University of Michigan Gender Salary Study: 2024 Update

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Executive summary

The University of Michigan-Ann Arbor has conducted an assessment of gender equity in salaries of tenured and tenure-track faculty since 1999. However, the last official assessment was done in 2012. Laurie McCauley, Provost and Executive Vice President for Academic Affairs, commissioned a group of faculty and academic administrators to update the assessment of gender equity among tenured and tenure-track faculty outside the Medical School as of November 2023. This report summarizes the key findings of the updated assessment.*

We do not find any meaningful difference between the salaries of women and men faculty once we account for basic control variables. In the sample inclusive of all non-medical faculty salaries, the estimates for 2024 imply a smaller gender difference than those reported a decade ago (Schoeni, Andreski, & Wolff, 2012).

1 Introduction

Gender equity in faculty salaries is a longstanding issue of national concern.[1] Nationally, the gap between the salaries of women and men faculty reported by the American Association of University Professors (AAUP) remains as large in 2023 as it was a decade ago. The University of Michigan's commitment to addressing salary equity among its employees dates back to 1971, when a complaint to the U.S. Department of Health, Education and Welfare alleging discrimination against women employees ultimately resulted in UM becoming the first university in the nation to establish an affirmative action plan to ensure equity between sexes (see L. Zielan, "It was a man's world," Bentley Historical Library). Since then, the University has conducted analyses of equity in faculty salaries on a semi-regular basis. Provost Laurie McCauley requested that the study of faculty outside the Medical School be updated. Vice Provost Lori J. Pierce was charged with overseeing the study, a responsibility she has had for all faculty salary studies since 2007. An advisory committee provided input and consultation to the study team, and members of this committee are listed in Table A1.

*The authors thank Patricia Andreski, Cecilio Palacio, Tracy Pattok, and Jennifer Watson for their support in creating this report. We also thank the advisory committee for their thoughtful comments.

[1]For the study, we will focus on differences between women and men, recognizing that this is a limited view and does not capture the full diversity of human gender identities. The administrative data also currently do not make a finer distinction. In the report, we will use the term "gender" differences to simply refer to gaps for women minus men.

2 Procedure and Data Description

This report takes the 2012 study conducted by Schoeni et al. (2012) as the starting point for the current analysis. We begin by following the methodology of the 2012 study and first benchmark the results using the updated data against the results reported in the 2012 study. We then proceed to augment and modify the 2012 "original specification" for reasons that we explain below.

The sample for our study is the number of tenured and tenure-track faculty on the Ann Arbor campus, excluding those whose only appointment is in the Medical School. We include faculty that have at least one salaried, non-medical school, tenure-track appointment as of November 1, 2023. We exclude 34 faculty who are or were high-level administrators.[2] With these restrictions taken into account, we have a sample of 2,174 tenure-track faculty, of whom a little over 40 percent identify as women.

Table 1 presents demographic information about the UM faculty in our sample. The top section of the table shows that 18 percent of the faculty identify as Asian, six percent Black and five percent Hispanic.[3] Men tend to have significantly more years since their highest degree and have been employed at the University of Michigan longer (15.4 years versus 11.5 years, on average, for women). About 60 percent of men are full professors, while only 44 percent of women have attained that rank. Because faculty's rank and years of service both affect their salaries, it will be important to control for these factors in the analysis that follows.

It is worth noting that there is extensive discussion in the literature on gender gaps on whether we should be controlling for rank and years employed. Rank should affect one's salary mechanically. However, factors that affect gender gaps in salary levels may also affect gender gaps in rank. In that case, we would underestimate gender gaps in salaries when we control for rank. Studying reasons for gender differences in rank are beyond the scope of this committee. As was the case in the 2012 report, we will report estimates with and without these controls. However, despite these concerns, given the large differences in rank by gender, we think it is important to control for rank in the analysis.

For the purposes of this analysis, an individual's salary is defined as the nine-month ("U-year") salary averaged across all tenure-track appointments held by that individual. Dry, or zero-percent, appointments are excluded from the average. We take full-time equivalent (FTE) weighted salaries across the various appointments, where the salary from each appointment belonging to a faculty member is weighted according to its share of that faculty member's total tenure-track FTE (see Appendix B.1 for details). This measure of salary only includes base compensation, and excludes compensation that may come in the form of summer appointments or additional pay for taking on intermittent responsibilities, such as department chair. The bottom of Table 1 shows that men tend to have higher salaries than women; the average FTE-weighted salary for men is $170,590 and for women it is $151,378. Average salaries are higher for men, even when comparing within rank; that is particularly the case at the assistant and full professor ranks.

[2] High-level administrators include provosts, vice provosts, presidents, vice-presidents, and deans. We measure current and former administrator positions from 2010 to present. We exclude one faculty member who has a tenure-track appointment, but falls into a unit that does not have tenure-track appointments. We also exclude another who belongs to a department for which we reassign faculty based on joint appointments, and who does not have a joint appointment.

[3] Faculty self-report gender, race, and ethnicity by choosing among a set of fixed categories. They select race and ethnicity separately, though we combine these into a single variable for consistency with the race and ethnicity variable definition in prior studies.

When comparing these statistics to those in 2012 (see Table D1), several things are of note. First, there has been a large increase in the relative proportion of women in the faculty. Their numbers increased from 635 to 872, while the number of men decreased slightly from 1320 to 1302. Second, the proportion of White faculty declined from 74% to 66% (while the share of Asian faculty rose from 13.5% to 18.1%).

3 Results

Even though, on average, men earn higher salaries than women overall, this does not by itself mean there is a gender gap in pay, since men and women faculty may differ in various other ways that affect their salary. Our goal is to investigate whether a gender gap in salaries exists after we control for a variety of these factors. For this purpose, as in previous reports, we use ordinary least squares regression analysis. The outcome variable in the main analysis is the natural logarithm of FTE-weighted salary. We regress this onto indicators for gender and for race, as well as several control variables. The coefficient of interest is the estimate on the indicator for woman, which reflects the log salary difference between women and men (a negative estimate indicating that women have lower average salaries). The log differences are quite similar to percentage differences in salary (especially when the estimates are smaller than 0.1 log points in magnitude).

The regression analysis includes two categories of control variables, which we will refer to as Model 1 and Model 2 (for detailed variable definitions, see Table B1). The controls in Model 1 include indicators of race and ethnicity along with the time since degree, years at the university, an indicator for PhD completion (that equals one if the faculty has a doctorate or post-doctorate professional degree, such as a JD), number of appointments at the university, whether the faculty has a medical school appointment, an administrative appointment now or since 2010, and the organizational category affiliation of the individual (31 department/school groupings - see Table B2). These variables reflect the seniority of the individual faculty and potential differences across disciplines; inclusion of organizational categories effectively allows us to compare salaries of women and men in the same groupings. The 2012 analysis used 29 organizational category groupings. Adjustments were made to the groupings based on feedback from the advisory committee, and to account for departments that were not in the 2011 data; see Appendix B.2 for details.

The second set of controls (in Model 2) add: (1) the faculty's rank (professor, associate professor, or assistant professor) and years in rank, and (2) the natural log of the mean market ratio. The market ratio is at the department-by-rank level, and measures the ratio of a given field's average salary to the average salary among all fields, conditional on rank, at 57 other schools in the Association of American Universities (AAU). Including the first set of variables will allow us to compare the salaries of women and men who are at the same rank and who have been in the rank for the same amount of time (conditional on all the controls already included in Model 1). Since some organizational categories can be quite broad and combine departments with different salary levels and different proportion of women, including the natural log of the mean market ratio further controls for those differences. The exact regression specifications for both models are outlined in Appendix C.

It is important to note that our analysis, like the UM analyses that precede it, omits several potentially important factors that could account for individual salary differentials. These include measures of teaching performance, scholarly reputation and impact, quality and quantity of an individual's contributions to the institution and their academic profession.

3.1 Gender Gap Estimates

We begin by replicating the results of the most recent salary study based on the 2011 salaries of tenured and tenure-track faculty (Schoeni et al., 2012). The first three columns of Table 2 show the results based on the 2011 data using the 2012 study's regression model. The raw gender coefficient – that is, the regression coefficient without controls – suggests a 0.137 log point (approximately 14.7 percent) pay gap between women and men, favoring men. When the Model 1 controls are included, the gap falls to 3.8 percent. When rank and years in rank are included (Model 2) the gender gap falls to 1.56 percent. These results exactly replicate those in Table 2 of Schoeni et al. (2012).

The results in the second group of columns labeled "Preferred specification" include some modifications to the 2012 study. These models differ from those in the 2012 study in a few ways. First, we add Hispanic faculty to the indicator that represents faculty who are Black, Native American/Alaskan Native, Hawaiian/Pacific Islander, report two or more races, or do not report their race or ethnicity. Second, when calculating each faculty member's average salary across appointments, we weight appointments by their FTE value. Third, we only include tenure-track appointments when calculating average salary and other variables derived from multiple appointments. Note that these changes have only a modest impact on the results. For example, the gender gap estimate in Model 1 changes from 3.80 percent to 3.74 percent. Both estimates are statistically different from zero at the one percent level (meaning that there is no more than a 1% chance that the difference would be this large if there was no "true" difference in salaries by faculty gender) but not statistically different from each other.

To measure potential gender gaps in the 2024 data, we make a few additional changes to the preferred specification that are not possible with the 2011 data due to data limitations. In addition to the changes described above, we reorganize the organizational category groupings (see Appendix B.2 for a full description of these changes from the 2012 report mappings). We also include two additional covariates: an indicator for being a former normal administrator in Model 1 and Model 2,[4] and the log of average market ratio across tenure-track salaried appointments (along with a missing market ratio data indicator) in Model 2.[5]

Table 3 reports the results based on 2024 data and our preferred regression specification. The first column shows that the raw gender gap has declined from 0.138 log points (about 14.8 percent) in 2012 to 0.116 log points (about 12.3 percent) in 2024. More importantly, after including controls, the gender coefficient is very small. In Model 1, it is -1.4% and is only marginally statistically significant. In Model 2, with our full set of controls, the coefficient is +0.8% and is not statistically different from zero. Appendix Table D3 shows that controlling for experience (or alternatively, rank and years spent in that rank) and the faculty's department/school accounts for most of the gender gap in salaries.

Table D4 shows the corresponding estimates using salary (instead of log salary) as the dependent variable. We see that the raw gender gap is $19,213. Inclusion of the Model 1 controls reduces the gender gap to -$2,070 (and the estimate is no longer statistically significant). In Model 2, the estimate becomes positive (i.e., the average salary gap is in favor of women) but the estimate is not statistically different from zero.

[4]Normal administrative positions include associate deans, academic program and other directors, and department chairs.

[5]In Table D2, we explore the effects of making only one of these changes at a time (for example, using FTE-weighted average salaries instead of weighting average salaries equally by number of appointments). We find that these individual specification adjustments do not qualitatively affect our estimates of the gender salary gap.

We also examine salary gaps by quantile. Rather than testing for differences in average salaries, as we do above, this analysis allows us to examine gaps at different locations in the salary distribution (for example, differences between the median or 90th percentile salary of men and women). Figure 1 plots the salary gap estimates and 90% confidence intervals at ten-point increments of the salary distribution using Model 2 (see Figures D1 and D2 for corresponding uncontrolled and Model 1 estimates). We estimate small, positive gender gaps throughout the distribution, none of which are significant.

We have shown that, on average, there is little evidence of a systematic gender gap in faculty salaries at the University of Michigan. Does this mean that there are no systematic gender gaps in *each* of the specific schools at the university? Not necessarily–we could have a case where some schools have positive gender gaps (i.e., salary differentials in favor of women) and some schools having negative gaps, with the overall gap averaging out to zero.

To that end, we estimate school-specific gender gaps by adapting Model 2 to allow for interactions between most variables and school-specific FTE fraction variables. We find economically large variation in gender gaps across the 17 schools (even after including all the Model 2 controls). We do not present a detailed discussion of these estimates in the report since they are quite imprecise (largely due to small sample sizes in many schools). In fact, we cannot reject the null hypothesis that the school-specific gaps (after including the Model 2 controls) are jointly equal to zero. Likewise, we cannot reject the null that the gaps across schools are equal. It is, however, worth noting that the school-specific gaps are persistent over time: for example, schools that had large gender gaps in favor of (or against) men in 2012 also tend to be the same schools that have large gaps in favor of (or against) men in 2024.

3.2 Departures and Retention

Our analysis is based on one snapshot in time. While the gender gap estimates in 2024 are smaller in magnitude than those in 2012, this need not necessarily imply progress in gender equity. For example, if women with lower salaries have left UM at higher rates in recent years, that could show up as a smaller gender gap in the aggregate.

We were provided with data on retention efforts from the start of the 2017-18 school year through the 2022-23 school year. However, due to decentralized reporting, it is not clear whether this covers the full set of retention efforts during this period.

Table 4 describes departure and retention among the faculty who worked at the university prior to 2020, including those who departed during or after November 2019. Women are both more likely to leave the university than men (12.1% versus 9.2%) and more likely to receive a retention offer (14.3% vs. 10.2%) during this time period. These differences are statistically significant at conventional levels. Conditional on leaving, men are more likely to have received a retention offer (27.9% vs. 22.0%), but women are more likely to stay given a retention offer (81.3% vs. 74.8%); these differences are not statistically significant.

The current data limitations preclude us from investigating what kinds of individuals are leaving, so it is hard to know what impact, if any, these departures – that differ by gender – have on the overall gender pay gap.

4 Summary

We study whether there is a salary gap between men and women faculty at the University of Michigan. To do so, we estimate regression models that control for other faculty characteristics that differ between men and women, such as their school and year of experience. The sample for the study is the number of tenured and tenure-track faculty on the Ann Arbor campus excluding those whose only appointment is in the Medical School. Our main finding is that, at the aggregate level, there is no statistically or economically significant difference between the salaries of men and women faculty once basic control variables are accounted for. Our analysis also finds gender differences in departures and retention rates: women are both more likely to depart and to have been offered retention packages.

If the metric for progress were the magnitude of the gender gap (after controlling for basic factors), there has definitely been progress in the sense that our estimated average gender gaps are smaller than those found in the 2011 data. However, a better understanding of the overall patterns would require a deeper investigation of why gaps vary across schools. In addition, one would need to analyze panel data (i.e., data over time), rather than analysis that is based primarily on one snapshot in time, as is the case for the current report.

References

Schoeni, R. F., Andreski, P., & Wolff, P. (2012). *University of michigan gender salary study: An update* (Tech. Rep.). University of Michigan.

Table 1: Summary statistics for faculty by gender

	All	Women	Men	p-value
N	2174	872	1302	
Race/ethnicity				
Asian	18.1	16.7	19.0	0.18
Black	6.3	8.5	4.8	0.00
Hispanic	5.2	5.7	4.9	0.41
White	66.3	64.4	67.5	0.14
Years since highest degree	20.7	18.1	22.4	0.00
Years at UM	13.8	11.5	15.4	0.00
PhD	93.3	91.9	94.3	0.04
Mean FTE-weighted market ratio	1.03	1.00	1.05	0.00
Appointments				
Two	29.7	32.3	28.0	0.03
Three or more	14.9	15.7	14.4	0.39
In medical school	3.9	3.7	4.1	0.63
Current administrative	14.4	16.2	13.3	0.06
Former administrative	12.1	10.0	13.5	0.01
Rank				
Assistant professor	21.4	27.3	17.4	0.00
Associate professor	24.9	28.7	22.4	0.00
Professor	53.7	44.0	60.2	0.00
Years in rank	8.2	6.1	9.6	0.00
Salary				
Mean simple-weighted salary	$162,912	$151,460	$170,582	0.00
Mean FTE-weighted salary	$162,884	$151,378	$170,590	0.00
Mean FTE-weighted salary, by rank				
Assistant professor	$118,653	$113,488	$124,068	0.00
Associate professor	$130,842	$130,573	$131,074	0.84
Professor	$195,335	$188,407	$198,728	0.00

The p-value column reports the probability of observing the given difference between men and women, given that the actual difference is zero.

Table 2: Replication of 2012 study estimates

	Original specification			Preferred specification		
Independent variables	No controls	Model 1	Model 2	No controls	Model 1	Model 2
Woman	-0.1370***	-0.0380***	-0.0156**	-0.1375***	-0.0374***	-0.0155**
	(8.36)	(3.83)	(2.03)	(8.42)	(3.78)	(2.05)
Race/ethnicity						
Asian		0.0148	-0.0008		0.0162	-0.0003
		(1.09)	(0.08)		(1.20)	(0.03)
Black, Hispanic		0.0091	0.0060		0.0184	0.0106
Native American,		(0.54)	(0.46)		(1.33)	(1.00)
Alaskan Native,						
Hawaiian/Pacific						
Islander, Two or more,						
Not indicated						
N	1955	1955	1955	1955	1955	1955
Additional control variables						
Model 1 variables		X	X		X	X
Model 2 variables			X			X

Model 1 variables: time since degree, years at UM, has PhD, appointment counts, medical school appointment, administrative appointment, organizational category.
Model 2 variables: rank, years in rank, interaction of rank and years in rank.
Original specification does not include Hispanic in Black, Native American... indicator.
t-statistic in parentheses; critical values are 1.65 (0.10), 1.96 (0.05), 2.58 (0.01).
* p≤ 0.10, ** p≤ 0.05, *** p≤ 0.01.

Table 3: Effects of gender on faculty salaries, 2024

	Preferred specification		
Independent variables	No controls	Model 1	Model 2
Woman	-0.116***	-0.014*	0.008
	(7.92)	(1.69)	(1.18)
Race/ethnicity			
Asian		0.012	-0.003
		(1.07)	(0.31)
Black, Hispanic		-0.001	0.012
Native American, Alaskan		(0.08)	(1.44)
Native, Hawaiian/Pacific			
Islander, Two or more,			
Not indicated			
N	2174	2174	2174
Additional control variables			
Model 1 variables		X	X
Former administrator		X	X
Market ratio			X
Model 2 variables			X

Model 1 variables: time since degree, years at UM, has PhD, appointment counts, medical school appointment, administrative appointment, organizational category.

Model 2 variables: rank, years in rank, interaction of rank and years in rank.

t-statistic in parentheses; critical values are 1.65 (0.10), 1.96 (0.05), 2.58 (0.01).

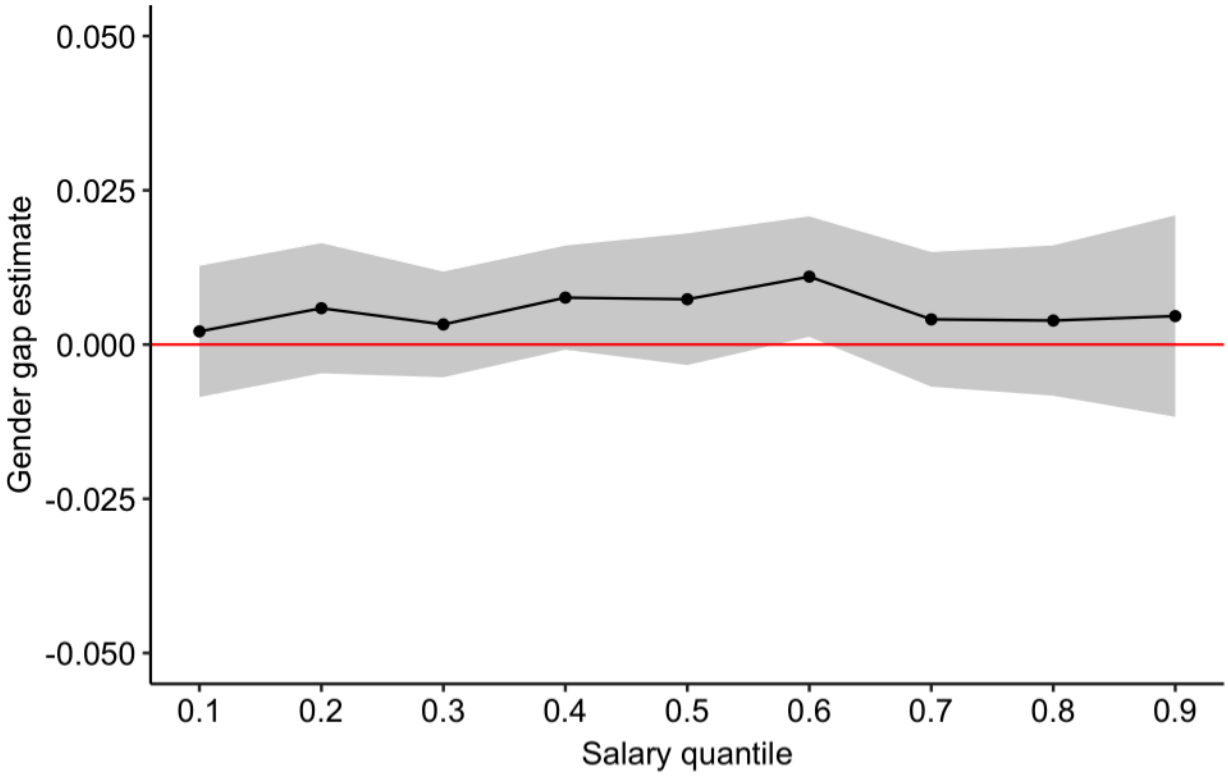
* $p \leq 0.10$, ** $p \leq 0.05$, *** $p \leq 0.01$.

Table 4: Departure summary statistics, 2024

	All	Women	Men	p-value
N	1955	751	1204	
Departed	10.3	12.1	9.2	0.05
Offered retention	11.8	14.2	10.2	0.01
Offered retention | Departed	25.2	22.0	27.9	0.33
Successful retention | Offered retention	77.8	81.3	74.8	0.23

The sample represented in this table includes the study faculty and the faculty who departed in the last five years and held a tenure-track appointment with effort in a categorized department prior to departure. All faculty are present prior to 2020. The p-value column reports the probability of observing the given difference between men and women, given that the actual difference is zero.

Figure 1: Gender gap estimates by salary quantile (Model 2)



Point estimates and 90% confidence interval from model 2.

Appendix

A Advisory committee

Table A1: Advisory committee

Name	Title
Lori Pierce	Vice Provost for Academic and Faculty Affairs
Gloria Hage	Associate General Counsel
Sascha Matish	Associate Vice Provost for Academic and Faculty Affairs and Senior Director, Academic Human Resources
Charles (Charlie) Brown	Professor Emeritus of Economics
Denise Sekaquaptewa	Director, ADVANCE Program
DuBois Bowman	Roderick Joseph Little Collegiate Professor of Public Health, Dean
Kate Cagney	Director, Institute for Social Research
Matthew Davis	Associate Professor of Nursing, Associate Professor of Learning Health Sciences
Megan Sweeney	Arthur F. Thurnau Professor, Departments of English, Afroamerican & African Studies, Women's and Gender Studies Director of Graduate Studies, English
Sara Pozzi	University Diversity and Social Transformation Professor, Professor of Nuclear Engineering and Radiological Sciences, College of Engineering and Professor of Physics
Steven Mankouche	Professor of Architecture
Tom Braun	Professor of Biostatistics

B Data preparation

B.1 Variable definitions

The table below lists key variables in the analysis and their definitions.

Table B1: Variable definitions

Variable	Definition
Salary	Natural log of FTE-weighted average of tenure-track, non-zero nine-month salaries as of 11/1/23
Model 1	
Woman	Employee is a woman
Asian	Employee race/ethnicity is Asian

Table B1: Variable definitions *(continued)*

Variable	Definition
Black, Hispanic, Native American/Alaskan Native, Hawaiian/Pacific Islander, Two or more, Not indicated	Employee race/ethnicity is Black, Hispanic, Native American/Alaskan Native, Hawaiian/Pacific Islander, Two or more, Not indicated
Years since highest degree	2023 - year of highest degree
Years at UM	2023 - first year at UM
Has PhD	Has doctorate or post-doctorate professional degree
Number of appointments	Total number of appointments, including those with zero salary
Medical school appointment	Has at least one appointment in medical school
Administrative appointment	Current normal administrative appointment
Former administrative appointment	Past normal administrative appointment
Model 2	
Rank	Highest rank among tenure-track appointments, one of professor, associate professor, assistant professor
Years in rank	Years in highest rank (2023 - year entered rank)
Rank x years in rank	Interaction between years in rank and professor, associate professor with years in rank <= 6, associate professor with years in rank > 7
Market ratio	Measure of market wage, based on department and rank of appointment. Equal to natural log of FTE-weighted average over tenure-track, salaried appointments for each faculty member
Units	
Organizational category	Each faculty member's share of tenure-track, salaried appointments that fall into given group of departments. There are 31 such groups, see below for mapping between departments and categories
School	Each faculty member's share of tenure-track, salaried appointments that fall into given school. There are 17 schools
Other variables	
Citizenship	Employee citizenship status
Leave status	Leaves in effect as of 11/1/2023
Faculty awards	Ever received given award
Faculty academy memberships	Ever appointed to given academy
Departed	Faculty left university or left tenure track in past five years
Offered retention	Faculty was offered retention package (conditional on sample of retained/departed faculty)
Successful retention	Faculty was successfully retained (conditional on retention offer)

Each appointment's salary is converted to a standard nine-month "U-year" value. To convert 12-month salaries to U-year salaries, salaries in a unit affiliated with the Institute for Social Research (ISR) are multiplied by 0.75, while non-ISR 12-month salaries are multiplied by 0.818. Our preferred measure of each faculty member's salary takes the full time equivalent (FTE)-weighted average among tenure-track appointments with positive salary. For example, a faculty member with a $100,000 0.25 appointment in department A and 0.75 $120,000 appointment in department B would have an FTE-weighted average salary of $115,000. If the sum of FTE is less than 1 among a faculty member's tenure-track appointments, we weight each appointment's salary by the share of FTE that does belong to tenure-track appointments. Building on the prior example, if the FTE in department B was 0.50, the FTE-weighted average salary would now be $\frac{0.25}{0.75} \times \$100,000 + \frac{0.50}{0.75} \times \$120,000 = \$113,333.33$. The dependent variable in all models of salary gaps is the natural log of FTE-weighted average U-year salary for each faculty member.

Organizational category variables represent the share of a faculty member's appointments that belong to groups of departments, or organizational categories. Departments with tenure-track appointments are assigned to one of 31 organizational category values, and this department-to-category mapping is described in the next section. To remain consistent with our preferred definition of salary, we only consider tenure-track, salaried appointments when measuring organizational category variables. The value for each category variable for a faculty member is the share of that member's tenure-track, salaried appointments that belong to that organizational category. For example, say departments A and B belong to the same category, then the example faculty member above would have a value of 1 for that category variable, and 0 for the other 30. If A belongs to category 1 and B to category 2, then the value of the category 1 variable would be $\frac{0.25}{0.75} = 0.\bar{3}$ and the value for the category 2 variable would be $\frac{0.50}{0.75} = 0.\bar{6}$ (again using the FTE total only among tenure-track, salaried appointments).

Our measure of market ratio is defined identically to salary: the log of the FTE-weighted average of the market ratio of tenure-track, salaried appointments. If the market ratio is missing for some but not all tenure-track, salaried appointments, we take the average over non-missing values. If it is missing for all such appointments, we impute 0 and set the value of the missing market ratio variable to 1. All models that include market ratio also include this missing data indicator.

Our definitions of the salary, market ratio, and organizational category variables differ from past studies. In those studies, average salary is calculated over all appointments that have non-zero salary, not just those that belong to tenure-track appointments. The average was also taken using the total number of paid appointments as the denominator; in other words, the average weighted each appointment equally rather than according to appointment's FTE value. Organizational category variables represented the share of appointments that fell into any organizational category (i.e., excluding appointments in departments or units without tenure-track from the numerator and denominator, and not using FTE). Market ratio was the simple average over all appointments with a market ratio (i.e., tenure-track, but not necessarily paid). To ensure that our estimates are not sensitive to different definitions of these variables, we estimate salary gaps using the original variable definitions, as well as with models that incrementally introduce these changes. The results follow later in the appendix, and show that salary gap estimates are not sensitive to these changes.

B.2 Organizational category mappings

The table below lists all departments included in the analysis sample and the organizational category to which each is mapped. Only departments with tenure-track appointments are included.

Table B2: Organizational category/department mapping, 2024

Org group	Dept name	Dept ID	Weighted FTE
1	LSA Anthropology	172000	40.6
2	LSA Chemistry	173500	42.0
3	LSA Economics	175000	32.4
	Ross: Business/Managerial Economics	999995	9.7
4	LSA English Language & Lit.	175500	46.3
	LSA Women's Studies	188700	15.4
	LSA DAAS	190300	20.8
	LSA Comparative Literature	191400	8.2
	LSA American Culture	193000	22.5
5	LSA Earth & Environmental Sci.	177000	32.0
6	LSA Classical Studies	174000	21.5
	LSA History	179000	51.6
	LSA Philosophy	184000	22.2
7	LSA Mathematics	183000	56.5
	LSA Statistics	188500	23.0
8	LSA Astronomy	172500	19.0
	LSA Physics	184500	48.0
	Atm, Oceanic & Space Sci.	224000	28.0
	LSA Biophysics	554000	6.5
9	LSA Political Science	185000	42.5
10	LSA Psychology	185500	78.5
11	LSA Asian Languages & Cultures	176000	18.2
	LSA Germanic Languages & Lit.	178000	8.5
	LSA Judaic Studies	179100	8.5
	LSA Linguistics	181200	13.0
	LSA Near Eastern Studies	183500	17.5
	LSA Romance Languages & Lit.	186500	23.3
	LSA Slavic Languages & Lit.	187000	6.5
12	LSA Sociology	187500	34.2
13	LSA Molec./Cell./Develop. Bio	189000	34.0
	LSA Ecology & Evolutionary Bio	189100	34.0
	LSA Study of Complex Systems	550400	2.7

Table B2: Organizational category/department mapping, 2024
(continued)

Org group	Dept name	Dept ID	Weighted FTE
14	Biomedical Engineering	210600	24.0
	Aerospace Engineering	212000	28.0
	Chemical Engineering Dept	213000	27.5
	Civil & Environmental Engr	215000	34.0
	Industrial Operations	221000	30.0
	Materials Science & Engin.	221800	25.0
	Naval Arch & Marine Dept	225500	13.0
	Nuclear Eng & Radiological Sci	227000	25.0
15	CoE Robotics	210308	19.0
	COE EECS - CSE Division	215900	66.5
	COE EECS - ECE Division	216100	66.5
16	Mechanical Engineering	222500	60.0
17	Coll of Arch & Urban Planning	372100	42.0
	Urban Planning	372200	10.0
18	LSA History of Art	179500	17.8
	School of Art and Design	373000	30.8
19	Ross School of Business	380000	9.0
	Ross: Business Administration and Management, General	999991	12.0
	Ross: Logistics, Materials, and Supply Chain Management	999992	1.0
	Ross: Operations Management and Supervision	999993	18.0
	Ross: Entrepreneurship/Entrepreneurial Studies	999996	2.0
	Ross: Organizational Behavior Studies	999998	12.2
20	DENT Bio & Materials Science	390300	14.0
	DENT Prosthodontics	390700	2.0
	DENTCariology,Restor Sci &Endo	391700	10.0
	DENT OM Surgery/HD	392300	1.0
	DENT Periodontics and Oral Med	393700	11.0
	DENT Orthodontics	398500	2.0
21	SOE-CSHPE	406800	9.0
	SOE-Educational Studies	408000	34.1
	School of Kinesiology	450000	34.0
22	Law School	410000	57.5
23	LSA Communication Studies	188300	19.2
	LSA Screen Arts & Cultures	191600	14.0
	CoE Technical Communications	220000	1.0
	School of Information	415000	47.7
24	School of Music	420000	105.5
	Department of Dance	431500	5.0
	Theatre and Drama	433000	18.0

Table B2: Organizational category/department mapping, 2024
(continued)

Org group	Dept name	Dept ID	Weighted FTE
25	Sch of Nat Resources & Environ	435000	41.0
26	School of Nursing	440000	42.0
	Hlth Behavior & Hlth Ed Dept	458300	21.0
27	PHARMACY Clin, Soc & Admin Sci	445100	12.0
	PHARMACY Medicinal Chemistry	445200	9.0
	PHARMACY Pharmaceutical Sci	445300	9.5
28	Health Management and Policy	455200	16.0
	Biostatistics Department	456000	33.0
	Nutritional Sciences	457000	9.5
	Environmental Health Sciences	457500	10.8
	Epidemiology Department	458000	29.8
29	School of Social Work	465000	45.0
30	G. Ford Sc Pub Pol	464000	31.7
31	Ross: Accounting	999994	13.8
	Ross: Finance, General	999997	10.0
	Ross: Marketing/Marketing Management, General	999999	14.0

Weighted FTE calculated from each faculty member's fraction of FTE in salaried, categorized appointments within a given department.

We make a few changes to the organizational categories to account for departments that were not there in the 2011 data, and based on recommendations from the Faculty Salary Study Advisory Committee and comparisons of salary ranges of departments in the same organizational category. First, there are three departments (that were not there in the 2011 categorization of departments): Robotics, in the College of Engineering; Oral and Maxillofacial Surgery / Hospital Dentistry in the School of Dentistry; and Nutritional Sciences in the School of Public Health. These are assigned to existing organizational categories.

Second, we create two new organizational categories: the Ford School of Public Policy is now in its own category, as are the Accounting, Finance, and Marketing groups from the Ross School of Business.

Third, we shift some departments to different categories: the Department of African American Studies is now grouped with Women's and Gender Studies, Comparative Literature, and American Culture Studies; the Business Economics group from Ross is now grouped with Economics; the remaining Ross groups are grouped together; and Biostatistics is now grouped with Health Management and Policy, Environmental Health Sciences, Epidemiology, and Nutritional Sciences.

Finally, faculty in the Organizational Studies department are assigned to departments with which they have a joint appointment (N = 5). One faculty member does not have a joint appointment and so is not included in the current analysis.

We test the use of these different organizational categories and find that they do not affect the

salary gap estimates; see below for these results.

C Models

Model 1:

$$\begin{aligned}\log(Salary_i) = \beta_0 &+ \beta_1 Woman_i + \beta_2 Asian_i + \beta_3 OtherRace_i + \\ &+ \beta_4 YearsSinceDegree_i + \beta_5 MissingYearsSinceDegree_i + \\ &+ \beta_6 YearsUM_i + \beta_7 HasPhD_i + \beta_8 MissingHasPhD_i + \beta_9 TwoAppt_i + \beta_{10} ThreeMoreAppt_i \\ &+ \beta_{11} MedicalSchoolAppt_i + \beta_{12} AdminAppt_i + \beta_{13} FormerAdminAppt_i \\ &+ \textstyle\sum_{g=1,\neq 10}^{31} \gamma_g OrgCatShare_{gi} + \epsilon_i\end{aligned}$$

Model 2:

$$\begin{aligned}\log(Salary_i) = \beta_0 &+ \textstyle\sum_{j-1}^{13} \beta_j X_{ji} + \beta_{14} FullProf_i + \beta_{15} AssocProf6_i + \beta_{16} AssocProf7_i \\ &+ \beta_{17} YearsInRank_i + \beta_{18} FullProf_i \times YearsInRank_i + \beta_{19} AssocProf6_i \times YearsInRank_i \\ &+ \beta_{20} AssocProf7_i \times YearsInRank_i + \beta_{21} \log(MarketRatio_i) + \beta_{22} MissingMarketRatio_i \\ &+ \textstyle\sum_{g=1,\neq 10}^{31} \gamma_g OrgCatShare_{gi} + \epsilon_i\end{aligned}$$

Variable definitions are as described above. In all models, organizational category 10 is the reference category. The gender gap estimate comes from $\hat{\beta}_1$. 90% confidence intervals are used throughout.

These models differ from those in the 2012 study by inclusion of two additional controls: an indicator for being a former normal administrator and the log of average market ratio across tenure-track, salaried appointments (along with a missing market ratio data indicator). We estimate the baseline model from 2012 with and without these controls and find that they do not affect the salary gap estimates; see below for these results.

D Tables and figures

D.1 Tables

Table D1: Summary statistics for faculty by gender, 2011 data

	All	Women	Men	p-value
N	1955	635	1320	
Race/ethnicity				
Asian	13.5	11.7	14.4	0.09
Black	5.5	6.5	5.1	0.23
Hispanic	4.5	5.5	4.0	0.16
White	74.3	74.0	74.4	0.86
Years since highest degree	19.8	17.6	20.9	0.00
Years at UM	13.1	11.0	14.1	0.00
PhD	93.1	92.0	93.7	0.17
Mean FTE-weighted market ratio	1.02	0.98	1.04	0.00
Appointments				
Two	28.6	29.6	28.2	0.52
Three or more	13.6	15.7	12.6	0.06
In medical school	3.9	4.6	3.6	0.34
Current administrative	12.2	11.8	12.4	0.70
Rank				
Assistant professor	21.8	26.1	19.7	0.00
Associate professor	26.6	33.1	23.6	0.00
Professor	51.6	40.8	56.7	0.00
Years in rank	8.1	6.3	9.0	0.00
Salary				
Mean simple-weighted salary	$122,238	$110,578	$127,847	0.00
Mean FTE-weighted salary	$122,102	$110,424	$127,719	0.00
Mean FTE-weighted salary, by rank				
Assistant professor	$88,978	$84,718	$91,698	0.01
Associate professor	$98,992	$95,334	$101,461	0.01
Professor	$148,045	$139,135	$151,126	0.00

2024 market ratio data used. The p-value column reports the probability of observing the given difference between men and women, given that the actual difference is zero.

Table D2: Incremental comparison of original and preferred specifications

Independent variables	Original specification	Hispanic in Black, ... indicator	FTE-weighted	Tenure track appointments only	2024 organizational categories	Former administrator	Market ratio
Model 1							
Woman	-0.012	-0.013	-0.012	-0.012	-0.014	-0.013	
	(1.37)	(1.42)	(1.40)	(1.39)	(1.62)	(1.45)	
Asian	0.005	0.005	0.005	0.005	0.006	0.011	
	(0.48)	(0.41)	(0.46)	(0.48)	(0.57)	(1.04)	
Black, Native American American, Alaskan Native, Hawaiian/Pacific Islander, Two or more, Not indicated	0.008 (0.55)	0.001 (0.10)	0.007 (0.53)	0.007 (0.48)	0.006 (0.41)	0.009 (0.67)	
N	2174	2174	2174	2174	2174	2174	
Model 2							
Woman	0.006	0.006	0.006	0.006	0.007	0.006	0.008
	(0.95)	(0.91)	(0.92)	(0.92)	(1.05)	(0.85)	(1.14)
Asian	-0.004	-0.003	-0.004	-0.004	-0.005	0.000	-0.005
	(0.42)	(0.39)	(0.43)	(0.42)	(0.65)	(0.01)	(0.58)
Black, Native American American, Alaskan Native, Hawaiian/Pacific Islander, Two or more, Not indicated	0.020* (1.89)	0.014 (1.59)	0.020* (1.86)	0.019* (1.80)	0.018* (1.77)	0.021** (1.97)	0.019* (1.81)
N	2174	2174	2174	2174	2174	2174	2174

Each column represents a single change to the original specification from the 2012 study. Changes are not cumulative across columns.
The first column of estimates replicates the original specification used in the 2012 study to generate gender gap estimates.
The second column adds Hispanic faculty to the indicator for Black, Native American/Alaskan Native, Hawaiian/Pacific Islander, two or more races, and race/ethnicity missing faculty.
The third column weights average salary and calculates organizational category variables from appointment FTE.
The fourth column only uses tenure-track appointments to calculate average salary and organizational category variables.
The fifth column uses new organizational category mappings, described in appendix B.2.
The sixth column adds an indicator for being a former normal administrator.
The seventh column adds the log of the simple average of the market ratios for each faculty.
t-statistic in parentheses; critical values are 1.65 (0.10), 1.96 (0.05), 2.58 (0.01).
* p≤ 0.10, ** p≤ 0.05, *** p≤ 0.01.

Table D3: Effects of controls on gap estimate

	Uncontrolled → Model 1		Uncontrolled → Model 2	
Independent variables	Impact on gender gap	Relative impact (%)	Impact on gender gap	Relative impact (%)
Rank			-0.066	57.0
Years at UM	0.021	-18.4	0.046	-39.7
Years in rank			-0.043	37.4
Organizational category	-0.048	41.3	-0.031	26.9
Market ratio			-0.014	12.4
Years of experience	-0.073	63.1	-0.011	9.3
Rank x years in rank			-0.005	3.9
Admin appointments	-0.002	1.5	-0.001	1.0
Appointment count	0.002	-1.6	0.001	-0.9
Race/ethnicity	0.000	0.3	0.001	-0.6
PhD	-0.002	1.3	0.000	-0.3
Medical appointment	0.000	0.1	0.000	0.1

This table describes the contribution of each set of covariates to the change in gender gap estimate between the uncontrolled difference and Models 1 and 2. The impact of including a covariate on the gender gap estimate is the difference in the covariate means of men and women, times the model coefficient. The contribution of a group of covariates is the sum of these products across covariates.

The "Impact on gender gap" columns represent how the uncontrolled gap coefficient changes with the inclusion of a given set of control variables. The "Relative impact" columns translate this into a percent of the total uncontrolled gap coefficient. A negative value in the "Impact on gender gap" column means that the covariates make the gap less negative, and a positive value means that covariates make it more negative.

Uncontrolled gender gap estimate = -0.116. Sorted on the absolute value of the impact on the gender gap.

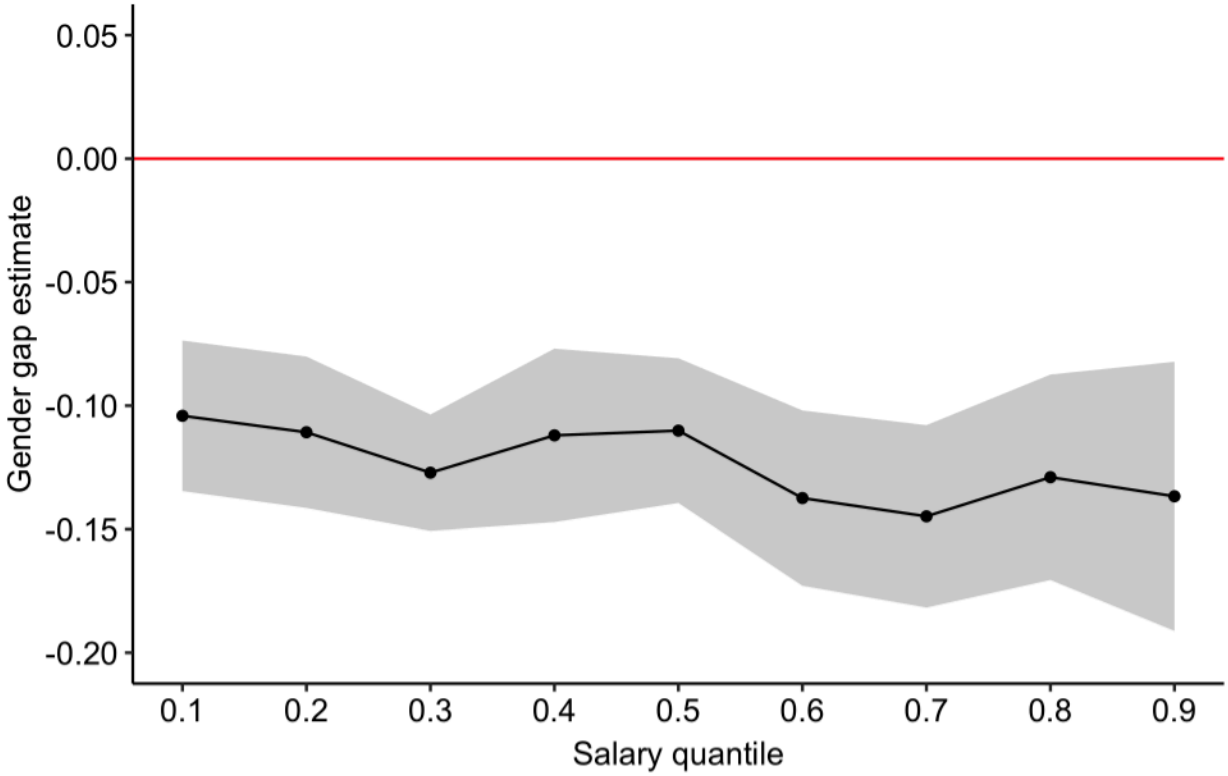
Table D4: Effects of gender on faculty salaries, 2024 (dollars)

	Preferred specification		
Independent variables	No controls	Model 1	Model 2
Woman	-$19,213***	-$2,070	$1,526
	(7.27)	(1.34)	(1.20)
Race/ethnicity			
Asian		$2,500	$401
		(1.26)	(0.25)
Black, Hispanic		$1,260	$2,802
Native American,		(0.61)	(1.64)
Alaskan Native,			
Hawaiian/Pacific			
Islander, Two or more,			
Not indicated			
N	2174	2174	2174
Additional control variables			
Model 1 variables		X	X
Former administrator		X	X
Market ratio			X
Model 2 variables			X

Model 1 variables: time since degree, years at UM, has PhD, appointment counts, medical school appointment, administrative appointment, organizational category.
Model 2 variables: rank, years in rank, interaction of rank and years in rank.
t-statistic in parentheses; critical values are 1.65 (0.10), 1.96 (0.05), 2.58 (0.01).
* p≤ 0.10, ** p≤ 0.05, *** p≤ 0.01.

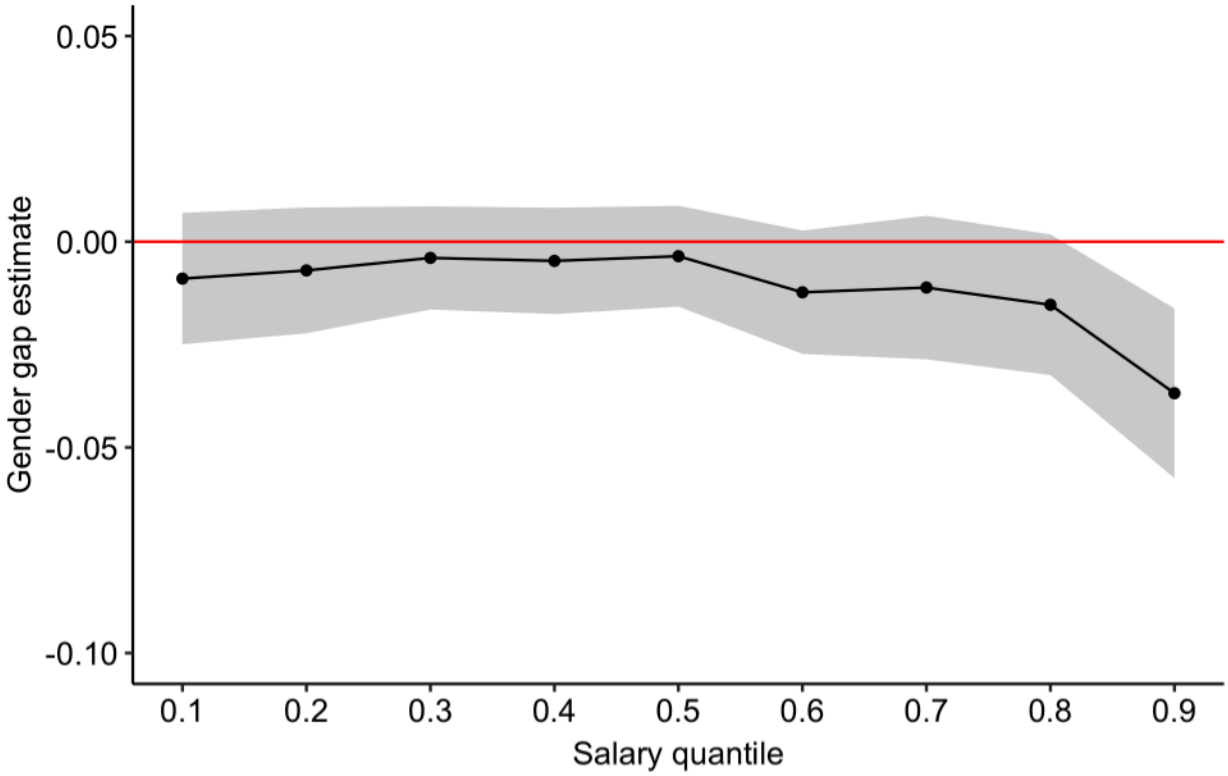
D.2 Figures

Figure D1: Gender gap estimates by salary quantile (uncontrolled)



Point estimates and 90% confidence interval from uncontrolled differences.

Figure D2: Gender gap estimates by salary quantile (Model 1)



Point estimates and 90% confidence interval from model 1.