THE UNIVERSITY
of NORTH CAROLINA
at CHAPEL HILL

2012 FACULTY SALARY EQUITY

TASK FORCE REPORT

Office of the Executive Vice Chancellor and Provost

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Presented to Executive Vice Chancellor and Provost Bruce Carney

The Faculty Salary Equity Task Force[i] was appointed and charged by Provost Bruce Carney with conducting a comprehensive study to determine if salary differentials existed by gender and race/ethnicity after controlling for factors that should be related to compensation. The analysis was a follow-up to a similar study of faculty salary equity in 2002.   The Task Force was also charged with: (1) examining time to promotion for tenure track and tenured faculty, (2) analyzing the gender and race/ethnicity characteristics of new faculty hires, and (3) recommending policy and strategies for identifying and addressing inequities.

Salary Equity Study

Methodology

Consistent with the 2002 salary equity study and the recommendations of the Association of American University Professors (AAUP), multiple regression analysis was the primary statistical technique used to examine the effects of gender and race/ethnicity on faculty salaries after controlling for career-related factors that might explain any observed differences.

Data for the regression analysis were derived from the University's official Fall 2009 Personnel Data File, and included all permanent, full-time, active and on-leave-with-pay faculty as of September 30th of that year. Table 1 below displays the gender and race/ethnicity of the 3,116 faculty members in the study population.

Table 1: Salary Equity Study Population								
	Male	**Female**	**White**	**African-Amer.**	**Asian**	**Hispanic**	**Native Amer.**	**Other**
Academic Affairs (N=1,290)	781	509	1,044	74	103	59	9	1
	60.5%	39.5%	80.9%	5.7%	8.0%	4.6%	0.7%	0.1%
School of Medicine (N=1,323)	776	547	1,092	50	141	31	4	5
	58.7%	41.3%	82.5%	3.8%	10.7%	2.3%	0.3%	0.4%
Other Health Affairs (N=503)	232	271	396	28	61	17	1	0
	46.1%	53.9%	78.7%	5.6%	12.1%	3.4%	0.2%	0.0%
TOTAL (N=3,116)	**1,789**	**1,327**	**2,532**	**152**	**305**	**107**	**14**	**6**
	57.4%	**42.6%**	**81.3%**	**4.9%**	**9.8%**	**3.4%**	**0.4%**	**0.2%**

Regression Models

Separate regression models were developed for: (1) the Division of Academic Affairs, which included the College of Arts and Sciences and the schools of Business, Education, Government, Information and Library Science, Journalism and Mass Communication, Law, and Social Work; (2) the School of Medicine, consisting of departments in Clinical Medicine, Basic Sciences, and Allied Health Sciences; and (3) the Division of Health Affairs schools other than the School of Medicine, which included Dentistry, Nursing, Pharmacy, and Public Health.

The dependent variable was annual salary in dollars, adjusted for contract length (9 months in Academic Affairs and 12 months in Health Affairs). For the School of Medicine regression model, the dependent variable was 12-month base salary plus bonus payments from clinical services rendered during that fiscal year.

Each regression model included the same sets of independent variables that captured the faculty members' demographic backgrounds and various career-related factors:

- Demographics--Gender, race/ethnicity
- Education--Highest earned degree
- Experience and Service Length--Years since terminal degree, years at UNC-Chapel Hill, years prior to UNC-Chapel Hill, years in current rank.

- Professional Status--Appointment type (fixed term, tenure track/tenured), rank, administrative role, distinguished professorship
- Discipline--Indicators for each school/department.

Results

Descriptive statistics for the study population revealed the following:

Compared to **male** faculty, female **faculty** members were more likely to:
- Hold a fixed term appointment.
- Have the rank of assistant or instructor.
- Not hold a distinguished title.
- Have spent fewer years in their current ranks.
- Be in a lower-paying discipline area.

Compared to **White** faculty, faculty members from **other racial/ethnic groups** were more likely to:
- Be on tenure track, but not yet tenured.
- Hold rank below full professor.
- Have spent fewer years in their current ranks.

A summary of the regression analysis results is displayed below in Table 2. As observed in the 2002 Salary Equity Study, there were important consistencies across all populations examined in the current study. Each regression model was highly predictive of salaries, as evidenced by the finding that a significant portion (84%, 74%, and 75%, respectively) of the variability in faculty salaries was accounted for by the selected study variables. Across all populations and all models, the strongest predictors of salary were those variables that should be correlated with higher salaries (in descending order of magnitude):

- Specializing in a high paying discipline
- Being at the rank of full professor
- Holding a major administrator role, such as Associate Dean
- Having a distinguished title
- Holding another administrator role, such as department chair
- Having a tenure-track appointment as opposed to fixed-term.

After controlling for these factors in the regression model, gender and race/ethnicity did not make a significant addition to the percentage of variance in salaries already explained by these predictor variables. However, when comparing average salaries by gender and race/ethnicity after controlling for all other variables in the regression model, some differences were observed although the pattern and magnitude varied across units.   On average, female faculty had lower salaries than male faculty in Academic Affairs, the School of Medicine, and the Other Health Affairs units. Results by race/ethnicity differed by unit. For example, African-American faculty had, on average, higher salaries than White faculty in Academic Affairs and Other Health Affairs units after controlling for other factors in the regression model, but the reverse was observed in the School of Medicine.

Table 2. Multiple Regression Analysis Results				
	Variance in Salaries Accounted for by Regression Model	Comparison Group	Salary Relative to Comparison Group After Controlling for Factors Used in the Regression Model	
Academic Affairs	83.6%	Male	Female	Lower
		White	African-American	Higher
			Asian	Higher
			Hispanic, Native American, Other	Lower
School of Medicine	74.1%	Male	Female	Lower
		White	African-American	Lower
			Asian	Lower
			Hispanic, Native American, Other	Lower
Other Health Affairs	75.4%	Male	Female	Lower
		White	African-American	Higher
			Asian	Lower
			Hispanic, Native American, Other	Higher

Although these regression models were all quite predictive, approximately 20% of the variability in faculty salaries was not explained by the independent variables in the analyses. This remaining variability might well be due to differences in the quality of faculty contributions that are not accounted for in these regression analyses. Most faculty salary increases are allocated among individuals based on merit, and it is quite likely that individual differences in productivity over time account for a great deal of the unexplained variance observed here.

Beyond the broad generalizations reported from this analysis, a more detailed, qualitative, case-by-case analysis must be performed by individuals who have context-specific knowledge of the faculty member's career history and professional performance. School/department-level analyses can focus on the individuals with large negative or positive disparities between their predicted and actual salaries to determine what productivity differences or other factors that could not be measured here might account for the observed gap.

Tenure and Promotion Study

Methodology

The employment histories of cohorts of newly hired tenure track assistant professors (1994-2003) and newly appointed tenured associate professors through hiring or promotion from assistant professor (1990-2000) were analyzed for evidence of sex and race/ethnicity differences in promotion rates and time-to-promotion that are not easily explainable by other factors.

Data for this study were derived from the University's Human Resources Data Warehouse, and supplemented and validated using the University's official Fall Personnel Data Files, payroll system extracts, hardcopy personnel files, and internet searches. Some historical information that might have provided a clearer picture of variations in individual faculty career progression did not exist in electronic form or had not been systematically maintained for the purpose of conducting statistical analyses. For example, incomplete data limited efforts to adjust time to tenure for personal leaves and tenure clock extensions for family-related obligations that disproportionately fall to females. Therefore, the reliability and validity of the findings reported here might have been compromised by the quality of data available for analysis.

Tenure/promotion rates and average time to promotion among those promoted were analyzed by gender, race/ethnicity, and academic unit. The Cox proportional hazards statistical model was used to examine differences in time to promotion as a function of gender and race/ethnicity after adjustment for important factors such as type of degree, experience, and discipline. Time to promotion was censored at the time that an individual resigned before being promoted. The reason for resignation could have been to take a more attractive position elsewhere or to seek alternative employment if promotion was unlikely. However, because the University has not consistently maintained data on place of employment after departure from UNC-Chapel Hill or on reasons for departure, the analysis could not account for these explanatory factors, which limits the usefulness of these findings of this study.

Results from Analysis of the 1994-2003 Assistant Professor Cohorts

Descriptive statistics for the tenure track assistant professor new hires are provided below.

				African-Amer.			Native Amer.
Table 3: New Tenure Track Assistant Professors Hired, 1994-2003 **Distribution by Gender and Race/Ethnicity**							
	Male	**Female**	**White**	**African-Amer.**	**Asian**	**Hispanic**	**Native Amer.**
TOTAL (N=568)	342	226	456	28	67	14	3
	60.2%	39.8%	80.3%	4.9%	11.8%	2.5%	0.5%

Promotion Rates and Years to Promotion from Assistant to Associate Professor

For all assistant professors in this cohort, promotion to associate professor also included conferral of tenure. As shown in Table 4, overall gender differences in the probability of promotion were small (men 64.6% vs. women 60.2%). Promotion rates for Asian (65.7%) and White (63.2%) faculty were higher than for the combined group of African-American, Hispanic, and Native American faculty (55.6%). These patterns were similar for Academic Affairs and Health Affairs, although the overall probability of promotion was substantially lower in Health Affairs (53.7%) than Academic Affairs (71.9%). Statistical adjustments for other factors in the time to event analysis (terminal degree, experience, and division) did not have a large effect on these differences.

Table 4: Assistant Professors: Percent Promoted to Associate Within 7 Years, and Mean Years to Promotion						
	All	Male	Female	White	Asian	All Others Combined*
Hired	568	342	226	456	67	45
Promoted	357	221	136	288	44	25
Promotion Rate	62.9%	64.6%	60.2%	63.2.%	65.7%	55.6%
Mean Years to Promotion	5.6	5.6	5.7	5.6	5.5	5.9
Includes African-American, Hispanic, and Native American.						

Across all assistant professors that were promoted, time to promotion was similar for females and males. Mean years to promotion was somewhat shorter for White and Asian faculty than for to the combined group of African-American, Hispanic, and Native American faculty.   Some differences in these patterns were observed between Academic Affairs and Health Affairs.   However, after statistically adjusting for other relevant factors (terminal degree, experience, division, etc.) the magnitude of all these differences was considerably reduced.

Results from Analysis of the 1990-2000 Associate Professor Cohorts

Descriptive statistics for the tenured associate professor cohorts are provided below.

Table 5: Tenured Associate Professors Appointed, 1990-2000 Distribution by Gender and Race/Ethnicity							
	Male	Female	White	African- Amer.	Asian	Hispanic	Native Amer.
TOTAL (N=535)	345	190	464	28	32	9	2
	64.5%	35.5%	86.7%	5.2%	6.0%	1.7%	0.4%

Probability of Promotion and Time to Promotion from Associate to Full Professor

Overall, the probability of promotion from associate to full professor within 10 years was lower for women (55.8%) than men (64.6%).   This deficit was larger in Academic Affairs than in Health Affairs.   Asian faculty had a higher rate of promotion within 10 years (75.0%) than White faculty (61.2%), and both groups had considerably higher rates than faculty in the combined group of African-American, Hispanic, and Native American (43.6%) faculty.

Table 6: Associate Professors: Percent Promoted to Full Professor Within 10 Years, and Mean Years to Promotion						
	All	Male	Female	White	Asian	All Others Combined*
Hired	535	342	190	464	32	39
Promoted	325	221	106	284	24	17
Promotion Rate	60.7%	64.6%	55.8%	61.2%	75.0%	43.6%
Mean Years to Promotion	5.5	5.6	5.8	5.6	4.8	5.9
Includes African-American, Hispanic, and Native American.						

Among faculty members who were promoted to full professor, mean years to promotion was similar for males (5.6) and females (5.8).   However, when compared by race/ethnicity, Asian faculty (4.8) achieved promotion to full professor nearly a year sooner than White faculty (5.6) and those from the combined group of African-American, Hispanic, and Native American faculty (5.9).   These patterns were observed in both Academic Affairs and Health Affairs.   These differences were essentially unchanged when statistically adjusted for other relevant factors in the time to event analysis (terminal degree, prior experience, and division).

Hiring Study

The Faculty Salary Equity Task Force examined hiring patterns of traditionally underrepresented minority faculty between 1994 and 2003, and the effects of the diversity programs implemented during that time.

Current Minority Initiatives

The Carolina Postdoctoral Program for Faculty Diversity (CPPFD), under the auspices of the Office of the Vice Chancellor for Research, was established in 1983 to develop scholars from underrepresented groups for possible tenure track

appointments at UNC-Chapel Hill and other research universities throughout the nation. The program has grown to a continuing class of 10 scholars who serve two-year postdoctoral appointments in the College of Arts and Sciences and the professional schools. As of July 2011, 151 scholars have participated in the program; 24% were subsequently hired by the University and 19% were still employed by the University.

The Simmons Scholar Program was established in 1994 to improve faculty diversity in the School of Medicine. In 2006, the School of Medicine reported that the program had been the single most successful tool for bringing underrepresented minorities to the faculty. They recommended further support for the program and for publicizing its availability for recruiting faculty other than research-oriented assistant professors.   Since 1994, 24 Simmons Scholars have been appointed, and of these, 14 remain employed by the School of Medicine.

The Provost's Target of Opportunity Diversity Initiative was established in 2001 to attract accomplished and talented new faculty members from all ranks and from underrepresented groups for tenure track [or tenured] appointments at UNC-Chapel Hill. The CPPFD fellows who have been hired by the University as faculty are appointed under the Provost's Target of Opportunity Diversity Initiative. Besides the CPPFD fellows reported above, 5 other faculty from minority groups were hired under this initiative between 1994 and 2003 and are still employed at the University.

Results

This analysis used the 568 new tenure track assistant professors hired by the University between 1994 and 2003 that were described in the Tenure and Promotion Study section of this report.   A total of 39.8% of those new hires were female and 19.3% reported a race/ethnicity other than White (see page 5 for a detailed gender and race/ethnicity breakdown of this population).

The hiring patterns during this time period for the three largest academic units are described below.   A notable percentage of these hires had been fellows in the Carolina Postdoctoral Program for Faculty Diversity (CPPFD) or appointed via the Simmons Scholar Program or the Provost's Target of Opportunity Initiative.

- College of Arts and Sciences: Of the 210 new hires between 1994 and 2003, only 16 (7.6%) were from underrepresented race/ethnicity minority groups. Of these, 6 (37.5%) had come to the University via the CPPFD. More specifically, 77% of all African American and Native American new hires in the College between 1994 and 2003 had been fellows in this program.
- School of Medicine: Of the 216 new hires, only 12 (5.6%) were from underrepresented minority groups. Forty-four percent of all African American and Native American new hires in the School of Medicine were either targeted hires, Simmons Scholars, or had been fellows in the CPPFD.
- School of Public Health: Of the 38 assistant professors hired during this period, 12 or 31.6% were minorities, one of which was appointed via the Provost's Target of Opportunity Initiative.

More recently, the impact of the CPPFD, the Provost's Target of Opportunity Initiative, and the Simmons Scholars Program can be seen in the increase in the percentage of minority assistant professors among all assistant professors at UNC-Chapel Hill from 21% in Fall 2003 to 29% in Fall 2009.   During this time period, Asians increased from 12.1% to 14.8%, African Americans increased from 5.3% to 7.3%, Hispanics increased from 2.6% to 6.4%, and Native Americans increased from 0.5% to 1.4% of all assistant professors at the University.

SUMMARY OF RECOMMENDATIONS

1. A study of this type should be done in the individual Schools on a rolling basis, with periodic re-evaluation of the regression model (perhaps every five years).

2. The Provost should appoint a task force comprising predominantly persons from outside the School of Medicine to investigate salary allocation practices in the School of Medicine, especially the Clinical Medicine departments, to identify the reasons behind the differences in salary by gender and race/ethnicity revealed in this study.

3. The unit head responsible for salary allocation for any faculty member whose salary deviates by 1.5σ or more (in either direction) from the value predicted by the regression analysis should be asked to justify the salary (in writing) to the Provost.

4. These explanations should be examined by a committee appointed by the Provost for this purpose.

5. The Provost should direct the Appointments, Promotion and Tenure (APT) committee to investigate evaluation and promotion practices in Academic Affairs to identify the reasons behind the differences in promotion rates by gender and race/ethnicity revealed in this study.

6. The Deans of the various Schools should direct departments and other hiring units within their schools to increase their efforts to recruit more minority applicants to apply for national searches.

7. Programs to foster the hiring of underrepresented minorities to the faculty should be further supported and expanded by the University.

8. The personnel record for each faculty member should contain a "compensation transcript," similar in spirit to the academic transcript kept for each student who attends the University. The "compensation transcript" should include the following items in addition to the conventional records:
    a. information regarding extensions of the probationary period
    b. information about the start-up package
    c. information about assignment of specific research space (where relevant) via a link to the eSPOTS database
    d. nominations to distinguished professorships
    e. information about outside offers and retention efforts
    f. RVUs (for Health Affairs faculty with clinical responsibilities)

9. Records for faculty members who came to UNC in or after 1980 should be transferred to the new personnel record system when it becomes available.

10. All academic units should be directed to include information about the destination of departing faculty members in the End of Employment form.

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[i] Faculty Salary Equity Task Force members included: Laurie McNeil, Chair, College of Arts and Sciences; Ada Adinora, School of Medicine; Amy Herring, School of Public Health; David Garcia, Douglas Kelly, and Abigail Panter, College of Arts and Sciences; David Parker, University Counsel; and Lynn Williford, Office of Institutional Research and Assessment.