



Institutional Knowledge Management

UNIVERSITY OF CENTRAL FLORIDA

INITIAL FACULTY SALARY EQUITY STUDY

A preliminary analysis of 2016 salaries among UCF faculty members

Examining possible differences by gender and ethnicity, while accounting for factors that affect salary.

REPORT PREPARED BY INSTITUTIONAL KNOWLEDGE MANAGEMENT
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EXECUTIVE SUMMARY

INTRODUCTION

The following report represents findings from a study conducted in March 2017 exploring differences in salaries of UCF faculty employed in 2016. This research was informed by faculty salary equity studies conducted at UC Berkeley, UC Riverside, and others.

This study consists of a single year “snapshot” of faculty salaries to consider differences by gender and ethnicity. It does not analyze salary changes over time among faculty and it does not intend to provide an exhaustive list of the factors that contribute to salary differences.

METHODS AND ANALYSES

Descriptive analyses as well as a nested linear regression were performed in order to explore the independent and multiplicative effect of various factors on annual salary. The main dependent variable used was the natural logarithm of the 9-month (or equivalent) salary among faculty members. Predictor variables of interest include demographic characteristics (gender and race/ethnicity), measures of experience (e.g. rank, tenure status, time at UCF, number of ranks held), structural factors (college/department and employee class), and merit-based factors (e.g. administrative responsibilities and teaching/research awards received).

FINDINGS AND DIRECTIONS FOR FUTURE RESEARCH

Findings indicate that the UCF faculty is disproportionately male and disproportionately white. Descriptive analyses suggest that, as a group, women of each ethnicity make less than their male counterparts. Additionally, underrepresented minorities, international faculty, and whites make less than Asian faculty members. Descriptive analyses also indicate that the colleges with the highest median salaries are more likely to be male-dominated including the College of Optics and Photonics, the College of Business Administration, and the College of Engineering. On the other hand, those with lower median salaries tend to be more female-dominated, such as the College of Health and Public Affairs, the Rosen College of Hospitality Management, and the College of Nursing.

The nested linear regression identified gender as a consistent predictor of salary differences, with female faculty members typically earning about 5% less than males, with all other factors held constant. Similarly, underrepresented minorities earn 3.5% less than white faculty, holding all other variables constant. However, there were also a number of differences related to college, department, merit, and experience that were more substantial predictors of differences in faculty salaries.

It is also important to note that the findings from this study are exploratory in nature, given that a number of additional unmeasured factors may play a role in salary and advancement. Similarly, existing research suggests that the role of gender in salary differences may be more of a latent effect of tracking into different fields, work/life balance, etc. These factors contribute to women and minorities’ disproportionate representation in ranks and fields of study which may have a more overt impact on salary differences.

It is important that future research and campus initiatives continue to explore the experiences of women and minorities on campus, as well as perceived barriers, the interactive effect of multiple characteristics, and the ways in which seemingly objective measures of salary determination may themselves be “gendered”.

BACKGROUND

The following is a preliminary exploration into faculty salaries by gender and ethnicity at the University of Central Florida. This research is being guided by studies conducted at UC Berkeley (2015), UC Riverside (2014), and others, with modifications made to reflect the UCF community and available data.

All data presented here is based on salaries and faculty roles for the 2016-17 academic year, excluding any retroactive increases applied after November 2016. This study consists of a single year “snapshot” of faculty salary by gender and ethnicity. It does not analyze salary changes over time among faculty members, nor is it to be considered an exhaustive analysis of the factors that contribute to salary rates and differences.

SAMPLE

A total of 1,606 faculty members are included in this analysis including 1,519 professors, instructors, and lecturers in the ten UCF colleges as well as those teaching at the various UCF research institutes and centers. Additionally, 87 faculty members are considered administrators, and range from the president and vice president of the university to college deans and directors.

All faculty members were included in the sample if they had a reported salary record for the year 2016 in the EEO database and were employed in a faculty role at that time, regardless of other ranks, classes, or job codes held at UCF prior to 2016. Salary, demographics, and other information on faculty members was pulled from the Equal Employment Opportunities database. In order to ensure data integrity, some information on longstanding employees, aside from their original date of hire, is not available prior to 2006. Therefore, information regarding length of time in current position, number of awards received, etc. will only reflect records for the past ten years, regardless of how long the employee has been with UCF.

Ethnic Category	Female	Male	Total
White	514	638	1,152
Asian	53	143	196
Underrepresented Minority ^a	95	89	184
International	24	50	74
Total	686	920	1,606

^a includes those identifying as Black/African American, Hispanic or Latino, American Indian, Alaska Native, or multi-racial

Slightly more than half of the UCF faculty are male (57%), and regardless of gender, faculty members are predominantly white (72%). Table 1 depicts the number of faculty members included in this study based on gender and ethnicity.

The average age of faculty at UCF is approximately 50 years old and range from 24 to 86 years of age. Administrators have the highest average age at 59, while faculty at institutes and centers have the lowest average at 43 years. College of Arts and Humanities faculty have the widest age range (24-85), while College of Nursing has the smallest age range among faculty (36-72 years).

Overall, approximately 78% of the UCF faculty have a doctorate or equivalent degree. 100% of faculty in the College of Optics and Photonics, and 95% of faculty in the College of Engineering and Computer Science, have earned a doctorate or equivalent. On the other hand, 55% of faculty in the College of Arts and Humanities have a doctorate or equivalent.

Faculty employed in 2016 have been employed at UCF in some capacity for an average of 9.5 years. Approximately 10% of the faculty included in this sample were hired in 2016, while 50% of the faculty have been with UCF between one and ten years. The remaining 40% have been with UCF between 11 and 47

years. Faculty employed as administrators have been at UCF for an average of 14 years, while faculty in the College of Nursing and in institutes and centers have been with UCF for an average of five years.

12% of the faculty included in this sample were serving an administrative role of some sort. Slightly less than half of that group (44%) are considered part of the Administration category for the purpose of this analysis, based on their specific administrative roles.

Fewer than 2% of the faculty were employed less than full-time in 2016, and approximately 16.4% of the faculty were employed on 12-month contracts. All salaries reported here include 9-month equivalency for 12-month based employees.

DATA AND METHODS

OUTCOME VARIABLE

The main outcome variable includes the reported 9-month salary for 2016 for each faculty, as reported in the Equal Employment Opportunities database. Salaries were converted to a 9-month equivalent amount for faculty members on 12-month contracts. Multivariate analyses consider the natural logarithm of the annual salary, which is used to more closely represent a normal curve in the distribution. As a result, the current examination reports on the multiplicative effect of the variables of interest described below.

PREDICTOR VARIABLES

The predictor variables of interest to the current examination include:

Measures of Demographics include gender (male and female) and race/ethnicity. The race/ethnicity variable was coded into four categories including White, Asian, Underrepresented Minority, and International. Underrepresented minorities include faculty identified as Black/African American, Hispanic or Latino, American Indian, Alaska Native, or multi-racial. International faculty include all faculty reported currently identified as “Non-Resident Alien” according to IPEDS definitions (“Definitions for New Race and Ethnicity Categories” n.d.)¹. The multivariate model also includes an interaction effect between gender and race.

Measures of Experience include number of years since faculty member earned their highest degree (range: 0 – 54 years), current rank (professor, associate professor, assistant professor, or instructor/lecturer), current tenure status (tenured, tenure-earning, non-tenure-earning), number of ranks held (range 1-3), and the number of years the faculty has been employed at UCF (range: 0 – 47 years). The number of years at UCF represents the years that have elapsed between the faculty member’s first date of hire and the year 2017. This does not necessarily represent the first date of hire as a faculty member, but rather includes their entire time spent at UCF. Additionally, due to limited availability of data, the number of ranks held do not account for changes that may have occurred prior to 2006 for faculty that have been employed for more than ten years.

Measures of UCF Structure include the faculty member’s college and home department as well as their employee class. College deans, associate deans, and those with the administrative description of “director,” such as those directing a center or degree program are included as administrators, regardless of their college. Statistical analyses were used to identify salary differences between departments within each

¹ A previous, and widely circulated, version of this report excluded the information indicating how International faculty are defined.

college. When no differences were identified, faculty were coded by their college. When differences were identified, the college and home department were taken into consideration in the multivariate model. Appendix B outlines the process of identifying these differences. Appendix A also includes charts describing the median salary and percent of women within each department and college. Based on proportion distribution, employee class is dichotomized into two groups: clinical or research faculty and regular or visiting faculty.

Measures of Merit and Barriers include whether the faculty is currently serving in an administrative position (Yes or No), representing faculty serving as department chairs, provosts, coordinators, program directors, etc. The total number of TIP and RIA awards earned is also included. Due to limited availability of data, TIP and RIA awards earned by faculty members before the year 2006 are not included in this analysis. The number of times faculty have been away on paid leave (since 2006) is also included in the model for periods of time away from work. This variable does not include regular annual or sick leave awarded to faculty members but rather serves as a proxy for time off for sabbaticals, parental leave, etc. Due to data limitations, these leave types are not differentiated in the current model.

ANALYSES

Descriptive, bivariate, and multivariate quantitative methods were used to analyze factors correlated with faculty salaries for the 2016-17 academic year. Appendix A includes a breakdown of descriptive analyses by college including proportions of faculty by race and gender as well as median income among college departments. The multivariate model consists of a nested linear regression of the logarithms of faculty members' annual salaries. Appendix B includes a detailed description of the analysis and modeling approaches and Appendix C includes a detailed table of findings of significance for each variable included in the nested model. Below, Table 2 outlines the four models included in the nested linear regression analysis used in the current examination.

	Model 1	Model 2	Model 3	Model 4
	Demographics	Experience	Structural	Merit/Barriers
Gender	x	x	x	x
Race/Ethnicity	x	x	x	x
Gender x Race/Ethnicity	x	x	x	x
Years at UCF		x	x	x
Years since highest degree earned		x	x	x
Current Rank		x	x	x
Current Tenure Status		x	x	x
Total Number of Ranks Held		x	x	x
College (or College + Department)			x	x
Employee Class			x	x
Currently Serving Admin Role				x
Total number of TIP + RIA earned				x
Number of times paid leave taken				x

RESULTS

DESCRIPTIVE ANALYSIS

Median salaries of faculty members sorted by gender and race/ethnicity indicate that there are some differences between groups. The median salary among men, regardless of ethnicity, is approximately

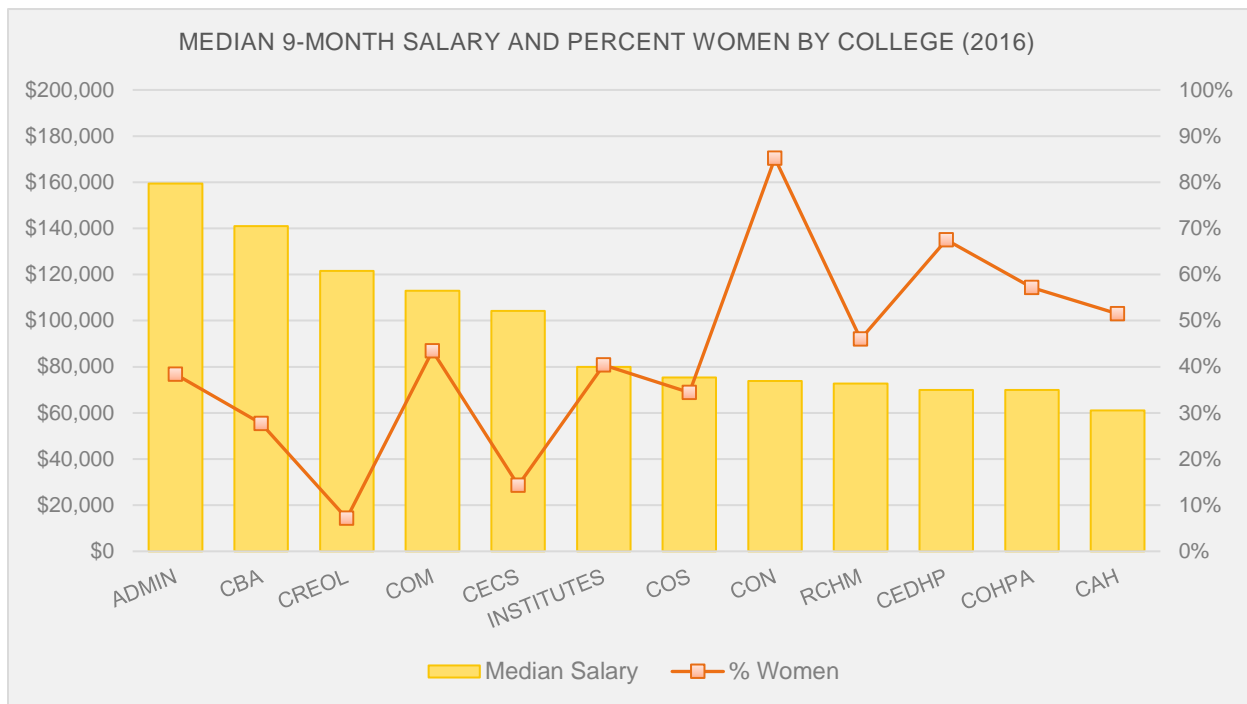
\$20,000 greater than the median salary of women. Median salaries for men were consistently higher than women in the same ethnic category, with differences ranging from \$8,000 to \$31,000. Similarly, Asian faculty members had the highest median salary, while underrepresented minorities had the lowest median salaries, regardless of gender.

Salary differences also emerged among faculty by college. The faculty groups whose median salary exceeded \$100,000 in 2016 include: administrative faculty, College of Business Administration (CBA), College of Optics and Photonics (CREOL), College of Medicine (COM), and College of Engineering and Computer Science (CECS). The proportion of women employed in each of these groups range from 7% to 43%.

Ethnic Category	Female	Male	Total
White	\$69,699	\$88,026	\$78,010
Asian	\$78,730	\$109,619	\$104,629
Underrepresented Minority ^a	\$66,000	\$84,747	\$74,421
International	\$67,705	\$75,976	\$75,047
Total	\$70,000	\$90,096	\$79,561

^a includes those identifying as Black/African American, Hispanic or Latino, American Indian, Alaska Native, or multi-racial

On the other hand, the faculty groups with the lowest median salaries include: College of Nursing (CON), Rosen College of Hospitality Management (RCHM), College of Education and Human Performance (CEDHP), College of Health and Public Affairs (COHPA), and College of Arts and Humanities (CAH). The proportion of women in each of these groups range from 46% to 85%, indicating that the colleges with the lowest median salaries are more likely to be female-dominated than those with the highest median salaries.



MODEL RESULTS

Each of the models presented below highlight the independent effects of multiple factors that may contribute to salary differences among faculty at UCF. The effect of each variable assumes that all other factors are held constant. For example, a comparison between male and female would indicate that those two professors are at the same rank, in the same department/college, ethnicity, and so on, where their only

distinguishing difference would be their gender. Additionally, only variables that were statistically significant are discussed below. See Appendix C for an illustration of the complete regression model and variable significance.

In each of the models below, categorical groups are compared to a “reference group” for analyses. Table 4 outlines the corresponding reference group whom each group is compared to.

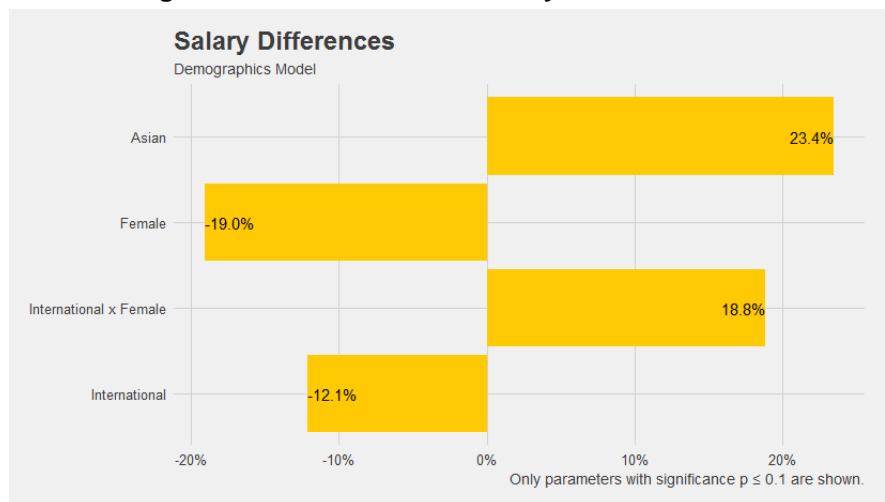
Category	Analysis Group	Reference Group
Gender	Female	Male
Race	Asian International Underrepresented Minority	White
Race x Gender	Asian x Female International x Female Underrepresented x Female	White Male
Rank	Instructor/Lecturer Assistant Professor Associate Professor	Full Professor
Tenure Status	Tenure-Track Non-Tenure-Earning	Tenured
College/Department	e.g. CAH/English	UCF overall
Faculty Type	Clinical or Research	A&P Regular or Visiting
Admin Status	Currently serving admin Role	No administrative role

It is important to note that the bar charts in this section only represent variables that are statistically significant or approaching significance ($p < .10$). See Appendix C for the complete regression model, variable significance, and reference groups noted.

MODEL 1: DEMOGRAPHY

Model 1 compares faculty salary based only on gender and race/ethnicity. While the model was significant, gender and race only explain 8% of salary differences, indicating that gender and ethnicity alone do not provide a clear picture of salary differences. Regardless, gender and ethnicity are important predictors of salary, according to this model. The chart presented here indicates the variables that were significant in Model 1.

Model 1: Significant Contributors to Salary Differences



In 2016, Asians earned 23% more than whites and women earned 19% less than men. Interestingly, international faculty earned about 12% less than white faculty, while international females in particular

earned about 19% more than would be expected if the two variables were independent, using white men as the reference. However, as models two through four will demonstrate, introducing additional attributes into the model decreased the gap between salaries by gender and ethnicity.

MODEL 2: EXPERIENCE

Model 2 adds faculty experience into the model with gender and race/ethnicity. Model 2 explains approximately 56% of salary variations, which is substantially higher than Model 1, but indicates that there are still additional factors that are considered in determining salary.

As indicated in the chart provided in this section, faculty rank supersedes

gender and ethnicity as a major contributor to salary differences. In particular, instructors/lecturers earned 59% less than full professors. Assistant professors earn about 38% less than full professors, and associate professors earned about 28% less than full professors.

As Model 2 indicates, women earned about 4% less than men when rank is introduced into the model. Underrepresented minorities also earned 4.5% less than whites, while Asians earned about 8.5% more than white faculty. International females continued to earn 13% more than would be expected if the two variables were independent, using white men as the reference. On the other hand, Asian females earn about 6% less than white males (approaching significance at $p = 0.095$).

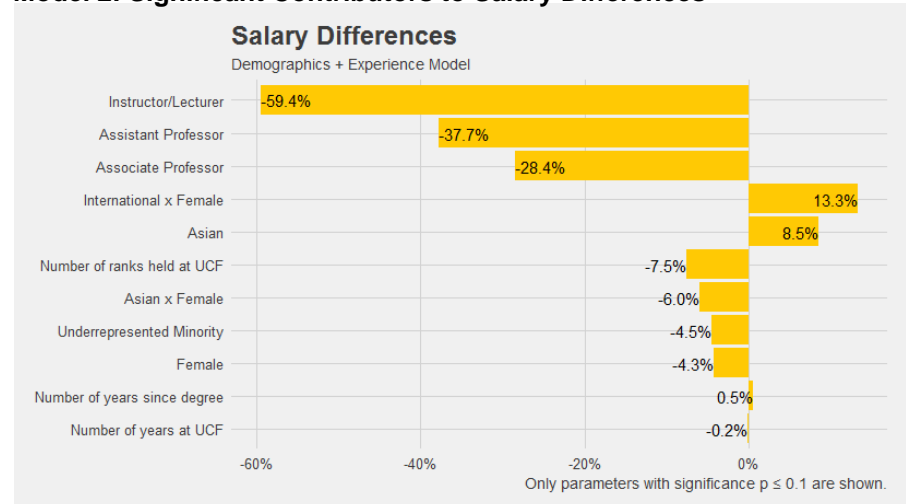
Interestingly, when current rank is held constant, faculty who progressed through multiple ranks during their time at UCF tend to have a slightly lower salary (7% less) than faculty who entered UCF at the higher rank.

MODEL 3: STRUCTURAL

Model 3 introduces structural characteristics, namely the faculty's college/department and employee class. The factors included in Model 3 explain approximately 66% of variation in salary. Rank continued to be a significant predictor of salary differences with instructors/lecturers earning 51% less than full professors, assistant professors earning 35% less than full professors, and associate professors earning 27% less than full professors.

However, certain colleges/departments presented larger gaps in salaries. For instance, faculty in the Accounting department as well as Finance and Real Estate faculty earned 79% more than the average UCF faculty. Professors in the Marketing department earned 77% more than the average UCF faculty, and Clinical Science professors in the College of Medicine earned 76% more than the average UCF faculty. College of Arts and Humanities faculty in Performing Arts, Philosophy, Writing and Rhetoric, and Modern

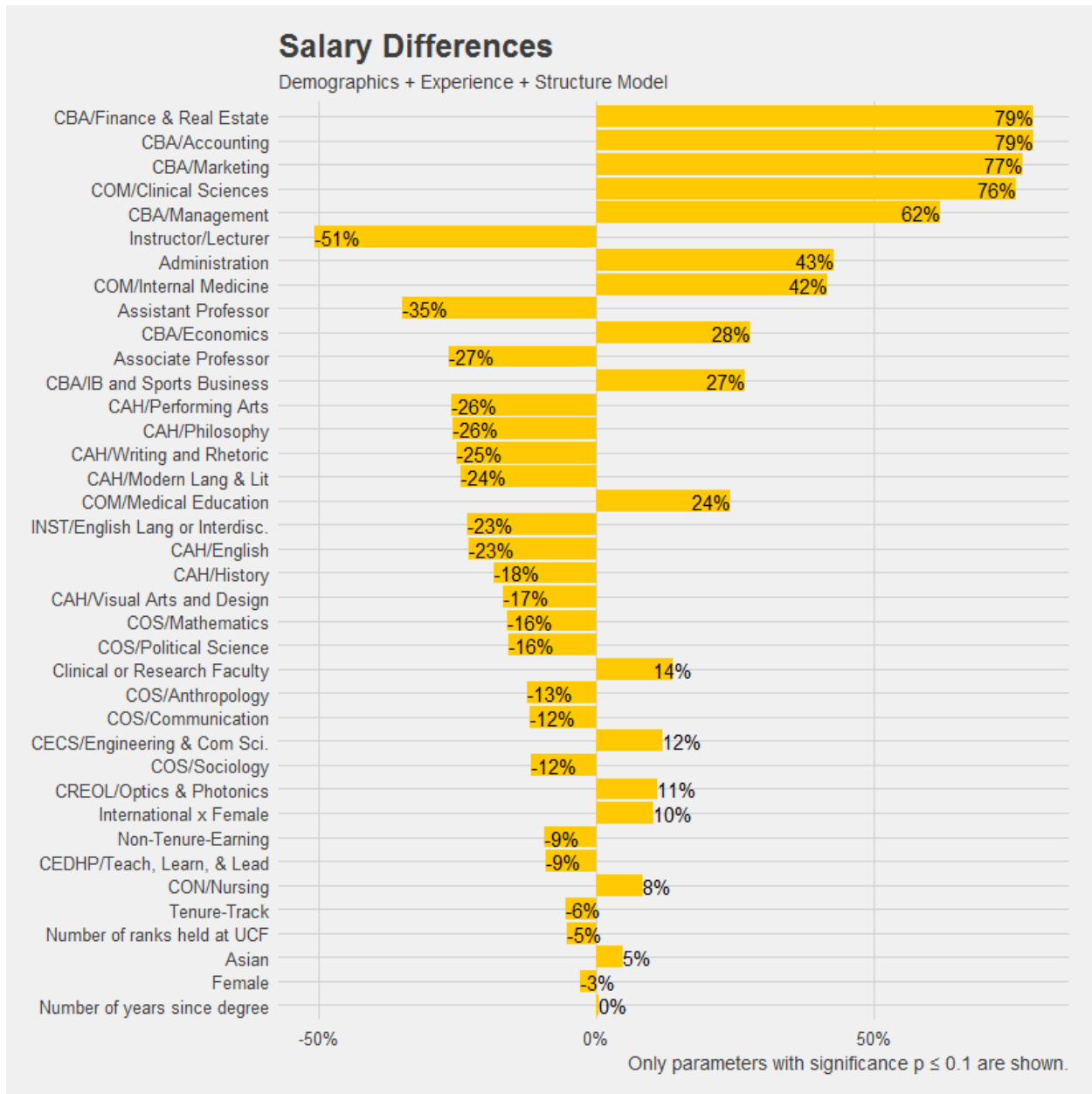
Model 2: Significant Contributors to Salary Differences



Language and Literature earned about 25% less than the average UCF faculty member. Administrative faculty had a higher salary than the average faculty member by about 43%.

Additionally, compared to regular or visiting faculty, professors who are considered clinical or research faculty members had a 14% higher salary. Model 3 also indicates that holding experience and department structures constant, female faculty continued to earn 3% less than males.

Model 3: Significant Contributors to Salary Differences



MODEL 4: MERIT / BARRIERS

The final model incorporates proxies for merit/barrier based factors that may contribute to salary differences, including whether or not the faculty is serving in an administrative role, the number of times they have taken long periods of paid leave, and the number of TIP and RIA awards they have earned in the past ten years. Model 4 explains 70% of variation in salary among faculty members. While this leaves approximately 30% unexplained (which likely include factors that are unmeasurable with the current data set), the full model is the best fit of those presented here.

Faculty in administrative roles earn approximately 26% more than those with no administrative position. Also, an increase in the number of TIP and/or RIA awards correlates to a 9% increase in salary. Interestingly, an increase in the number of times using paid leave correlates with a 2% higher salary, indicating that this is more consistent with sabbaticals or other merit-based leave rather than a family leave barrier.

Despite these additional factors, faculty rank and some colleges/departments remain correlated with larger gaps in salary among faculty. For instance, in Model 4, faculty in Accounting, Finance and Real Estate, and Marketing in the College of Business earned 70-80% more than the average UCF faculty. Clinical Sciences faculty in the College of Medicine earned 68% more than the average faculty member.

Instructors/lecturers continued to earn substantially less than full professors (47%), followed by assistant professors (30%), and associate professors (23%). Clinical or research faculty earned about 17% more than regular or visiting faculty.

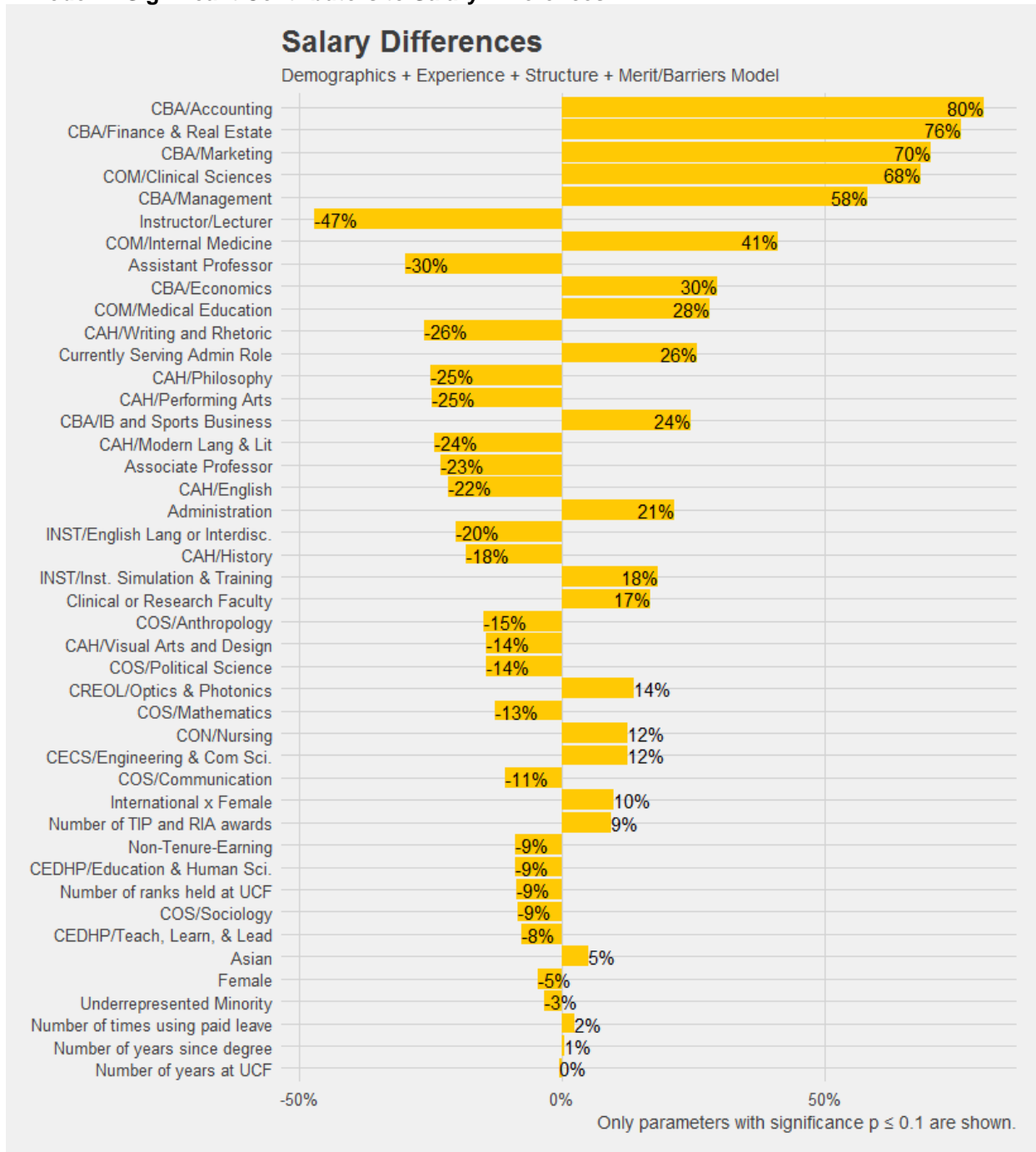
In the final model, Asian faculty members earned 5% more than white faculty, while underrepresented minorities earned 3% less than white faculty members. The salary of female faculty members was 5% lower than that of male faculty members. International female faculty, in particular, earned about 10% more than would be expected if race and gender were independent predictors of salary, compared to white males.²

Model 4 indicates that a number of differences related to college, department, merit, and experience contribute to faculty salaries. However, holding all of these factors constant, women and underrepresented minorities continue to earn slightly less, on average.

(MODEL 4 CHART ON NEXT PAGE)

² NOTE: An earlier, and widely circulated, version of this report incorrectly stated that international females earned 10% more than white males. This summary error was a result of an oversimplification of the statistically significant interaction effect between race and gender, regrettably overlooked in report revisions.

Model 4: Significant Contributors to Salary Differences



CONCLUSION

In sum, throughout the study presented here, gender remained a significant factor in salary differences. As the research models became more complex, gender played a smaller role as a factor related to salary, yet results indicate that, holding all other factors constant, female faculty members made about 5% less than their male counterparts in 2016.

It is also important to note that the findings from this study are exploratory in nature, given that a number of additional unmeasured factors may play a role in salary and advancement.

For instance, throughout this study, rank was identified as an important predictor of salary. As cited in the UC Berkeley Salary Equity Study (2015), faculty rank may reflect overt or latent biases within an institution, college, or department, as well as academia at large. Despite gains in recent decades, women and minorities remain underrepresented in academia and among tenured faculty (Menges and Exum, 1983; Deutsch & Yao, 2014). Research has also identified ways in which women disproportionately experience wage penalties known as the “Motherhood Penalty” (Budig & England, 2001) and are more likely to experience other work/life balance issues that may impede their ability to meet workplace standards for competitive advancements (Sullivan, 2014).

While this may not be an overt penalty, women disproportionately take on the responsibilities of childcare and providing care to relatives and other home responsibilities, on average. This may result in fewer opportunities to take on additional leadership roles, publish papers, or dedicate more time to the workplace, which then has a latent effect of appearing less productive or committed to the workplace. These issues may affect women prior to their employment at UCF or during their time at this institution. As a result, women may advance in rank at a slower rate or not get selected for promotion or additional administrative responsibilities as a result of potential differences in seemingly objective measures.

Similarly, women and minorities are disproportionately represented in fields of study that may have a more overt impact on salary differences. For example, the colleges at UCF with the highest median salaries are also among those with the smallest proportion of women faculty, while the colleges with the lowest median incomes tend to have much greater proportions of women faculty. While it may be easy to explain salary differentiations between engineering and arts faculty, it is important to consider how these arenas are themselves “gendered”.

The current study does not include an analyses of subjective measures of work/life balance, nor did available data provide the research team with the opportunity to explore faculty productivity measures such as publications, presentations, etc. (Claypool, Janssen, Kim & Mitchell, 2017). Future research is needed to identify differences between men and women in terms of the number of TIP and RIA awards received, the use of paid leave, administrative roles, and other factors that may have a more direct effect on salary differences presented here.

While this study did include analyses related to gendered proportions in various colleges and departments, it is impossible to identify how some individuals or groups are “tracked” in certain directions over others. Research and community efforts within UCF as well as on a broader scale increasingly make efforts to engage girls and women in STEM fields, however, the effects of these changes and potential impact on salary differences by gender are unmeasurable in the current study.

In closing, despite other factors emerging as more important determinations of salary, gender remains a significant factor in salary at UCF. Similarly, differences in salary and the underrepresentation of various

racial and ethnic groups indicate that additional research is needed to explore the correlation and impact of these differences.

While institutions are not likely to overtly determine salary based on gender and race, these factors likely play an impact on the more “objective” measures that contribute to salary more directly, such as field, time in rank, and productivity. Additionally, further research is needed to identify the interaction between multiple variables in addition to the independent effects explored here in order to develop a more complex understanding of the factors that contribute to salary differences at UCF.

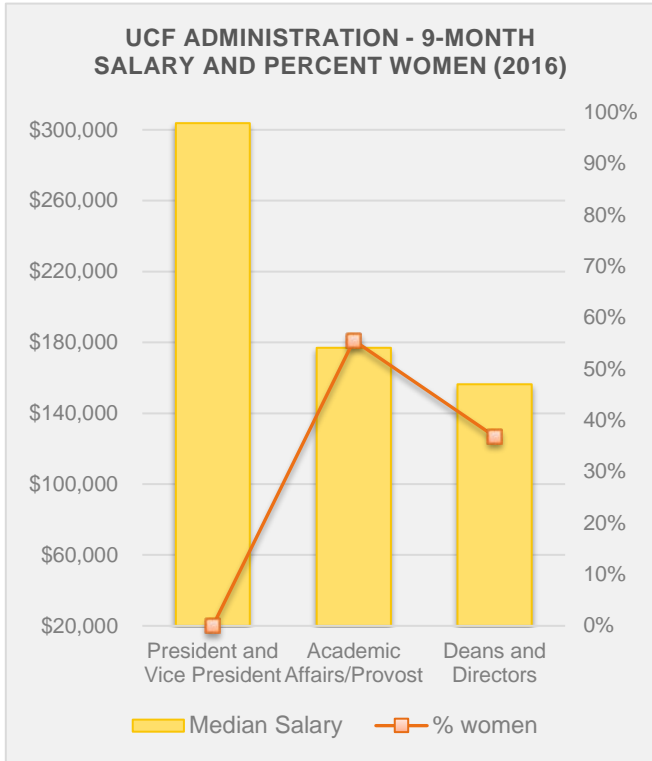
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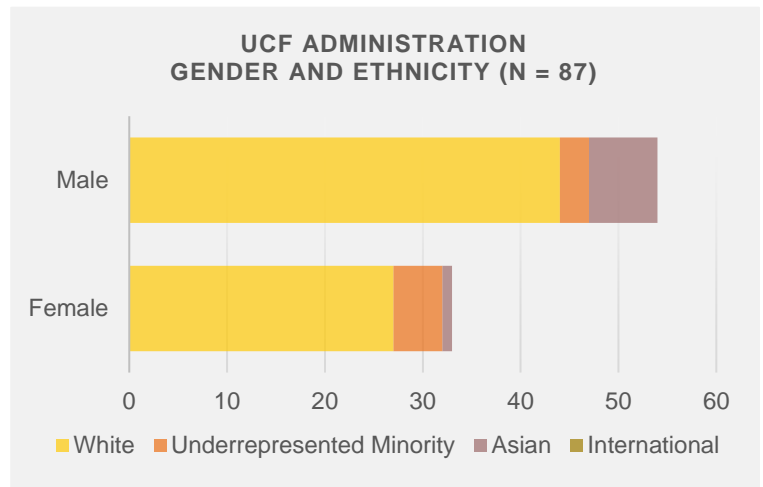
APPENDIX A – SALARY SUMMARIES BY COLLEGE

ADMINISTRATION (ADMIN)

Approximately 62% of the administrative faculty are male, however Academic Affairs/Provost faculty are more likely to be female (56%) than college deans and directors (37%). The administrative staff is disproportionately white, with underrepresented minorities and Asian faculty representing less than 20% of the administrative positions.



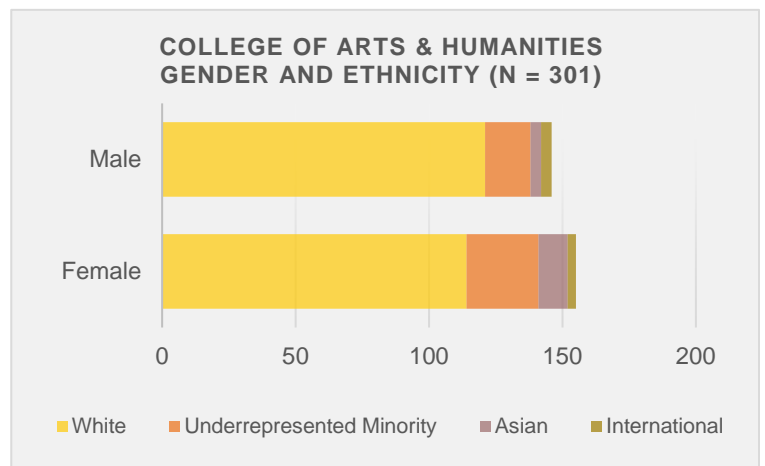
With the exception of the president and vice president, the median salary of administrative faculty is approximately \$157,163, with Academic Affairs/Provost faculty earning approximately \$20,000 more than college and program deans and directors.



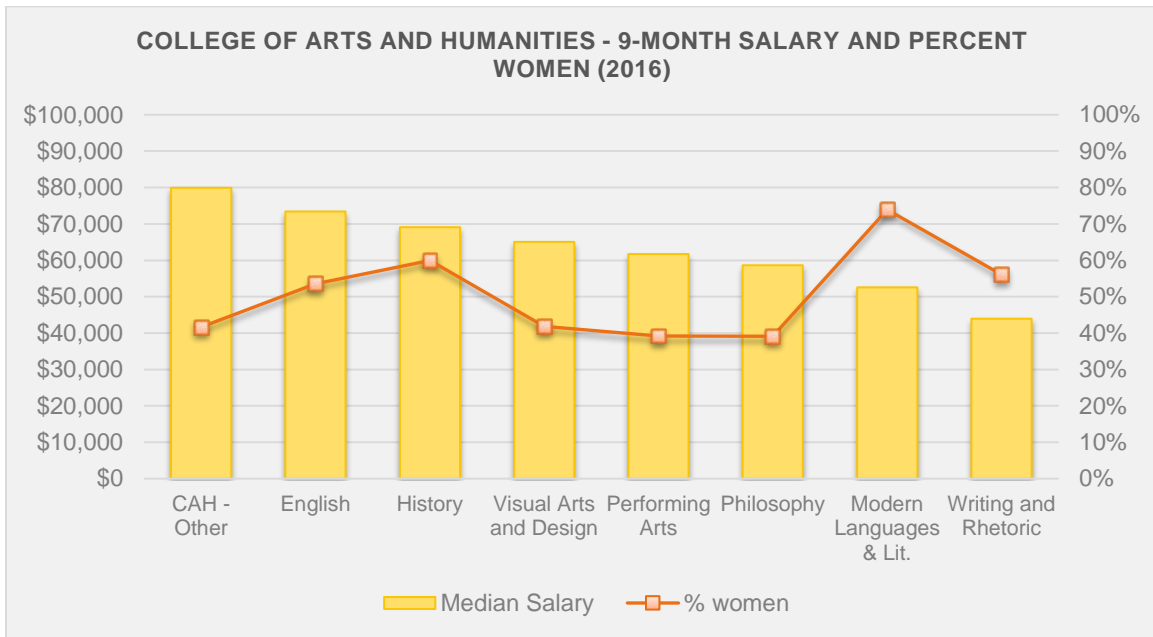
COLLEGE OF ARTS & HUMANITIES (CAH)

Approximately 52% of the CAH faculty are female, making it the most gender equal UCF College, overall. However, the Modern Languages and Literature (74%), History (60%), Writing and Rhetoric (56%), and English (54%) faculty have a female majority. CAH faculty are disproportionately white, with underrepresented minorities, International, and Asian faculty representing approximately 22% of the college.

The median salary in the College of Arts and Humanities faculty is approximately \$61,039. Faculty members who are program directors or assigned additional responsibilities have the highest median salary, followed by faculty in the English department. Modern Languages and Literature and Writing and Rhetoric faculty have the lowest median salaries.



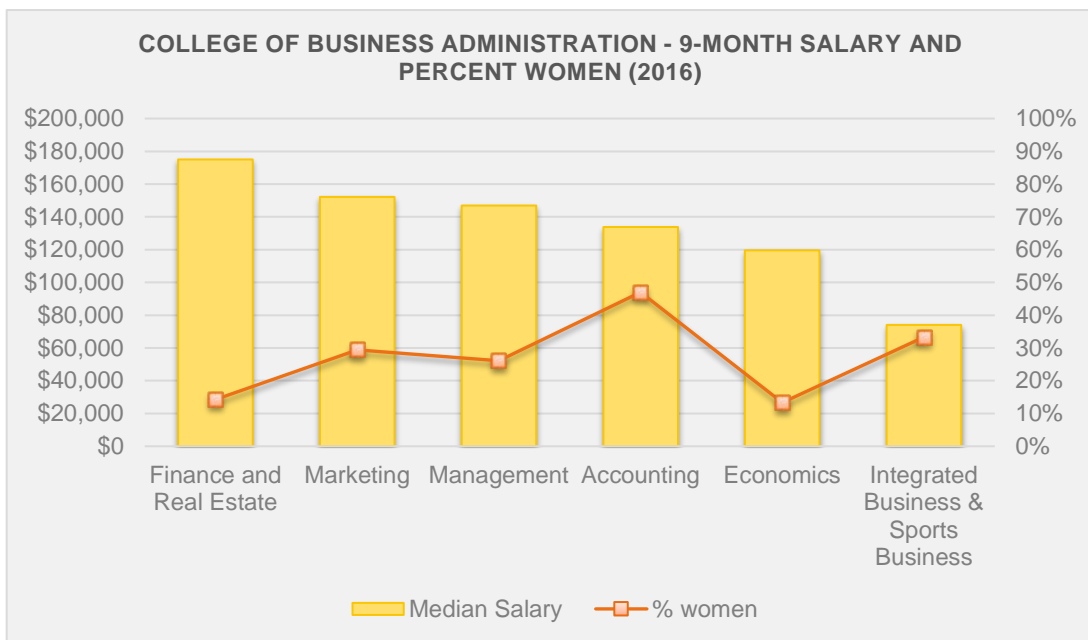
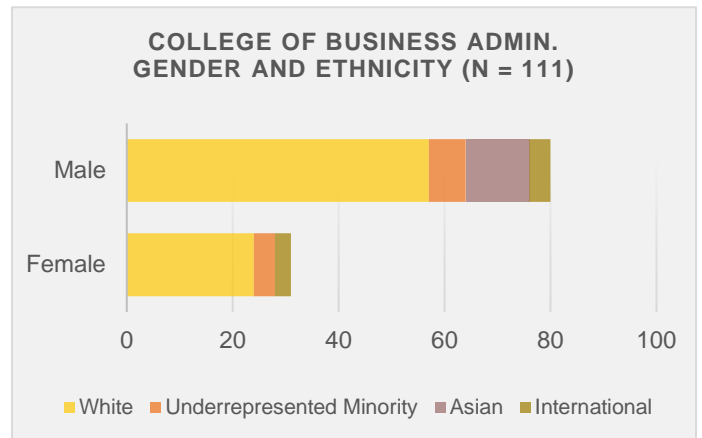
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COLLEGE OF BUSINESS ADMINISTRATION (CBA)

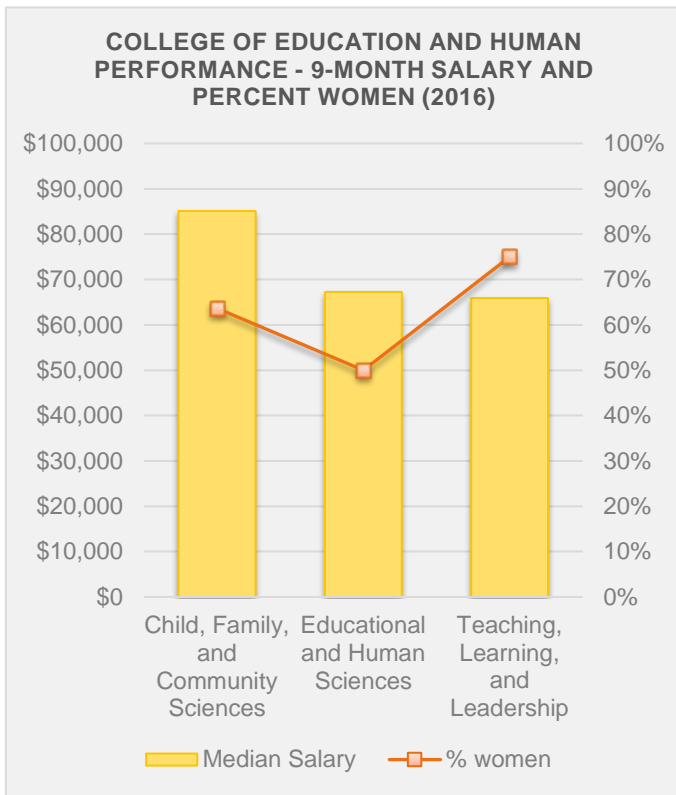
Approximately 72% of the CBA faculty are male, however faculty in the Accounting department are more likely to be female (47%) than in any other CBA department. CBA faculty are also disproportionately white, with underrepresented minorities and Asian faculty representing less than 20% of college.

The median salary of College of Business faculty is approximately \$142,191. Finance and Real Estate faculty members have the highest median salary for 2016 (\$175,000) while the median salary of Integrated Business and Sports Business faculty is approximately 42% of the finance faculty's median salary.

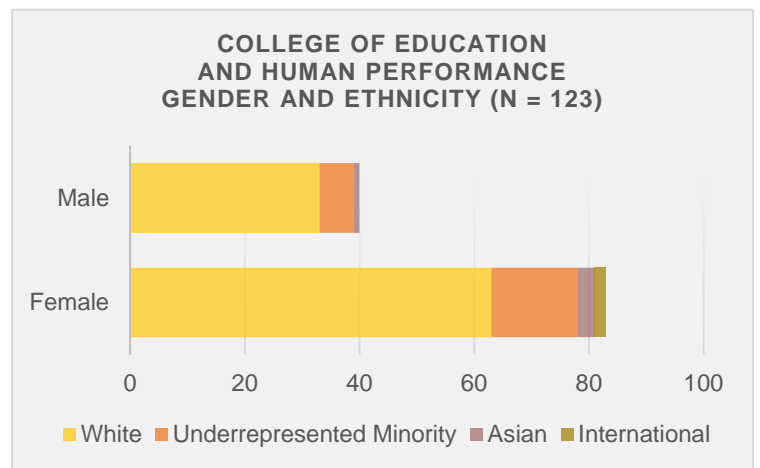


COLLEGE OF EDUCATION AND HUMAN PERFORMANCE (CEDHP)

Approximately 67% of the CEDHP faculty are female, however approximately 75% of the faculty in the Teaching, Learning, and Leadership department are female. A majority of the faculty members are white, with underrepresented minorities, Asians, and International faculty representing approximately 22% of the college.



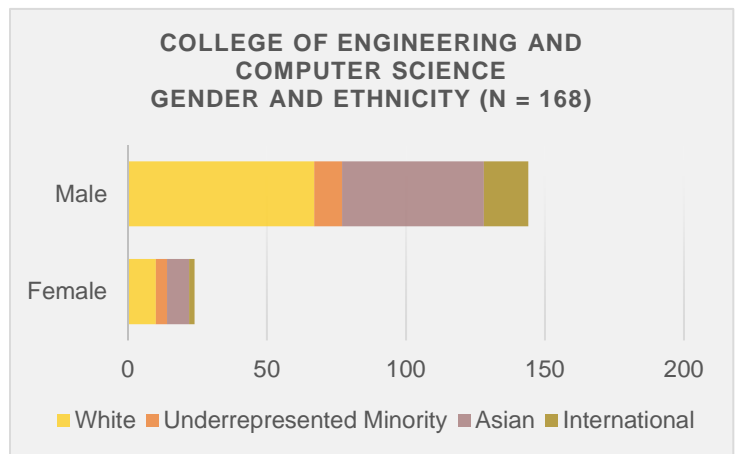
The median salary of College of Education and Human Performance faculty is approximately \$70,014. Faculty in the Department of Child, Family, and Community Sciences had the highest median income compared to the other two departments (\$85,098). Meanwhile, there was minimal difference between the median salaries in the Educational and Human Sciences (\$67,229) and the Teaching, Learning, and Leadership (\$65,944).



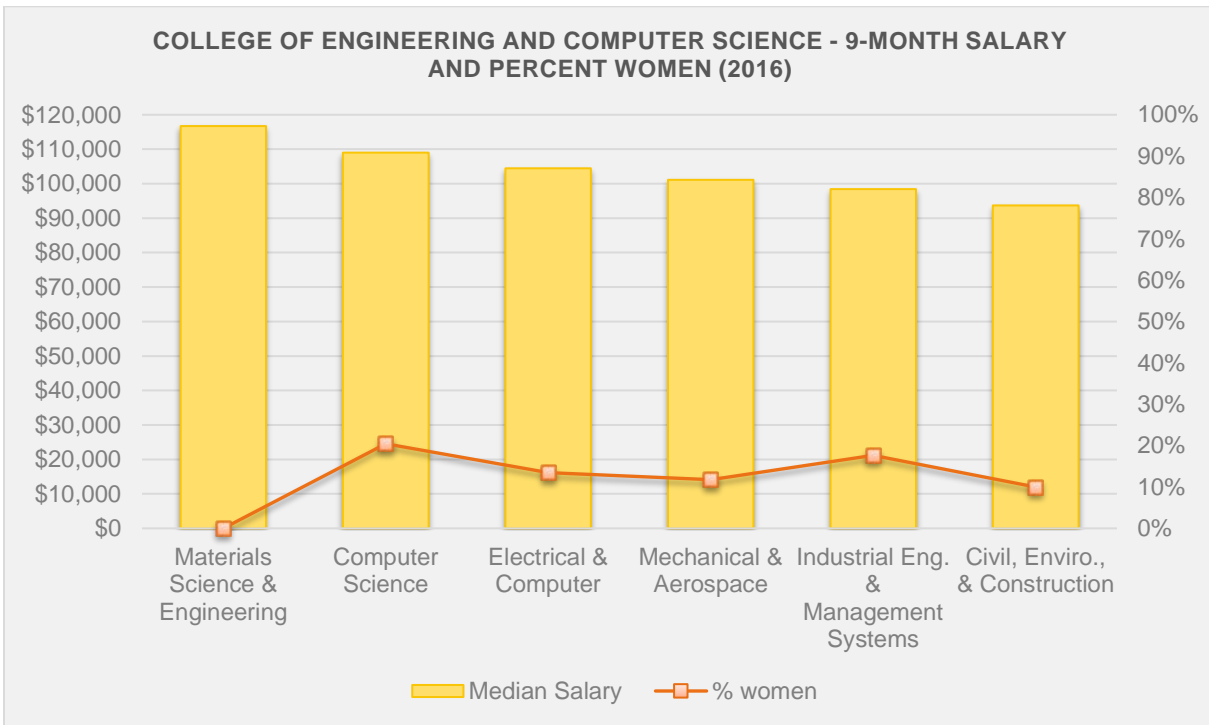
COLLEGE OF ENGINEERING AND COMPUTER SCIENCE (CECS)

Approximately 86% of the CECS faculty are men. The department of Computer Science has the highest proportion of women (20%), however, representation of women is limited throughout the college. The College of Engineering and Computer Science is relatively more diverse compared to some of the other colleges at UCF. Approximately 35% of the faculty are Asian, 11% are international, 8% are underrepresented minorities, and only 46% of the faculty are white.

The median salary of CECS faculty is approximately \$104,215. The difference between the department with the highest median salary (Materials Science and Engineering - \$116,736) and the department with the lowest median salary (Civil, Environmental, and Construction Engineering - \$93,710) is slightly more than \$20,000.

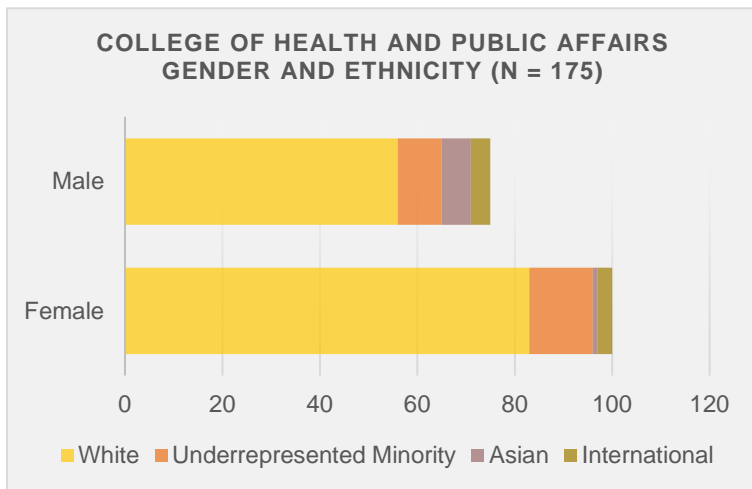


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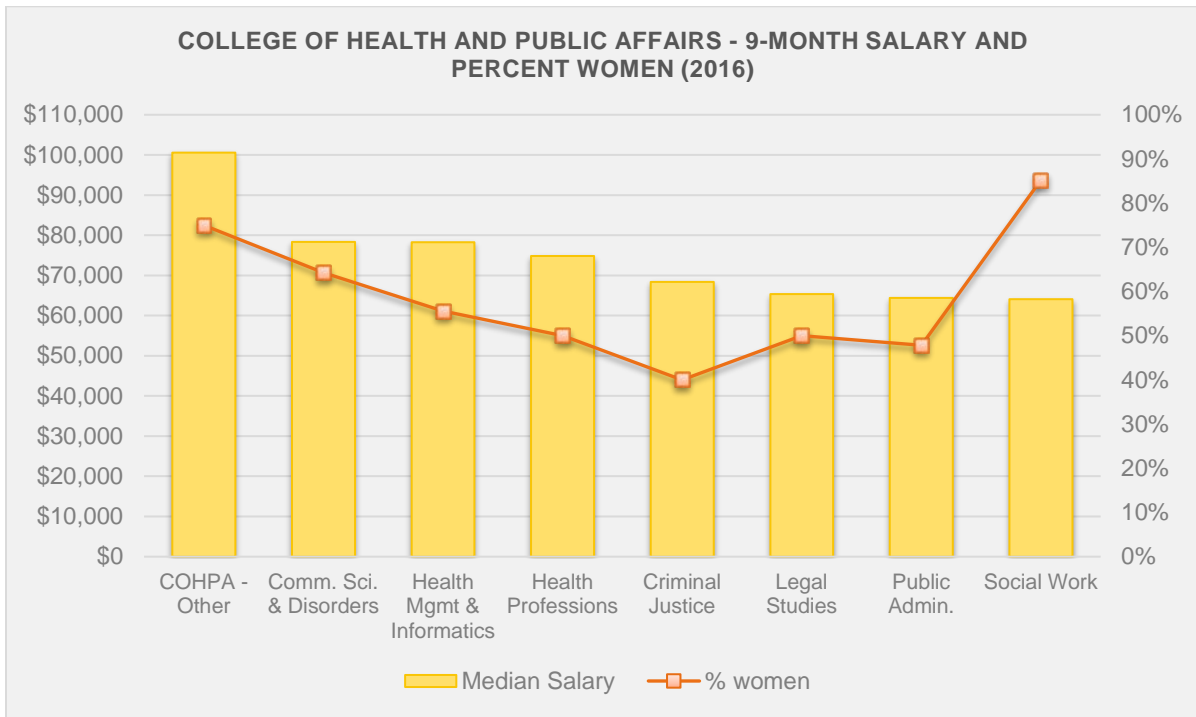
COLLEGE OF HEALTH AND PUBLIC AFFAIRS (COHPA)

Women comprise approximately 57% of COHPA faculty. Faculty in the School of Social Work (85%) and those categorized as “Other” (including Public Affairs professors paid through the dean’s office) (75%) are the most female-dominated departments, followed by Communication Sciences and Disorders faculty (64%). The department of Criminal Justice has the largest proportion of men in COHPA (60%). Approximately 80% of COHPA faculty are white. An additional 13% of the faculty are underrepresented minorities.



The median faculty salary in the College of Health and Public affairs is approximately \$70,000. Faculty classified as “other” have the highest median salary (\$100,000) and likely include faculty assigned to special projects or have additional responsibilities. Communication Sciences and Disorders faculty have the next highest median salary in COHPA (\$78,362), while faculty in the School of Social Work have the lowest median income (\$64,122). Interestingly, all three of these departments are female-dominated, however, social workers are the most disproportionately female in the College of Health and Public Affairs.

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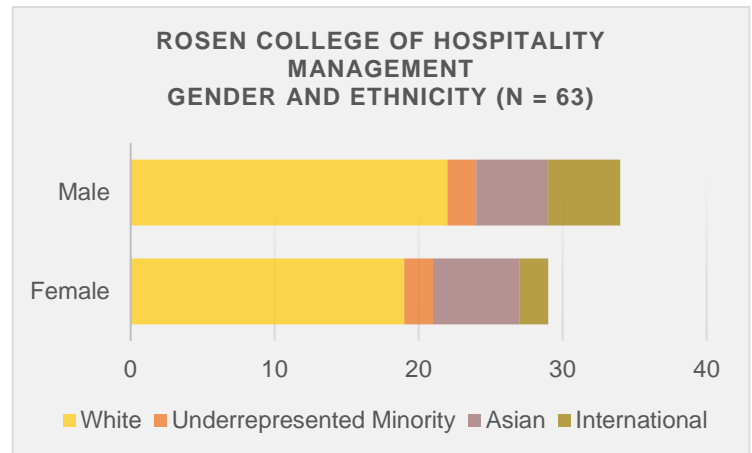


ROSEN COLLEGE OF HOSPITALITY MANAGEMENT (RCHM)

RCHM is the second most evenly divided college by gender with men representing approximately 54% of the faculty. 68% of the Tourism, Events, and Attractions department are women, while men make up about two-thirds of the Foodservice and Lodging Management (67%) and Hospitality Services (62%) departments. Additionally, 65% of the college faculty are white, with Asians representing an additional 17.5% of the college faculty. There are slightly more international male faculty than females. Only 6% of the RCHM faculty are underrepresented minorities.



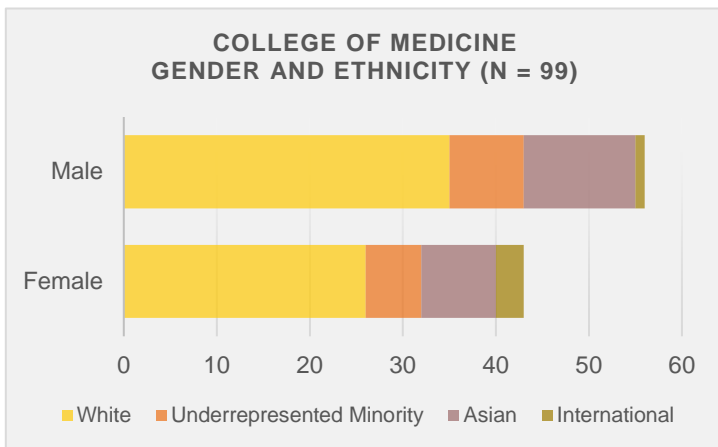
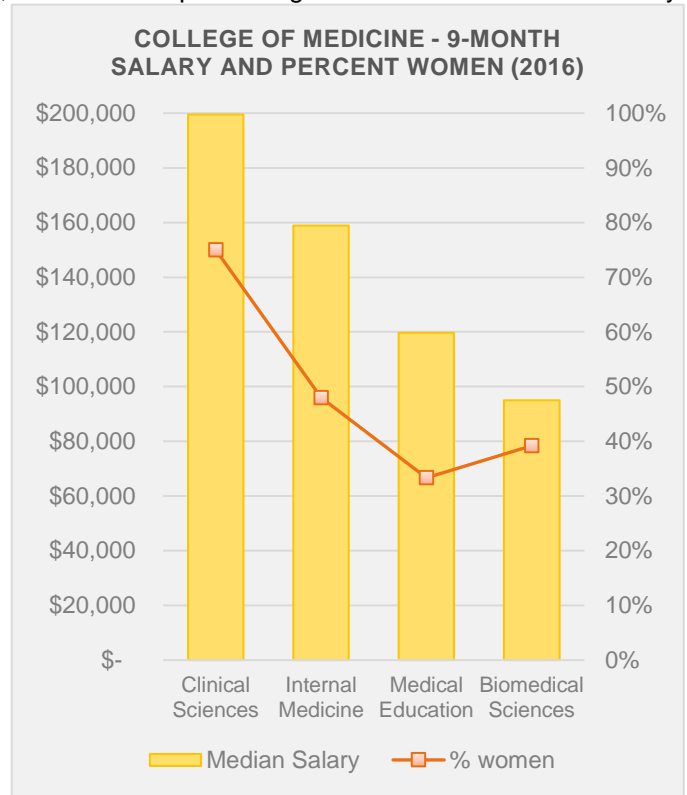
The median salary of RCHM faculty is approximately \$72,700. The department of Hospitality Services has the highest median income (\$78,730), while Foodservice & Lodging Management has a median salary of \$70,000.



COLLEGE OF MEDICINE (COM)

Approximately 57% of the COM faculty are men. Clinical Sciences faculty (75%) have the largest proportion of women in the College of Medicine, while only 33% of Medical Education faculty and 39% of faculty in the Burnett School of Biomedical Sciences are women. COM faculty are approximately 62% white, with Asians representing an additional 20% of the faculty. COM has one of the highest proportions of underrepresented minority faculty (14%) at UCF. Only 4% of the faculty are considered International.

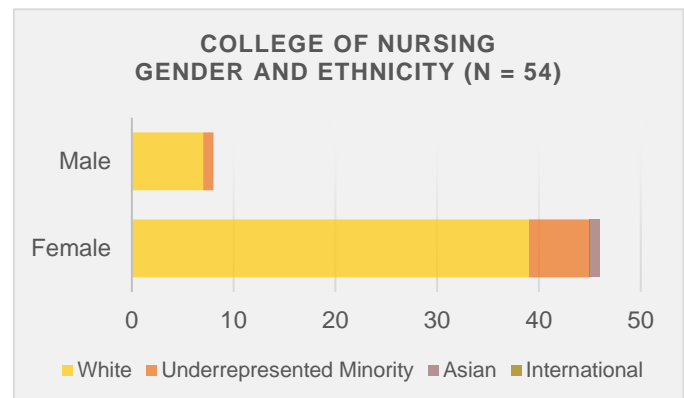
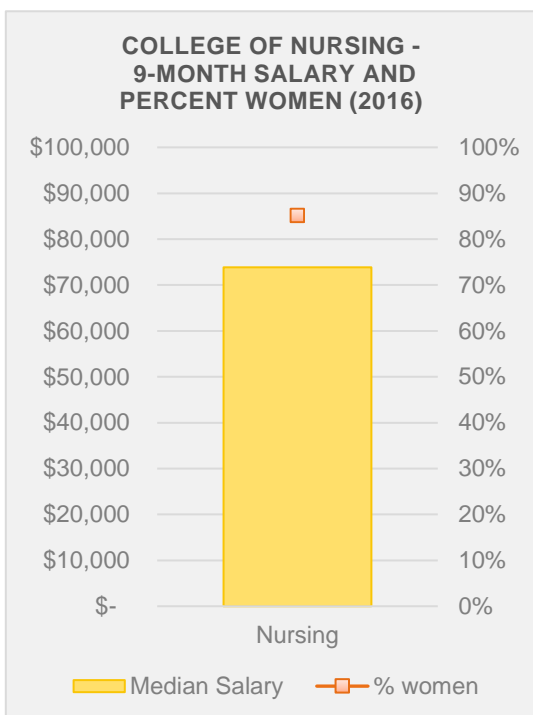
The median salary among College of Medicine faculty is approximately \$112,942. Clinical Sciences has the highest median salary (\$199,500), while the median salary for faculty in the Burnett School of Biomedical Sciences (\$95,032) is slightly lower than the overall college median.



COLLEGE OF NURSING (CON)

The College of Nursing is the most female-dominated college at UCF with women representing approximately 85% of the faculty. CON also has the highest proportion of white faculty (85%) compared to other colleges. Approximately 13% of faculty are underrepresented minorities and only 2% of the CON faculty are Asian. There were no International faculty in CON in 2016.

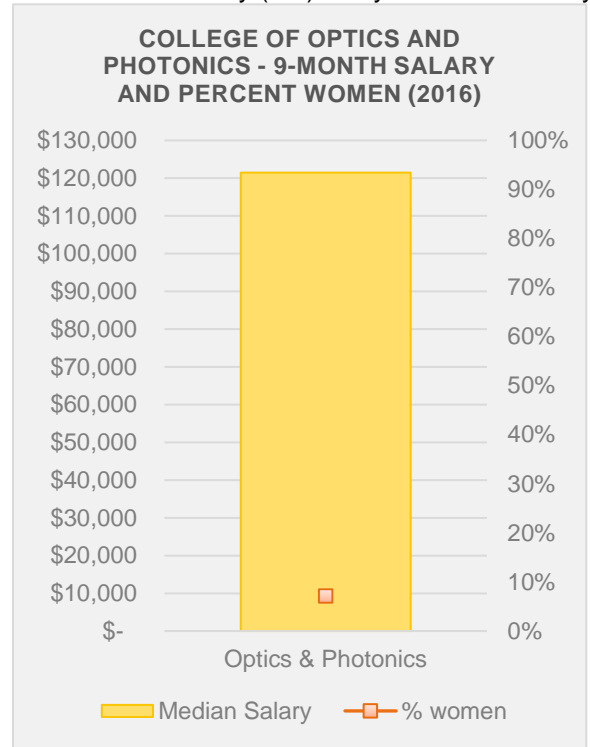
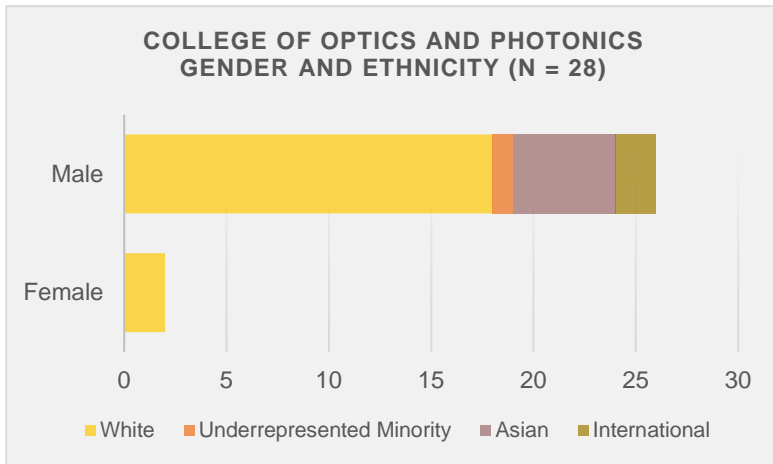
All faculty in CON are housed within the same department, so limited information is available to compare median salaries. Overall, the median salary of College of Nursing faculty is approximately \$73,894. There are only four colleges with a lower median salary than CON faculty.



COLLEGE OF OPTICS AND PHOTONICS (CREOL)

The College of Optics and Photonics is the most male-dominated college at UCF, with men representing approximately 93% of the faculty. CREOL also represents the smallest proportion of faculty by college. Approximately 71% of the faculty are white, while Asians represent the next largest proportion (18%), and International faculty (7%). Only 3% of the faculty are underrepresented minorities. There are no non-white women in the college.

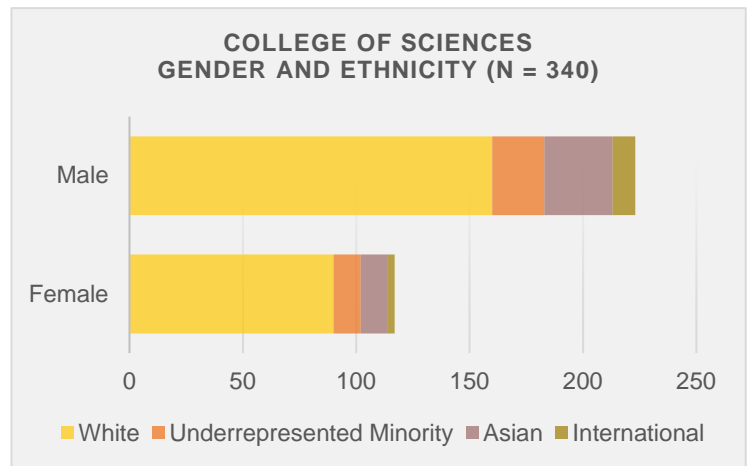
The median salary of CREOL faculty is approximately \$121,482. All faculty in CREOL are housed within the same department, so limited information is available to compare median salaries. However, the College of Optics and Photonics has the third highest median salary among UCF colleges.



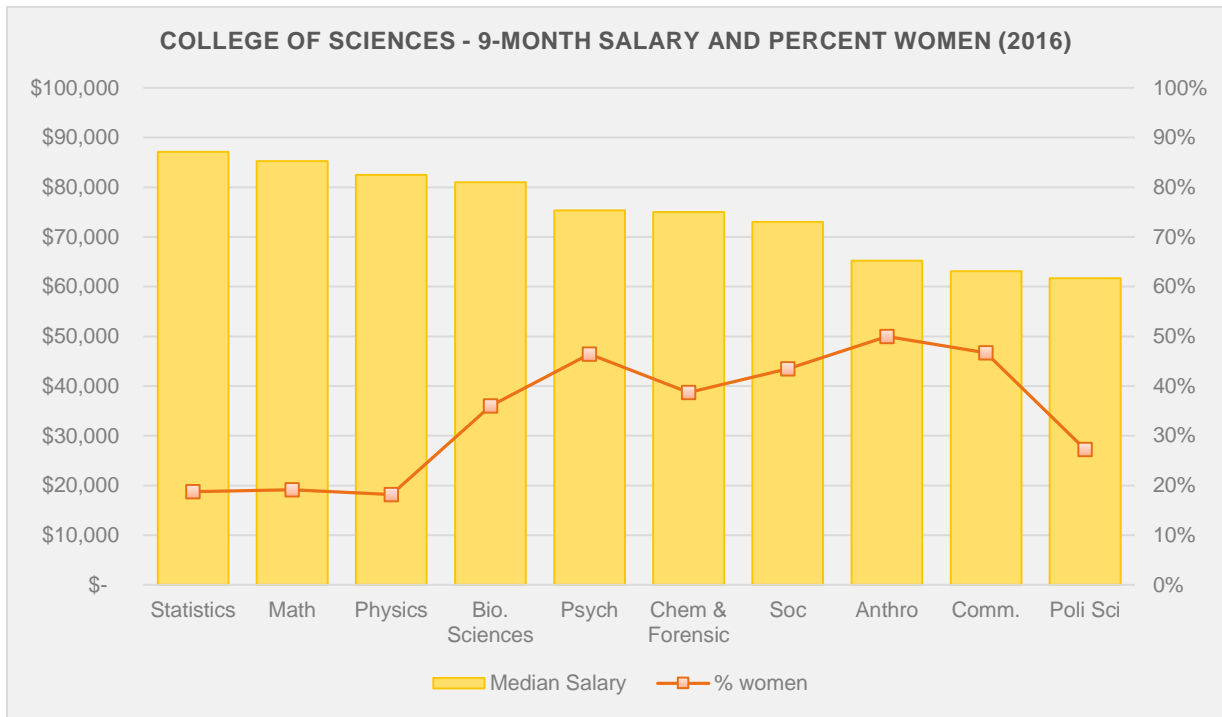
COLLEGE OF SCIENCES (COS)

The College of Science has the largest number of faculty. Overall, men represent approximately two-thirds (66%) of the COS faculty. The department of Anthropology (50%), Nicholson School of Communications (47%), and the department of Psychology (46%) have the highest proportions of women in the College of Sciences. Additionally, almost three-quarters of the COS faculty are white (74%), an additional 12% are Asian and 10% are underrepresented minorities. Only 4% of COS faculty are considered international faculty.

The median salary among COS faculty is approximately \$75,406. The departments of Statistics (\$87,145), Mathematics (\$85,270), and Physics (\$82,492) have the highest median salaries in COS. They also have the lowest proportions of women within the college (18-19%). On the other hand, Anthropology (\$65,250), Communications (\$63,117), and Political Science (\$61,684) have the lowest median salaries in the college. The proportion of women in these departments ranges from 27% to 50%.

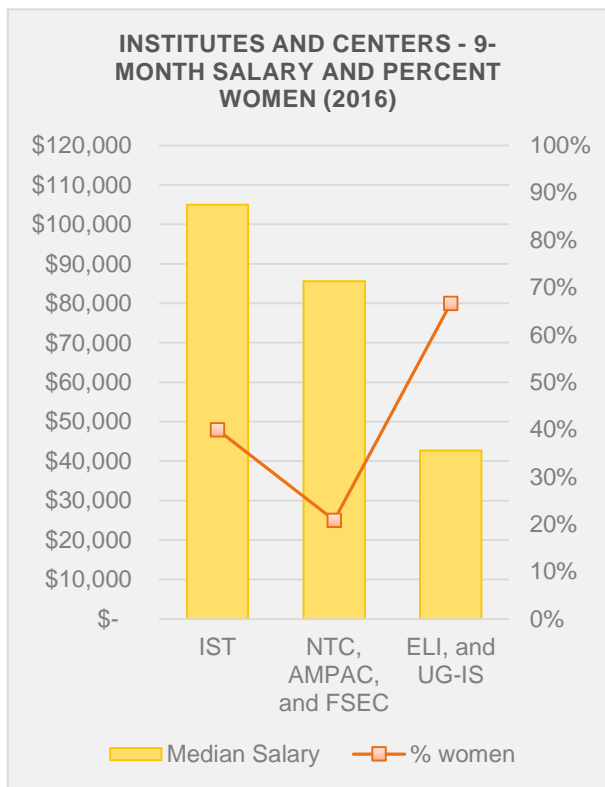


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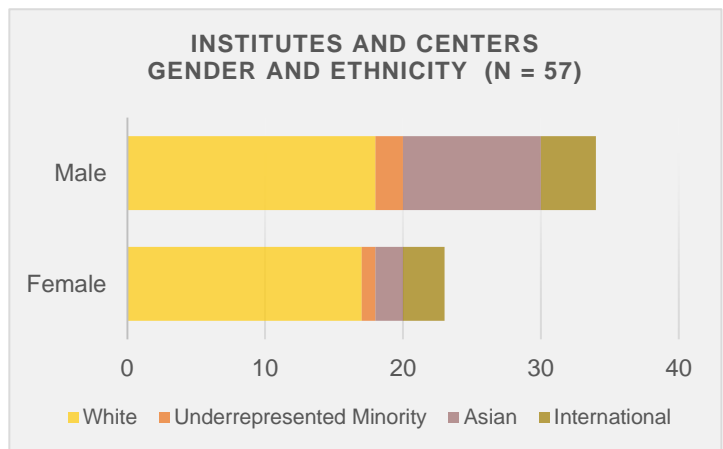
INSTITUTES AND CENTERS (INSTITUTES)

Approximately 60% of the institute faculty are men. However, two-thirds of the faculty in the English Language Institute (ELI) and the Undergraduate Studies – Interdisciplinary Studies (UG-IS) departments are women (67%). On the other hand, only 21% of faculty in either the NanoScience Technology Center (NTC), Advanced Materials Processing and Analysis Center (AMPAC), or the Florida Solar Energy Center (FSEC) are women. Approximately 40% of the Institute for Simulation and Training (IST) faculty are women.



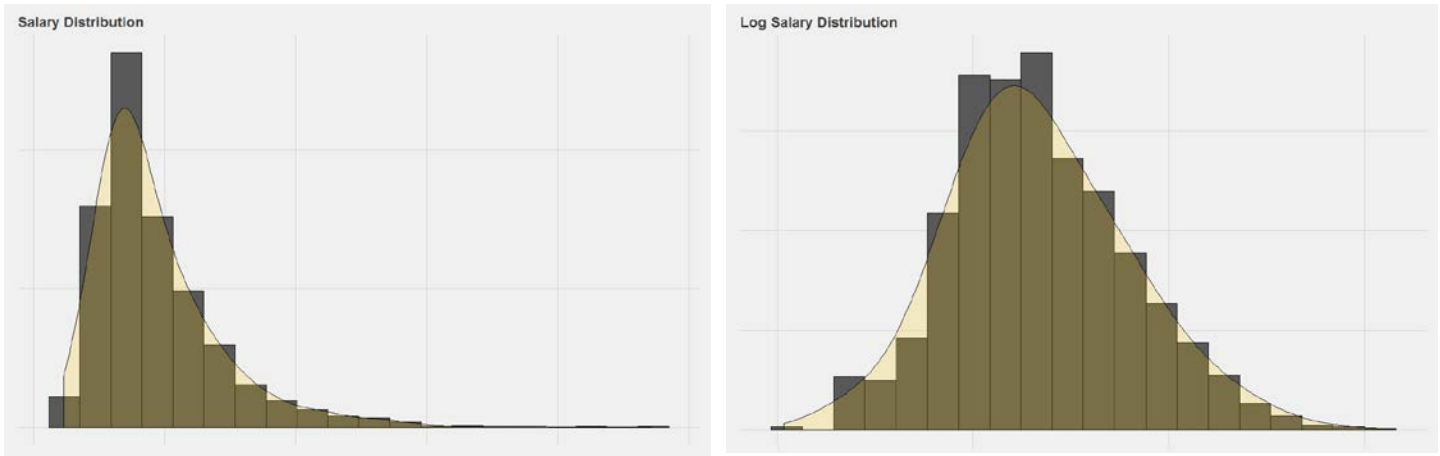
While this group represents a small portion of faculty at UCF, the research institutes and centers are the second most diverse group, with whites representing 61% of institute faculty. Approximately 21% of faculty are Asian, and 12% are international. However, only 5% are underrepresented minorities.

The median salary among faculty in the institutes and centers is approximately \$80,000. The median salary for ELI and UG-IS faculty is substantially lower than the overall median (\$42,680), while IST faculty have a median salary of \$105,000.



APPENDIX B – DATA AND ANALYSIS

SALARY VS. LOG SALARY



Changing our dependent variable has a drastic effect on how we interpret our results. Namely, do we believe that the factors in our data have an additive effect on salary, or a multiplicative one? Based on the available literature in similar salary equity studies, we chose to make the log salary our dependent variable.

INTERPRETING LOG SALARY MODEL RESULTS

The multivariate model for salary is relatively simple, and looks like

$$\text{Adjusted 9 Month Salary} = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_p x_p$$

Where p is the number of factors considered, and x is the value of a particular factor. The interpretation is equally straightforward. Say that x_1 was the total number of years a faculty member has been at UCF. For an increase of one year at UCF, we can expect an increase of β_1 dollars to the faculty member's salary. There is more nuance to interpreting categorical variables, but the point is that each variable is assumed to have an *additive* effect on salary.

The multivariate model for log salary, on the other hand, takes the form

$$\log(\text{Adjusted 9 Month Salary}) = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_p x_p$$

When we exponentiate both sides, the equation becomes

$$e^{\log(\text{Adjusted 9 Month Salary})} = e^{\beta_0 + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_p x_p}$$

$$\text{Adjusted 9 Month Salary} = e^{\beta_0 + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_p x_p}$$

$$\text{Adjusted 9 Month Salary} = e^{\beta_0} * e^{\beta_1 x_1} * e^{\beta_2 x_2} * \dots * e^{\beta_p x_p}$$

Note that the variables in this model have a *multiplicative* effect on salary, which changes how results are reported. Neither method is right or wrong, necessarily, just different.

COLLEGE / DEPARTMENT BREAKDOWN

We could add every department into models 3 and 4, but adding so many dummy variables creates unwanted clutter that may not be necessary. Which ones to keep? Or conversely, which ones can we ignore?

We can test for differences in variance between departments within colleges using a nested ANOVA test of the form:

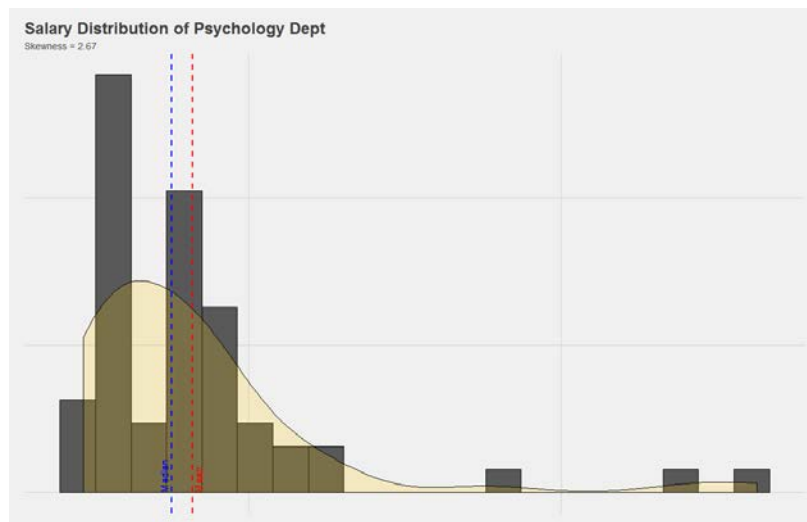
$$\text{SALARY_9MO} \sim \text{COLLEGE/DEPARTMENT}$$

Unsurprisingly, they're different. But the results of that test only tell you that within at least one college, there is a significant difference between department mean salaries. It does not provide specifics as to which colleges have differences between their departments. So, we go college by college and do one-way ANOVA on the departments to look for differences in mean salaries.

If the mean salary does not differ much between departments within a college, we can just use the college and reduce the number of departments we need to add into the model.

College	p-value
Admin	Not significant
College of Arts & Humanities	**
College of Business Administration	***
College of Education	***
College of Engineering/Computer Science	Not significant
College of Health & Public Affairs	Not significant
College of Hospitality Management	Not significant
College of Medicine	***
College of Nursing	N/A - Only one department
College of Optics & Photonics	N/A - Only one department
College of Sciences	***
Institutes	***

For the colleges where the results were not significant, we can conclude that the mean salaries between departments in that college did not differ significantly. However, salary distributions are often skewed to the right, which violates the assumption of normality that the ANOVA test requires.



Shown above is the distribution of salaries for the psychology department as an example. Therefore, it is prudent to use the Kruskal-Wallis test to check differences in medians, rather than means, to see if the same results hold.

College	p-value
Admin	Not significant
College of Arts & Humanities	***
College of Business Administration	***
College of Education	***
College of Engineering/Computer Science	Not significant
College of Health & Public Affairs	Not significant
College of Hospitality Management	Not significant
College of Medicine	***
College of Nursing	N/A - Only one department
College of Optics & Photonics	N/A - Only one department
College of Sciences	***
Institutes	***

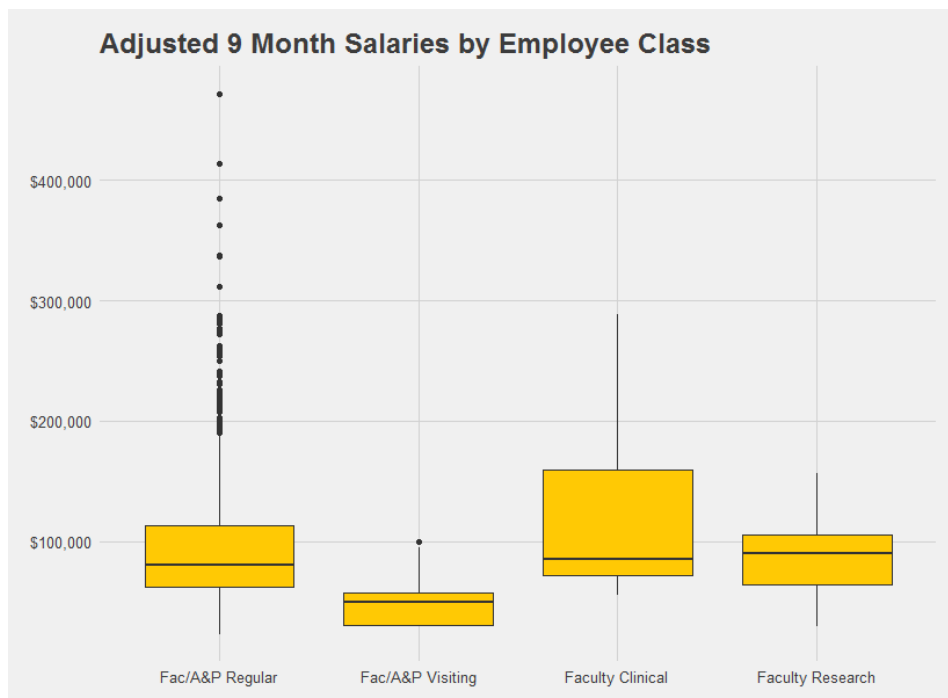
The results are nearly identical, which is good news. This means that for Admin, College of Engineering/Computer Science, College of Health & Public Affairs, and College of Hospitality Management, we can safely use only the college in our models, without needing to break them down further to the department level.

EMPLOYEE CLASS

Faculty members are broadly categorized into either Regular, Visiting, Clinical, or Research.

Employee Class	Count
A&P Regular	1489
A&P Visiting	61
Clinical	28
Research	28

Since the counts for Clinical and Research are so low, we wish to group them in some way.



We would like to group the Clinical and Research faculty together, but we should test for a difference in medians first with a Wilcoxon Rank-Sum test. We do not find a significant difference, so we can feel free to group them.

We also group Regular and Visiting Faculty together, based on their shared job description. Despite significant differences in their medians, we feel this grouping is justified given their similar attributes and the small number of visiting faculty.

APPENDIX C – FULL MODEL TABLE

Table 5: Log-Linear regression results: The effects of Sociodemographics, Experience, Departmental Structure, and Merit in 9-month (or equivalent) Salary Differences for among UCF Faculty in 2016

Independent Variables	Model 1	Model 2	Model 3	Model 4
Female	-.21 [-.24 , -.18] ***	-.05 [-.07 , -.02] ***	-.03 [-.05 , -.01] **	-.04 [-.06 , -.02] ***
Race/Ethnicity ^a				
Asian	.21 [.15 , .24] ***	.06 [.03 , .10] ***	.04 [.01 , .07] *	.05 [.02 , .07] **
International	-.13 [-.15 , .00] **	.04 [-.02 , .09]	.02 [-.03 , .06]	.02 [-.02 , .07]
Underrepresented Minority	-.06 [-.10 , -.00]	-.04 [-.08 , -.01] **	-.03 [-.06 , .00] *	-.003 [-.06 , .00] *
Gender/Race Interactions ^b				
Asian x Female	-.06 [-.17 , .04]	-.06 [-.13 , .01] †	-.03 [-.09 , .04]	-.01 [-.07 , .05]
International x Female	.17 [.02 , .33] *	.12 [.01 , .24] *	.10 [-.00 , .20] †	.09 [.00 , .19] *
Underrep. Minority x Female	.01 [-.09 , 0.11]	.003 [-.06 , .07]	.002 [-.06 , .06]	.01 [-.04 , .07]
Number of years at UCF		-.002 [.00 , .00] *	-.001 [.00 , .00]	-.005 [-.01 , -.00] ***
Number of years since degree		.005 [.00 , .01] ***	.004 [.00 , .01] ***	.005 [.00 , .01] ***
Rank ^c				
Associate Professor		-.33 [-.37 , -.30] ***	-.31 [-.34 , -.28] ***	-.26[-.29 , -.23] ***
Assistant Professor		-.48 [-.55 , -.41] ***	-.43 [-.50 , -.37] ***	-.36 [-.42 , -.30] ***
Instructor/Lecturer		-.90 [-.97 , -.84] ***	-.71 [-.78 , -.64] ***	-.64 [-.70 , -.58] ***
Tenure Status ^d				
Tenure-Track		.05 [-.01 , .11] †	-.10 [-.16 , -.04] **	-.09 [-.15 , -.03] **
Non-Tenure-Earning		-.05 [-.12 , .03]	-.06 [-.12 , .01] †	-.03 [-.09 , .03]
Number of ranks held at UCF		-.08 [-.10 , -.05] ***	-.06 [-.08 , -.03] ***	-.09 [-.11 , -.07] ***
College/Department ^e				
Administration			.36 [.30 , .42] ***	.19 [.13 , .26] ***
CAH/English			-.26 [-.34 , -.18] ***	-.25 [-.32 , -.17] ***
CAH/History			-.20 [-.30 , -.11] ***	-.20 [-.29 , -.11] ***
CAH/Modern Lang & Lit			-.28 [-.36 , -.20] ***	-.28 [-.35 , -.21] ***
CAH/Other			-.02 [-.17 , .13]	-.07 [-.21 , .07]
CAH/Performing Arts			-.30 [-.38 , -.23] ***	-.29 [-.36 , -.22] ***
CAH/Philosophy			-.30 [-.41 , -.19] ***	-.29 [-.39 , -.19] ***
CAH/Visual Arts and Design			-.18 [-.25 , -.11] ***	-.16 [-.22 , -.09] ***
CAH/Writing and Rhetoric			-.29 [-.38 , -.20] ***	-.30 [-.39 , -.22] ***
CBA/Accounting			.58 [.47 , .69] ***	.59 [.49 , .69] ***
CBA/Economics			.24 [.11 , .38] ***	.26 [.13 , .38] ***
CBA/Finance & Real Estate			.58 [.47 , .70] ***	.57 [.46 , .67] ***
CBA/IB and Sports Business			.24 [.07 , .40] **	.22 [.06 , .37] **
CBA/Management			.48 [.37 , .59] ***	.46 [.36 , .56] ***
CBA/Marketing			.58 [.45 , .71] ***	.54 [.42 , .66] ***
CECS/Engineering & Com Sci.			.11 [.07 , .16] ***	.12 [.08 , .16] ***
CEDHP/Child, Family & Comm.			-.07 [-.16 , .02]	-.06 [-.15 , .02]
CEDHP/Education & Human Sci.			-.08 [-.19 , .03]	-.09 [-.20 , .01] †
CEDHP/Teach, Learn, & Lead			-.09 [-.16 , -.03] **	-.08 [-.14 , -.02] *
COHPA/Health & Public Affairs			-.02 [-.06 , .02]	-.01 [-.05 , .03]
RCHM/Hospitality Management			-.01 [-.08 , .06]	-.02 [-.09 , .04]
COM/Burnett Biomed Sciences			.02 [-.05 , .10]	.04 [-.03 , .11]
COM/Clinical Sciences			.56 [.36 , .76] ***	.52 [.33 , .71] ***
COM/Internal Medicine			.35 [.24 , .46] ***	.35 [.24 , .45] ***
COM/Medical Education			.22 [.08 , .36] **	.25 [.12 , .38] ***
CON/Nursing			.08 [.01 , .15] *	.12 [.05 , .19] ***
CREOL/Optics & Photonics			.10 [.00 , .20] *	.13 [.03 , .22] **
COS/Anthropology			-.13 [-.25 , -.02] *	-.16 [-.27 , -.05] **
COS/Bio Sciences			-.02 [-.13 , .08]	-.04 [-.14 , .06]
COS/Chemistry & Forensic Sci			.002 [-.09 , .10]	-.002 [-.09 , .09]
COS/Communication			-.13 [-.21 , -.05] **	-.12[-.19 , -.04] **
COS/Mathematics			-.18 [-.25 , -.10] ***	.14 [-.21 , -.07] ***
COS/Physics			-.07 [-.15 , .01] †	-.05 [-.13 , .03]
COS/Political Science			-.17 [-.27 , -.08] ***	-.16 [-.24 , -.07] ***
COS/Psychology			-.03 [-.11 , .04]	-.02 [-.09 , .05]

Table 4 (cont.): Log-Linear regression results: The effects of Sociodemographics, Experience, Departmental Structure, and Merit in 9-month (or equivalent) Salary Differences for among UCF Faculty in 2016

Independent Variables	Model 1	Model 2	Model 3	Model 4
College/Department ^e				
COS/Sociology			-.12 [-.23 , -.02] *	-.09 [-.19 , .01] †
COS/Statistics			-.07 [-.20 , .06]	-.06 [-.18 , .07]
INST/English Lang or Interdisc.			-.27 [-.39 , -.14] ***	-.23 [-.35 , -.11] ***
INST/Inst. Simulation & Training			.12 [-.03 , .27]	.17 [.03 , .31] *
INST/NTC, AMPAC, or FSEC			-.04 [-.14 , .07]	.01 [-.11 , .09]
Clinical or Research Faculty ^f			.13 [.06 , .19] ***	.15 [.09 , .22] ***
Currently Serving Admin Role				.23 [.20 , .26] ***
Number of TIP and RIA awards				.09 [.08 , .10] ***
Number of times using paid leave				.02 [.01 , .04] **
N				
Constant	11.41 [11.39 , 11.44] **	11.85 [11.79 , 11.91] **	11.80 [11.74, 11.85] ***	11.73 [11.68 , 11.78] ***
Model (F)	42.45 *	334.20 *		
Adjusted R ²	.083	.559	.661	0.701

Note: Entries are given as log estimate with 95% Confidence Interval in brackets [lower limit, upper limit]

† p <.01 * p<.05 ** p<.01. ***p<.001

^a Whites as reference group ^b White males as reference group ^c Full Professor as reference group ^d Tenured faculty as reference group

^e The reference level for College/Department was obtained by making a copy of the data, assigning "UCF" as the College/Department for that copy, and setting "UCF" to the reference level. Therefore, the college/department is being compared to the university as a whole. Duplicating the data has no practical effect on the model. Additionally, colleges with no significant difference between departments within the college are not sorted by college and department. For these college, † College/Department label represents all departments within.

^f Employee class of Regular or Visiting faculty as reference group.