

# Gender Salary Analysis

Academic year 2012-2013

# Data

- Assistant Professor, Associate Professor and Professor
  - Both tenure and non-tenure streams
  - Excludes clinical faculty in the School of Medicine
  - Physical Education and Athletics includes Instructors.
- 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 all other schools are adjusted to a 9-month equivalent appointment and are adjusted to 100% effort.
- Data are for AY2012-2013. Changes made following the start of the fiscal year 2012 are not reflected in this analysis.

# 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.

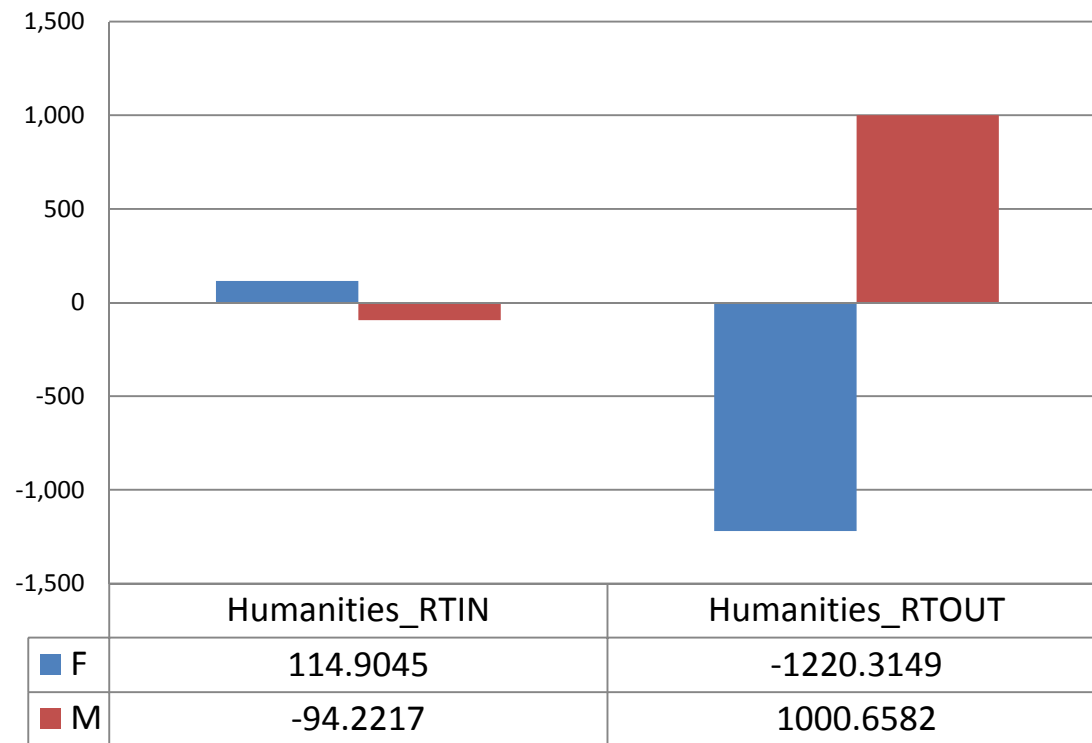
# Limitations of the Analysis

- 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	11	\$61,508	\$3,359
Assistant Professor	Female	11	\$59,691	\$2,422
Associate Professor	Male	19	\$74,057	\$6,310
Associate Professor	Female	23	\$75,527	\$12,747
Professor	Male	20	\$95,528	\$12,723
Professor	Female	8	\$96,134	\$14,410
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# College of Arts and Sciences - Humanities



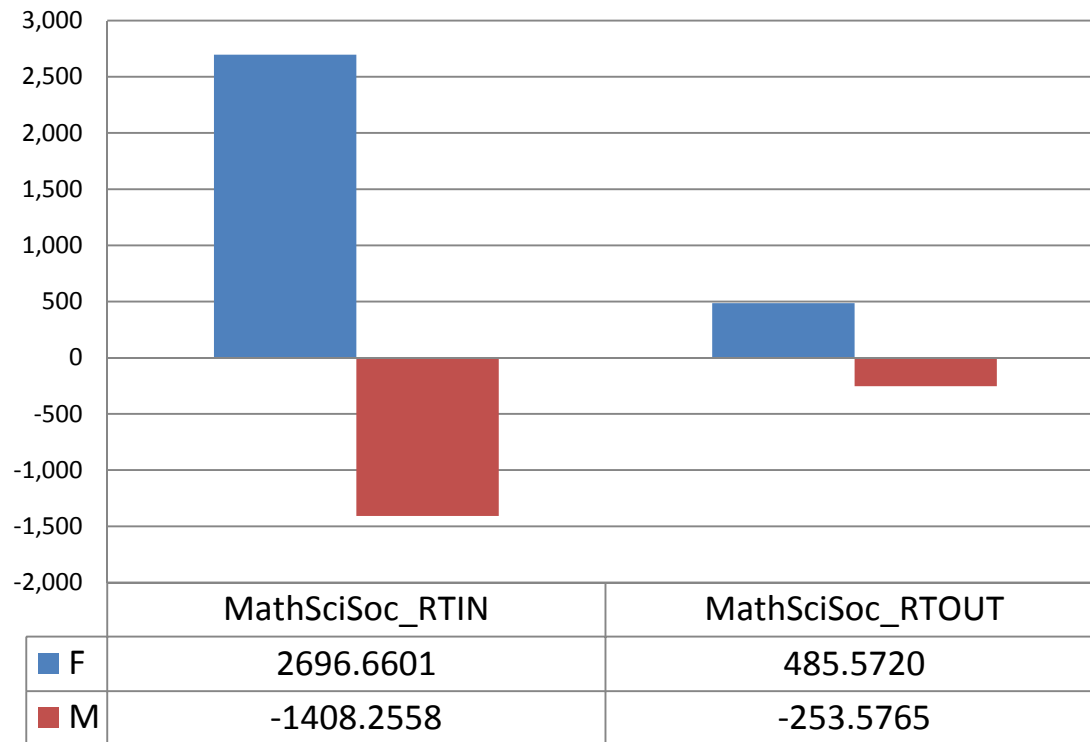


# College of Arts and Sciences – Math, Natural Sciences, Social Sciences

Rank	Gender	N	Mean	Std. Deviation
Assistant Professor	Male	15	\$69,300	\$5,401
Assistant Professor	Female	19	\$66,189	\$6,543
Associate Professor	Male	18	\$80,271	\$8,157
Associate Professor	Female	11	\$75,845	\$5,643
Professor	Male	57	\$110,620	\$23,421
Professor	Female	17	\$114,031	\$20,351

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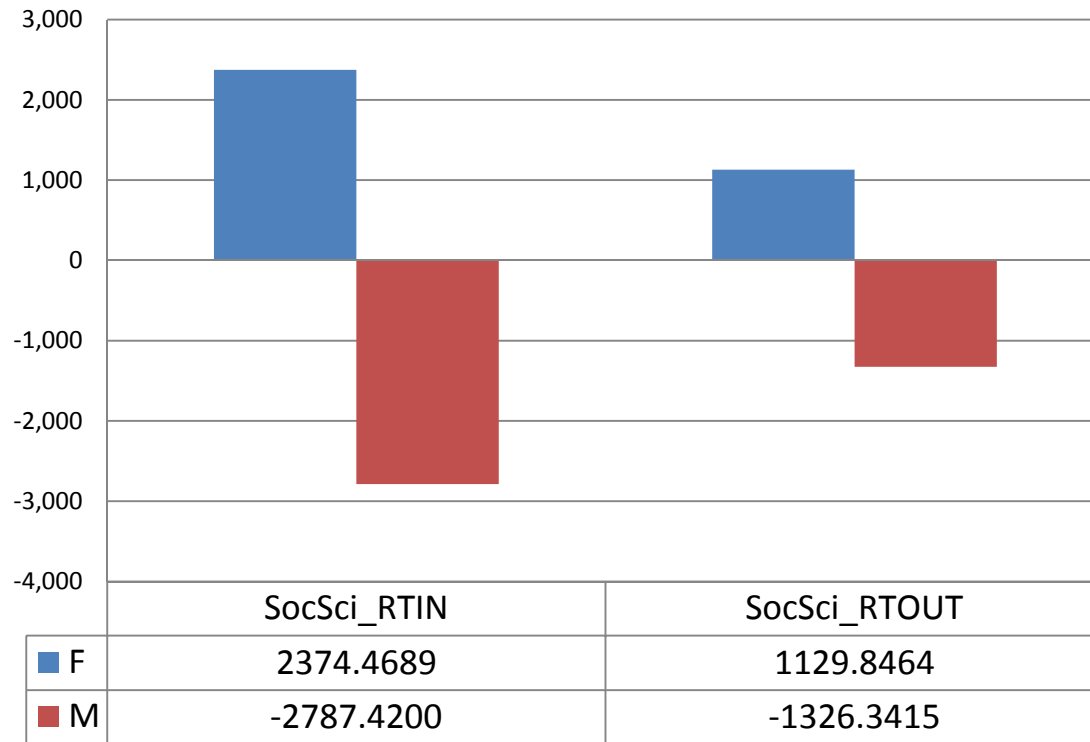
# College of Arts and Sciences – Math, Natural Sciences, Social Sciences



# College of Arts and Sciences – Social Sciences Only

Rank	Gender	N	Mean	Std. Deviation
Assistant Professor	Male	3	\$68,520	\$5,362
Assistant Professor	Female	10	\$62,607	\$5,526
Associate Professor	Male	7	\$78,525	\$9,703
Associate Professor	Female	7	\$73,295	\$3,994
Professor	Male	13	\$107,740	\$24,191
Professor	Female	10	\$115,190	\$21,644
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# College of Arts and Sciences – Social Sciences Only

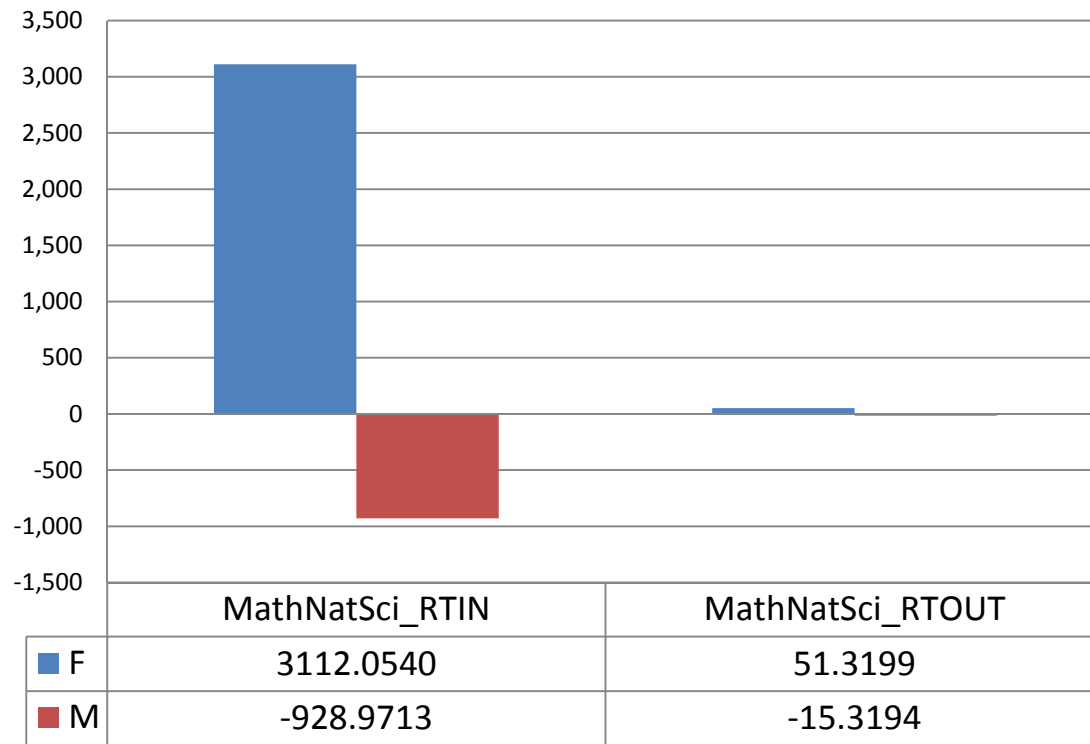


# College of Arts and Sciences – Math & Natural Sciences Only

Rank	Gender	N	Mean	Std. Deviation
Assistant Professor	Male	12	\$69,495	\$5,630
Assistant Professor	Female	9	\$70,170	\$5,302
Associate Professor	Male	11	\$81,383	\$7,290
Associate Professor	Female	4	\$80,308	\$5,702
Professor	Male	44	\$111,471	\$23,406
Professor	Female	7	\$112,377	\$19,907

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

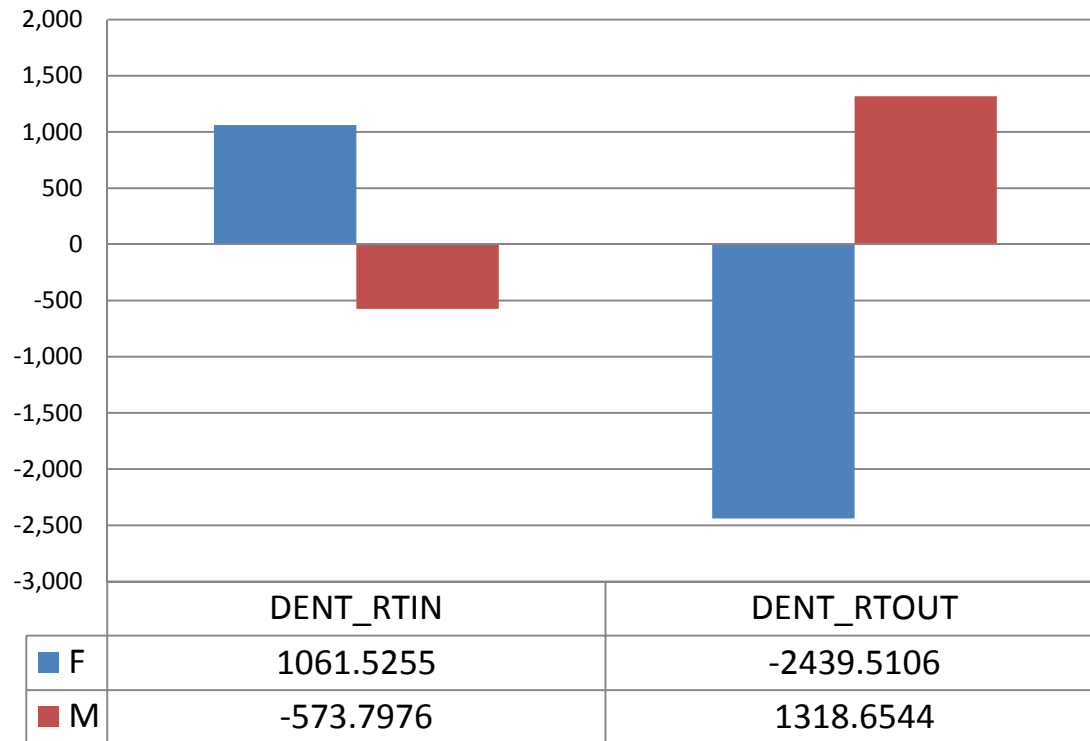


# School of Dental Medicine

Rank	Gender	N	Mean	Std. Deviation
Assistant Professor	Male	12	\$93,875	\$18,281
Assistant Professor	Female	13	\$85,156	\$12,402
Associate Professor	Male	18	\$105,754	\$24,830
Associate Professor	Female	5	\$111,611	\$26,697
Professor	Male	6	\$146,485	\$18,511
Professor	Female	2	--	--

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# School of Dental Medicine



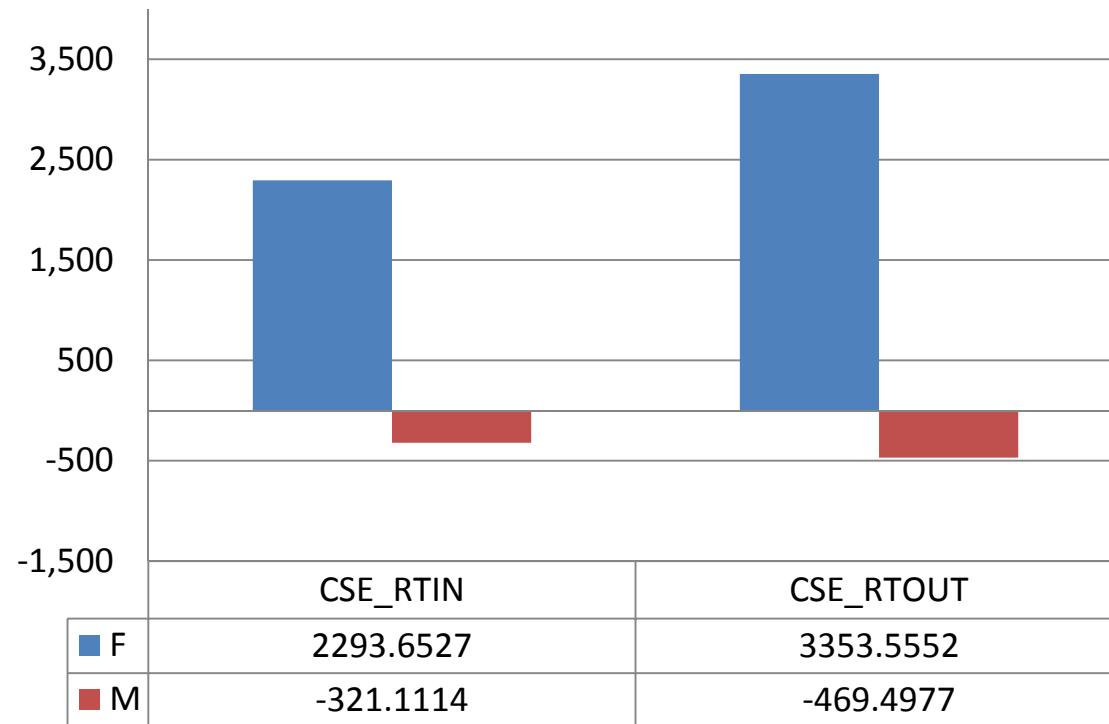


# Case School of Engineering

Rank	Gender	N	Mean	Std. Deviation
Assistant Professor	Male	12	\$79,363	\$6,538
Assistant Professor	Female	5	\$85,204	\$8,600
Associate Professor	Male	34	\$98,704	\$11,254
Associate Professor	Female	5	\$105,313	\$6,679
Professor	Male	53	\$132,834	\$29,300
Professor	Female	4	\$125,920	\$19,901

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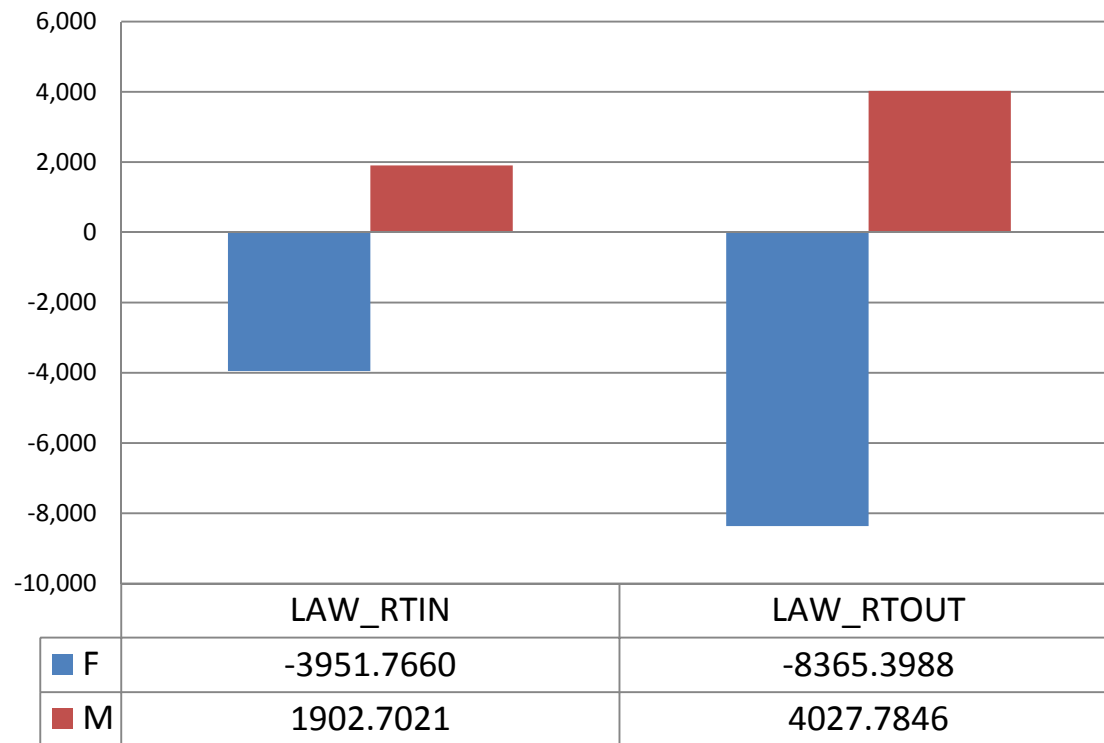
# Case School of Engineering



# School of Law

Rank	Gender	N	Mean	Std. Deviation
Assistant Professor	Male	4	\$118,920	\$14,749
Assistant Professor	Female	0	--	--
Associate Professor	Male	1	--	--
Associate Professor	Female	2	--	--
Professor	Male	22	\$178,632	\$48,445
Professor	Female	11	\$127,378	\$37,523
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# School of Law

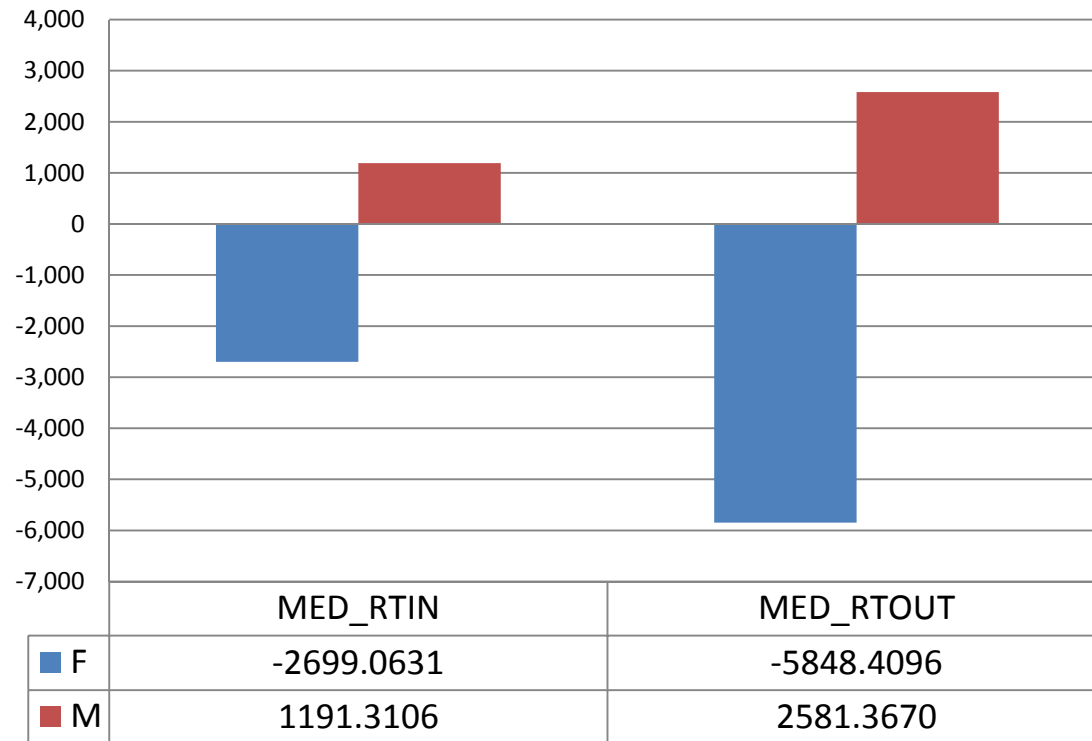


# School of Medicine - Basic Sciences

Rank	Gender	N	Mean	Std. Deviation
Assistant Professor	Male	49	\$90,362	\$10,928
Assistant Professor	Female	27	\$88,804	\$10,391
Associate Professor	Male	47	\$106,844	\$29,727
Associate Professor	Female	18	\$104,306	\$24,444
Professor	Male	47	\$176,881	\$44,988
Professor	Female	19	\$147,014	\$34,665
Chair*	Male	8	\$220,614	\$42,764
Chair*	Female	1	*	*

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# School of Medicine - Basic Sciences

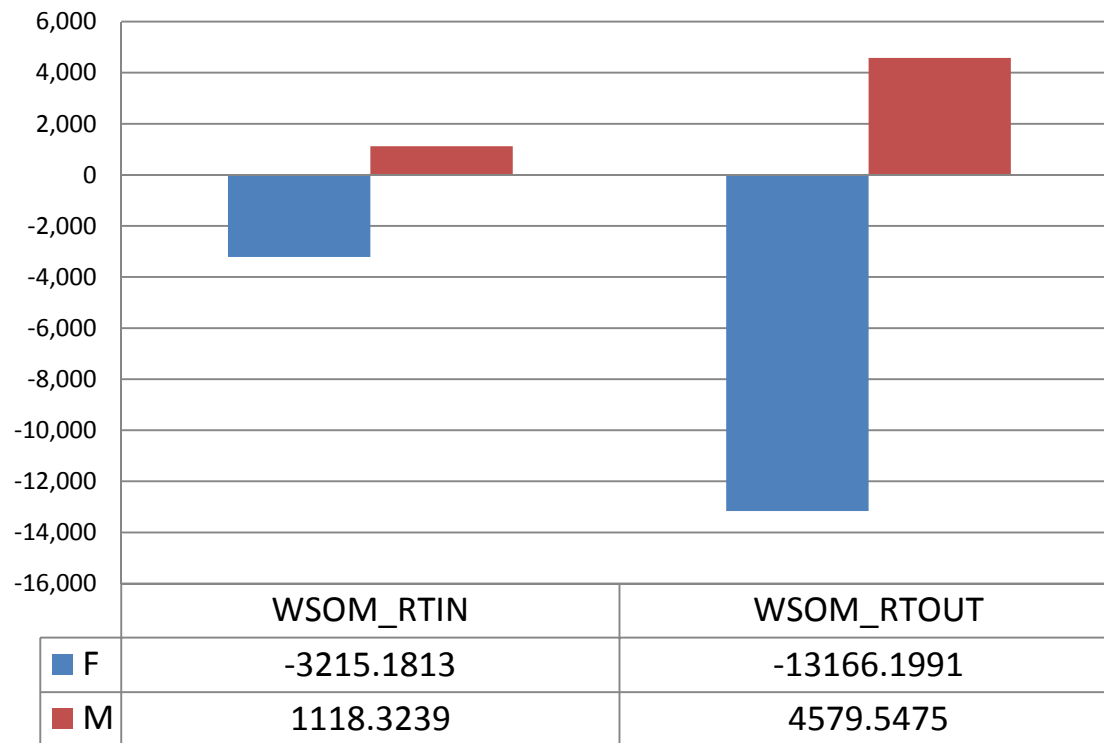


\*Salaries based on 12-month appointment

# Weatherhead School of Management

Rank	Gender	N	Mean	Std. Deviation
Assistant Professor	Male	7	\$131,388	\$25,083
Assistant Professor	Female	10	\$123,676	\$23,721
Associate Professor	Male	11	\$129,272	\$37,523
Associate Professor	Female	3	--	--
Professor	Male	28	\$179,410	\$61,633
Professor	Female	3	--	--
		62		

# Weatherhead School of Management



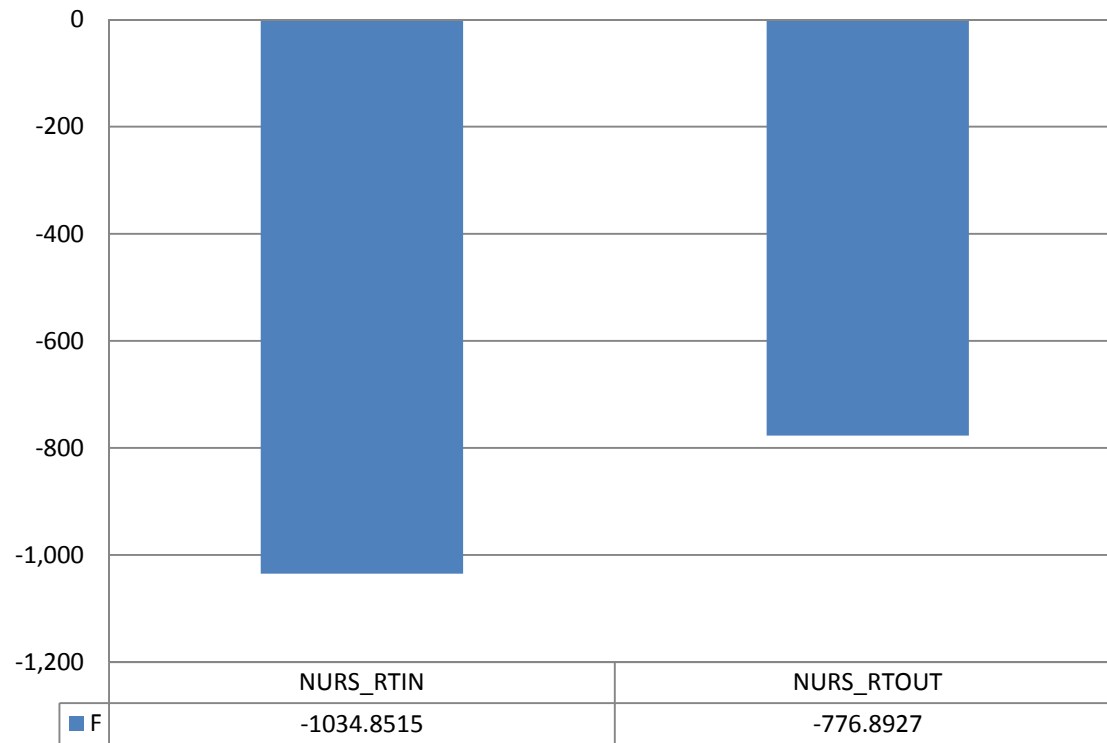


# Frances Payne Bolton School of Nursing

Rank	Gender	N	Mean	Std. Deviation
Assistant Professor	Male	3	--	--
Assistant Professor	Female	15	\$66,887	\$8,769
Associate Professor	Male	0	--	--
Associate Professor	Female	16	\$82,300	\$11,605
Professor	Male	0	--	--
Professor	Female	13	\$131,470	\$25,561

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# Frances Payne Bolton School of Nursing

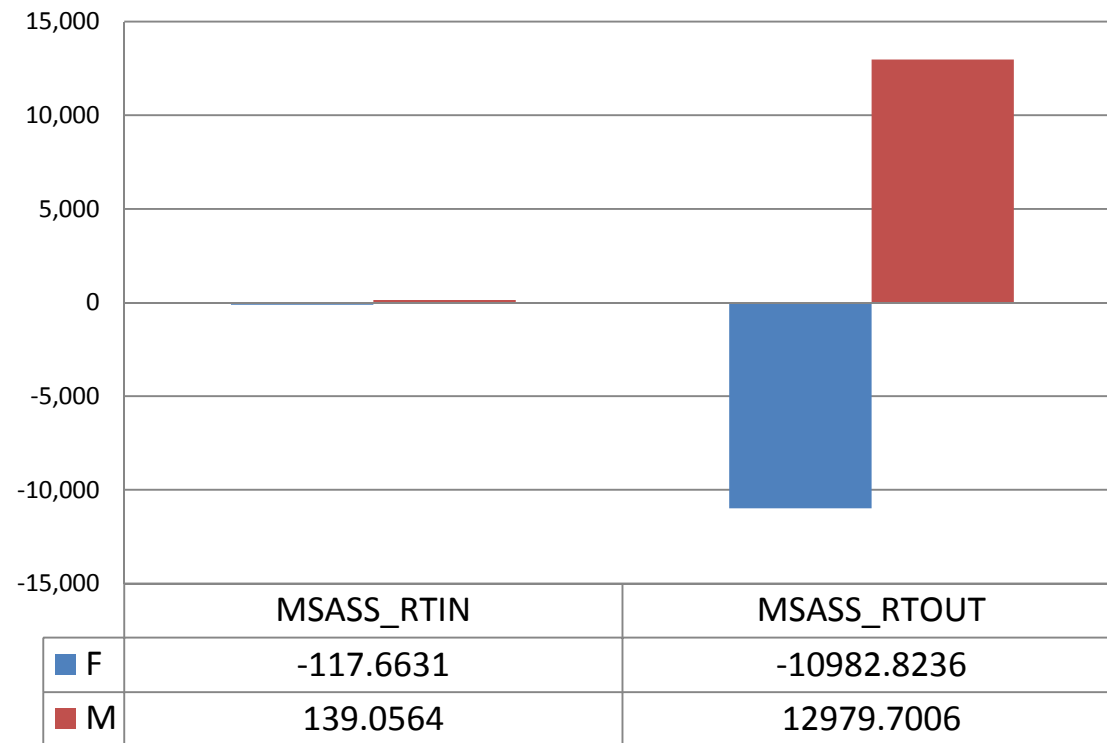


# Mandel School of Applied Social Sciences

Rank	Gender	N	Mean	Std. Deviation
Assistant Professor	Male	1	--	--
Assistant Professor	Female	5	\$74,031	\$9,379
Associate Professor	Male	4	\$99,112	\$23,144
Associate Professor	Female	4	\$97,706	\$15,932
Professor	Male	6	\$162,236	\$29,330
Professor	Female	4	\$136,956	\$40,891

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# Mandel School of Applied Social Sciences

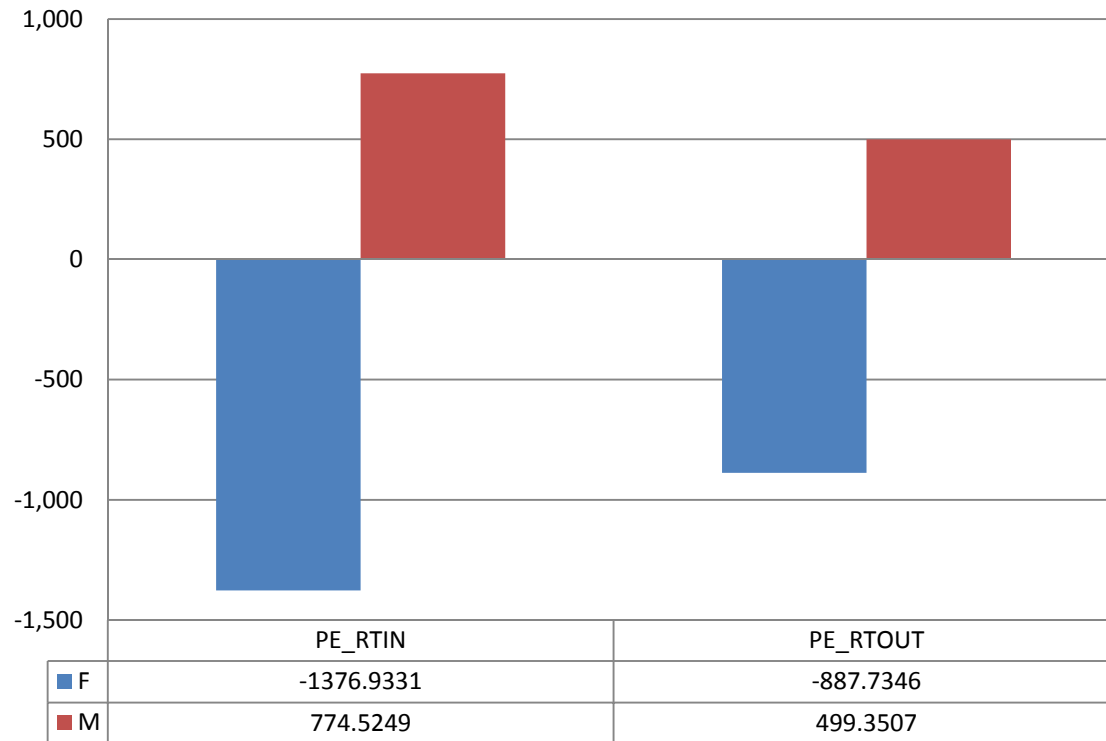


# Physical Education and Athletics

Rank	Gender	N	Mean	Std. Deviation
Instructor	Male	9	\$46,365	\$11,044
Instructor	Female	8	\$41,898	\$11,729
Assistant Professor	Male	5	\$61,759	\$17,584
Assistant Professor	Female	1	--	--
Associate Professor	Male	1	--	--
Professor	Male	1	--	--

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# Physical Education and Athletics



# 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	Discrepancy of residual values 2012-2013
A&S - Humanities	\$359 M	\$474 M	\$1,146 M	\$209 W
A&S – Math, Natural Sciences and Social Sciences	\$1,861 W	\$1,448 W	\$4,148 W	\$4,105 W
A&S – Social Sciences	\$1,661 M	\$72 M	\$3,493 W	\$5,162 W
A&S – Math and Natural Sciences	\$902 W	\$1,737 W	\$3,533 W	\$4,041 W
Engineering	\$1,071 M	\$1,339 M	\$2262 W	\$2,615 W
Management	\$5,512 M	\$11,917 M	\$7,051 M	\$4,334 M
Nursing	N/A	N/A	N/A	
Dental Medicine	\$4,934 M	\$8,990 M	\$1,080 W	\$1,635 W
Law	\$2,544 M	\$4,998 M	\$6,609 M	\$5,484 M*
Medicine	\$6,755 M	\$5,488 M	\$2,432 M	\$3,809 M
MSASS	\$3,990 W	\$2,753 W	\$2,241 M	\$257 M
Physical Education	-	-	-	\$2,151 M

*\*Does not reflect changes made following start of fiscal year 2012*

# Summer Salary

School	Gender	% With Salary	Mean	Std. Dev.
A&S - Humanities	M	34%	\$7,856	\$4,670
	F	24%	\$6,859	\$9,753
A&S - Math and Natural Sciences	M	63%	\$19,637	\$10,846
	F	70%	\$13,383	\$6,863
A&S - Social Sciences	M	48%	\$13,325	\$6,714
	F	44%	\$18,165	\$9,752
A&S - Math, Nat'l Sci. and Social Sci.	M	59%	\$18,652	\$10,458
	F	55%	\$15,326	\$8,358
Engineering	M	47%	\$24,718	\$13,176
	F	93%	\$21,020	\$10,966
Law	M	70%	\$13,087	\$10,881
	F	46%	\$13,714	\$12,615
Management	M	37%	\$22,211	\$4,706
	F	63%	\$24,929	\$8,890
Nursing	M	33%	*	*
	F	27%	\$9,018	\$6045
MSASS	M	69%	\$20,130	\$18,420
	F	69%	\$15,610	\$8,648

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

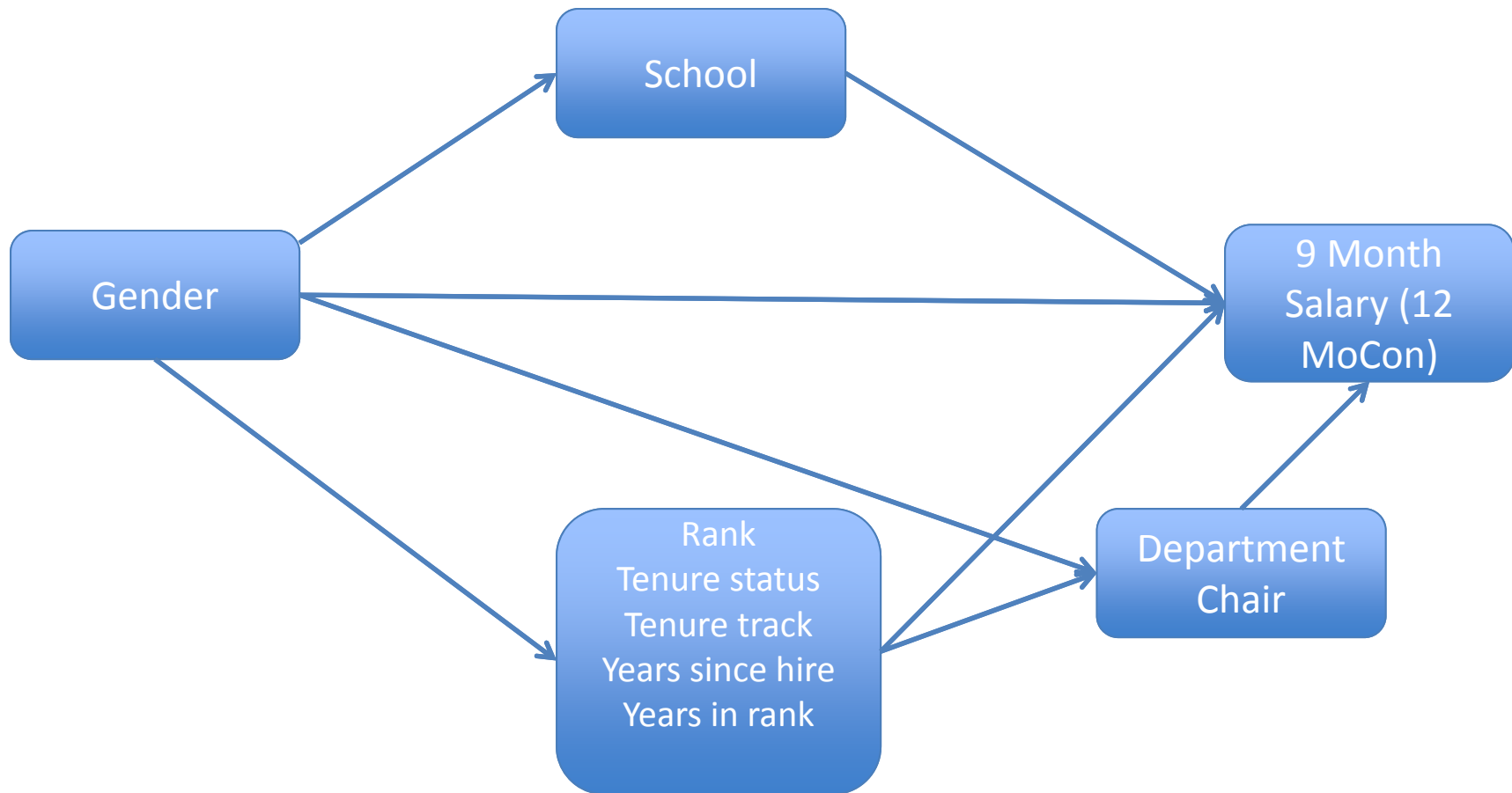


# Supplemental Salary

	Gender	% With Supp	Mean	St. Dev.
A&S - Humanities	M	12%	\$9,195	\$2,029
	F	12%	\$9,797	\$5,037
A&S - Math & Natural Sciences	M	15%	\$16,836	\$22,643
	F	15%	*	*
A&S - Social Sciences	M	26%	\$7,420	*
	F	11%	*	\$11,159
A&S - Math, Nat'l Sci. and Social Sci.	M	18%	\$13,513	\$18,639
	F	13%	\$13,907	\$7,388
Engineering	M	19%	\$22,289	\$18,025
	F	29%	\$18,707	\$14,751
Dental Medicine	M	46%	\$17,320	\$13,647
	F	40%	\$16,071	\$12,910
Law	M	30%	\$21,562	\$12,004
	F	69%	\$9,713	\$8,545
Management	M	7%	*	*
	F	6%	*	*
Nursing	M	33%	*	*
	F	27%	\$6,140	\$3,568
MSASS	M	9%	*	*
	F	31%	\$11,500	\$10,583
Medicine	M	12%	\$45,281	\$45,303
	F	14%	\$24,611	\$14,088

\* < 3 supplements. Removed to protect confidentiality

# Revised Model



# Results

- R-squared=.689
- Gender (F=1) had a direct effect on the following variables( $p<.05$ ).
  - Years since hire (-)
  - Assistant Professor Rank (+)
  - Tenure track (-)
  - Tenure status (-)
  - Years in rank (-)
  - Appointment in nursing (+)
  - Appointment in engineering (-)

# Results

- Controlling for all other variables in the model, the direct effect of gender on salary was \$1,868. While this effect was not statistically significant, the indirect and total effects of gender on salary are substantial.
- Of note, this discrepancy represents an overall average for the university, while individual schools/units vary in the amount and direction of salary differences. Moreover, within schools, there may be differences within ranks/disciplines.
- This analysis does not consider productivity, an important component of salary.

# Results

- The largest differences reside in management, law, medicine.
- There is very little difference between men and women this year in the Humanities.
- Women have seen some gains over time in specific schools.

# Results

- Women's overall pay was less than men's for the following reasons:
  - Women were more likely to be recent hires
  - were more likely to be of lower rank,
  - were less likely to be on the tenure track,
  - and had spent less time at their current rank.

# Recommendations

- The following efforts are recommended for the advancement of women faculty:
  - Enhance mentoring for female faculty to increase the likelihood that women faculty will achieve tenure and promotion to full professor in a timely manner. This will assure that salary increases will occur earlier in female faculty careers.

## Recommendations (Cont.)

- Currently, few female professors of higher rank are hired. Actively recruiting female faculty at senior ranks would reduce gender differences in salary where they exist.
- More women faculty need to be promoted to leadership positions. For example, within the School of Medicine, only one department chair is female.