Johns Hopkins University
Bloomberg School of Public Health

Report on Johns Hopkins University
School of Medicine Faculty Salary Analysis, Fiscal Year 2005

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Objectives:

- Describe the distribution of salaries for School of Medicine faculty for fiscal year 2005
- Determine the average difference in salary between females and males who are from the same department and similar in terms of rank, degree and years in rank (i.e. overall gender effect)
- Determine the difference in average salary between females and males within each department and similar in terms of rank, degree, ethnicity and years in rank (i.e. department specific gender effect)
- Compare the estimated average difference in salary between females and males during fiscal year 2004 and fiscal year 2005

Data:

Information on 1481 School of Medicine faculty members was provided by Mary Foy and Phil Goertz. The data include

- Department[+]
- Rank (Professor, Associate Professor, or Assistant Professor)
- Gender (Male vs. Female)
- Degree[*] (MD vs. Non-MD)
- Ethnicity (Caucasian vs. Non-Caucasian)
- Years in current rank (as of June 30, 2005)
- Fiscal year 2005 salary (full time equivalent salary based on standard 37.5 hour work week and total salary which includes bonuses)

NOTE: Originally, the data contained 36 department groups.
- The following departments were combined to form Basic Science: Biophysics, Cell Biology, Anatomy, Biomedical Engineering, Comparative Medicine, Molecular Biology and Genetics, Pharmacology, Biological Chemistry, Physiology and Neuroscience.
- Oncology and Radiation Oncology were combined to form the Oncology group.
- Surgery, Otolaryngology, Orthopaedic surgery, Neurosurgery and Urology were combined to form the Surgery group.
- Departments with fewer than 20 male or female faculty were combined to form the "Other" department. This department group included: Art Applied to Medicine, History of Medicine, Dentistry/Oral Surgery, Dermatology, OB/GYN, Physical Medicine/Rehabilitation, Emergency Medicine, Genetic Medicine, Academic Administration, and HD.

NOTE: An MD is defined to be someone who has at least one of the following degrees: MD, DMD, MBBCh, MBBS, MBChB

Methods:

Cross-tabulations were used to describe the relationship among the discrete predictor variables: department, rank, gender, ethnicity and degree. Summary statistics were calculated for years in rank and salary by degree, rank, ethnicity and gender. Boxplots (a.k.a. box-whiskers plots) were used to assess the relationship between salary and each of the discrete predictors. The "box" portion of the boxplot gives the 25th, 50th (median) and 75th percentiles of the salary. The "whiskers" portion of the boxplot indicates the range of the data above or the 25th and 75th percentiles. Any values indicated by "o" below or above the "whiskers" are considered to be extreme observations relative to the majority of the salaries. Scatterplots were used to assess the relationship between the years in rank and salary. Descriptive statistics were calculated for those faculty receiving bonuses.

A series of linear regression models were used to describe log salary as a function of: gender, department group, department group specific rank, degree, and years in rank (natural spline with 2 degrees of freedom) effects. The log transformation of the salary protects against a few very large salaries having high influence on the results of the regression models and allows a simple interpretation of the regression coefficients. Take for example the regression coefficient for gender. This coefficient represents roughly the percentage difference between the median salary for female faculty compared to otherwise similar male faculty. Therefore, an estimated regression coefficient of –0.02 would indicate that women earn on average 2% less than men, and an estimated regression coefficient of 0.02 would indicate that women earn on average 2% more than men, everything else being equal.

With our first set of models, we estimated:
- an overall gender difference with adjustments for department group and department group-specific rank, degree and years in rank,
- rank specific gender differences with adjustments for department group and department group-specific degree and years in rank,
- degree specific gender differences with adjustments for department group and department group-specific rank and years in rank
- years in rank by rank specific gender differences with adjustments for department group and department group-specific degree effects.

Second, we estimated a separate gender difference for each department group adjusting for department group-specific rank, degree and years in rank. Because the gender differences were highly uncertain given the large number of departments and small sample sizes for some departments, we combined all departments with fewer than 20 male or female faculty into an "Other" department group and obtained department group-specific gender differences for: Basic Science, OB/GYN, Neurology, Medicine, Ophthalmology, Pathology, Pediatrics, Psychiatry, Surgery, Radiology, Oncology, Anesthesiology and Other. The gender difference for the Medicine department was estimated with and without the inclusion of the Cardiology and GI specialties. The

gender difference for the Surgery department was estimated with and without the inclusion of the Neurosurgery specialty. The gender difference for the Pediatric department is also adjusted for the rank-specific percentile of the faculty salary as reported by the American Association of Academic Pediatrics (AAAP) study of faculty salary (modeled as a rank specific linear effect).

To assess the sensitivity of the analyses to additional potential confounders of the salary-gender association; we reassessed the gender differences described above allowing for a department group-specific adjustment for the ethnicity of the faculty (white vs. non-white).

For comparative purposes, the same linear models described above were applied to the actual salary. These models directly estimate the difference in the average salary comparing similar female to male faculty. Robust variance estimates were calculated to provide more appropriate standard error estimates after we established that the variability of the residuals from these models was not constant as a function of the predicted salaries.

The estimated gender differences from fiscal year 2004 are compared with those estimated from fiscal year 2005. To further aid the understanding of the differences across fiscal years, the faculty salary data from fiscal year 2004 (n = 1444) was merged with the fiscal year 2005 data (n = 1481). Summary statistics were calculated for the faculty who were included in the 2004 analysis but are not present in the 2005 analysis and the faculty who were included in the 2005 analysis but not present in the 2004 analysis.

Seven faculty were excluded from the regression models due to high influence on the form of the years in rank association with both total and full-time equivalent salaries. Two additional faculty with very low salaries (less than $4000) were excluded. In addition, nine faculty from the Pediatric department did not have information available on the percentile of salary as reported by the AAAP. A list of the social security numbers for the excluded faculty is included as an appendix.

Predicted total and full-time equivalent salaries were obtained by fitting the regression models described above to the data for male faculty only (excluding the Cardiology, GI and Neurosurgery specialties). Using the results of these regression models, predicted salaries were obtained for both female and male faculty (including Cardiology, GI and Neurosurgery specialties). An Excel spreadsheet is provided which contains the social security number, department, rank, degree, gender and years in rank of all faculty with the observed salaries and predicted salaries. In addition, the spreadsheet contains the percent difference in predicted verse observed salaries.

Results:

Description of faculty

Tables 1 through 3 display the number of faculty by gender, rank and degree in each department. Of the 1481 faculty, 30 percent are female, 26 percent are full professors and 26 percent are associate professors. Seventy-three (73) percent of the faculty are MDs. Tables 4 and 5 display the cross-tabulation of gender and degree with rank. Thirty-one (31) percent of the male and 15 percent of the female faculty are full professors. Twenty-five (25) percent of the MDs and twenty-nine (29) percent of the Non-MDs are full professors.

Tables 6 through 8 contain summary statistics for years in rank and salary (in $1000) by degree, rank and gender. Male professors have spent an average of approximately 9 years in that rank whereas female professors have spent approximately 6 years. Average years in rank for the male and female associate professors differ by approximately 1 year; there appears to be little difference in the average years in rank among the male and female assistant professors. There appears to be little differences in years in rank comparing the Non-MDs to the MDs of the same gender. Among Non-MDs, the average full-time equivalent salary among female faculty is approximately $8,000 less than the males, regardless of rank. The differences in average full-time equivalent salary between genders are greater among the MDs at each rank. The same trends are observed for the total salaries. Figures 1 through 7 provide graphical summaries of the relationship between salaries and gender, degree, rank and years in rank.

Tables 9 and 10 display the number of faculty by rank, gender and degree that received a bonus in fiscal year 2005. Roughly 55, 60 and 55 percent of the professors, associate professors and assistant professors received a bonus in 2005. Among the professors receiving a bonus, approximately 13 percent were female and 87 percent were MDs. Among the associate professors receiving a bonus, approximately 24 percent were female and 84 percent were MDs. Among the assistant professors receiving a bonus, approximately 35 percent were female and 90 percent were MDs. Table 11 displays the average bonus and range of the bonuses by rank, degree and gender. Among the Non-MD faculty, there are only small differences in the average bonus across rank and gender; however, we see that the range of bonuses for the MDs differ substantially across rank and gender. Among the faculty with an MD, the average bonus differs by approximately 25, 17 and 12 thousand dollars when comparing male to female professors, associate professors and assistant professors, respectively.

Estimated Gender Difference (Log salary models)

We estimate that the average full-time equivalent salary for female faculty is roughly 3 percent less than otherwise similar male faculty (95% Confidence Interval: 0.2 to 5 percent less). The corresponding difference for total salary is estimated to be roughly 6 percent less (2 to 9 percent less). Tables 12a and 12b display the estimated gender

differences estimated within rank, years in rank by rank and degree. We estimate that the average full-time equivalent and total salary for female professors is roughly 2 and 5 percent less than otherwise similar male professors, respectively (7 percent less to 4 percent more for full-time equivalent, 12 percent less to 3 percent more for total). We estimate that the average full-time equivalent and total salary for female associate professors is roughly 4 and 7 percent less than otherwise similar male associate professors, respectively (8 percent less to 1 percent more for full-time equivalent, 13 percent less to 1 percent more for total). For assistant professors, we estimate that the average full-time equivalent and total salary for female faculty is roughly 3 and 6 percent less than otherwise similar male faculty, respectively (6 percent less to 0 for full-time equivalent, 10 percent less to 1 percent more for total).

Within each rank, the faculty were stratified into roughly three equal sized groups based on their years in rank and the gender difference was estimated after accounting for differences across departments, and degree. Among the professors, there is little to no difference in the full-time equivalent salary for female and male professors with at most 10 years in rank; however, among professors with more than 10 years in rank, the female professors earn on average 13 percent less than the comparable male professors. In terms of total salary, the female professors are earning on average 3 to 14 percent less than otherwise similar male faculty depending on the years in rank. Among the associate professors, we estimate that the full-time equivalent salary for female associate professors are roughly 2 to 7 percent less depending on the years in rank; these differences are more pronounced when assessing the total salaries. Among the assistant professors, there is little difference between the female and male salaries for assistant professors with at most 2 years in rank. The gender difference is approximately 5 or 9 percent among assistant professors with more than 2 years in rank for full-time equivalent or total salary, respectively. For each rank, the differences in the gender differences by years in rank were not statistically significantly different.

Female MDs earn on average 1 or 6 percent less than equivalent male MDs in terms of full-time equivalent or total salary, respectively. Non-MD female faculty earn on average 3 percent less than similar male faculty without an MD. The gender differences comparing the MDs to Non-MDs were not statistically significantly different.

Table 13 and figures 8 and 9 display the estimated gender differences for each department group and for the entire school. These estimates are adjusted for department specific rank, degree and years in rank. We tested the assumption that the gender difference is the same for all department groups. For both total and full-time equivalent salary, we failed to reject this assumption (Wald test with 12 df, p-value > 0.10). We also find that the estimate of the gender difference in the department of Medicine is sensitive to the inclusion of the Cardiology and GI specialties. Specifically, we estimate that female faculty from the department of Medicine have average total salaries which are roughly 6 percent less than otherwise similar male faculty and that this difference reduces to 3 percent when Cardiology and GI faculty are excluded from the analysis. The estimated gender difference for the Surgery department is sensitive to the exclusion of the Neurosurgery specialty. The estimated difference in total salary comparing females to

otherwise similar males in the Surgery department is approximately 12 percent including the Neurosurgeons and 14 percent when excluding the Neurosurgeons. The results were not sensitive to the inclusion of an adjustment for ethnicity (white vs. non-white).

To demonstrate the magnitude of the gender difference, we regressed the log-salary on department-specific rank, degree, and years in rank (smooth function with 2 degrees of freedom) ignoring gender differences. We then compared the distribution of the residuals (adjusted salaries) for the females to that of the males using a quantile-quantile plot. In this plot, if the distribution of male and female residuals are the same (all points falling on the 45 degree line) then male and female salaries are similar after adjusting for rank, degree and years in rank. If there is departure from the 45 degree line that indicates that the distribution of adjusted salaries differs by gender. Figure 10 displays the quantile-quantile plots for full-time equivalent salary and total salary. We notice that for faculty with residuals in the lower 50 percentile of all residuals that the distribution of female and male residuals are similar (i.e. adjusted salaries are similar). In addition, we note that for faculty with residuals in the upper 50 percentile of residuals that the male faculty have consistently higher residuals (i.e. higher adjusted salaries).

Estimated Gender Difference (Salary models)

We fit several linear models for the actual full-time equivalent salary and total salary to estimate the gender difference in actual dollars; the results from these models are displayed in tables 14a, 14b and 15 and figures 11 and 12. From these models, we estimate that the average full-time equivalent salary for female faculty is approximately $5,000 less than the salaries for otherwise similar male faculty (95% CI: $2,000 to $8,000 less). For total salary, we estimate that the female faculty earn on average $13,000 less than otherwise similar male faculty (95% CI: $8,000 to $18,000 less). Figure 13 compares the predicted full-time equivalent and total salaries based on the log-salary and salary models. We note that the salary model tends to produce higher predicted salaries than the log-salary model. This is a result of the impact of the small fraction of very large salaries.

Comparison of Gender Differences (FY 2004 vs. 2005)

Tables 16a and 16b compare the estimated gender differences from fiscal year 2004 and 2005. Notable decreases in the estimated gender differences for full-time equivalent salary are observed for Basic Sciences, Anesthesiology, and the "Other" department. Similarly, we observed decreases in the estimated gender differences for total salary for Neurology, Anesthesiology and the "Other" department.

The fiscal year 2004 analysis included 1444 faculty of which 108 faculty were not included in the fiscal year 2005 analysis. These faculty include both faculty who left the school but also faculty newly appointed to department chair or dean's office positions. Tables 17 through 19 provide information on these 108 faculty. Half of these faculty were assistant professors in 2004. The professors, associate professors and assistant professors had spent an average of 14, 8 or 6 years in rank, respectively.

The fiscal year 2005 analysis included 1481 faculty of which 145 were not included in the fiscal year 2004 analysis. There are 122 faculty hired/promoted in fiscal year 2005; in addition, there are 23 faculty which are returning to faculty positions after serving as department chairs or in positions in the dean's office. Tables 20 through 22 provide information on the 122 new hires/promoted faculty and tables 23 through 24 provide information on the 23 faculty returning to their faculty appointments. Almost all of the 122 faculty are new hires as assistant professors. Roughly 40 percent of the new assistant professors are female and roughly 85 percent are MDs.

Table 1: Numbers of School of Medicine faculty by department and gender.

Department	Male	Female	Total
Basic Science	78	26	104
Neurology	59	20	79
Medicine	237	102	339
Ophthamology	57	28	85
Pathology	61	28	89
Pediatrics	49	53	102
Psychiatry	64	46	110
Surgery	145	25	170
Radiology	61	20	81
Oncology	76	29	105
Anesthesiology	64	23	87
OB/GYN	16	25	41
Art Applied to Medicine	3	1	4
History of Medicine	4	2	6
Dentistry/Oral Surgery	3	1	4
Dermatology	12	6	18
Physical Medicine/Rehab	6	4	10
Emergency Medicine	20	4	24
Genetic Medicine	12	9	21
Academic Admin	1	0	1
HD	1	0	1
Total	1029	452	1481

Table 2: Numbers of School of Medicine faculty by department and rank.

Department	Professor	Associate Professor	Assistant Professor	Total
Basic Science	61	23	20	104
Neurology	21	19	39	79
Medicine	90	90	159	339
Ophthamology	28	15	42	85
Pathology	26	30	33	89
Pediatrics	22	33	47	102
Psychiatry	21	28	61	110
Surgery	41	41	88	170
Radiology	17	27	37	81
Oncology	34	26	45	105
Anesthesiology	7	23	57	87
OB/GYN	6	9	26	41
Art Applied to Medicine	0	2	2	4
History of Medicine	2	3	1	6
Dentistry/Oral Surgery	1	0	3	4
Dermatology	4	7	7	18
Physical Medicine/Rehab	0	3	7	10
Emergency Medicine	1	4	19	24
Genetic Medicine	4	6	11	21
Academic Admin	0	0	1	1
HD	0	1	0	1
Total	386	390	705	1481

Table 3: Numbers of School of Medicine faculty by department and Non-MD vs. MD.

Department	Non-MD	MD	Total
Basic Science	91	13	104
Neurology	14	65	79
Medicine	53	286	339
Ophthamology	26	59	85
Pathology	23	66	89
Pediatrics	13	89	102
Psychiatry	44	66	110
Surgery	29	141	170
Radiology	28	53	81
Oncology	30	75	105
Anesthesiology	5	82	87
OB/GYN	7	34	41
Art Applied to Medicine	3	1	4
History of Medicine	6	0	6
Dentistry/Oral Surgery	4	0	4
Dermatology	5	13	18
Physical Medicine/Rehab	6	4	10
Emergency Medicine	2	22	24
Genetic Medicine	9	12	21
Academic Admin	1	0	1
HD	0	1	1
Total	399	1082	1481

Table 4: Numbers of School of Medicine faculty by gender and rank.

Gender	Professor	Associate Professor	Assistant Professor	Total
Male	316	282	431	1029
Female	70	108	274	452
Total	386	390	705	1481

Table 5: Numbers of School of Medicine faculty by degree and rank.

Degree	Professor	Associate Professor	Assistant Professor	Total
Non-MD	116	117	166	399
MD	270	273	539	1082
Total	386	390	705	1481

Table 6: Mean, (standard deviation) and [range] of years in rank by degree, rank and gender.

Non-MD		
Rank	Male	Female
Professor	8.9 (6.5) [0.3, 30.0]	5.6 (5.6) [0.2, 20.3]
Associate Professor	5.9 (5.6) [0.1, 26.0]	4.9 (4.3) [0.2, 20.0]
Assistant Professor	3.2 (2.9) [0.1, 20.8]	4.0 (3.0) [0.1, 13.1]
MD		
Rank	Male	Female
Professor	9.3 (7.7) [0.1, 36.0]	6.2 (5.3) [0.4, 26.5]
Associate Professor	6.5 (5.8) [0.1, 31.0]	5.2 (4.8) [0.3, 29.0]
Assistant Professor	4.5 (3.7) [0.1, 28.0]	4.6 (3.6) [0.2, 25.5]

Table 7: Mean, (standard deviation) and [range] of full-time equivalent salary (in $1,000s) by degree, rank and gender.

Non-MD		
Rank	Male	Female
Professor	145.5 (27.7) [88.3, 219.9]	134.5 (19.5) [80.8, 168.1]
Associate Professor	100.9 (17.7) [65.4, 157.6]	94.2 (19.4) [72.5, 175.0]
Assistant Professor	79.2 (21.8) [50.0, 209.5]	71.9 (9.9) [49.9, 105.0]
MD		
Rank	Male	Female
Professor	200.9 (44.6) [66.2, 350.0]	181.6 (27.1) [93.0, 246.0]
Associate Professor	174.0 (46.7) [3.3, 292.7]	156.3 (34.6) [95.2, 269.1]
Assistant Professor	138.3 (45.7) [47.3, 250.0]	128.5 (36.8) [55.8, 250.0]

Table 8: Mean, (standard deviation) and [range] of total salary (in $1,000s) by degree, rank and gender.

Non-MD		
Rank	Male	Female
Professor	145.8 (29.6) [88.3, 244.9]	133.4 (22.6) [76.5, 173.2]
Associate Professor	100.9 (22.0) [20.8, 157.6]	92.2 (14.6) [54.1, 135.3]
Assistant Professor	76.3 (28.2) [3.3, 258.1]	68.6 (16.0) [17.5, 117.0]
MD		
Rank	Male	Female
Professor	228.3 (95.9) [60.0, 800.0]	184.7 (41.9) [96.5, 281.3]
Associate Professor	198.8 (79.6) [2.5, 575.0]	164.4 (47.0) [102.3, 329.9]
Assistant Professor	154.4 (72.4) [11.7, 619.0]	133.8 (49.4) [33.5, 320.7]

Table 9: Total number of faculty who received a bonus in fiscal year 2005 by rank, gender and degree.

	Professor (n = 386)	Associate Professor (n = 390)	Assistant Professor (n = 705)
Total	215	241	393
Female	29	59	139
MD	186	202	353

Table 10: Total number of faculty who received a bonus in fiscal year 2005 by rank, department and gender.

Department	Professor		Associate Professor		Assistant Professor	
	Total	Female	Total	Female	Total	Female
Basic Science	5	0	3	0	1	0
Neurology	16	2	17	5	29	9
Medicine	57	11	62	10	88	38
Ophthamology	20	3	10	4	21	7
Pathology	26	3	60	12	31	12
Pediatrics	12	3	13	9	21	10
Psychiatry	3	0	5	0	14	6
Surgery	37	1	32	3	62	15
Radiology	16	3	25	7	30	9
Oncology	7	3	11	1	9	1
Anesthesiology	7	0	23	4	52	18
OB/GYN	3	0	5	3	12	9
Art Applied to Medicine	0	0	0	0	0	0
History of Medicine	0	0	0	0	0	0
Dentistry/Oral Surgery	1	0	0	0	1	0
Dermatology	2	0	1	0	4	2
Physical Medicine/Rehab	0	0	0	0	0	0
Emergency Medicine	1	0	4	1	16	3
Genetic Medicine	2	0	0	0	1	0
Academic Admin	0	0	0	0	1	0
HD	0	0	0	0	0	0
Total	215	29	241	59	393	139

Table 11: Mean, (standard deviation) and [range] of bonuses (in $1000s) by rank, gender and degree.

Non-MD		
Rank	Male	Female
Professor	7.5 (7.4) [0.1, 25.0]	5.7 (4.3) [1.0, 12.0]
Associate Professor	8.3 (9.7) [0.1, 40.0]	5.2 (3.8) [1.6, 12.7]
Assistant Professor	6.7 (12.2) [0.5, 49.3]	4.5 (8.4) [0.1, 31.0]
MD		
Rank	Male	Female
Professor	42.9 (72.0) [0.1, 450.0]	18.0 (22.1) [0.4, 79.0]
Associate Professor	35.0 (50.5) [0.1, 350.0]	17.9 (18.4) [0.4, 77.3]
Assistant Professor	27.7 (38.6) [0.1, 369.0]	16.1 (20.3) [0.1, 125.0]

Table 12a. Estimated percent difference in mean full-time equivalent (FTE) salary comparing females to otherwise similar males. The coefficients (%diff) and standard errors (SE) from regression of log salary allowing for an overall gender difference, a rank specific gender difference, a degree specific gender difference, a years in rank and rank specific gender difference. The models adjust for department and when appropriate department specific rank, degree and years in rank (smooth function with 2 degrees of freedom).

Department	FTE Salary		FTE Salary*	
	%diff	SE	%diff	SE
Overall	**-2.6**	**1.2**	**-2.4**	**1.2**
Professor	-1.5	2.8	-1.0	2.8
Associate Professor	-3.6	2.5	-3.3	2.4
Assistant Professor	-2.9	1.6	-2.8	1.6
Professor				
At most 4 years in rank	0.8	4.4	2.5	4.3
4 to 10 years in rank	-0.8	4.9	-0.4	4.8
More than 10 years in rank	-13.0	6.6	-12.0	6.3
Associate Professor				
At most 3 years in rank	-1.7	3.9	-1.9	3.9
3 to 7 years in rank	-5.3	4.2	-5.4	4.2
More than 7 years in rank	-7.3	5.0	-5.3	4.9
Assistant Professor				
At most 2 years in rank	0.9	3.0	0.6	3.0
2 to 5 years in rank	-4.0	2.7	-3.6	2.6
More than 5 years in rank	-5.6	3.1	-5.6	3.0
MD	-1.3	1.5	-1.0	1.5
Non-MD	-3.0	2.3	-2.6	2.3

* Estimated gender difference after removing the Cardiology and GI specialties from the Medicine department and after removing the Neurosurgery specialty from the Surgery department.

Table 12b. Estimated percent difference in mean total salary comparing females to otherwise similar males. The coefficients (%diff) and standard errors (SE) from regression of log salary allowing for an overall gender difference, a rank specific gender difference, a degree specific gender difference, a years in rank and rank specific gender difference. The models adjust for department and when appropriate department specific rank, degree and years in rank (smooth function with 2 degrees of freedom).

Department	Total Salary		Total Salary*	
	%diff	SE	%diff	SE
Overall	**-5.7**	**1.7**	**-5.2**	**1.7**
Professor	-5.1	4.0	-3.9	4.0
Associate Professor	-7.3	3.5	-6.7	3.5
Assistant Professor	-5.5	2.3	-5.5	2.3
Professor				
At most 4 years in rank	-3.0	6.9	0.04	6.1
4 to 10 years in rank	-6.3	9.4	-5.8	6.8
More than 10 years in rank	-14.3	5.4	-14.7	9.1
Associate Professor				
At most 3 years in rank	-3.6	6.0	-2.8	5.5
3 to 7 years in rank	-8.9	7.0	-9.4	6.0
More than 7 years in rank	-11.7	4.2	-9.3	7.0
Assistant Professor				
At most 2 years in rank	3.0	3.7	4.3	4.2
2 to 5 years in rank	-8.9	4.3	-9.0	3.7
More than 5 years in rank	-8.8	7.2	-9.7	4.3
MD	-5.5	2.2	-5.2	2.2
Non-MD	-2.8	3.3	-1.7	2.3

* Estimated gender difference after removing the Cardiology and GI specialties from the Medicine department and after removing the Neurosurgery specialty from the Surgery department.

Table 13. Estimated percent difference in mean salary comparing females to otherwise similar males. The coefficients (%diff) and standard errors (SE) from regressions of log salary allowing for an overall gender difference or a department-specific gender difference after adjusting for department-specific rank, degree, and years in rank (smooth function with 2 degrees of freedom).

Department	FTE Salary		Total Salary	
	%diff	SE	%diff	SE
Overall	**-2.6**	**1.2**	**-5.7**	**1.7**
Overall*	**-2.4**	**1.2**	**-5.2**	**1.7**
Basic Science	0.3	5.0	-1.7	7.2
Neurology	-4.6	5.6	-2.1	8.0
Medicine	-3.5	2.5	-5.5	3.6
Medicine*	-1.1	2.8	-2.7	4.0
Ophthalmology	-8.9	5.1	-8.2	7.3
Pathology	0.4	5.0	-3.6	7.1
Pediatrics+	-1.3	4.6	-4.3	6.5
Psychiatry	-1.0	4.2	-4.9	5.9
Surgery	0.1	4.6	-12.2	6.6
Surgery*	-3.9	4.6	-14.2	6.6
Radiology	-3.9	5.5	-14.3	7.8
Oncology	-4.9	4.7	-1.8	6.7
Anesthesiology	-3.3	5.4	-4.7	7.7
Other	-1.3	3.9	-4.8	5.6

* Estimated gender difference after removing the Cardiology and GI specialties from the Medicine department and after removing the Neurosurgery specialty from the Surgery department.

+ Estimated gender difference also includes adjustment for rank-specific effect of the percentile from AAAP survey of Pediatric salaries.

Table 14a. Estimated percent difference in mean full-time equivalent (FTE) salary comparing females to otherwise similar males. The coefficients (diff in $1000s) and standard errors (SE) from regression of log salary allowing for an overall gender difference, a rank specific gender difference, a degree specific gender difference, a years in rank and rank specific gender difference. The models adjust for department and when appropriate department specific rank, degree and years in rank (smooth function with 2 degrees of freedom).

Department	FTE Salary		FTE Salary*	
	Diff (in $1000s)	SE	Diff (in $1000s)	SE
Overall	**-5.4**	**1.5**	**-4.7**	**1.5**
Professor	-10.2	**3.1**	-8.9	3.1
Associate Professor	-6.9	3.0	-6.2	3.0
Assistant Professor	-4.0	2.0	-3.6	2.0
Professor				
At most 4 years in rank	-7.0	4.7	-3.7	4.5
4 to 10 years in rank	-8.0	4.9	-7.3	5.1
More than 10 years in rank	-24.9	10.2	-24.4	10.1
Associate Professor				
At most 3 years in rank	-1.9	5.5	-2.2	5.5
3 to 7 years in rank	-11.3	3.9	-11.2	4.1
More than 7 years in rank	-11.6	5.1	-8.0	5.2
Assistant Professor				
At most 2 years in rank	1.1	3.4	0.8	3.3
2 to 5 years in rank	-4.7	3.2	-3.8	3.2
More than 5 years in rank	-8.3	4.0	-7.9	3.9
MD	-5.7	1.9	-4.9	1.9
Non-MD	-0.2	2.6	0.4	2.4

* Estimated gender difference after removing the Cardiology and GI specialties from the Medicine department and after removing the Neurosurgery specialty from the Surgery department.

Table 14b. Estimated difference (in $1000s) in mean total salary comparing females to otherwise similar males. The coefficients (diff in $1000s) and standard errors (SE) from regression of salary allowing for an overall gender difference, a rank specific gender difference, a degree specific gender difference, a years in rank and rank specific gender difference. The models adjust for department and when appropriate department specific rank, degree and years in rank (smooth function with 2 degrees of freedom).

Department	Total Salary		Total Salary*	
	Diff (in $1000s)	SE	Diff (in $1000s)	SE
Overall	**-13.4**	**2.5**	**-12.9**	**2.5**
Professor	-24.0	5.9	-20.6	5.8
Associate Professor	-18.6	4.8	-16.9	4.9
Assistant Professor	-8.5	3.2	-9.3	3.2
Professor				
At most 4 years in rank	-23.5	10.4	-13.9	9.1
4 to 10 years in rank	-21.8	8.8	-21.0	9.2
More than 10 years in rank	-36.8	14.7	-37.3	14.8
Associate Professor				
At most 3 years in rank	-8.4	7.7	-5.8	7.2
3 to 7 years in rank	-23.3	7.1	-24.3	7.4
More than 7 years in rank	-24.2	9.9	-19.4	10.1
Assistant Professor				
At most 2 years in rank	6.1	4.7	6.0	4.5
2 to 5 years in rank	-15.1	5.5	-15.4	5.7
More than 5 years in rank	-14.0	5.7	-15.1	5.7
MD	-17.2	3.2	-16.6	3.3
Non-MD	2.1	5.6	2.8	3.7

* Estimated gender difference after removing the Cardiology and GI specialties from the Medicine department and after removing the Neurosurgery specialty from the Surgery department.

Table 15. Estimated difference (in $1000s) in mean salary comparing females to otherwise similar males. The estimated difference and robust standard errors (SE) from regressions of salary allowing for an overall gender difference or a department-specific gender difference after adjusting for department-specific rank, degree, and years in rank (smooth function with 2 degrees of freedom).

Department	FTE Salary		Total Salary	
	Diff (in $1000s)	SE	Diff (in $1000s)	SE
Overall	**-5.4**	**1.5**	**-13.4**	**2.5**
Overall*	**-4.7**	**1.5**	**-12.9**	**2.5**
Basic Science	0.2	4.5	-2.7	**3.2**
Neurology	-7.4	4.4	-8.2	**6.4**
Medicine	-7.3	2.9	-10.5	3.5
Medicine*	-3.2	2.7	-5.0	3.4
Ophthalmology	-14.3	5.8	-18.2	11.6
Pathology	0.2	3.2	-7.4	5.9
Pediatrics+	-2.9	4.8	-6.9	7.0
Psychiatry	-3.0	2.9	-7.1	3.2
Surgery	-2.2	6.7	-31.6	15.0
Surgery*	-6.0	6.8	-38.2	14.6
Radiology	-10.8	5.4	-42.0	12.7
Oncology	-4.5	5.9	-4.5	9.1
Anesthesiology	-10.8	8.7	-18.7	12.8
Other	-2.5	6.3	-15.8	11.7

* Estimated gender difference after removing the Cardiology and GI specialties from the Medicine department and after removing the Neurosurgery specialty from the Surgery department.
+ Estimated gender difference also includes adjustment for rank-specific effect of the percentile from AAAP survey of Pediatric salaries.

Table 16a. Estimated percent difference in mean full-time equivalent salary comparing females to otherwise similar males for fiscal years 2004 and 2005. The coefficients (%diff) and standard errors (SE) from regressions of log salary allowing for an overall gender difference or a department-specific gender difference after adjusting for department-specific rank, degree, and years in rank (smooth function with 2 degrees of freedom).

Department	Fiscal Year 2004		Fiscal Year 2005	
	%diff	SE	%diff	SE
Overall	**-3.6**	**1.3**	**-2.6**	**1.2**
Basic Science	-2.5	4.9	0.3	5.0
Neurology	-2.6	5.7	-4.6	5.6
Medicine	-3.3	2.6	-3.5	2.5
Medicine*	-1.6	2.9	-1.1	2.8
Ophthalmology	-7.1	5.1	-8.9	5.1
Pathology	-1.3	5.1	0.4	5.0
Pediatrics+	-	4.4	-1.3	4.6
Psychiatry	0.4	4.2	-1.0	4.2
Surgery	0.7	4.9	0.1	4.6
Radiology	-2.4	5.4	-3.9	5.5
Oncology	-3.0	4.8	-4.9	4.7
Anesthesiology	-9.8	5.6	-3.3	5.4
Other	-6.9	3.8	-1.3	3.9

* Estimated gender difference after removing the Cardiology and GI specialties from the Medicine department.

+ Estimated gender difference for fiscal year 2005 also includes adjustment for rank-specific effect of the percentile from AAAP survey of Pediatric salaries. Estimated gender difference for fiscal year 2004 did not include this adjustment and is not presented.

Table 16b. Estimated percent difference in mean total salary comparing females to otherwise similar males for fiscal years 2004 and 2005. The coefficients (%diff) and standard errors (SE) from regressions of log salary allowing for an overall gender difference or a department-specific gender difference after adjusting for department-specific rank, degree, and years in rank (smooth function with 2 degrees of freedom).

Department	Fiscal Year 2004		Fiscal Year 2005	
	%diff	SE	%diff	SE
Overall	**-6.1**	**1.5**	**-5.7**	**1.7**
Basic Science	-3.5	6.0	-1.7	7.2
Neurology	-5.1	6.9	-2.1	8.0
Medicine	-5.0	3.2	-5.5	3.6
Medicine*	-2.8	3.6	-2.7	4.0
Ophthalmology	-6.9	6.2	-8.2	7.3
Pathology	-5.2	6.2	-3.6	7.1
Pediatrics+	-	5.4	-4.3	6.5
Psychiatry	0.9	5.6	-4.9	5.9
Surgery	-7.3	5.9	-12.2	6.6
Radiology	-10.4	6.6	-14.3	7.8
Oncology	-2.8	5.9	-1.8	6.7
Anesthesiology	-14.0	6.8	-4.7	7.7
Other	-12.5	4.7	-4.8	5.6

* Estimated gender difference after removing the Cardiology and GI specialties from the Medicine department.
+ Estimated gender difference for fiscal year 2005 also includes adjustment for rank-specific effect of the percentile from AAAP survey of Pediatric salaries. Estimated gender difference for fiscal year 2004 did not include this adjustment and is not presented.

Table 17: Total number of faculty who were included in the analysis in fiscal year 2004 but whom thereafter left the school or who were appointed to department chair or dean's office positions

	Professor	Associate Professor	Assistant Professor
Total	33	21	54
Female	3	2	17
MD	25	16	39

Table 18: Total number of faculty who were included in the analysis in fiscal year 2004 but whom thereafter left the school or who were appointed to department chair or dean's office positions by department and rank.

Department	Professor	Associate Professor	Assistant Professor
Basic Science	6	0	3
Neurology	0	0	0
Medicine	5	3	12
Ophthamology	1	1	5
Pathology	2	2	2
Pediatrics	0	1	3
Psychiatry	2	1	8
Surgery	10	3	6
Radiology	1	1	5
Oncology	1	1	1
Anesthesiology	4	4	2
Other	0	3	1
Total	33	21	54

Table 19: Mean, (standard deviation) and [range] of years in rank and salary (in $1000s) by rank for the faculty who were included in the analysis in fiscal year 2004 but not in the fiscal year 2005 analysis.

	Professor	Associate Professor	Assistant Professor
Years in Rank	14 (10) [2, 36]	8 (6) [2, 32]	6 (5) [2, 26]
FTE Salary	227 (77) [98, 392]	163 (75) [56, 384]	117 (47) [45, 250]
Total Salary	282 (144) [99, 665]	185 (102) [56, 484]	131 (65) [45, 350]

Table 20: Total number of new hires/promoted faculty in fiscal year 2005.

	Professor	Associate Professor	Assistant Professor
Total	2	5	115
Female	0	1	42
MD	1	1	81

Table 21: Total number of new hires/promoted faculty in fiscal year 2005 by department and rank.

Department	Professor	Associate Professor	Assistant Professor
Basic Science	0	2	4
Neurology	0	1	5
Medicine	0	0	30
Ophthamology	0	1	5
Pathology	0	0	6
Pediatrics	0	0	6
Psychiatry	0	0	7
Surgery	0	0	18
Radiology	1	1	3
Oncology	0	0	6
Anesthesiology	0	0	12
Other	1	0	5
Total	2	5	115

Table 22: Mean, (standard deviation) and [range] of years in rank and salary (in $1000s) by rank for the new hires/promoted faculty in fiscal year 2005.

	Professor	Associate Professor	Assistant Professor
Years in Rank	-	0.5 (0.4) [0.1, 1.0]	0.8 (0.3) [0.1, 1.0]
FTE Salary	-	140 (28) [110, 175]	116 (45) [50, 230]
Total Salary	-	110 (56) [21, 165]	109 (58) [3, 246]

Table 23: Total number of faculty holding department chair or dean's office positions in fiscal year 2004 but not during 2005.

	Professor	Associate Professor	Assistant Professor
Total	4	8	11
Female	0	1	3
MD	4	7	10

Table 24: Total number of faculty holding department chair or dean's office positions in fiscal year 2004 but not during 2005 by department and rank.

Department	Professor	Associate Professor	Assistant Professor
Basic Science	0	0	0
Neurology	1	0	0
Medicine	1	3	3
Ophthamology	0	0	2
Pathology	0	1	0
Pediatrics	1	1	0
Psychiatry	0	0	1
Surgery	0	0	1
Radiology	0	1	0
Oncology	0	1	0
Anesthesiology	0	0	2
Other	1	1	2
Total	4	8	11

Table 25: Mean, (standard deviation) and [range] of years in rank and salary (in $1000s) by rank for faculty holding department chair or dean's office positions in fiscal year 2004 but not during 2005.

	Professor	Associate Professor	Assistant Professor
Years in Rank	2 (1) [1, 3]	4 (6) [1, 21]	3 (1) [1, 5]
FTE Salary	203 (65) [165, 300]	157 (49) [97, 246]	132 (53) [62, 217]
Total Salary	200 (111) [92, 356]	171 (64) [99, 296]	148 (79) [46, 270]

Figure 1: Boxplots of salary (in $1000) by gender.
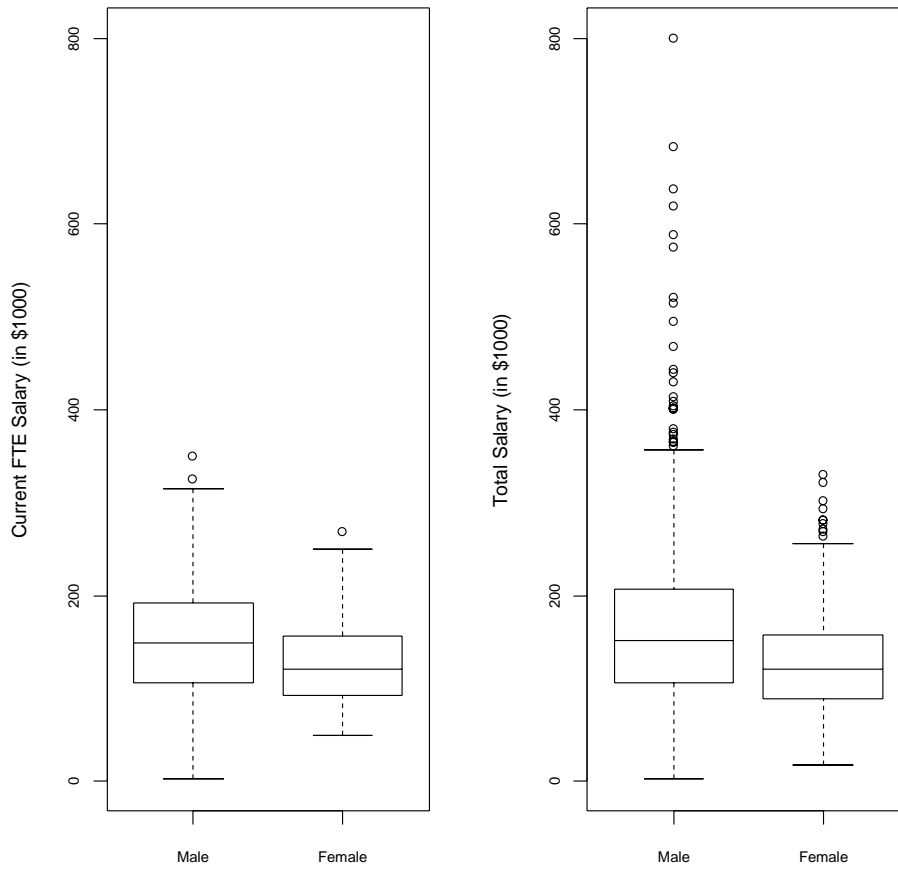
Figure 2: Boxplots of salary (in $1000) by degree.
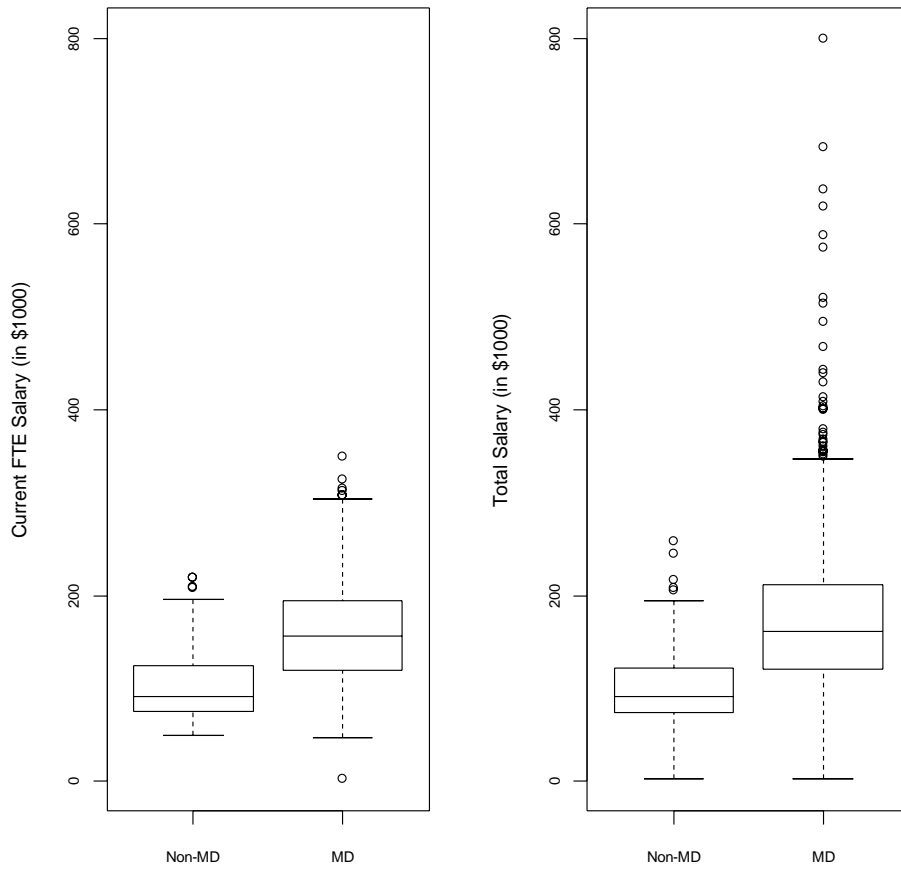
Figure 3. Boxplots of salary (in $1000) by rank (P – Professor, AsP – Associate
Professor and AP – Assistant Professor).
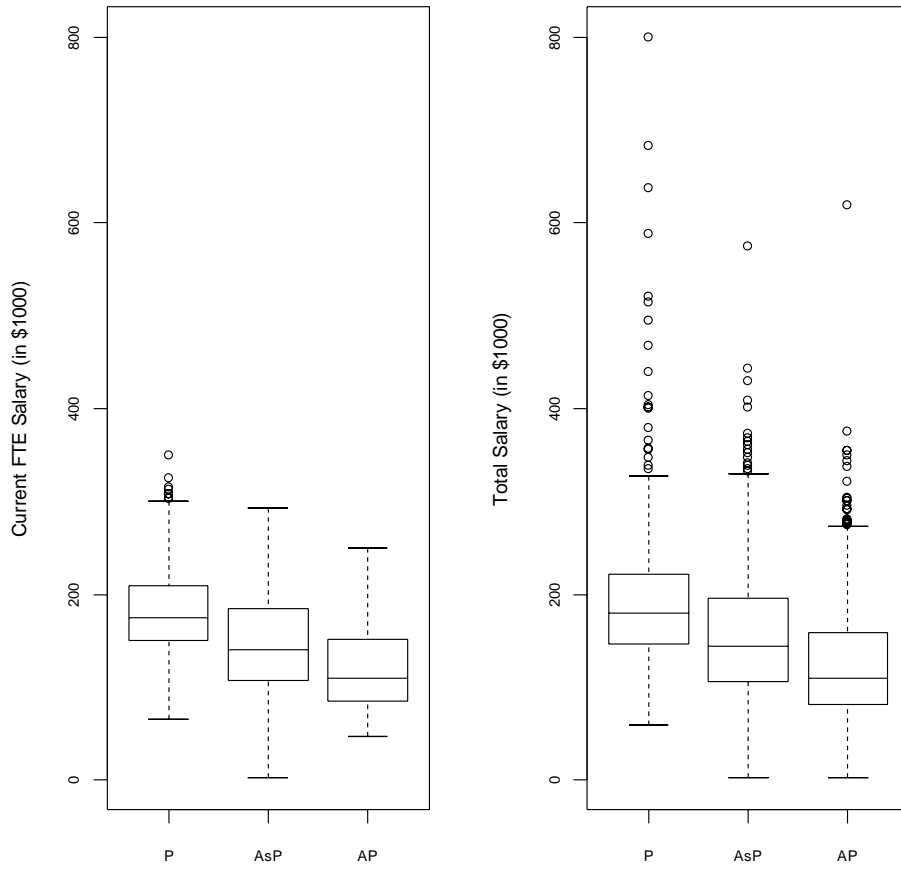
Figure 4. Boxplots of salary (in $1000) by degree and gender.
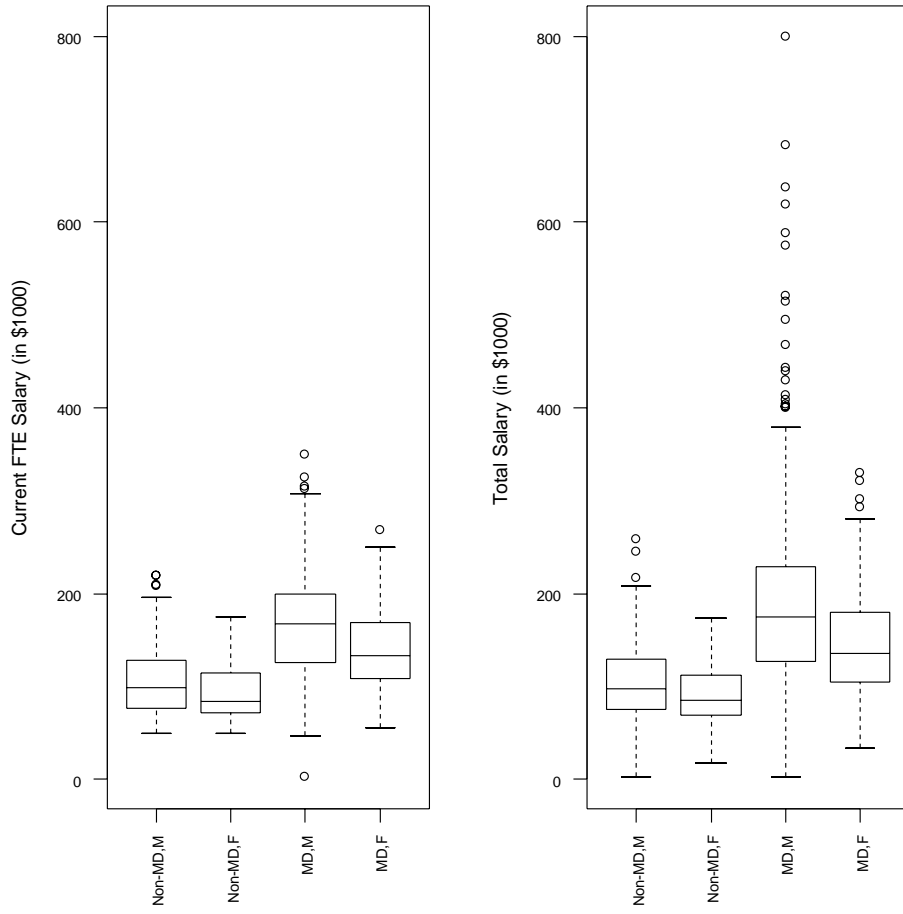
Figure 5. Boxplots of salary (in $1000) by rank and gender (P – Professor, AsP – Associate Professor and AP – Assistant Professor)
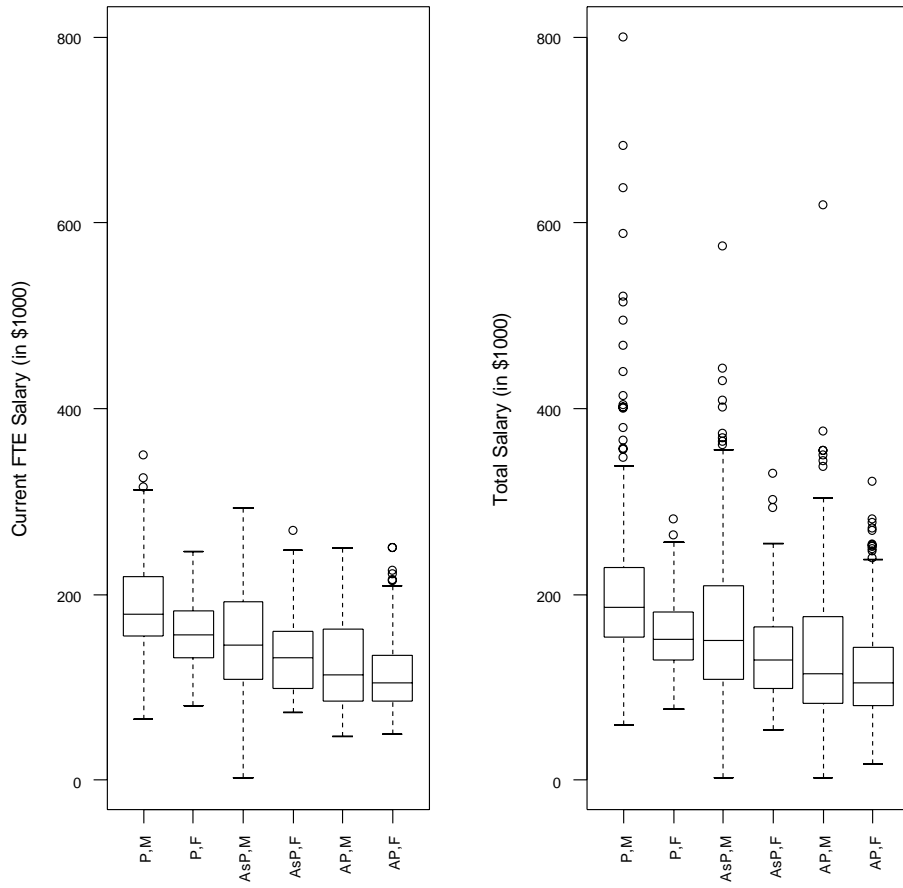
Figure 6. Scatterplot of salary (in $1000) by years in rank. The solid line on the figure estimates the mean salary as a function of years in rank.
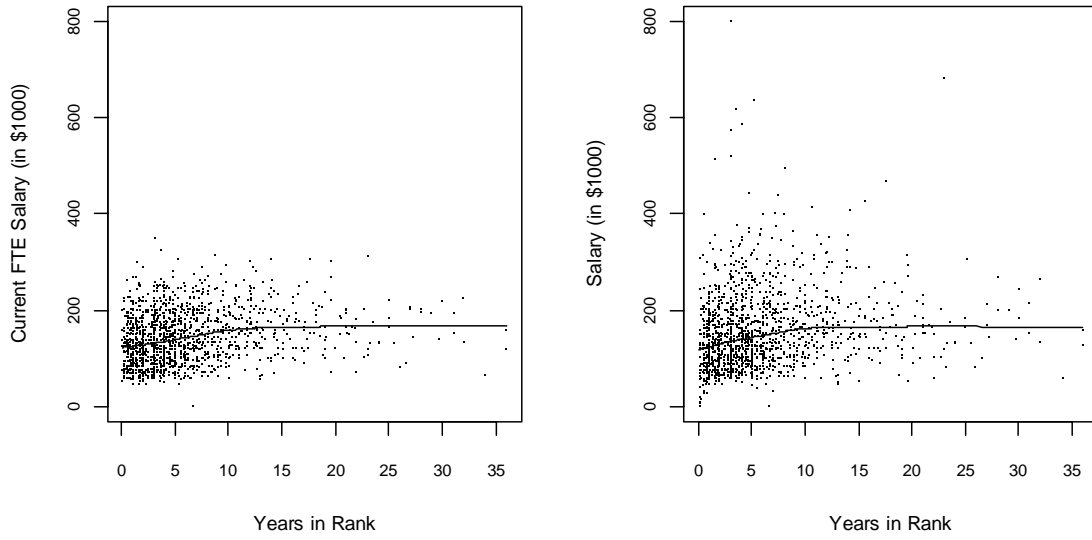
Figure 7. Scatterplot of salary (in $1000) by years in rank and gender. The lines on the figure estimate the mean salary as a function of years in rank for each gender (dashed line are the males and solid line are the females).
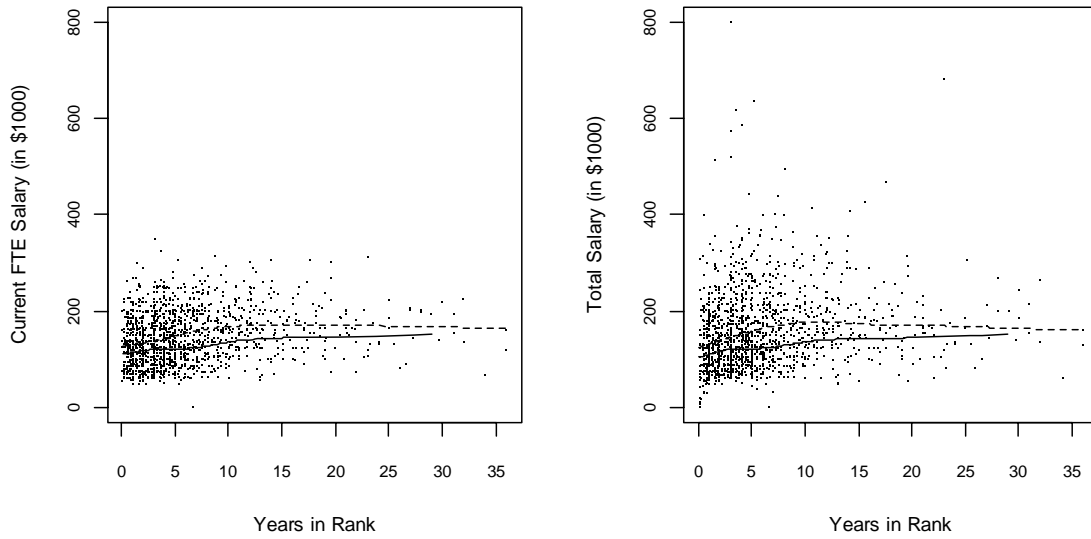
Figure 8. Estimated percent difference in average full-time equivalent salary comparing females to otherwise similar males with 95% confidence intervals. The overall percent difference is displayed in addition to the department-specific estimates. Estimates indicated by "*" exclude the Cardiology, GI and Neurosurgery specialties. The estimate for the Pediatrics department (+) is adjusted for rank-specific percentile of salary provided by AAAP.
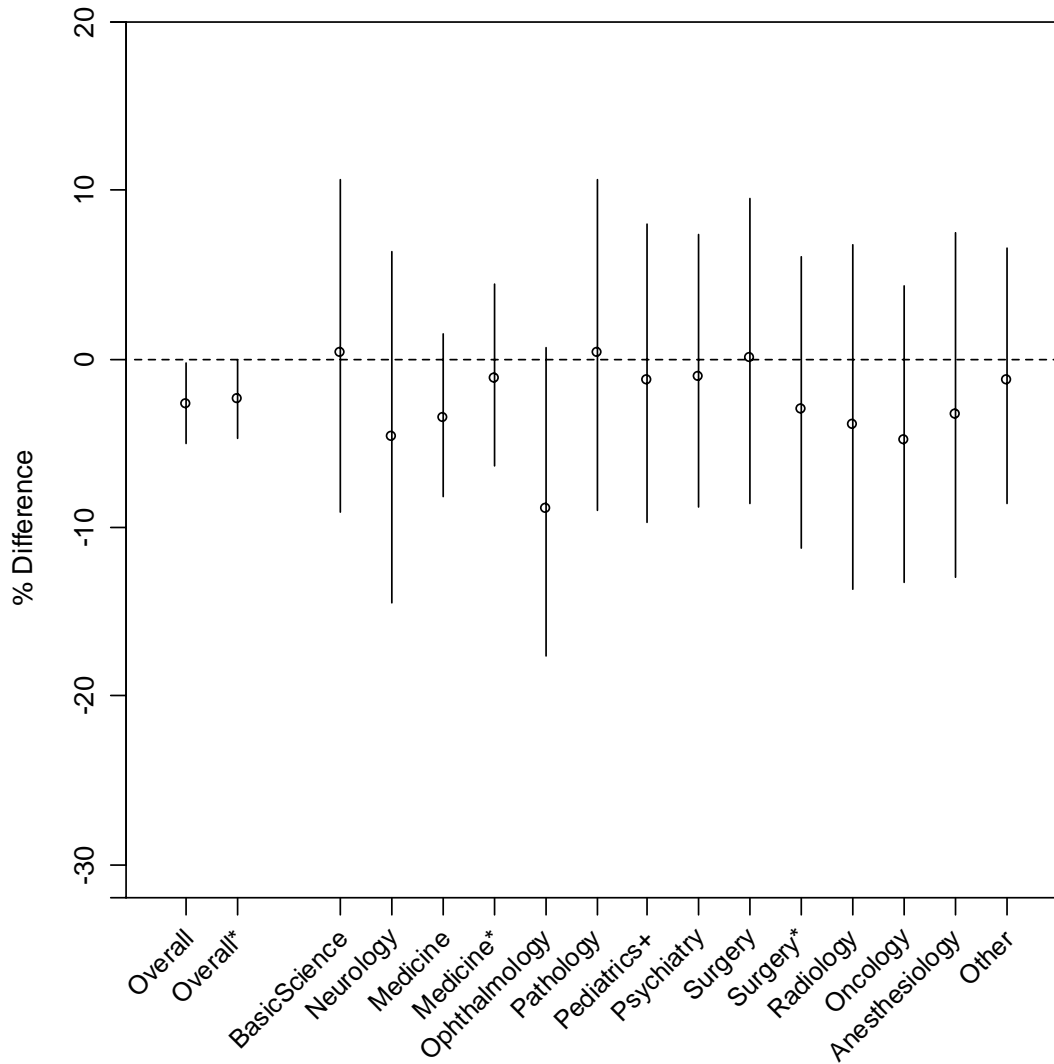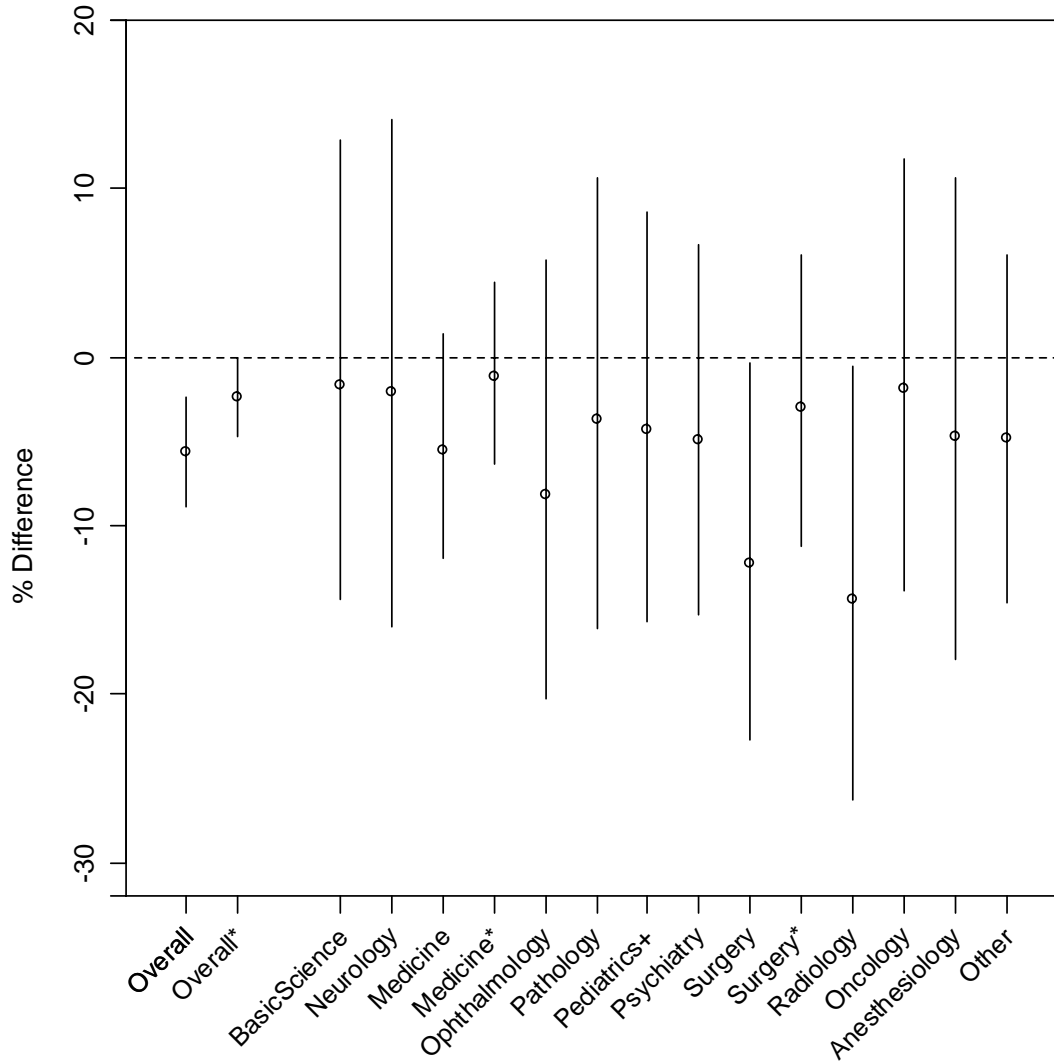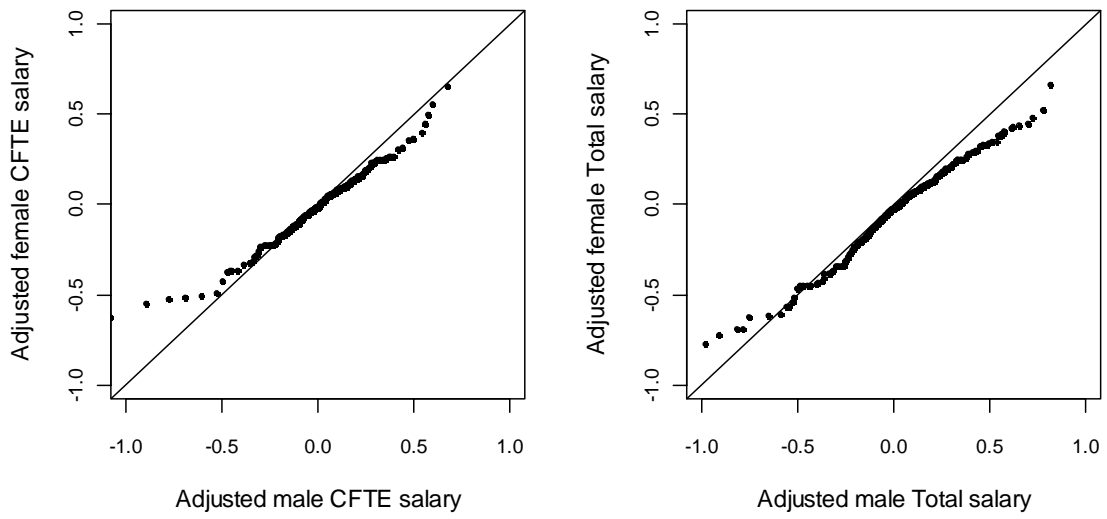
Figure 9. Estimated percent difference in average total salary comparing females to otherwise similar males with 95% confidence intervals. The overall percent difference is displayed in addition to the department-specific estimates. Estimates indicated by "*" exclude the Cardiology, GI and Neurosurgery specialties. The estimate for the Pediatrics department (+) is adjusted for rank-specific percentile of salary provided by AAAP.

Figure 10: Quantile-quantile plot comparing the distribution of department specific rank, degree and years in rank adjusted salaries for males and females.

Figure 11. Estimated difference (in $1000s) in average full-time equivalent salary comparing females to otherwise similar males with 95% confidence intervals. The overall difference is displayed in addition to the department-specific estimates. Estimates indicated by "*" exclude the Cardiology, GI and Neurosurgery specialties. The estimate for the Pediatrics department (+) is adjusted for rank-specific percentile of salary provided by AAAP.
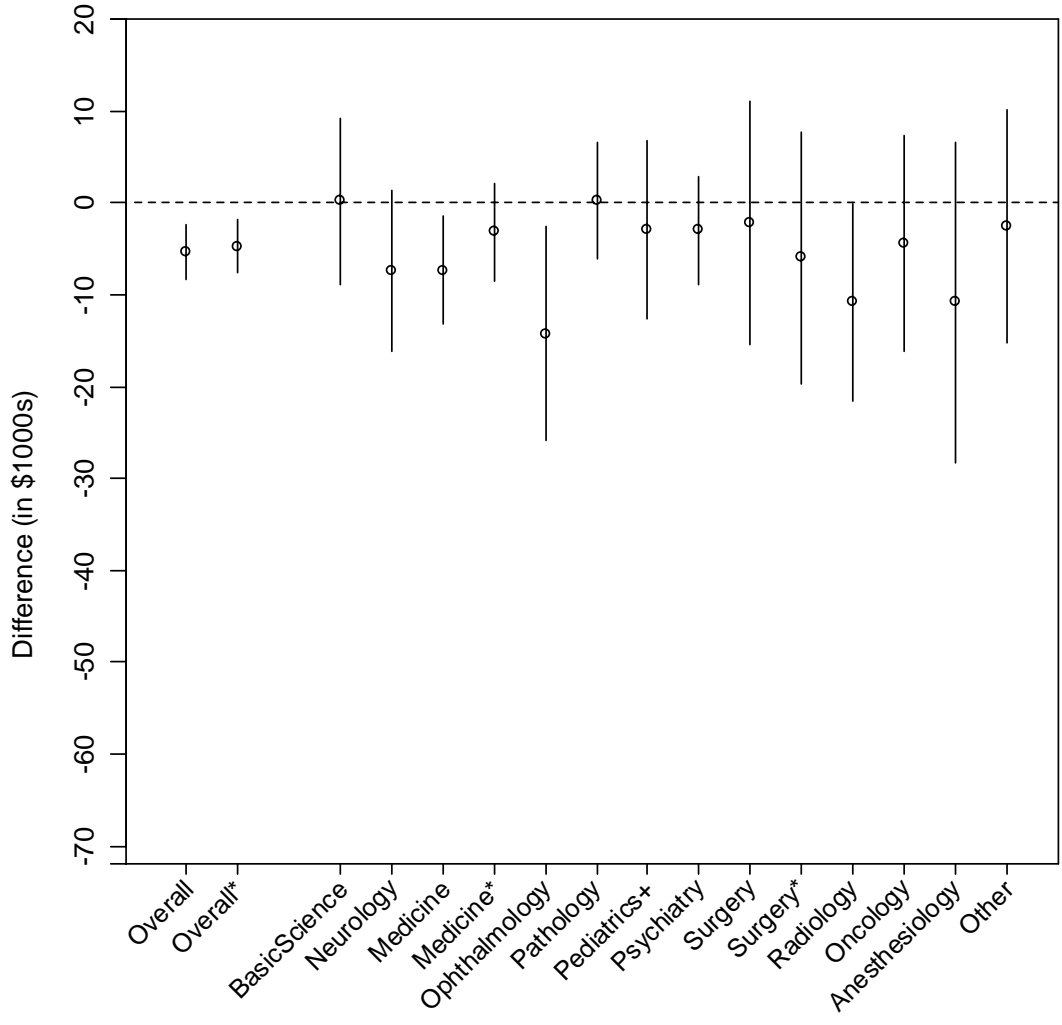
Figure 12. Estimated difference (in $1000s) in average total salary comparing females to otherwise similar males with 95% confidence intervals. The overall difference is displayed in addition to the department-specific estimates. Estimates indicated by "*" exclude the Cardiology, GI and Neurosurgery specialties. The estimate for the Pediatrics department (+) is adjusted for rank-specific percentile of salary provided by AAAP.
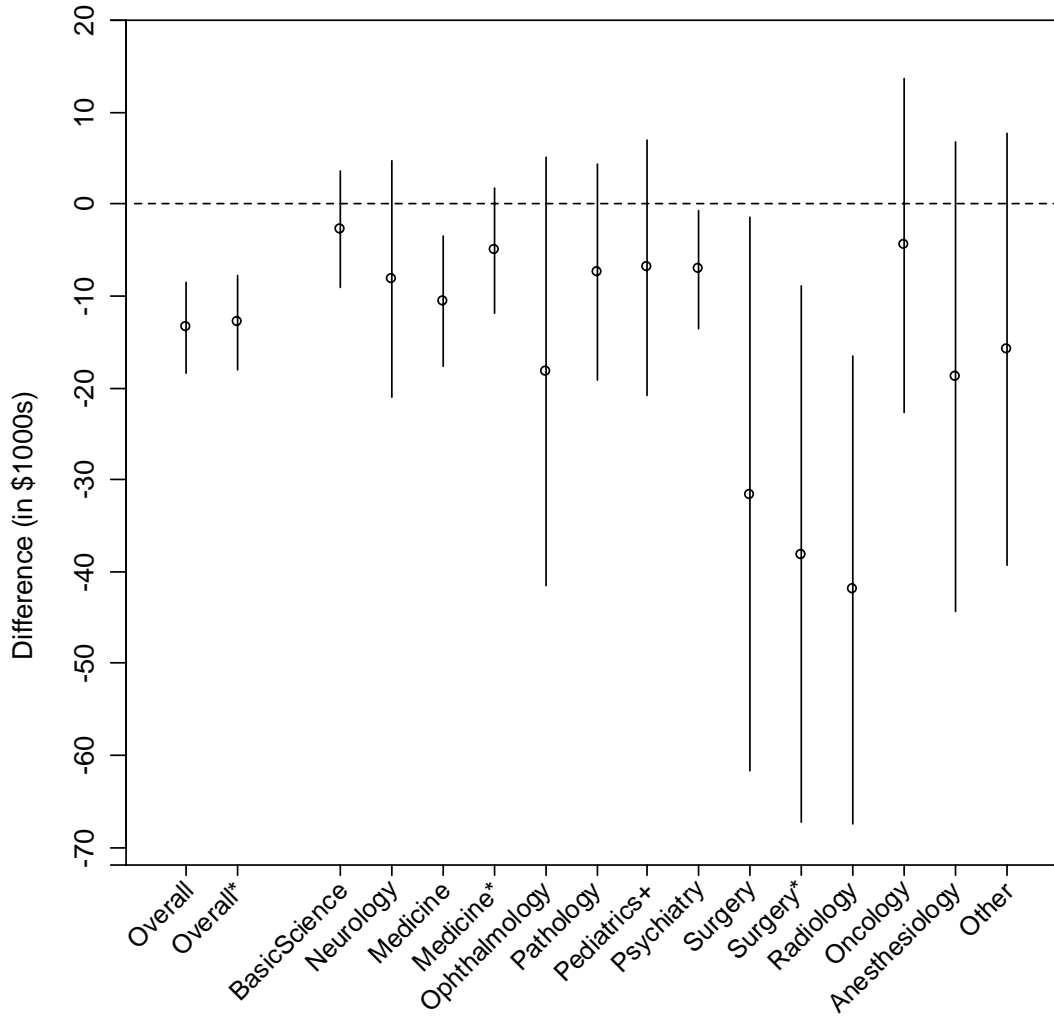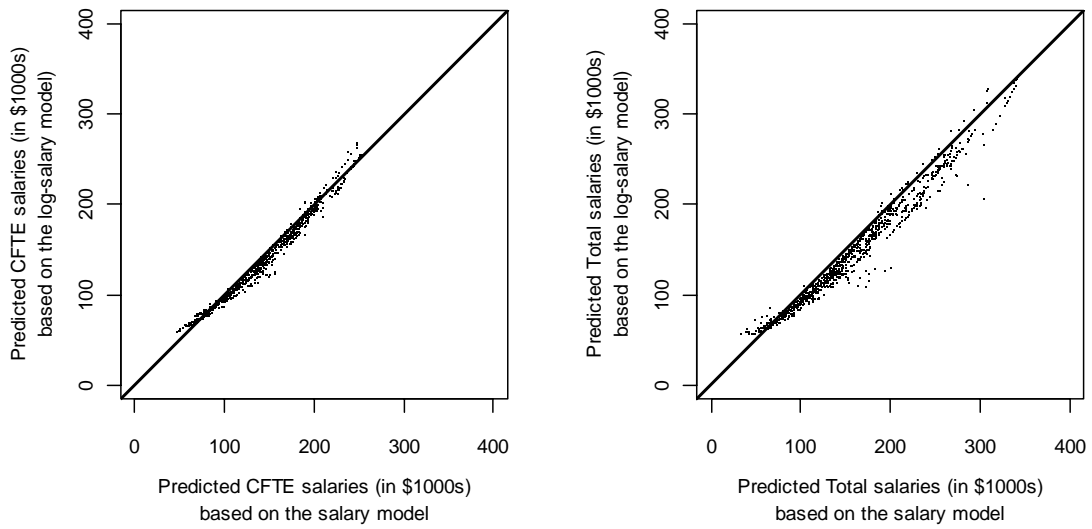
Figure 13: Comparison of predicted full-time equivalent (left) and total (right) salaries based on log-salary model and salary model.

Appendix: Faculty Excluded from Analyses

Here is the list of faculty who were excluded from the analyses:
223-40-6055
312-40-1506

118-18-0099
529-46-4199
104-36-3289
146-24-3547
414-42-3722
220-46-1525

086-30-3307
097-38-7804
102-54-8165
228-90-5594
279-96-2066
388-82-8294
414-08-2374
491-48-4129
529-46-4199