Report of the Salary Equity Task Force

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Brief History of Salary Equity Issues at the University of Minnesota

In 1980, the University of Minnesota and a class of female academic employees entered into the *Rajender Consent Decree* in order to settle a class action lawsuit that began in the 1970s. Thereafter, a number of female academic employees filed individual salary discrimination claims, and efforts were undertaken from 1983-87 to collect the data necessary to conduct analyses bearing on the broader question of salary inequities based on gender. By 1988, the necessary data were collected, and in 1989, the University entered into a second consent decree to settle those claims. As part of this second settlement, the University agreed to augment the salaries of the class of female academic employees, including faculty, to maintain an up-to-date data base of salaries, and to conduct faculty salary assessments based on gender on an annual basis for a period ending in July 1992.

The University continued to maintain salary data by gender and to conduct salary analyses after 1992, and the last such analysis of faculty salaries was conducted in 1996 by Robert K. Toutkoushian in the Office of Planning and Analysis at the University of Minnesota. More specifically, Toutkoushian undertook a systematic study of salary increases for academic employees (both faculty and professional and academic staff members) employed continuously during the academic years 1994-1996. Among the findings provided in Toutkoushian's report was the conclusion that there were no significant differences in the salary increases accrued by male (average salary increases of 2.47%) and female (average salary increases of 2.45%) faculty.

Given that the last large-scale systematic study of salaries at the University of Minnesota was conducted in 1996, and given the ongoing commitment of both the University of Minnesota and the Equal Employment Opportunity for Women Committee (EEOWC) to detecting and addressing inequities based on gender and race/ethnicity, the EEOWC has worked over the last few years to secure another assessment of faculty salaries based on gender and race/ethnicity. Efforts were hampered until this year by the departure of Robert Toutkoushian, by conversion to PeopleSoft data management software, and by a lack of funding to support the analysis of such a large volume of salary data.

At a meeting of the EEOWC in 1998, Vice-President and Provost Robert Bruininks endorsed the proposal of the EEOWC to conduct a new analysis of salaries, and he committed funds from his office to support the work of a graduate student who would work under the immediate supervision of a faculty member in Applied Statistics.

What follows in this brief report is a summary of the data analytic methods used and of the findings thereby generated.

The Current Study: Data Analytic Strategy

All of the analyses described in this working paper were conducted at the request of and in consultation with the Salary Equity Task Force, a task force established by the Equal Employment Opportunity for Women Committee, which Prof. Mindy Kurzer chaired during the 1998-99 academic year, and which Prof. Marti Hope Gonzales chaired during the 1999-00 academic year.

At a series of meetings, the Salary Equity Task Force met with Professor R. Dennis Cook of the School of Applied Statistics on the St. Paul Campus, and with his research assistant, Ms. Yun Ju Sung, to determine the choice of academic units for analysis. A primary consideration was the number of tenured and tenure-track faculty in demographic categories of interest (i.e., gender, race/ethnicity). Units in which there were too few men, too few women, or too few faculty of color were excluded from consideration, given the possibility of unreliable results based on sample sizes that were too small. Given these constraints, a total of twelve units (including two coordinate campuses) were retained for further analysis.

Ms. Sung assumed primary responsibility for conducting the analyses, and she worked under the immediate supervision of Professor Cook. Funding in support of this Task Force project was provided by the office of Executive Vice President and Provost Robert H. Bruinninks; more specifically, his office provided a stipend to support Ms. Sung during both the 1998-99 and 1999-00 academic years, during which the analyses were conducted.

Results of the analyses of salary equity by gender and race/ethnicity described in this report were based on a total of 2,288 tenured or tenure-track faculty employed at the University of Minnesota (Twin Cities and coordinate campuses) during the academic years 1993-1997, inclusive. Data used for these analyses were provided by Gary Ogren of the Office of Human Resources on the Twin Cities campus.

Table 1 provides a list of the academic units included in the analyses, and also provides the total number of faculty whose salary data met the inclusion criteria. It should be noted that although it was possible to segment the Twin Cities Campus of the University into smaller academic units (schools or colleges), a similar segmentation of the coordinate campuses yielded sample sizes that were too small to produce reliable results. It should also be noted that it was decided by the Task Force to omit the Medical School on the Twin Cities campus. It was the consensus of Task Force members that salary determinations at the Medical School were sufficiently complex as to render salaries incomparable to salaries in other units, and therefore to render those data uninterpretable and unusable.

Table 1
Academic Units and Number of 1997 Faculty Salary Data Points Used in the Analyses.

Academic Unit	No. of Faculty
College of Liberal Arts (TC Campus)	399
Institute of Technology (TC Campus)	323
College of Agriculture, Food, and Environmental Science (TC Campus)	171
College of Human Ecology (TC Campus)	47
School of Public Health (TC Campus)	53
College of Pharmacy (TC Campus)	34
College of Biological Sciences (TC Campus)	58
School of Veterinary Medicine (TC Campus)	63
College of Education and Human Development (TC Campus)	107
Carlson School of Management (TC Campus)	80
University of Minnesota-Duluth Campus	225
University of Minnesota-Morris Campus	65

To determine the feasibility of this complex project, data from the College of Liberal Arts on the Twin Cities campus of the University of Minnesota were employed. The primary outcome in this pilot analysis was the 1997 salary of white male faculty, women faculty (including women of color), and male faculty of color who were continuously employed in the College of Liberal Arts in tenured or tenure-track faculty positions during the years 1993-1997, inclusive. For analytic purposes, the criterion variable was in fact a log transformation of $20,000 less than faculty members' actual 1997 salary (in dollars)[1]

Initial analyses of the College of Liberal Arts salary data first compared the 1997 salaries of white male faculty to other faculty (i.e., all women faculty, including women of color, and male faculty of color). More specifically, a linear regression model was generated to predict the 1997 salaries of white male faculty members. Predictor variables were limited to reliable data provided by the Office of Human Resources, and included (1) the year of faculty members' hire (to account for years of service as a predictor of 1997 salaries); (2) year promoted in rank (to account for salary augmentation following promotion from assistant to associate or from associate to full professor), (3) faculty rank (to account for salary differences as a function of academic rank); and (4) the academic department with which faculty were affiliated (to account for differences between or among departments in faculty members' 1997 salaries).[2]

[1] More specifically, the criterion variable used in this model can be represented as $\log_2$ (1997 salary-$20,000). This particular transformation is the most commonly used transformation to "normalize" the distribution of salaries under consideration.

[2] In essence, inclusion of these predictor variables reduced the number of alternative explanations for any salary inequities that *might* be detected. For example, were it to be found that the average salary of female professors was significantly lower than the average salary of male professors, such a discrepancy could not be explained by reference to differential length of service, academic rank, promotion during the five years under consideration, or the specific academic department with which faculty members were affiliated.

The regression model generated by the data from white male professors was then used to predict the 1997 salaries of non-male/non-white faculty in the College (i.e., all female faculty, and male faculty of color). To the extent that the model generated using white male faculty data provided for accurate predictions of the 1997 salaries of female faculty and male faculty of color, salary equity is evidenced.

The Current Study: Results

Encouraged by the workability of the data analytic strategy employed in the sample of College of Liberal Arts faculty, comparable analyses were conducted on the other 11 units listed in Table 1. That is, linear regression models were generated to predict the 1997 salaries of white male professors, and when sample size dictated, the models generated for white male professors were used to predict (1) the salaries of female faculty, (2) the salaries of male faculty of color, and/or (3) the salaries of all female faculty and male faculty of color. Results of those analyses revealed that there are two units in which salary discrepancies are statistically significant (i.e., do not appear to be due to chance).

Given these apparent salary discrepancies between white male faculty and female faculty in one unit, and between white male faculty and male faculty of color in another unit, the Salary Equity Task Force recommended that a more detailed examination of these two units be undertaken. To the extent that lower salaries for women or for men of color can be explained with reference to variables not included in the model used in the current analyses, salary inequities based solely on gender or race/ethnicity cannot be assumed.

Over the summer of 2000, conversations were held between representatives of the Equal Opportunity and Affirmative Action Office and representatives of the two academic units in question. Exchanges will continue as these representatives work together to identify the source(s) of the above noted salary discrepancies.