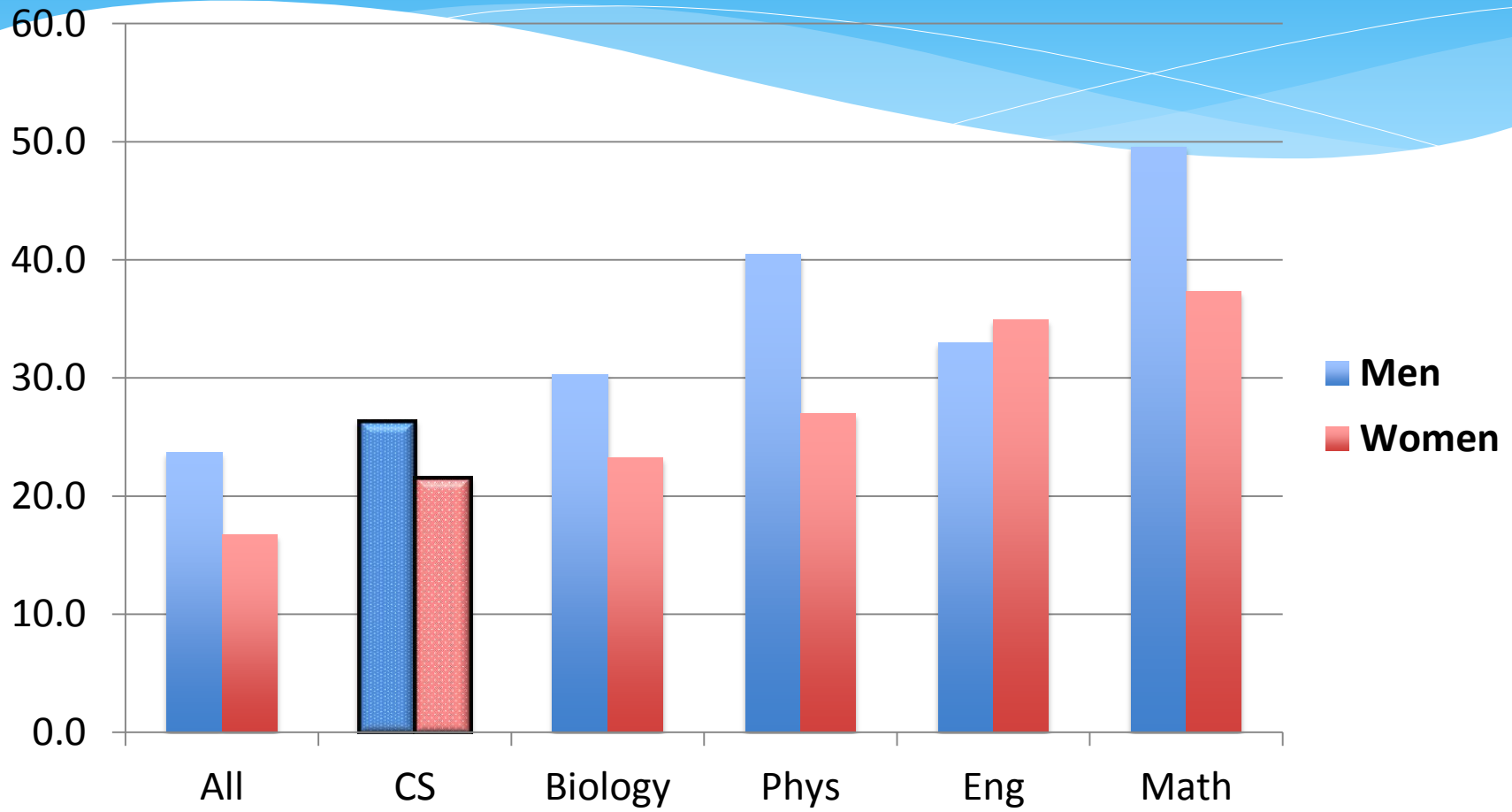
Proportion of Entering CS Majors Who Are Undecided about their Career Aspirations (1971-2011)



Source: Cooperative Institutional Research Program Freshman Survey, Higher Education Research Institute, UCLA

Self-Rated Academic Ability (2011)

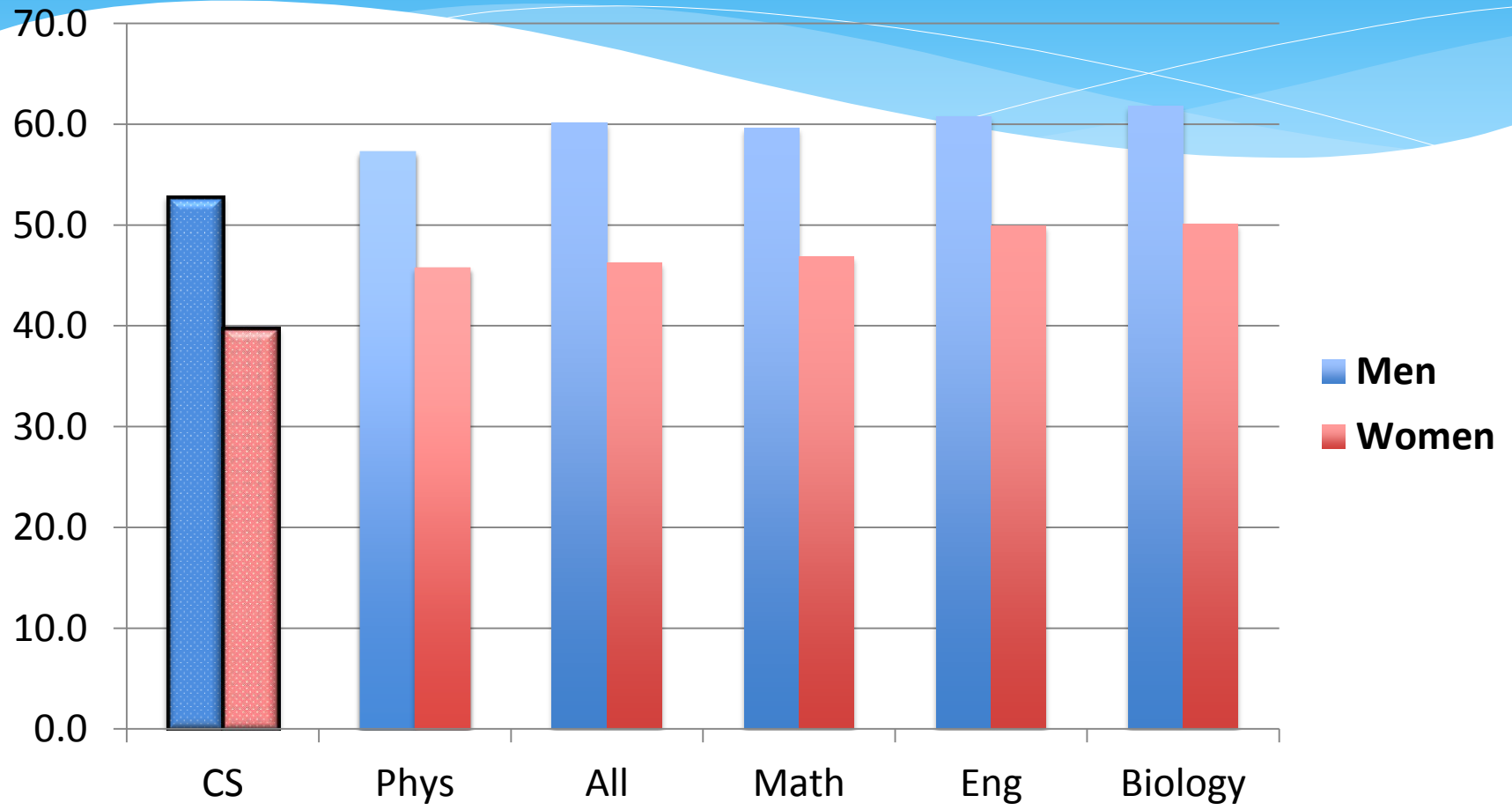
(% Indicating "Highest 10%")



Source: Cooperative Institutional Research Program Freshman Survey, Higher Education Research Institute, UCLA

Self-Rated Emotional Health (2011)

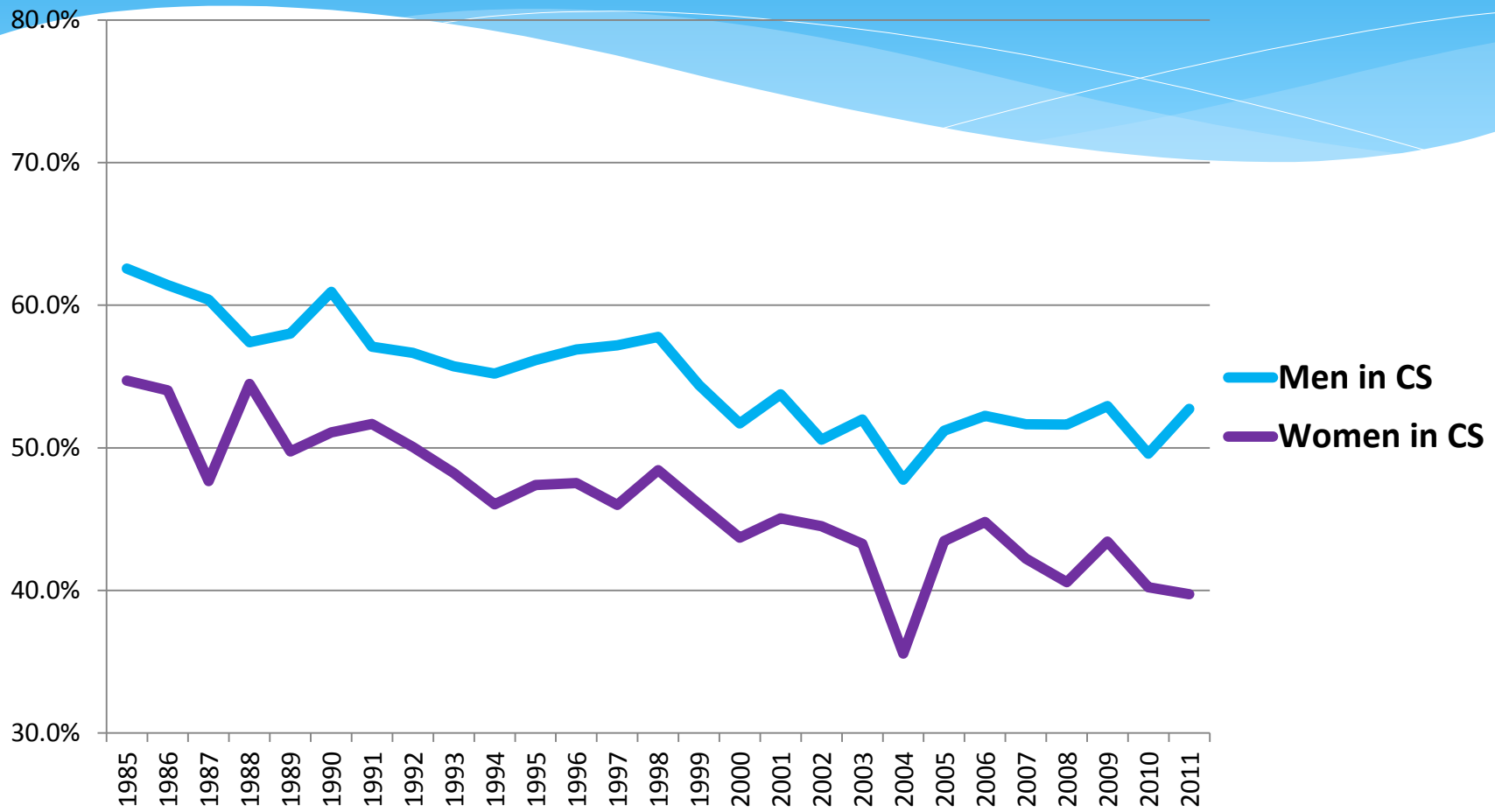
(% Indicating "Above Average" or "Highest 10%")



Source: Cooperative Institutional Research Program Freshman Survey, Higher Education Research Institute, UCLA

Trends in Self-Rated Emotional Health (1985-2011)

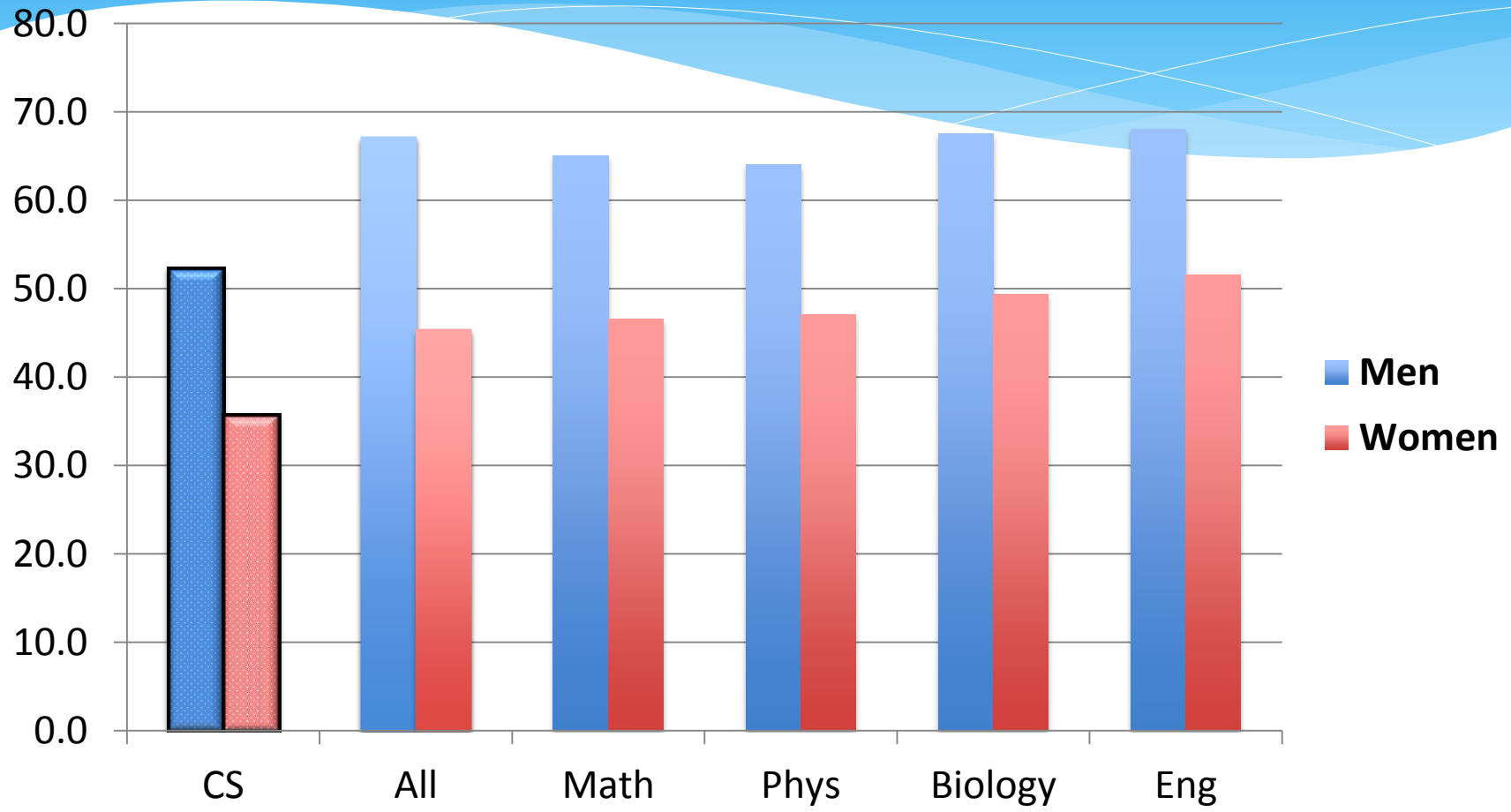
(% Indicating "Highest 10%" or "Above Average")



Source: Cooperative Institutional Research Program Freshman Survey, Higher Education Research Institute, UCLA

Self-Rated Physical Health (2011)

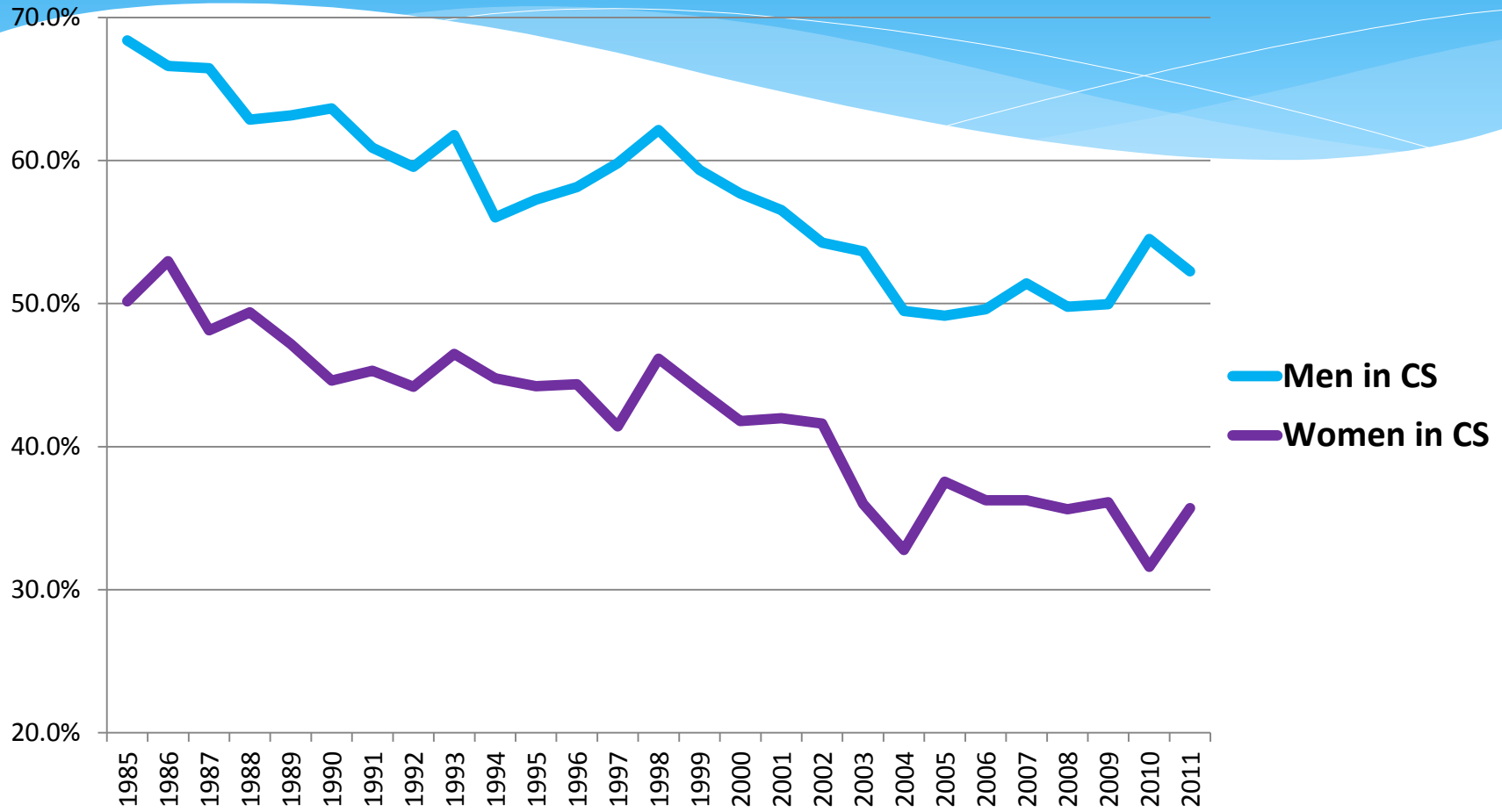
(% Indicating "Above Average" or "Highest 10%")



Source: Cooperative Institutional Research Program Freshman Survey, Higher Education Research Institute, UCLA

Trends in Self-Rated Physical Health (1985-2011)

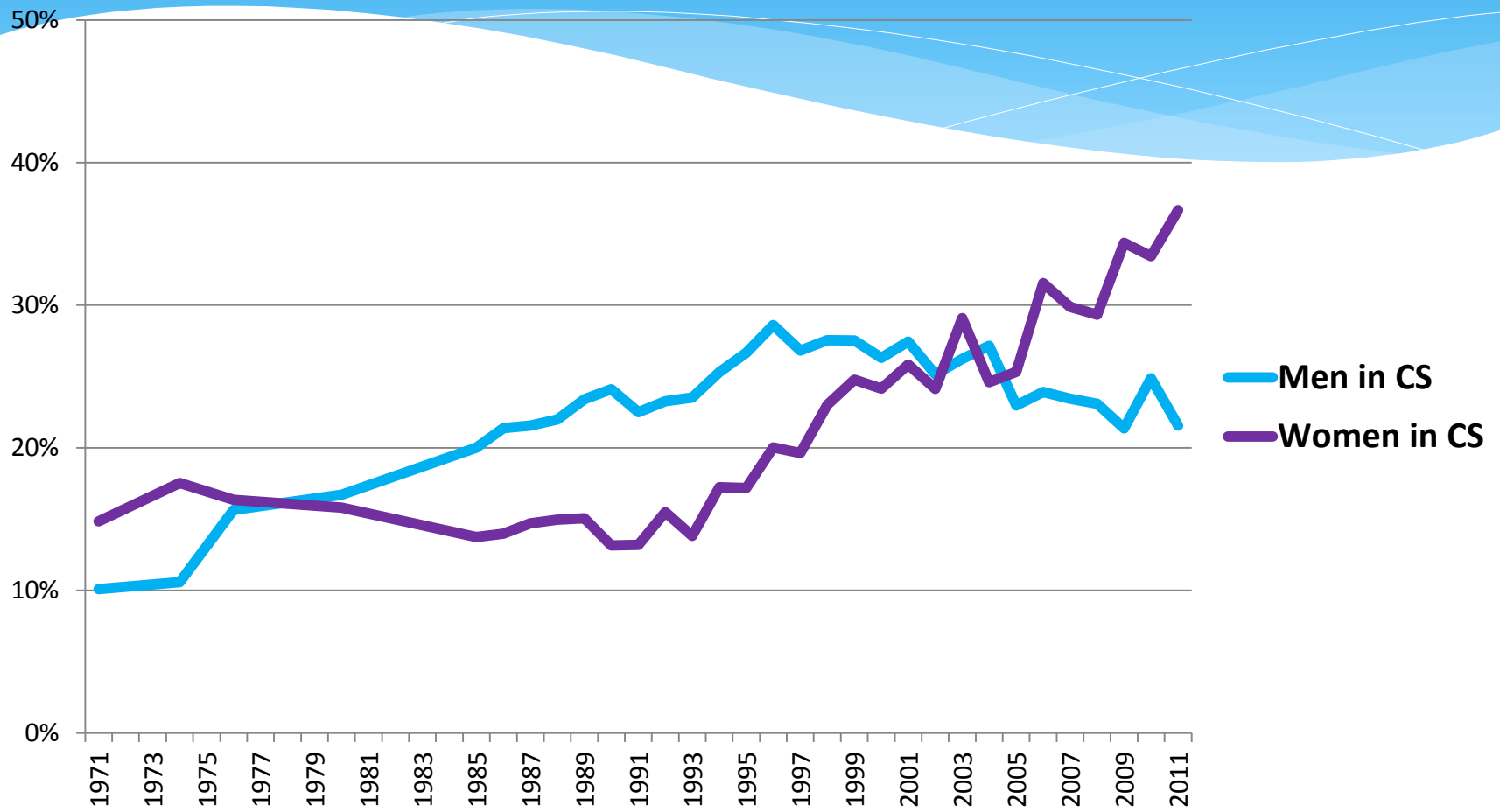
(% Indicating "Highest 10%" or "Above Average")



Source: Cooperative Institutional Research Program Freshman Survey, Higher Education Research Institute, UCLA

Trends in Self-Rated Artistic Ability (1971-2011)

(% Indicating "Above Average" or "Highest 10%")



Source: Cooperative Institutional Research Program Freshman Survey, Higher Education Research Institute, UCLA

Who Takes Intro CS?

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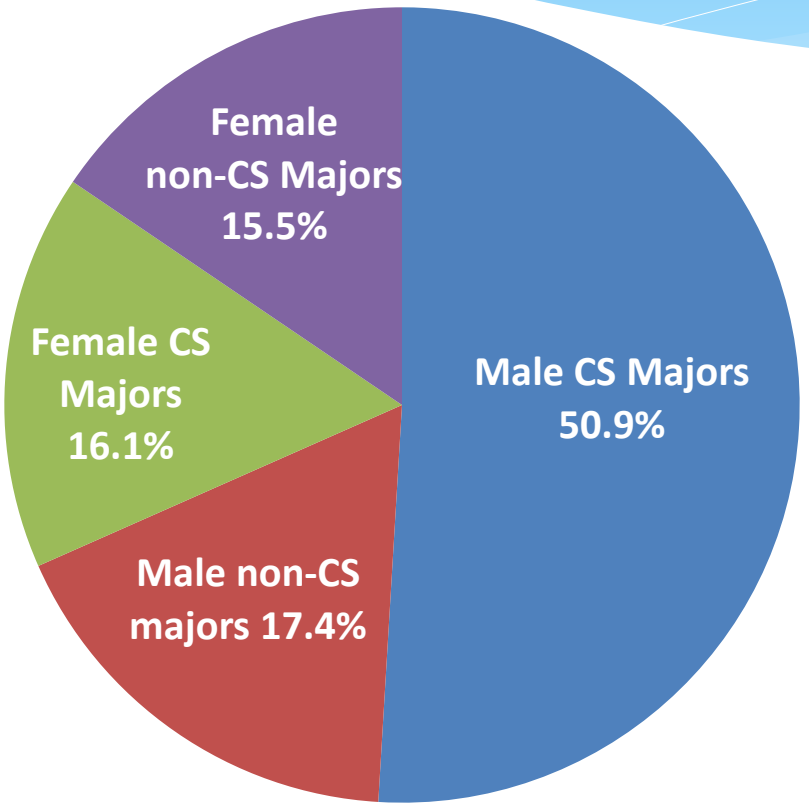
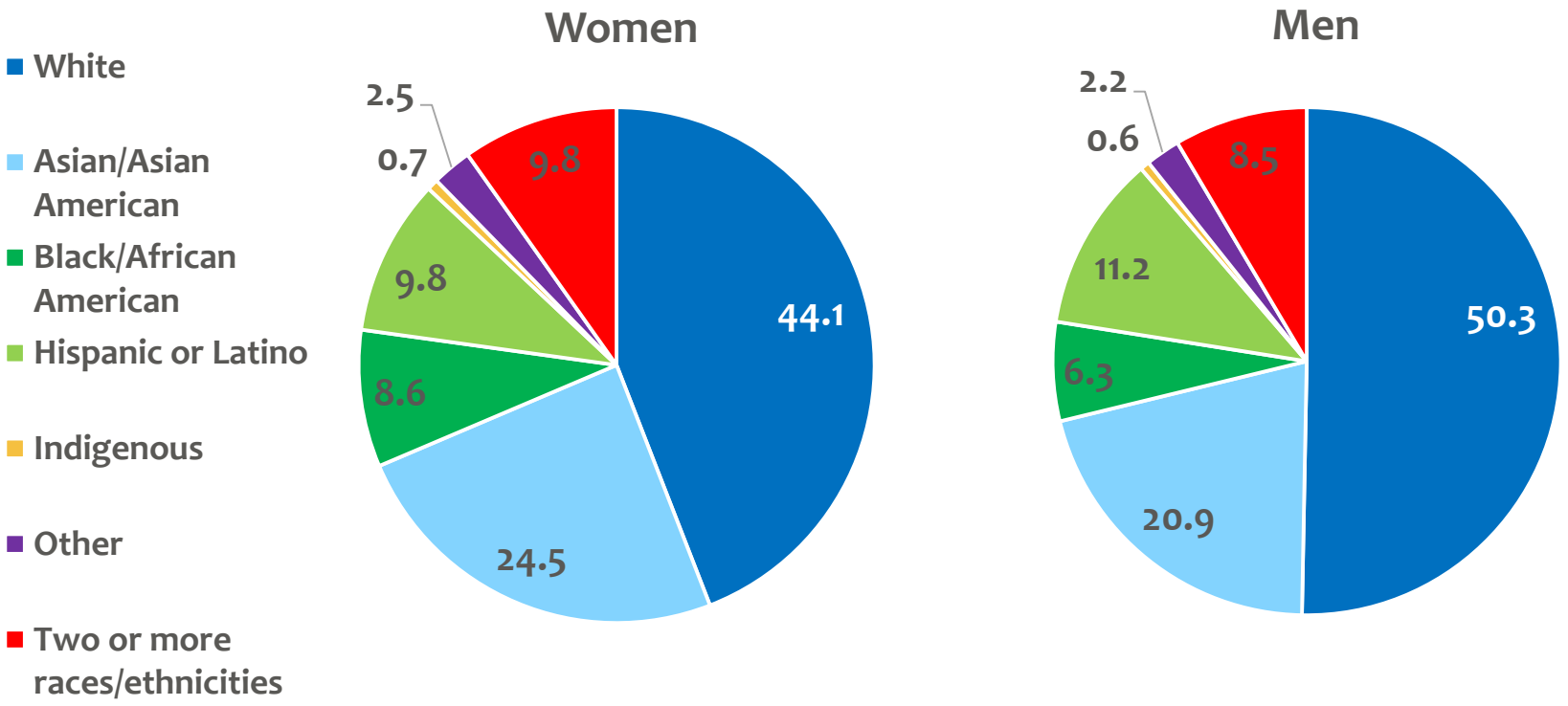
Building Recruiting And Inclusion for Diversity

- 15-campus initiative to promote gender and racial/ethnic diversity in undergraduate computing
- Collaboration between Harvey Mudd College, The Anita Borg Institute and UCLA
- Funded by Google, Facebook, Microsoft and Intel, with additional research support from NSF and the Computing Research Association
- Research focuses on thousands of students enrolled in hundreds of introductory CS classes (2015-2016 and 2016-17)
  - Pre-post design with annual follow-ups through 2018
  - Who takes intro CS?
  - What are their experiences and perceptions?
  - Longer-term major pathways and career plans
  - Variations by gender and race

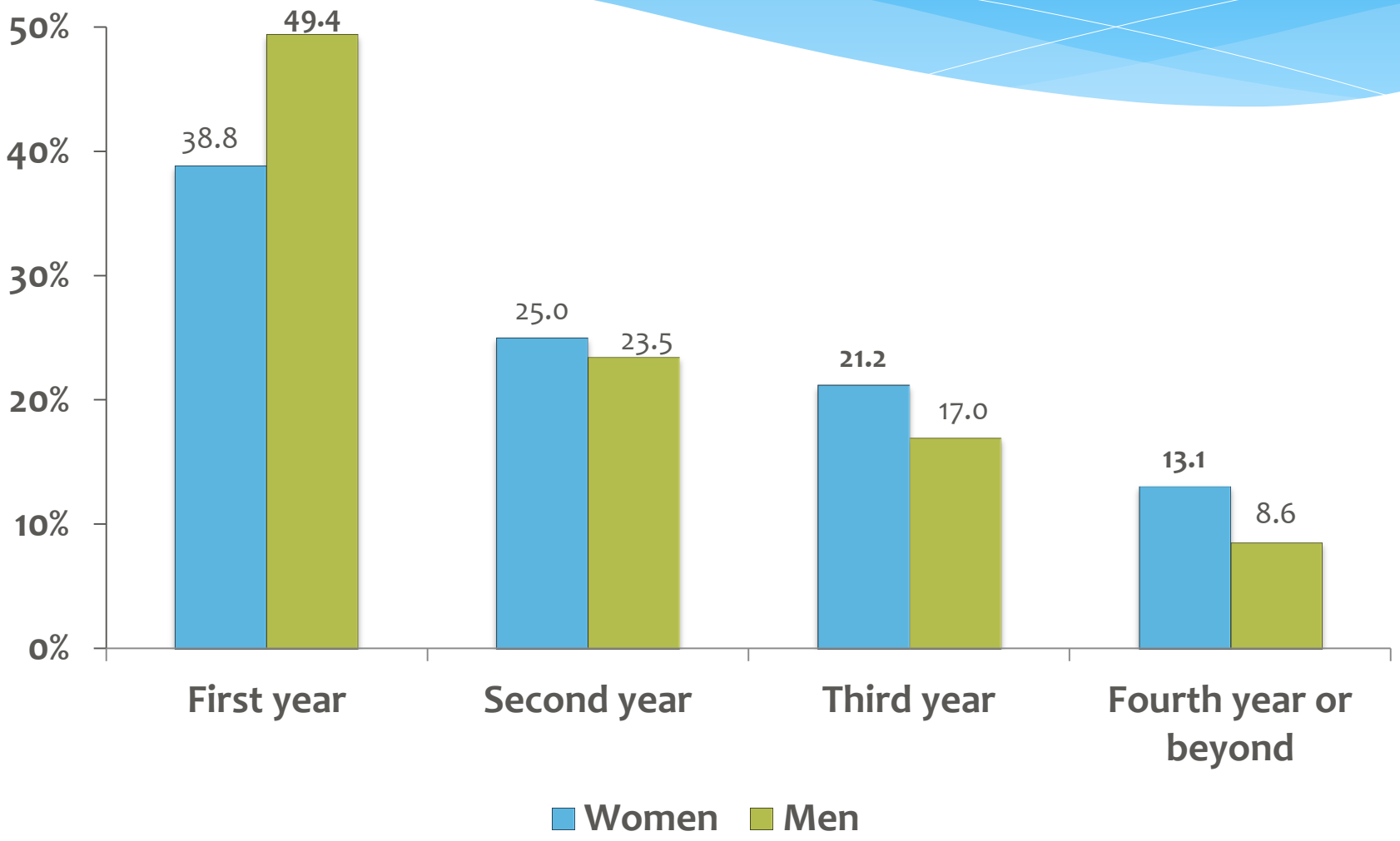
Half of Students in Intro CS are Male CS Majors



Greater Racial/Ethnic Diversity Among Women in Intro CS

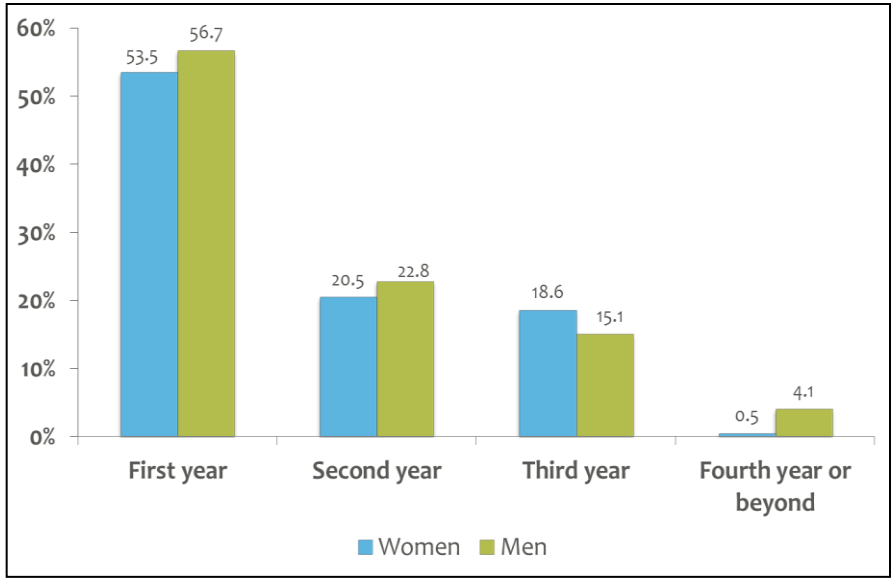


When Do Students Take Intro CS?



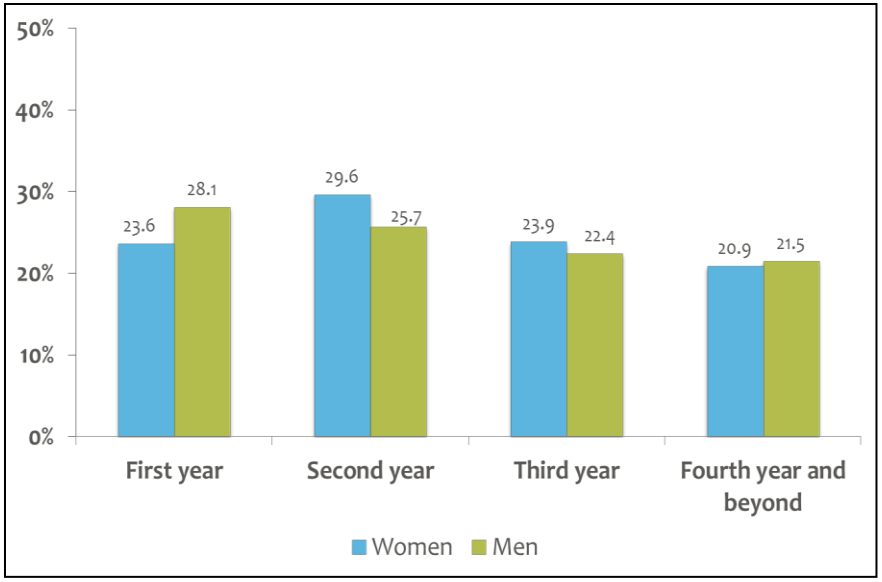
Timing of Intro CS Varies Between CS and Non-CS Majors

CS Majors…



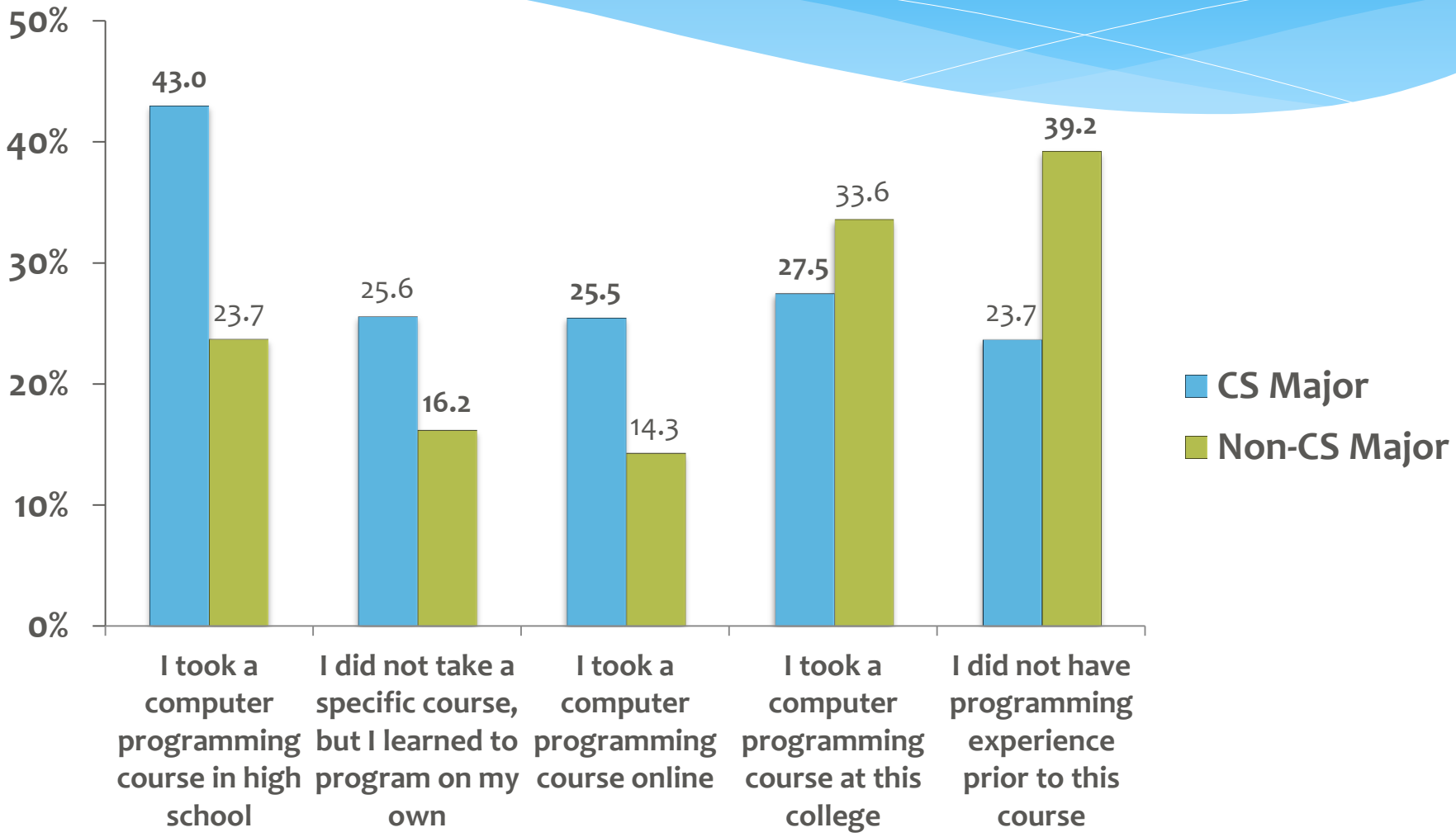
…tend to take it Year One

Non-CS Majors…



…take it any year

Significant Differences in Prior Programming Experiences



Where is the Research Headed?

- What intro course strategies are most/least effective in promoting students' computing confidence, sense of belonging, and longer-term persistence in computing? What is role of class size?
- Does this operate differently for women or URMs? Must address intersectionality.
- What happens to students who are undecided, non-computing majors, or double-majors?
  - Annual follow-ups funded by NSF
- More info: https://braidresearch.gseis.ucla.edu/

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