Salary Anomalies Among Faculty Members and Librarians at the University of Windsor, 2002

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Introduction

This report is in two parts. The first is a regression analysis of anomalies based on faculty member and librarians' age, experience, rank, and so on. It is much like my previous analysis of salaries under the last contract. The second part describes the results of survey asking WUFA members' to indicate whether they are Aboriginal persons or members of racialized communities, if they have a disability affecting work or which, though not affecting their work, might give rise to unequal treatment, and their gender. The survey results, it will be shown, do not give grounds for changing the first analysis.

Part 1. Regression Analysis of Salaries

The regression analysis of salary anomalies employs the same methodology as its July 2001 predecessor. Since most faculty members and librarians received incremental increases in the most recent collective agreement, the results must also be quite similar. Anomalies adjustments under the previous agreement and staff turnover, of course, produce some change in the salary structure.

Once regression models predicting the salaries of faculty and librarians have been developed, a salary "anomaly" is just a large difference between a person's actual and predicted salary. Although the regression procedure is objective, two judgments play critical roles in the results. First, deciding which factors constitute legitimate bases of salary difference – and so can be included as predictors in the regression – embodies a view of what constitutes fair grounds for salary differences. Second, one must decide how large a salary difference constitutes an anomaly and whether such an anomaly reflects unfairness or unusual, but not unfair, circumstances affecting a person's salary, which are not "captured" by the regression model.

This analysis is guided by discussion at a meeting at the University of Windsor on 16 December 2002 that included representatives of the administration of the University of Windsor, the Windsor University Faculty Association (WUFA), and of the Department of Human Resources. Further clarification was provided by e-mail correspondence among the writer, WUFA President Brian Brown, University Vice-President Neil Gold, and Director of Human Resources Rita La Civita. The administrative data on which the regression is based were provided by Ms. Lea Janisse.

In addition to identifying individual salary anomalies, it was agreed that the analysis should determine the impact on salaries, if any, of three structural factors affecting groups of faculty members. These are:

a. *Unusual variation in salaries within departments and (non-departmentalized) faculties*
   The concern was that faculty members in some units might have salaries that were normal in relation to the faculty as a whole, but unusually low relative to colleagues in

their units. Essentially, the question is whether some units exhibit unusually large variation in salary, *after* taking account of across-the-board predictors of salary, such as age, experience and rank.

b. *Potentially lower salaries of persons hired during the years of the NDP government's Social Contract*
The question to be investigated is whether, due to government imposed budgetary constraints, faculty members hired in the *Social Contract* years might have had lower initial salaries, to their long term disadvantage. The years of concern, it was agreed, were 1992 to 1996.

c. *Potentially lower salaries of more senior women faculty*
The 2001 analysis showed that there was virtually no difference in the salaries of women and men adjusted for age, unit and other personal characteristics. A pattern found in some in some other institutions, however, is that despite *overall* equality in the salaries of women and men (accounting for age, experience and other factors), older women are substantially disadvantaged, while younger women are not, and may even be paid more than men with similar characteristics. Any such pattern can be discovered by examining the salaries of women and men within categories of age.

Regression Analysis for Faculty

The regression analysis began with almost exactly the same variables used in 2001, including:

- gender
- age when hired by the University of Windsor (not current age, used previously)
- whether the person has a completed doctorate
- rank when hired
- whether hired into an administrative position
- years of experience at the University of Windsor
- total merit pay at the University, and number of times awarded merit pay
- department (or faculty for faculties without departments)
- highest administrative post held and
- measures of the speed of promotion

Not all these variables significantly affected salary and those that did not were dropped from the equation. These included gender, the number of merit pay awards, some of the measures of speed of promotion and some categories of "highest administrative position." Of the various administrative positions a faculty member could have held, only having served as a Dean or having an "other administrative position" was related to salary; serving as a co-ordinator, department or area head, or associate dean did not affect salary and these measures were dropped from the equation. Table 1 shows which variables were retained in the faculty regression.

Of course, the results of any regression depend on who exactly is included in the analysis. This is straightforward, except that the parties agreed to *exclude* two persons whose salaries were

adjusted and to *add* three faculty members with limited term appointments in 2002 and regular appointments from 2003 on.

In order for the regression to provide a basis for analyzing anomalies, it must predict salary fairly precisely, indicating there is an orderly salary structure from which to measure differences. The regression procedure does not create this consistency, but only "captures" existing regularities in the salary structure corresponding to the predictor variables. The regression equation shown in Table 1 accounts for 92.3 percent of the variation in faculty salary, which is completely satisfactory; omitting the two administrative service variables, 92.1 percent of the variation is explained. These two figures are "adjusted for degrees of freedom," which means they exclude the small amount of explained variation that results from chance.

Even with this very high degree of prediction there are considerable differences between the observed and predicted salaries. The extent of these differences is measured by the "standard error of estimate," which is the standard deviation of the difference between predicted and observed salaries, computed over all the faculty members. The standard error of estimate in faculty salaries predicted from the regression is $5088 ($5161, omitting the two administrative variables). Assuming the anomalies are approximately normally distributed ("bell shaped"), about 30 percent of faculty members would have salaries $5000 or more from the values predicted by the regression, and about 5 percent would be $10,000 or more from their predicted salaries. Table 2 shows this is about right and also that the regression models with and without the two administrative variables yield very similar distributions of anomalies. Not surprisingly, about half the differences between actual salaries and those predicted from the model (the "residuals", in statistical terminology) are negative, indicating a salary *below* the regression prediction, and half positive.

The regression coefficients in Table 1 show the effects of the various predictors on faculty salaries. Most of the coefficients are self-explanatory, as they measure the impact of having a particular attribute. For example, taking account of all other factors, a faculty member initially hired at the rank of associate professor earned an average of $8,821 more than a faculty member hired at the (more usual initial) rank of assistant professor. Table 1 also indicates – see the figure to the right of the dollar figure – that 54 of the total of 433 faculty members at the University were hired at the rank of associate professor.

In order to determine the impact of age when hired, of years of service at Windsor and its square (designed to capture "non-linearity" in the effect of experience on salary), and of merit pay one *multiplies* the regression coefficient by the appropriate number of years, etc. *Each* year of experience, for example, corresponds to a salary increase of $1071, net of all other variables in the regression.

The second part of Table 1 shows the differences among departmental and faculty units, relative to the average for all units. Thus the coefficient of -$1,800 for "Classical & Modern Languages, Literature & Civilization" means that faculty in that department are paid an average of $1,800

less than the average for all units (weighting each department proportional to the number of faculty in the unit). The unit averages in Table 1 take account of inter-unit differences in the distributions of rank, age, and all other characteristics of faculty included in the regression (and show in the first page of Table 1). Departmental salary differences are often attributed to "segmentation" of the market for academic labour, reflecting supply and demand in each discipline.

Table 7, provided on a separate file, gives the observed and predicted salaries for each University of Windsor faculty member, along with their difference in dollars and percentage terms. Separate figures are given for the two equations with and without the two administrative service variables. While only employee numbers and not names are given in the file, note that information on year of hire, rank and department makes it possible to identify individuals in this file. For convenience the file is sorted in order of the differences between the observed and predicted salaries, with the person with the largest negative anomaly first.

The distribution of anomalies for Windsor faculty is given in Table 2. One faculty member has a salary more than $15,000 below its regression-predicted value; eight faculty members have salaries between $10,000 and $14,999 below their predicted values; another seven have salaries between $8,000 and $9,999 below their predicted values; and so on. Interestingly, five faculty members have salaries that *exceed* their predicted values by $15,000 or more.

Regression Analysis for Librarians

With only 22 librarians on staff, it is necessary to find a regression model that predicts salaries well with just a few variables. The regression shown in Table 3 accomplishes this, using rank, age when hired, experience, total merit pay, holding a doctoral degree, and having been a department head to explain 97.3 percent of the variation in librarians' salaries (without the "department head" measure, 96.9 percent). Table 8, which also includes information that could identify individuals, shows that one amonaly is about $4000 and two others are in the $2000 to $3,000 range.

Unusual Variation in Faculty Salaries *Within* Some Units?

Table 4 provides information about the variation in salaries *within* departmental/faculty units, *after* accounting for the personal characteristics of faculty members measured in the regression. The analysis is based on the residuals from the regression – the differences between observed and predicted salaries *of all the members of each unit*. Since the department is one of the predictors in the regression, the *average* residual within each department is exactly zero; whether a department exhibits high variation has nothing to do with the average rate of pay in the department.

A reasonable measure of the degree of salary variation within a department is the standard deviation of the salary residuals for all members of the department. By this standard, two departments, both in Engineering, stand out as having unusually large internal salary variation. For the Department of Industrial and Manufacturing Systems Engineering, the standard deviation

of the salary residuals is $13,001. The next highest values are $9,129 for Social Work and $8,097 for Mechanical, Automotive and Materials Engineering. No other value exceeds $7,500.

Examining the units, in Table 4, it is difficult to generalize beyond saying that the humanities and social science units exhibit less internal variation in salaries. In the other faculties, however, the departments seem quite different. For example, two of the five engineering departments have very low variation, while three exhibit high variation.

Effects of Being Hired During the "Social Contract" Years

Table 5 shows the pay of persons hired in each of the "Social Contract" years – 1992 to 1996 – compared to persons hired before and after. Again, the figures in the Table are based on the differences between the observed and predicted salaries *after* removing the effects of salary differences between departments and differences in the qualifications of new faculty.

Persons hired in 1992 did indeed have salaries an average of $3,646 *below* the regression prediction, but the average salaries of persons hired in 1993 and 1994, respectively, averaged $4702 and $4375 *above* the model predictions; in 1995-96 (based on just seven persons) was $372 below the prediction. These unsystematic differences imply that there is no reason to think faculty members hired during the *Social Contract* period had unfairly lower starting salaries. On the other hand, it is surprising to see that the years 1991-1994 are the most discrepant compared to all other years, and that the first two of these years produced lower than average salaries and the next two produced higher than average salaries.

Are More Senior Women Faculty Disadvantaged?

After accounting for salary differences between departments and the effects of other individual characteristics, the initial regression showed essentially no difference in the salaries of women and men faculty. For this reason, gender was not used as a predictor in the faculty regression equation. Table 6 shows, further, that there is no significant gender variation in salaries anywhere in the age range. Note that there is some age variation not captured by the model, but the overall deviations are quite small.

Summary, and Comment on the Use of these Results

These results are very similar to those obtained in the first such analysis, in 2001. Reflecting a very regular salary structure, faculty salaries are highly predictable. At the same time some individuals have anomalous salaries, above or below their predictions by substantial amounts. The faculty members with salaries many thousands of dollars below their predicted levels are candidates for anomalies adjustments. For librarians, the magnitude of the anomalies is quite small, reflecting a highly standardized salary distribution.

Since the anomalies are provided in a spreadsheet, it is quite easy to determine the effects of any remedial plan. For example, reducing all faculty anomalies exceeding $5,000 to that figure would cost about $132,000. Reducing anomalies for librarians to $2000 if they exceed that amount would cost about $2,300.

Being hired in the "Social Contract" years or being an older women faculty member had *no* discernable negative effect on salary, controlling for the other predictors in the regression equation. So there is no need to address these issues.

There is more salary variation within some departments than others. Two departments in Engineering, exhibited unusually large internal variation in salaries. Because the regression imposes the condition that the total of all anomalies in each unit must be zero, units with high variation must have large anomalies – the variation is a measure of these anomalies – *both* negative and positive. These computed results, of course, do not tell us *why* the hiring in a particular department would involve such large departures from institutional norms.

The question of how to use results of this kind is to some extent independent of the exact results, though a body of practice and statistical considerations can be of some help. Almost always the practical question is how to distribute a limited amount of funds to address anomalies whose total seems much larger.

The first point is to recognize that, short of a salary grid, the processes of salary-setting in universities produce "natural" variation in which some faculty must be below the average and some above. A second point is that not all large anomalies reflect unfairness – occasionally a large anomaly reflects some peculiarity of the bargain struck when a person is hired; she or he might have a lower salary because she or he had income from another job or pension when hired, or the person might have take a position at a lower rank or lower salary in order to get a job in a particular city. What seemed like fair bargains at the time of hire may no longer be seen this way a few years later, especially when the implications for a person's pension become clear. There are no rules for dealing with these unusual situations.

It may be reasonable to think of anomalies as arising for two different reasons, requiring different remedies. Anomalies may arise from a discrete decision, typically from an unusually low starting salary due to the university's financial circumstances at the time, something unusual about the person being appointed and/or his or her qualifications, or something that dramatically affected the parties' bargaining when an offer was made. In such cases, it may be reasonable to rethink the decision and provide compensation. Other anomalies do not so clearly represent a discrete decision, but an unlucky combination of circumstances, such as labour market conditions in the year a person was hired, peculiarities of a unit's or the university's budget at the time, views of the candidate's qualifications, and so on. For such persons, whose low salaries do not have a single clear cause, it is appropriate to employ a general policy designed to push up the bottom of the salary distribution.

For anomalies of the second kind, three guidelines are generally applied in remedying anomalies: 1) provide greater compensation to persons with larger anomalies; 2) ensure that the *order* of salaries is not changed by the anomalies settlement, sometimes termed "no leapfrogging"; and 3) below some limit do not make any change – to prevent the settlement funds being distributed to

many individuals in such small amounts that adequate compensation is denied to persons who are significantly underpaid.

Many *different* and reasonable formulas satisfy these conditions. For example, one could bring all salaries with anomalies exceeding a certain amount down to a fixed minimum – perhaps also dealing separately with unusual cases and/or excluding anomalies seen as justified. Another scheme would be to reduce all anomalous salaries beyond a fixed amount by the same fraction, say by one half. When there is a small number of very large anomalies, these could be treated separately, with other anomalies beyond some limit subject to reduction by a fixed fraction. Still another alternative is to break the anomalies into a small number of groups – say three or four – and apply a different percentage reduction in the anomaly to each group (paying attention persons with salaries near the boundaries of the groups, in order to avoid leapfrogging).

Part 2. The Survey of Faculty and Librarians

The survey, administered mainly over the web (accounting for more than 90 percent of the returns), and also by means of printed questionnaires, asked five questions. Two questions asked if the respondent was "an aboriginal person" or "a visible minority person." These questions were modelled on the 2001 Canadian Census. The second offered the responses, White, Chinese, South Asian, Black, Filipino, Latin American, Southeast Asian, Arab, West Asian, Japanese, Korean and Other (respondents were asked to specify which group). A third question asked about gender, but since the personnel files already include this measure, those responses are not considered.

The other two questions asked if the respondent had a disability that "reduced the amount or kind of work you were able to do as a faculty member or librarian," or a disability *not* affecting her or his work but which "was visible or known to your colleagues and might have disadvantaged you." For both questions, respondent was asked to describe any disability as "minor" or "major".

The assurance of the survey's confidentiality was as follows, "No questionnaires will be kept by WUFA or in University of Windsor files." In order to preserve the confidentiality of the results, only approximate counts of the numbers of responses are given here. Naturally, the focus is not on counting the numbers of persons in the various categories, but on determining whether these distinctions affect salaries.

Even with guarantees of confidentiality, it is Canadian practice to make self-identification voluntary and to make *no* attempt to use other means to identify the characteristics of survey non-respondents. This is the norm, for example, in conducting censuses to fulfill a university's obligations under the Federal Contractors Program.

Numbers of Faculty and Librarians who are Aboriginal, members of a Visible Minority Group and have a Disability, and Related Methodological Issues

Of the 455 faculty members and librarians covered by the anomalies exercise, 302 completed the survey, for a response rate of 66 percent. A few survey respondents did not answer all the questions or did not answer them fully. For example, one respondent indicated that she or he had work-related disability, but not whether it was "major" or "minor". Also, the "other-specify" responses for "race" are so different that they cannot be used individually and 2 or 3 do not meet the conventional criteria for "visibility".

Of 300 valid answers to the questions, less than five faculty members and librarians indicated they were Aboriginal, between 70 and 75 indicated they were members of a visible minority group and about 225 answered "white". In the visible minority category:

- less than five faculty members and librarians indicated they are East Asian people (adding the categories for Filipinos, Japanese and Koreans and "other, specify" answers for other East Asian and Pacific counties, such as Vietnam)
- less than five are Latin American people
- between 5 and 9 are West Asian people
- between 5 and 9 are Black people
- between 10 and 14 are Arab people
- between 15 and 19 are Chinese people
- between 20 and 24 are South Asian people.

A very small number of respondents gave two answers.

There were 294 valid answers to questions about disabilities. While it seems likely that the eight persons who returned the survey without completing these answers meant to indicate they had no disability, the answers are just treated as missing. Between 15 and 19 faculty members and librarians indicated they had a disability with a "minor" effect on their university work, between 5 and 9 indicated they had a disability with a "major" effect. In addition, between 10 and 14 persons with disability affecting their work, said they had a disability with a "minor" effect on their *non-work* activities, but which was visible and might subject them to unfairness. As measured in the survey, disability is much less common for faculty members and librarians under the age of 40, which suggests that most disabilities developed *after* a person is hired.

The effects on salaries of being an Aboriginal person, a member of a visible minority group and having a disability are easily estimated using the regression framework on which the analysis of anomalies is based. This involves exactly the same assumptions (agreed by the parties) as the analysis in the first part of this *Report*.

Non-response is a major concern for the Windsor survey. There is no statistical fix to make up for information one does not have. Certainly, we cannot assume that persons who did not answer the questionnaire were, on average, the same as the respondents. Nor is it reasonable to think of the non-respondents as a single group. For this reason, the results reported below are for the survey respondents *only* (with the effects of the variables such as age, experience and

departmental/ faculty unit are re-estimated for the survey respondents only, *not* taken from Table1). These results should be taken seriously, but we cannot know exactly how they differ from the results that would be obtained if information was available for all Windsor faculty members and librarians. This is a problem plaguing all evaluation research based on voluntary self-identification, including the Federal Contractors Program.

While non-response is endemic in survey research, the seriousness of this concern depends on the level of non-response, and also on the consequence of the research findings. Good academic studies of elections, which result in research publications but no actual policy, for example, typically have response rates of about fifty percent. On the other hand, Statistics Canada expects response rates well above 90 percent in the monthly Labour Force Survey, used to measure the unemployment rate and guide national economic policy.

The practical question is what to make of a survey with 66 percent response, designed to assess systemic inequality in salaries and, potentially, to provide a basis for financial remedies. The answer must depend on the extent of the measured disparity, with statistical significance providing a rough guide, in combination with an assessment of the magnitude of the observed disparity. A difference of a few hundred dollars a year in salary is too small to worry about, even if it is statistically significant, while a difference of many thousands is concern, even if it is not significant. The problem is how to draw lines between disparities that demand action, disparities that raise concern but for which the evidence is not certain, and disparities too small to merit concern. Answering this question, involves professional judgement; and potentially disagreement among qualified experts.

A related problem concerns the groups to be compared. From much other research, we know that it is not appropriate to lump all members of a visible minority into a single category. But this means we must analyze data for some visible minority categories with very small numbers of respondents. The same is true for the measurement of disability, with between 5 and 10 persons saying they have a disability with a "major" effect on their ability to work.

As long as there are at least two members of a group, regression can be used to compare the salary of members of the group to the majority. If there is just one person in a category it is impossible to distinguish her or his personal "anomaly" from the characteristic of her or his group. The estimate of the average difference in the salary of members of a potentially disadvantaged group and the majority has an associated uncertainty (measured by the "standard error" of the regression coefficient), which is greater if the group is smaller. Roughly, the uncertainty varies as the inverse of the square root of the number in the group.

Ignoring survey non-response, it can be argued that the data describe an entire population – *all* the faculty and librarians are in the analysis – so that the estimates of group differences are exact and not subject to sampling error. In this context, however, it is still reasonable to think of the error estimates from the regression as measuring whether the observed difference could have arisen from chance.

Effects of Membership in a Racialized Group on Faculty Salaries

For three groups, Aboriginal persons, Southeast Asian people and Latin American people, the number of faculty members is less than five. As a result, the "standard error" of estimate of the difference between the average salary of each group and the average for white people is about $4000, requiring a difference from the expected salary of around $8000/yr to reach statistical significance. The regression results give no reason to think the salaries of members of these three groups differ from the majority.

Faculty members from the three largest visible minority groups, Arab, Chinese and South Asian people had average salaries about $1500 per year *higher* than white people (taking account of the other factors in the regression) – far less than the value required for statistical significance (about $3000).

Accounting for other factors, Black and West Asian people have average salaries that are, respectively, $2600 and $2100 *below* the average for white people. In neither case is the difference statistically significant, even using a "one-tailed" test (that makes the assumption the difference cannot be positive). The standard errors of the two coefficients are $1900 and $2300 respectively and the "t values are" 1.35 and 0.94.

The observed difference of $2100 in the average salaries of West Asian and white people (accounting for all other variables in the regression), could occur by chance – if there was no true difference – more than one-third of the time. This is not the same as demonstrating that the difference *is* actually zero, but most statisticians would *not* regard the figure as evidence there is any difference.

There should be more concern about salaries of Black faculty members, though these fall below strong evidence of systemic bias – because of survey non-response, the magnitude of salary difference relative to the standard error of estimate of the regression (around $5000) and the failure to reach statistical significance using the most "lenient" test. Alternative treatments of the data result in larger and smaller effects, depending on the assumptions used. What steps should be taken to address this issue is a policy issue, not a question for which there is no exact statistical answer.

Effects Disability on Faculty Salaries

Having a disability was measured in thee categories, for persons with: a disability with a "minor" effect on the faculty member's work; a disability with a "major" effect on the faculty member's work; and a noticeable disability with no effect on the faculty member's work (but whose perception could be a disadvantage). By amounts averaging $800, $2900 and $1300/yr, faculty members with disabilities in these three categories, had salaries *above* the salaries of comparable individuals without a disability. These effects also do not reach statistical significance, as their standard errors are, respectively $1400, $2100 and $1600. Assuming the persons who did not answer the survey had no disability changes the estimates to $600, $2300 and $400, respectively – of course the change is brought about because the comparison is to a

different comparison group. But the effects are still are positive, so there is absolutely no reason to think that persons with a disability have lower salaries as a result.

For Librarians

The number of librarians is quite small and it is not reasonable to extend that regression analysis to include disability and race. Also, with just 22 librarians it is simply not possible to separate the effect of race and disability from individual anomalies. These data were inspected manually inspect the outcomes to see if disability and race had any apparent effect. This inspection gives no reason to think there is a concern.

Table 1
Faculty Salary Regression

Predictor	Regression Coefficient	Standard Error	t	Significance	Number of Persons / Mean
Rank, relative to Associate Professor					
Lecturer	-11,043	2,007	-5.50	0.00	18
Assistant Professor	-1,689	1,065	-1.59	0.11	126
Full Professor	3,197	851	3.76	0.00	147
Age when hired at Windsor	389	51	7.58	0.00	36
Experience in Years	1,071	46	23.41	0.00	16
Experience, squared	147	30	4.94	0.00	
Merit Pay (total at Windsor in dollars)	2	0	6.16	0.00	837
Has a doctorate	1,333	1,099	1.21	0.23	364
Rank when hired, relative to Assistant Professor					
Lecturer	-1,749	896	-1.95	0.05	72
Associate Professor	8,821	1,024	8.62	0.00	54
Full Professor	26,693	1,965	13.58	0.00	15
Was Assistant Professor for 1-2 years	2,511	1,133	2.22	0.03	33
Was Assistant Professor for 3-4 years	3,628	824	4.40	0.00	82
Promoted from Assoc. Prof. in 3-4 years	1,722	1,283	1.34	0.18	21
Hired into an Administrative Position	5,550	2,030	2.73	0.01	11
Former Dean	4,088	1,533	2.67	0.01	13
Presently or formerly "Other" adminstrator	4,987	1,822	2.74	0.01	13
Regression constant	71,598	1,608	44.52	0.00	

Table 1, continued
Faculty Salary Regression, Departmental Effects

Department/Faculty Unit	Adjusted Mean	Number in Unit
Classical & Modern Lang., Liter. & Civiliz.	-1,800	12
English Language, Literature & Creative Writing	-3,000	14
French Language & Literature	-6,800	6
History	-6,100	9
Philosophy	-2,900	5
Communication Studies	-2,100	9
Economics	-900	10
Political Science	-3,700	12
Psychology	-300	30
Sociology & Anthropology	-4,400	26
Biological Sciences	-1,500	22
Chemistry & Biochemistry	500	17
Earth Sciences	-1,300	13
Mathematics & Statistics	-2,300	16
Physics	1,500	7
Dramatic Art	-4,200	11
Music	-700	8
Visual Arts	-2,200	7
Civil & Environmental Engineering	2,900	12
Computer Science	1,100	31
Electrical & Computer Engineering	6,100	7
Industrial & Manufacturing Systems Engineering	10,400	5
Mechanical, Automotive & Materials Engineering	7,500	15
Kinesiology	-1,500	13
Nursing	-800	18
Social Work	4,400	9
Education	0	24
Law	4,900	25
Business Administration	2,400	40

Table 2

Distribution of the Difference Between Observed Salary and Salary Predicted from the Regression Model

Difference	With Administrative Service Variables	Without Administrative Service Variables
	Number	
Salary **Lower** than Predicted		
$15,000 or more	1	1
$10,000 to 14,999	8	7
$8,000 to 9,999	7	9
$6,000 to 7,999	16	14
$4,000 to 5,999	37	40
$2,000 to 3,999	66	66
Within $2000 of prediction	180	175
Salary **Higher** than Predicted		
$2,000 to 3,999	50	50
$4,000 to 5,999	25	26
$6,000 to 7,999	22	22
$8,000 to 9,999	12	13
$10,000 to 14,999	4	5
$15,000 or more	5	5
Total	433	433

Table 3
Regression of Librarians' Salary on All Predictors

	Regression Coefficient	Standard Error	t	Signif-icance
Rank compared to Librarian II				
Librarian I	-3,456	2,065	-1.67	0.12
Librarian III	5,149	1,971	2.61	0.02
Librarian IV	5,819	3,191	1.82	0.09
Age when hired at Windsor	842	140	6.01	0.00
Experience in Years	966	120	8.02	0.00
Has a doctorate	6,854	2,970	2.31	0.04
Merit Pay (Total at Windsor)	3.57	1.11	3.22	0.01
Department Head	3,429	1,919	1.79	0.10
Regression Constant	60,991	1,671	36.49	0.00

Table 4
Standard Deviation of the Differences Between Observed and Predicted Salary in each Department/Faculty Unit

Department/Faculty Unit	Standard Deviation Within Department/ Faculty Unit
Classical & Modern Lang., Liter. & Civiliz.	3,805
English Language, Literature & Creative Writing	2,084
French Language & Literature	3,276
History	3,146
Philosophy	3,744
Communication Studies	6,036
Economics	3,478
Political Science	2,145
Psychology	4,454
Sociology & Anthropology	3,247
Biological Sciences	5,556
Chemistry & Biochemistry	6,057
Earth Sciences	4,045
Mathematics & Statistics	4,913
Physics	7,049
Dramatic Art	6,163
Music	4,374
Visual Arts	3,615
Civil & Environmental Engineering	3,989
Computer Science	4,248
Electrical & Computer Engineering	7,449
Industrial & Manufacturing Systems Engineering	13,001
Mechanical, Automotive & Materials Engineering	8,097
Kinesiology	2,717
Nursing	3,490
Social Work	9,129
Education	4,961
Law	3,835
Business Administration	5,342
All Departments/Faculties	4,815

Table 5
Mean Difference Between Current Actual and Predicted Salaries of Faculty by Year of Hire, Accounting for Department and Faculty and Other Predictors of Salary
(negative values indicate lower than expected salary)

Year	Average Difference Between Actual and Predicted Salary	Standard Deviation of Difference	Current Mean Salary
Before 1970	-269	4243	104402
1970-74	128	4088	100596
1975-79	370	4287	96402
1980-84	297	5556	94072
1985-90	-318	4047	84135
1990	-859	3560	76387
1991	-2783	4530	73929
1992	-3646	5399	72378
1993	4702	8384	85331
1994	4375	9370	90942
1995-96	-537	6682	76477
1997	235	3193	68742
1998	578	3878	69089
1999	931	4762	68034
2000	374	4257	66630
2001	-1117	4488	60297
2002	595	5167	75056
Total	0	4815	82418

Table 6
Difference Between Actual and Predicted Salary, by Sex and Age

	under 35	35-39	40-44	45-49	50-54	55-59	60-65	Total
Women								
Mean Difference	491	-119	-534	-727	-273	1215	1209	-28
Number of Faculty	15	20	27	25	24	17	8	136
Men								
Mean Difference	-51	-361	367	473	-79	165	-272	13
Number of Faculty	22	36	33	33	46	65	62	297