An Analysis of the Gender Pay Gap in Professorial Salaries at UBC

Report of the Pay Equity (Data) Working Group

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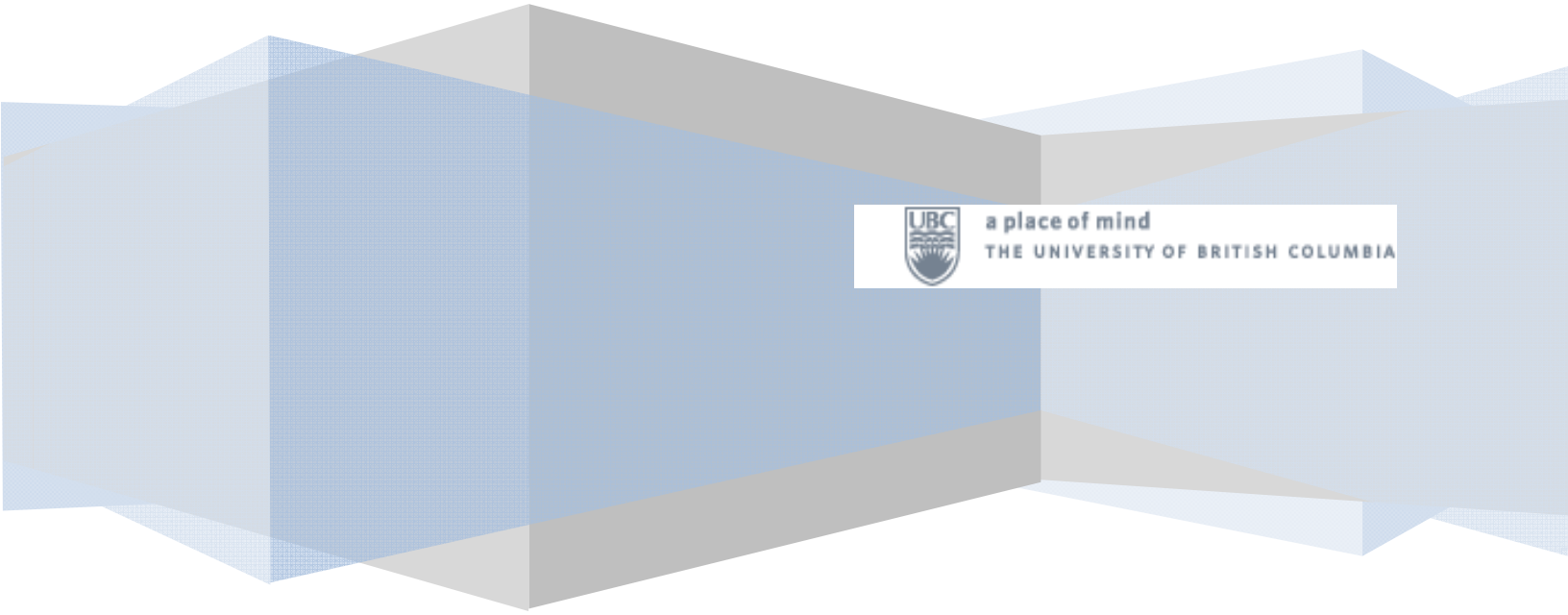

Executive Summary

This document summarizes the work of the DATA Working Group, jointly convened by the Faculty Association and the Office of the Provost at UBC in January 2010 (the Terms of Reference of the DATA Group can be found in Section 1 of this report). The Working Group's mandate was focused on a study of gender-related pay inequity analysis with respect to faculty at UBC's Vancouver campus[1].

The findings of the report are summarized as follows:

- The regression analysis of the annual salaries of full-time professors employed at the Vancouver campus (excluding the Faculty of Medicine) as of June 9, 2010 shows a gender differential of $14332.20 in average pay[2].

- About half of the average gender pay differential is accounted by the underrepresentation of women at the Full Professor level. While women account for about 38% of faculty members at the Associate and Assistant level, they account for only 21% at the Full Professor level. Given that the salaries of Full Professors are less constrained than the salaries of Associate and Assistant Professors, it is not surprising to find such a large effect.

- Another quarter of the average gender pay differential is accounted for by gender differences in the allocation of faculty members across Departmental units. For example, 6.6% of male faculty members are in the high paying Faculty of Commerce versus 3.3% of female faculty members. Conversely, 1.2% of female faculty members are in the low paying Department of Central, Eastern, and Northern Europe Studies versus 0.6% of male faculty members.

- After additionally accounting for experience (measured by a quadratic in Years in Rank) and for Canada Research Chairs and Distinguished University Professors, there remains an unexplained female pay disadvantage of about $3000. This finding is robust to alternative specifications of the gender gap decomposition.

- The unexplained female pay disadvantage of about $3000 can be considered discriminatory under the assumptions that male and female faculty members are equally productive.

- While we do not have complete data on faculty productivity, our analysis of Merit awards in 2008 and 2009 shows no female disadvantage.

[1] A Structural Measures (SMART) Working Group was created at the same time; its Terms of Reference can be found in Appendix C. The two Working Groups were intended to complement one another, and we recommend that their reports be read together.

[2] See Appendix B for an explanation of regression analysis. The raw differential in median pay is $15625.00.

- This study did not analyze special circumstances that might affect productivity such as parental leave[3]. We note that the earlier UBC study, "Statistical Analysis of UBC Faculty Salaries II" by Marmer and Sudmant (2009), showed that when years of experience were corrected for maternity leaves, this did not change the results of the salary analysis (in other words, whether or not a female faculty member has taken maternity leave had virtually no impact on the female pay disadvantage). This gives us confidence that our assumptions would be supported by a more complete analysis, and that parental leave does not alter the salary disadvantage.

- Moreover, some of the "explanatory" factors that we include in our pay analysis may themselves carry some gender biases (for example, rank), thus the female salary disadvantage found in the study can be interpreted as a lower bound.

- In summary this study has used four different regression methods (pooled, male line, female line, and the log of salary analysis). These approaches yield a similar finding: Women faculty members have a salary disadvantage of roughly $3000. These findings appear to be robust and the amount of the salary disadvantage is, in our opinion, substantial and warrants being addressed. We make a number of recommendations in this regard, below.

[3] The Tri-Council funding agencies allow for mention of special circumstances which might affect productivity. Specifically, NSERC defines special circumstances as "health problems, family responsibilities, disabilities or other circumstances (e.g., the time necessary to complete a monograph, file a patent, or commercialize an industrial process or product)". SSHRC defines special circumstances as "child-rearing, administrative responsibilities, illness or disability, which may have delayed or interrupted studies or research".

Recommendations

The following recommendations are structured in accordance with Working Group's Terms of Reference:

(i) The Pay Equity (DATA) Working Group has reached agreement on data to be used in the present study (Terms of Reference Item 1). We note, however, that

a. The six departments in Medicine whose faculty members are researchers (with no clinical income) should have been included in the analysis; we recommend that these be included in future analyses.

b. We recommend that the University consider conducting a separate study of pay equity be conducted of clinical researchers in the Faculty of Medicine, taking into account the special circumstances (i.e. clinical income) which pertain in this case.

c. We recommend that UBC-O be included in future analyses. Of special interest in the UBC-O case is the fact that salary grids applied prior to the creation of UBC-O in 2005; tracking salary divergence between men and women from 2005 to 2010 could provide interesting and important information on the causes of pay differentials.

d. We recommend that improved data-tracking procedures be implemented at UBC, including data on starting salaries, merit pay, retention pay, CPI adjustments, as well as parental and sick leaves. An adequate time series on these variables will be extremely useful in follow-up studies. Additional recommendations for data tracking are made in Appendix D, and Appendix E contains a set of metrics recommended in the 2005 Harvard Task Force on Women Faculty (currently being implemented by the Office of Faculty Development and Diversity, which reports to the Senior Vice Provost on Faculty Development and Diversity).

e. We recommend that improved data-cleaning procedures be implemented at UBC; the datasets provided to the Working Group had a significant number of errors and missing data points.

(ii) We have reached agreement on the analytical method to be used to assess the gender wage gap (Terms of Reference Items 2 and 3), and are pleased to recommend the results of this study.

We have not reached agreement on methods for addressing the pay gap (past compensation and current salary corrections, Terms of Reference Item 4). A discussion of these issues is presented in Appendix E. We recommend that the University and Faculty Association jointly create a new Working Group or Committee to take this issue forward. In addition to the issues of compensation for past losses and current salary corrections, we recommend that the Working Group also consider the recommendations of the SMART working group, particularly with respect to the list of other measures that the SMART group identified as potential issues to be addressed in order to

prevent the pay gap from reappearing.

(iii) We have reached agreement on an ongoing analysis protocol (Terms of Reference Item 5). We recommend that the University and Faculty Association conduct a joint analysis of gender-related pay equity every 5 years, resourced by and reporting to the Office of the Provost. Future studies should include analyses of merit, PSA, retention, and starting salaries.

Section 1 – Introduction

In 2007 and 2009, UBC's Equity Office released two reports analyzing pay equity in salaries of full-time tenure track professors at UBC, focusing on differences due to sex or visible minority status[4]. The studies resulted in two meetings being held between the Faculty Association, the President, and the Provost in 2009. Subsequently, the Faculty Association and Provost jointly sponsored two Working Groups, which began their work in January 2010:

1. The DATA Working Group (whose mandate is focused on a quantitative analysis of the pay gap); and

2. The SMART Working Group (whose mandate is focused, as its title suggests, on structural measures to prevent and redress gender inequities amongst faculty, focusing on "equal pay for equal work").

The Terms of Reference of the SMART Working Group can be found in Appendix C. These two reports intended to complement one another, and should be read together.

1.A. Terms of Reference: Pay Equity Analysis & Resolution Working Group

The Pay Equity Analysis & Resolution Working Group was struck jointly by the Faculty Association and Provost's office in January 2010, with the following terms of reference:

1. DESCRIPTIVE STATISTICS: Agreement, or itemized disagreement with grounds, on data-sets & "raw numbers" necessary for the analysis, including but not limited to:

a) Definition of criteria for inclusion in dataset to be analyzed
b) Starting salaries (with total compensation proxies)
c) Discretionary pay differentials (merit/PSA/retention) by gender
d) Gender wage-gap across full-time professoriate (with total compensation proxy)
e) Promotion: gender gap in probability of promotion; timelines to promotion by gender
f) Proportion of professoriate that is female

2. ANALYTICAL METHOD: Agreement, or itemized disagreement with grounds, on methods of analysis of mechanisms whereby gender wage-gap is produced, this should include the time period over which pay inequity is to be analyzed.

3. ANALYSIS: Agreement, or itemized disagreement with grounds, on a figure, in dollar terms, of actual

[4] Marmer, O. and Sudmant, W. (2006) "Statistical Analysis of UBC Faculty Salaries: Investigation of Differences Due to Sex or Visible Minority Status"; UBC Planning and Institutional Research; Marmer, O. and Sudman, W. (2009) "Statistical Analysis of UBC Faculty Salaries II", UBC Planning and Institutional Research. These studies analyzed the salaries of faculty employed at UBC's main campus in Vancouver.

average gender pay gap, including time period over which pay inequity is to be analyzed.

4. PROCESS FOR RESOLUTION: Agreement, or itemized disagreement with grounds, on methods for addressing the pay gap (past compensation and current salary corrections):

4a. METHOD: compensation
4b. METHOD: corrections going forward
4c. PROCESS: who does the analysis, on what timeline

5. AGREEMENT ON ONGOING ANALYSIS PROTOCOL: data, assessment (by whom, and how, with what resources), reporting (by whom and how)

Section 2 - Methodology

A. Scope of the Study and Choice of Specification

The goal of the study is to find the sources of the gender differences in professorial salaries. The analysis seeks to determine the extent to which the gender differences in professorial salaries arise because female and male professors are different in terms of various pay determining characteristics (also called factors) or because these characteristics are compensated differently by gender. The first types of effects are called composition effects and the second types are called pay structure effects. A non-discriminatory pay structure would apply the same compensation rules to all individuals irrespective of gender or other minority group membership.

Although there is less mobility in academia than in other sectors of the economy, the professorial labour force at UBC is still quite dynamic. Approximately 5% of faculty members leave UBC each year, either for retirement or for alternative employment, and another 5% are added as new hires, not only at the Assistant Professor level, but also at the Associate and Full Professor level. Retirements, quits, layoffs, and new hires also vary by unit because of historical reasons (for example, age structure of the unit) and differences in hiring and outside employment opportunities. Thus average professorial salaries by gender may vary from year to year because of the composition of the professorial labour force and because of changes in the pay structure.

Whether there are gender biases in firing and hiring, as well as in promotion, is beyond the scope of this study, as the related analysis would require longitudinal data (data that follow individuals over time or with their complete history) which are not available at the present time.[5] An analysis of the probability of being a Full Professor (covering one time period) in terms of various factors will be presented. However, because of the absence of longitudinal data, it is not intended to provide a full understanding of the promotion process (in particular, timely access to Full Professor) and of any gender biases therein.[6]

Importantly, over the past 40 years, numerous analyses of the gender pay gap in academia, from Morton, Gordon and Braden (1974) to Ginther and Kahn (2003) have found that professorial rank, in particular full professor, account for the larger share of the gender pay differential in faculty salaries. For example, McDonald and Thornton (2001) using data from the Council of Ontario Universities (1987-89) find that “a good deal of the overall pay gap, from half to three- quarters of it, may be due to different proportions of men and women faculty in the various ranks”. We thus include professorial rank as an important “explanatory” variable, even though it is understood that this variable may capture some gender biases, as shown in section 4.

[5] For example, Ginther and Kahn (2006) using the 1973-2001 U.S. Survey of Doctorate Recipients to study the gender differences in the likelihood of obtaining a tenure track job, promotion to tenure, and promotion to full professor.

[6] We note also that research by Ginther and Hayes (1999, 2003), Ginther (2003), and Ginther and Kahn (2004) demonstrates that employment and promotion outcomes differ by academic field.

The pay structure for full-time professors at UBC has some universal components that are the same for all faculty members, as well as some discretionary components that vary by individual and unit. The universal components comprise (fixed amount) "Career Progress Increments" (CPI)[7] for years in rank (up to some maximum depending on rank), and some negotiated ad valorem (proportional) increases. Because of the first deterministic component to the pay structure, we will include years in rank, as well as the square of years in rank to capture the fact that after the maximum number of career progress increments in a particular rank has been exhausted, years in rank no longer necessarily contributes positively to salary.

The discretionary component begins at hiring and over the years includes various salary increments linked to on-the-job performance: merit and PSA (Performance Salary Assessment). The hiring salary is the result of a bargaining process between the candidate and the head of the unit and dean of the faculty (and other superiors, in some cases). Thus it may depend on the salaries of comparable faculty members in the unit and on alternative offers that a candidate has on hand. We note that new hires themselves are not necessarily comparable in terms of years of experience: some have done post-doc work, others not, some are hired at different stages in their academic career. The salaries of comparable faculty members in different units will be different depending on outside options, often referred to as market options. Units where outside options are more abundant and better remunerated will have higher average salaries. To the extent that there are gender biases in these outside options, if for example women are concentrated in departments which have fewer outside options, and thus receive fewer outside offers, these may be reflected in hiring salaries.[8]

Because of differences across units in market options and of differences in the relative strength of units at UBC, unit indicator variables (also called dummy variables) will be included in the analysis.[9] These variables will capture the "relative conditional mean" of salaries in the unit, where "relative" signifies by comparison with the omitted or base unit, and "conditional" indicates after accounting for other factors or "all else being equal".[10] If UBC is highly ranked in Canada (and across the world) in particular discipline, the faculty members from that unit will likely enjoy a salary premium by comparison with faculty members from a discipline in less well-ranked department across Canada and from a less well-ranked department at UBC, given that the latter members are less of a flight risk. Differences in market options can also be a significant source of salary differences, here it is also understood that these variables may incorporate some gender biases that are beyond the scope of this study.[11]

[7] http://www.hr.ubc.ca/faculty_relations/compensation/salaries/facultyincreases/careerprogress.html.

[8] For example, Blackaby, Booth and Frank (2005) using a 1999 survey of U.K. academic economists found that men receive more outside offers than women of comparable characteristics, and gain higher pay increases in response.

[9] The means of the explanatory variables presented in Appendix Table A2 display in the first two columns the percentages of men and women in each Departmental unit.

[10] For ease of interpretation, we will choose as omitted or base unit, the one whose average salary is closest to the overall average. In our case, this is Microbiology.

[11] The recognition of penalties related to the "femaleness of occupation" has led to the enactment of comparable worth legislation in the public sector in Canada, and in the private sector in the provinces of Ontario and Quebec. At UBC, there are only 4 units which constitute effectively female-dominated occupations (greater or equal to 70

The arguably more important omissions in this study are the indicators of performance-related merit and PSA (Performance Salary Assessment) salary increments.[12] Because the salary history data is not available to us, we are not able to include these elements in the analysis. However, we did include other salient indicators of performance: Canada Research Chair (although we are unable to distinguish Tier 1 and Tier 2) and the Distinguished University Professorships.

Another set of often included and potentially important omitted variables are related to family life, including marital status, fertility decisions, and maternal/paternity leaves.[13] Although published research on this topic does not provide an unequivocal answer to the question of whether family responsibilities affect productivity and pay differentials. The most comprehensive studies on this issue performed by Donna Ginther and co- authors consider longitudinal data from the U.S. 1973-2001 waves of the Survey of Doctorate Recipients, and include measures of academic performance. For example, Ginther and Kayes (2003) find in their analysis of the faculty salary structure within Humanities that, as in other segments of the labour market, there is a male premium to being married and having children, and a female penalty to the same variables. However, these variables are not statistically significant. In the Sciences, Ginther (2003) finds that the fertility choices of women do not explain salary differences. On the other hand, Ginther and Kahn (2006) find that women's fertility decisions have important impacts on probability of tenure in the Sciences. Finally, we note that the earlier UBC study, "Statistical Analysis of UBC Faculty Salaries II" by Marmer and Sudmant (2009), showed that when years of experience were corrected for maternal leaves, this did not change the results of the salary analysis.

B. Data

The data used for this analysis come from the Office of Faculty Relations and represents the professorial labour force employed at the Vancouver campus as of June 9, 2010. The data does not include faculty members from the Faculty of Medicine, because of the difficulty introduced by clinical income. For example, a faculty member in medicine often has earnings from the practice of medicine, and these earning are not shown in the data provided by UBC. Hence much of the variation in medical faculty salaries is a result of the extent to which the faculty member has clinical income, and, for example, a relatively low academic salary has no real meaning in terms of this analysis. It includes all full-time faculty members on a tenure-track, a grant or tenured position. This data set does not include sessional lecturers and instructors.

B1. Following the discussion in section 2.A, we use the following variables in the analysis.

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percent female): Nursing, Women's Studies, School of Library, Archival & Info Studies, and the College for Interdisciplinary Studies. So, this approach is not applicable.

[12] We note that the analyses from Lethbridge University (Mellow et al. 2008), the University of Calgary (Wallace, 2005), and the University of Western Ontario (Campbell et al., 2005) include performance indicators: the first two indicators of merit received and the latter a relative performance indicator.

[13] We note the analysis from the University of Calgary (Wallace, 2005) included information about marital status and leaves taken.

Variable	Metric	Comments
Annual Salary (AANNSAL)	Nominal 2010 $CAN [part of the analysis is conducted using log(AANNSAL)]	Dependent variable. Salaries not reduced by sabbatical or other leaves. Administrative stipends are not included.
Gender	(=1 if Female, 0 if Male)	The average difference between female and male salaries, all else being equal.
Rank 1 – Full Professor	(=1 if Full Professor, 0 Otherwise)	The average difference between salaries of full professors and the reference group (assistant professors), all else being equal.
Rank 2 – Associate Professor	(=1 if Associate Professor, 0 Otherwise)	The average difference between salaries of associate professors and the reference group (assistant professors), all else being equal.
Rank 3- Assistant Professor	Base Category	
Canada Research Chair	(=1 if CRC, 0 Otherwise)	The average difference between salaries of CRCs and the reference group (all others), all else being equal
Distinguished University Professor	(=1 if DUP, 0 Otherwise)	The average difference between salaries of DUPs and the reference group (all others), all else being equal
Years in Rank	years	Number of years in current academic rank.
Years in Rank Squared	years	Square of previous variable.
Departmental Units (67)	(=1 if in Department Unit no , 0 Otherwise)	The average difference between salaries of each department and the reference group, all else being equal There are two units with only one faculty member.

B2. The following variables were considered, but not included in the final analysis of the gender gap in salaries because they did not add significant explanatory power of the model.

Variable	Comments
Years since Ph.D.	This may differ from total years worked at UBC as some individuals may have held alternative employment before starting their academic career or may have completed their highest degree after starting at the university. This alternative measure of labour market experience was dominated by Years in rank, and did not change the gender pay gap analysis. This

	measure of experience is used in the analysis of the propensity to be a Full Professor.
Years at UBC	This refers to the total number of years worked at UBC as a faculty member, and is a measure of experience that will be lower for new hires at all professorial ranks. Since it is a linear transformation of year hired, this variable may also capture macro economic effects (lower pay if hired in a recession). Because of ambiguity of interpretation (new hires may be junior professors as well as outstanding senior professors), this variable was omitted.
Age	In some pay equity studies, age is used as a proxy measure of labour market experience. But this is somewhat problematic as an indicator of experience in professorial life, especially for people who held alternative employment; here it is dominated by Years in rank.

C. Descriptive Statistics

Table 1 reports the number of male and female faculty members employed at UBC as of June 9, 2010 in the 3 professorial ranks, as well as mean (average) and median salaries (salary of the middle person). The table shows that while women represent 30% of all faculty members, at the Full Professor rank, they make up only 20% of members. At the rank of Associate and Assistant, women represent 38% of faculty members.

Table 1. Average and Median Professorial Salaries

Gender	Rank	Numbers	% of All	% of women	Average Salary	Female/ Male Ratio	Median Salary	Female/ Male Ratio2
Men	All	968	100.0		134955.3	0.89	129790	0.88
Women	All	419	100.0	30.2	120623.1		114165	
Men	Full	501	51.8		152493.4	0.96	145860	0.95
Women	Full	130	31.0	20.6	146047.5		138030.5	
Men	Associate	297	30.7		121483.4	0.94	116271	0.95
Women	Associate	184	43.9	38.3	114594.9		110920.5	
Men	Assistant	170	17.6		106805.6	0.93	100222.5	0.97
Women	Assistant	105	25.1	38.2	99708.87		97146	

The figures indicate that the overall average female/male salary gap is: $134955.30-$120623.10=$14332.20, while the within-rank salary gaps are of $6445.90, $6888.50, and $7096.73 among Full Professor, Associate Professor, and Assistant Professor, respectively. Also reported in Table 1 is the female/male salary ratio, which indicates that overall the female/male ratio is around 89%, however within rank it is closer to 95%. The within-rank ratios at UBC are comparable to those reported in McDonald and Thornton (2001) for Ontario Universities in 1987-89, but the overall ratio at UBC is

more favorable to women, reflecting an improvement over time in the proportion of women among Full Professors.

The discrepancy between the overall ratios and the within- rank ratios reflect the importance of rank in accounting for the gender pay gap in faculty salaries. If the proportion of men across rank was identical to women, the overall counterfactual average male salary would be:

$$\frac{31}{100} \times 152493.4 + \frac{43.9}{100} \times 121483.4 + \frac{25.1}{100} \times 106805.6 = 127426.43,$$

and the overall ratio would be 120623.1/127426.43 (*100)= 94.66%. The gender salary gap adjusted for rank at male pay would be $127426.43-$120623.1=$6803.33, that is, at male "prices", $7528.85 of the $14332.2 gap (52.5%) is accounted for by the gender differences in the proportion of faculty members across rank.

If the proportion of women across rank was identical to men, the overall counterfactual average female salary would be:

$$\frac{51.8}{100} \times 146047.5 + \frac{30.7}{100} \times 114594.9 + \frac{17.6}{100} \times 99708.87 = 128259.3,$$

and the overall ratio would be 134955.3/128259.3(*100)=95.03%. The gender salary gap adjusted for rank at female pay would be $134955.3-$128259.3=$6696.012, that is, at female "prices", $7636.19 of the $14332.2 gap (53.3%) of the gap is accounted for by the gender differences in the proportion of faculty members across rank.

This indicates that more than half of the overall gender salary gap is accounted for by composition effects arising from rank. This simple reweighing method illustrates the spirit of the more classic decomposition methods that we will use below to account for other factors or salary determining characteristics.[14]

Figure 1a and 1b provide a more complete picture of the differences in the salary distribution across genders overall and by rank. The height of the bins indicates the number of faculty members whose annual salary falls in each $10000 wide bin. For example, the panel "Total" in each Figure show that close to 125 men (actually 120) and less than 100 women (actually 92) are paid between $100000 and $110000. The Figures show that at the Assistant and Associate Professor level, women's salaries are more compressed than men's. The relatively more compressed distributions of salary among Assistant and Associate Professors also help explain the importance of rank, particular Full Professor, in a salary regression. To the extent that Department heads want to maintain a hierarchy of salaries that is in accord with rank, there is less opportunities to raise Associate's salaries above that of Full Professors, a constraint not faced at the Full Professor level.

[14] Kline (2010) shows that the classic Oaxaca-Blinder decomposition is analogous to the reweighing method. In appendix Table A1, we also provide the empirical results that illustrate this point in this case.

Figure 1a. Histogram of Men's Annual Salaries by Rank

Figure 1b. Histogram of Women's Annual Salaries by Rank

Table 2 reports the average of various characteristics of faculty members by gender and by rank. As explained in section 2.A, some of the characteristics are used in the pay gap analysis, but others (age and years of experience) are excluded.

Table 2. Average Characteristics by Gender and Rank

Gender	Rank	Numbers	Age		Years of experience		Years in rank		No. of CRCs		No. of DUPs[a]
Men	All	968	51.4		21.1		8.9		77		30
Women	All	419	49.3	***	16.9	***	6.6	***	22	*	13
Men	Full	501	57.0		27.6		11.4		46		28
Women	Full	130	55.5	***	24.4	***	8.0	***	11		11
Men	Associate	297	48.2		16.6		7.0		21		2
Women	Associate	184	49.4		16.3		6.5		6	*	2
Men	Assistant	170	40.7		9.5		5.0		10		0
Women	Assistant	105	41.6		8.8		4.9		5		0

[a]DUP means Distinguished University Professor

Asterisks indicate statistically significant differences between men and women: *** at the 0.01 level, ** at the 0.05 level and * at the 0.10 level.

Table 2 shows that overall men are older, have more years of experience and more years in rank than women. However, this is due to differences at the Full Professor level. At the Associate Professor and Assistant Professor level, there is virtually no (except for CRCs) statistically significant differences in characteristics between genders. [15] The fact that women at the Full Professor level are younger than the men may be indicative of a cohort effect.[16] It is interesting to note that, within the dataset used for this study, the gender differences in the number of CRCs and DUPs are not statistically significant at the conventional 5% level. For example, while women represent 21% of Full Professors, they represent 19% of Canada Research Chairs and 28% of Distinguished University Professors at the Full Professor level. However, the dataset does not capture all CRCs and DUPs at UBC because it excludes the Faculty of Medicine. The representation of women in the entire cohort of CRCs (June 2010 data) at UBC is as follows: Women hold 22% of all CRC positions at UBC (13% of Tier 1 CRCs, and 28% of Tier 2 CRCs). [17]

[15] As with political pool data, statistically significance at the 0.05 level indicates that 19 times out of 20, we will obtain the results. At the 0.10 level, it is 9 times out of 10, and at the 0.01 level, it is 99 times out of 100.

[16] Golding and Katz (2002) and Bailey (2006) have argued that cohorts of women born before 1950 (who reached their 20s before the 1970s) had little access to reliable contraception during the years where they would have pursued higher education, which therefore limited that pursuit. See Warman, Woolley and Worswick (2006) for an analysis of cohort effects in the salaries of Canadian faculty members from 1970-2001.

[17] Data Source: UBC data, cross-checked with http://www.chairs-chaires.gc.ca/about_us-a_notre_sujet/statistics-satistiques-eng.aspx *and* Ghazzali, N. and Morin-Rivest, N. 2010. CHAIRES DE RECHERCHE DU CANADA ET CHAIRES D'EXCELLENCE EN RECHERCHE DU CANADA: STATISTIQUES DÉTAILLÉES. Report published by the CRSNG Chair, University of Laval: www.chaire-crsng-inal.fsg.ulaval.ca.

Merit Awards (Productivity)

At UBC the institution's designated award for productivity is "merit". The award of merit pay is significant as it adds to a faculty members' base salary (via a lump sum or "merit unit").[18] An analysis was conducted of merit awards made to faculty members in 2008 and 2009. This analysis finds that the proportion of merit awards by rank (Table 3) is almost identical to the percentages of men and women within each faculty rank (see also Table 1). In other words, women and men are equally likely to receive merit pay, at all ranks. Furthermore, the percentage of merit awarded to women and men by rank appears to be relatively stable across the two years surveyed (2008 and 2009). This suggests that by UBC's designated metric, women and men are considered equally productive and rewarded as such.

Table 3a: Merit awards to faculty, by rank and gender, UBC (2008, 2009)[19]

Rank	% Men	% Merit awards to men		% Women	% Merit awards to women	
	2009	2008	2009	2009	2008	2009
Assistant Professor	61%	61%	60%	39%	39%	40%
Associate Professor	63%	63%	63%	37%	37%	37%
Professor	80%	79%	81%	20%	21%	19%

Because PSA may also impact salaries we considered the combined effects of merit and PSA (Table 3b, 2009 data). We found that women are slightly more likely to get PSA, and almost as likely to receive merit across all ranks, .At the Full Professor rank, 76% of women received merit or PSA (or both), versus 71% of men. At the Associate Professor rank, the corresponding figure is 70%.

That is consistent with the hypothesis that the productivity level necessary for promotion from Associate to Full is lower for men than women, which implies that the average productivity level of women in both ranks would be higher than the average productivity level of men.

[18] Data Source: http://www.hr.ubc.ca/faculty_relations/compensation/salaries/facultyincreases/mpsa.html#5
[19] Data source: UBC Human Resources, 2010.

Table 3b: Merit and PSA Awards (2009)

Professorial Rank	Assistant		Associate		Professor	
Gender	Men	Women	Men	Women	Men	Women
% receiving either PSA or Merit or both	63%	57%	67%	70%	71%	76%
% receiving PSA	22%	24%	29%	35%	27%	29%
Average # of Merit Units per eligible faculty member	0.53	0.47	0.52	0.51	0.68	0.79
Average $ value of Merit Award per eligible faculty member	$798	$697	$779	$768	$1,025	$1,178
Average $ value of PSA Award per eligible faculty member	$278	$353	$383	$476	$405	$618
Average Size of PSA Award (amongst those who received any PSA)	$1,280	$1,480	$1,304	$1,352	$1,527	$2,160
Merit and PSA per eligible faculty member	$1,076	$1,051	$1,162	$1,244	$1,430	$1,797
Merit and PSA (amongst those who received any PSA or Merit)	$1,710	$1,845	$1,739	$1,783	$2,008	$2,363

Source: 2009 Salary Increases Dataset

In addition, the issue of retention pay has been raised. Table 4 indicates that while men and women receive retention pay at very similar rates, the awards given to men are higher.

Table 4: Retention pay at UBC, by gender (2003 – 2008)

Year	% of Awards to men	% of retention funds going to men faculty	Average award per male faculty	% of retention funds going to women faculty	Average award per female faculty
2003	70%	72%	$10,253	28%	$9,087
2004	76%	77%	$12,577	23%	$5,103
2005	67%	75%	$6,348	25%	$4,229
2006	63%	60%	$6,400	40%	$7,352
2007	78%	77%	$7,306	23%	$7,757
2008	68%	70%	$8,174	30%	$7,426
Average	70%	72%	$8,510	28%	$6,826

Source: Retention Pay Datasets, 2003 - 2008

D. Empirical Methodology

There are two main methods in the analysis of discrimination. Both methods aim at supplementing the layman's view which sees a positive simple difference, D, in the mean salary between men and women as evidence of discrimination:

$$D^L = E(Salary|Men) - E(Salary|Women)$$

where $E(Salary|Men)$ indicates that we are computing the mean of the salaries of men and $E(Salary|Women)$ indicates that we are computing the mean of the salaries of women. The problem with the layman's view is that men and women may have different levels of productive characteristics, for example women may have lower levels of labour market experience, and we have to take that into account in our computation.

The economist's view argues that one should account for productivity related characteristics, called X, in the computation of the mean difference, that is we should compute a conditional mean,

$$D^E = E(Salary|X, Men) - E(Salary|X, Women)$$

For example, the average salaries reported in Table 1 are conditional means on gender and rank, that is where X=rank.[20] If we assume that we can model the conditional mean salary as a function of the characteristics, X, and use F as a shorthand for female (F=1 if a women and 0 if a men), we get the equation

$$E(Salary|X, F) = X'\beta + \alpha F + E(\varepsilon|X, F) \quad (1)$$

where X' is a vector (comprise many) of characteristics, and ε denote some unobserved characteristics or errors, whose conditional mean goes to zero. We can bring this equation to the data to estimate the parameters α and β, which can loosely be interpreted as the price or the return to the characteristics the return to the characteristics.[21] For example, if X was years in rank, we would expect $\beta_{yrs\ in\ rank}$ to be close to the career progression increments, if there were no other yearly salary increases. In practice, we will estimate (1) as a multivariate equation by ordinary least squares.

If we can agree that there is no gender bias in productive characteristics and that no important characteristics have been omitted, we will see a negative $\hat{\alpha}$ as evidence of discrimination. Of course, our choice of characteristics is rarely ideal, it is thus more accurate to say that the coefficient $\hat{\alpha}$ captures the salary disadvantage of women that is not "explained" or "accounted for" by the productive characteristics X.

Another popular methodology proposed by Blinder (1973) and Oaxaca (1973) is based on the construction of counterfactual average salary. The idea was to come up with an adjusted salary gap that would take into account some of the differences in the productive characteristics of men and women.

[20] To be more precise, the word "mean" designates a population measure of the first moment of the distribution, while the word "average" is an estimate of the population mean for the sample at hand.
[21] See Appendix B for a description of regression analysis.

For example, it asks what would be the average salary of women if their average characteristics were paid the same price as men.

If we had estimated equation (1) separately by gender, using the subscripts *g=m,f* to designate the male and female equations, we could write the average salaries by gender, $\overline{Salary_m}$ and $\overline{Salary_f}$, as the product of the average characteristics of each gender, $\bar{X}'_m$ and $\bar{X}'_f$, times the gender-specific estimated returns to these characteristics, $\widehat{\beta_m}$ and $\widehat{\beta_f}$,

$$\overline{Salary_m} = \bar{X}'_m\widehat{\beta_m} \;\; and \;\; \overline{Salary_f} = \bar{X}'_f\widehat{\beta_f}$$

given that the conditional mean error goes to zero ($E(\varepsilon|X,F) = 0$).

Then we can write the gender difference in average salaries, adding and subtracting the counterfactual average salary that women would have earned at the male returns , $\bar{X}'_f\widehat{\beta_m}$,

$$\overline{Salary_m} - \overline{Salary_f} = \bar{X}'_m\,\widehat{\beta_m} - \bar{X}'_f\widehat{\beta_f} + \; \bar{X}'_f\widehat{\beta_m} - \bar{X}'_f\beta_m$$

$$= \left(\bar{X}'_m - \bar{X}'_f\right)\widehat{\beta_m} + \left(\widehat{\beta_m} - \widehat{\beta_f}\right)\bar{X}'_f \qquad (2)$$

where the first term in the last equality captures the impact on the gender salary gap of differences in the average characteristics of men and women, $\left(\bar{X}'_m - \bar{X}'_f\right)$, evaluated at the male returns, $\widehat{\beta_m}$, and the second term measure differences dues to differential returns , sometimes called the unexplained part, sometimes called the part due to discrimination.

This decomposition could have used as alternative counterfactual average salary, the average salary that men would have earned at the female returns , $\bar{X}'_m\widehat{\beta_f}$, in which case equation (2) would be written as:

$$\overline{Salary_m} - \overline{Salary_f} = \left(\bar{X}'_m - \bar{X}'_f\right)\widehat{\beta_f} + \left(\widehat{\beta_f} - \widehat{\beta_m}\right)\bar{X}'_m \qquad (3)$$

where the first term now captures the impact on the gender salary gap of differences in the average characteristics of men and women evaluated at the female returns. Because they are based on different counterfactuals and evaluate the impact of gender differences in characteristics using potentially different returns, the male or the female returns, the results of the decompositions using equation (2) and (3) can be different.[22]

Another alternative takes equation (1) as the correct specification, and construct two counterfactual average salaries, the average salary that women would have earned at the pooled returns, $\bar{X}'_f\hat{\beta}$, and the average salary that men would have earned at the pooled returns , $\bar{X}'_m\hat{\beta}$, the decomposition is then written as

$$\overline{Salary_m} - \overline{Salary_f} = \left(\bar{X}'_m - \bar{X}'_f\right)\hat{\beta} + [\bar{X}'_m\left(\widehat{\beta_f} - \hat{\beta}\right) - \bar{X}'_f\left(\widehat{\beta_f} - \hat{\beta}\right)] \qquad (4)$$

[22] As we saw in the construction of average counterfactual salaries using either the male or the female average salaries by rank in Section 2C.

where the first term captures the impact on the gender salary gap of differences in the average characteristics of men and women, evaluated at the pooled returns, and where the last term in bracket will correspond to the parameter α of equation (1). The sub-components of this last term can be interpreted as the advantage of men, $\bar{X}_m'(\widehat{\beta_f} - \hat{\beta})$, and the disadvantage of women, $\bar{X}_f'(\widehat{\beta_f} - \hat{\beta})$ .The decomposition (4) provides an interpretation of equation (1) based on counterfactual average salaries. We will provide estimation results using all four equations.

Section 3 - Results & Discussion of Analyses

We begin by providing a summary table of the various analyses conducted using the above four methodologies, plus an additional regression using the logarithm of annual salary [log(salary)] as the dependent variable.

Table 5. Summary Table - Effect of Gender (Female) on Professorial Salaries

Method/ Equation		Explanatory Variables	Effect	Std. Err.	t	P>|t|	% of UBC Average Salary
OLS -Dummy for Gender	(1)	Rank, Quadratic in rank, CRC Dummy, DUP Dummy, Departmental Dummies	-3040.8	1149.76	-2.64	0.01	-0.023
OLS -Dummy for Gender	(1)	Rank, Quadratic in rank, Departmental Dummies	-2966.52	1186.7	-2.5	0.01	-0.023
OLS -Dummy for Gender on Ln(Salaries)	(1)	Rank, Quadratic in rank,CRC Dummy, DUP Dummy, Departmental Dummies	-0.0236	0.0089	-2.66	0.01	-0.023
Oaxaca-Blinder Decomposition Pooled Coefficients with Gender Dummy	(4)	Rank, Quadratic in rank, CRC Dummy, DUP Dummy, Departmental Dummies	-3040.8	918.102	3.31	0.00	-0.023
Oaxaca-Blinder Decomposition Male Coefficients	(2)	Rank, Quadratic in rank, CRC Dummy, DUP Dummy, Departmental Dummies	-2830.51	1267.5	2.23	0.03	-0.022
Oaxaca-Blinder Decomposition Female Coefficients	(3)	Rank, Quadratic in rank, CRC Dummy, DUP Dummy, Departmental Dummies	-2865.25	1299.21	2.21	0.03	-0.022

Importantly, all methodologies find a similar female salary disadvantage of about $3000, — although not precisely estimated—, or 2.3% of average salary. To the extent that we agree that men and women are equally productive— after having accounted for rank, a quadratic in rank, CRC and DUP, and Departmental dummies—, and that family responsibilities do not affect differentially the performance of male and female faculty members, this discrepancy can be considered discriminatory.

We now present the more detailed estimation results from each methodology in turn. Table 6 reports the results of the estimation of equation (1) which is performed on the pooled sample (men and women together) and including a gender (female) dummy by ordinary least squares. First, the measures of the correlation between the actual and predicted salaries, the adjusted R-squares, are relatively high for cross-sectional data, at around 70%, and show that the specifications are very successful. Interestingly, the comparison of Panel A, with include dummies for CRCs and DUPs, and Panel B, which excludes these dummies, show the coefficient on gender is quite robust to the inclusion of performance indicators. Panel C presents the results of a more standard regression in labour economics, which uses a logarithmic transformation of the dependent variable.[23] Yet the impact of gender in Panel C is similar to the impact in Panel A and B. The Departmental dummies (MICB base) are displayed in Appendix A (Table A1), which also shows the male and female coefficients.

Table 6. Ordinary Least Squares Regression on Annual Salaries

Panel A.

Explanatory Variables	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
Gender	-3040.8	1149.756	-2.64	0.01	-5296.356	-785.24
Rank (Assistant base)						
Professor	43195.15	1429.95	30.21	0.00	40389.91	46000.38
Associate	17364.13	1383.865	12.55	0.00	14649.3	20078.96
CRC	14677.56	1905.61	7.7	0.00	10939.19	18415.94
DUP	16362.61	2855.956	5.73	0.00	10759.87	21965.35
Years in Rank	1721.693	238.7933	7.21	0.00	1253.235	2190.15
Years in Rank Squared	-56.6711	8.966584	-6.32	0.00	-74.26153	-39.08
Dummies for Departmental Units (MICB base)	Yes					
Number of Observations	1387					
Adj R-squared	0.7048					

Panel B.

Explanatory Variables	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
Gender	-2966.52	1186.701	-2.5	0.01	-5294.559	-638.49
Rank (Assistant base)						
Professor	44929.38	1460.569	30.76	0.00	42064.08	47794.68

[23] The rationale for this transformation is that the distribution of salaries, and likely of error terms, is closer to a lognormal distribution that a normal distribution. Certainly, Figures 1a and 1b show a lack of symmetry in the distributions.

Associate	17716.36	1427.914	12.41	0.00	14915.12	20517.6
CRC						
DUP						
Years in Rank	1564.948	245.6661	6.37	0.00	1083.007	2046.89
Years in Rank Squared	-52.3044	9.241207	-5.66	0.00	-70.43354	-34.18
Dummies for Departmental Units (MICB base)	Yes					
Number of Observations	1387					
Adj R-squared	0.6854					

Panel C. Dependent Variable - Logarithm of Annual Salaries

Explanatory Variables	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
Gender	-0.0236	0.0089	-2.66	0.01	-0.0411	-0.0062
Rank (Assistant base)						
Professor	0.3418	0.0111	30.9	0	0.3201	0.3635
Associate	0.1564	0.0107	14.6	0.00	0.1353	0.1774
CRC	0.1035	0.0147	7.02	0.00	0.0745	0.1324
DUP	0.1102	0.0221	4.99	0.00	0.0669	0.1535
Years in Rank	0.0145	0.0018	7.84	0.00	0.0109	0.0181
Years in Rank Squared	-0.0005	0.0001	-7.12	0.00	-0.0006	-0.0004
Dummies for Departmental Units (MICB base)	Yes					
Number of Observations	1387					
Adj R-squared	0.6822					

Table 7 reports the results of the Oaxaca-Blinder Decomposition corresponding to the different counterfactual experiments described in equation (2), (3) and (4). Interestingly, the unexplained part of the gender salary differential is little affected by alternative choices of counterfactual. By comparison with reweighing procedure of section 2.C, the explanatory power of rank with respect gender salary differential is reduced by addition of the other factors, but remains the most important factor. Rank accounts for about 46% of the gender salary gap.[25] It is followed by Departmental indicator variables which explain about 25% of the salary gap.[26]

[25] As explained in Fortin, Lemieux, and Firpo (2010), it is not possible to separate the effects of each category of a categorical variable, since these effects depend on the base category.

[26] The Oaxaca-Blinder Decompositions are implemented using the STATA software, and the "Oaxaca" procedure coded by Jahn (2008). The procedure automatically omits redundant Departmental indicators.

Table 7. Oaxaca-Blinder Decomposition

Coefficients of Counterfactual Salaries:	Male Coeff.		% of gap	Female Coeff.		% of gap	Pooled[a] Coeff.		% of gap
Raw Gender Salary Differentials	14332.24	***		14332.24	***		14332.24	***	
Accounted for by differences in characteristics									
Rank	6720.559	***	46.89%	6647.376	***	46.38%	6656.663	***	46.45%
CRC	361.2989	*	2.52%	546.7241	***	3.81%	396.8738	*	2.77%
DUP	-0.6221		0.00%	-0.4578		0.00%	-0.5648		0.00%
Years in Rank	500.7529		3.49%	1180.126		8.23%	647.6272	**	4.52%
Departmental Dummies	3919.743	***	27.35%	3093.223	***	21.58%	3590.85	***	25.05%
Total Explained	11501.73	***	80.25%	11466.99	***	80.01%	11291.45	***	78.78%
Total Unexplained	2830.513	***	19.75%	2865.253	***	19.99%	3040.796	***	21.22%

[a]Pooled Coefficients with Gender Dummy
Asterisks indicate statistical significance, *** at 1% level, ** at 5% level and * at 10% level.

There remains an unexplained amount of ranging from $2830.51 to $3040.80, corresponding to about 20% of the salary gap. We note that these effects are robust to the various specifications attempted.

Section 4 - Gender Biases in Factors

In addition to its explanatory power toward gender salary gap, the issue of the underrepresentation of women in high ranking positions, either in corporate world or in academia, is interesting by itself. It is studied under the terminology of the "glass ceiling effects". It is a difficult issue to address because women who leave the organization are seldom followed, and thus we do not know the reasons (lack of promotion, conflicts with family responsibilities, etc.) for attrition. Sometimes the gender biases in promotion arise from critical mass issues.[27] In many European countries where academic promotions are centralized at the national level, policies have been put in place that mandate a certain gender balance (or at least representation) on the promotion committees (see Zinovyeva and Bagues. 2010). To study

[27] For example, McDowell and Smith (1992) use longitudinal data tracking Ph.D. recipients, and show that the propensity to co-author with same-gender researchers lowers the productivity of women in smaller Economics Departments. Their evidence explains why women wait longer for promotion and are less likely to be promoted than men in a predominantly male profession.

the issue of gender biases in promotions, we would need information about tenure decisions, and preferably about the men and women who are denied tenure and leave UBC.

With the available data, we can see whether being a woman lowers the probability of being a Full Professor among current faculty members and how this probability is affected by other factors. We estimate a regression model similar to equation (1) where $Salary$ has been replaced by an indicator variable of whether a faculty member is a Full Professor or not ($Full = 1$ if a Full Professor and 0 otherwise).

Because we are estimating the probability of being of Full Professor, the corresponding population model is called a Linear Probability Model,

$$Prob(Full = 1|F, X) = X'\beta + \alpha F.$$

This model is thought to be inferior to the Probit Model, which more explicitly takes into account the fact that the dependent variable can take only the value of 0 and 1, and estimate the model in terms of a latent variable, which is bounded between 0 and 1 using the function Φ.[28]

$$Prob(Full = 1|F, X) = \Phi(X'\beta + \alpha F).$$

In practice, however, both models often give similar results, as shown below. The results of the Linear Probability Model and of the Probit analysis are presented in Table 8.

Table 8. Effect of Gender of the Probability of Being a Full Professor

Model	Linear Probability Model		Probit - Marginal Effects	
Explanatory Variables	Coef.	Std. Err.	Coef.	Std. Err.
Gender	-0.058	0.023	-0.056	0.023
CRC	0.105	0.039	0.139	0.033
DUP	0.295	0.058	0.257	0.049
Years since Ph.D.	0.065	0.004	0.082	0.005
Years since Ph.D. Squared	-0.001	0.000	-0.001	0.000
Dummies for Departmental Units (LAWF base[a])				
AGRO	-0.149	0.099	-0.160	0.103
AGSF	N/A		N/A	

[28] In the case of the Probit, the function Φ is the cumulative Normal distribution function and the model is estimated by maximum likelihood. Because this is a non-linear model, the coefficients from Probit estimation have to be transformed into marginal effects to yield the same interpretation as the LPM. Computing marginal effects is particularly tricky for variables with multiple categories, such as Departmental dummies, since if one category is turned on to 1 and then the other categories for that variable have to be turned to 0, so the sum of all categories is equal to 1. This is something that the STATA command "dprobit" does not do; we thus used "margeff" to compute the marginal effects.

AHVA	-0.226	0.103	-0.252	0.122
ANTH	-0.256	0.101	-0.251	0.089
APET	-0.043	0.169	-0.025	0.128
ASIA	-0.059	0.094	-0.118	0.093
ASRE	-0.118	0.126	-0.130	0.131
BGCH	N/A		N/A	
BIOT	0.175	0.114	0.090	0.068
BOTA	-0.142	0.103	-0.200	0.111
CERS	-0.287	0.103	-0.312	0.090
CFIS	N/A		N/A	
CHBE	0.045	0.095	-0.005	0.097
CHEM	-0.053	0.080	-0.024	0.071
CIVL	0.061	0.087	-0.010	0.075
COMF	-0.001	0.068	-0.032	0.057
CPSC	-0.026	0.077	-0.041	0.068
CRWR	-0.569	0.156	-0.649	0.162
CUST	-0.016	0.088	-0.035	0.097
ECON	0.063	0.085	0.033	0.062
ECPS	-0.040	0.080	-0.070	0.088
EDST	-0.045	0.085	-0.051	0.084
EDUF	N/A		N/A	
ELEC	0.006	0.078	-0.013	0.049
ENGL	-0.117	0.075	-0.171	0.079
EOSC	-0.065	0.080	-0.103	0.091
FDNH	-0.129	0.110	-0.176	0.136
FHIS	-0.155	0.095	-0.271	0.115
FILM	-0.344	0.169	-0.370	0.173
FISH	-0.180	0.126	-0.217	0.131
FORM	-0.067	0.102	-0.131	0.117
FRSC	0.270	0.114	0.188	0.078
GEOG	-0.036	0.092	-0.054	0.074
GMST	-0.255	0.121	-0.287	0.111
HELP	-0.015	0.169	-0.085	0.167
HIST	-0.242	0.087	-0.260	0.081
IFES	N/A		N/A	
IFRE	0.084	0.146	0.063	0.118
JOUR	N/A		N/A	
LCIS	N/A		N/A	
LIBR	-0.114	0.126	-0.179	0.102
LING	-0.182	0.114	-0.206	0.123
LLED	0.077	0.094	0.040	0.082
MATH	0.027	0.073	0.005	0.061
MECH	-0.028	0.089	-0.052	0.072

METL	0.019	0.106	-0.071	0.113
MICB	-0.011	0.103	-0.056	0.121
MMPE	-0.163	0.122	-0.226	0.131
MUSC	-0.132	0.089	-0.142	0.092
NURS	-0.103	0.087	-0.051	0.053
OHYP	0.135	0.146	0.090	0.102
PHAR	-0.026	0.089	-0.085	0.096
PHED	0.012	0.092	0.005	0.060
PHIL	0.103	0.103	0.062	0.085
PHYS	-0.025	0.074	-0.040	0.071
PLAN	0.088	0.121	0.019	0.139
POLI	0.087	0.085	0.066	0.064
PSYC	0.012	0.079	-0.026	0.059
SALA	-0.206	0.097	-0.254	0.110
SOCI	-0.073	0.094	-0.119	0.079
SOWK	-0.186	0.105	-0.172	0.110
STAT	0.134	0.117	0.080	0.081
THTR	-0.402	0.121	-0.508	0.092
WINE	-0.199	0.214	-0.189	0.212
WMST	N/A		N/A	
WOOD	0.187	0.114	0.129	0.108
ZOOL	0.113	0.085	0.083	0.076
Constant	-0.388	0.065		
Number of Observations	1375		1375	
Adj./Pseudo R-squared	0.4842		0.5083	

Both the results from the Linear Probability Model and the Probit indicate that, all else being equal, being a woman lowers the probability of being a Full Professor among current faculty members by close to 6% and this effect is significant at the 5%level. These results imply that the factors used in the decomposition of the gender pay gap themselves contain some gender biases and that the female salary disadvantage found in section 3 may indeed only be a lower bound.

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APPENDIX A

Table A1. Oaxaca-Blinder Decomposition using Rank as Single Explanatory Variable

Coefficients of Counterfactual Salaries:	Male Coeff.		% of gap	Female Coeff.		% of gap	Pooled[a] Coeff.		% of gap
Raw Gender Salary Differentials	14332.24	***		14332.24	***		14332.24	***	
Accounted for by differences in characteristics									
Total Explained	7528.845	***	52.53%	7636.226	***	53.28%	7557.885	***	52.73%
Total Unexplained	6803.399	***	47.47%	6696.018	***	46.72%	6774.359	***	47.27%

[a]Pooled Coefficients with Gender Dummy

Asterisks indicate statistical significange, *** at 1% level, ** at 5% level and * at 10% level.

Table A2. Detailed Regressions Results

Sample:	Male	Female		Pooled		Male		Female	
Explana-tory Variables	Means	Means	% Female	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Gender				-3040.80	1149.76				
Rank (Assistant base)									
Professor	0.518	0.310		43195.15	1429.95	43731.78	1929.68	42681.70	2070.89
Associate	0.307	0.439		17364.13	1383.87	17721.96	1927.76	16629.93	1846.65
CRC	0.080	0.053		14677.56	1905.61	13361.90	2366.80	20219.47	3472.50
DUP	0.031	0.031		16362.61	2855.96	18023.20	3753.65	13262.54	4116.22
Years in Rank	8.937	6.561		1721.69	238.79	1531.46	313.25	2130.20	433.23
Years in Rank Squared	132.2	71.5		-56.67	8.97	-51.65	11.25	-63.88	20.17
Dummies for Departmental Units (MICB base[a])									
AGRO	0.017	0.007	16%	4799.55	5879.05	4267.78	7037.22	10080.44	11243.29
AGSF	0.001	0.000	0%	18473.53	18102.46	16457.87	19903.79	N/A	
AHVA	0.009	0.019	47%	-6031.04	6050.05	-7272.82	8207.46	-15.74	9343.39
ANTH	0.012	0.014	33%	-5495.89	5964.58	-8422.67	7572.47	4692.88	9699.93
APET	0.003	0.005	40%	-170.10	8952.33	-4770.14	12205.79	11898.82	12510.14
ASIA	0.014	0.019	36%	-3977.59	5690.91	-6766.24	7262.96	5230.42	9289.67
ASRE	0.009	0.002	10%	3298.27	7014.20	4436.66	8216.05	-12450.52	15764.64
BGCH	0.001	0.000	0%	-139.07	18066.57	-1318.27	19847.92	N/A	
BIOT	0.012	0.002	8%	22331.96	6474.16	22126.36	7550.18	19239.23	15754.36
BOTA	0.012	0.012	29%	2376.33	6031.74	2963.66	7558.66	5228.36	10002.90
CERS	0.011	0.014	35%	-4653.51	6053.97	-8328.46	7793.93	5822.30	9636.32
CFIS	0.000	0.002	100%	134436.90	18144.89	N/A		134493.40	15858.87
CHBE	0.020	0.007	14%	-5103.41	5676.87	-6960.92	6758.19	6796.56	11180.76
CHEM	0.034	0.012	13%	5463.46	5140.17	3837.65	6136.00	17202.02	10085.83
CIVL	0.026	0.007	11%	1161.59	5416.79	743.31	6425.32	2471.91	11225.44
COMF	0.066	0.033	18%	66787.34	4716.10	66700.20	5678.60	68161.80	8729.87
CPSC	0.038	0.021	20%	25764.70	4996.14	23901.63	6033.40	36357.22	9154.21
CRWR	0.002	0.010	67%	-5004.73	8370.95	-9065.76	14547.31	3536.96	10449.73
CUST	0.015	0.029	44%	1484.16	5465.46	672.12	7141.44	7959.35	8881.47
ECON	0.025	0.017	23%	34612.24	5320.24	34200.47	6476.50	37746.71	9471.49
ECPS	0.013	0.060	66%	-475.56	5173.50	971.98	7423.83	4835.97	8401.15
EDST	0.014	0.038	53%	-228.31	5364.62	-3118.38	7267.34	7921.67	8649.67
EDUF	0.001	0.000	0%	43149.49	18071.11	42566.87	19856.60	N/A	
ELEC	0.038	0.014	14%	24945.69	5042.73	23851.86	6031.62	31489.91	9728.66

ENGL	0.024	0.062	53%	-6354.80	4983.77	-7699.29	6527.68	204.55	8386.54
EOSC	0.032	0.019	21%	1633.40	5114.18	-1083.66	6190.12	13215.95	9217.63
FDNH	0.008	0.014	43%	-424.40	6359.40	-3554.78	8522.82	7018.42	9632.23
FHIS	0.011	0.024	48%	-12590.89	5763.15	-13323.25	7761.44	-7397.34	9038.89
FILM	0.002	0.007	60%	-8860.19	8958.43	-19350.63	14521.48	4153.33	11168.84
FISH	0.009	0.002	10%	9991.13	7027.68	9078.83	8247.70	6205.32	15877.05
FORM	0.018	0.002	6%	-273.92	5956.60	-745.23	6943.18	-6881.54	15787.42
FRSC	0.008	0.012	38%	-2528.43	6499.20	-4758.56	8527.75	5220.01	10035.73
GEOG	0.020	0.012	21%	-4547.29	5581.43	-7167.02	6772.50	7510.43	10019.22
GMST	0.006	0.012	45%	-14544.65	6824.31	-13968.11	9409.95	-9945.35	10020.36
HELP	0.003	0.005	40%	26108.69	8945.74	41045.33	12211.99	8017.96	12452.59
HIST	0.021	0.019	29%	-6182.86	5436.35	-7552.18	6744.57	688.59	9261.31
IFES	0.001	0.000	0%	14884.50	18074.75	13185.41	19859.79	N/A	
IFRE	0.004	0.007	43%	12627.74	7885.21	14336.11	10867.78	14545.95	11091.75
JOUR	0.002	0.002	33%	15651.60	11021.94	16301.78	14526.18	19099.25	15773.01
LAWF	0.022	0.055	52%	32519.85	5060.33	31923.63	6696.00	37860.29	8402.76
LCIS	0.002	0.002	33%	2089.86	11020.90	-484.83	14523.49	11418.18	15783.22
LIBR	0.003	0.017	70%	5248.58	7047.22	430.55	12243.22	12769.48	9492.36
LING	0.009	0.010	31%	-5176.96	6494.93	-8800.36	8218.47	6939.46	10563.61
LLED	0.009	0.031	59%	-563.67	5713.96	-3742.06	8214.71	7530.56	8790.48
MATH	0.051	0.019	14%	5215.56	4864.30	3875.96	5827.59	12293.96	9250.48
MECH	0.026	0.005	7%	5745.53	5443.50	4582.72	6412.18	14714.58	12496.65
METL	0.015	0.002	6%	2267.43	6128.73	702.10	7143.96	14295.96	15810.05
MMPE	0.011	0.000	0%	6036.65	6823.08	4906.06	7767.96	N/A	
MUSC	0.020	0.017	27%	-3078.76	5502.94	-4662.77	6783.48	4189.19	9470.26
NURS	0.004	0.057	86%	2164.38	5480.77	-1141.21	10927.29	8997.68	8448.23
OHYP	0.005	0.005	29%	2437.01	7905.01	1166.00	10007.37	9433.37	12512.81
PHAR	0.020	0.017	27%	-5280.09	5487.80	-3722.33	6770.11	-7747.48	9407.70
PHED	0.018	0.014	26%	1839.67	5633.70	656.14	6935.57	8404.75	9746.88
PHIL	0.015	0.005	12%	885.98	6047.88	-2410.50	7163.19	21034.03	12459.85
PHYS	0.050	0.014	11%	7954.58	4890.36	7422.82	5830.44	10949.03	9708.77
PLAN	0.007	0.010	36%	2229.87	6799.90	1580.79	8891.24	6858.10	10419.39
POLI	0.022	0.021	30%	3523.70	5338.80	2887.31	6618.16	9162.86	9160.71
PSYC	0.024	0.038	41%	2884.06	5138.94	295.46	6564.39	10072.56	8586.49
SALA	0.011	0.021	45%	-1554.80	5821.00	-6294.52	7755.83	9114.22	9152.80
SOCI	0.010	0.029	55%	1714.58	5705.91	2848.85	7971.34	6187.54	8860.48
SOWK	0.010	0.014	37%	-5750.31	6157.75	-6789.74	7997.91	771.40	9714.56
STAT	0.010	0.005	17%	-1923.20	6627.18	-5692.75	7943.05	17677.21	12480.19
THTR	0.007	0.010	36%	-6825.82	6840.01	-7754.23	8929.89	-1669.96	10448.62
WINE	0.002	0.002	33%	22322.71	11010.35	29551.43	14511.22	6457.22	15883.86

WMST	0.000	0.002	100%	2218.30	18103.31	N/A		9969.25	15773.01
WOOD	0.012	0.002	8%	-3525.81	6479.48	-4700.07	7557.77	249.83	15753.08
ZOOL	0.023	0.021	29%	3947.34	5307.39	5573.07	6557.44	4805.61	9230.45
Constant				88839.32	4500.14	90682.37	5446.67	77621.17	8293.91
Number of Obs.				1387		968		419	
Adj R-squared				0.7048		0.6618		0.7707	

[a] The average salary in MICB is $130350.6, thus very close to the overall average of $130625.70.

Appendix B – Introduction to Regression Analysis

The goal of regression analysis, whose name goes back to Galton (1886), is to find the quantitative relationship between two (or more) variables.[29] Let's use as an example, the relationship between annual professorial salaries and years in rank, where we are actually interested in the effect of increasing the number of years in rank on salary increases.

Let's use the Greek letter beta, $\beta_{yrs\ in\ rank}$ to designate the effect of interest

$$\beta_{yrs\ in\ rank} = \frac{Change\ in\ Salary}{Change\ in\ Yrs\ in\ Rank},$$

which is the slope of a straight line relating $Salary$ and $Yrs\ in\ rank$

$$Salary = \beta_{constant} + \beta_{yrs\ in\ rank} \times Yrs\ in\ rank, \qquad \text{(B.1)}$$

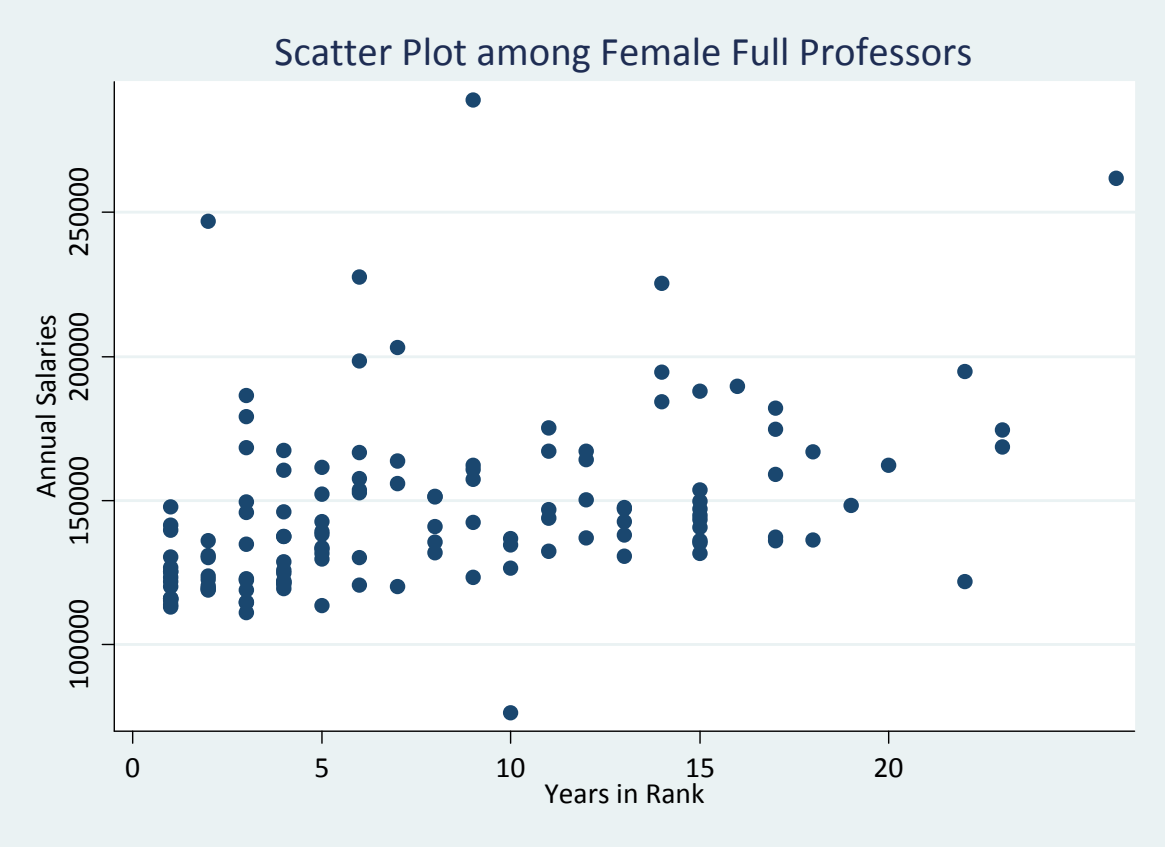
where $\beta_{constant}$ is the intercept of this straight line and $\beta_{yrs\ in\ rank}$ is the slope . If we knew the two parameters $\beta_{constant}$ and $\beta_{yrs\ in\ rank}$ and we thought that equation (B.1) was a good model for salaries, we could predict a person 's salary if we knew her $Yrs\ in\ rank$. But we do not think that (B.1) is a good description of the relationship, there are other factors missing,

$$Salary = \beta_{constant} + \beta_{yrs\ in\ rank} \times Yrs\ in\ rank + other\ factors\ , \qquad \text{(B.2)}$$

importantly, $Rank$, itself. Also we may think that the relationship is non linear (i.e. declines after a certain number of years).

Let's put these two considerations aside for a moment and asks how we would find the unknown parameters $\beta_{constant}$ and $\beta_{yrs\ in\ rank}$ by considering the sub-sample of female faculty members who are Full Professors. The scatter plot of $Salary$ and $Yrs\ in\ rank$ look like this

[29] Francis Galton (1886) was studying the relationship between the stature (physical height) of fathers and sons and found the sons of tall fathers tended to be shorter than their fathers, and that the sons of short fathers tended to be taller than them. Thus he found a "regression" towards the mean, the terminology stuck to his methodology.



Obviously, this is not straight line, so departures from the straight line, these $other\ factors$ or mistakes, are quite important. But we do see a positive relationship.

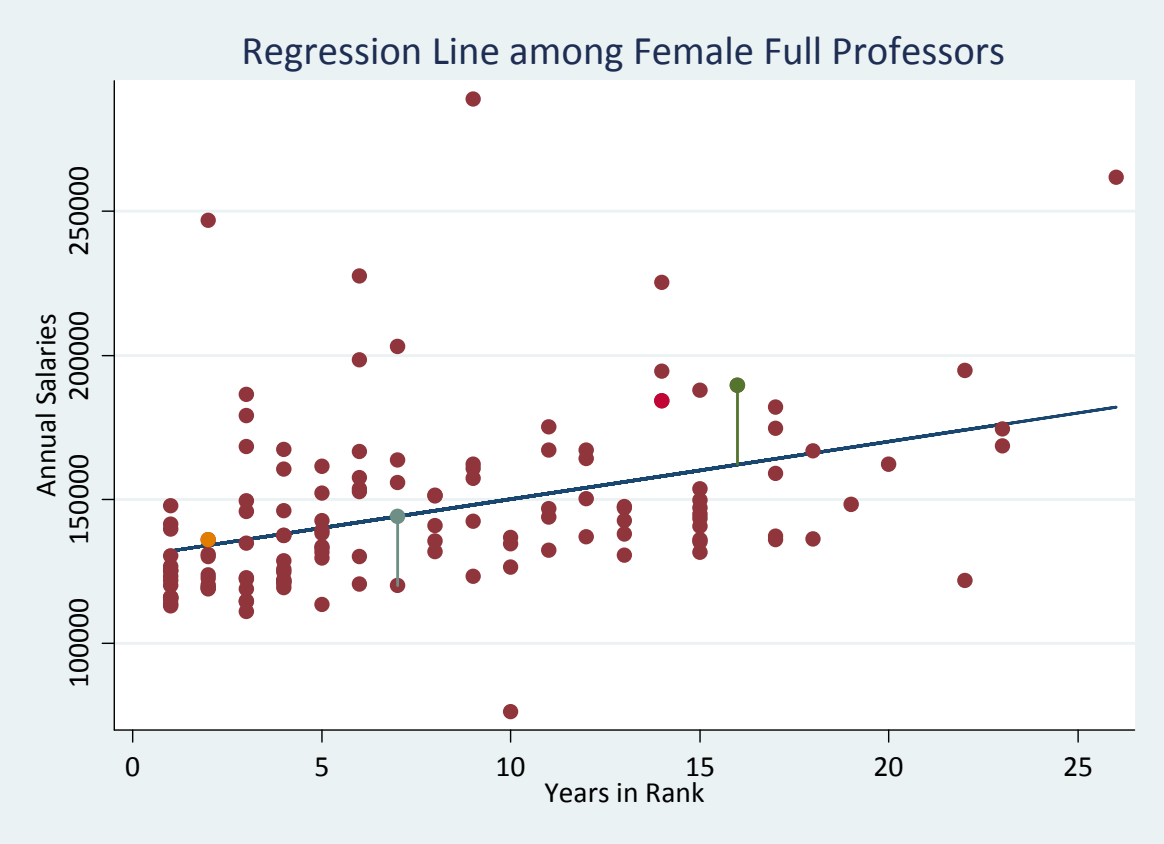
Ordinary Least Squares estimators find the estimates of the intercept $\hat{\beta}_{constant}$ (the point where the line cross the vertical axis) and the slope$\hat{\beta}_{yrs\ in\ rank}$ by minimizing the sum of the squares of these mistakes or errors,

$$minimize \sum_{i=1}^{n} \left(Salary_i - \beta_{constant} - \beta_{yrs\ in\ rank} \times Yrs\ in\ rank_i \right)^2 .$$

The errors are the vertical distance from *i*th point to the predicted regression line. We take the square because these errors can be either positive or negative, as shown below.[30] The formulas for $\hat{\beta}_{constant}$ and for $\hat{\beta}_{yrs\ in\ rank}$ are obtained by calculus and built into virtually all spreadsheets and statistical software packages.[31] In our example the prediction line,

$$\widehat{Salary}_i = \hat{\beta}_{constant} + \hat{\beta}_{yrs\ in\ rank} \times Yrs\ in\ rank_i \quad \text{looks like}$$

[30] This has the disadvantage of giving more weights to outliers.
[31] The same formulas can be obtained by the methods of moments using algebra.



The quality of the model is often judged by its ability to "explain" the variation in the data and by whether the slope of explanatory variables in interest is statistically significant from zero. The regression R-squared is measured as the ratio of the sample variance of the prediction ($\widehat{Salary}_i$) to sample variance of the dependent variable ($Salary_i$). Under a set of assumptions, a confidence band around our estimates $\hat{\beta}_{constant}$ and $\hat{\beta}_{yrs\ in\ rank}$ is constructed and allows us to assess whether there is a significant link between the variables of interest; if zero lies in that confidence interval, it is not a good sign. The results from the statistical package STATA that we use looks like this.

```
. regress AANNSAL YRS_IN_RANK if SEX==1 & RANK==1;

      Source |       SS       df       MS              Number of obs =     130
-------------+------------------------------           F(  1,   128) =   24.07
       Model |  1.9001e+10     1  1.9001e+10           Prob > F      =  0.0000
    Residual |  1.0106e+11   128   789542810           R-squared     =  0.1583
-------------+------------------------------           Adj R-squared =  0.1517
       Total |  1.2006e+11   129   930713976           Root MSE      =   28099

------------------------------------------------------------------------------
     AANNSAL |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
 YRS_IN_RANK |   2003.859   408.4803     4.91   0.000     1195.611    2812.107
       _cons |   130078.3   4082.917    31.86   0.000     121999.6    138157.1
```

The regression results thus indicate that the "starting" salaries of Full Professor are about $130,000 on average and that an additional $Yrs\ in\ rank$ yields about a $2000 increase.

In our full analysis, we include additional explanatory variables to equation (B.2) and proceed as outlined here.

Appendix C: Terms of Reference SMART Working Group

Reporting to: Faculty Association & Provost

Preliminary Goals:

1. Agreement on specific proposals, with time-lines and required resources, benchmarks and enforcement options, on issues including but not limited to:

a) equity training for (senior) administrators, Heads and Directors and above

b) training for decision-makers (hiring/appointment/P&T committees, SAC)

c) review/response mechanisms for inequities (Working Climate Studies)

d) resourced mentoring/assistance programs

e) salary information provision to short-listed candidates

f) mechanisms for transparency in discretionary pay

g) mechanisms for awarding discretionary pay

2. Agreement on Process for Periodic and Systematic Reviews/Audits

3. Agreement on Process and Timelines for Implementation, including responsible unit on campus and ongoing committee structures, if any.

4. Time-Lines:

a) Report on 1. & by Feb 28,2010
b) Report on 2 by March 30, 2010
c) Report on 3 by May 15, 2010

5. Resources/Support Staff:

6. Scheduling/Coordination: FA: Nancy Lovelace

APPENDIX D:

METRICS FOR MONITORING FACULTY GENDER EQUITY

Source: Harvard Task Force on Women Faculty report (2005)[32]

1. Overall Representation (i.e., percent women and underrepresented minorities). Populations should include, as appropriate and feasible:

    a. Professors / tenured faculty

    b. Associate professors

    c. Assistant professors

    d. Instructors and sessionals

    e. Fixed-contract faculty (appropriate categories within this group)

    f. Postdocs

    g. Graduate students

    h. Undergraduates

2. Comparisons of Overall Representation against External Benchmarks (at school or departmental level, as appropriate).

3. Leadership Representation (i.e., percent women and underrepresented minorities) for total, tenured and tenure-track faculty by department, division and for the University:

    a. Academic leadership (e.g., deans, associate deans, department chairs)

    b. Committee leadership (e.g., chairs, vice chairs)

    c. Named chairs

4. Comparison of Leadership Representation to Overall Representation

[32] http://universitywomen.stanford.edu/reports/women-faculty.harvard.5.05.pdf.

5. Hiring – Offers (i.e., percent of offers to women and underrepresented minorities).

Populations should include, as appropriate and feasible:

a. Tenured faculty

b. Non-tenured (tenure-track only) faculty

6. Hiring – Acceptances (i.e., percent of acceptances by women and underrepresented minorities). Populations should include, as appropriate and feasible:

a. Tenured faculty

b. Non-tenured (tenure-track only) faculty

7. Utilization Factors by department and/or division:

a. Percent women faculty in a given department vs. percent women in relevant Ph.D. pools [need to agree on which Ph.D. production years to use. For example, Princeton used a five-year Ph.D. cohort 1991-96 to compare against 2002 faculty figures].

b. Percent underrepresented minority faculty in a given department vs. percent underrepresented minority in relevant Ph.D. pools.

8. Compensation for women faculty versus men faculty and for minority faculty versus non-minority faculty (total compensation; to include salaries, bonuses, housing subsidies, etc.)

Populations should include, as appropriate and feasible:

a. Tenured faculty

b. Non-tenured (tenure-track only) faculty

c. Fixed-contract faculty (appropriate categories within this group)

9. Start-up funds for women faculty versus men faculty and for underrepresented minority faculty versus non-minority faculty. Populations should include, as appropriate and feasible:

a. Tenured faculty

b. Non-tenured (tenure-track faculty)

10. Space allocations (e.g., lab space) for women faculty versus men faculty and for underrepresented minority faculty versus non-minority faculty. Populations should include, as appropriate and feasible:

a. Tenured faculty

b. Non-tenured (tenure-track) faculty

11. Promotion rates for women faculty versus men faculty and for underrepresented minority faculty versus non-minority faculty:

a. Internal promotions from Instructor to Assistant level (hospitals)

b. Internal promotions from Assistant to Associate level

c. Internal promotions from Associate to Full Professor level

12. Time to tenure for women faculty versus men faculty and for underrepresented minority faculty versus non-minority faculty:

a. Promotion to Assistant Professor (hospitals)

b. Promotion to Associate Professor

c. Promotion from Associate to Full Professor

13. Retention rates for tenured faculty: women faculty versus men faculty and underrepresented minority faculty versus non-minority faculty:

a. Cohort analysis

14. Duration (years with Harvard) for tenure-track faculty: women faculty versus men faculty and underrepresented minority faculty versus non-minority faculty:

a. Cohort analysis

15. Faculty utilization of tenure extension policies: by women faculty versus men faculty and underrepresented minority faculty versus non-minority faculty. Populations:

a. Non-tenured (tenure-track faculty)

16. Faculty utilization of workload relief policies: by women faculty versus men faculty and underrepresented minority faculty versus non-minority faculty. Populations:

a. Tenured faculty

b. Non-tenured (tenure-track faculty)

17. Workload assessment by women faculty versus men faculty and underrepresented minority faculty versus non-minority faculty. Categories of workload to include teaching, research, committee time, advising, mentoring, recommendation writing, etc. Populations should include, as appropriate and feasible:

a. Tenured faculty

b. Non-tenured (tenure-track faculty)

c. Fixed-contract faculty (appropriate categories within this group)

Appendix E: Model Solutions: Key Issues and Overview of Initiatives at Other Universities

In this section of the report, we discuss issues that should be considered with respect to redressing the pay equity gap through raising salaries. It is important to note that there are two elements:

(i) Compensation for past losses;
(ii) Salary increases to eradicate pay differentials.

Compensation for past losses would entail a lump sum payment (limited to 12 months under the BC Human Rights Code) based on total compensation (salary plus benefits including pension, plus compounding).

More than one method exists for salary increases to eradicate pay differentials. As context for this discussion, it is useful to note that multiple-regression analysis is a method of identifying group (or "class") differences across the population surveyed (in this case, all women faculty). Multiple-regression analysis results refer to group rather than individual differences. Accordingly, some argue that a group approach to salary awards for *all* women is the most appropriate strategy, as it is the best method to ensure that the highest-paid women have salaries more like the highest-paid men, and the lowest-paid women will have salaries more like the lowest-paid men. Others argue that, because of heterogeneity in average and individual salaries across the university, a case-by-case approach should be adopted.

Table 1: Types of compensation methods

Type	Target Group	Pros	Cons	Examples
Group salary award	All individuals within the group (in this case, women) received a salary award	Consistent with multiple regression analysis; aligns intercepts of male and female regression lines; time-efficient;	Awards given to highly paid women (outliers).	SUNY (29 campuses).
Flagging: "Below-the line" corrections	Only individuals whose predicted salaries are above their actual salaries	If $ resources are scarce, focuses remedy on those with greatest "residual".	Time-consuming to administer; inconsistent with multiple-regression analysis; penalizes top performers.	U Madison-Wisconsin; McGill.
Flagging: Case reviews	Individuals whose predicted salaries are above their actual salaries may apply to have salary examined and potentially	Cost-savings (potentially).	Time-consuming to administer; salary decisions subject to potential bias; more open to controversy and conflict within departments/units;	UBC in early 1990s.

	adjusted		inconsistent with multiple regression analysis; penalizes top performers.	

Note that the "flagging/case reviews" approach was highly controversial at UBC in the 1990s; many women faculty never received payouts, and the total sum awarded under arbitration was never completely paid out. Moreover, this approach may be compromised (or perceived to be compromised) by unconscious bias and discrimination in the assessment process. We recommend that this approach not be used.

The approach taken at Canadian universities has varied:

McGill	Pay Equity Study conducted in 1999/2000 and again in 2009	$1 million anomalies fund distributed in response to first study
Queens	Anomalies Fund allocated by Anomalies Side-Table to collective bargaining	Funds used to address anomalies within and between disciplines ($350,000 in last round)
Western	Salary Anomalies Committee established under Collective Agreement	Funds distributed via the 2009-10 Salary Anomalies Fund ($500,000)

Whichever approach is adopted, we recommend that an "opt-out" rather than "opt-in" approach is adopted, to ensure maximum coverage and to ensure equity across the faculty ranks.

Other issues related to salary correction include:

Longevity: The most senior women faculty members may have suffered more bias because of the compounding effect over time. A percentage increase is sometimes suggested as a way of correcting for this compounding.

Excluding high outliers: Some argue that highly paid women should be excluded from any salary correction. Other argues that, because bias applies across the spectrum, excluding women at the top salary range risks confirming the stereotype that women are low performers, and that paying the best women more will make it easier for other women to be more fairly treated.

It may be instructive to check for "pockets of bias" through examining interaction terms or the pattern of residuals across departments. Neither is a substitute for compensation; these are methods that *complement* a compensation method.

Good communication is essential. For an example, see the work done by UC Irvine: **http://www.ap.uci.edu/Equity/studies/payequity05/figure01.html**

In all cases, universities have acknowledged that **a salary correction mechanism does not prevent the problem from reappearing.** Accordingly, universities have initiated a range of measures designed to address the causes of salary inequities, some of which listed below, and many of which were preceded by a comprehensive 'Working Climate' study. Note that not all of these issues were addressed by the SMART Working Group (which focused on startup salary information, mentoring, equity training, and working climate surveys).

EMPLOYMENT EQUITY-SPECIFIC TRAINING

(Calgary, Queens, Stanford, Wisconsin)

- Members of appointments, promotions, and tenure committees are trained in systemic bias and complete a workshop which covers the institutional expectations with respect to employment equity.

SENIOR APPOINTMENT on WOMEN FACULTY ISSUES

(Calgary, Harvard, Toronto)

- Creations of an Advisor to the University on Women's Issues
- Role is to: advise the President on policy relating to the status of women at The University of Calgary; participate in the development of employment equity policies and procedures; facilitate communication among University groups concerned with women's issues; and take steps to encourage research that bears on the status of women at the University.

PROMOTION TIMELINE MONITORING

(McGill, Stony Brook, Stanford, Wisconsin, Calgary, Stony Brook)

- Deans review the status of women faculty in the associate professor rank, and discuss with chairs the files of women who have been in the rank for a longer than normal period.

EQUITY-FOCUSED RECRUITMENT FUNDS

- Targeted funds to assist departments in recruiting and retaining female faculty & support dual career programs

IMPROVED RECORD KEEPING TO FACILITATE TRACKING AND DATA ANALYSES

(McGill, Calgary, Stanford, Wisconsin, Harvard)

- Systematic reviews of base salary information and collects detailed information on: start up

offers, research accounts, laboratory space, retention packages, teaching loads and housing subsidies to be assembled into tables, graphs and summaries and evaluated
- Monitor gender equity in startup packages, availability of office and lab space, and research development funds.

MENTORING (Toronto, York, Calgary, Stanford, Wisconsin, Harvard)

- Mentoring programs for female faculty
- Leadership and development programs

STARTING SALARY INFORMATION PROVIDED TO ALL SHORT-LISTED FACULTY (York)

Because only some of the above issues were addressed by the SMART group, we recommend that the new Working Group consider other measures that need to be addressed in order to stop the pay gap from reappearing.