

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)

	<u>2000</u>	<u>2010</u>
Assistant Prof.	35.4%	43.7%
Associate Prof.	24.0%	29.3%
Full Prof.	7.9%	16.3%

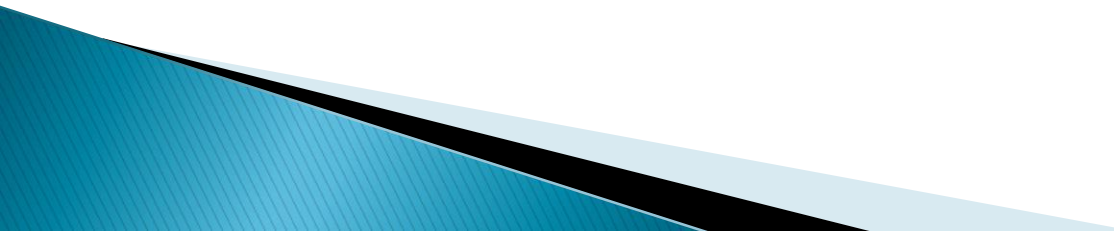
Table 1: Percent of Women Tenured and Tenure Track Faculty in Science/Engineering by Rank and Department, Fall 2000 & 2010

Department	2000			2010		
	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

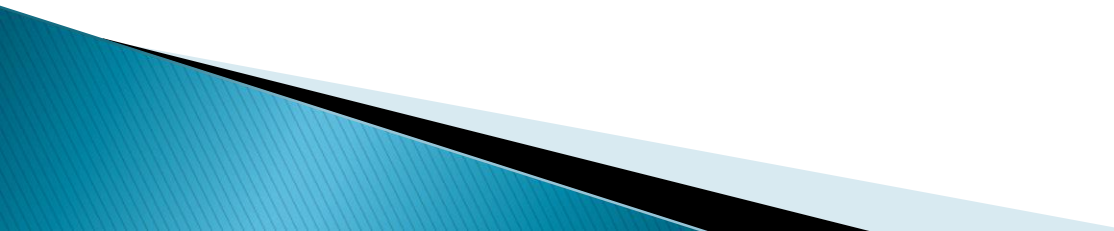
Issue #1: Leaky Pipeline: Why?

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

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

Standard errors in parentheses

* significant at 90%; ** significant at 95%

Table 4: Service to Department, College, and University

Independent Variables	<i>Recruitment¹</i>		<i>Status</i>		<i>Asked to Administrate²</i>	
	Volunteered	Asked to Serve	Served	Chaired	Department Chair	Dept. Program or Section Director
Rank	0.146** (0.05)	0.122** (0.04)	0.155** (0.02)	0.207** (0.04)	1.769** (0.12)	0.904** (0.09)
Female	0.010 (0.089)	0.110* (0.06)	0.101** (0.04)	-0.137** (0.065)	-0.491** (0.18)	-0.346** (0.16)
Minority	-0.056 (0.12)	-0.138* (0.08)	-0.070 (0.06)	0.010 (0.08)	-0.086 (0.23)	0.393* (0.20)
Children	-0.013 (0.09)	0.038 (0.06)	0.058 (0.04)	0.045 (0.07)	0.280 (0.18)	0.338** (0.16)
PhD program	-0.296** (0.10)	0.149** (0.06)	0.025 (0.04)	0.027 (0.07)	-1.133** (0.19)	0.344** (0.16)
MA program	0.158* (0.10)	0.092 (0.08)	0.115** (0.05)	0.017 (0.07)	-0.443** (0.22)	0.538** (0.19)
Tenured female faculty	0.222* (0.12)	0.100 (0.09)	0.055 (0.06)	-0.005 (0.09)	0.519** (0.26)	-0.064 (0.23)
Outside offer	0.103 (0.09)	0.113* (0.06)	0.064 (0.04)	0.004 (0.06)	0.261 (0.174)	0.273* (0.16)
Constant	0.235 (0.17)	0.552** (0.13)	0.712** (0.09)	0.091 (0.16)	-5.673** (0.41)	-3.610** (0.32)
Observations	329	517	882	571	1,046	992
Test of $\alpha = 0$	$\chi^2=0.29$	$\chi^2=11.56^{**}$	$\chi^2=8.23^{**}$	-- 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** (0.04)	0.442** (0.05)	0.236** (0.05)	0.864** (0.07)	0.509** (0.06)
Female	-0.080 (0.06)	-0.229** (0.08)	-0.068 (0.09)	0.155 (0.11)	0.422** (0.10)
Minority	-0.135 (0.08)	-0.026 (0.10)	-0.222* (0.12)	0.208 (0.15)	0.085 (0.13)
Children	0.108* (0.06)	0.006 (0.08)	0.146* (0.09)	-0.032 (0.12)	0.123 (0.10)
PhD program	0.794** (0.07)	0.060 (0.08)	1.076** (0.09)	0.945** (0.11)	0.566** (0.11)
MA program	0.269** (0.08)	-0.067 (0.10)	0.362** (0.11)	0.239 (0.15)	0.530** (0.13)
Tenured female faculty	-0.331** (0.10)	-0.185 (0.12)	-0.365** (0.13)	-0.651** (0.22)	-0.261 (0.17)
Outside offer	0.220** (0.07)	0.187** (0.08)	0.138 (0.09)	0.619** (0.10)	0.477** (0.10)
Constant	1.253** (0.12)	-0.341** (0.16)	0.911** (0.17)	-3.893** (0.27)	-2.209** (0.22)
Observations	1,035	1,071	1,071	1,071	1,071
Test of $\alpha = 0$	$\chi^2=8137^{**}$	$\chi^2=1438^{**}$	$\chi^2=9086^{**}$	$\chi^2=241^{**}$	$\chi^2=507^{**}$


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.
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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)
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Evidence

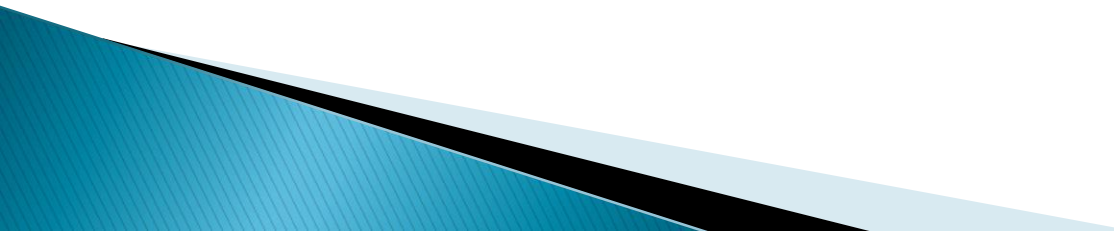
- ▶ In analyses of journals in my research field (International Relations), we find that women are 2–3 times more likely to cite the work of female scholars than male peers.
- ▶ These results are confirmed in quantitative studies in several other disciplines as well.

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

Author(s) Sex	Sex of Author(s) in References			Total
	Male	Female	Male & Female	
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%)

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

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
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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

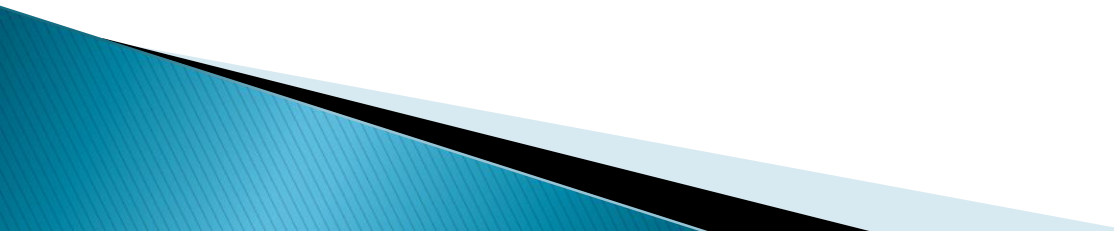
▶ Better parental leave policies

▶ Ensure a fair tenure process

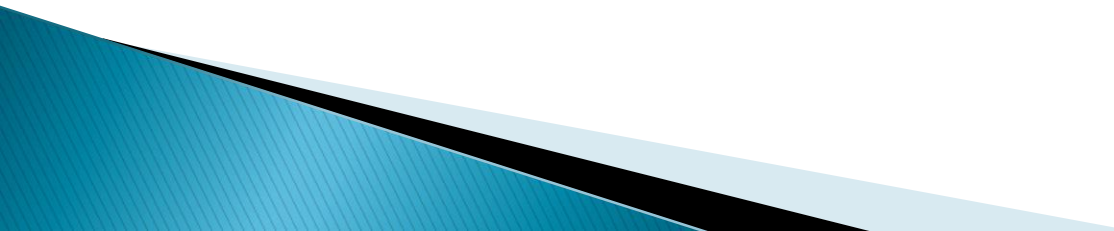
Strategies for Success: Salaries

- ▶ 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.
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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
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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
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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!
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