UW-L Instructors' Annual Salaries:
The Effects of Rank, Gender, and College

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ABSTRACT

The purpose of this paper is to determine the effect of rank, gender, and college on full-time UW-L instructors' salaries for the academic years 1998-1999 and 1999-2000. The data used in this study is from *The University of Wisconsin System 1998-99 and 1999-00 Budgets, Volume III*. Multiple regression analysis was conducted on a sample of 350 instructors for 1998-99 and 336 instructors for 1999-00 from the four colleges at UW-L. The results show that once college and rank is taken into consideration, gender loses its statistically significant effect on salary in 1999-00. Future researchers are encouraged to explore why women instructors are concentrated in the lower ranks and in the lower-paying colleges.

INTRODUCTION

Empirical research on the gender wage gap has uncovered a great deal about its trends and explanations. Overall, there has been a significant reduction in the gender gap in the U.S. over the past 25 years. In 1969, full-time women workers were earning approximately 56% on average of what their male counterparts were earning. That ratio increased to 71% in 1994 (Blau, 1998). Explanations for the reduction in the wage gap include increased educational attainment of women, higher demand for women workers as the economy became more service-based, increased labor market opportunities for women due to anti-discrimination legislation, and a reduction in the real wages of men over this time period.

However, a wage gap continues to persist. Two possible explanations are a concentration of women in lower-paying occupations and in lower-paying industries. (Blau, 1998; Cortis, 2000). This paper will explore these two explanations for the gender salary gap that exists among UW-L faculty. The purpose of this research is to determine if the gender salary gap can be explained by the fact that men are more likely to be in the rank of professors, the highest academic rank, and employed in the higher-paying colleges compared to women. I will study the effect of rank, gender, and college on UW-L professors' annual salaries.

Gender pay equity has been studied within university settings. For example, in a study of gender pay equity conducted by Indiana State University, researchers found a consistent pattern of salary bias due to gender (Lamb, 1999). Researchers at Indiana University-Purdue University, Indianapolis, performed a similar pay-equity study (Carlin and Rooney, 2000). They found that male instructors earned on average over 20 percent more than female instructors. They then went on to show that factors such as rank, seniority, and college explained some of the gap.

Studying salary differences is important for a number of reasons. One is that it will provide people going into teaching with information about whom gets paid the highest salary

and why. Second, it will interest current UW-L faculty members. Finally, some unusual results showing pay inequality or discrimination may be found, and UW-L may look at these results to make proper adjustments if it deems the problem to be large enough. In the long run, universities may benefit from studies such as these by avoiding future earning disputes.

HYPOTHESIS

I hypothesize that there is a statistically significant relationship between the rank, gender, and college of professors, and their annual salaries at UW-L.

METHODS

In order to test my research hypothesis, I used data from the *University of Wisconsin System 1998-99 and 1999-00 Budgets, Volume III,* also known as the "Red Book." It contains budgets for every department for all University of Wisconsin system schools, including faculty salaries, residence hall budgets, sports budgets, and other various salaries and budgets. The universities use this particular book for future budgeting and planning purposes.

The sample consisted of all 350 full-time instructors at UW-L for the school term 1998-99, and 336 full-time instructors for the following school year of 1999-00. For this research, faculty annual salaries was the dependent variable while rank, gender (0=male, 1=female), and academic college were the independent variables. There are five levels of rank: professor, associate professor, assistant professor, lecturer, and associate lecturer. The four academic colleges at UW-L are the College of Business Administration (CBA), the College of Liberal Studies (CLS), the College of Science and Allied Health (SAH), and the College of Health, Physical Education, Recreation, and Teacher Education (HPERTE). To avoid multicollinearity problems, the College of Business Administration was used as the omitted college in the multiple linear regression test for relationship.

DESCRIPTIVE STATISTICS

Tables 1 and 2 show the breakdown of the data by rank for each year. Table 3 provides the frequency distribution by college for 1999-00, which was very similar to that of 1998-99. In addition, the percent of the sample that was female was 63% in 1999-00 and 65% in 1998-99. Tables 4 and 5 provide average salary by gender. Independent samples t-test results show the differences to be statistically significant (p=.000). From 1998-99 to 1999-00 there was an increase of about $2,000 in males' annual salaries. The increase in female salaries was about $3,000. While on average female annual salaries are considerably lower than males, they are increasing at a higher rate.

A possible explanation for the gender difference is that women are disproportionately employed in the lower-paying ranks and lower-paying colleges compared to men. Figure 1 shows gender breakdown by rank for 1999-00. Women made up 22% of full professors and 65% of lecturers. Further, in 1999-00, women comprised 30% of the CBA, the college with the highest average salary ($64,421), but 42% of CLS, the college with the lowest average salary ($45,699). Average salary by college and gender is given in Figure 2.

Table 1. Frequency Distribution of Rank for 1999-2000

RANK

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	professor	113	33.6	33.6	33.6
	associate professor	96	28.6	28.6	62.2
	assistant professor	90	26.8	26.8	89.0
	lecturer	34	10.1	10.1	99.1
	associate lecturer	3	.9	.9	100.0
	Total	336	100.0	100.0	

Table 2. Frequency Distribution of Rank for 1998-1999

RANK

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	professor	125	35.7	35.7	35.7
	associate professor	101	28.9	28.9	64.6
	assistant professor	76	21.7	21.7	86.3
	lecturer	46	13.1	13.1	99.4
	associate lecturer	2	.6	.6	100.0
	Total	350	100.0	100.0	

Table 3. Frequency Distribution of College for 1999-2000

COLLEGE

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	CBA	44	13.1	13.1	13.1
	CLS	129	38.4	38.4	51.5
	SAH	100	29.8	29.8	81.3
	HPRTE	63	18.8	18.8	100.0
	Total	336	100.0	100.0	

Table 4. Mean Salary by Gender for 1999-2000

Group Statistics

	GENDER	N	Mean	Std. Deviation	Std. Error Mean
SALARY	male	213	53109.91	12556.769	860.376
	female	123	46965.17	10954.910	987.771

Table 5. Mean Salary by Gender for 1998-1999

Group Statistics

	GENDER	N	Mean	Std. Deviation	Std. Error Mean
SALARY	male	226	50780.22	12071.401	802.978
	female	124	44085.23	11256.869	1010.897

Figure 1

Gender Breakdown by Rank
1999-00

Figure 2

Average Salary by College and Gender
1999-00
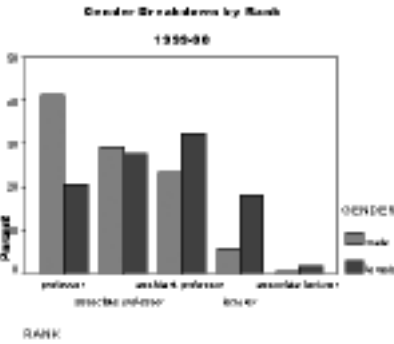
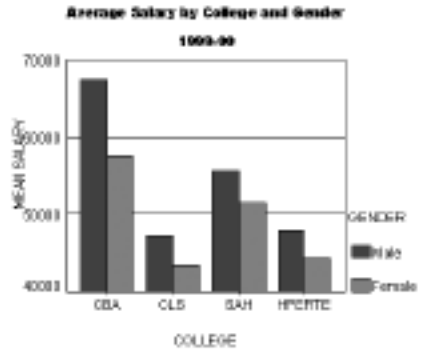## REGRESSION RESULTS

Multiple regression analysis allows me to control for the effect of rank and college on salary. Table 6 shows the results of the regression analysis for 1998-99. A significant relationship exists between rank and salary (p-value=.000). Each additional level of rank increases annual salary by an average of $7,022.71 holding other factors constant. Gender also has a significant effect on annual salary (p-value=.082). For this year, being female reduces annual salary by an average of $1,576.27 holding other factors constant. The p-values for each college are .000. When compared to the CBA, CLS faculty are paid annually on average $16,974.47 less, SAH $8,976.44 less, and HPERTE $14,096.89 less holding other factors constant.

Table 6: Regression Results for 1998-99

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	68872.909	1262.917		54.535	.000
	HPERTE	-14096.9	1483.934	-.465	-9.500	.000
	RANK	-7022.705	404.281	-.613	-17.371	.000
	GENDER	-1576.266	903.428	-.062	-1.745	.082
	SAH	-8976.438	1392.384	-.334	-6.447	.000
	CLS	-16974.5	1345.001	-.676	-12.620	.000

a. Dependent Variable: SALARY

The regression results for 1999-00 are given in Table 7. A significant relationship exists again between rank and salary (p-value=.000). Each additional level of rank earned increases annual salary by an average of $7,140.95 holding other factors constant. However, gender is no longer significant after controlling for the other factors.

For 1999-00, the p-values for each college remain at .000. When compared to the CBA, all other colleges are paid less at a rate higher than the previous year. CLS faculty are paid annually on average $18,314.94 less, SAH $9,506.47 less, and HPERTE $16,890.20 less, holding other factors constant.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	72354.502	1213.633		59.618	.000
	HPERTE	-16990.2	1471.793	-.535	-11.476	.000
	RANK	-7140.950	410.836	-.598	-17.381	.000
	GENDER	-485.035	886.465	-.019	-.547	.585
	SAH	-9506.469	1351.108	-.353	-7.036	.000
	CLS	-18314.9	1307.819	-.723	-14.004	.000

[a.] Dependent Variable: SALARY

Table 7: Regression Results for 1999-00

CONCLUSIONS AND RECOMMENDATIONS

Overall, my hypothesis was correct for 1998-99: there was a statistically significant relationship between the rank, gender, and college of professors and their annual salaries at UW-L. However, although rank and college retain their significant effect on salary, gender is no longer significant in the following year of 1999-00.

Future research should continue to explore pay inequities by gender, and examine how much could be due to experience. Future researchers are encouraged to explore why women instructors are concentrated in the lower ranks and in the lower-paying colleges. It would be interesting to continue this research at UW-L to determine if the narrowing of the salary gap by gender observed in the two years of the study continues. In the future, I would like to compare my results above with similar research done in Spain. I think the outcomes in Spain would vary significantly due to their economic situation, the number of professors of each gender, and differences in the setup of rank and college.

LIMITATIONS

The main limitation of this study is that there was no way of determining how long each faculty member had been employed with the university or degree of instructors, which can have a large effect on salary. It was also impossible to account for changes each year due to new faculty members, department budget changes, retired faculty, and increases in rank among existing faculty.

ACKNOWLEDGEMENTS

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