

# Social and Behavioral Sciences: Diversity in SBS; STEM in SBS

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UCI ADVANCE ROUNDTABLE WORKSHOP OCTOBER 2012

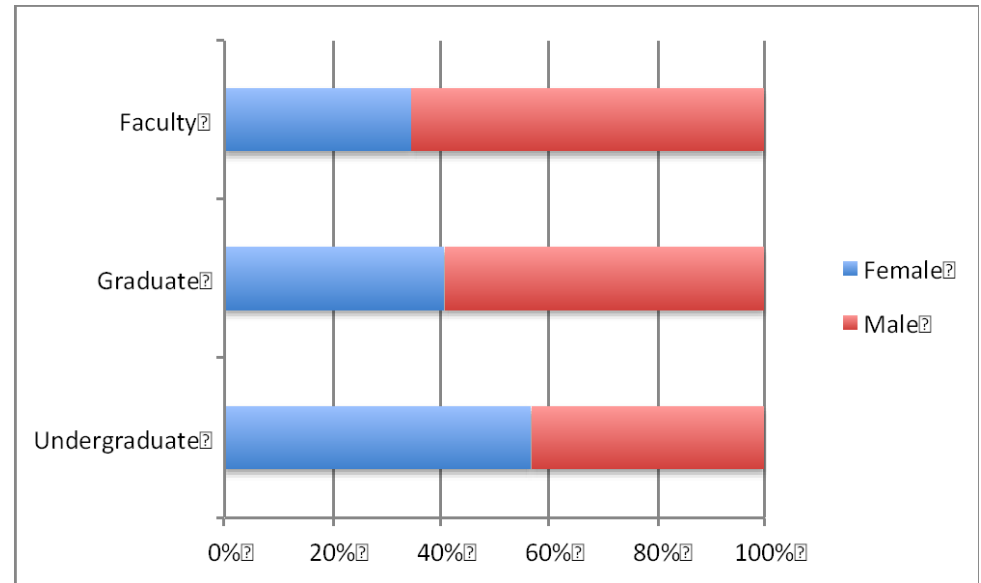
“You need to see one to be one.”

Marian Wright Edelman

# SBS as a Microcosm of Academe

# Leaky Pipeline in SBS

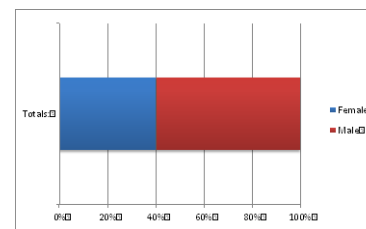
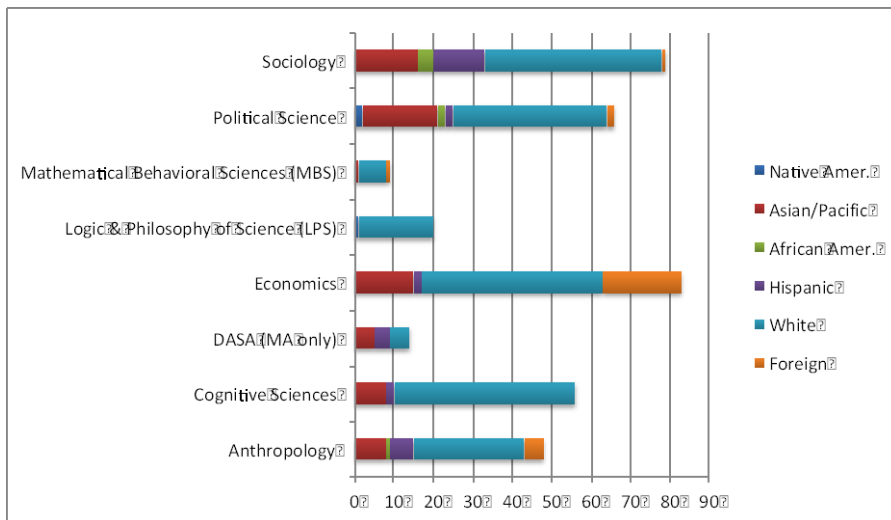
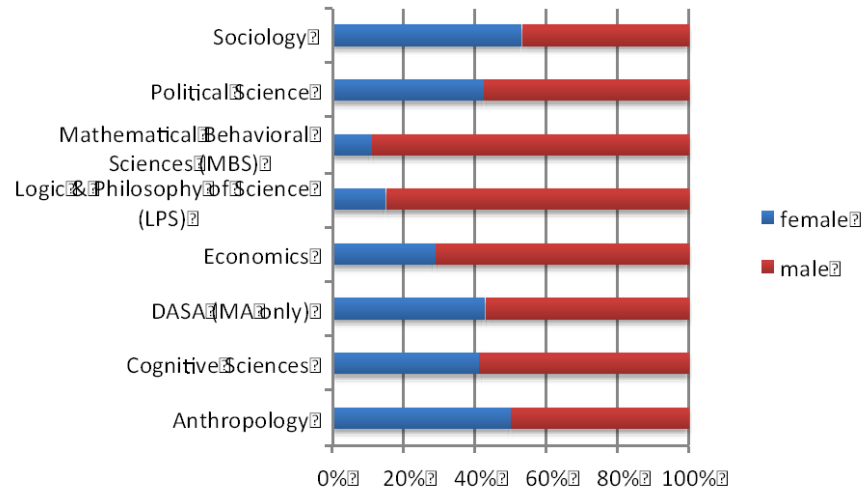
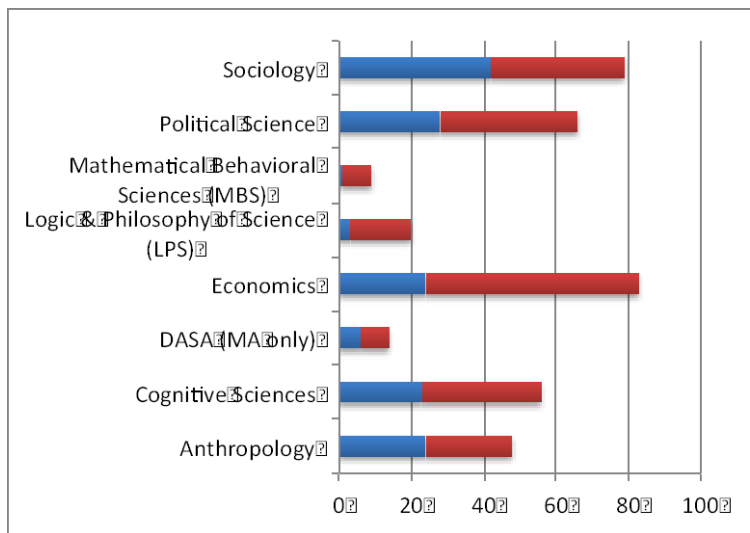
Just as in the STEM fields, there is a leaky pipeline of women (and minorities) from undergraduate to graduate students to faculty.



(UCI data at UG and G is representative of UC and all institutions.)

Source: UC Irvine Office of Institutional Research (UG/G-2011-12);  
UCI Advance (F-2010-11) Total student headcounts; total faculty headcount  
Note: These data are not cohort lagged to represent actual cohort transitions

# Graduate Students and Composition

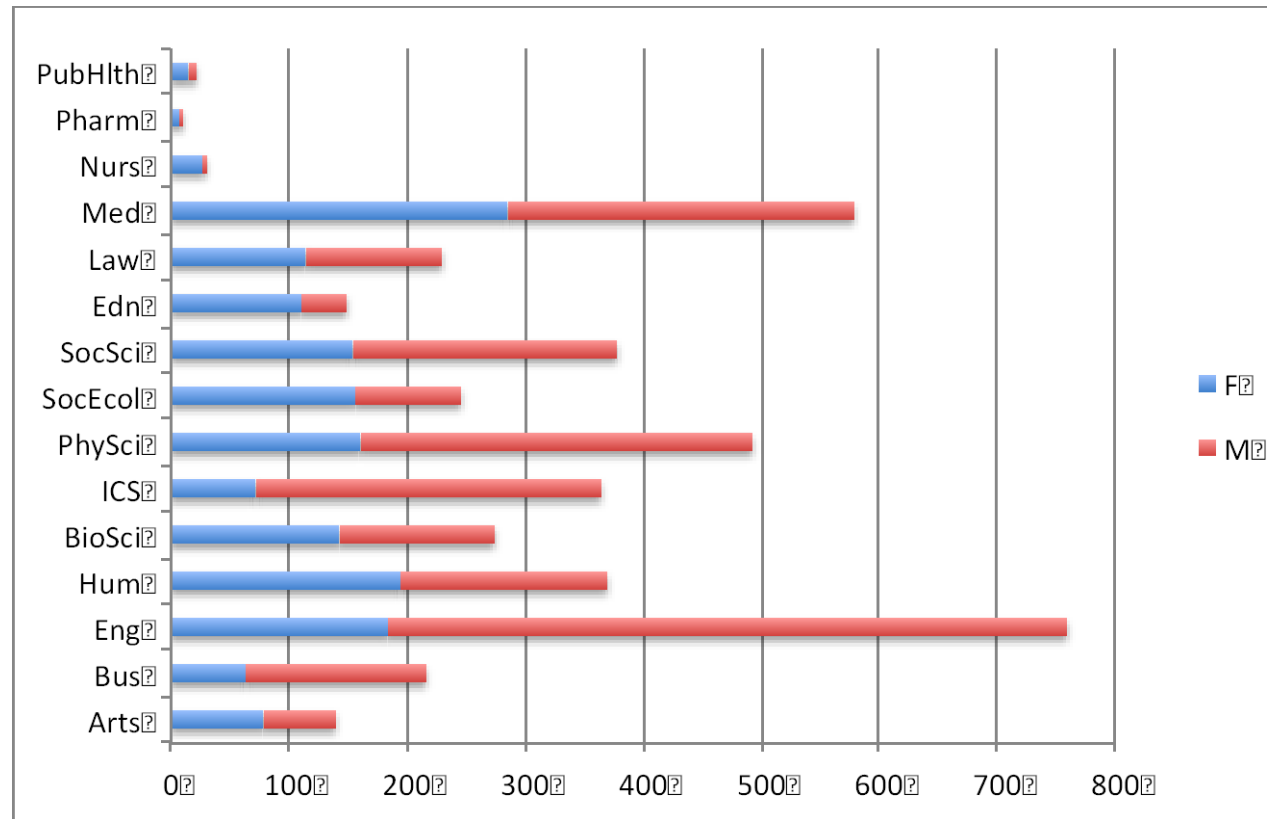


UC Irvine Social Sciences

More mathematical/quantitative areas have fewer women/URM.

Source: Data from UC Irvine Social Sciences Graduate Office 2011-2012

# Graduate Topics & Gender

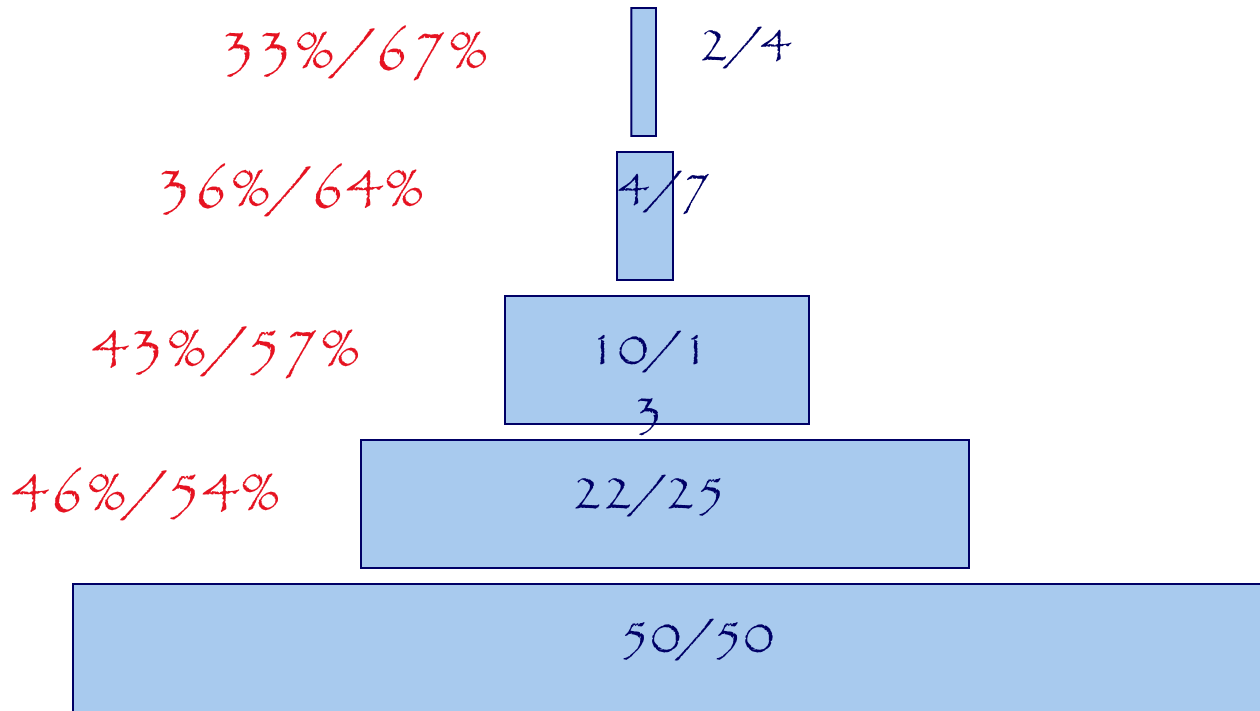


Fields with more male graduate students tend to be more quantitative – and larger.

Inclusion happens one field at a time.

Source: UC Irvine Institutional Research, Headcounts by gender 2011-12

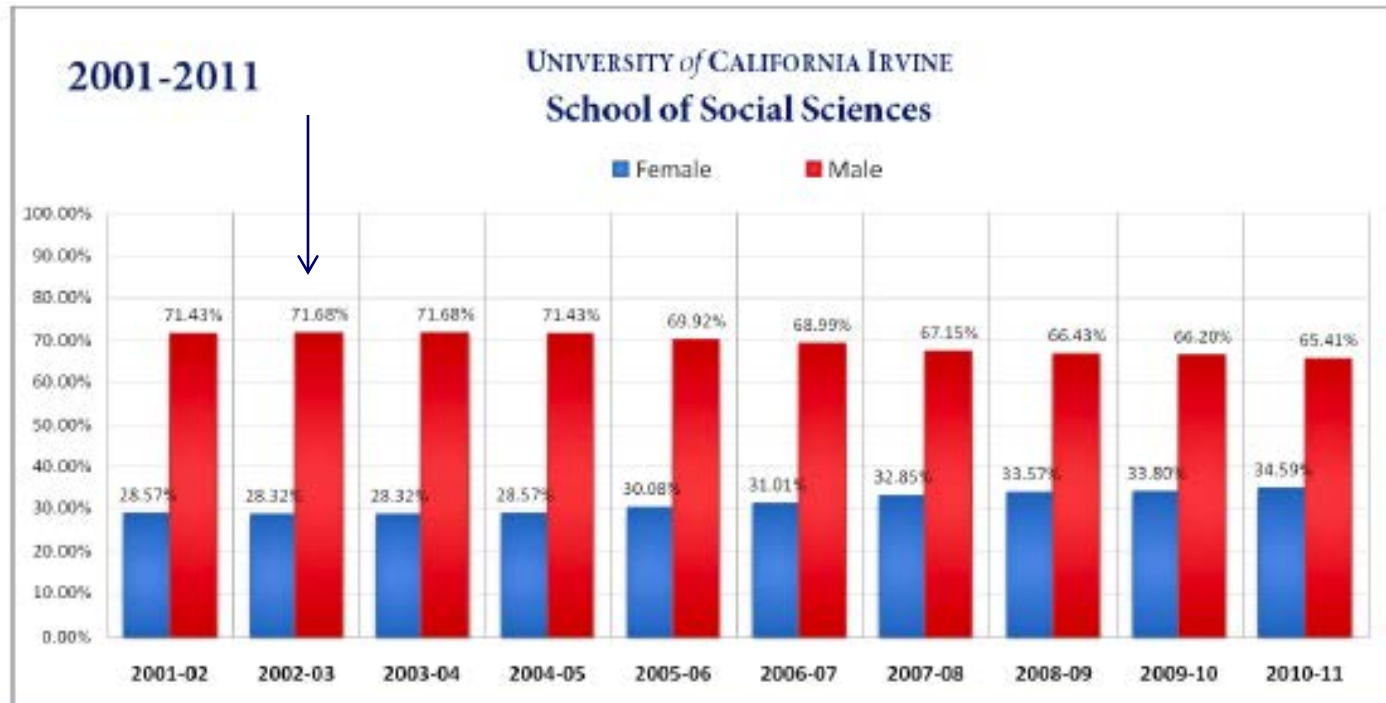
# Heirarchy+Small Differences=Bias



Starting with an equal number of women and men and a 45% transition to the next stage for women, and a 50% transition for men, cumulates in just a few stages to a substantial advantage for men.

Simplified illustration of Martell, Lane, & Emrich (1996) model which included 8 layers and a small bias accounting for 1% of variance that led to 65% sort at the top.

# Changing Faculty Profile is Slow



Overall gender composition of faculty can only be changed *slowly* since the number of recruitments and retentions is a relatively small proportion of the whole faculty. [28% to 34%]

Source: UC Irvine ADVANCE program report

# Institutional Actions

- Recruitment from the widest possible applicant pool
- Instruct search committees on biases in evaluation
- Equity in initial compensation and support packages
- Equity in teaching loads and service jobs
- Equity in research opportunities, space, and support, consistent with field needs
- Mentoring to equate informal advice and information
- Public release of salary comparison data (campus)
- Family-friendly child-bearing leave policy and child-rearing modified duty policies (UCOP)



# Promoting Diversity in Recruiting/Retention

- Special recruiting in Presidential Postdoc program increases diversity of hire and faculty who study diversity

- Partner recruiting tends to increase gender diversity –

I adopted a practice of absorbing the department cost share centrally (1/3 each central campus, requesting and receiving units)

Tactical over-offers to alternate recruits when both candidates had multiple offers

These special recruiting and retention practices become increasingly difficult as budgets contract – and especially so in the public as the big private universities often have large financial initiatives for diversity recruiting.

# Field Composition is the Challenge

Recruiting diverse faculty in mathematical/computational subfields is very difficult.

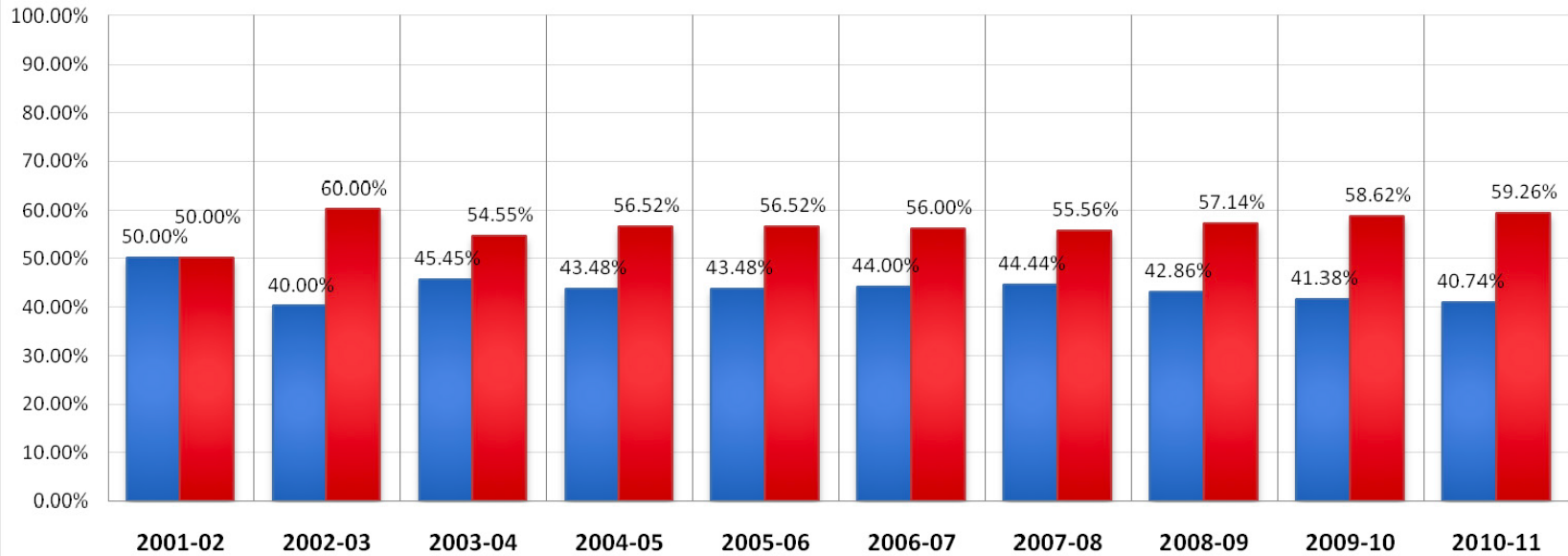
Identified women are often difficult to recruit (the “fish-story”). In social and behavioral sciences, these more technical subfields are often (not always) “cutting edge” and necessary directions to enhance program quality.

Effective availability pools are very low in technical subfields, e.g., mathematical behavioral sciences; philosophy of physics, mathematics; quantitative demography; social network theory; computational cognitive neuroscience; cognitive neuroimaging; economics, especially econometrics, Bayesian estimation, labor, etc. Increasing role of algorithm development and large data-mining operations in “social computing” – perhaps lower than in core STEM fields.

2001-2011

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Sociology

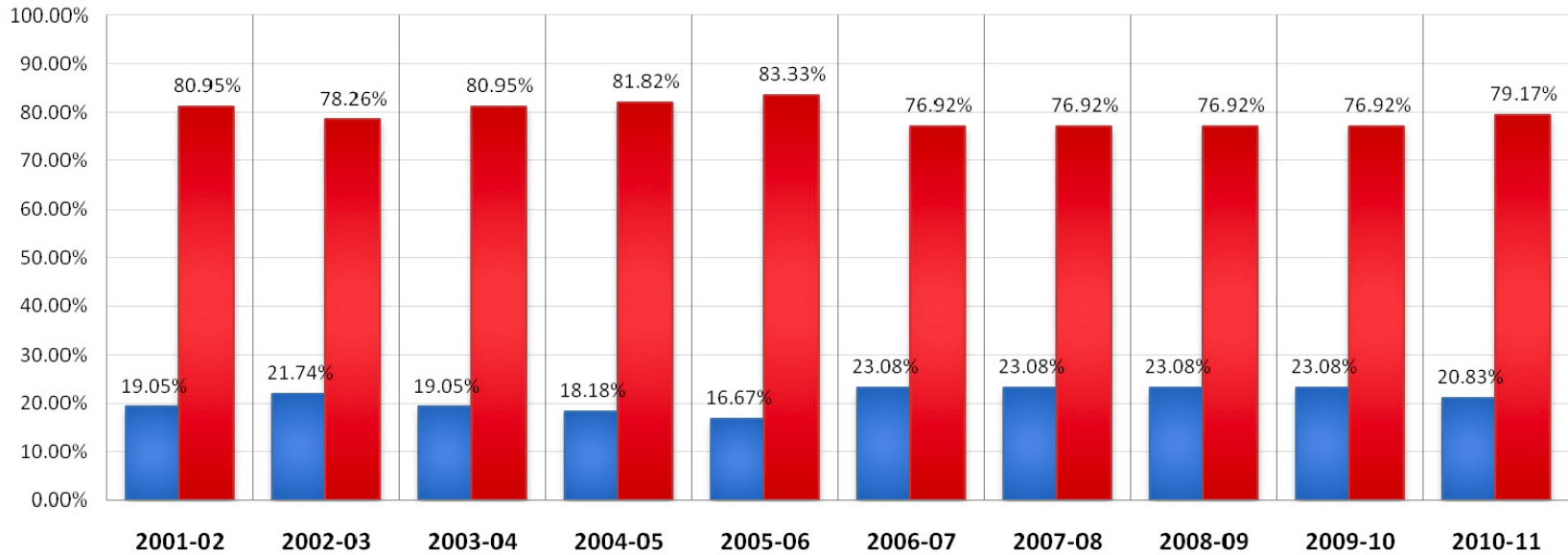
■ Female ■ Male



2001-2011

UNIVERSITY of CALIFORNIA IRVINE  
Economics

■ Female ■ Male



# Advancement and Salary

- Women advance through the ranks more slowly in (almost) all fields
- Salary differentials emerge with time in all fields

For one view of gender equity in the academic/ professional fields, see the web site of Virginia Valian (Hunter College, New York), Gender Equity Project

<http://www.hunter.cuny.edu/genderequity/>

Including tutorials with data and explanations

Or her book, "Why so Slow?"

As Chair of UC Irvine CAP in 1996, I negotiated the release of salary data, and selected the AAU format (see UCI Advance website) and initiated Career Equity Reviews.

In the early 2000's, an analysis (carried out by UC-CAP which I chaired) of UC Professor VI (a mid-Full promotion step, showed women were far less likely to have passed this barrier given the years in service.

# Culture and Climate?

Cartoons on Sex, Sexism, Relationships and Family from Punch | PUNCH

[http://punch.photoshelter.com/image/I0000eHEXGI\\_wLnQ](http://punch.photoshelter.com/image/I0000eHEXGI_wLnQ)



*"That's an excellent suggestion, Miss Triggs. Perhaps one of the men here would like to make it."*

2 of 3

10/12/12 11:18 AM

For treatment of the effects of culture and climate, see video of Virginia Valian at MIT:

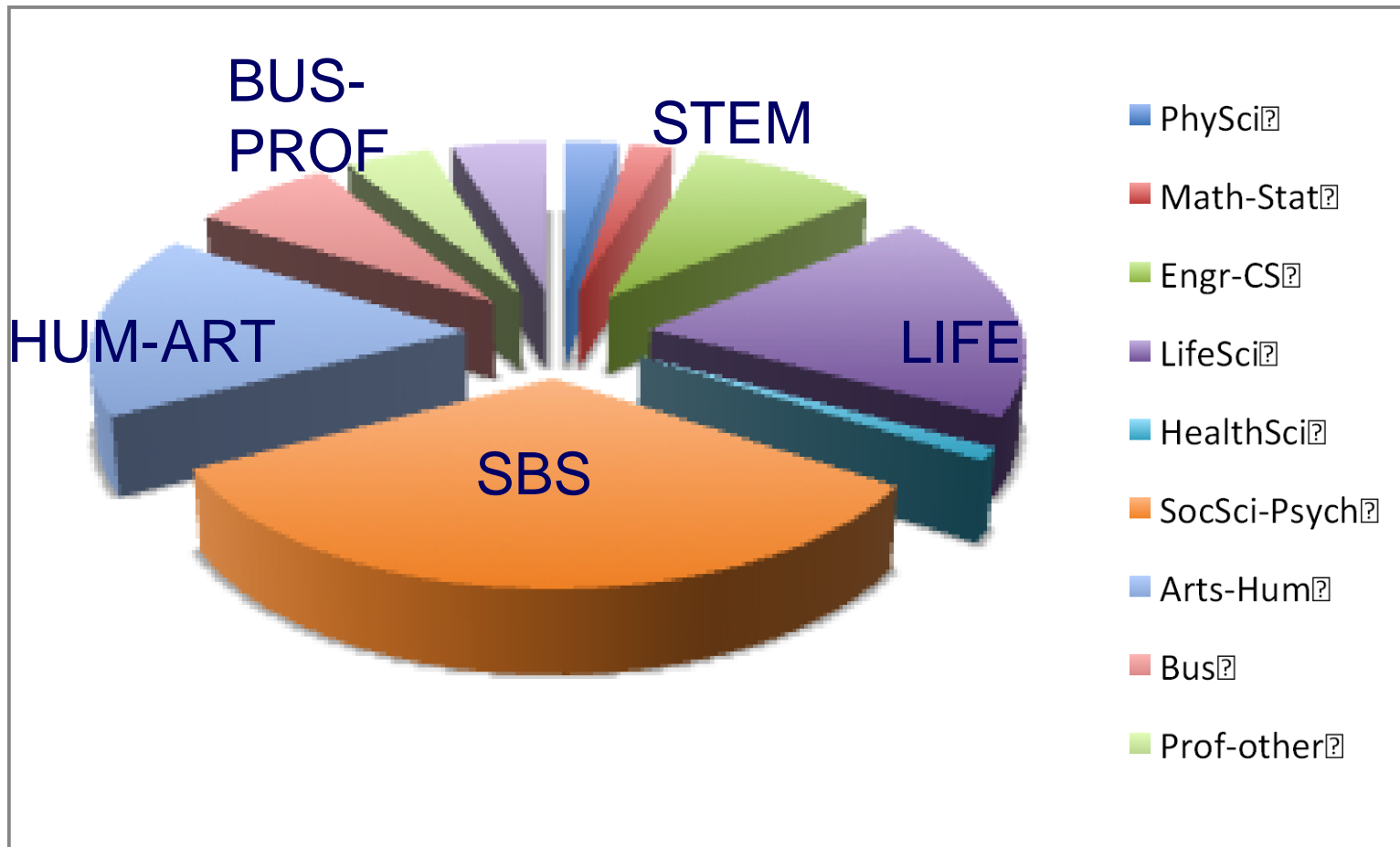
<http://mitworld.mit.edu/video/80/>

Social and Behavioral Sciences and STEM

or

why SBS should be a player in “STEM+”  
education initiatives....

# UC Bachelor Degrees 2010-11



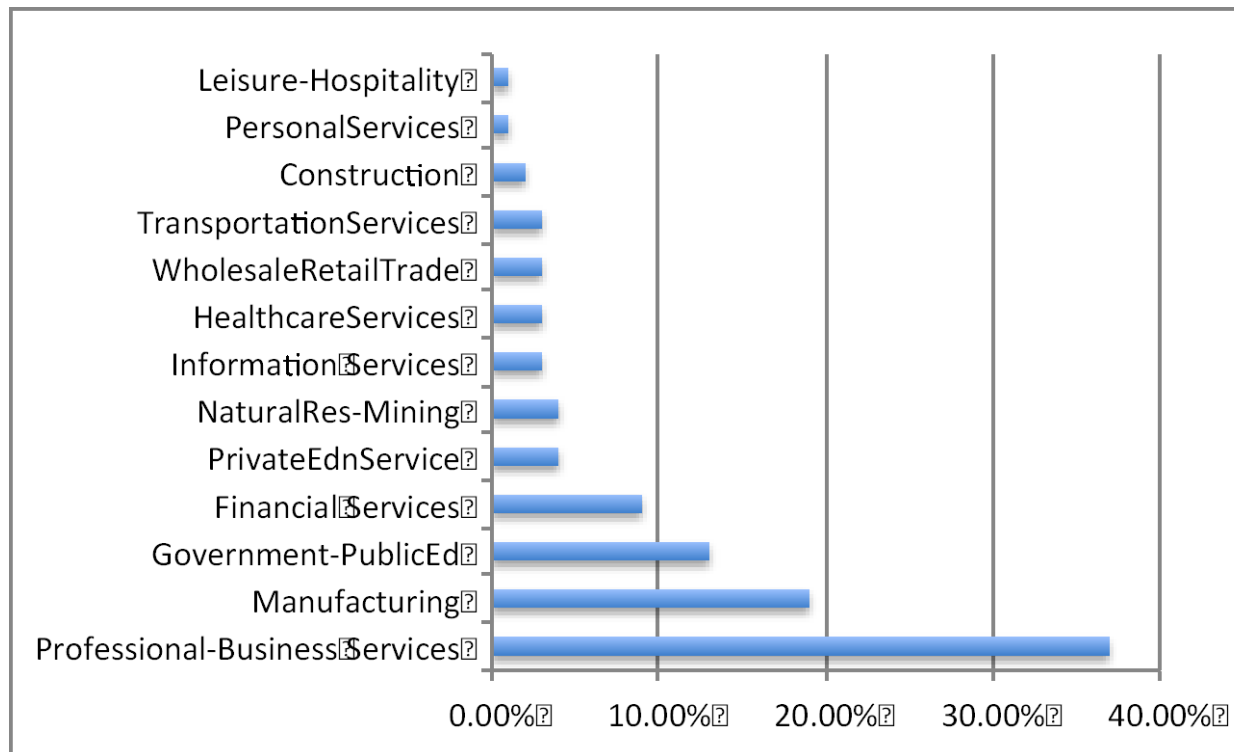
Source: UC Office of the President Institutional Research

**STEM++=STEM+LIFE+SBS**  
**STEM+ =STEM+LIFE**



# Where are the “STEM” jobs?

Many (or most) STEM jobs are in areas that could be served by people with “STEM competencies” and especially with core SBS competencies.



Source: American Community Survey Data, Cited in Carnevale et al.

# STEM Competencies

Many STEM jobs require broad competencies that are also core to SBS fields.

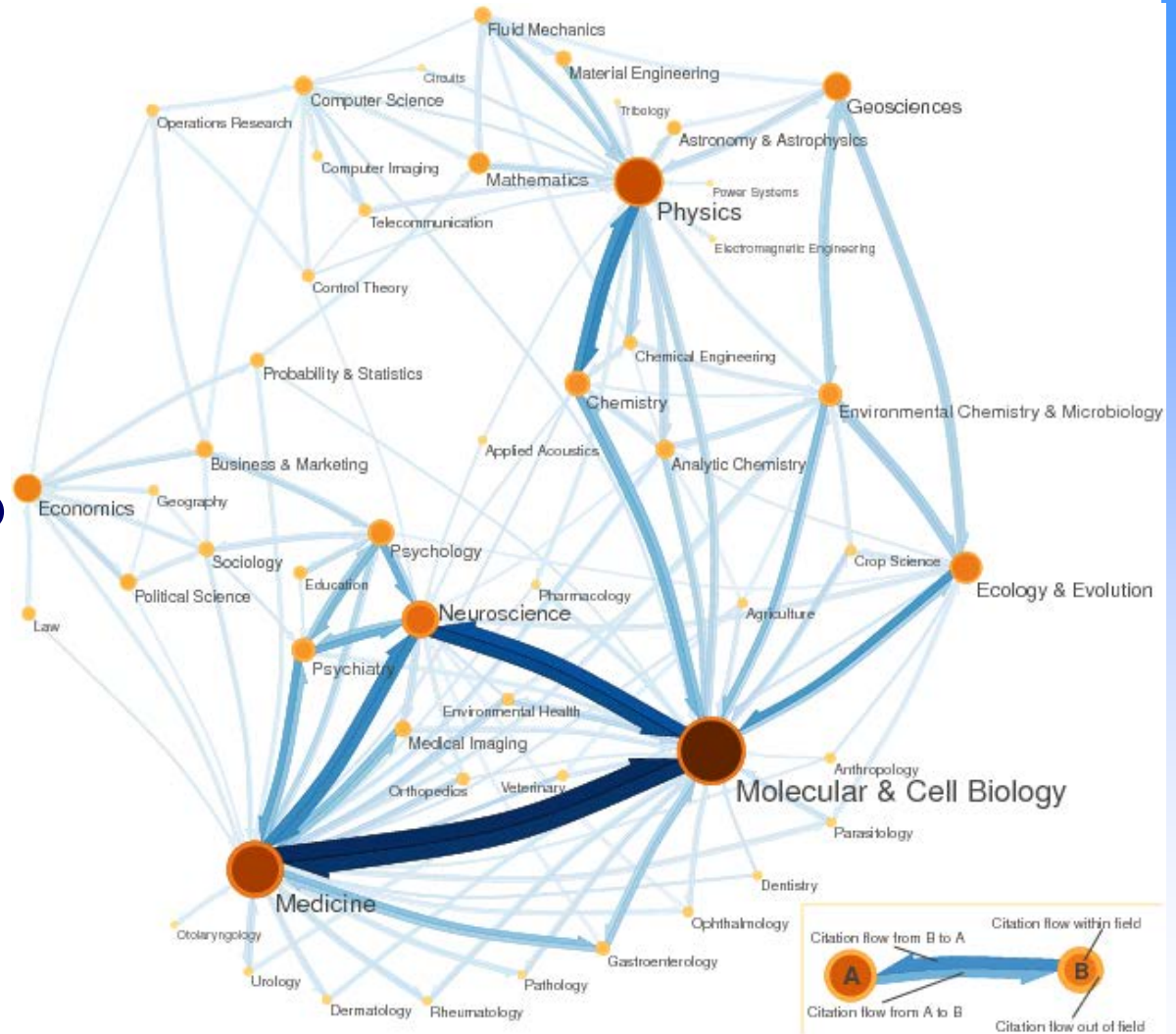
“STEM” abilities: problem sensitivity, deductive reasoning, inductive reasoning, mathematical reasoning, number facility, perceptual speed

“STEM” skills: mathematics (statistics), science, critical thinking, active learning, complex problem solving, operations analysis, technology design, equipment selection, programming, quality control analysis, operations monitoring, equipment maintenance, troubleshooting, repairing, systems analysis, systems evaluation.

Source: List from GT Workingpaper; emphasis added

# Information Flows in STEM fields

SBS fields are in many ways equivalent to statistics and computer science in their relationship to other STEM areas – and both better reflect the job prospects for bachelor-level students.



[www.eigenfactor.org/map/Sci2004.png](http://www.eigenfactor.org/map/Sci2004.png)

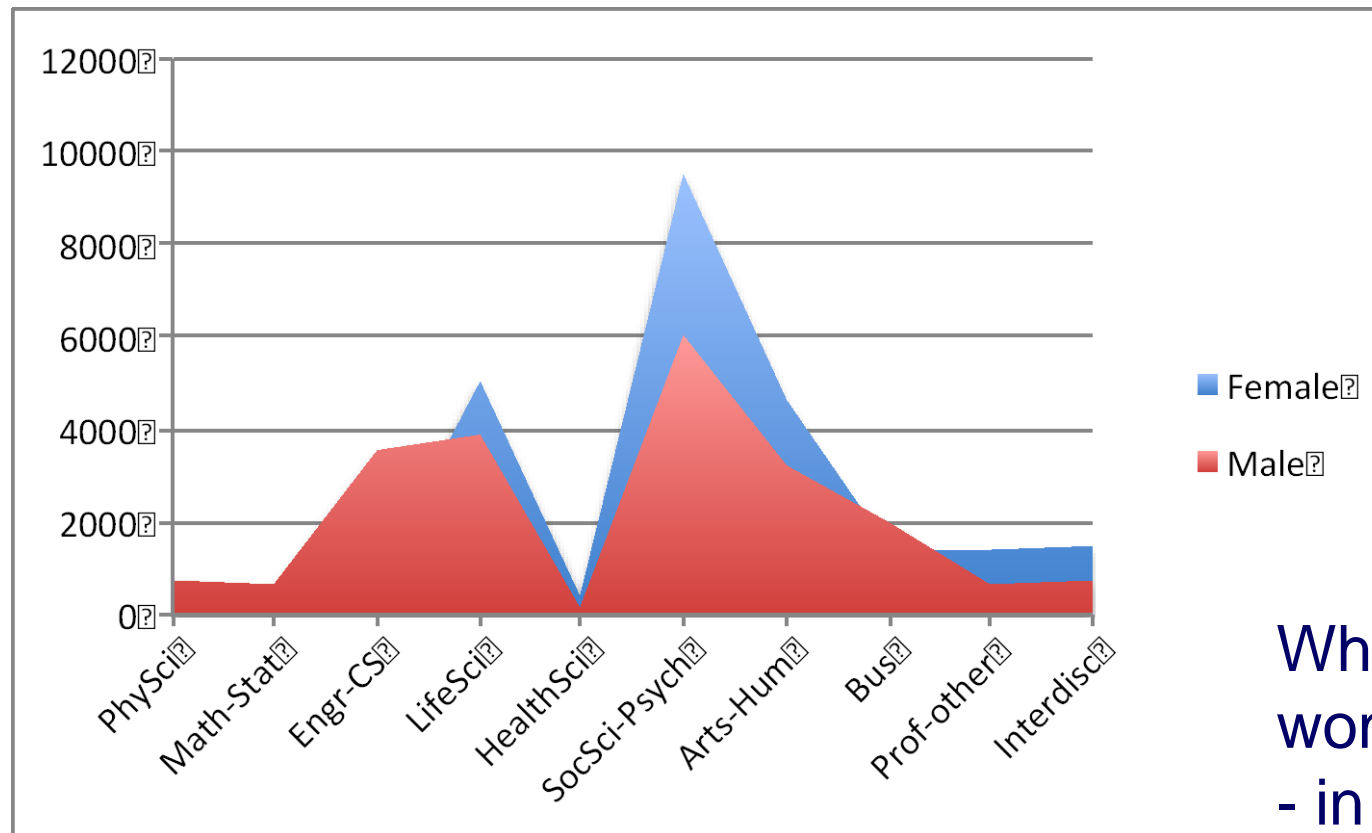
- STEM+ (including life and health sciences) account for a modest proportion of all bachelors degrees.
- The majority of STEM jobs are in sectors that suggest SBS core competencies also align with job needs.
- Many STEM skills and abilities are the same as core SBS skills.

# Serving Diverse Groups

or

Do you “STEM”-enrich diversity students where they are, try to divert them to other fields, or both?....

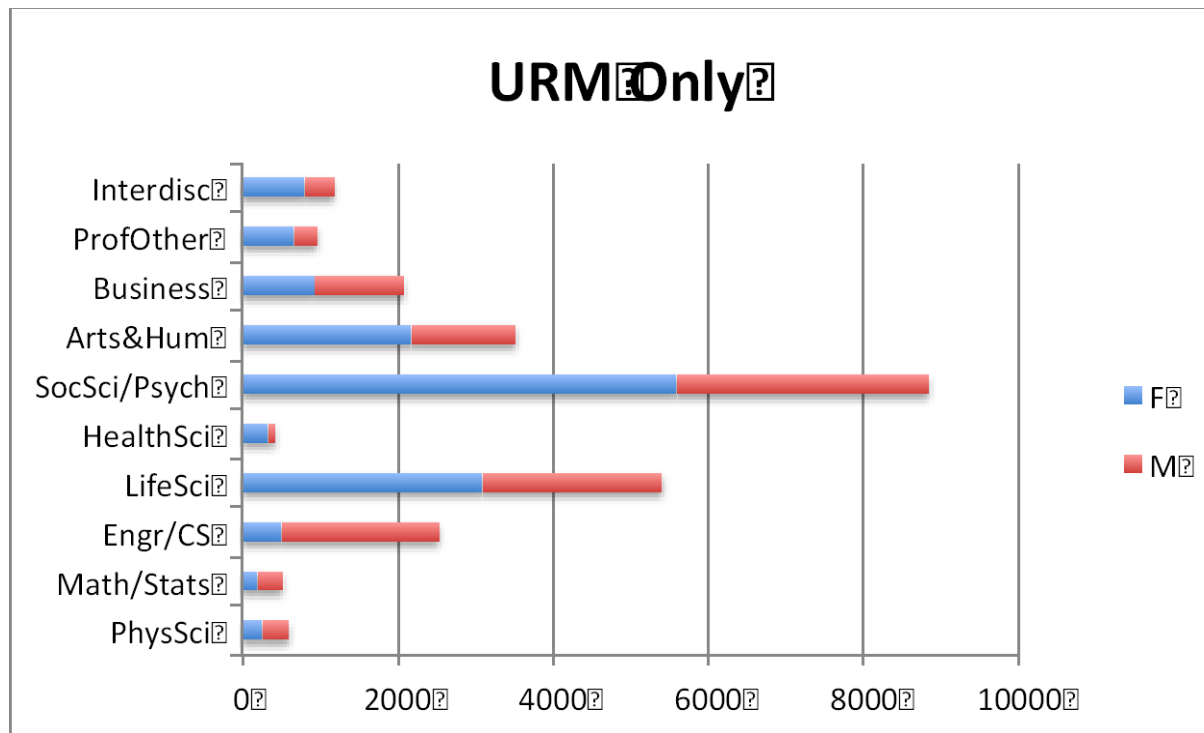
# Where are they/UG majors/gender?



Where are the women?  
- in the SBS and Life Sciences

Source: UC Office of the President Institutional Research

# Where are they/UG major/URM?



The “double bind” – STEM+ women minority undergraduates are disproportionately in SBS and Life Sciences (as are men)

Source: UC Office of the President Institutional Research

# The Role of SBS in STEM++

- Women and URM in undergraduate STEM++ fields are located in the Life Sciences and SBS.
- Persistent migration patterns between majors – a out of the “core” STEM+ fields and into SBS.

⇒(I say) Serve these students where they are (by offering STEM-enhanced learning programs in SBS)

⇒Refocus the STEM educational initiatives at the UG level to include all of the STEM++ disciplines





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