2016-17 Auburn University Faculty Salary Study

Take Away: Using hierarchical linear modeling, a study of Fall 2015 salary records for all full-time instructional faculty and librarians at Auburn University found no evidence of salary inequity by gender after controlling for individual and department-level characteristics.

In response to a request from Provost Timothy R. Boosinger, this study attempts to discover evidence of potential salary inequity by gender among Auburn University's full-time instructional faculty, including librarians.

An important context for this study is provided by Auburn's 2013-18 Strategic Plan, which sets as one of five priorities an effort to support faculty excellence. This priority was selected, in part, in response to data from the Fall 2013 Faculty Job Satisfaction Survey conducted by the Collaborative on Academic Careers in Higher Education (COACHE). In their responses to some items on this survey, Auburn University's female faculty reported levels of satisfaction that were lower than those reported by Auburn's male faculty and, of even greater concern, lower than those reported by female faculty at peer and national institutions. In September 2014, following analysis of these COACHE results, Provost Timothy Boosinger formed a Commission on Women in Academic Careers at Auburn University. He charged the Commission to review the findings of COACHE study, to collect additional data on the academic careers of female faculty at Auburn, and to recommend policies to improve opportunities for female faculty members.

To extend the COACHE survey data, the Commission conducted focus groups. At some of these sessions, female faculty members expressed concerns over perceived gender-based salary inequity at Auburn. One of the Commission's eventual recommendations was that a study be conducted to explore possible institution-wide salary inequities between female and male faculty members that cannot be explained by other factors. Provost Boosinger accepted that recommendation and asked the Auburn's Office of Institutional Research to conduct the analysis.

Methodology

The data set is based on Fall 2015 records for all full-time instructional faculty and librarians on the main campus of Auburn University (N=1,230), not including visiting faculty. The analysis includes data on faculty members currently serving as academic Department Heads and Chairs. However, we excluded current Deans, Associate Deans, and Assistant Deans, as well as former Deans now serving as full-time instructional faculty. In preparing this study, we examined an approach that also excluded all non-tenure-track faculty members, but we found that doing so did not improve model fit.

In our study, the dependent variable is the natural logarithm of 9-month base salary, a transformation selected because the distribution of base faculty salaries in the data set is positively skewed, with the preponderance of the distribution concentrated in the lower salary ranges. Taking the natural logarithm of salary also means that the parameter estimates are interpreted as percentage change in salary rather than as absolute dollar change, which is more plausible.

For faculty members on 12-month appointments, we converted base salaries to 9-month equivalents, first multiplying the 12-month salary by 9 and then dividing the product by 11. Only base salary is included; summer pay and out-of-class pay are excluded because each is incidental.

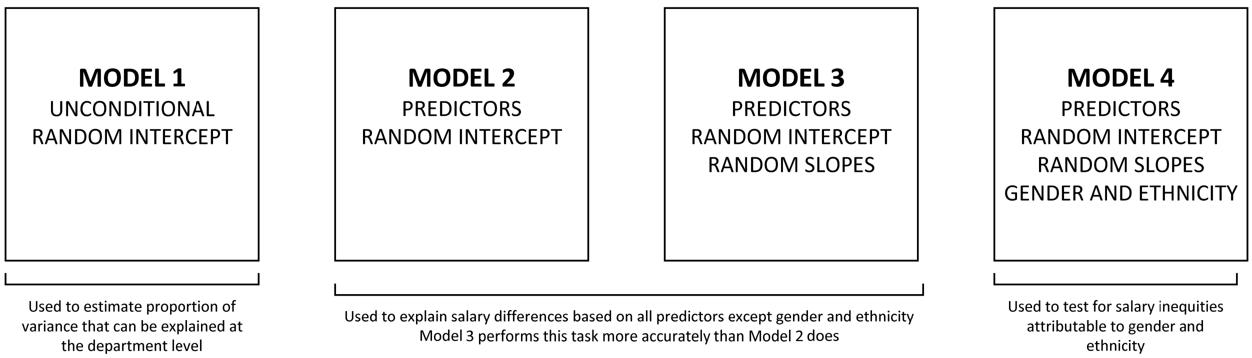
Our selection of independent variables is based on the recommendations of Haignere and Lin (2002) in a study conducted for the American Association of University Professors (AAUP). Our independent variables include:

- *Gender*
- *Non-Caucasian ethnic group status*, coded as a binomial indicator (1 = Non-Caucasian; 0 = Caucasian or Unknown)
- *Highest degree earned at time of appointment to current rank at Auburn University,* coded as a pair of binomial indicators for doctoral (1 = doctoral degree at time of current rank; 0 = no such degree at time of current rank) and terminal degree at a time of current rank.
- *Years elapsed between highest degree and the date of appointment to current rank at Auburn University*, included as a proxy for prior experience
- *Years elapsed between date of appointment to current rank at Auburn University and the beginning of the Fall 2015 semester*, included as a proxy for experience at current rank at Auburn
- *Rank at hire*, measured using a pair of binomial indicators for hired at rank of professor (1 = yes) and hired at rank of associate professor (1 = yes)
- *Current rank*, measured using three binomial variables for rank of assistant professor (1=yes), rank of associate professor (1=yes), and rank of full professor (1=yes)
- *Contract length,* i.e., 9- or 12-month appointment
- *Department*
- *Average 9-month salary of assistant professors in the same discipline at SREB peer institutions*, expressed as a natural logarithm and added as a control for market differences by academic discipline

Before conducting the analysis, we took three steps to account for features of the data set. First, to account for the diverse types of faculty assignment and salary captured in our study, we included five binomial indicators, each set to a value of one if the faculty member's appointment fell into that category: tenured or tenure-track appointment; clinical faculty appointment; research faculty appointment; extension faculty appointment; and appointment at the rank of instructor, lecturer, or senior lecturer. Second, to account for the fact that some faculty members either currently receive or have previously received boosts in base salary for administrative service or from holding a titled professorship, we included two additional binomial indicators, the first for administrator status (whether currently or formerly serving in an administrative role) and the second for titled professorship status. We also included an interaction effect for administrator status and titled professorship status, since an individual faculty member could have received both kinds of boost in salary. Finally, following the recommendation of Haignere (2002) for the AAUP, we added quadratic terms for time-related variables such as years at a current rank or years elapsed between highest degree and date of current rank at Auburn.

We carried out the analysis in three stages, with each stage having an associated model. The four final models are depicted in Figure 1 and are presented in detail in Table 2.

Figure 1



In the first stage, we estimated a so-called unconditional model, that is, a model without predictors but with random intercept (see Figure 1 and Table 2). We used this model to estimate the variance of salaries within departments and between departments and, hence, the proportion of variance in salaries between departments. We also used this unconditional model to establish a baseline for comparison with subsequent models.

With that baseline established, we next produced a series of models designed to examine differences in salary based on all predictors <u>except</u> gender and ethnicity. This approach is called a single-equation or total population regression analysis (Toutkoushian and Hoffman, 2002). In this stage of the analysis we first produced a preliminary model, Model 2, which adds predictors to the baseline Model 1 (see Figure 1 and Table 2). Model 2 assumes the same regression slopes, with intercepts varying randomly across departments. However, because certain characteristics might have varying effects on salaries across departments, we concluded this stage of the analysis by examining multiple models with slopes varying randomly across departments. Of these, we identified the model with random slopes that had the lowest deviance (a measure of model fit) and led to a greater proportional reduction of error at the individual faculty level. This became Model 3 (see Figure 1 and Table 2). Model 3 underlies the calculation of average residuals by school and college presented in Table 3, a step based on recommendations from prior salary equity studies (e.g., Toutkoushian and Hoffman, 2002; McLaughlin and McLaughlin, 2003).

In the final stage of our analysis, we added data on gender and ethnicity to Model 3 to produce Model 4 (see Figure 1 and Table 2). Model 4 allows us to address the main research question of the present study: after controlling for other department- and individual-level characteristics, is there evidence of salary inequity by gender at Auburn University?

Advantages of a Multilevel Approach

In order to deal with the hierarchical nature of our data, our study makes use of Hierarchical Linear Modeling (HLM). (For an HLM manual see Raudenbush, Bryk, Cheong, and Congdon, 2004.)

To date, most published salary equity studies have been conducted using ordinary least squares (OLS) regression, a technique that treats all data at the same level. However, because the OLS approach requires an assumption that error terms are independent of one another and because the salaries of faculty working in the same department are, in fact, correlated with one another, the OLS assumption is violated. Data on faculty salaries by department involve at least two levels of hierarchy—one for the individual and one for the department in which that individual is nested. Multilevel models are more appropriate for analysis of multilevel data like these (see, for example, Loeb 2003). When multilevel data are analyzed with traditional statistical tests like OLS, dependencies between individual observations lead to incorrect estimates of standard errors and spurious "significant" results (Raudenbush and Bryk, 2002). By contrast, multilevel models account for the nesting of data in hierarchies, such as faculty within departments, by introducing residual components at each level. Department-level residuals represent unobserved departmental characteristics that affect salary and that, in fact, are a source of correlation between the salaries of faculty members in the same department. In turn, faculty-level residuals represent unobserved faculty characteristics that affect only that person's salary. A multilevel model properly treats these dependencies and reflects the variation introduced by different levels of a hierarchical structure.

Multiple previous studies have shown that the greater the proportion of female faculty in a given discipline, the lower the average salary for that discipline (Staub 1987; Bellas 1997, 1994; cited in Haignere and Lin 2002). Thus, all else being equal, disciplines with higher proportions of female faculty are likely to exhibit different patterns of salary distribution than disciplines with lower proportions of female faculty. By employing multilevel analysis with faculty at Level 1 and departments at Level 2, we are able to measure the effects of gender by comparing faculty who are in the same discipline, so that salary differences related to discipline are not mistakenly attributed to gender bias.

Another advantage of using multilevel analysis for this study is its ability to deal efficiently with effects that might vary by department. In a multilevel approach, both intercepts and slopes can be set to vary across departments, thus achieving an accurate model without the need to run separate analyses for each college, school, or department.

Faculty-Level Analysis (Level 1)

We denote salary for faculty *i* in department *j* as Y_{ij}. The outcome of the model—the natural logarithm of 9-month base faculty salary—can be represented as a function of individual faculty characteristics, X_{qij}, and a residual r_{ij}:

$$
\begin{aligned}
\ln(Y_{ij}) = \beta_{0j} + \beta_{1j} \times X_{1ij} + \beta_{2j} \times X_{2ij} + \beta_{3j} \times X_{3ij} + \beta_{4j} \times X_{4ij} + \beta_{5j} \times X_{5ij} + \beta_{6j} \times X_{6ij} \\
+ \beta_{7j} \times X_{7ij} + \beta_{8j} \times X_{8ij} + \beta_{9j} \times X_{9ij} + \beta_{10j} \times X_{10ij} + \beta_{11j} \times X_{11ij} \\
+ \beta_{12j} \times X_{12ij} + \beta_{13j} \times X_{13ij} + \beta_{14j} \times X_{14ij} + \beta_{15j} \times X_{15ij} + \beta_{16j} \times X_{16ij} + \beta_{17j} \times X_{17ij} \\
+ \beta_{18j} \times X_{17ij}^2 + \beta_{19j} \times X_{18ij} + \beta_{20j} \times X_{18ij}^2 + r_{ij}
\end{aligned}
$$

Where r_{ij} is a residual (also called random effect); and it is assumed that $r_{ij} \sim N(0, \delta_r^2)$; δ_r^2 is a residual variance at Level 1 after controlling for the following department- and faculty-level predictors (see Table 1 for descriptive statistics of variables included in the model):

X_1 = 1 if a faculty member is currently an assistant professor

X_2 = 1 if a faculty member is currently an associate professor

X_3 = 1 if a faculty member is currently a full professor at hire

X_4 = 1 for clinical faculty

X_5 = 1 for extension faculty

X_6 = 1 for research faculty

X_7 = 1 for holders of a titled professorship

X_8 = 1 for current administrator

X_9 = 1 for former administrator

X_{10} = 1 for titled professors who are former or current administrators

X_{11} = 1 for tenure-track or tenured faculty

X_{12} = 1 if originally hired as an associate professor

X_{13} = 1 if originally hired as a full professor

X_{14} = 1 if a faculty member holds a doctoral degree

X_{15} = 1 if a faculty member holds a terminal degree

X_{16} = 1 is a faculty member is on nine-month appointment

X_{17} = Number of years in rank

X_{18} = Number of years elapsed between date of highest degree and date of current rank at Auburn

The following features of our Level 1 variables should be noted:

Due to limitations in our data, we used binomial indicators for three variables where we would have preferred to be able to use greater precision—titled professorship status and current or former administrator status. In actuality, the boost in salary that a faculty member receives from holding a titled professorship will vary with the terms of that specific professorship. Likewise, any boost in salary that a faculty member receives from having served as an administrator in the past may vary with the number of years served as an administrator. Unfortunately, we were unable to obtain even reasonably precise estimates of the dollar value of all titled professorships in the data set or measures of the number of years a faculty member previously served in one or more administrative positions.

A principal unobserved faculty characteristic in this study is individual performance quality—how well a faculty member has been judged to be carrying out his or her assigned duties.

Department-Level Analysis (Level 2)

Each of the parameters—$\beta_{0j},\ \beta_{1j},\ \beta_{2j}, \dots ,\ \beta_{19j},\ \text{or}\ \beta_{20j}$—can be set to vary across departments by adding random errors—$u_{0j},\ u_{1j},\ u_{2j}, \dots ,\ u_{19j},\ \text{or}\ u_{20j}$. Model 1 and Model 2 were limited to one department-varying parameter, β_{0j}, or the intercept. Our model presumed that the intercept, $\beta_{0j,}$ is a function of the natural logarithm of the average salary of assistant professors in the same discipline at regional peer institutions, $\ln(W_{1j})$, and a random error, u_{0i} . We also include a department-level intercept, γ_{00}:

$$\beta_{0j} = \gamma_{00} + \gamma_{01} \times \ln(W_{1j}) + u_{0j}$$

It is assumed that the residual is normally distributed with a mean of zero and a variance of $\left(\delta_{u0}^{2}\right)$.

After the initial model, we added several parameters to allow random variation of eight slopes—the slopes for the binomial indicator of administrator, nine-month appointment, years in rank and years in rank squared, the tenure-track indicator, current rank of associate, or full professor:

$$\beta_{2j} = \gamma_{20} + u_{2j}$$

$$\beta_{3} = \gamma_{30} + u_{3j}$$

$$\beta_{8j} = \gamma_{80} + u_{8j}$$

$$\beta_{11j} = \gamma_{110} + u_{11j}$$

$$\beta_{16j} = \gamma_{160} + u_{1j}$$

$$\beta_{17j} = \gamma_{170} + u_{17j}$$

$$\beta_{18j} = \gamma_{180} + u_{18j}$$

Residuals are assumed to be normally distributed. Each slope can have its own distribution of residuals. We tested several competing models with different combinations of random effects. The final model was selected because it led to a significant decrease in deviance, which measures model fit. The difference between deviance statistics for any two models has a chi-square (χ^2) distribution with degrees of freedom equal to the difference in the number of parameters estimated in the more parameterized (less restricted or having more random effects) model and less parameterized (more restricted or having fewer parameters) model. If adding a random effect led to a statistically significant difference in deviance, this random effect was kept in the final model. For a detailed description of this and other selection criteria among competing and nested hierarchical linear models, see Whittaker and Furlow (2009).

Partitioning of Variance

As noted earlier, we began by estimating Model 1, an unconditional model (i.e., without predictors) in order to partition variation among different levels—faculty and departments (see Table 2). δ_r^2 is the total variance within departments that can be explained by the Level 1 model. δ_u^2 is the total variance among departments that can be explained at Level 2. The intra-class correlation coefficient (ICC) is the proportion of the variance in salaries that can be explained by the department level.

$$ICC = \frac{\delta_u^2}{\delta_u^2 + \delta_r^2} = \frac{0.05406}{0.05406 + 0.07671} \approx 0.41$$

Comparing the variance components of the final model with the variance components of Model 1—the unconditional model—provides an estimate that is similar to the conventional coefficient of determination. This estimate, however, denotes the *proportionate reduction of errors of prediction* (*PRE*) rather than the percentage of variance explained by the model (Kreft and De Leeuw 1998; cited in Bickel 2007, p.132).

When explanatory variables are put in, the Level 2 variance can increase (Pillinger, n.d.). At the same time, however, adding explanatory variables decreases Level 1 variance. Because our primary goal is to explain variance at Level 1 (the faculty member) while controlling for observed characteristics and residuals at Level 2 (the department), we are primarily concerned with reducing error at Level 1—the faculty level. Including our independent variables in Model 3, the final model (see Table 2) reduces errors in predicting logarithms of salaries at Level 1 by 90%:

$$PRE = 1 - \frac{\delta_r^2(final)}{\delta_r^2(unconditional)} = 1 - \frac{0.00784}{0.07671} \approx 0.90$$

This reduction in error at Level 1 was one of the criteria for selecting random effects in the final model for prediction alongside with the outlined above decrease in deviance.

Model Selection

As mentioned previously, after completing Model 2 (Table 2)—i.e., a model with random intercept that does not include random slopes—we tested several models that did include random slopes. A random slope model "allows the explanatory variable to have a different effect for each group" (Pillinger, n.d.). After comparing several such models with random intercepts and examining their deviance and reduction of error in predicting the salaries at Level 1, we chose the model with random slopes for the following indicators: current administrator status, years in rank and years in rank squared, the tenure-track indicator, nine-month appointment, and current rank of associate, or full professor; see Model 3 in Table 2. Compared with Model 2, Model 3 has a lower deviance and leads to a 36% $\left(1 - \frac{0.00784}{0.01232}\right)$ decrease in error of prediction at Level 1.

After selecting Model 3 in Table 2 based on deviance and decrease in error of prediction at Level 1, we concluded our study by adding gender and ethnicity as independent variables to produce Model 4, as shown in Figure 1 and Table 2.

Findings

As evidenced by Model 4 (see Table 2), the effect of gender (where female = 1) is positive but not statistically significant for Auburn University as a whole. In other words, controlling for department and individual-level characteristics, we did not find evidence of pay inequity by gender.

A similar finding applies to salary inequity by ethnicity. The effect of ethnicity (where non-Caucasian = 1) is negative but not statistically significant.

Our remaining findings are largely unremarkable and are based on Model 3 (see Table 2):

1. Higher current rank is associated with higher salary. Assistant professors are expected to make 38.8% ($e^{0.328} \approx 1.388$) more than instructors or lecturers. Associate professors are expected to make 8.5% ($e^{0.409-0.328} \approx 1.085$) more than assistant professors. And professors are expected to make 22.5% ($e^{0.612-.409} \approx 1.225$) more than associate professors.

2. Higher rank at hire is also associated with higher salary. Thus, being hired at the rank of associate professor is associated with an increase of about 4.7% ($e^{0.046} \approx 1.047$) in expected salary; being hired at the rank of professor is associated with an increase of 15.9% ($e^{0.147} \approx 1.159$).

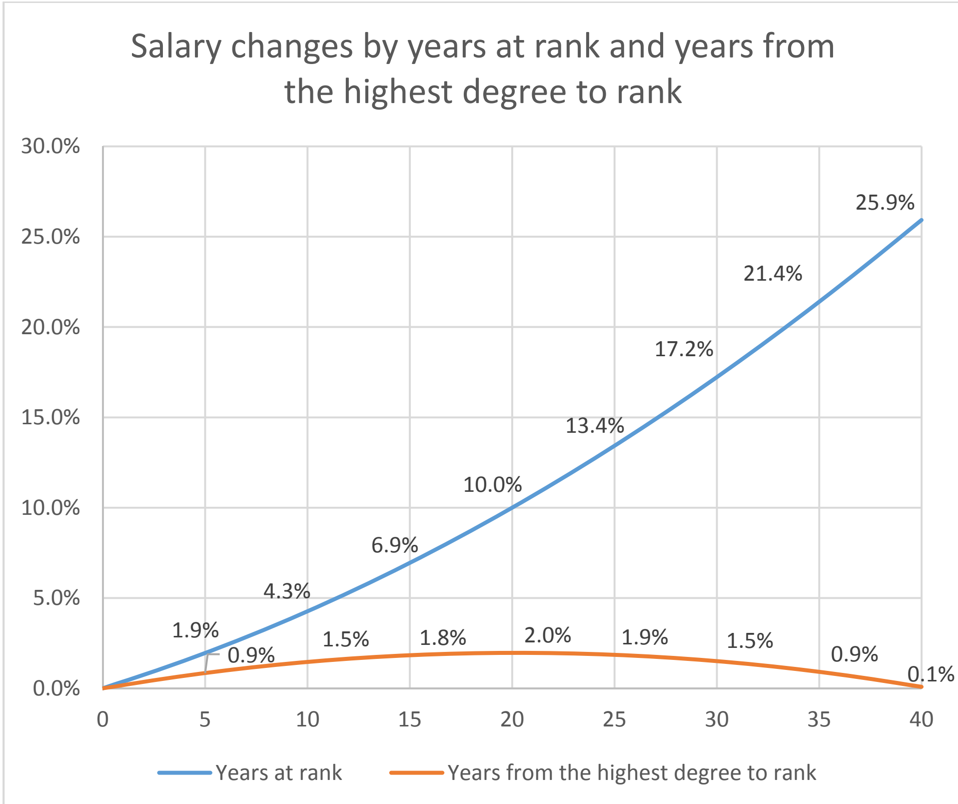
3. Being a research faculty member or an instructor is associated with lower salary. Based on the model, research faculty make 20.6% less ($e^{-0.231} \approx 0.794$) than instructional faculty.

4. Having either an administrative appointment or a titled professorship is associated with higher salary. Being a current administrator leads to a 30.4% increase ($e^{0.265} \approx 1.304$); a former administrator is expected to have a 21.2% ($e^{0.192} \approx 1.212$) greater salary. A titled professor is expected to have 9.2% ($e^{0.088} \approx 1.092$) greater salary. When a faculty member is both a current or former administrator and a titled professor, the combined effect of these predictors is less than the sum of their effects.

5. Having a terminal degree is associated with 5.6% increase ($e^{0.054} \approx 1.056$) in expected salary.

6. Generally, years at current rank are associated with higher salary. The positive effect of years at current rank and the likewise positive effect of years at current rank squared means that as faculty spend more time at Auburn the effect is stronger.

7. At the same time, a positive effect of years from highest degree to hire and a negative effect of years from highest degree to hire squared means that as more time elapses between the date of a faculty member highest degree and his or her hiring at Auburn, the effect of years from highest degree and hire is lessened. This is illustrated in the following graph.



While we do not describe associations that are not statistically significant at the 5% alpha level, we note that lack of statistical significance should be considered with caution, since our analysis is based on the full population and a typical interpretation of significance—i.e., the coefficient is different from zero in the population—does not apply.

In addition to the analysis described already, we examined salary residuals—that is, differences between actual and predicted salaries—grouped by college and gender (see Tables 3 and 4). This examination did not reveal statistically significant differences by gender or by college. Neither did we find there to be an interaction between gender and college that has a statistically significant effect on discrepancies between actual and predicted salaries.

References:

Bellas, M.L. (1997). Disciplinary differences in faculty salaries: Does gender bias play a role? *Journal of Higher Education, 68*: 299-321.

Bellas, M.L. (1994). Comparable worth in academia: The effects on faculty salaries of the sex composition and labor conditions of academic discipline. *American Sociological Review, 59*: 807-31.

Benoit, K. (2011). *Linear Regression Models with Logarithmic Transformations*. Methodology Institute, London School of Economics.

Bickel, R. (2007). *Multilevel Analysis for Applied Research: It's Just Regression!* The Guilford Press, New York.

Despa, S. (2004). Meaningful regression parameters through centering. *Newsletter of the Cornell Statistical Consulting Unit, 66*.

Haignere, L. and Lin, Y. (2002). Database Decisions and Development. *Paychecks: A Guide to Conducting Salary-Equity Studies for Higher Education Faculty*. Second Edition. American Association of University Professors, Washington, DC, pp.17-26.

Haignere, L. (2002). Gender and Race Bias in Salaries. *Paychecks: A Guide to Conducting Salary-Equity Studies for Higher Education Faculty*. Second Edition. American Association of University Professors, Washington, DC, pp.37-48.

Kreft, G.G. and De Leeuw, J. (1998). *Introducing Multilevel Modeling*. Sage Publications, London.

Loeb, J.W. (2003). Hierarchical linear modeling in salary-equity studies. *Directions for Institutional Research, 117*: 69-96.

McLaughlin, G.W. and McLaughlin, J.S. (2003). Conducting a salary-equity study: A consultant's view. *New Directions for Institutional Research, 117*: 97-114.

Pillinger, R. (n.d.) *Random Intercept Models*. A transcript of random intercept models presentation. Retrieved from University of Bristol Centre for Multilevel Modeling web page.

Raudenbush, S.W, Bryk, A.S. (2002). *Hierarchical Linear Models: Applications and Data Analysis Methods*. SAGE Publications.

Raudenbush, S.W, Bryk, A.S., Cheong, Y.F., and Congdon, R.T. (2004). *HLM 6: Hierarchical Linear and Nonlinear Modeling*. Lincolnwood: Scientific Software International.

Staub, K. (1967). *Level of Female participation: An Overlooked Factor in Salary Differences among Faculty Disciplines*. Presentation at the Annual Conference of the Southern Association for Institutional Research.

Toutkoushian, R.K. and Hoffman, E.P. (2002). Alternatives for measuring the unexplained wage gap. *New Directions for Institutional Research, 115*: 71-89.

Whittaker, T.A. and Furlow, C.F. (2009). The comparison of model selection criteria when selecting among competing hierarchical linear models. *Journal of Modern Applied Statistical Methods, 8(*1), Article 15:173-193.

Table 1 Descriptive Statistics

Variable	Mean	Standard Deviation
Level 1		
Logarithm of salary (dependent Variable)	11.32	0.36
Assistant Professor	0.23	0.42
Associate Professor	0.34	0.47
Professor	0.35	0.48
Clinical faculty	0.06	0.24
Extension faculty	0.03	0.16
Research faculty	0.02	0.14
Titled professorship	0.10	0.3
Current administrator	0.06	0.23
Former administrator	0.03	0.16
Titled professor who is former or current administrator	0.02	0.13
Tenure-track or tenured	0.82	0.38
Associate professor at hire	0.09	0.29
Full professor at hire	0.05	0.22
Doctoral degree	0.88	0.32
Terminal degree	0.95	0.21
Nine-month appointment	0.70	0.46
Years at current rank	7	8
Years at current rank, squared	115	214
Years from highest degree to current rank	10	8
Years from highest degree to current rank, squared	157	224
Female	0.38	0.49
Non-Caucasian	0.22	0.41
Number of cases	1,230	
Level 2		
Logarithm of mean salary of assistant professors in the same disciplines at regional peers	11.26	0.24
Number of cases	58	

Table 2 Models of Logarithm of Salary

	Model 1 Unconditional Random Intercept	**Model 2** Predictors (excluding gender and ethnicity) Random Intercept	**Model 3** Predictors (excluding gender and ethnicity) Random Intercept Random Slopes	**Model 4** Predictors (including gender and ethnicity) Random Intercept Random Slopes†
Level-1				
Assistant Professor		0.364(0.044)***	0.328(0.046)***	0.327(0.046)***
Associate Professor		0.448(0.044)***	0.409(0.044)***	0.409(0.044)***
Professor		0.645(0.046)***	0.612(0.048)***	0.612(0.048)***
Clinical faculty		0.011(0.042)	0.024(0.047)	0.024(0.046)
Extension faculty		-0.008(0.023)	0.021(0.023)	0.021(0.023)
Research faculty		-0.164(0.071)**	-0.231(0.044)***	-0.229(0.044)***
Titled professorship		0.087(0.018)***	0.088(0.016)***	0.089(0.016)***
Current administrator		0.273(0.029)***	0.265(0.029)***	0.266(0.029)***
Former administrator		0.203(0.031)***	0.192(0.028)***	0.192(0.028)***
Titled professor who is former or current administrator		-0.038(0.036)	-0.044(0.029)	-0.045(0.029)
Tenure-track or tenured		0.036(0.036)	0.046(0.035)	0.047(0.036)
Associate professor at hire		0.049(0.012)***	0.046(0.01)***	0.047(0.01)***
Full professor at hire		0.127(0.021)***	0.147(0.017)***	0.148(0.017)***
Doctoral degree		0.024(0.019)	0.013(0.013)	0.013(0.013)
Terminal degree		0.064(0.029)**	0.054(0.023)**	0.055(0.023)**
Nine-month appointment		0.030(0.018)	0.013(0.022)	0.014(0.022)
Years at current rank		0.00341(0.00184)*	0.00352(0.00171)**	0.00342(0.00170)**
Years at current rank, squared		0.00009(0.00007)	0.00007(0.00007)	0.00008(0.00007)
Years from highest degree to current rank		0.00137(0.00129)	0.00194(0.00108)*	0.00192(0.00109)*
Years from highest degree to current rank, squared		-0.00002(0.0000)	-0.00005(0.00003)*	-0.00005(0.00003)*
Female				0.001(0.006)
Minority				-0.007(0.007)

(Table 2 continues on next page)

Table 2 *(Continued)*

Level-2				
Intercept	11.346 (0.0315)***	2.399 (0.577)***	2.185 (0.284)***	2.232 (0.297)***
Logarithm of mean salary of assistant professors in the same disciplines at regional peers		0.734 (0.052)***	0.758 (0.025)***	0.754 (0.027)***
Variance Components				
Intercept, u0	0.05406	0.006	0.014	0.014
Years at rank, u17			0.0001	0.0001
Years at rank, squared, u18			0.0000	0.0000
Associate professor, u2			0.002	0.002
Professor, u3			0.010	0.010
Current administrator, u11			0.022	0.022
Tenure-track or tenured, u11			0.019	0.019
Nine-month appointment, u16			0.018	0.018
Level-1, r	0.07671	0.012	0.00784	0.00784
Deviance	490	-1,625	-1,888	-1,872

*Significant at the 10% alpha level; **Significant at the 5% alpha level, ***Significant at the 1% alpha level.

† Includes gender and minority status

Table 3 Average residuals by college and gender

	Females		Males		Total	
College	N	Mean	N	Mean	N	Mean
College Architecture, Design and Construction	11	-$194	40	$825	51	$605
College of Agriculture	35	$381	96	$725	131	$633
College of Business	19	-$1,739	54	$551	73	-$45
College of Education	67	-$36	34	-$687	101	-$256
College of Human Sciences	30	$3,065	17	$1,102	47	$2,355
College of Liberal Arts	151	$208	155	-$150	306	$27
College of Sciences & Mathematics	34	$239	127	$240	161	$239
College of Veterinary Medicine	41	$272	58	$728	99	$539
Library	15	$251	6	-$1,516	21	-$254
Samuel Ginn College of Engineering	12	-$1,814	124	$2,188	136	$1,835
School of Forestry & Wildlife Sciences	7	$1,466	22	-$185	29	$213
School of Nursing	18	$249	3	-$1,354	21	$20
Harrison School of Pharmacy	32	$577	22	-$722	54	$48
Total	472	$283	758	$548	1230	$446

Table 4 Two-way ANOVA of residuals (discrepancies between expected and actual salaries) by Gender and College

Tests of Between-Subjects Effects

Dependent Variable: Discrepancy

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	976094772[a]	25	39043790.90	.559	.961
Intercept	15215760.54	1	15215760.54	.218	.641
Gender	973865.502	1	973865.502	.014	.906
College	274245050.6	12	22853754.21	.327	.985
Gender * College	383407178.1	12	31950598.18	.457	.939
Error	84102067454	1204	69852215.49		
Total	85323129516	1230			
Corrected Total	85078162227	1229			

a. R Squared = .011 (Adjusted R Squared = -.009)