Do the Best Researchers and Society Win?
Fairness, Validity, and Bias in Promotion and Tenure Decision Making

AIM Network Meeting: November 8, 2022

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Fairness and Bias in Promotion and Tenure (P&T) Processes

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Overall Project Goals
Background and Methods
Dataset Descriptives
Analysis and Results
Takeaways and Recommendations

Women and Minorities are Underrepresented in Academia
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We have 6 main Research Questions

1. What is the relationship between applicants’ scholarly productivity and demographics with ERL linguistic content and length?
2. Do ERL writer characteristics predict ERL linguistic content and length?
3. What role do languages and length play in determining subsequent promotion and tenure votes?
4. What role do institution characteristics, promotion strategies and COVID-clock extensions, play in ERL language and committee votes?
5. Do ERLs describe a candidate’s collaborative research differently based on candidate gender?
6. What role do tenure clock extensions, particularly caregiver and COVID clock extensions, play in ERL language and committee votes?

Looking at Specific Promotion and Tenure Questions

How does race and gender affect voting outcomes?

Do tenure clock extensions affect some candidates more than others?

We are a consortium of 10 partner institutions

- 2017 - 2020 (Archival)
- 2021 - 2022 (COVID extension analysis)
- Total of 1700 candidates
- Over 9000 ERLs

Applicant & Letter Writer Features

- Applicant & Letter Writer Productivity
- Ethnicity
- Google Scholar Link
- P&T Policies
- Academic Discipline
- # of students supervised (Candidate only)
- Institution Rank
- Year Ph.D. granted
- Tenure extension (Candidate only)

These variables were captured from P&T packets & CVs:

- Gender
- H Index & Total Citations
- No/Yes vote at Department, College, & University level
- P&T Policies
- University
- Google Scholar Link
- Candidate recently granted
- Clinical Grants (Candidate only)
- Tenure extension (Candidate only)

Our project uses discipline-relevant productivity metrics

We scrape Google Scholar profiles to collect data on research productivity

Data Scraping

Google Scholar

**200 complete records are collected by one device in one week.**
Other Databases Scraped for Additional Information

We use Linguistic Inquiry Word Count (LIWC) to analyze letter content

Candidate & Letter Writer Demographics

- 93% of candidates are seeking promotion to Associate or Full Professor with Tenure
- 54% of candidates are in non-STEM disciplines
- 65% of candidates and 71% of letter writers are men
- 62% of candidates and 80% of letter writers are White

5.0% of Candidates Requested a Non-COVID Tenure Extension for family or health reasons

- Approximately the same number of women and men took a non-COVID tenure extension
- 31 Men & 28 Women

P&T Outcomes: Control Variables

- Candidate H-Index at Time of P&T
  - Calculated with scraped Google Scholar data
- Candidate Discipline
  - CIP Code

P&T Outcomes

- Unanimous Votes
  - The number of committee “No Votes” equals 0 (including abstentions)
- Overall Positive Vote
  - The number of “Yes Votes” exceeds the number of “No Votes”
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Promotion to Associate Professor

URM Faculty Less Likely to Receive Positive Votes than White & Asian Faculty at Department Level (Promotion to Associate Professor with Tenure)

Observed Trends Most Pronounced for Hispanic Faculty

Hispanic Faculty Less Likely to Receive Positive Votes and Unanimous Votes than White Faculty at Department Level (Promotion to Associate Professor with Tenure)

Hispanic Faculty Less Likely to Receive Positive Votes and Unanimous Votes than White Faculty at College Level (Promotion to Associate Professor with Tenure)
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**Hispanic Faculty Least Likely to Receive Unanimous & Overall Positive Votes than White & Asian Faculty at University Level**
(Promotion to Associate Professor with Tenure)

<table>
<thead>
<tr>
<th>Faculty Type</th>
<th>University Unanimous</th>
<th>University Positive</th>
<th>Overall Positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>White (n = 186)</td>
<td>91.40%</td>
<td>97.05%</td>
<td>96.43%</td>
</tr>
<tr>
<td>Hispanic (n = 15)</td>
<td>88.80%</td>
<td>97.05%</td>
<td>96.43%</td>
</tr>
<tr>
<td>Black/African American (n = 8)</td>
<td>87.50%</td>
<td>97.05%</td>
<td>96.43%</td>
</tr>
<tr>
<td>Asian (n = 84)</td>
<td>94.44%</td>
<td>95.16%</td>
<td>91.40%</td>
</tr>
</tbody>
</table>

*Different v. all University Faculty

**Women Less Likely to Receive Positive and Unanimous Votes than Men at Department Level**
(Promotion to Associate Professor with Tenure)

<table>
<thead>
<tr>
<th>Gender</th>
<th>Department Positive</th>
<th>Department Unanimous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men(n=438)</td>
<td>84%</td>
<td>70%</td>
</tr>
<tr>
<td>Women(n=257)</td>
<td>58%</td>
<td>13%</td>
</tr>
</tbody>
</table>

**Promotion to Full Professor**

**Fewer favorable votes for URM Faculty at University Level**
(Promotion to Full)

<table>
<thead>
<tr>
<th>Faculty Type</th>
<th>University Positive</th>
<th>University Unanimous</th>
</tr>
</thead>
<tbody>
<tr>
<td>URM (n=26)</td>
<td>94%</td>
<td>54%</td>
</tr>
<tr>
<td>Asian(n=53)</td>
<td>68%</td>
<td>67%</td>
</tr>
<tr>
<td>White(n=116)</td>
<td>96%</td>
<td>94%</td>
</tr>
</tbody>
</table>
Black faculty receive least favorable voting outcome at University level (Promotion to Full Professor)

Less favorable outcomes for women in non-STEM than in STEM disciplines at Department level

Less favorable outcomes for Hispanic and Black Faculty in non-STEM than in STEM disciplines at Departmental and College levels
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Black and Hispanic Faculty in Non-STEM Less Likely to Receive Overall Positive and Unanimous Votes than in STEM at College Level

Women who requested a Non-Covid Tenure Extension Less Likely to receive Unanimous & Overall Positive Votes at Department Level

What Role Does Innovation and Entrepreneurship Play in Promotion and Tenure?

31% of Candidates in STEM have a patent

31% of Letter Writers (for Candidates in STEM) have a patent

The majority of candidates and letter writers with a patent are men
The majority of candidates and letter writers with a patent are White or Asian.

Less Favorable Outcomes for I&E Endeavors
- Candidates with patents receive more negative votes at the university level.
- Consequences for candidates who receive patent language in their ERLs.
  - More negative votes at the departmental and university levels.
  - Fewer unanimous votes at the departmental and university levels.
- Candidates who receive innovation language in their ERLs receive fewer unanimous votes at the departmental level.

I&E Takeaways
- A focus on patents and I&E language is not pertinent to fostering an inclusive academy.
- I&E accomplishments are associated with less favorable P&T outcomes.
- P&T committee training should be implemented to advance diversity goals and I&E goals.

Recommendations for the P&T Process
- Reconsider the practice of treating unanimous votes as the “gold standard” for a successful application to full professor.
- Ensure representation from multiple and diverse perspectives on P&T committees.
Train the members of P&T committees on bias and equity issues in the promotion process.

Give more weight to service and mentorship in promotion decisions.

Build a clear, structured promotion process for all candidates.