Faculty Salary Equity: A Literature Review
The University of Texas System, Office of Strategic Initiatives

Examining faculty salary equity in higher education, although not new, continues to be a relevant and important topic. The Office of Strategic Initiatives has compiled the following literature review in order to understand findings of previous research, the various methodological approaches utilized, and any challenges encountered when conducting such a study.

The previous findings of examinations of faculty salary equity fall into a few broad themes: women earn less than men, women are underrepresented at higher faculty ranks, and women are underrepresented in the higher paying disciplines. This literature review is organized along those themes.

Emphasis was placed on locating studies conducted by University of Texas System (UT System) institutions, peer systems and institutions, and leading research universities. Though much has been published on the topic, it is important to note that often this research is conducted for internal institution or system purposes and is not made publicly available. This literature review is focused on studies that are available to the public and therefore accessible to the Office of Strategic Initiatives.

Literature Review Summary

Women earn less than men in the labor market and specifically in higher education.

The U.S. Census Bureau reported that women make 77 cents for every dollar men make, a statistic that often appears in mainstream media reports.¹ This gap extends to the academe, though not quite as wide. U.S. Census Bureau data released in March 2015 shows for the occupation of “postsecondary teachers,” women’s earnings are reported at 85% of men’s earnings.² Data released in 2014 by the American Association of University Professors (AAUP) also shows that there is a gender pay gap in academia that ranges from 85% to 95% of men’s salaries, depending on faculty rank and the type of institution. For example, according to the AAUP, for full professors at a Doctoral/Research university, the gap averages around 9%, whereas for full professors at an Associate institution, the gap may be closer to 5%.³ Furthermore, data from the U.S. Department of Education’s Integrated Postsecondary Education Data System (IPEDS), made available through The Chronicle of Higher Education, indicate that this disparity is pervasive across individual institutions and that female faculty members employed by UT System institutions generally earn less than male faculty members, across faculty ranks.⁴
Among the UT System institutions, only two have published a study of gender equity within the last decade. In 2008, the University of Texas at Austin’s Gender Equity Task Force, commissioned by then-Provost Steven Leslie, concluded that an overall salary gap existed among its faculty. In addition, the Task Force noted, that among its peers, UT Austin ranked last out of 12 institutions on the 2006 AAUP gender equity study measure “average female faculty salary as a percentage of average male salary” (72.3%, compared to the highest ratio of 83.7% at the University of Minnesota, Twin Cities). However, the analysis, which controlled for differences in salary based on fields, departments/schools, and faculty characteristics, indicated that, for tenured and tenure-track faculty, the salary gap was only statistically significant for full professors, with female full professors in 2007 earning, on average, $9,028 less than male full professors. Additional analyses revealed that this gap was driven largely by the differences in the starting salaries for men and women upon achieving that rank. Among non-tenure-track faculty, both women’s starting salaries and current salaries were significantly lower than men’s. Furthermore, this pattern was found at each rank. A follow-up assessment of faculty total compensation, which includes supplements such as endowment funds, rather than nine-month academic rates only, indicated that there was a decrease in the total compensation gap for UT Austin full professors. While female full professors earned 6% less than male full professors in 2007, the gap in compensation at this rank in 2011 was 4%.

The College of Liberal Arts at the University of Texas at Austin revisited the issue of faculty salary equity in 2012, following a targeted effort to decrease the salary disparity within the College through merit-based salary increases and the hiring of more women faculty in senior positions. The subsequent report of findings did not include statistical results, but did reveal improvement in the academic rate of female faculty over the last several years. Whereas in 2007 female full professors earned 89% of what male full professors did, by 2011 the ratio had increased to 98%. Similarly, the ratio improved for associate professors, from a low in 2008, with female faculty receiving an average academic rate equal to 91% of what men received, to a ratio of 97% in 2011. The salary disparity increased during this period for assistant professors, however, with female faculty earning 97% of what men did in 2007, but earning only 94% of what male faculty did in 2011. An examination of total compensation (i.e., academic rate plus supplements) across all ranks indicated that in 2007 the average total compensation for female faculty was 88% of the total compensation for male faculty, but that this ratio increased to 96% in 2011. In 2011, male full professors were proportionally more likely to have supplements than were female full professors, and the average supplement for men was almost a third higher than the average supplement for women.

The University of Texas at El Paso investigated whether there was a gender gap in the nine-month academic salaries of its faculty members in 2008. The results of this analysis indicated that when rank and discipline (Business, Engineering, Social and Behavioral Sciences, and Physical/Life Sciences) were controlled for, gender differences in salary were not statistically significant.
Texas A&M University recently conducted an intensive analysis of salary equity among its faculty, considering in its models gender, race, rank, rank at hire, administrative status, degree, years since degree, years at the institution, certification, change in status, departmental indicators, and contract term length. Separate models were developed for each college and, within the Colleges of Liberal Arts and Agriculture and Life Sciences, independent models were estimated for STEM departments and Non-STEM departments. Several statistically significant results were found. First, the salaries for female assistant and associate professors in the STEM departments of the Colleges of Liberal Arts and Agriculture and Life Sciences were lower than for the male counterparts (p<.01 or p<.05, depending on the combination of rank and college). Second, the women in the non-STEM departments of the College of Agriculture and Life Sciences earned less than men across ranks, with a statistical significance for assistant, associate, and full professors of p<.05, p<.05, and p<.01, respectively. Third, female associate professors in the College of Architecture made significantly less than male associate professors (p<.05). Finally, the salary for female full professors in the College of Veterinary Medicine was significantly lower than for male full professors (P<.01).

In 2011, the University of California System (UC System) released the findings of its faculty pay equity study, which used the resulting equation from a linear multiple regression predicting the appointment pay rate for white men to assess salary discrepancies on the basis of gender or race. Following the author’s conclusion that there was a disparity in salary within the UC System, in which female faculty received lower compensation than male faculty, UC President Mark Yudof charged the individual campuses to conduct at least one salary equity study by 2015. The subsequent analysis by the University of California Berkeley, a UT System peer institution, indicated that female faculty at the university earned 15.8% less than white male faculty overall (main effect for gender=p<.001). However, when experience-related variables were taken into account, the gap was reduced to 11.3% (main effect for gender=p<.001). The introduction of several field-related variables into their analysis further reduced the difference to 4.3% (main effect for gender=p<.001) and, after rank was incorporated into the model, the study indicated that women earned 1.8% less than their white male counterparts (main effect for gender=p<.064).

The University of California Los Angeles (UCLA), another UT System peer institution, also determined that female faculty members earn less than male faculty members. The institution is in the process of conducting salary analyses of individual campus units and released results for the Division of Social Sciences in January 2015. Although there were no statistically significant differences in median starting base salaries by gender, regardless of faculty rank, the median current base salaries for men were higher in all ranks than for women (p=.01). When current step within rank, starting rank and step, and time since start were added to the model, gender was still significant, with male faculty members making on average $11,344 more than female faculty members (p=.043).
While the University of California, Berkeley and UCLA did find evidence for salary inequities based on gender, the University of California, Riverside, determined from its multiple regression analysis that gender itself was not a significant factor in predicting either initial or current faculty salary. Instead, the significant influences on salary were factors associated with experience, field, rank, and in the case of current salary, ethnic category. Notably, subsequent descriptive analyses indicated that the award of tenure and promotions to associate professor and full professor appear to occur more quickly for men than women.xiv

Similarly, the University of California, Santa Barbara concluded that its apparent gender gap in salary results from differences in the number of years of experience between its male and female faculty, as well as differences in pay across broad academic disciplines (i.e., college divisions, for example, Social Sciences or Mathematical, Life, and Physical Sciences). However, the authors recommended that a review of female faculty with notably lower salaries than their model predicts be conducted in the future and that additional factors such as rank and step at initial hire and rates of advancement be considered.xv

In its analysis of faculty salary equity, the University of California, Santa Cruz found that the lower wages for its female faculty could statistically be explained primarily by departmental differences in salary and promotion growth. Nevertheless, they noted that these differences are also associated with gender, in that departments with more male faculty generally having higher salaries and rates of promotion.xvi

Also a peer institution, the University of California, San Diego, has conducted two recent faculty salary studies. The first study focused on the general campus and Scripps Institution of Oceanography, found some evidence of salary inequity on the basis of gender when department, years since highest degree, and years since ladder-rank appointment at the university were controlled for, but concluded that this difference was not statistically significant.xvii The second study focused on faculty in the health sciences. The results of this analysis indicated that female faculty in these fields made 13.2% less than their male peers, even when factors such as rank, academic series, department, degree, ethnicity, and years of service at the university were accounted for (p.<.0001).xviii

Another UT System peer institution, the University of Michigan Ann Arbor, has conducted three salary studies over the last decade, two of which focused on its non-Medical School faculty. The investigations controlled for several factors known to influence salary, including race, time since highest degree, years at the institution, department, and number and types of appointments. In the 2007 study, female faculty were found to earn 3.8% less than male faculty (p<.05). When rank and years in rank were added to the model, the difference in salary between men and women was 2.5%, still statistically significant (p<.05).xix In the 2012 update, the salaries of female faculty were again 3.8% less than male faculty in the model that excluded rank factors (p<.001), but with rank and years in rank controlled for, the gap had decreased to 1.6% (p<.05). This decrease itself was not found
to be statistically significant.\textsuperscript{xx} The results of the third University of Michigan study, pertaining to the salary of Medical School faculty, reflected the same pattern. When race, experience, field, and appointments were controlled for, women earned 7.5% less than men (p<.001). The addition of rank and years in rank decreased this gap somewhat (to 4.7%; p<.05).\textsuperscript{xi}

The University of Houston modeled their investigation of faculty salary after the University of Michigan studies, and also found that women made significantly less than men, even when administrative appointments, years since degree, average market salary based on field, rank, and years in rank were controlled for (p<.05). In a separate analysis of only STEM faculty, the effect of gender was determined to be statistically insignificant.\textsuperscript{xxi}

A recent gender equity study at Ohio State concentrated on the faculty of its College of Engineering, College of Veterinary Medicine, and Division of Natural and Mathematical Sciences, areas in which women have historically been underrepresented. The results of this study indicated that differences in salary between female and male faculty were due primarily to discipline (p<.0001), rank (p<.0001), and an interaction between rank and time in rank (p<.0001).\textsuperscript{xxii} Similarly, the results of the University of Illinois Urbana-Champaign’s annual faculty salary equity study suggest that factors related to rank, field, and experience predict salaries at the institution, while gender does not.\textsuperscript{xxiii} An early study by Stanford University did not find an overall gender disparity in wages, but did note some inequity within a few individual departments.\textsuperscript{xxiv} However, the current status of faculty salary by gender is unknown, as the data is not publicly available.

Finally, an investigation of faculty pay at the University of Memphis revealed that female full professors at the University earn 86% of what male full professors earn and that the ratio for associate and assistant professors is 96% and 92%, respectively. Whether or not these differences are statistically significant is unknown, and the author did not include a comprehensive analysis of the factors that may influence faculty salary, although they do provide evidence of inequity within some disciplines.\textsuperscript{xxvi} However, this and other studies of faculty salary equity often point to the same major findings about gender equity in the academe that are also related to salary: that women are underrepresented in higher faculty ranks and in higher paid disciplines.\textsuperscript{xxvii}

\textbf{There is a “representation gap” with fewer women in the higher faculty ranks.}

In 2004, 53% of the doctorates awarded to U.S. citizens nationally were received by women. The continued increase of women’s enrollment in graduate programs should facilitate their representation within the ranks of university faculty, but this has not been the case. According to the AAUP 2006 study, for doctoral universities, women constituted 26% of the tenured faculty, only 19% of the full professors, and 34% of all full-time
employees. An analysis of recent AAUP data indicated that female full professors make up 8% of total full-time faculty among doctoral universities, while male full professors make up 26%.

The Gender Equity Task Force at the University of Texas at Austin found several indicators of a representation gap within the university. Overall, women constitute a much smaller proportion of full-time, tenured/tenure-track professors. Women tend to hold a higher proportion of the part-time positions at lower ranks. Also, women tend to lag behind men in their promotion ranks and in time to promotion. Furthermore, when compared to its peer institutions, UT Austin ranked 11 out of 12 in the proportion of women ranked as full professors. However, recent evidence has suggested there have been some gains in the inclusion of women in higher faculty ranks. For example, in 1993 women represented 10% of the full professors at the campus, yet 22% in 2012. The proportion of female associate professors and assistant professors has remained at 38% and 42%, respectively, since 2004. An analysis of the UT Austin College of Liberal Arts specifically indicated that whereas women filled 20% of the full professor positions in 2007, they held 26% of them in 2011. In 2007, 43% of the assistant professors and 40% percent of the associate professors were females. By 2011, this ratio increased to 44% and 43%, respectively.

In 2013, UT System reported the following ranks and tenure status for women across all institutions.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professor</td>
<td>23%</td>
</tr>
<tr>
<td>Associate Prof.</td>
<td>36%</td>
</tr>
<tr>
<td>Assistant Prof.</td>
<td>40%</td>
</tr>
<tr>
<td>Other Faculty</td>
<td>48%</td>
</tr>
<tr>
<td>Instructors</td>
<td>63%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tenure Status</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tenured</td>
<td>28%</td>
</tr>
<tr>
<td>Tenure Track</td>
<td>39%</td>
</tr>
<tr>
<td>Non-Tenure Track</td>
<td>48%</td>
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Similar to the findings at UT Austin and the UT System, the data from the equity studies at the University of California Berkeley, University of California Los Angeles, University of California Riverside, and University of California San Diego Health Sciences all suggest that women are underrepresented in the higher faculty ranks. At Ohio State University (including Wexler Medical Center) women make up 38% of the total faculty, but only 25% of the full professors. In 2013, women comprised 27% of the total faculty at Stanford and 20% of the tenured full professor positions. A study of 12 business schools in Texas, which included a range of Carnegie classifications and one UT System school, UT Dallas, found 60% of the female faculty members employed as instructor/lecturer or assistant professor, while male faculty members were clustered in the ranks of associate and full professor. It should be noted that this study did not find evidence of salary inequity between men and women within a given rank.
Texas A&M University recently examined the promotion and separation rates for its faculty and found two statistically significant results pertaining to assistant professors hired since 2004. Female faculty in the College of Engineering were less likely to have been promoted to associate professor than were male faculty, but female faculty in the STEM departments of the College of Agriculture and Life Sciences were more likely to have been promoted than their male counterparts.xi

A recent analysis of faculty salaries at 475 institutions indicated that higher proportions of women at the rank of full professor were associated with lower gender gap levels for wages among assistant professors, when disciplinary fields and institutional research intensiveness was controlled for. Although the cause of this association could not be determined, the researchers posited that it could be a result of senior female faculty mentoring of junior faculty, or of their participation in institutional policymaking.xli

In general, representation gaps remain large at health-related institutions. The Association of American Medical Colleges’ (AAMC) 2013 study revealed that women make up 34% of associate professors and 21% of full professors. In addition, only 15% of department chairs and 16% of deans at U.S. medical schools are female.xlii

At the University of Michigan School of Medicine, only 26% of female faculty were full professors, while 46% of male faculty were full professors. The Yale School of Medicine is currently conducting an investigation of gender equity at its institution and includes among its issues of interest barriers to career advancement.xliii

In the UT Austin study, gender distribution data showed that the lowest percentage of women were employed in geosciences, engineering, and natural sciences and the highest percentage were in nursing, social work, communication, and education.xliv Professors in STEM fields at universities tend to earn higher salaries than those in non-STEM fields, and often the STEM fields are male dominated.xlv

Data from the Texas A&M University study of promotion and separation rates among faculty indicate that women make up 44% of the faculty in the institution’s STEM departments however, the proportion varies widely across departments. For example, 26% of the faculty of the Engineering department comprises of women, compared to 52% of the faculty within the STEM departments of the College of Liberal Arts.xlvi

**Women are less likely to be found in the higher paid disciplines.**

The now well-known remarks made in 2005 by then-Harvard President Lawrence Summers rekindled conversations about why women faculty are underrepresented at elite universities and in particular disciplines. A 1995 study at MIT on women in science shed light on large equity issues across the science disciplines.xlvii

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The University California, Berkeley also found that women were significantly underrepresented in many STEM fields. Similarly, the University of California Riverside data reveal that women make a noticeably smaller proportion of the faculty in the institution’s divisions of business, engineering, and natural and agricultural sciences. Women also appear to be underrepresented in the faculty at some of the STEM-related academic units at the University of California Santa Barbara, University of California Santa Cruz, and University of Memphis. In addition, in the study of 12 business schools in Texas, women made up approximately 30% of the total faculty.

In health-related institutions, women only make up a little more than one third (38%) of full-time academic medical faculty. Similarly, UT MD Anderson’s faculty make-up is only 35% women, while women comprise 39% of the faculty in health sciences at the University of California San Diego. At the University of Michigan Medical School, women were found to fill only 18% of the faculty positions.

**Additional Factors**

Studies have also revealed other factors that may contribute to the pay gap. For example, men being more represented in leadership roles and positions making hiring decisions and a lack of family-friendly policies/programs. Additionally, according to the study done at UT Austin, more women than men left the university prior to being tenure eligible. Finally, a discussion of note in the University of California, Berkeley study considers why rank should or should not be included in studies of salary equity, noting that rank in and of itself may be susceptible to the same kinds of biases as salary decisions and that, if experience is controlled for, dropping rank as a variable of interest is potentially warranted.

Overall, the literature reveals that faculty salary equity studies are complex, due in part, to the variety of factors that may contribute to a faculty member’s salary. Complex statistical analysis is required, and careful consideration must be given to the methodological approach. Further, detailed data on faculty appointments are necessary so that as many variables that may contribute to salary differences can be considered and examined.
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