

# Gender Salary Analysis

Academic year 2011-2012

# Data

- Assistant Professor, Associate Professor and Professor
  - Both tenure and non-tenure streams
  - Excludes clinical faculty in the School of Medicine.
- Analyses were conducted on base salary
  - Salaries for the School of Medicine and for the School of Dental Medicine are based on a 12-month appointment. Salaries for the School of Medicine excludes chairs.
  - Salaries for all other schools are adjusted to a 9-month equivalent appointment and are adjusted to 100% effort.
- Data are for AY2011-2012

# Method

- Tables include descriptive statistics using the 9-month equivalent adjusted salary except for faculty in the School of Medicine and for the School of Dental Medicine where numbers are based on a 12-month appointment.
- Outliers with residuals  $>3$  were removed from the analysis.
- Cells where  $N < 3$  were not included in the salary tables.

# Calculating Residual Values

## 1. Regression analysis conducted *for each school*

- Dependent variable = 9-month equivalent adjusted salary (12-month salary for MED and DENT).
- Independent variables = age, rank, years in rank, tenure status, years since hire, highest degree, years since highest degree.

2. Using the regression analysis, a predicted value was calculated for *each faculty member*. Faculty members with standardized residuals above three were removed.

3. This predicted value was subtracted from the faculty member's *actual salary*, giving each faculty member "residual" value.

- Positive residual means person is being paid more than the above independent variables would predict.
- Negative residual means person is being paid less than the above independent variables would predict.

# Graphs

- Graphs were created by plotting the average residual for men and the average residual for women *in each school*.
  - Positive residual for women in a particular school means that, on average, women in that school are being paid more than the independent variables would predict.
  - Negative residual for women means that, on average, women are being paid less than the independent variables would predict.
- This description of methods explains the RTIN bars on each chart. The RTOUT bars were calculated in exactly the same way with one exception: rank and tenure were removed from the initial regression equation.

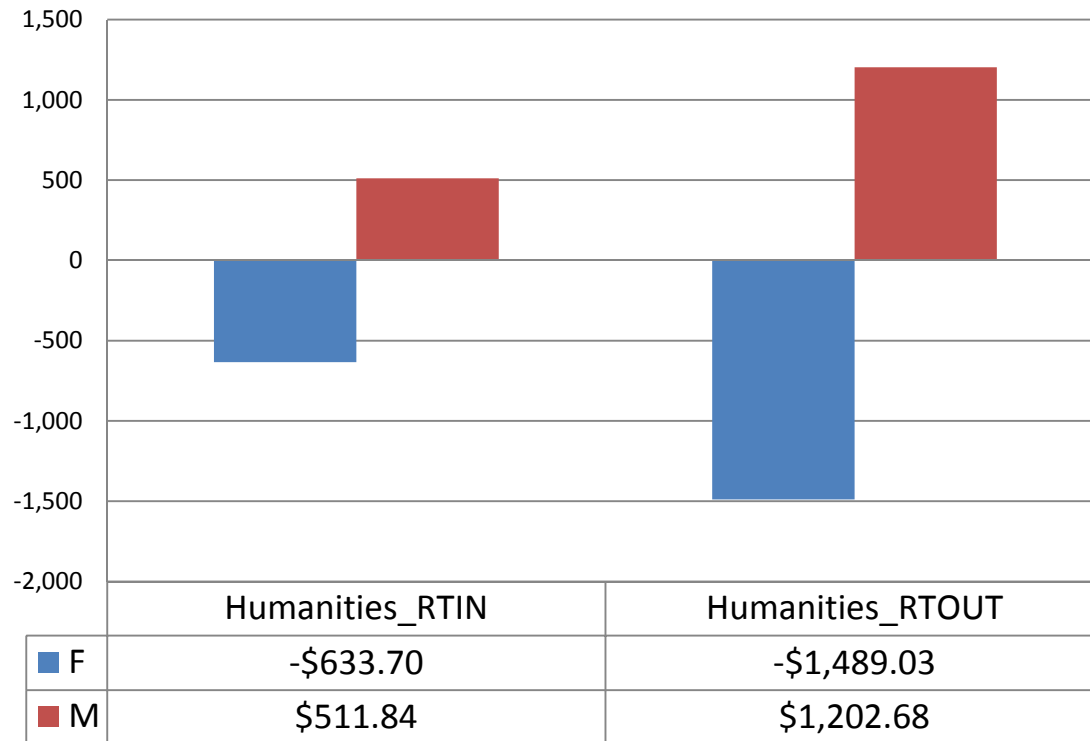
# Limitations of the Analysis

- No measure of productivity in the regression analysis
- Examining residuals by group is a “broad brush” technique for highlighting where differences *might* exist.
- Residual values in this population have very high standard deviations, often exceeding 100 times the mean value.
- Analysis is *strongly* affected by extreme high/low values.

# College of Arts and Sciences - Humanities

Rank	Gender	N	Mean	Std. Deviation
Assistant Professor	Male	13	\$60,459	\$3,173
Assistant Professor	Female	10	\$59,660	\$2,551
Associate Professor	Male	20	\$73,364	\$6,006
Associate Professor	Female	21	\$70,075	\$4,722
Professor	Male	19	\$96,770	\$12,818
Professor	Female	11	\$93,733	\$12,403
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# College of Arts and Sciences - Humanities



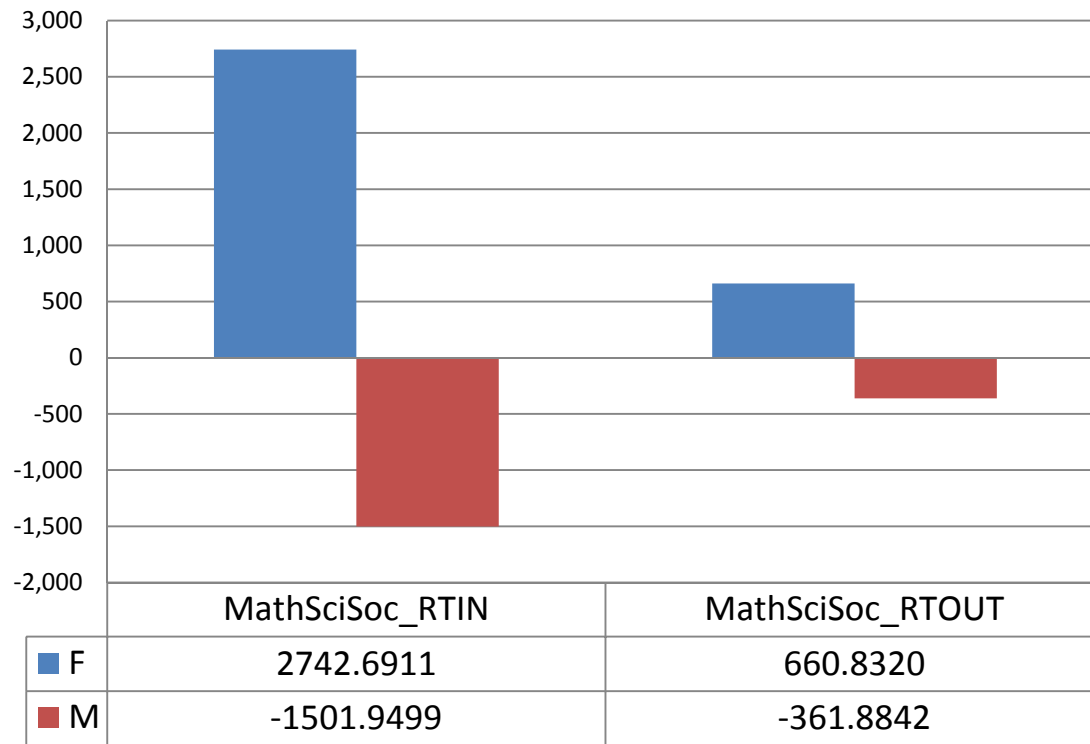


# College of Arts and Sciences – Math, Natural Sciences, Social Sciences

Rank	Gender	N	Mean	Std. Deviation
Assistant Professor	Male	17	\$68,319	\$4,727
Assistant Professor	Female	20	\$66,328	\$6,229
Associate Professor	Male	20	\$79,463	\$8,295
Associate Professor	Female	10	\$78,166	\$5,856
Professor	Male	52	\$109,382	\$20,828
Professor	Female	15	\$113,784	\$16,939

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# College of Arts and Sciences – Math, Natural Sciences, Social Sciences

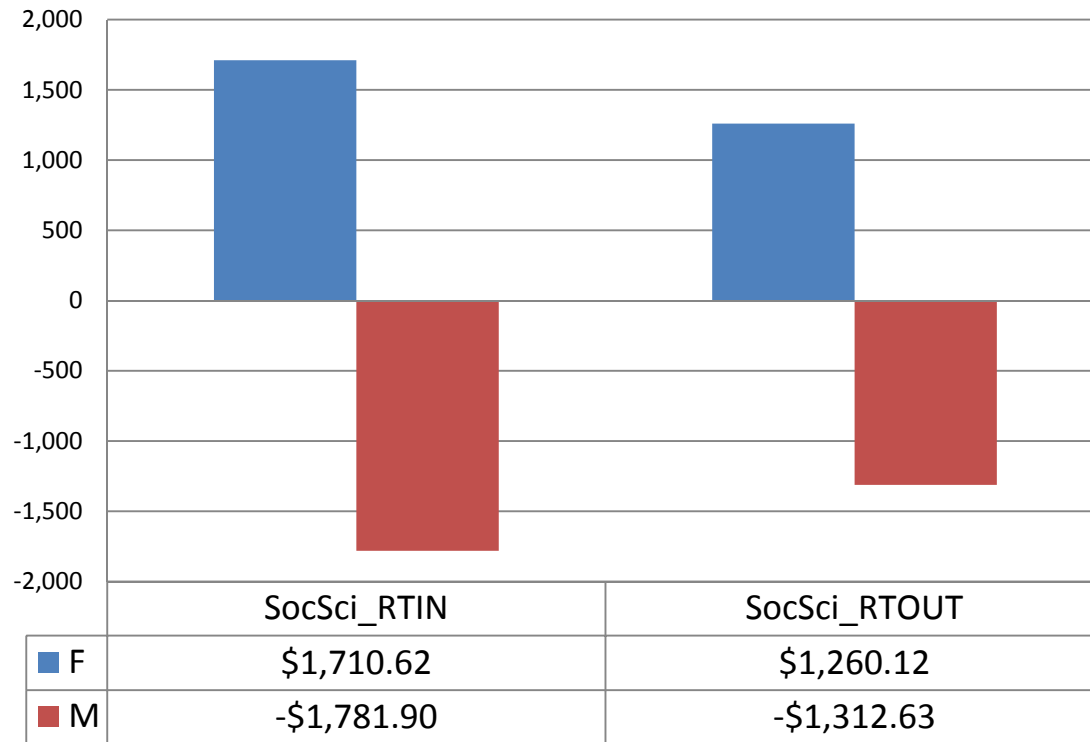


# College of Arts and Sciences – Social Sciences Only

Rank	Gender	N	Mean	Std. Deviation
Assistant Professor	Male	4	\$67,232	\$5,081
Assistant Professor	Female	10	\$62,807	\$5,066
Associate Professor	Male	9	\$76,424	\$9,274
Associate Professor	Female	6	\$77,457	\$6,273
Professor	Male	11	\$112,227	\$21,306
Professor	Female	9	\$113,975	\$19,106

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# College of Arts and Sciences – Social Sciences Only

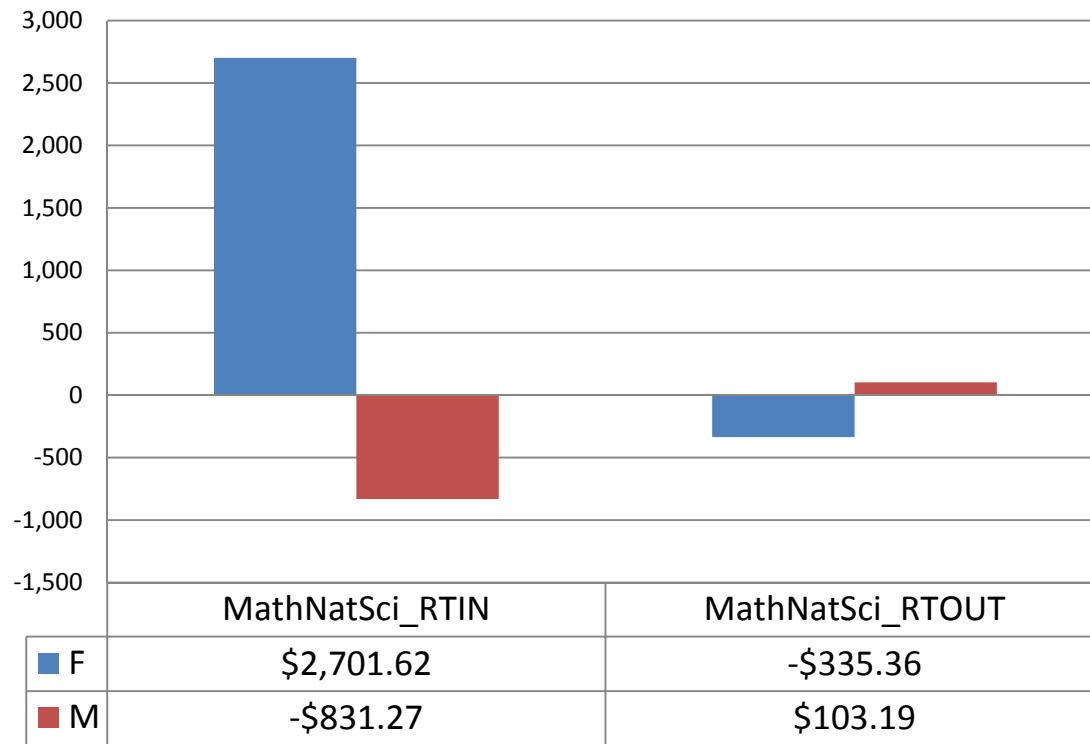


# College of Arts and Sciences – Math & Natural Sciences Only

Rank	Gender	N	Mean	Std. Deviation
Assistant Professor	Male	13	\$68,654	\$4,778
Assistant Professor	Female	10	\$69,849	\$5,357
Associate Professor	Male	11	\$81,948	\$6,844
Associate Professor	Female	4	\$79,230	\$5,897
Professor	Male	41	\$108,618	\$20,968
Professor	Female	6	\$113,496	\$14,804

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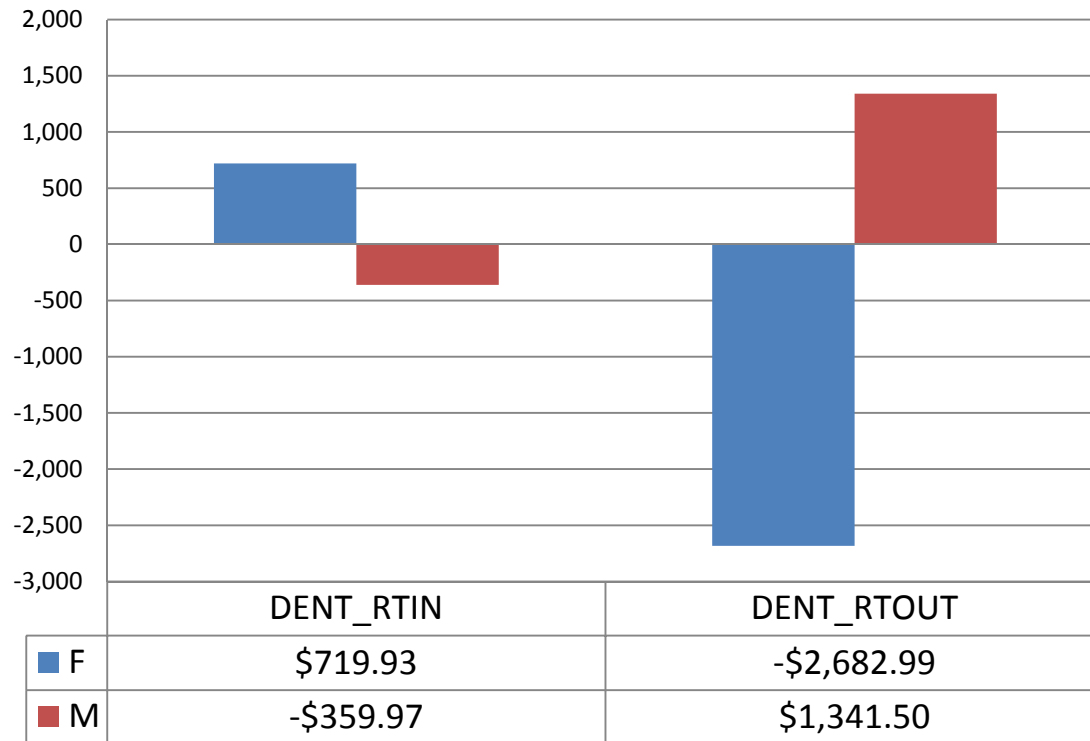
# College of Arts and Sciences – Math & Natural Sciences Only



# School of Dental Medicine

Rank	Gender	N	Mean	Std. Deviation
Assistant Professor	Male	9	\$95,499	\$18,473
Assistant Professor	Female	9	\$84,823	\$8,613
Associate Professor	Male	16	\$103,419	\$26,061
Associate Professor	Female	5	\$109,423	\$26,174
Professor	Male	7	\$155,919	\$36,531
Professor	Female	2	--	--
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# School of Dental Medicine



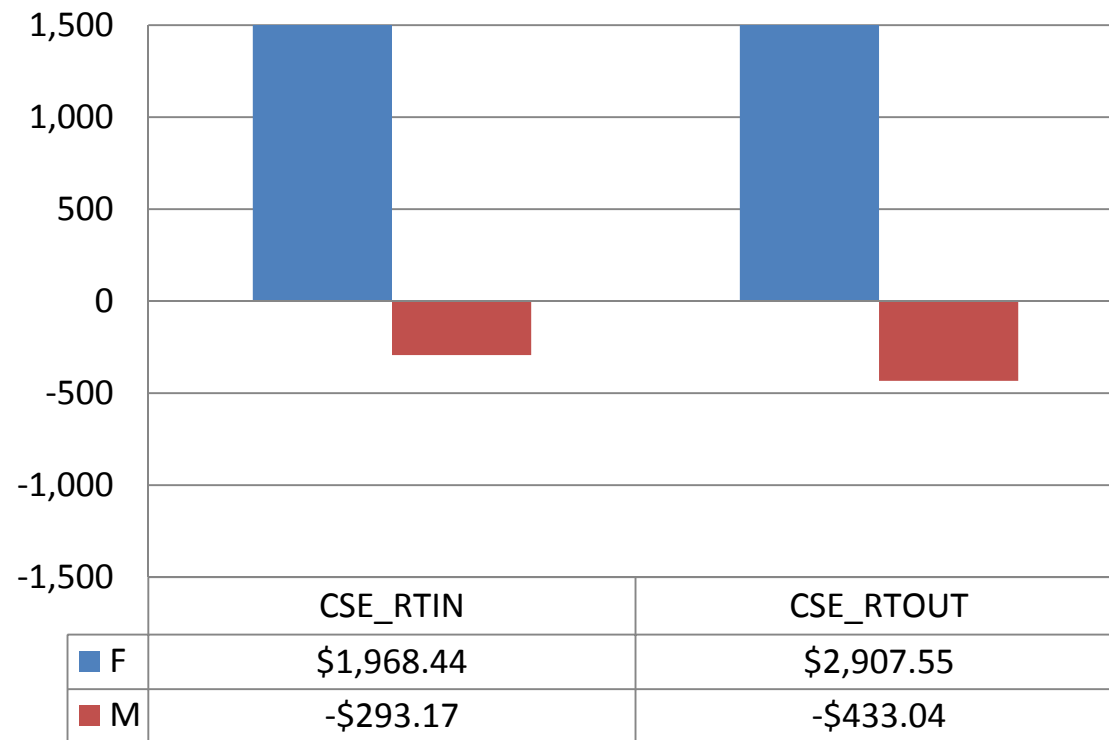


# Case School of Engineering

Rank	Gender	N	Mean	Std. Deviation
Assistant Professor	Male	9	\$80,317	\$5,160
Assistant Professor	Female	5	\$82,607	\$7,796
Associate Professor	Male	30	\$95,161	\$10,623
Associate Professor	Female	5	\$102,460	\$6,723
Professor	Male	55	\$124,262	\$21,538
Professor	Female	4	\$123,363	\$18,995

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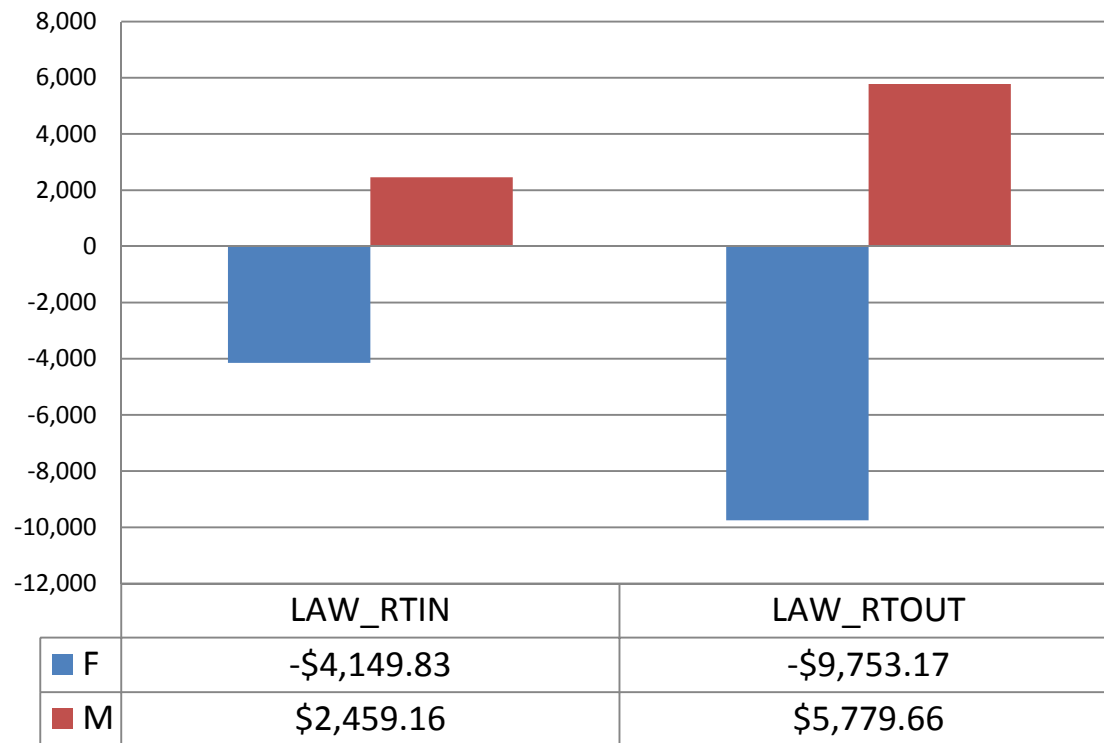
# Case School of Engineering



# School of Law

Rank	Gender	N	Mean	Std. Deviation
Assistant Professor	Male	4	\$114,000	\$21,560
Assistant Professor	Female	1	--	--
Associate Professor	Male	0	--	--
Associate Professor	Female	5	\$104,900	\$28,250
Professor	Male	23	\$176,127	\$48,293
Professor	Female	10	\$140,504	\$37,841
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# School of Law



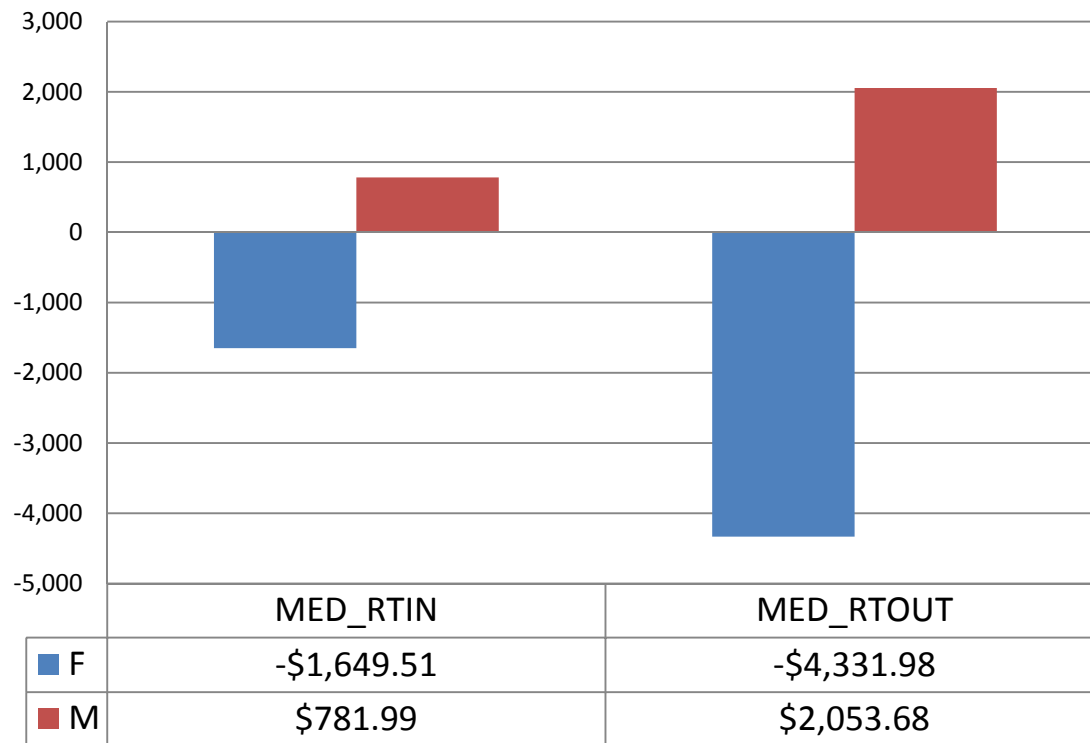
# School of Medicine - Basic Sciences

Rank	Gender	N	Mean*	Std. Deviation
Assistant Professor	Male	52	\$90,072	\$11,264
Assistant Professor	Female	27	\$88,571	\$9,949
Associate Professor	Male	46	\$104,955	\$11,264
Associate Professor	Female	22	\$103,192	\$22,467
Professor	Male	37	\$163,702	\$39,597
Professor	Female	15	\$137,230	\$26,067

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\*Salaries based on 12-month appointment, department chairs removed from analysis

# School of Medicine - Basic Sciences

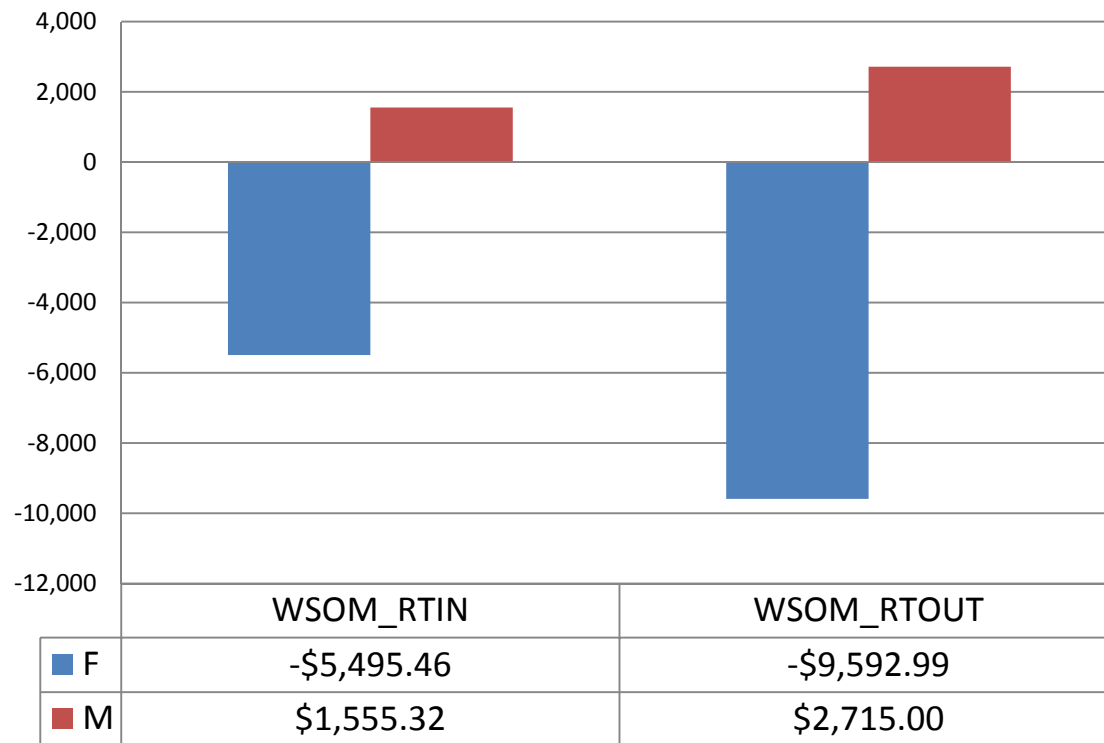


\*Salaries based on 12-month appointment, department chairs removed from analysis

# Weatherhead School of Management

Rank	Gender	N	Mean	Std. Deviation
Assistant Professor	Male	12	\$130,450	\$25,028
Assistant Professor	Female	9	\$123,207	\$24,917
Associate Professor	Male	11	\$110,616	\$32,805
Associate Professor	Female	3	--	--
Professor	Male	30	\$167,142	\$46,122
Professor	Female	3	--	--
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# Weatherhead School of Management

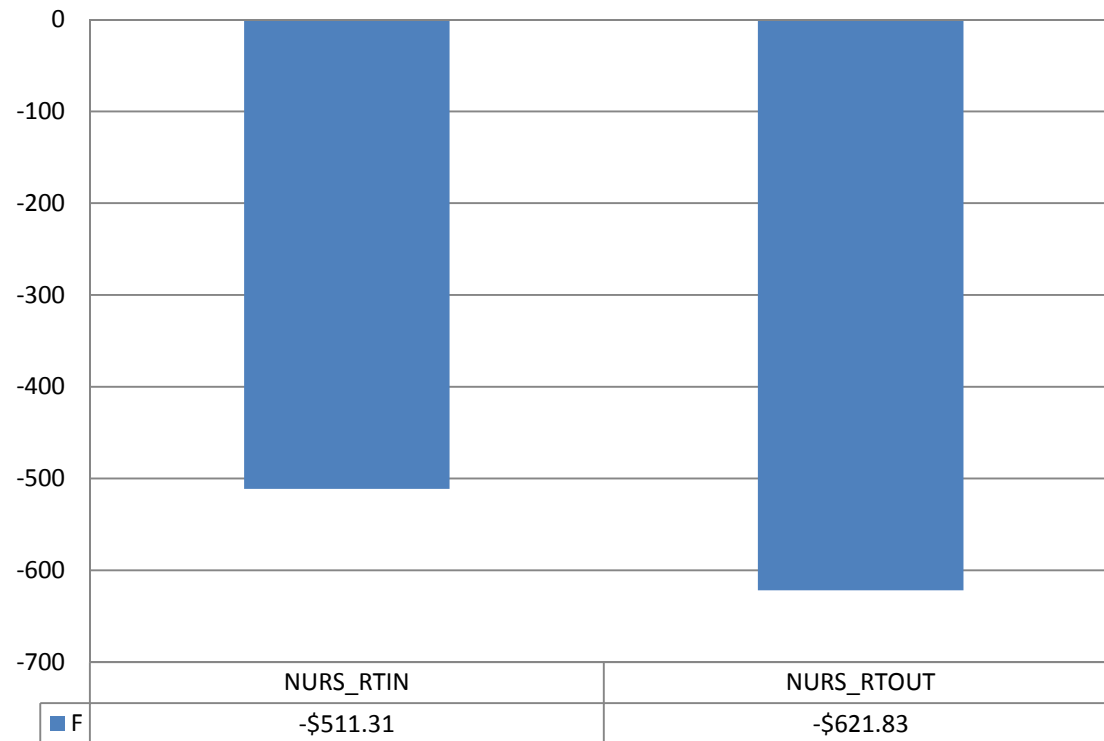




# Frances Payne Bolton School of Nursing

Rank	Gender	N	Mean	Std. Deviation
Assistant Professor	Male	3	--	--
Assistant Professor	Female	16	\$66,673	\$11,8674
Associate Professor	Male	1	--	--
Associate Professor	Female	15	\$78,318	\$11,117
Professor	Male	0	--	--
Professor	Female	14	\$124,117	\$26,707
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# Frances Payne Bolton School of Nursing

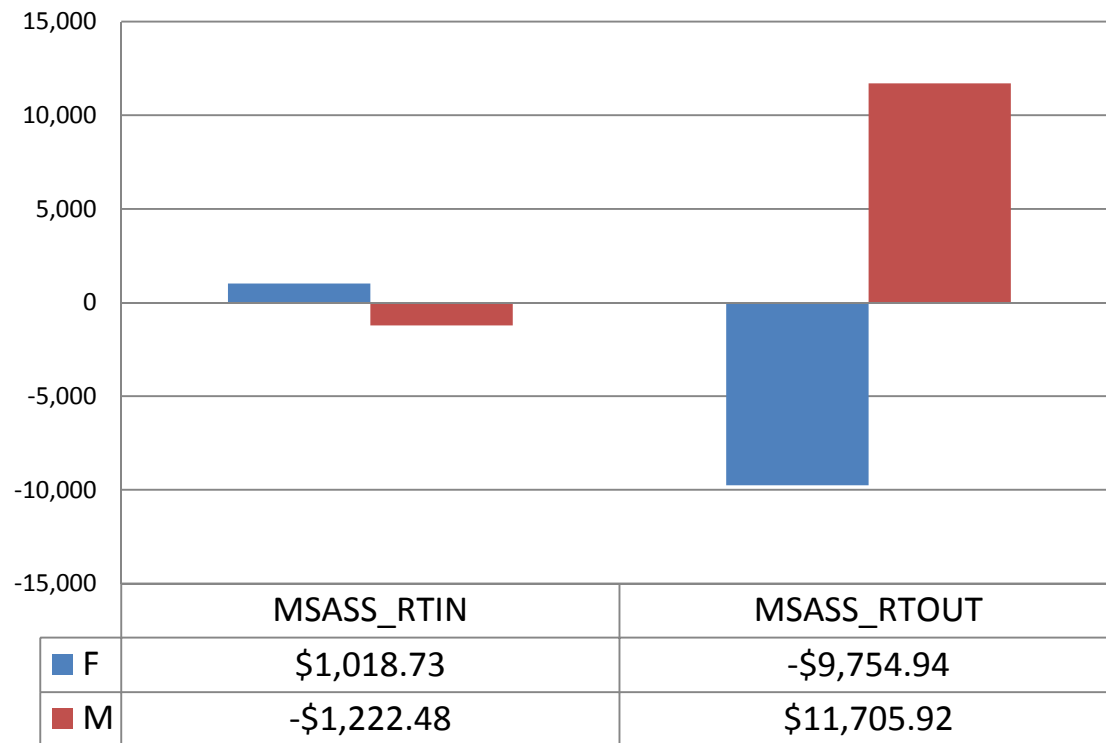


# Mandel School of Applied Social Sciences

Rank	Gender	N	Mean	Std. Deviation
Assistant Professor	Male	2	--	--
Assistant Professor	Female	4	\$71,894	\$10,635
Associate Professor	Male	2	--	--
Associate Professor	Female	4	\$95,907	\$14,552
Professor	Male	6	\$157,531	\$26,982
Professor	Female	4	\$132,294	\$36,989

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# Mandel School of Applied Social Sciences



# Gender Summary – Salary Equity Study

All FTE except clinical departments of the School of Medicine.

School	Discrepancy of residual values 2009-2010	Discrepancy of residual values 2010-2011	Discrepancy of residual values 2011-2012
A&S - Humanities	\$359 M	\$474 M	\$1,146 M
A&S – Math, Natural Sciences and Social Sciences	\$1,861 W	\$1,448 W	\$4,148 W
A&S – Social Sciences	\$1,661 M	\$72 M	\$3,493 W
A&S – Math and Natural Sciences	\$902 W	\$1,737 W	\$3,533 W
Engineering	\$1,071 M	\$1,339 M	\$2262 W
Management	\$5,512 M	\$11,917 M	\$7,051 M
Nursing	N/A	N/A	N/A
Dental Medicine	\$4,934 M	\$8,990 M	\$1,080 W
Law	\$2,544 M	\$4,998 M	\$6,609 M
Medicine	\$6,755 M	\$5,488 M	\$2,432 M
MSASS	\$3,990 W	\$2,753 W	\$2,241 M

# Summer Salary

School	Gender	% With Salary	Mean	Std. Dev.
A&S - Humanities	F	25%	\$9,091	\$7,004
	M	21%	\$7,688	\$4,669
A&S - Math and Natural Sciences	F	71%	\$14,637	\$5,236
	M	70%	\$1,931	\$11,078
A&S - Social Sciences	F	64%	\$17,689	\$14,269
	M	44%	\$14,496	\$7,347
A&S - Math, Nat'l Sci. and Social Sci.	F	67%	\$16,675	\$10,933
	M	64%	\$19,997	\$12,432
Engineering	F	71%	\$23,611	\$11,934
	M	68%	\$26,114	\$13,567
Law	F	82%	\$13,055	\$10,881
	M	56%	\$10,750	\$5,290
Management	F	53%	\$29,104	\$4,973
	M	28%	\$20,775	\$8,136
Nursing	F	27%	\$9,146	\$6,138
	M	0%	\$0	\$0
MSASS	F	86%	\$21,707	\$8,192
	M	90%	\$21,522	\$14,364

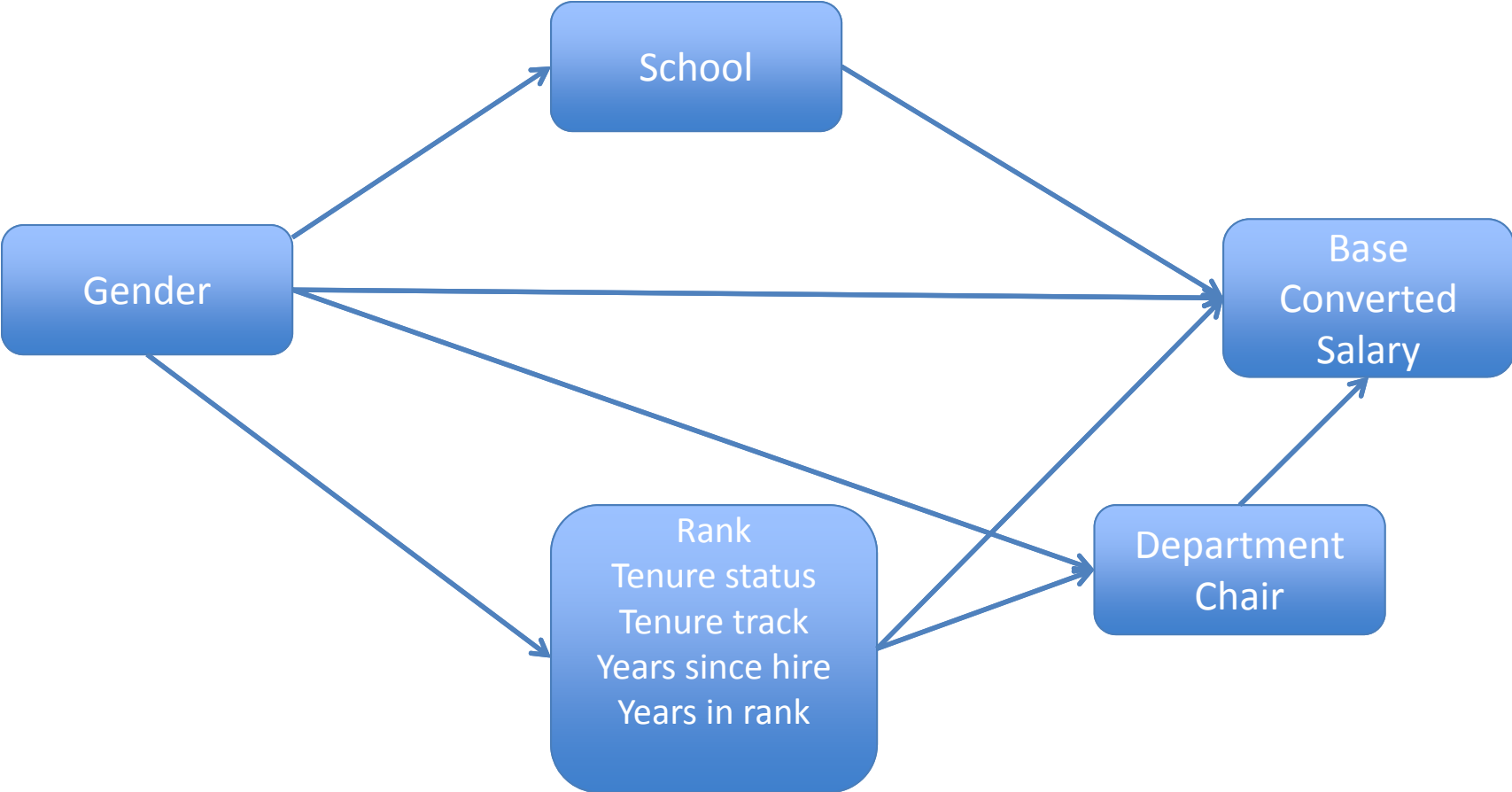
Faculty in Medicine and Dental Medicine are on 12 month contracts and, thus do not receive summer salaries

# Supplemental Salary

	Gender	% With Sup.	Mean	St. Dev.
A&S - Humanities	F	15%	\$15,953	\$11,159
	M	8%	\$10,303	\$1,533
A&S - Math & Natural Sciences	F	15%	*	*
	M	15%	\$18,130	\$22,872
A&S - Social Sciences	F	12%	*	*
	M	20%	\$10,303	\$11,159
A&S - Math, Nat'l Sci. and Social Sci.	F	13%	\$10,299	\$11,326
	M	16%	\$22,453	\$24,355
Engineering	F	21%		
	M	20%	\$19,909	\$15,646
Dental Medicine	F	50%	\$15,756	\$12,657
	M	58%	\$17,946	\$14,430
Law	F	63%	\$9,958	\$7,703
	M	52%	\$14,035	\$10,913
Management	F	7%	*	*
	M	9%	\$15,119	\$11,147
Nursing	F	29%	\$7,038	\$3,881
	M	50%	*	*
MSASS	F	18%	\$9,125	\$6,169
	M	0%		
Medicine	F	15%	\$19,086	\$13,549
	M	12%	\$51,509	\$37,326

\* < 3 supplements. Removed to protect confidentiality

# Revised Model





# Results

- R-squared=.808
- Gender (F-1) had a direct effect on the following variables( $p<.05$ ).
  - Years since hire (-)
  - Rank (-)
  - Tenure track (-)
  - Tenure status (-)
  - Years in rank (-)
  - Appointment in nursing (+)
  - Appointment in engineering (-)

# Results

- There was no significant direct effect of gender on salary.
- Women earned less than men because they:
  - Were more likely to be recent hires.
  - Were more likely to be of lower rank.
  - Were less likely to be on the tenure track.
  - Spent less time at their current rank.

# Decreasing the gap

- Based on findings from this model, the following efforts would likely promote salary equity within the faculty:
  - Facilitate the promotion and tenure process for women.
  - Implement policies to retain women faculty, especially those of high rank.
  - Hire more women faculty, especially at higher ranks.