

**Salary Anomaly Working Group
Analysis and Findings
(26 February 2021)**

A Salary Anomaly Working Group was created in 2015 as one result of the salary settlement between the University of Waterloo and the Faculty Association of the University of Waterloo that took effect 1 May 2015. Its terms of reference were to investigate all cases of faculty salary inequities, including but not limited to gender-based inequities, that may exist and recommend how such cases should be resolved using the Faculties' existing anomaly funds; to review the processes by which salary anomalies are currently identified and resolved in each Faculty; and to establish a standardized university-wide process for the detection and resolution of all faculty salary anomalies that may arise in future, wherever they may occur. The working group provided a final written report detailing its methodologies and findings to the VPAP and to the FAUW President on 26 May 2016.

Following one of the recommendations of the 2015 Salary Anomaly Working Group report, a joint Provostial-FAUW Memorandum of Agreement on Faculty Salary Anomaly Reviews was issued in December 2016 and included the following statement:

“We have agreed that every five years, beginning in September 2020, a jointly sponsored Working Group will be struck to conduct a university-wide anomaly review for both male and female faculty, including lecturers. Since the 2015-2016 review should be used as a baseline and for comparison purposes, the review should use an equivalent regression model to that developed for the 2015-2016 review (unless both parties agree to a change in methodology).”

Hence a Working Group was re-established in September 2020. Its membership consisted of six members in total, three appointed by FAUW - Mario Ioannidis (Chemical Engineering and co-chair of the Salary Anomaly Working Group), Diana Skrzydlo (Statistics and Actuarial Science), and Cecilia Cotton (Statistics and Actuarial Science) – and three appointed by the VPAP - Jean Andrey (Dean of Environment and co-chair of the Salary Anomaly Working Group), Christiane Lemieux (Statistics and Actuarial Science), and Bill Power (Chemistry). This report summarizes the Working Group's findings with the goal that recommended salary adjustments can be implemented before 30 April 2021 (so that they could be incorporated into the normal salary increases that take effect each May 1).

Looking Back

The 2020 Salary Anomaly Working Group determined that current practices should be reviewed in light of the previous recommendations, to ensure salary anomalies can be identified and resolved on an ongoing basis. For clarity, the 2016 recommendations are summarized here:

i. Recommended Best Practices for Identification and Resolution of Salary Anomalies at the Faculty Level.

- a) Deans of all Faculties should be open to self-identification and to identification of potential anomalies by Chairs and Directors of academic units, but should not be reliant upon those means of identifying anomalies.
- b) Deans of all Faculties should continue to review all salaries in their Faculty annually for anomalies.
- c) Career earnings and annual salaries are a function of two key variables: starting salaries and merit increases. To help prevent future anomalies, care should continue to be taken to ensure that starting salaries are equitable, as an inequity at this point can quickly compound.

ii. Recommended Best Practices for the Identification and Resolution of Salary Anomalies at the University Level.

- d) Because annual Faculty-level anomaly reviews may fail to identify inequities that may be developing across the university as a whole, the Working Group recommends that a university-wide anomaly review be done regularly for both men and women faculty, including lecturers, using the regression model developed for the 2015-16 review. A five-year interval is recommended, as it is long enough to allow the system to detect anomalies as they develop, but short enough to allow corrections to be applied in a timely manner (the Working Group recommends every five years).

This key recommendation was formally adopted in the joint Provostial-FAUW memorandum of agreement on faculty salary anomaly reviews, dated December 12th, 2016.

- e) One subset of those cases identified as potential anomalies are definite-term professorial appointments. The Working Group recommends that the VPAP examine closely the practices around the determinations of these salaries, with the purpose of ensuring equity across campus for those hired into this rank.

The Working Group consulted the Deans and the VPAP to gauge their practices in light of these recommendations, and were satisfied that consistent efforts at both the Faculty and University level were being made to follow these suggested measures. In general, there was more uniformity to the identification and resolution of salary anomalies across Faculties and a shared commitment among the Deans, with the VPAP, to dealing with them effectively when they became apparent.

Current Work

Summary of Methodology

The 2020 Working Group agreed to adopt an equivalent model (regression analysis) as a starting point for the identification of anomalies. Hence, similar to the approach from 2015, a comprehensive regression model was used to identify both individual salary anomalies and any remaining systemic gender-based anomaly. This model accounts for each individual's observed employment history including actual average merit ranking from up to the past seven years. Detailed and anonymized salary data including current salary, starting salary, year of hire, rank, and merit scores, among others, were collected and reviewed in detail, to ensure integrity of the data. The Working Group decided *a priori* to use the same criteria to identify individual anomalies as used in the 2015 analysis. That is, an actual salary less than 90% of the predicted salary and an actual salary more than \$5000 below the predicted salary. See the Appendix for a comprehensive explanation of the methodology used to identify salary anomalies.

After the regression model was fit without a gender term and individual anomalies were assumed to be corrected, the model was fit again with the inclusion of a gender term, to determine whether a gender-based salary anomaly was present. The Working Group decided *a priori* that the criteria for a gender-based anomaly was an estimated difference greater than 1% of the median faculty salary (either positive or negative in value) and statistical significance at the 0.05 level.

Summary of Findings

The Appendix includes a comprehensive explanation of the findings of the analysis.

A total of 82 individuals were identified in the analysis. Of those 82 cases, 32 are considered by the Working Group to be truly anomalous, whereas 50 cases are considered to be potentially anomalous requiring further investigation. The 50 potential anomalies requiring further investigation consist of two distinct groups:

1. The first group of potential anomalies requiring further investigation includes 35 “early career” individuals - mainly recent hires - for whom just one or two merit scores are available. The Working Group is concerned that one or two merit scores may be insufficient to provide a reliable average, which could make the identification of salary anomaly based on the regression model less certain. It is recommended that the Deans review these individuals closely to ensure their starting salaries were appropriately set, and apply any suggested corrections this year or at their next reappointment.
2. The second group of potential anomalies requiring further investigation includes 15 individuals whose salaries exceeded the thresholds of the faculty salary structure (commonly referred to as T1 and T2 in the Memorandum of Agreement between the Faculty Association of the University of Waterloo and the University of Waterloo,

Article 13). The Working Group is concerned that the structural effect of the thresholds on faculty salaries (insofar as this dampens the effect of the merit scores on salary increases) may impact the identification of salary anomalies using the linear regression model in the range of high salaries. It is recommended that the Deans review these individuals closely to determine whether a correction should be applied to their salaries.

Of the 82 total cases identified, 31 of them are women (of a total population of 410 women in the dataset, so 7.6% of all women) and 51 are men (of a total population of 901 men in the dataset, so 5.7% of all men). Thirty-five of the 82 cases are lecturers (continuing or definite-term) and 47 cases are in the professorial ranks (tenure-stream or definite-term).

The Faculty breakdown of the cases identified is provided in the table below. Under the column “Number of Cases Identified”, the leftmost number is the number of true anomalies, and the numbers in brackets are potential anomalies requiring further investigation (fewer than three R scores, salary above T1). The last column gives the fraction (as percentage) of true salary anomalies compared to the size of the Faculty complement.

Faculty	Academic Grouping	Number of Cases Identified	Faculty Complement in Dataset	Cases/Size of Faculty Complement
Arts	Economics	1 (0, 1)	35	2.9%
	School of Accounting	4 (2, 2)	55	7.3%
	All other units	15 (3, 0)	230	6.5%
	Total	20 (5, 3)	320	6.2%
Engineering	Total	16 (6, 6)	334	4.8%
Environment	Total	6 (5, 0)	93	6.5%
Health	Total	4 (1, 0)	81	4.9%
Mathematics	Computer Science	3 (0, 1)	95	3.2%
	All other units	10 (9, 0)	178	5.6%
	Total	13 (9, 1)	273	4.8%
Science	Optometry & Vision Science	4 (0, 2)	30	13.3%
	Pharmacy	3 (1, 1)	24	12.5%
	All other units	16 (8, 2)	156	10.3%
	Total	23 (9, 5)	210	11.0%

In addition, after the 82 cases were identified, the regression model was re-run with the individual salaries adjusted by the recommended amounts, and the addition of a single term to represent gender. This analysis determined that **there was no systemic gender-based anomaly present** in the collective salary data of faculty at the University of Waterloo. After controlling

for all factors included in the model (see Appendix) the estimated difference between the salary of a male and female faculty member was \$37. This difference was not statistically significant. The same conclusions were reached when the regression model was re-run with the addition of a gender term but without any salary adjustment. After controlling for all factors included in the model (see Appendix) the estimated difference between the salary of a male and female faculty member was \$147. Again, this difference was not statistically significant.

Current Recommendations.

- a) The Working Group recommends that the 32 cases considered to be truly anomalous be adjusted.
- b) The Working Group recommends that the remaining 50 cases be investigated further by the respective Dean, with the objective of determining whether or not they are anomalous, and correcting those that are.
- c) The Working Group recommends that the 32 individuals who have been identified as having anomalous salaries be informed of that fact, and the size of their particular anomaly in a similar method to that employed after the last salary anomaly review, and before 30 April 2021. These communications should be issued jointly by the VPAP and the President of the Faculty Association of the University of Waterloo, as co-sponsors of the anomaly review.
- d) One third of all cases for which a salary anomaly correction is recommended concern lecturer appointments. The Working Group recommends that the VPAP examine closely the practices around the determination of these salaries, with the purpose of ensuring equity across campus for those hired into this rank.

Looking Forward

Recommendations from this Working Group (2020) to the next.

- (a) Collection of accurate and complete data for individual faculty members is a crucial element of any successful salary review. Quality control of the data required for a comprehensive salary review is an ongoing recommendation. For example, the calendar year of hire in the Human Resources record is not always the same as the year an individual was first hired as a faculty member (part-time or full-time at any rank subject to the Faculty Salary Increase (FSI) process). This, however, is not a significant impediment since Human Resources records can be readily checked against the records kept at each Dean's Office to confirm the accuracy of the information.

- (b) It is recommended that this report be retained in its entirety, including the regression model, and the corrected year of hire data, and it be made available to the next salary anomaly Working Group committee so that it may use it in its own work. As per the joint Provostial-FAUW MoA, the Associate Provost for Human Resources should be the keeper of these documents.

Appendix

Salary Analysis Report

Objectives

The main task the Salary Anomaly Working Group was asked to perform was the following:

- To investigate all cases where faculty salary inequities, including but not limited to gender-based inequities, may exist and recommend how such cases should be resolved using the existing anomaly funds within the Faculty budgets.

This appendix describes the process by which the Working Group accomplished this task.

Methodology

We followed the same methodology used by the 2015 Salary Anomaly Working Group for the identification of individual anomalies. Specifically, we developed a linear regression model incorporating several factors to explain a response variable in a statistical sense. The response variable was the 1 May 2020 salary (Full Time Equivalent Pay).

Data Requested

The cohort that was used to do the analysis consists of regular full-time and part-time faculty members at UW as of 1 May 2020, included in the Faculty Salary Increase (FSI) process. Note that any individual hired on or after 1 May 2020 is not included in this cohort. The FSI includes individuals defined under Policy 76, 2A; regular faculty with a definite term, probationary, tenured, or continuing appointment, and with a load of full-time, reduced- or fractional-load. The term 'part-time' refers to regular faculty with either reduced- or fractional-load intensities.

The following data were requested for each individual in the above cohort. These data were provided by Human Resources in a blinded manner, with each individual being assigned an ID number. This unique identifier was linked to a database of names accessible only to the Provost and the Deans.

Variable	Description
FTE	Percentage appointment, e.g. 1.0 or 0.5 for 100% and 50%
Annual Salary	Annual base salary (or FTE) as of 01/05/2020 exclusive of stipends
Starting Salary	Annual base salary (or FTE) at time of hire exclusive of stipends
Rank at Hire ¹	Rank at which the individual was hired as a faculty member at UW
Year of Hire	Calendar year the individual was hired as a faculty member at UW
Highest Degree ²	Highest degree earned by the individual
Year of Highest Degree	Calendar year the individual's highest degree was awarded
Rank	Current rank of the individual
Faculty ³	Faculty the individual belongs to

Department	Department or School individual belongs to
Gender	Male, Female
Outstand Performance Award (OPA)	Number of Outstanding Performance Awards earned by the individual over career
Merit - Overall	Overall merit R scores assigned annually for each of the last 10 years

¹ Assistant Professor, Associate Professor, Clinical Lecturer, Lecturer, Professor

² Bachelor, Doctoral, Graduate License, Masters, Professional

³ Arts, Engineering, Environment, Health, Mathematics, Science

Table 1: List of Requested Individual Level Characteristics

After we obtained this data it was carefully checked for completeness and consistency. Several minor issues including verification of some highest degrees, missing information at hire, and missing merit scores were handled in consultation with HR and, in some cases, the Faculties.

The original data from HR included both a “Year of Hire” and “Workday Year of Hire”. In most cases these two dates were the same. We asked the Executive Officer from each Faculty to check the dates for all other faculty members. They were asked to provide the year in which the faculty member was first hired as a faculty member (part-time or full-time at any rank subject to the Faculty Salary Increase (FSI) process). This was the year used in the analysis.

In preparing the data for analysis the Working Group considered the following:

- **Academic Groups:** In consultation with the Deans and by examining the starting salaries of recent hires we determined that the following Academic Groups would be used in all models: Health (all units), School of Accounting and Finance (SAF), Economics, Arts (all other units), Engineering (all units), Environment (all units), Cheriton School of Computer Science (CSCS), Math (all other units), School of Optometry and Vision Science (SOVS), School of Pharmacy, and Science (all other units).
- **Joint Appointments:** Individuals with a joint appointment had their R scores and base pay scaled according to the FTE in each unit. They are included in the Academic Group corresponding to the unit where they have the highest FTE.
- **Individuals with FTE < 1:** The response variable used in the model is the Full Time equivalent pay. This is the scaled pay they would have received if they had been working at FTE= 1.
- **Calculation of Average Performance Rating:** The average R score was based on up to seven years (2014-2020) of performance ratings for each faculty member. Since biennial evaluations were introduced in 2017 this allowed for up to five independent evaluations of tenured and continuing faculty members. Missing data were excluded. Note that the R score for any specific year is based on performance during the previous one- or two-year evaluation period. For individuals hired in 2020 or 2019 with no recorded R scores, the R score used was based on average 2020 scores stratified by Faculty and rank.

The tables below provide a summary of the data used for the analysis by rank, gender, and Faculty.

	Female	Male	Total
Arts	144	176	320
Engineering	68	266	334
Environment	35	58	93
Health	36	45	81
Mathematics	56	217	273
Science	71	139	210
Total	410	901	1311

Table 2: Summary of Faculty Members by Faculty and Gender

	Female	Male	Total
Assistant Professor	87	127	214
Associate Professor	124	279	403
Clinical Lecturer	6	2	8
Lecturer	88	137	225
Professor	105	356	461
Total	410	901	1311

Table 3: Summary of Faculty Members by Rank and Gender

Regression Model

The regression model used fits the 1 May 2020 salary as a linear function of the following variables, which are the same as those used in 2015:

- Average R score (all available scores from 2014-2020)
- Lag of years between highest degree and Year of Hire
- Years since hire at UW
- Years since hire at UW squared
- Number of previous Outstanding Performance Awards (OPA)
- Highest degree (factor, comparison is Bachelor)
- Current Rank (factor, comparison group is Assistant Professor)
- Academic Group (factor, comparison group is Faculty of Health)
- Rank at Hire (factor, comparison is Assistant Professor)
- Interaction between Academic Group and a binary version of Current Rank (professorial rank vs Lecturer) called “Current.Rank2” in the model
- Interaction between Lag and Rank at Hire

Note that Gender is not included in the model used to detect individual anomalies. The rank of Clinical Lecturer was merged with Lecturer due to small numbers at this rank. The resulting fitted model is given below, where for each of the above variables we obtain a coefficient that indicates by how much the corresponding variable must be multiplied to obtain a fitted salary.

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	55882.15	5247.35	10.65	0.0000
R-score, avg	27711.54	2164.78	12.8	0.0000
Lag	1053.81	146.69	7.18	0.0000
Years.UW	3119.49	132.54	23.54	0.0000
Years.UW.sq	-28.80	3.16	-9.11	0.0000
OPA	3881.91	473.20	8.20	0.0000
factor(Highest.Degree)Doctoral	9802.09	3731.89	2.63	0.0087
factor(Highest.Degree)Graduate License	-9013.73	7572.62	-1.19	0.2341
factor(Highest.Degree)Masters	8958.48	3755.76	2.39	0.0172
factor(Highest.Degree)Professional	16505.81	4680.32	3.53	0.0004
factor(Rank.at.Hire)Associate Professor	2699.49	2434.18	1.11	0.2676
factor(Rank.at.Hire)Lecturer	-2795.57	1955.96	-1.43	0.1532
factor(Rank.at.Hire)Professor	26974.51	3859.57	6.99	0.0000
factor(Current.Rank)Associate Professor	6582.83	1253.00	5.25	0.0000
factor(Current.Rank)Lecturer	-12156.7	4115.02	-2.95	0.0032
factor(Current.Rank)Professor	14892.48	1592.78	9.35	0.0000
factor(Academic.Group)ARTS	-9808.95	3891.31	-2.52	0.0118
factor(Academic.Group)ENG	11481.13	3819.00	3.01	0.0027
factor(Academic.Group)ENV	-3020.77	5327.41	-0.57	0.5708
factor(Academic.Group)MATH	-221.04	3844.06	-0.06	0.9542
factor(Academic.Group)SCI	-4103.36	4196.23	-0.98	0.3283
factor(Academic.Group)SAF	7222.36	4517.28	1.60	0.1101
factor(Academic.Group)Econ	7289.76	5815.53	1.25	0.2103
factor(Academic.Group)CSCS	3600.38	4387.72	0.82	0.4121
factor(Academic.Group)SOVS	17685.04	7796.67	2.27	0.0235
factor(Academic.Group)Pharmacy	28657.24	6741.58	4.25	0.0000
factor(Academic.Group)ARTS:factor(Current.Rank2)Prof	3249.25	4213.67	0.77	0.4408
factor(Academic.Group)ENG:factor(Current.Rank2)Prof	2890.13	4115.15	0.70	0.4826
factor(Academic.Group)ENV:factor(Current.Rank2)Prof	-3054.03	5637.46	-0.54	0.5881
factor(Academic.Group)MATH:factor(Current.Rank2)Prof	12504.37	4196.51	2.98	0.0029
factor(Academic.Group)SCI:factor(Current.Rank2)Prof	3380.60	4523.92	0.75	0.4550
factor(Academic.Group)SAF:factor(Current.Rank2)Prof	35402.05	5097.57	6.94	0.0000
factor(Academic.Group)Econ:factor(Current.Rank2)Prof	6940.58	6336.02	1.10	0.2735
factor(Academic.Group)CSCS:factor(Current.Rank2)Prof	19097.21	4772.01	4.00	0.0001
factor(Academic.Group)SOVS:factor(Current.Rank2)Prof	-3809.09	8053.30	-0.47	0.6363
factor(Academic.Group)Pharmacy:factor(Current.Rank2)Prof	-8899.50	7324.97	-1.21	0.2246
Lag:factor(Rank.at.Hire)Associate Professor	797.14	266.25	2.99	0.0028
Lag:factor(Rank.at.Hire)Lecturer	-198.29	177.82	-1.12	0.2650
Lag:factor(Rank.at.Hire)Professor	297.41	234.53	1.27	0.2050

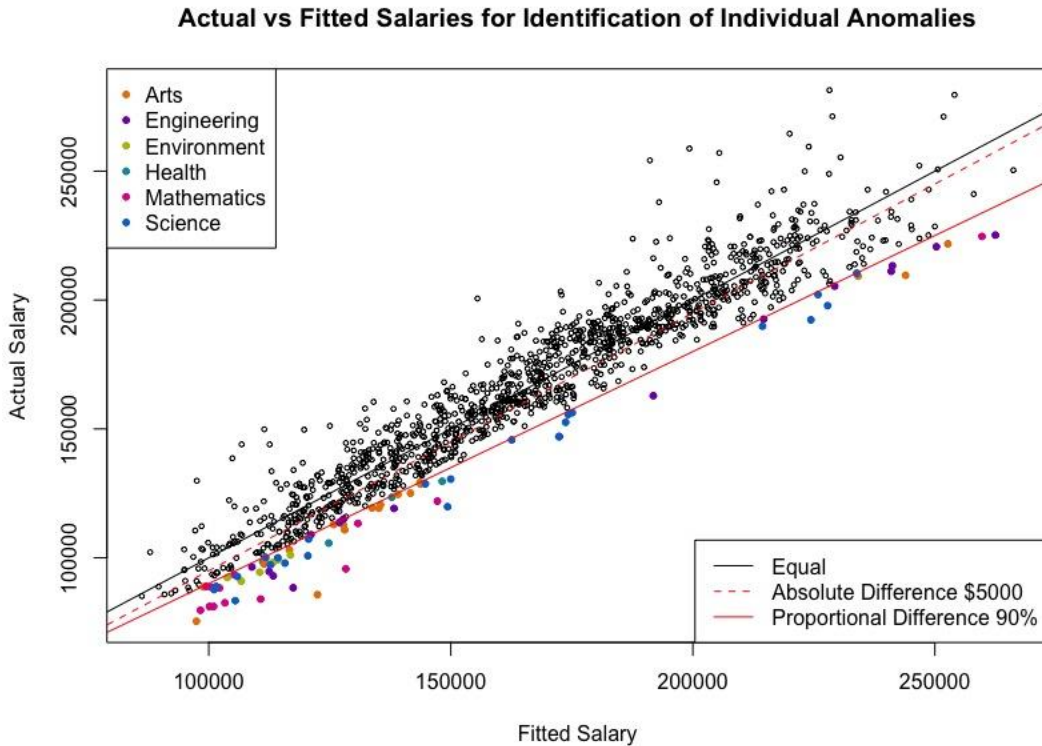
Table 4. Summary of Fitted Regression Model for Identification of Individual Anomalies.

The model was used to calculate a fitted salary for each individual in the data set. For example, consider a faculty member in Environment hired as Assistant Professor in 2010 with a PhD in

2008 and with an average performance rating of 1.5. Assume the individual is an Associate Professor as of 1 May 2020 and has not received any OPAs. This individual’s model-based fitted salary is:

$$55882.15 + 27711.54 * 1.5 + 1053.81 * (2010-2008) + 3119.49 * (2020-2010) - 28.80 * (2020-2010)^2 + 9802.09 + 6582.83 - 3020.77 - 3054.03 = 138182.10$$

The plot below shows the actual salaries versus the fitted salaries.



The fitted model had an adjusted R-squared value of 91%. That is, essentially 91% of the variability in salaries is being explained by the variables included in the model. The plot above confirms that most individuals have a salary that is within a reasonable range of the salary predicted by the model (a perfect model would show all points on the y=x diagonal line shown in black on the plot).

There was some indication of non-constant variance in the fitted model suggesting the variability in residuals increased as the salary size increases. Several transformations of the response variable were considered but they did not resolve the issue. In addition, we considered additional interaction variables but none were statistically significant. Although several individuals were identified as having high leverage over the fit of the model no individuals were excluded from the analysis as all were determined to be valid observations. A sensitivity analysis showed exclusion of these individuals did not lead to the identification of additional individual anomalies.

Key Assumptions of the Regression Model

- The average merit from 2014 to 2020 is representative of the individual's full history of merit ratings over their career.
- The individual has had continuous service since their year of hire.
- For faculty members with a joint appointment, their salary is consistent with the Academic Group for which the corresponding FTE is the largest.
- It is assumed that the functional form of the model is correct, including the fact that we assume a linear relationship between the explanatory variables and outcome (actual salary).
- It is assumed that data is accurate, including merit scores, rank at hire, year of hire, and highest degree.

Identification of Individual Anomalies

The model-based fitted salary for each faculty member was compared to the actual (full time equivalent) salary in two ways:

- The **Absolute Difference** between actual salary and the fitted salary = (Actual - Fitted)
- The **Proportional Difference** between actual salary and fitted salary = (Actual - Fitted)/Fitted

Individuals were identified as potential anomalies if they met both of the following criteria:

- An **Absolute Difference** of more than \$5000 (i.e. Fitted - Actual > 5000)
- A **Proportional Difference** where Actual < 90% Fitted (i.e., (Actual - Fitted)/Fitted < - 0.1)

In practice all individuals who met the second criteria also met the first criteria. Using these criteria, a total of 82 cases were identified. The salaries of these individuals are highlighted, by Faculty, in the figure above. As described in the main report, of the 82 cases, 32 are considered by the Working Group to be truly anomalous, whereas 50 cases are considered to be potentially anomalous requiring further investigation due to either having only one of two R scores in the record or having an actual salary above threshold T1. Summaries of these cases by gender, Faculty, and rank are provided in the tables below.

	Not Anomalies	True Anomalies	Potential Anomalies		Total
			< 3 R scores	Salary Above T1	
Female	379	11	17	3	410
Male	850	21	18	12	901
Total	1229	32	35	15	1311

Table 5: Summary of Individual Salary Anomalies by Gender

	Not Anomalies	True Anomalies	Potential Anomalies		Total
			< 3 R scores	Salary Above T1	
Arts	300	12	5	3	320
Engineering	318	4	6	6	334
Environment	87	1	5	0	93
Health	77	3	1	0	81
Mathematics	260	3	9	1	273
Science	187	9	9	5	210
Total	1229	32	35	15	1311

Table 6: Summary of Individual Salary Anomalies by Academic Group

	Not Anomalies	True Anomalies	Potential Anomalies		Total
			< 3 R scores	Salary Above T1	
Assistant Professor	198	6	10	0	214
Associate Professor	388	14	0	1	403
Lecturer ¹	198	10	25	0	233
Professor	445	2	0	14	461
Sum	1229	32	35	15	1311

¹ Includes Clinical Lecturers

Table 7: Summary of Individual Salary Anomalies by Rank

The amount of the recommended correction in each case is determined as follows. We first compute the dollar amount necessary for the actual salary to no longer be an anomaly. Then we round this amount up to the next \$500 amount. The following table contains the sum of the corrections in each Faculty for the 32 true anomalies assuming an FTE of 1. Since some individuals may be working part-time the actual cost could be slightly less.

	Count	Total Recommended Corrections
Arts	12	\$19,000
Engineering	4	\$24,500
Environment	1	\$4,500
Health	3	\$12,000
Mathematics	3	\$31,500
Science	9	\$48,000
Total	32	\$139,500

Table 8: Cost of Fixing Identified True Anomalies by Faculty

Gender-Based Analysis

Gender was not included in the model used to identify individual anomalies. In order to investigate the presence of a gender-based inequality we performed the following analysis. We assumed that the recommended corrections were made to all 82 anomalies. We then re-fit the regression model with the addition of a single term to represent gender. The value for the regression coefficient for the gender factor is the expected salary difference between a male and female faculty member with fixed values of all other terms included in the regression model (e.g., average R score, year of hire, highest degree, year of highest degree, etc.). The fitted model is given below. The value of the regression coefficient corresponding to gender is \$37. This difference was not statistically significant. This analysis determined that **there was no systemic gender-based anomaly present** in the collective salary data of faculty members at the University of Waterloo.

The same conclusions were reached when the regression model was re-run with the addition of a gender term but without any salary adjustment. In this case the estimated difference between the salary of a male and female faculty member was \$147. When the model was re-run with salary adjustment made only to the 32 anomalous salaries not requiring follow-up by the Deans the estimated gender regression parameter was \$167. Neither of these differences were statistically significant. In addition, there was no statistically significant interaction between Gender and Rank, Gender and Academic Group, or Gender and Years since hire at UW.

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	55311.71	4985.59	11.09	0.0000
factor(Gender)Male	37.31	688.40	0.05	0.9568
R-score, avg	27829.28	2053.45	13.55	0.0000
Lag	1070.44	139.14	7.69	0.0000
Years.UW	3062.18	125.77	24.35	0.0000
Years.UW.sq	-27.44	3.00	-9.15	0.0000
OPA	3772.81	448.82	8.41	0.0000
factor(Highest.Degree)Doctoral	10461.45	3540.57	2.95	0.0032
factor(Highest.Degree)Graduate License	-8621.58	7184.43	-1.20	0.2303
factor(Highest.Degree)Masters	9399.78	3562.30	2.64	0.0084
factor(Highest.Degree)Professional	18914.90	4439.75	4.26	0.0000
factor(Rank.at.Hire)Associate Professor	2616.50	2309.75	1.13	0.2575
factor(Rank.at.Hire)Lecturer	-2714.61	1855.49	-1.46	0.1437
factor(Rank.at.Hire)Professor	26054.75	3661.38	7.12	0.0000
factor(Current.Rank)Associate Professor	6725.66	1189.20	5.66	0.0000
factor(Current.Rank)Lecturer	-11684.79	3905.03	-2.99	0.0028
factor(Current.Rank)Professor	15092.46	1511.53	9.98	0.0000
factor(Academic.Group)ARTS	-10048.36	3695.02	-2.72	0.0066
factor(Academic.Group)ENG	11775.57	3633.13	3.24	0.0012
factor(Academic.Group)ENV	-3088.27	5058.01	-0.61	0.5416
factor(Academic.Group)MATH	854.21	3658.38	0.23	0.8154
factor(Academic.Group)SCI	-3270.63	3981.23	-0.82	0.4115
factor(Academic.Group)SAF	6741.46	4289.27	1.57	0.1163
factor(Academic.Group)Econ	6711.89	5517.90	1.22	0.2241
factor(Academic.Group)CSCS	4174.37	4174.97	1.00	0.3176
factor(Academic.Group)SOVS	15736.17	7394.99	2.13	0.0335
factor(Academic.Group)Pharmacy	28546.52	6394.33	4.46	0.0000
factor(Academic.Group)ARTS:factor(Current.Rank2)Prof	3733.52	4004.98	0.93	0.3514
factor(Academic.Group)ENG:factor(Current.Rank2)Prof	2754.65	3906.03	0.71	0.4808
factor(Academic.Group)ENV:factor(Current.Rank2)Prof	-2789.43	5351.28	-0.52	0.6023
factor(Academic.Group)MATH:factor(Current.Rank2)Prof	11385.30	3983.90	2.86	0.0043
factor(Academic.Group)SCI:factor(Current.Rank2)Prof	2869.28	4290.85	0.67	0.5038
factor(Academic.Group)SAF:factor(Current.Rank2)Prof	36052.26	4835.64	7.46	0.0000
factor(Academic.Group)Econ:factor(Current.Rank2)Prof	7700.74	6009.66	1.28	0.2003
factor(Academic.Group)CSCS:factor(Current.Rank2)Prof	18609.21	4530.25	4.11	0.0000
factor(Academic.Group)SOVS:factor(Current.Rank2)Prof	-1642.94	7641.34	-0.22	0.8298
factor(Academic.Group)Pharmacy:factor(Current.Rank2)Prof	-8945.14	6947.65	-1.29	0.1982
Lag:factor(Rank.at.Hire)Associate Professor	780.63	252.55	3.09	0.0020
Lag:factor(Rank.at.Hire)Lecturer	-191.47	168.66	-1.14	0.2565
Lag:factor(Rank.at.Hire)Professor	350.77	222.47	1.58	0.1151

Table 9. Summary of Fitted Regression Model for Identification of a Gender-Based Anomaly