Strategic Yes; Calculated No

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Overview

- Review some areas of the gender gap in academia
  - Leaky pipeline
  - Salaries/Resources
  - Service
  - Citations
- Strategies for success

Issue #1: Leaky Pipeline

- Definition: Increasing attrition rates for female scholars at all academic levels (Mitchell & Hesli 2013)

University of Iowa STEM fields (NSF) (% women)

	2000	2010
Assistant Prof.	35.4%	43.7%
Associate Prof.	24.0%	29.3%
Full Prof.	7.9%	16.3%

Table 1: Percent of Women Tenured and Tenure Track Faculty in Science/Engineering by Rank and Department, Fall 2000 & 2010

	2000			2010		
Department	Professor	Associate Professor	Assistant Professor	Professor	Associate Professor	Assistant Professor
Physical Sciences	**3.1%**	**23.1%**	**25.0%**	**13.3%**	**20.0%**	**36.4%**
Chemistry	0.0%	33.3%	30.0%	18.2%	11.1%	50.0%
Physics & Astronomy	4.8%	14.3%	0.0%	10.5%	33.3%	0.0%
Earth, Atmospheric and Ocean Sciences	**33.30%**	**33.3%**	**0.0%**	**16.7%**	**16.7%**	**16.7%**
Earth and Environmental Sciences	33.3%	0.0%	33.3%	16.7%	16.7%	66.7%
Biological/Agricultural Sciences	**15.2%**	**40.0%**	**35.3%**	**25.6%**	**30.0%**	**47.1%**
Biochemistry	23.1%	33.3%	33.3%	30.0%	0.0%	50.0%
Biology	11.1%	50.0%	20.0%	25.0%	25.0%	50.0%
Psychology	13.3%	33.3%	44.4%	23.5%	44.4%	40.0%
Mathematical and Computer Sciences	**1.9%**	**16.7%**	**50.0%**	**8.7%**	**25.0%**	**56.3%**
Mathematics	2.9%	12.5%	50.0%	20.0%	0.0%	0.0%
Computer Science	0.0%	20.0%	25.0%	7.4%	25.0%	60.0%
Statistics & Actuarial Science	0.0%	20.0%	100.0%	0.0%	66.7%	60.0%
Social and Behavioral Sciences	**16.0%**	**41.7%**	**47.8%**	**30.6%**	**51.9%**	**40.7%**
American Studies	50.0%	100.0%		100.0%	50.0%	100.0%
Anthropology	42.9%	50.0%	33.3%	33.3%	50.0%	50.0%
Economics	7.7%	25.0%	33.3%	12.5%	0.0%	33.3%
Geographical and Sustainability Sciences	0.00%	0.0%	50.0%	0.00%	0.0%	
Linguistics	33.3%	50.0%	100.0%	50.0%	100.0%	
Political Science	0.0%	20.0%	40.0%	25.0%	25.0%	50.0%
Sociology	28.6%	50.0%	60.0%	50.0%	80.0%	25.0%
Engineering	**0.0%**	**0.0%**	**21.1%**	**6.3%**	**10.5%**	**30.8%**
Biomedical Engineering	0.0%	0.0%	0.0%	0.0%	20.0%	100.0%
Chemical & Biochemical Engineering	0.0%	0.0%	100.0%	14.3%	100.0%	0.0%
Civil-Environmental Engineering	0.0%	0.0%	50.0%	12.5%	0.0%	50.0%
Electrical-Computer Engineering	0.0%	0.0%	0.0%	0.0%	0.0%	25.0%
Industrial Engineering	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Mechanical Engineering	0.0%	0.0%	0.0%	0.0%	0.0%	33.3%
All	**7.9%**	**24.0%**	**35.4%**	**16.3%**	**29.3%**	**43.7%**
N=	**229**	**100**	**82**	**209**	**99**	**87**

Issue #1: Leaky Pipeline: Why?

- In a study of academic ranks in Political Science, we find women have a significantly lower likelihood of being an associate professor than men (compared with assistant professors).
- Yet, there are no significant differences between males and females in the likelihood of achieving full professor status.
- We also find that the effect of publications on achieving associate rank is insignificant for women!
- Other factors include work-life balance, higher service load, more hostile work climate, etc.

Issue #2: Salary Gap

- Gender gap in academic salaries once we control for many other factors.
- In our analyses of Political Science data, we find about a $4000 salary gap.
- We find that women make more than men at the Assistant Professor rank, but that they quickly fall behind in salary at higher ranks.
- We find that while negotiating salaries increases men's salaries, negotiations have no effect on women's salaries.

Issue #2: Salary Gap: Why?

- Women publish fewer articles than men, which can influence salaries.
- Women are less mobile on the job market than men.
- Women have fewer resources (e.g. lab space & other financial support).
- Women spend more time on teaching and service relative to research compared with male peers.
- Negotiations don't succeed as often for women.

Issue #3: Service Gender Gap

- National Survey of Postsecondary Faculty (NSOPF) data shows that:
  - Faculty work between 50-64 hours on average a week
- Misra et al (2008-09) find that:
  - Women are often taxed to do more service in academia, especially as they become more senior.
  - Women take on major service roles (e.g. DUS) earlier in their careers, which contributes to the leaky pipeline.
- Women engage in more “token” service

Table 3: Total Number of Advisees: Undergraduates, Graduates (MA, PhD), Post-Docs

Independent Variables	All Respondents	Male Respondents	Female Respondents
Rank	0.212**	0.117**	0.386**
	(0.049)	(0.058)	(0.093)
Female	0.167**	----	----
	(0.082)		
Minority	0.057	0.094	-0.012
	(0.111)	(0.130)	(0.207)
Children	-0.142*	-0.138	-0.149
	(0.082)	(0.099)	(0.150)
PhD program	-0.348**	-0.319**	-0.411**
	(0.089)	(0.106)	(0.161)
MA program	0.115	0.234*	-0.136
	(0.103)	(0.121)	(0.192)
Tenured female faculty	0.029	0.187	-0.317
	(0.122)	(0.138)	(0.249)
Outside offer	-0.069	-0.054	-0.037
	(0.085)	(0.098)	(0.169)
Constant	2.664**	2.894**	2.434**
	(0.167)	(0.198)	(0.283)
Observations	1,020	696	324
Test of $\alpha = 0$	χ^2=50.68**	χ^2=31.96**	χ^2=28.23**

Standard errors in parentheses
* significant at 90%; ** significant at 95%

Table 4: Service to Department, College, and University

	Recruitment[1]		*Status*		*Asked to Administrate*[2]	
Independent Variables	Volunteered	Asked to Serve	Served	Chaired	Department Chair	Dept. Program or Section Director
Rank	0.146**	0.122**	0.155**	0.207**	1.769**	0.904**
	(0.05)	(0.04)	(0.02)	(0.04)	(0.12)	(0.09)
Female	0.010	0.110*	0.101**	-0.137**	-0.491**	-0.346**
	(0.089)	(0.06)	(0.04)	(0.065)	(0.18)	(0.16)
Minority	-0.056	-0.138*	-0.070	0.010	-0.086	0.393*
	(0.12)	(0.08)	(0.06)	(0.08)	(0.23)	(0.20)
Children	-0.013	0.038	0.058	0.045	0.280	0.338**
	(0.09)	(0.06)	(0.04)	(0.07)	(0.18)	(0.16)
PhD program	-0.296**	0.149**	0.025	0.027	-1.133**	0.344**
	(0.10)	(0.06)	(0.04)	(0.07)	(0.19)	(0.16)
MA program	0.158*	0.092	0.115**	0.017	-0.443**	0.538**
	(0.10)	(0.08)	(0.05)	(0.07)	(0.22)	(0.19)
Tenured female faculty	0.222*	0.100	0.055	-0.005	0.519**	-0.064
	(0.12)	(0.09)	(0.06)	(0.09)	(0.26)	(0.23)
Outside offer	0.103	0.113*	0.064	0.004	0.261	0.273*
	(0.09)	(0.06)	(0.04)	(0.06)	(0.174)	(0.16)
Constant	0.235	0.552**	0.712**	0.091	-5.673**	-3.610**
	(0.17)	(0.13)	(0.09)	(0.16)	(0.41)	(0.32)
Observations	329	517	882	571	1,046	992
Test of $\alpha = 0$	χ^2=0.29	χ^2=11.56**	χ^2=8.23**	--[3]		

Standard errors in parentheses
* significant at 90%; ** significant at 95%

Table 5: Service to Discipline

Independent Variables	Total Service	# of Books Reviewed	# of Articles Reviewed	# of Editorial Boards	# of Professional Committees
Rank	0.312**	0.442**	0.236**	0.864**	0.509**
	(0.04)	(0.05)	(0.05)	(0.07)	(0.06)
Female	-0.080	-0.229**	-0.068	0.155	0.422**
	(0.06)	(0.08)	(0.09)	(0.11)	(0.10)
Minority	-0.135	-0.026	-0.222*	0.208	0.085
	(0.08)	(0.10)	(0.12)	(0.15)	(0.13)
Children	0.108*	0.006	0.146*	-0.032	0.123
	(0.06)	(0.08)	(0.09)	(0.12)	(0.10)
PhD program	0.794**	0.060	1.076**	0.945**	0.566**
	(0.07)	(0.08)	(0.09)	(0.11)	(0.11)
MA program	0.269**	-0.067	0.362**	0.239	0.530**
	(0.08)	(0.10)	(0.11)	(0.15)	(0.13)
Tenured female faculty	-0.331**	-0.185	-0.365**	-0.651**	-0.261
	(0.10)	(0.12)	(0.13)	(0.22)	(0.17)
Outside offer	0.220**	0.187**	0.138	0.619**	0.477**
	(0.07)	(0.08)	(0.09)	(0.10)	(0.10)
Constant	1.253**	-0.341**	0.911**	-3.893**	-2.209**
	(0.12)	(0.16)	(0.17)	(0.27)	(0.22)
Observations	1,035	1,071	1,071	1,071	1,071
Test of $\alpha = 0$	χ^2=8137**	χ^2=1438**	χ^2=9086**	χ^2=241**	χ^2=507**

Standard errors in parentheses
* significant at 90%; ** significant at 95%

Issue #3: Service Gender Gap: Why?

- Leaky pipeline creates fewer women at higher ranks and thus puts more pressure on women to engage in service.
  - "We need a woman on this committee!"
- Women are more likely to provide academic service when asked than their male peers.
- Women have a stronger desire to build a community on their campuses.

Issue #4: Citation Gender Gap

- Is research by women cited less frequently than research by men in the same field?
- Citations are important:
  - Measure of scholarly impact for tenure and promotion decisions
  - Journals use impact factor scores to evaluate their success
  - Search algorithms like Scholar Google are sorted based on citations
  - Citations can increase salary ($50-$1300)

Evidence

- In analyses of journals in my research field (International Relations), we find that women are 2-3 times more likely to cite the work of female scholars than male peers.
- These results are confirmed in quantitative studies in several other disciplines as well.

Table 2: Gender & Article References, International Studies Quarterly (2005)

	Sex of Author(s) in References			
Author(s) Sex	Male	Female	Male & Female	Total
Male	1,009 (83%)	139 (11%)	73 (6%)	1,221 (59%)
Female	298 (57%)	177 (33%)	52 (10%)	527 (26%)
Male & Female	247 (81%)	35 (11%)	24 (8%)	306 (15%)
Total	1,544 (76%)	351 (17%)	149 (7%)	2,054 (100%)

$\chi^2 (4) = 155.1 (p<.0001)$

Issue #4: Citation Gender Gap: Why?

- Women don't cite themselves!
- Women's work less visible in fields where they are a minority of the larger group.
- Scholars trained to focus on contributions by male scholars.
- Networking issues (e.g. edited volumes)
- Contagion effects from looking at others' reference pages
- Subconscious gender biases

Strategies for Success: Leaky Pipeline

- Better mentoring
  - Help women navigate the tenure track more successfully
    - More women at UI in STEM fields have left for voluntary reasons than men
  - Women at associate ranks need to put themselves forward for full professor
    - Women at UI spend more years in the associate track than their male peers
- Better parental leave policies
- Ensure a fair tenure process

Strategies for Success: Salaries

- Our data suggests that publications have a higher salary boost for women faculty than men.
- Yet women publish fewer articles & books, thus we need to develop strategies to increase productivity.
  - Ensure equality of lab spaces & other resources
- Women may be less likely to ask & less likely to succeed in negotiations
  - Administrators need to be aware of these biases & take steps to remedy them.

Strategies for Success: Service

- Make sure women/minorities aren't simply placed on committees to ensure diversity
- Protect women's time in the assistant & associate tracks and encourage them to say no to service requests
  - 24 hour rule
  - Ask (yourself) if your presence on a committee matters (lose the control issues)
  - Think about allocation of service across department, college, university, & discipline/profession
  - Bargain for resources when you agree to service
  - Ask to chair committees

Strategies for Success: Citations

- Raise awareness with colleagues/editors/editorial boards
- Create more diversity in our course syllabi
- Increase self-citations
- Promote your work by sending it to other colleagues & blogging about it
- Help increase number of women in various research areas to generate a critical mass

Conclusions

- Saying no can be difficult, but it is important for women especially as we become more senior & there are fewer of us to do the work
- Negotiations may be more effective for women in writing rather than in person
- Self-promotion is important but we also need senior women to take steps to ensure fair processes for junior women in our professions.
- Mentoring can be very helpful!