2023 Salary Equity Study
UCI Professor and Professor of Teaching
General Campus

Overview

The annual campus pay equity study of faculty salaries in the Professor and Professor of Teaching salaries was conducted and prepared by a committee with the following members:

- Diane O'Dowd (Chair), Vice Provost, Academic Personnel
- Nina Bandelj, Associate Vice Provost for Faculty Development
- Ryan Cherland, Assistant Vice Chancellor, Institutional Research & Decision Support
- Jean Chin, Director, Academic Personnel
- Preston Reed, Principal Research Analyst, Institutional Research

The analyses presented in this report focus on the regression models and rate of progression through the ranks, consistent with our campus practice 2015-present. Data are examined at the whole campus level, and for 14 Schools/Units. Faculty in the School of Law are analyzed separate from the General Campus analysis due to a different standard progression rate. School of Medicine (SOM) faculty continue to be excluded from this study due to the differences in compensation associated with participation in the COMP plan. SOM faculty are analyzed in a separate study examining pay between Basic Sciences and Clinical areas. Since 2020, Professors of Teaching are included in the analyses with faculty in the Professor series. This occurred with the transition of Lecturers with Security of Employment to Professors of Teaching titles and placement on the same rank/step system employed for the Professor series faculty. For analytical purposes, Professors and Professors of Teaching are treated as a single group.

Analysis of salary data from October 2022 indicated that, after adjusting for experience, discipline, and rank, there was no evidence of systematic disparity in pay associated with gender and/or ethnicity at the campus level. There is further work to do to understand the issues around the 1) low percentage of women and minority faculty at the higher ranks and steps across campus, and 2) differences in the rate of progression through the ranks and salary disparities by gender/ethnicity in some units.

Methodology

Multiple linear regression model: A series of regressions were used to examine potential correlations between gender/ethnicity variables and salary for faculty across the whole campus (excluding School of Law, where rank and step progress is distinct from the 14 other schools). This approach provided a broad view of faculty employment and pay structure by demographic variables and by experience, discipline, and rank.

- Demographic factors were entered in the equation as dichotomous variables for Women, Asian, and Underrepresented Minorities (URM). In cases where gender or ethnicity were non-binary, unknown, or declined to state, a missing value was used. This would exclude the faculty member from models that used demographic variables.
- Experience variables include Years Since Degree, Years of Service, and Decade of Hire. Years Since Degree is the number of years passed from the year the highest degree was earned to the present. Years of Service is the number of years passed since the individual became a Ladder Rank faculty member at UCI. Decade of Hire consists of four

binary categorical variables to account for the decade the individual became senate faculty: 2013 to 2022, 2003 to 2012, 1993 to 2002, or prior to 1993.

- Discipline variables include faculty member school and market salary ratio. Indicator variables were used for each faculty member's school. The market salary ratio is derived using Association of American Universities Data Exchange (AAUDE) faculty salary data for UCI's peer institutions connected to each faculty member by Classification of Instructional Program (CIP) code and rank.
- Rank includes Current Rank and Step, Initial Rank and Step at time of hire, and Progress Rate.

Progress Rate measures number of years the faculty member is ahead or behind normal progression through the ranks. Normative time to achieve each rank is determined by computing the number of years it would take to move from the initial rank to the current rank and step, if the individual is progressing at the campus normative scale. If an individual advanced to the next rank/step in the normative time, then rate of progression is 0. If they took longer than normative time, rate of progression is expressed as a negative number (years). If they took less than normative time then rate of progression is expressed as a positive number (years). The appendix shows normative time table and sample calculations.

In order to evaluate whether biases exist within progression through the ranks, several box and scatter plots by gender, ethnicity, rank, and school were generated to visualize and investigate the data. Progression rate differences by demographic groups were also tested with t-tests. Finally, a series of regression models were run to quantify progression rate differences that may exist by gender or ethnicity.

There is a possibility that one or more of the explanatory factors in the salary regression models are correlated; we therefore evaluated the effect of multicollinearity in our models. There was evidence of multicollinearity, therefore, data are presented with and without removal of variables with variance inflation factors (VIF) ≥ 10. Variables were removed in stepwise manner beginning with the variable with the highest VIF. After a one-year break in reporting on the faculty equity study related to the pandemic, models for 2021 were re-created using the above methods and adjustments for multicollinearity. In the interest of consistency over time, except in rare circumstances of high levels of collinearity (VIF > 20), variables retained in the final model corrected for collinearity are the same as the previous year.

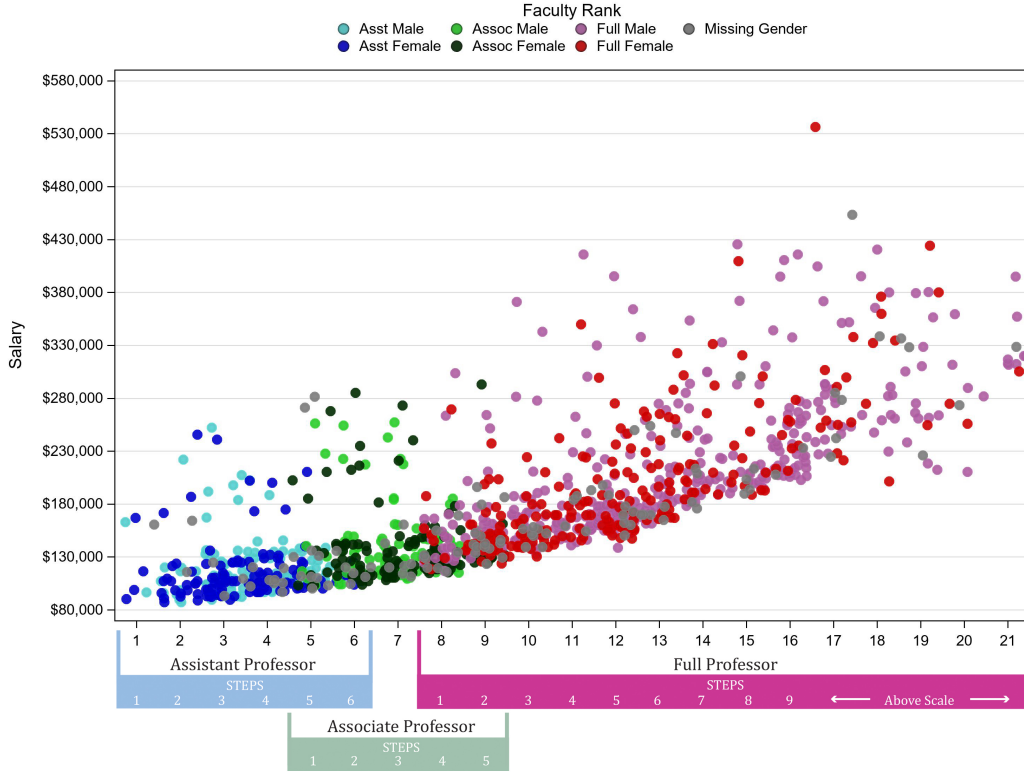## Results for Salary Data (October 2022)

Campus level
1. Salary data for all ladder rank faculty plotted as a function of rank/step/gender and rank/step/ethnicity are illustrated in Graphs 1 and 2.

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Graph 1: General Campus, Salary by Rank/Step and Gender

Faculty Rank
- ● Asst Male
- ● Asst Female
- ● Assoc Male
- ● Assoc Female
- ● Full Male
- ● Full Female
- ● Missing Gender

Graph 2: General Campus, Salary by Rank/Step and Ethnicity
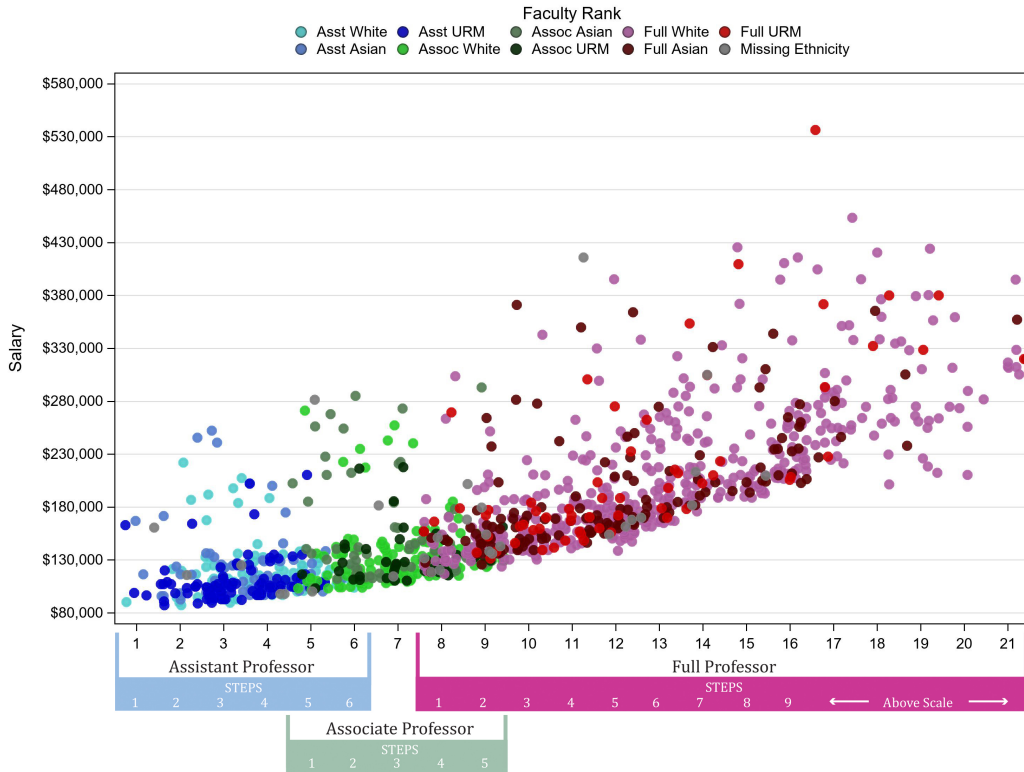
Faculty Rank
- ● Asst White
- ● Asst Asian
- ● Asst URM
- ● Assoc White
- ● Assoc Asian
- ● Assoc URM
- ● Full White
- ● Full Asian
- ● Full URM
- ● Missing Ethnicity

2. <u>Multiple linear regression analysis</u>: When these data are evaluated with the simplest model that includes only demographic variables the result indicates that, compared to their colleagues who are male, women earn salaries that are 11.6% lower, Asian faculty 3.6% lower, and URM faculty 18.0% lower. However, only 9% of the salary variation is explained by the model (Table 1). As additional explanatory variables are added to the model, salary differences diminish to approximately 1% or less between women, Asian, and URM faculty when compared to white men; and the percentage of salary variation explained by the model increases to 90%. None of the demographic variables are statistically significant predictors of salary. At the campus level, there is little evidence of systematic salary inequity associated with gender and/or ethnicity. The final model predicted salaries within plus or minus 23.1%. (For technically-minded readers, the RMSE on the log base 10 scale is 0.045.)

Table 1.

			Salary Difference		
Model[1]	R-sq	Significant Variables	Women vs Men	Asian vs White	URM vs White
1 Demographics	0.09	Women***, URM***	-11.6%	-3.6%	-18.0%
2 Demography, Experience	0.47	Women***, Asian*, URM*, Experience***	-6.4%	3.8%	-5.0%
3 Demog, Exper, Field	0.70	Women**, Experience***, Field***	-3.1%	-1.1%	-1.4%
4 Demog, Exper, Field, Rank	0.91	URM*, Field***, Rank***	0.1%	1.0%	1.9%
5 Demog, Exper, Field, Rank[2]	0.90	Experience***, Field***, Rank***	0.0%	0.9%	1.3%

*$p<0.05$, **$p<0.01$, ***$p<0.001$

[1]Experience includes years of service, years since degree, and decade of hire. Field includes school and the market ratio of salaries tied to the faculty member's department. Rank includes their starting rank at UCI, their current rank at UCI, and where they stand in relation to normal progress (progress).

[2]Final model adjusted for collinearity and included demographics, years of service***, years since degree, school***, market salary ratio***, initial rank***, and progress***.
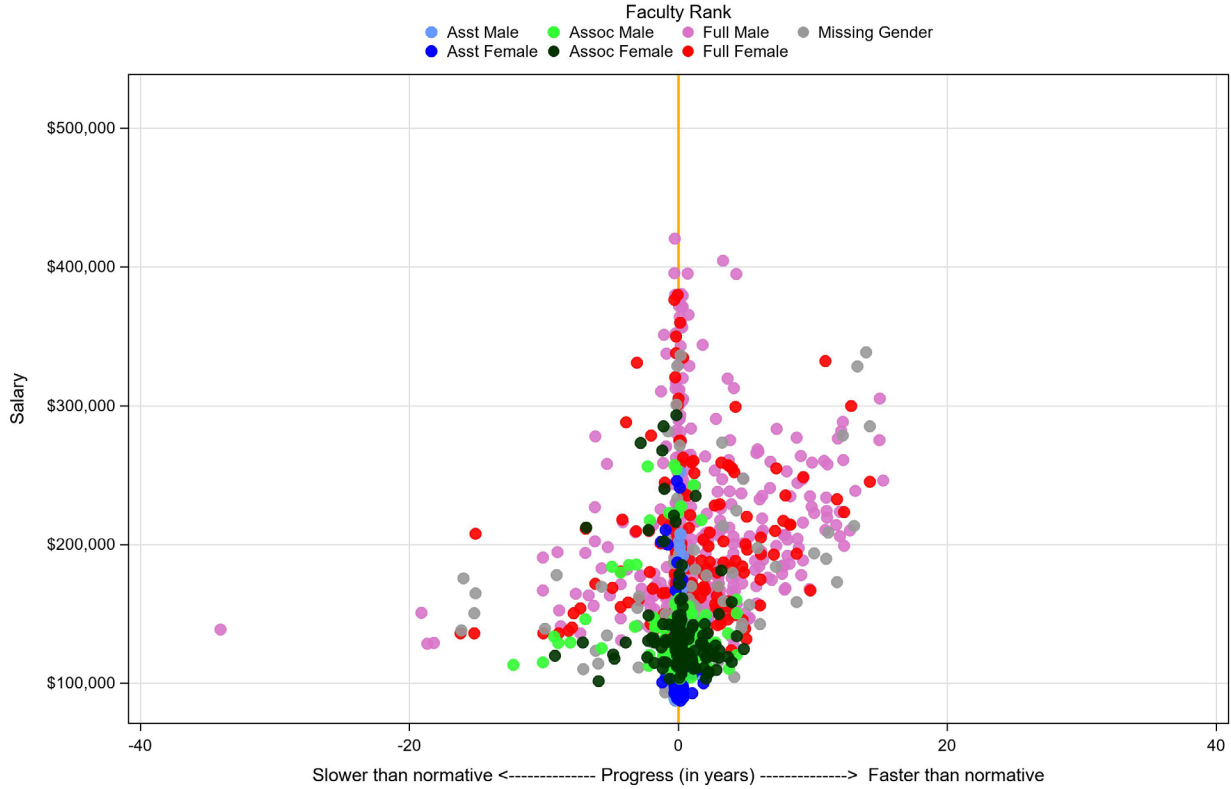
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Progress Rate Graphs: By Gender and Ethnicity

Graph 3: General Campus, Salary by Progress and Gender

Faculty Rank
- Asst Male
- Asst Female
- Assoc Male
- Assoc Female
- Full Male
- Full Female
- Missing Gender

Slower than normative <-------------- Progress (in years) --------------> Faster than normative

Graph 4: General Campus, Salary by Progress and Ethnicity
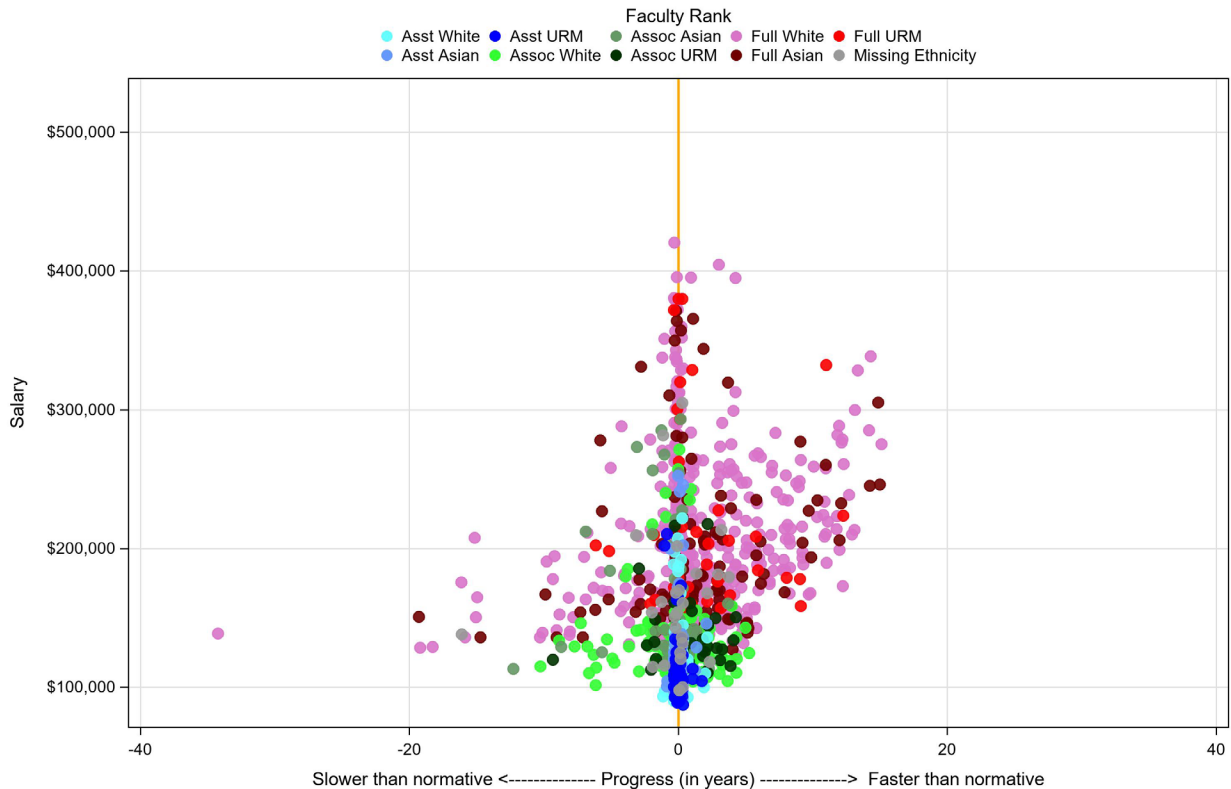
Faculty Rank
- Asst White
- Asst Asian
- Asst URM
- Assoc White
- Assoc Asian
- Assoc URM
- Full White
- Full Asian
- Full URM
- Missing Ethnicity

Slower than normative <-------------- Progress (in years) --------------> Faster than normative

3. <u>Progress Rate Analysis:</u> There has been debate on whether rank should be included in predicting salary. In previous studies, rank is generally included in predictive modeling unless there is evidence of bias against one group progressing through the ranks. Cursory *t*-tests on the rate of progression (excluding the School of Law) indicate that women faculty and URM faculty progressed at a rate that is not as fast as that of White men. See note to Table 2 for additional analysis.

Table 2. Progress Rate (in years) Comparison

Comparison	n	Mean	t	df	p-value
White Male vs	396	1.11			
Women[a]	456	0.43	-2.63	688	0.009
URM[a]	186	0.55	-2.04	576	0.042
Asian[a]	259	0.49	-1.96	607	0.051

Note. Multivariate regression was conducted estimating rates of progression adjusting for experience, discipline, and initial rank. These analyses showed no significant differences between White men and Women, URM, or Asian faculty.

[a]Homogeneity of variance assumption not met. Satterthwaite variance estimator used.

School Level
Analyses at the school level yield a range of results. When controlling for experience, department within the school, and rank and progress, salary differences are, for the most part, not significantly different between gender or ethnic/racial groups, but there are exceptions. A few schools show statistically significant higher salaries for minority groups relative to white faculty. There are two schools with statistically significant lower salaries for women relative to men. Known limitations to the current analysis are that data on "Stop the Clock" are not readily available. Similarly, the impact of outside offers was not addressed.

Summary
In summary, we found no evidence of systemic disparity in pay associated with gender and/or ethnicity at the campus level after adjusting for experience, discipline, and rank. Though the study showed that women and URM faculty progressed at a rate slower than White male faculty, this difference was not significant after adjusting for experience, discipline, and initial rank.

UCI Ladder Rank Faculty Salary Equity study, 2023

Appendix

PROGRESSION THROUGH THE RANKS
Normal time (in years) it takes to achieve rank/step

STARTING RANK/STEP	Asst2	Asst3	Asst4	Asst5	Asst6	Assoc1	Assoc2	Assoc3	Assoc4	Assoc5	Prof1	Prof2	Prof3	Prof4	Prof5	Prof6	Prof7	Prof8	Prof9	ProfAS
Asst1	2	4	--	--	--	6	8	10	--	--	12	15	18	21	24	27	30	33	36	40
Asst2	--	2	4	--	--	6	8	10	--	--	12	15	18	21	24	27	30	33	36	40
Asst3	--	--	2	4	--	--	6	8	10	--	--	13	16	19	22	25	28	31	34	38
Asst4	--	--	--	2	4	--	--	6	8	11	--	--	14	17	20	23	26	29	32	36
Asst5 *	--	--	--	--	--	--	2	4	6	--	--	9	12	15	18	21	24	27	30	33
Asst6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Assoc1	--	--	--	--	--	--	2	4	--	--	6	9	12	15	18	21	24	27	30	34
Assoc2	--	--	--	--	--	--	--	2	4	--	--	7	10	13	16	19	22	25	28	32
Assoc3	--	--	--	--	--	--	--	--	2	5	--	--	8	11	14	17	20	23	26	30
Assoc4	--	--	--	--	--	--	--	--	--	3	--	--	6	9	12	15	18	21	24	28
Assoc5	--	--	--	--	--	--	--	--	--	--	--	--	3	6	9	12	15	18	21	25
Prof1	--	--	--	--	--	--	--	--	--	--	--	3	6	9	12	15	18	21	24	28
Prof2	--	--	--	--	--	--	--	--	--	--	--	--	3	6	9	12	15	18	21	25
Prof3	--	--	--	--	--	--	--	--	--	--	--	--	--	3	6	9	12	15	18	22
Prof4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3	6	9	12	15	19
Prof5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3	6	9	12	16
Prof6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3	6	9	13
Prof7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3	6	10
Prof8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3	7
Prof9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4
ProfAS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

(Column group header: ENDING RANK/STEP)

EXAMPLES:

Professor A: Normal Progression
Initial Rank/Step: Assistant Professor III
Current Rank/Step: Professor VI
Years of Service: 25 years
Expected time to get from Asst III to Prof VI: 25 years
Progress Rate: 0 (Normal Progression)

Professor B: Accelerated Progression
Initial Rank/Step: Assistant Professor II
Current Rank/Step: Professor VIII
Years of Service: 26 years
Expected time to get from Asst II to Prof VIII: 33 years
Progress Rate: +7 (Accelerated Progression)

Professor C: Slower Progression
Initial Rank/Step: Assistant Professor I
Current Rank/Step: Associate Professor IV
Years of Service: 20 years
Expected time to get from Asst I to Assoc IV: 12 years*
Progress Rate: -5 (Accelerated Progression)

For Professor C, why is the progress rate not -8?
Because we have to correct for the 3 years that Prof C would have normally gotten to progress to the next step (it should not count against Prof C). Otherwise everyone who is between reviews and progressing normally will look like they are progressing slowly.

* It is not normative for someone who started at Asst I to end up as an Assoc IV. One would expect that this individual would have moved to Full Professor by now, which is why the matrix does not have a year attributed to that cross section. We obtained the expected time from Asst I to Assoc IV by adding 2 years (normal review cycle for Assoc III to Assoc IV) to the expected time from Asst I to Assoc III (10 years).