Report by the University of California, Merced Joint Academic Senate and Administrative Faculty Salary and Equity Committee

Spring, 2014

The November 2013 UC Merced Faculty Salary Equity Committee[1] report, *Faculty Compensation and Startup Commitment When Hired*, found no significant systematic differential treatment at recruitment and hiring of ladder-rank faculty[2] that disadvantaged females or minorities. This second report addresses faculty salary equity by gender and also by ethnicity and uses a methodology pilot-tested by UC Merced (UCM) Institutional Research and Decision Support and reviewed by the Committee at the fall meeting in 2013. The Committee supported a strategy that would use salary equations based on white male faculty from comparable UC campuses (thereafter referred to as "sibling campuses"). These external salary equations would serve as a yardstick or reference point against which male and female salaries can be compared. The Committee recommended that Riverside and Santa Cruz data be used for the external "yardstick" or benchmark. Briefly, the methodology (1) creates equations to describe the relationship among three variables (rank, age, and salary from state or tuition and fee sources) within disciplinary areas, (2) applies those equations to UC Merced faculty to produce predicted salaries, and then (3) examines the error between predicted and actual salaries for systematic differences by gender and minority status. This methodology is logically consistent with that recommended by the AAUP

[1] The membership of Administrative-Academic Senate Faculty Salary Equity Study Steering Committee includes Academic Senate Committee on Faculty Welfare, Diversity and Academic Freedom appointments: Rudy Ortiz (Associate Professor in Molecular Cell Biology, School of Natural Sciences), Shawn Newsam (Associate Professor in Computer Science and Engineering, School of Engineering), and Tanya Golash-Boza (Associate Professor in Sociology, School of Social Sciences, Humanities and Arts); and administrative appointments: Nancy Ochsner (AVC Institutional Research and Decision Support), Becky Gubser (Associate Director of Academic Personnel) and Steve Chatman (Principal Analyst, Institutional Research and Decision Support).

[2] Throughout this report, "faculty" refers to ladder-rank (tenured or tenure-track) faculty only (those with appointments as professor, associate professor, or assistant professor).

(Haignere,2002). [3] and can be applied to a small campus like UC Merced. This new methodology is especially useful for a young campus like UC Merced that does not have decades-long local career service records. In addition to being a useful way for UCM to address this mandated charge from the UC Office of the President, this methodology is especially applicable to small campuses where sample sizes are small and the number of important predictor/independent variables is relatively large. At UC Merced, for example, there were insufficient numbers of white male ladder-rank faculty in a number of disciplinary areas.[4]

Table 1: Sibling Campus Characteristics

After receipt of standard faculty income files from the Office of the President for UC Riverside, UC Santa Cruz, and UC Merced, the first step was to make the sibling campus files as comparable as possible. The combined ladder-rank faculty information in the UCR and UCSC data files was trimmed in the following ways:

Medical school faculty (e.g., DOS Codes HD, HO, HR, HY and HZ) were excluded;

Title codes were limited to faculty ranks in the categories of professorial-tenure or professorial-non-tenure;

Income sources were limited to State Funds or Tuition and Fees;

FTE employment from combined sources (State Funds or Tuition and Fees supported sources) had to represent six months or more;

Title appointment codes for deans, associate deans and directors (i.e., 1010, 1000, and 0900) were excluded;

Title appointment codes were restricted to assistant, associate or full professors (i.e., 1100, 1143, 1200, 1243, 1300, 1343); and

Faculty in Agriculture and Natural Resources, Area Studies, Education, Fine and Applied Arts, Interdisciplinary Studies, Medicine, Public Health, and Theology were removed (as these are not programs at UC Merced).

[3] Haignere, Lois (2002). Paychecks: A Guide to Conducting Faculty Salary-Equity Studies for Higher Education. Second Edition. AAUP.

[4] It is arguably a more accurate methodology for large campuses but is not statistically necessary for large campuses.

Application of those conditions resulted in a file of 699 UCR and UCSC faculty, 324 of whom were white males. Overall, 46% of the selected faculty were white males and they formed the benchmarking dataset. If necessary, when a faculty member was employed for between six and 12 months, a 12-month adjusted salary was computed using the FTE and partial year salary that was supported by State Funds or Tuition and Fee funds. Except in business and economics, every disciplinary area at UCR and UCSC included 37 or more white male faculty members. Because of exceptionally high salaries, business and economics faculty historically have been excluded or treated separately in UC studies of faculty salaries. Because the number of white males in business and economics at both the sibling campuses and at UC Merced was very small and because there were no female faculty members in business and economics at UC Merced, that disciplinary area was excluded from UC Merced's study.

Table 2 describes the distribution of UCR and UCSC faculty by rank and discipline. White males were the majority faculty in three disciplinary areas: engineering and computer science (55%), biological sciences (61%), and physical sciences and mathematics (57%). They were also the majority at the professorial rank in those areas. In contrast, white males were 38% of assistant professors and were the assistant professor majority only in physical sciences and mathematics (53%). In other areas, the percentages of white male assistant professors were in the 30-38% range. White males were less likely to be associate professors in letters and languages (23%) as well as in social sciences (25%).

In Table 3 and Figure 1, the cumulative distributions of faculty salaries by discipline are displayed to show that there were differences and that the differences tended to be consistent across the distributions. The one exception was biological sciences where salaries at the lower end of the distribution appeared to be less than would be expected given the patterns for other disciplines.

Table 4 presents the results of comparative models to determine the most useful available variable choices when predicting salary. Specifically, the models compared the use of all professorial ranks as predictors to using only the professor rank and also compared whether the log of annual salary and age should be used as was recommended by the 2012 UCSB equity study[5] and mentioned as a criticism of

[5] 2012 Faculty Equity Analysis, Office of the Executive Vice Chancellor, UC Santa Barbara.

the UCOP Yahr study.[6] Although log salary and log age were used in the UCSB report, Figure C of the UCSB report did not show a distinct advantage for log age and, if there was an effect, it appeared to be driven by the inclusion of faculty over 65 years old and faculty over 65 have been excluded from the UCM study as atypical local cases. When models using log age were compared to those not using log age, there was not a single instance where log age was an advantage in explaining the variance in salaries. In contrast with the age and log age comparison, models including log salary were consistently associated with an improvement of five percent or more additional variance explained. For the majority of disciplinary areas, the models excluding an associate professor flag were as strong as those where it was included.[7] The exceptions were engineering and computer science and physical science and mathematics. The relationship between age, faculty rank and discipline is displayed as Figure 2. Except for engineering, the typical relationship between age and salary by rank was not precisely linear but was very nearly linear. For most disciplinary areas, the best fitting (regression) line split the space between mean age and income at the associate and assistant ranks.

In sum, the best salary models predicting log annual salary from Table 4, the models that were applied to UC Merced faculty, are described in Table 5. The models shared three elements; age, professor (yes or no), and log annual salary. The models for engineering and natural sciences also include a weight for associate professor (yes or no). These equations were applied to UC Merced faculty by discipline area to produce an expected salary. In other words, UC Merced faculty were "assigned the salary" they would be paid if they were white male faculty in their discipline areas and at the same rank at UC Riverside and Santa Cruz. The difference between each UCM faculty member's predicted and actual salary is considered "error." Because there is no logical reason that the amount and direction of error should be different for males and females or for minority and majority faculty, evidence of significant error associated with gender or minority status would be reason to explore the data more thoroughly.

[6] Yahr, Pauline (2011). Analysis of UC Pay Equity by Sex and, Among Men, Ethnicity, 2009-10. University of California Academic Senate.

[7] It should be noted that inclusion of dichotomous variables for professor and associate professor effectively identified assistant professors as well because those not full professors or associate professors are considered the "suppressed" or "reference" category.

Results: Gender

Table 6 presents the results of a variety of female-to-male comparisons, including a comparison with no consideration of rank, age, or disciplinary area (in other words, a simple comparison by gender of gross annual income). This simple mean salary-by-gender comparison revealed that gross annual earnings did not statistically vary by gender overall or by School, in spite of consistent salary differences favoring males. Even though not statistically significant, when compared to men, women make about 95 cents on the dollar. The size of the difference was not large relative to the variance in salaries (S.D. = $29,800) and the effect size was 0.18, less than $1/5^{th}$ of a standard deviation. This simple comparison obviously ignored many factors known to be associated with faculty salaries. One reason for the methodology supported by the Committee was that this simpler analysis might find differences that could be explained by years of experience and disciplinary affiliation, false positives, or might fail to find real differences, false negatives. The simple comparison is offered here to answer an anticipated question of what might be found if we simply compared salaries by gender with no other consideration. The Committee was not satisfied with the simple model and used instead factors known to be associated with faculty salaries: rank, age (experience), and disciplinary area.

To reiterate, the methodology employed by the Committee examined the "error" (or difference between expected and observed faculty salaries) for statistically recognizable differences by gender and minority status. The equation used to compute an expected salary was based on the faculty member's discipline area, her age, and whether or not she was a full professor. Equations in two discipline areas, (1) engineering and computer science and (2) physical science and mathematics, also considered whether she was an associate professor. The difference between expected and observed values was the basis for analysis at the campus level. Recall that the fundamental issue is whether the campus exhibits salary bias, not whether individual faculty members are being correctly compensated.

Overall, the mean difference in error by gender was not statistically significant at commonly used levels.[8] The probability of a greater F value, roughly the probability level at which the difference would have been considered to be recognizable, was just over 10%. In addition, mean gender differences explained only 2% of variance. Last, as an effect-size, the difference was 0.14, a small difference at most and not an effect-size generally recognized as of importance. The same tests were applied to error

[8] Commonly used probabilities are 5%, 1% or less.

differences by School and disciplinary area where the numbers permitted. Again, the results did not support a finding of systematic gender inequity.

The bottom part of Table 6 employs an age adjustment based on mean difference of age at receipt of terminal degree to address the possibility that women were more likely to delay career entry. This was information available for Merced faculty but not for faculty at the sibling campuses. Years since receipt of highest degree is a crude measure of the length of a professional career and is not limited to UCM service. It was used as follows. If female faculty members in a disciplinary area on average were four years older when they received a terminal degree, then the age component in the equation producing predicted salary was reduced by four years to compensate. The observed gender differences by disciplinary area were 3.8 years in biological sciences, 0.5 years in engineering, 8.7 years in letters and foreign languages and 1.4 years in social sciences. In physical sciences, men were 1.9 years older at receipt of their terminal degree. Adding the age adjustments reduced mean salary differences by just over $1,400 and supported the finding of no systematic gender difference. This age adjustment also reduced the salary difference overall for all Schools except SSHA.

Figures 3 and 4 present the distribution of difference between predicted and observed (actual) salaries by gender. Figure 3 is a scatter plot of the differences by observed salary and Figure 4 is a distribution chart based on size of the error between expected and observed salaries. Figure 3 supports a random distribution interpretation for female salaries and it should be noted that the greatest outliers were a few males with salaries considerably higher than were expected. Figure 4 makes clear that the large majority of observed incomes were within $10,000 of the predicted incomes. It might appear that there were more women on the side of observed income being less than expected, but, using the same standard as the UCSB study, 72% of **both** male and female faculty were within plus or minus one standard error of measurement.

Results: Minority

For the purpose of this study, minority faculty was comprised of Latin American, Latino, Black, African-American, American Indian, Alaskan Native, Mexican, Mexican-American, Chicano, Hispanic, Native Hawaiian or Other Pacific Islander, and Other Asian (N=19).[9] The same methodology used for the

[9] The comparison group for minority faculty salaries when doing an equity study has varied. Some UC studies have restricted the minority analysis to males (e.g., Yahr study for UCOP, UCSB). Others have included male and female

gender salary-equity analysis was repeated for minority salary-equity and the results appear as Table 7. The simple comparison of annual actual salaries, without controlling for rank or age, showed no difference overall and there were no differences by School. Using predicted salary by discipline likewise revealed no significant differences. The largest difference was in SSHA with an R-Squared of 7.5%, a nonsignificant 0.07 significance level, and a mean difference of over $11,000. An adjustment for age at receipt of terminal degree was made for minority faculty, males and females, in the same manner as done for female faculty. Overall, the differences were reduced but not in SSHA. The scatterplot of salary error by minority status (Figure 5) appears to show more minority faculty whose predicted salary exceeded their actual salary (error > $0) than the inverse. Likewise, the bar chart of differences (Figure 6) confirms that most minority faculty earned salaries less than predicted. In addition, minority faculty were somewhat more likely to be outside one standard error of measurement (37% versus 27%). In sum, there was no difference statistically significant at the 0.05 level, but there were several differences that could be cause for continued scrutiny. However, that concern is largely ameliorated by the fact that the number of minority faculty was small and greatly affected by individual cases. In addition, minority faculty with predicted salaries over one standard error greater than their actual salaries were in disciplinary areas where UCM paid less than expected salaries regardless of minority status. The five minority faculty members with the most extreme over-prediction errors were in Literatures & Cultures (3), Anthropology (1), and Materials Science & Engineering (1). Those happen to be disciplinary areas where UCM has paid less than other UC campuses. Table 8 was developed from an earlier analysis[10] and it illustrates relative salary patterns. It shows that these three disciplines were areas with low UCM comparative salaries: Literatures & Culture (ranked 19 of 20), Materials Science and Engineering (ranked 16 or 20), and Anthropology (ranked 14 of 20). Therefore, what might appear at first to be a minority bias concern is more likely a function of the small number of minority faculty and a few extreme cases concentrated in fields with lower UCM salaries regardless of minority status.

Summary

This is the second report from the Faculty Salary Equity Committee. The first was produced in fall of 2013 and concluded that there was no evidence of systematic bias in the incentives or salaries of

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faculty when considering minority status (e.g., UCI). A review of publicly available UC reports did not find a compelling argument for male only restriction when considering salary differences by minority status and neither does the AAUP document, *Paychecks*. Therefore, this study includes both males and females when comparing minority salaries with the salaries of others.

[10] Chatman, S. & Lowe, G. (2013). Which Faculty Comparative Faculty Salary Should I Use? Paper presented at the California Association for Institutional Research, Napa.

successful faculty recruitments. This second report describes Merced's salary study plan, a small campus adaptation of the strategy recommended by AAUP[11] and used by Yahr for the 2011 University of California study.[12] The study established disciplinary salary expectations using white male faculty salaries at sibling campuses, UC Riverside and UC Santa Cruz. Data from those campuses were provided by the Office of the President's Academic Personnel Office. The proposed methodology was successfully pilot-tested in the fall and replicated here using faculty characteristics, disciplinary distributions, and appointment and funding source amounts to determine the best available predictors of faculty salary. One change to the pilot-tested methodology was consideration of the use of natural logarithm transformations for salary and age as recommended in the UC Santa Barbara faculty salary equity report.[13] Log salary proved to reduce error but transforming age to log age was found to be unnecessary. When the methodology was applied to UC Merced faculty data and prediction errors were examined, no evidence of gender or minority systematic bias was found. In conclusion, UC Merced's 2014 Faculty Salary Equity study comparing ladder-rank faculty actual salaries with predicted salaries based on discipline, age, and rank of white male faculty at UCR and UCSC, found no statistically significant differences in salaries by gender or minority status.

[11] Haignere, op. cit.
[12] Yahr, op. cit.
[13] UC Santa Barbara (2012). *Salary Equity Analysis.* Office of the Executive Vice Chancellor, UC Santa Barbara.

Table 1: Sibling Campus Characteristics

	Overall	White Males	% All	%White Male	
Sex					
Female	237		34%		
Male	462	324	66%		
Ethnic Origin					
Asian	157		23%		
Black	20		3%		
Pacific Islander	41		6%		
American Indian	11		2%		
White	468	324	67%		
					% All That Are White Males
CIP* Cluster					
Biological Sciences	61	37	9%	11%	61%
Business Economics	28	9	4%	3%	**32%**
Engineering & Computer Science	130	71	19%	22%	55%
Letters & Foreign Language	125	43	18%	13%	**34%**
Physical Sciences & Mathematics	171	98	24%	30%	57%
Social Sciences	184	66	26%	20%	**36%**
		324			
Faculty Rank					
Assistant Professor	170	64	24%	20%	38%
Associate Professor	171	71	24%	22%	42%
Professor	358	189	51%	58%	53%
		324			
Citizenship Status					
C (US Citizen)	506	250	72%	77%	49%
N (Nonresident Alien)	3	1	0%	0%	33%
P (Pending Permanent Resident)	1		0%	0%	0%
R (Resident Alien)	189	73	27%	23%	39%
		324			

Table 1: Sibling Campus Characteristics

Age (20 - 65)			Cum All	Cum White	%tile All	%tile White Males
27	1	1	1		0.1%	0.0%
29	2		3	1	0.4%	0.3%
30	3	2	6	3	0.9%	0.9%
31	6	3	12	6	1.7%	1.9%
32	8	4	20	10	2.9%	3.1%
33	10	4	30	14	4.3%	4.3%
34	18	6	48	20	6.9%	6.2%
35	24	12	72	32	**10%**	**9.9%**
36	23	8	95	40	14%	12%
37	18	7	113	47	16%	15%
38	17	6	130	53	19%	16%
39	23	9	153	62	22%	19%
40	20	10	173	72	25%	22%
41	29	10	202	82	29%	25%
42	26	12	228	94	33%	29%
43	15	5	243	99	35%	31%
44	22	13	265	112	38%	35%
45	33	13	298	125	43%	39%
46	16	5	314	130	45%	40%
47	35	15	349	145	**50%**	45%
48	22	10	371	155	53%	**48%**
49	25	10	396	165	57%	**51%**
50	16	12	412	177	59%	55%
51	13	4	425	181	61%	56%
52	13	5	438	186	63%	57%
53	27	13	465	199	67%	61%
54	27	11	492	210	70%	65%
55	20	10	512	220	**73%**	68%
56	29	19	541	239	**77%**	**74%**
57	20	8	561	247	80%	**76%**
58	17	10	578	257	83%	79%
59	24	16	602	273	86%	84%
60	18	11	620	284	**89%**	88%
61	15	5	635	289	**91%**	**89%**
62	18	9	653	298	93%	**92%**
63	19	9	672	307	96%	95%
64	9	6	681	313	97%	97%
65	18	11	699	324	100%	100%
Mean	48	49				

* CIP is a federal classification system for higher education (Classification of Instructional Programs)

Table 2: Distribution of Faculty at Sibling Campus by Discipline (65 and Younger)

	CIP2		FacultyRank Asst.	Assoc.	Full	Total
Engineering & Computer Science	**14**	White Male	11	18	42	71
		All	31	27	72	130
Letters and Languages	**23**	White Male	10	10	23	43
		All	33	44	48	125
Biological Sciences	**26**	White Male	6	5	26	37
		All	16	8	37	61
Physical Sciences & Mathematics	**40**	White Male	20	23	55	98
		All	38	34	99	171
Social Sciences	**45**	White Male	16	14	36	66
		All	44	55	85	184
Business and Economics	**52**	White Male	1	1	7	9
		All	8	3	17	28
Total		White Male	64	71	189	324
		All	170	171	358	699
Percent White Male						
Engineering & Computer Science	**14**		35%	67%	58%	55%
Letters and Languages	**23**		**30%**	**23%**	48%	34%
Biological Sciences	**26**		38%	63%	70%	61%
Physical Sciences & Mathematics	**40**		53%	68%	56%	57%
Social Sciences	**45**		36%	**25%**	42%	36%
Business and Economics	**52**		**13%**	**33%**	41%	**32%**
			38%	42%	53%	46%

Table 3: Salary Distributions For All Faculty All Ranks

Disciplinary Area (Business & Economics Excluded)	Percentile 10th	25th	50th	75th	90th
Biological Sciences	$74,750	$80,725	$92,648	$131,053	$161,125
Engineering & Computer Science	$87,950	$95,800	$104,121	$125,275	$162,139
Letters and Foreign Languages	$67,500	$73,200	$85,575	$112,531	$150,800
Physical Sciences & Mathematics	$73,249	$79,325	$96,700	$121,575	$157,308
Social Sciences	$70,706	$76,298	$89,550	$117,825	$154,567
Range	$20,450	$22,600	$18,546	$18,522	$11,339
Maximum	$87,950	$95,800	$104,121	$131,053	$162,139
Minimum	$67,500	$73,200	$85,575	$112,531	$150,800

Figure 1: Cumulative Percentile Salary Distributions All Ladder Rank Faculty at Sibling Campuses (Business & Economics Excluded)

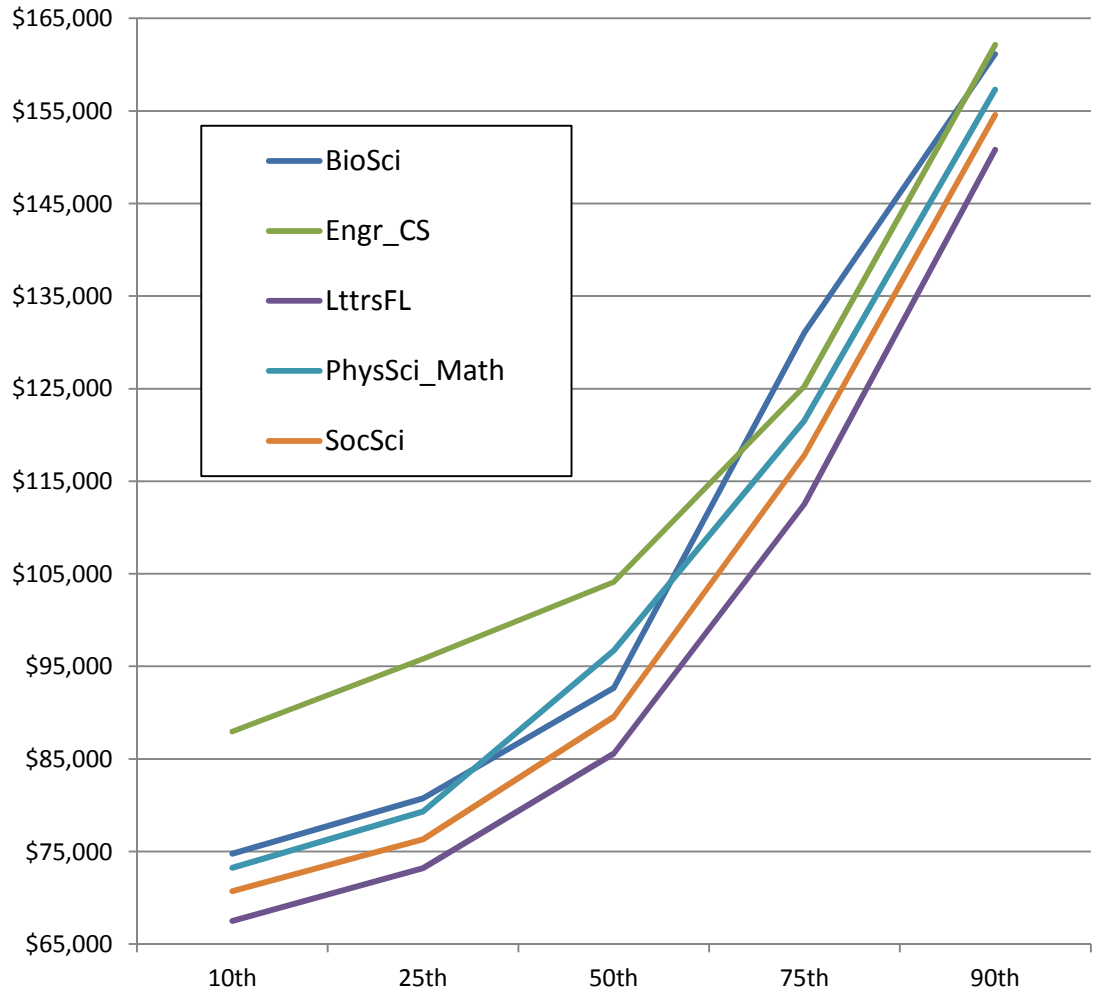

Figure 2: Mean Annual Salary and Age by Rank and Disciplinary Area for White Males at Sibling Campus

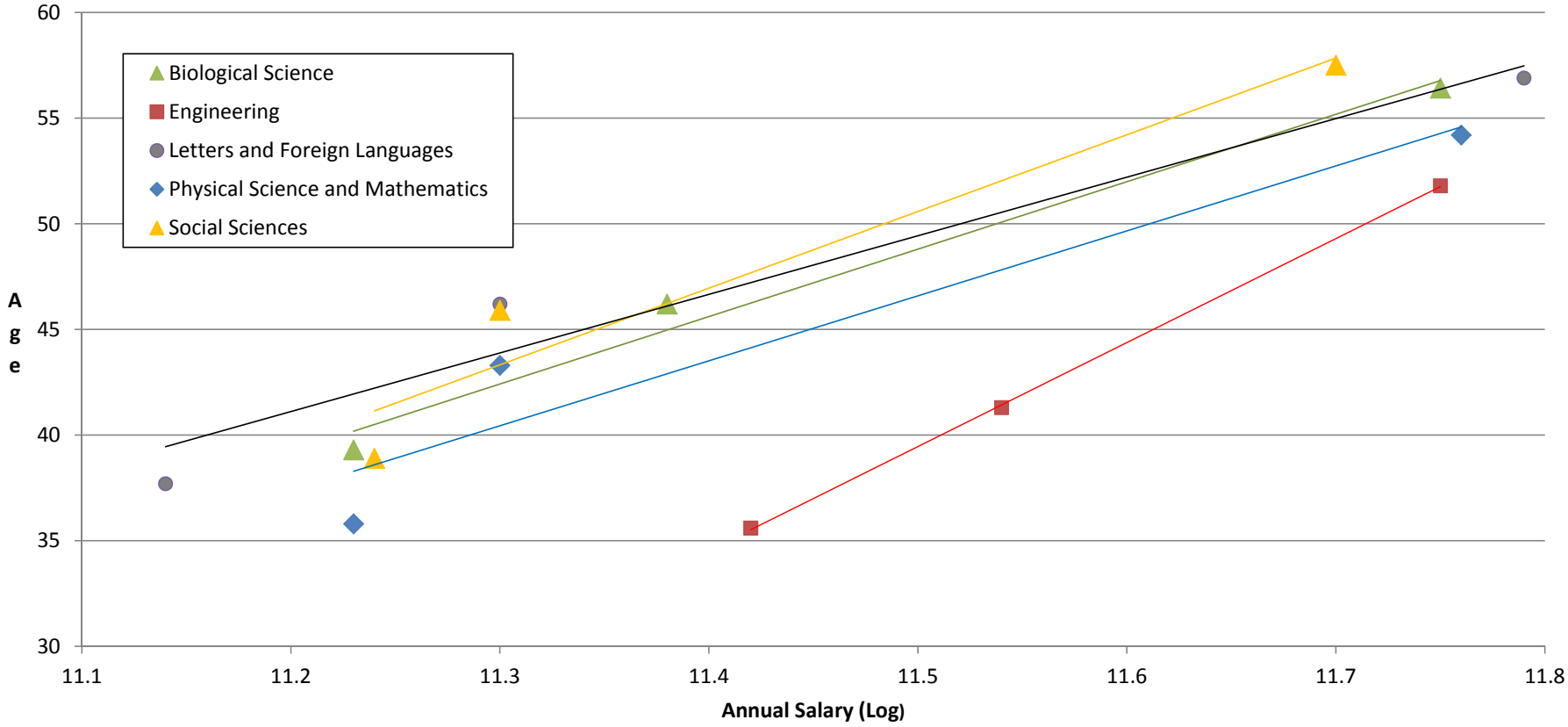

Table 4: Variance Explained by Regression Equation Relating Rank and Age to Salary by Discipline for White, Male Ladder Rank Faculty from 20 and 65 Years Old

	Equation Elements									
Variance Explained	**Prof, Assoc = Salary12**	**Age = Salary12**	**LogAge = Salary12**	**Prof, Assoc, Age = Salary12**	**Prof, Assoc, LogAge = Salary12**	**Prof, Age = Salary12**	**Prof, LogAge = Salary12**	**Prof, Assoc, Age = LogSalary12**	**Prof, Assoc, LogAge = LogSalary12**	**Prof, Age = LogSalary12**
Biological Sciences	0.44	0.52	0.51	0.54	0.53	0.54	0.53	0.59	0.59	**0.59**
Engineering and Computer Science	0.35	0.42	0.40	0.45	0.43	0.45	0.43	**0.51**	**0.50**	0.45
Letters and Foreign Language	0.64	0.51	0.49	0.65	0.65	0.65	0.65	0.73	0.73	**0.72**
Physical Sciences and Mathematics	0.54	0.55	0.52	0.63	0.61	0.62	0.61	**0.68**	**0.66**	0.62
Social Sciences	0.44	0.38	0.35	0.46	0.45	0.46	0.45	0.53	0.52	**0.53**
One Equation	0.48	0.43	0.41	0.52	0.50	0.52	0.50	0.57	0.56	**0.57**

Reducing Complexity and Increasing Accuracy by Comparing Models	**LogAge Loss**	**Loss if Drop Associate Professor Distinction Base 10 Salary**	**Loss if Prof, Assoc, and LogAge Instead of Age**	**Loss if Drop Associate Professor Distinction Log Salary**	**Loss if Prof and LogAge Instead of Age**	**Advantage Associated with Log Salary Instead of Base 10 Salary**	**Loss to Advantage if Log Age Instead of Age**
Biological Sciences	0.01	0.00	0.01	0.00	0.01	**0.05**	0.01
Engineering and Computer Science	0.02	0.00	0.02	**0.06**	0.01	**0.06**	0.01
Letters and Foreign Language	0.02	0.00	0.00	0.01	0.00	**0.08**	0.00
Physical Sciences and Mathematics	0.03	0.00	0.02	**0.05**	0.02	**0.05**	0.01
Social Sciences	0.02	0.00	0.01	0.00	0.01	**0.07**	0.01
Simple Average of Above Figures	0.02	0.00	0.01	0.03	0.01	**0.06**	0.01

Table 5: Regression Equation Relating Rank and Age to Salary by Discipline for White, Male Ladder Rank Faculty from 20 and 65 Years Old

Log of 12-month equated salary = Intercept + Professor (yes or no) * X1Prof + Age * X2Age

					Example, 60 year old professor	
Disciplinary Area	**Intercept**	**Professor (Y or N)**	**Associate Professor (Y or N)**	**Age**	**LogSalary**	**As Base 10 Salary**
Biological Sciences	10.470	0.179		0.020	11.82	$136,111
Engineering	11.055	0.166	0.061	0.010	11.84	$138,140
Letters and Foreign Language	10.836	0.419		0.009	11.82	$136,137
Physical Sciences	10.764	0.296	-0.023	0.013	11.84	$138,441
Social Sciences	11.001	0.359		0.006	11.74	$125,999

Table 6: Mean Differences by Sex (Anova Tests) -- Error is Predicted Value - Actual, Positive Values Suggest Underpayment

School / CIP Cluster	R-Square	F Statistic Signficance Level	Degrees of Freedom	Minority? Yes	Minority? No	Difference (Minority - Others)	Advantage
Simple Gross Annual Earnings Comparison -- No Controls for Rank or Age							
Campus Level	0.009	0.292	120	$85,990	$80,728	-$5,262	**Men**
Engineering	0.004	0.740	27	$97,411	$92,781	-$4,629	**Men**
Natural Sciences	0.005	0.634	47	$79,894	$76,954	-$2,940	**Men**
Social Sciences, Humanities, & Arts	0.005	0.656	44	$83,829	$80,100	-$3,729	**Men**

				Mean Error (Predicted - Actual) Male	Mean Error (Predicted - Actual) Female	Error Difference (Male - Female)	Advantage
Error of Predicted Annual Income Using Rank and Age							
Campus Level	**0.023**	**0.101**	**120**	**$1,640**	**$5,406**	**-$3,765**	**Men**
Engineering	**0.104**	**0.094**	**27**	**$1,952**	**$11,929**	**-$9,977**	**Men**
Natural Sciences	**0.004**	**0.675**	**47**	**$1,093**	**$2,030**	**-$937**	**Men**
Biological Sciences	0.001	0.906	23	$1,712	$2,084	-$372	**Men**
Physical Science & Mathematics	0.009	0.651	23	$474	$1,976	-$1,503	**Men**
Social Sciences, Humanities, & Arts	**0.019**	**0.369**	**44**	**$2,051**	**$6,189**	**-$4,138**	**Men**
Letters & Foreign Language	0.211	0.300	6	$18,565	$10,452	$8,113	**Women**
Social Sciences	0.065	0.122	37	-$1,881	$5,687	-$7,568	**Men**
Error with Additional Female Age Adjustment by CIP Cluster**							
Campus Level	**0.009**	**0.307**	**120**	**$1,640**	**$3,994**	**-$2,354**	**Men**
Engineering	**0.094**	**0.112**	**27**	**$1,952**	**$11,384**	**-$9,432**	**Men**
Natural Sciences	**0.003**	**0.704**	**47**	**$1,093**	**$208**	**$885**	**Women**
Biological Sciences	0.130	0.084	23	$1,712	-$3,746	$5,458	**Women**
Physical Science & Mathematics	0.053	0.279	23	$474	$4,163	-$3,689	**Men**
Social Sciences, Humanities, & Arts	**0.033**	**0.234**	**44**	**$2,051**	**$7,591**	**-$5,540**	**Men**
Letters & Foreign Language	0.457	0.095	6	$18,565	$4,339	$14,226	**Women**
Social Sciences	0.053	0.164	37	-$1,881	$4,909	-$6,790	**Men**

* Negative values are deficits for women. Positive values are surpluses.

** Age adjustments were based on mean difference by sex of years since doctorate was earned. Those adjustments in years were as follows:

Biological Sciences = -3.8, Engineering and Computer Science = -0.5, Letters and Foreign Languages = -8.7, Physical Science & Math = +1.9, and Social Sciences = -1.4.

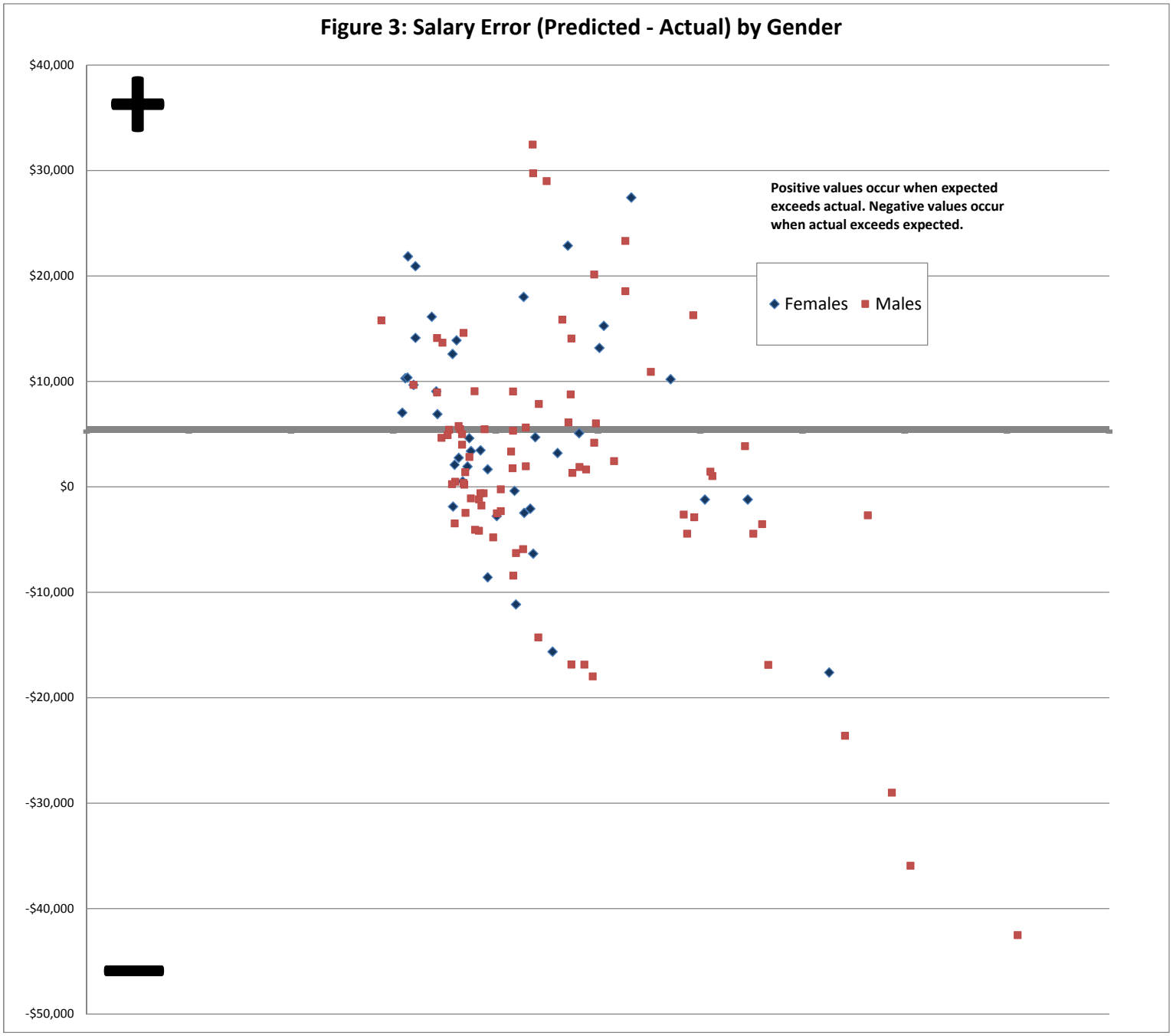
Figure 3: Salary Error (Predicted - Actual) by Gender
$40,000
$30,000
$20,000
$10,000
$0
-$10,000
-$20,000
-$30,000
-$40,000
-$50,000
Positive values occur when expected exceeds actual. Negative values occur when actual exceeds expected.
Females
Males

Figure 4: Distribution of Error by Gender

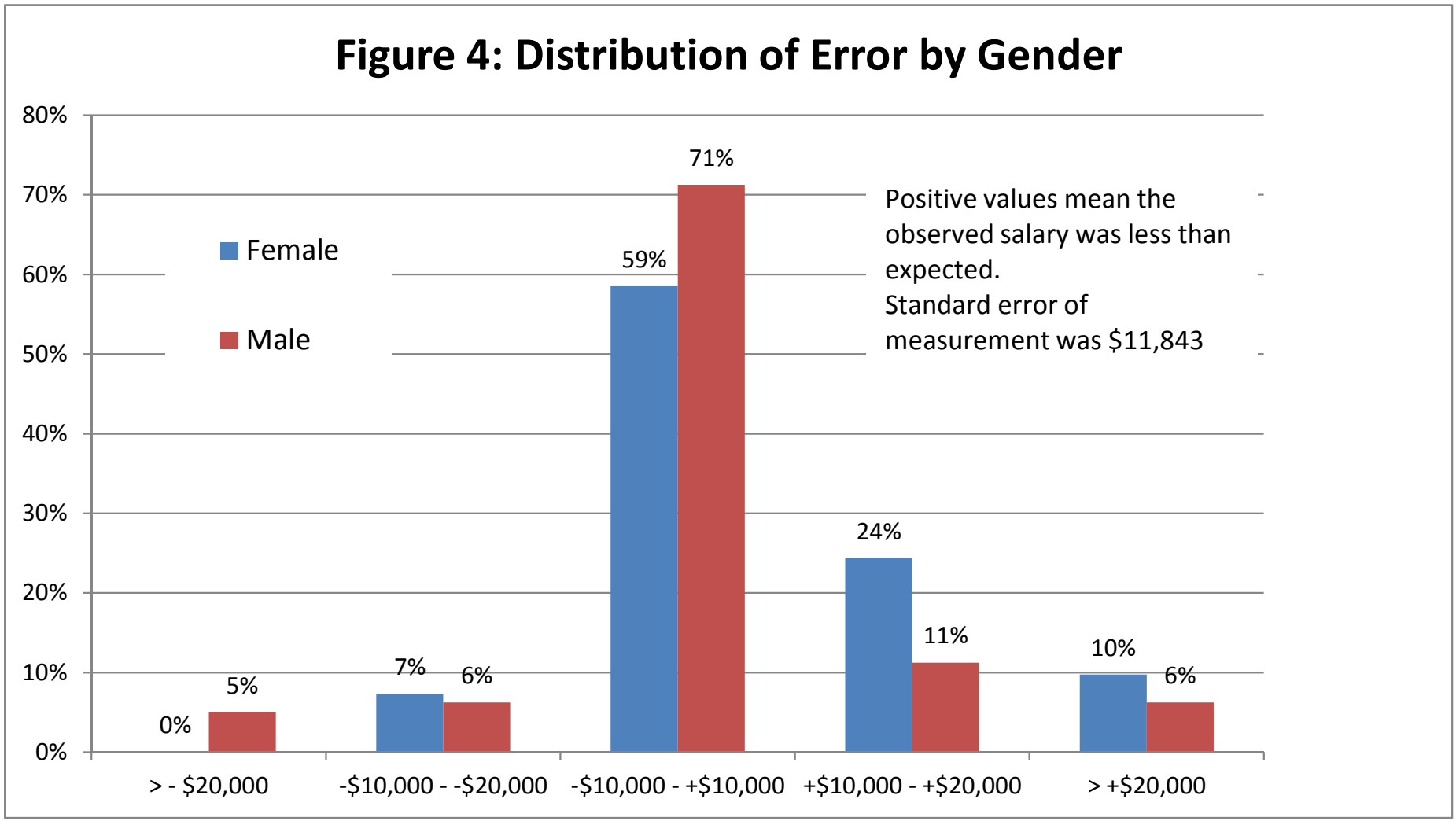

Table 7: Mean Differences by Minority Status (Anova Tests) -- Error is Predicted Value - Actual, Positive Values Suggest

School / CIP Cluster	R-Square	F Statistic Signficance Level	Degrees of Freedom	Minority? Yes	Minority? No	Difference (Minority - Others)	Advantage
Simple Gross Annual Earnings Comparison -- No Controls for Rank or Age							
Campus Level	**0.001**	**0.773**	**120**	**$82,622**	**$84,502**	**-$1,880**	**Minority**
Engineering	0.018	0.500	27	$105,869	$94,844	$11,025	**Other**
Natural Sciences	0.002	0.744	47	$81,041	$78,489	$2,552	**Other**
Social Sciences, Humanities, & Arts	0.031	0.246	44	$71,146	$84,301	-$13,155	**Minority**

				Mean Error (Predicted - Actual) Minority	Mean Error (Predicted - Actual) Other	Error Difference (Minority - Other)	Advantage
Error of Predicted Annual Income Using Rank and Age							
Campus Level	**0.018**	**0.139**	**120**	**$6,643**	**$2,222**	**$4,421**	**Other**
Engineering	**0.009**	**0.627**	**27**	**$1,111**	**$4,586**	**-$3,475**	**Minority**
Natural Sciences	**0.019**	**0.350**	**47**	**$3,595**	**$967**	**$2,627**	**Other**
Biological Sciences	0.032	0.400	23	$3,595	$957	$2,638	**Other**
Physical Science & Mathematics						$0	
Social Sciences, Humanities, & Arts	**0.075**	**0.069**	**44**	**$13,287**	**$2,050**	**$11,237**	**Other**
Letters & Foreign Language	0.027	0.726	6	$17,377	$14,739	$2,638	**Other**
Social Sciences	0.016	0.452	37	$7,834	$962	$6,872	**Other**
Error with Additional Minority Age Adjustment by CIP Cluster**							
Campus Level	**0.006**	**0.409**	**120**	**$4,736**	**$2,222**	**$2,514**	**Other**
Engineering	**0.024**	**0.433**	**27**	**-$1,059**	**$4,586**	**-$5,645**	**Minority**
Natural Sciences	**0.002**	**0.739**	**47**	**$34**	**$967**	**-$933**	**< $1,000**
Biological Sciences	0.004	0.767	23	$34	$957	-$923	**< $1,000**
Physical Science & Mathematics					$0	$0	
Social Sciences, Humanities, & Arts	**0.073**	**0.072**	**44**	**$13,422**	**$2,050**	**$11,372**	**Other**
Letters & Foreign Language	0.127	0.432	6	$21,136	$14,739	$6,397	**Other**
Social Sciences	0.002	0.811	37	$3,136	$962	$2,173	**Other**

* Negative values are deficits for women. Positive values are surpluses.

** Age adjustments were based on mean difference by minority status for years since doctorate was earned. Those adjustments in years were as follows:
Biological Sciences = -2.2, Engineering and Computer Science = 2.0, Letters and Foreign Languages = +4.0, Physical Science & Math = None, and

Figure 5: Salary Error (Predicted - Actual) by Minority Status

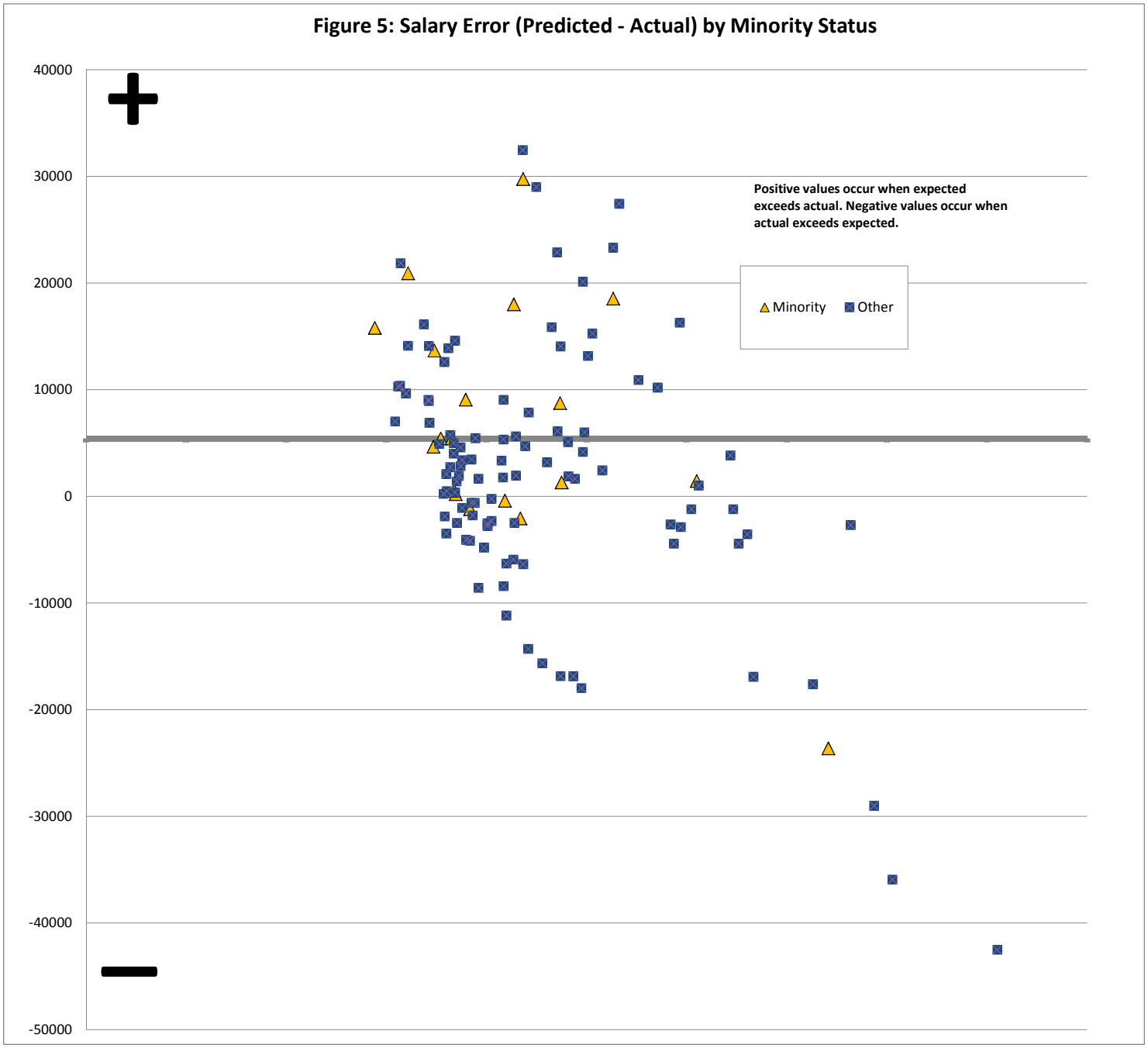

Figure 6: Distribution of Error by Minority Status

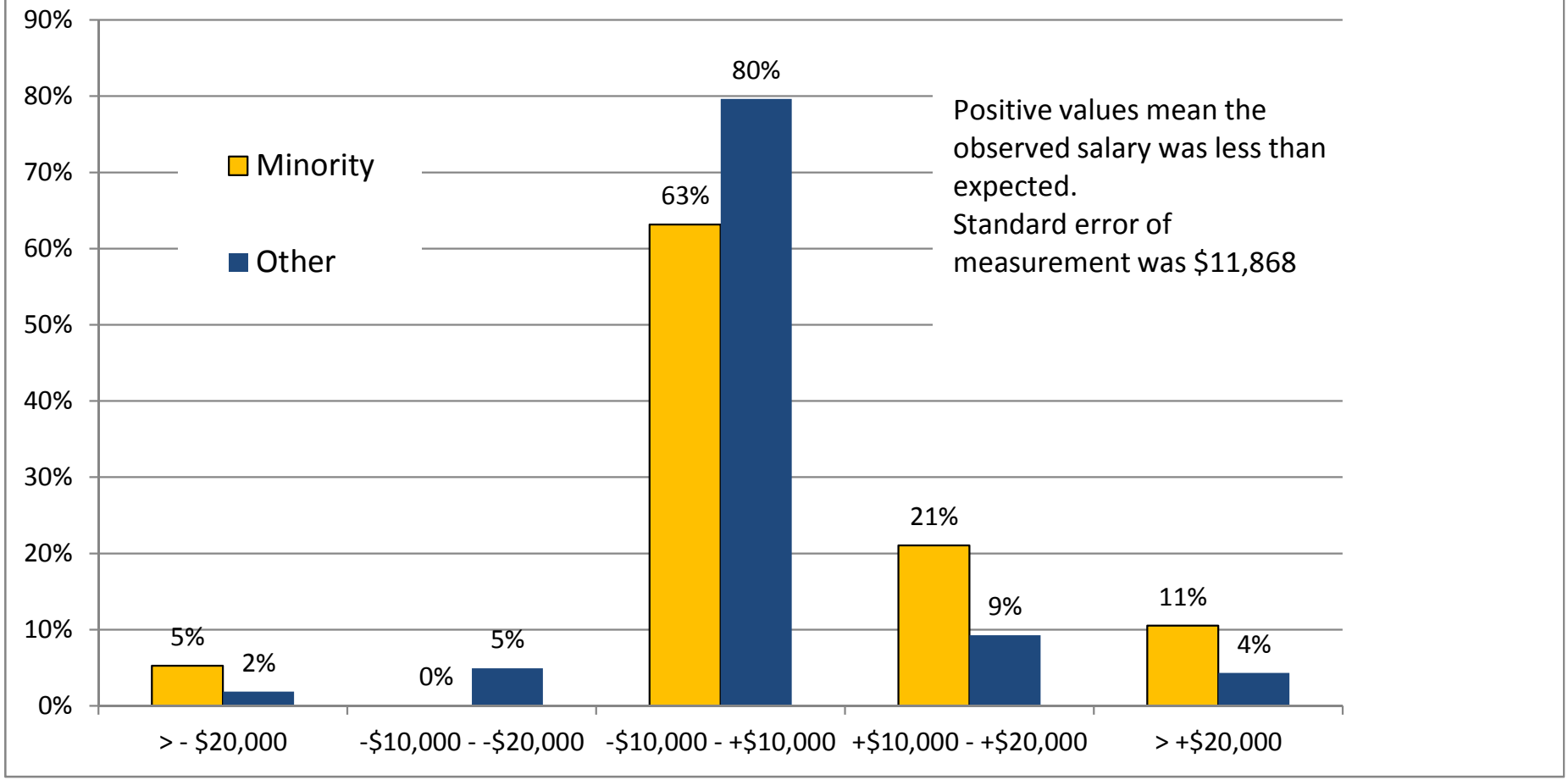

Table 8: Faculty Salary Comparisons Using UC Merced Composition and Other UC Faculty Average Salaries (AAUDE 2012-2013 Report)*

Ladder Rank	Content Area	Relative Salary UCM/ Other UC	Rank of Discipline
Engineering			
Professor	Environmental/Environmental Health Engineering	107%	
Assoc. Prof.	Environmental/Environmental Health Engineering	97%	
Asst. Prof.	Environmental/Environmental Health Engineering	101%	
All Ranks		102%	**1**
Professor	Computer Engineering	110%	
Assoc. Prof.	Computer Engineering	96%	
Asst. Prof.	Computer Engineering	99%	
All Ranks		102%	**2**
Professor	Mechanical Engineering	95%	
Assoc. Prof.	Mechanical Engineering	96%	
Asst. Prof.	Mechanical Engineering	102%	
All Ranks		99%	**4**
Professor	Biomedical/Medical Engineering	98%	
Assoc. Prof.	Biomedical/Medical Engineering	98%	
Asst. Prof.	Biomedical/Medical Engineering	99%	
All Ranks		98%	**5**
Professor	Materials Engineering	74%	
Assoc. Prof.	Materials Engineering	94%	
Asst. Prof.	Materials Engineering	88%	
All Ranks		85%	**16**
Natural Sciences			
Professor	Applied Mathematics		
Assoc. Prof.	Applied Mathematics	93%	
Asst. Prof.	Applied Mathematics	96%	
All Ranks		94%	**8**
Professor	Physics	106%	
Assoc. Prof.	Physics	93%	
Asst. Prof.	Physics	90%	
All Ranks		94%	**9**
Professor	Ecology, Evolution, Systematics, and Population Biology	79%	
Assoc. Prof.	Ecology, Evolution, Systematics, and Population Biology	91%	
Asst. Prof.	Ecology, Evolution, Systematics, and Population Biology	104%	
All Ranks		92%	**10**
Professor	Biology, General	99%	
Assoc. Prof.	Biology, General	90%	
Asst. Prof.	Biology, General	88%	
All Ranks		91%	**11**
Professor	Chemistry	78%	
Assoc. Prof.	Chemistry	93%	
Asst. Prof.	Chemistry	93%	
All Ranks		87%	**13**
SSHA			
Professor	Cognitive Science	93%	
Assoc. Prof.	Cognitive Science	97%	
Asst. Prof.	Cognitive Science	112%	
All Ranks		99%	**3**
Professor	Political Science and Government		
Assoc. Prof.	Political Science and Government	102%	
Asst. Prof.	Political Science and Government	92%	
All Ranks		97%	**6**

Table 8: Faculty Salary Comparisons Using UC Merced Composition and Other UC Faculty Average Salaries (AAUDE 2012-2013 Report)*

Ladder Rank	Content Area	Relative Salary UCM/ Other UC	Rank of Discipline
Professor	Sociology		
Assoc. Prof.	Sociology	100%	
Asst. Prof.	Sociology	88%	
All Ranks		95%	**7**
Professor	Psychology, General	91%	
Assoc. Prof.	Psychology, General		
Asst. Prof.	Psychology, General	84%	
All Ranks		88%	**12**
Professor	Anthropology		
Assoc. Prof.	Anthropology	83%	
Asst. Prof.	Anthropology	92%	
All Ranks		88%	**14**
Professor	Economics	94%	
Assoc. Prof.	Economics	56%	
Asst. Prof.	Economics	91%	
All Ranks		85%	**15**
Professor	Liberal Arts and Sciences, General Studies and Humanities	101%	
Assoc. Prof.	Liberal Arts and Sciences, General Studies and Humanities	79%	
Asst. Prof.	Liberal Arts and Sciences, General Studies and Humanities	79%	
All Ranks		83%	**17**
Professor	Linguistic, Comparative, and Related Language Studies and Services	74%	
Assoc. Prof.	Linguistic, Comparative, and Related Language Studies and Services	86%	
Asst. Prof.	Linguistic, Comparative, and Related Language Studies and Services	88%	
All Ranks		80%	**19**
Professor	History	72%	
Assoc. Prof.	History	87%	
Asst. Prof.	History	98%	
All Ranks		83%	**18**
Professor	Business Administration, Management and Operations	77%	
Assoc. Prof.	Business Administration, Management and Operations		
Asst. Prof.	Business Administration, Management and Operations		
All Ranks		77%	**20**
OVERALL			
Professor	Overall	91%	
Assoc. Prof.	Overall	91%	
Asst. Prof.	Overall	93%	