ADVANCE R.I.T.
for women faculty in science, engineering, computing and technology
NSF ADVANCE – IT Catalyst EFFORT@RIT (NSF #0811076)

Establishing the Foundation for Future Organizational Reform and Transformation

A self-study across RIT’s colleges with STEM departments to collect and analyze data on the factors that women seek in an academic position and determine how well RIT provides (or fails to provide) for these through climate study activities, policy benchmarking, and objective data review.
Primary Research Questions

1. What is the **distribution** of STEM faculty by **gender**, **rank**, and **department**?
2. What are the outcomes of institutional processes of **recruitment** and **advancement** for men and women?
3. What is the **gender distribution** of STEM faculty in **leadership positions**?
4. What is the **allocation of resources** for STEM faculty?
5. Are there **barriers** to the **recruitment** and **advancement** of women?
6. How successful are **existing structures** at addressing these barriers?
<table>
<thead>
<tr>
<th>Research Questions</th>
<th>Method</th>
<th>Measures</th>
</tr>
</thead>
</table>
| (1) What is the distribution of science and engineering faculty by gender, rank,  | HR Obj. Data Review            | • Current number of faculty by department, rank, gender, and college (2004-2010)  
| and department?                                                                  |                                | • Percentage of female by college (2004-2010)                                      
|                                                                                 |                                | • Current number of non TT faculty (2009)                                            
|                                                                                 |                                | • Benchmark data (where available)                                                    |
| (2) What are the outcomes of institutional processes of recruitment and           | HR Obj. Data Review            | • Faculty applicant data by college (2007-2010)                                      
|                                                                                 |                                | • Summary of TT acceleration or tenure credit upon hire                              
|                                                                                 |                                | • Tenure and promotion review outcomes by gender, department, and rank transition (2006-2010)                           
|                                                                                 |                                | • Cohort analysis of tenure and promotion, including to full professor (2006-2009)                          
|                                                                                 |                                | • Number of tenured Associate Professors by department and gender with years-in-rank, years in previous rank, and hired rank |
|                                                                                 |                                | • Number of faculty who left their departments by rank, gender, and department (2004-2009)                             
|                                                                                 |                                | • Number of faculty voluntarily leaving before reaching tenure excluding retirements (2004-2009)             |
| (3) What is the gender distribution of science and engineering faculty in         | HR Obj. Data Review            | • Number of men and women in leadership positions or on select committees (2009)                                              |
| leadership positions?                                                             |                                |                                                                                                                                  |
| (4) What is the allocation of resources for science and engineering faculty?      | HR Obj. Data Review            | • Study of salaries of men and women faculty (averages based on rank then more detailed model with additional controls such as department, degree earned, years in rank; salary adjustments occurred in OCT 2010) |
|                                                                                 |                                | • October 2008 Comparison of RIT Average STEM Salaries to CUPA Salaries by Discipline (for n >5)                          |
|                                                                                 |                                | • Study of Space Allocation and start-up packages of newly hired faculty by gender (data difficult to assemble)         |
| (5) Are there barriers to the recruitment and advancement of women?               | HR Obj. Data Review            | • Evaluation of results from research questions 1 – 4                                                                               |
|                                                                                 | RIT Faculty Work-Life Survey   | • Statistical analysis of responses to the RIT Faculty Work-Life Survey                                                           |
|                                                                                 | Institute Policy Review/Benchmark | • Results of Institute Policy Review and Benchmark                                                                     |
| (6) How successful are existing structures at addressing barriers to the          | HR Obj. Data Review            | • Evaluation of results from research questions 1 – 4                                                                               |
| recruitment and advancement of women?                                            | RIT Faculty Work-Life Survey   | • Statistical analysis of responses to the RIT Faculty Work-Life Survey                                                           |
|                                                                                 | Institute Policy Review/Benchmark | • Results of Institute Policy Review and Benchmark                                                                     |
Objective Data & Benchmarking

• **Objective Data Review**
  ◦ Examined trends in objective data from October 2004 to October 2010

• **Benchmarking**
  ◦ RIT’s policies and procedures were researched in search of:
    • Diversity statement
    • Tenure policies
    • Mentoring
    • Faculty awards
    • Leave policies
    • Grievance policies
    • Procedures/Benefits for women seeking academic positions
    • Tuition support for family
Objective Data & Benchmarking

Benchmarking, cont.

- 13 benchmark schools, as defined on the Human Resources website, were then investigated to identify if they had the investigated policies in place
- 4 benchmark schools are also ADVANCE schools
Climate Survey

- To ensure confidentiality, Survey Research Institute (SRI) at Cornell invited participation directly through an external, secure website.
- Survey offered to all Tenured and Tenure Track faculty
- General areas covered in the survey:
  - Teaching, Resources, and Service
  - Career Satisfaction, Work Load, Recognition
  - Climate, Mentoring, Tenure, Promotion
  - Balancing Personal and Professional Life

66% response rate overall with n = 535/808

>70% response rate for every STEM College


<table>
<thead>
<tr>
<th>College</th>
<th># Women Faculty 1995</th>
<th># Women Faculty Oct 08</th>
<th># Women Faculty Oct 10</th>
<th>% Women Faculty 2010</th>
<th>National Pool PhD Women Grads</th>
<th>Asst: % Women @ RIT</th>
<th>Assoc: % Women @ RIT</th>
<th>Full: % Women @ RIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>KGCOE</td>
<td>4</td>
<td>8</td>
<td>10</td>
<td>12.4%</td>
<td>17.8%</td>
<td>17.4%</td>
<td>7.1%</td>
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<tr>
<td>CAST</td>
<td>3</td>
<td>7</td>
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<td>19.3%</td>
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<td>4.8%</td>
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<tr>
<td>GCCIS</td>
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<td>23</td>
<td>26</td>
<td>27.7%</td>
<td>22.0%</td>
<td>33.3%</td>
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<td>13.8%</td>
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<tr>
<td>COS</td>
<td>19</td>
<td>29</td>
<td>32</td>
<td>23.7%</td>
<td>35.5%</td>
<td>26.8%</td>
<td>66.7%</td>
<td>25%</td>
</tr>
<tr>
<td>NTID</td>
<td>n/a</td>
<td>12</td>
<td>11</td>
<td>32.4%</td>
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<td>35%</td>
<td>40%</td>
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<td>CIAS</td>
<td>n/a</td>
<td>4</td>
<td>3</td>
<td>25%</td>
<td>n/a</td>
<td>0%</td>
<td>66.7%</td>
<td>25%</td>
</tr>
<tr>
<td>GIS</td>
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<td>0</td>
<td>2</td>
<td>50%</td>
<td>n/a</td>
<td>100%</td>
<td>0%</td>
<td>n/a</td>
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<tr>
<td>STEM Dean's Offices</td>
<td>1</td>
<td>3</td>
<td>5</td>
<td>45.5%</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>45.5%</td>
</tr>
<tr>
<td>Total Women STEM Faculty</td>
<td>32</td>
<td>86</td>
<td>95</td>
<td>22.8%</td>
<td>26.4%</td>
<td>31.3% (36/115)</td>
<td>23.7% (35/148)</td>
<td>15.6% (24/154)</td>
</tr>
</tbody>
</table>

1 Represents Teaching (as opposed to Research) Faculty
3 Data listed is for a subset of departments within college classified as STEM.
4 Represents percentage of women faculty at each rank within each STEM college
5 Kate Gleason College of Engineering (KGCOE), College of Applied Science and Technology (CAST), Golisano College of Computing and Information Sciences (GCCIS), College of Science (COS), National Technical Institute for the Deaf (NTID), College of Imaging Arts and Sciences (CIAS), Golisano Institute for Sustainability (GIS)
Significant Findings

- **Barriers identified** for the recruitment, retention, and advancement of women STEM faculty at RIT include issues related to *career navigation, climate, and work/life balance issues*.

- The current representation of **women STEM faculty applicants** is below national pool availability.

- **Upon hire**, women faculty receive less credit towards tenure and are less likely to be hired at a rank above Assistant professor.

- The current representations of **women STEM faculty** are below national averages.

- **Women leave** the faculty at a rate nearly twice that of their male colleagues with a high dependence on college.
Salary Study

- A faculty salary study motivated by this research preceded salary adjustments made in 2010.
- The resulting gender average salary gap was
  - reduced for assistant female professors from 4.86% to 4.14%
  - reduced for female associate professors from 5.99% to 3.17%
  - increased for female professors from 5.97% to 7.79%
- When surveyed, 62% of female faculty respondents view men within their departments as receiving preferential treatment in regards to compensation compared with 9% of male faculty who view females as receiving preferential treatment in compensation.
Career Advancement

- 32% of female T TT STEM faculty do not have a terminal degree compared to 22% of the males.

- From 2006 - 2010, there was no significant difference in the tenure denial rate and within the largest STEM colleges there was no significant difference in time in rank at assistant professor.

- When surveyed, 16% and 22% of female faculty respondents view men within their departments as receiving preferential treatment in regards to the tenure and promotion processes, respectively. This is compared with 8% and 9% of male faculty who view females as receiving preferential treatment in tenure and promotion, respectively.
Career Advancement

- A higher percentage of males (60.5%) than females (51.6%) have been asked to serve in a **leadership role** at RIT over the previous two years.
- When surveyed, 41% of female faculty respondents view men within their departments as receiving **preferential treatment in regards to career advancement and leadership** (12% of male faculty view females as receiving preferential treatment).
Risk to Promotion/Tenure

- Males agree more strongly than females that they are free to pursue their scholarship/research without compromising their position for promotion/tenure:
  - 58.5% of females and 70% of males agree
  - 27.9% of females and 17.4% of males disagree

Mentoring

- 30% of female faculty report having a mentor, compared to 18% of male faculty (p<0.01).
- Among survey responses, 60% of females and 35% of males do view support for mentoring junior faculty to be of significant value in improving the overall quality of faculty work/life balance at RIT.
Climate Issues

- Male responses indicate a more positive department view than female responses.
- Males’ view of their department on a whole is more friendly, diverse, respectful, and non-sexist than females’ view of their department.
  - 66% of females view the department as friendly, compared to 74% of males.
  - 49% of females and 62% of males consider their department to be diverse.
  - 61% of females and 65% of males view their department as respectful.
  - The department is viewed as non-sexist by 62% of females and 81% of males. Conversely, 18% of female respondents and 6% of male respondents feel the campus tends toward being sexist.
Work/Life Balance

- Women faculty report higher levels of stress, on average, than men in:
  - managing household responsibilities (36% compared to 16%)
  - child care issues (34% compared to 14%)
  - health of family members (25% compared to 16%)
- More female faculty agreed that their career has been slowed by personal responsibilities (50% of women compared to 23% of men).
- More females agreed that they often forego personal activities for professional responsibilities (66% of women compared to 47% of men) and forego professional activities for personal responsibilities (38% of women compared to 26% of men).
RIT Faculty Apportioned Time

- Faculty were asked to estimate how they apportioned time at work across several given domains of activity. The figures entered could differ from the formal terms of appointment. Percentages were selected which summed to 100%.
- Based on responses from 174 female faculty and 357 male faculty the following gender-based differences were observed:
  - Males report spending more time engaged in
    - scholarship/research (21% of time vs. 18.2% of time)
    - service to their discipline (6.7% vs. 5.3%)
  - Females report spending more time engaged in
    - teaching (50.8% vs. 46.2%)
When asked how satisfied they were with this distribution:

- 50.0% of women respondents were *dissatisfied with their distribution* compared to 31.9% of men.
- 39.3% of male respondents were *satisfied with their distribution* compared to 26.2% of females.

Higher satisfaction is more likely for Professors than for Assistant Professors and less likely for STEM faculty than for non-STEM.

On average, males are more satisfied than females with their distribution of time, overall research/scholarship, and quality of long range career map/plan, and position overall.
**Recommendations**

- Recommendations that follow seek to address barriers to the recruitment, representation, and advancement of women faculty at RIT by building on existing institutional structures as well as developing and integrating new structures.

**Institutional Transformation Strategy**

- Faculty Mentoring Network
- Faculty Exit Interview
- Clearly Define Maternity Leave
- Tenure Stop Clock
- Dual Career Solutions
- Extended Child Care

- Reporting Structure
- Start-up Package Database
- Work/Life Website
- Annual Benchmarking & Data Collection
- Regular Faculty Climate Surveys
- Flexible Working Arrangements
EFFORT@RIT Dissemination

- Project website
  http://nsfadvance.rit.edu/
- Final report posted plus climate survey statistical results based on:
  - All Responses by Gender,
  - Non-STEM and STEM Responses by Gender,
  - All Responses by Ethnicity,
  - All Responses by Rank,
- College and department level faculty satisfaction results
Future Plans

- Disseminate final report and college/department level results
- Advocate/strategize recommendations
- Create institutional transformation (IT) strategy in summer and fall
  - Map evidence/findings to respective causes and planned remediation strategies
  - Base IT strategy on a well-grounded social science framework
  - Determine how to measure impact of grant activities
Acknowledgments

- This material is based upon work supported by the National Science Foundation under Grant No. 0811076.
- Questions?
## Climate Survey Response

<table>
<thead>
<tr>
<th>Gender</th>
<th>Completions</th>
<th>Out of</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>175</td>
<td>245</td>
<td>71.43%</td>
</tr>
<tr>
<td>Male</td>
<td>360</td>
<td>563</td>
<td>63.94%</td>
</tr>
<tr>
<td>Overall</td>
<td>535</td>
<td>808</td>
<td>66.29%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>College/Division</th>
<th>Completions</th>
<th>Out of</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Center for Integrated Manufacturing Studies</td>
<td>3</td>
<td>6</td>
<td>50.00%</td>
</tr>
<tr>
<td>College of Applied Science and Technology</td>
<td>56</td>
<td>71</td>
<td>78.87%</td>
</tr>
<tr>
<td>Arts and Sciences</td>
<td>55</td>
<td>100</td>
<td>55.00%</td>
</tr>
<tr>
<td></td>
<td>83</td>
<td>124</td>
<td>66.94%</td>
</tr>
<tr>
<td></td>
<td>99</td>
<td>137</td>
<td>72.26%</td>
</tr>
<tr>
<td>E. of Business</td>
<td>18</td>
<td>38</td>
<td>47.37%</td>
</tr>
<tr>
<td>of Computing &amp; Info Sciences</td>
<td>68</td>
<td>92</td>
<td>73.91%</td>
</tr>
<tr>
<td>of Engineering</td>
<td>62</td>
<td>85</td>
<td>72.94%</td>
</tr>
<tr>
<td>National Technical Institute for the Deaf</td>
<td>87</td>
<td>147</td>
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<td>1</td>
<td>100.00%</td>
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<tr>
<td>Provost</td>
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<td>6</td>
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<tr>
<td>Student Affairs</td>
<td>0</td>
<td>1</td>
<td>0.00%</td>
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<tr>
<td><strong>Overall</strong></td>
<td><strong>535</strong></td>
<td><strong>808</strong></td>
<td><strong>66.29%</strong></td>
</tr>
</tbody>
</table>
Modeling *Overall Satisfaction*

- Although *climate* and *work/life balance* issues are identified as barriers for women faculty at RIT, *overall satisfaction* with one’s faculty position for both sexes is more closely linked to their perception of *value and influence* ($R^2 = 60.3\%$) as opposed to *climate* ($R^2 = 20.8\%$) and *work/life balance* ($R^2 = 13.1\%$) measures.
Value & Influence

- Most useful with $R^2$ value of 60.3%
  - $R^2$ values are 58.2% for females and 61.4% for males
  - This measure is equally valid for men and women

- Set of survey questions used to create the value and influence composite score:
  - Sense of being valued by unit/department and upper administration
  - Level of social interaction with colleagues in dept.
  - Solicitation of opinions about scholarship
  - Satisfaction that one’s research is on track for career advancement and with one’s long range career plan
  - Amount of influence in the unit/department over obtaining a desired teaching schedule