

Faculty Salary Analysis

Cover Sheet	Introduction	Methodology and Analysis	Preface to the Results	College of Arts and Sciences: Arts and Humanities	College of Arts and Sciences: Math and Natural Sciences
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2018-2019 Faculty Salary Analysis

February 18, 2019

Faculty Salary Analysis

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Data

- Assistant Professor, Associate Professor, and Professor ranks are included; ranks of Instructor and Senior Instructor are excluded, except for Physical Education and Athletics
- Both tenure and non-tenure streams
- The analysis for the School of Medicine excludes faculty in clinical departments and dual-paid faculty in the basic sciences (i.e., those with salary from both CWRU and an affiliated hospital)
- The analysis for Physical Education and Athletics is based on athletics role rather than faculty rank to allow better comparison
- Analyses were conducted on base salary
- Salaries for the School of Medicine and School of Dental Medicine are based on 12-month appointments
- Salaries for all other schools are adjusted to a 9-month equivalent appointment and are adjusted to 100% effort to allow comparison
- Data are from Fall 2018. Changes made after November 1, 2018 are not reflected in this analysis

Faculty Salary Analysis

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Regression Analysis

- A separate regression is conducted for each school or division
- The dependent variable in the analyses is the 9-month equivalent adjusted base salary for all except the School of Medicine and the School of Dental Medicine
- The dependent variable for the School of Medicine and School of Dental Medicine is the 12-month salary, which includes incentive pay
- The independent variables in the analyses are age, rank, years in rank, tenure status, years since hire, and highest degree
- Using a multiple regression analysis, a predicted salary value is calculated for each faculty member
- This predicted salary value is compared to the faculty member's actual salary, and "residual" values are calculated from the difference between actual and predicted salary values

Limitations of the Analysis

- There is no measure of productivity in the regression analysis
- Examining residuals by group is a "broad brush" technique for highlighting where differences **might** exist
- Analysis is **strongly** affected by extreme high or low values. No outliers were removed to reflect actual salary distributions

Faculty Salary Analysis

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Preface to the Results

The results are presented on the following pages using four separate charts:

- The first is a bar graph charting average salary by rank and sex. Assistant, Associate, and full Professors are included, where average actual salaries are presented for women and men. In cases where there are less than four cases, no average was computed and the graphs are suppressed.
- Second, there is a table depicting the percentage of cases that fall above and below the regression line for men and women. Falling above the line indicates an actual salary greater than predicted, whereas actual salary was lower than predicted when falling below the line.
- Lastly, the average unstandardized residuals for men and women were plotted using a bar chart. This allows for the exploration of disparity in real dollars as averaged out across groups. Positive values indicate greater actual salaries than predicted, while negative values reflect consistently lower actual salaries than predicted.

For all charts and graphs, the color blue represents women and orange represents men.

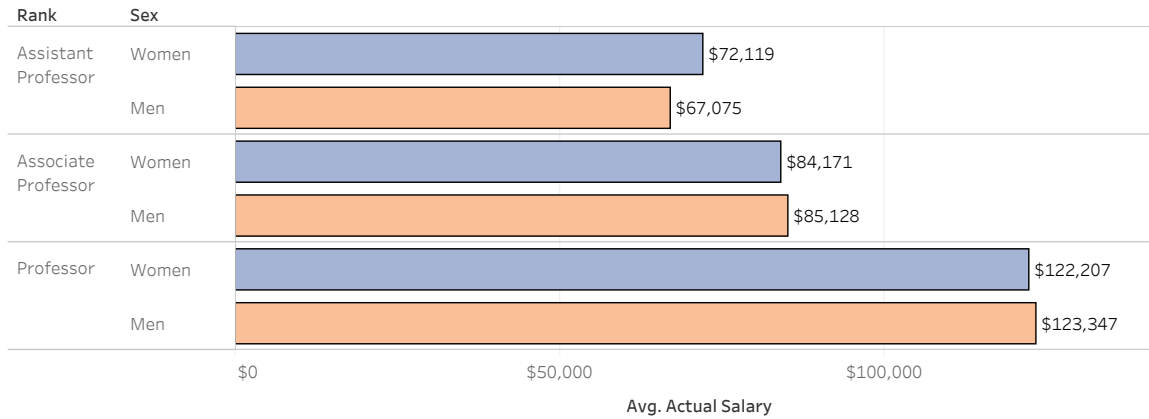
Data consisting of fewer than four cases are suppressed for privacy.

Faculty Salary Analysis

Introduction	Methodology and Analysis	Preface to the Results	College of Arts and Sciences: Arts and Humanities	College of Arts and Sciences: Math and Natural Sciences	College of Arts and Sciences: Social Sciences	Case School of Engineering
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Average Salary by Sex and Rank

School/Division
Arts and Humanities



Above or Below the Line

Sex	Above or Below	Percentage
Women	Above the line	47%
	Below the line	53%
Men	Above the line	40%
	Below the line	60%

Average Residuals

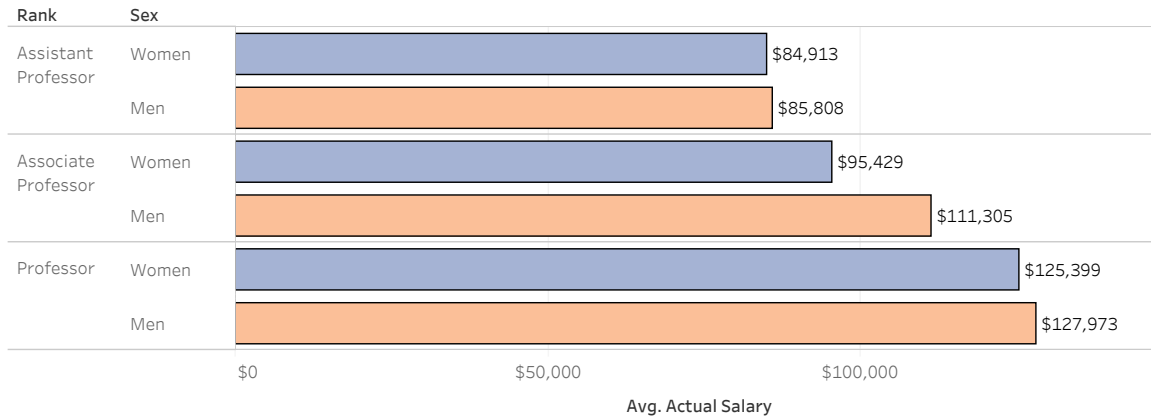


Faculty Salary Analysis

Methodology and Analysis	Preface to the Results	College of Arts and Sciences: Arts and Humanities	College of Arts and Sciences: Math and Natural Sciences	College of Arts and Sciences: Social Sciences	Case School of Engineering	Mandel School of Applied Science
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Average Salary by Sex and Rank

School/Division
Math and Natural Sciences



Above or Below the Line

Sex	Above or Below	Percentage
Women	Above the line	37%
	Below the line	63%
Men	Above the line	44%
	Below the line	56%

Average Residuals

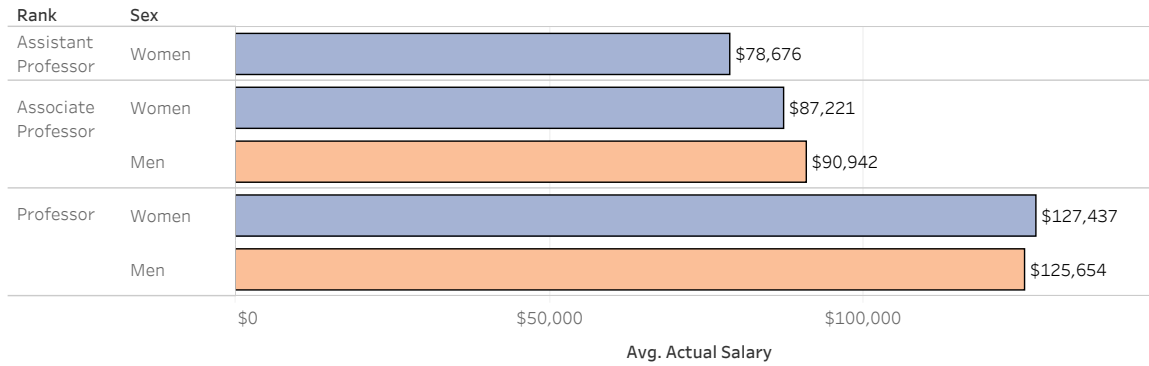


Faculty Salary Analysis

Preface to the Results	College of Arts and Sciences: Arts and Humanities	College of Arts and Sciences: Math and Natural Sciences	College of Arts and Sciences: Social Sciences	Case School of Engineering	Mandel School of Applied Social Sciences	Weatherhead School of Manag..
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Average Salary by Sex and Rank

School/Division
Social Sciences



Above or Below the Line

Sex	Above or Below	Percentage
Women	Above the line	56%
	Below the line	44%
Men	Above the line	41%
	Below the line	59%

Average Residuals

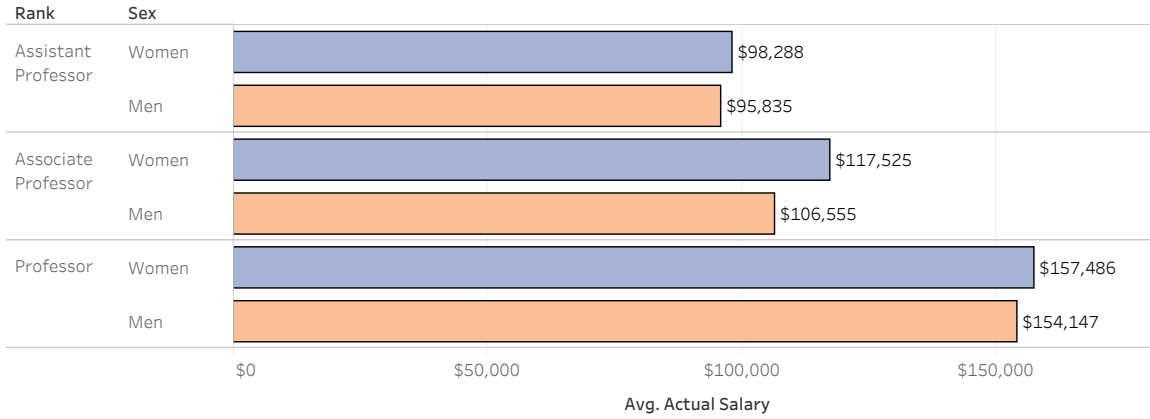


Faculty Salary Analysis

College of Arts and Sc..	College of Arts and Sciences: Math and Natural Sciences	College of Arts and Sciences: Social Sciences	Case School of Engineering	Mandel School of Applied Social Sciences	Weatherhead School of Management	School of Law
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Average Salary by Sex and Rank

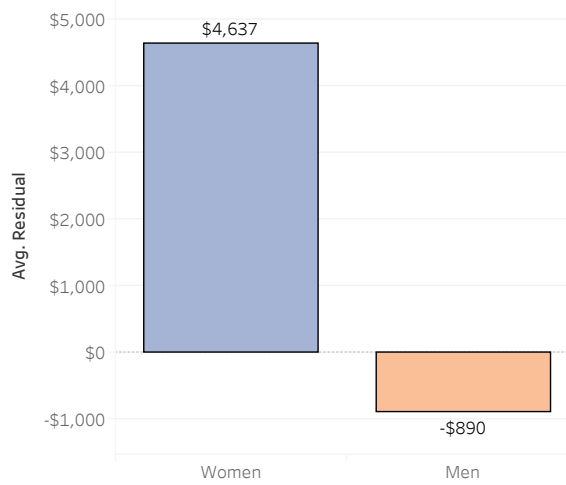
School/Division
Engineering



Above or Below the Line

Sex	Above or Below	Percentage
Women	Above the line	63%
	Below the line	37%
Men	Above the line	41%
	Below the line	59%

Average Residuals

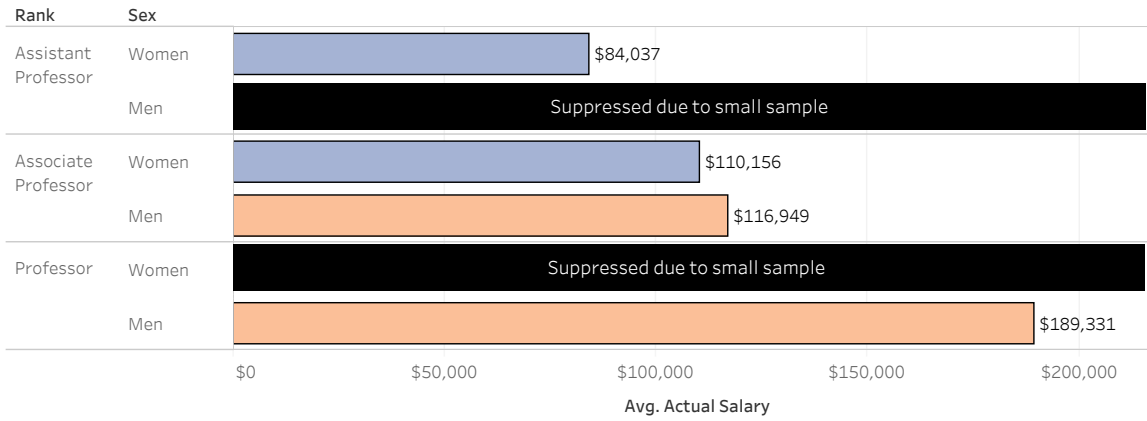


Faculty Salary Analysis

College of Arts and Sc..	College of Arts and Sciences: Social Sciences	Case School of Engineering	Mandel School of Applied Social Sciences	Weatherhead School of Management	School of Law	Frances Payne Bolton Sc..
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Average Salary by Sex and Rank

School/Division
Social Work



Above or Below the Line

Sex	Above or Below	Percentage
Women	Above the line	57%
	Below the line	43%
Men	Above the line	38%
	Below the line	62%

Average Residuals

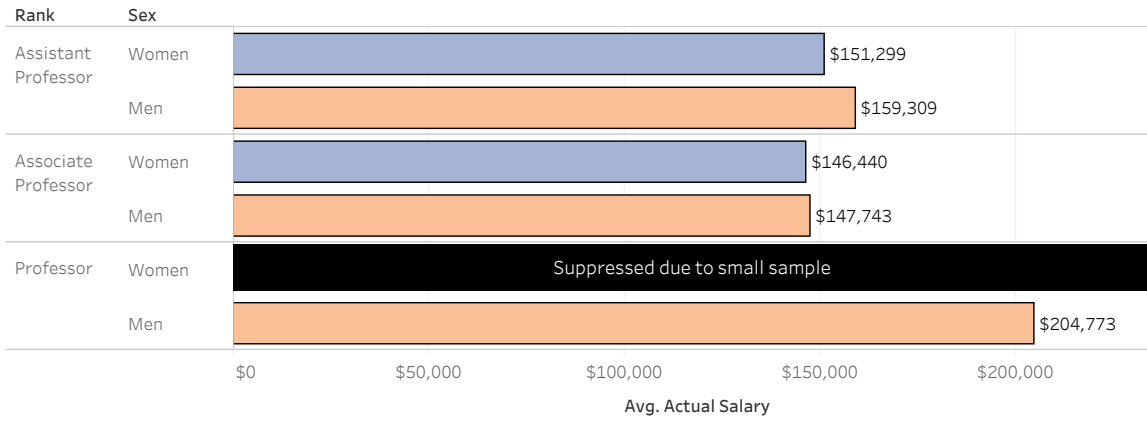


Faculty Salary Analysis

College of Arts and Sc..	Case School of Engineering	Mandel School of Applied Social Sciences	Weatherhead School of Management	School of Law	Frances Payne Bolton School of Nursing	School of Medicine: Basic Sci..
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Average Salary by Sex and Rank

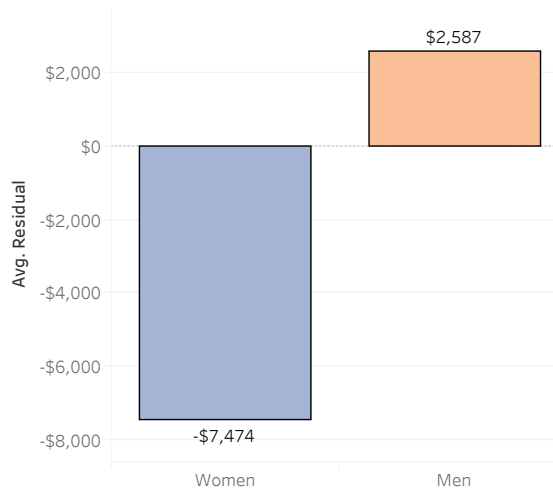
School/Division Management



Above or Below the Line

Sex	Above or Below	Percentage
Women	Above the line	33%
	Below the line	67%
Men	Above the line	56%
	Below the line	44%

Average Residuals

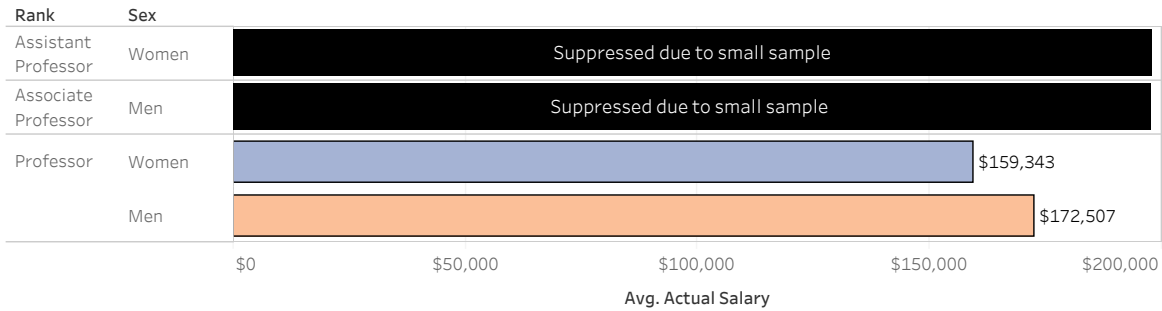


Faculty Salary Analysis

Case School of Engi..	Mandel School of Applied Social Sciences	Weatherhead School of Management	School of Law	Frances Payne Bolton School of Nursing	School of Medicine: Basic Sciences (Base+Incentive)	School of Dental Medicine
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Average Salary by Sex and Rank

School/Division
Law



Above or Below the Line

Sex	Above or Below	Percentage
Women	Above the line	60%
	Below the line	40%
Men	Above the line	36%
	Below the line	64%

Average Residuals

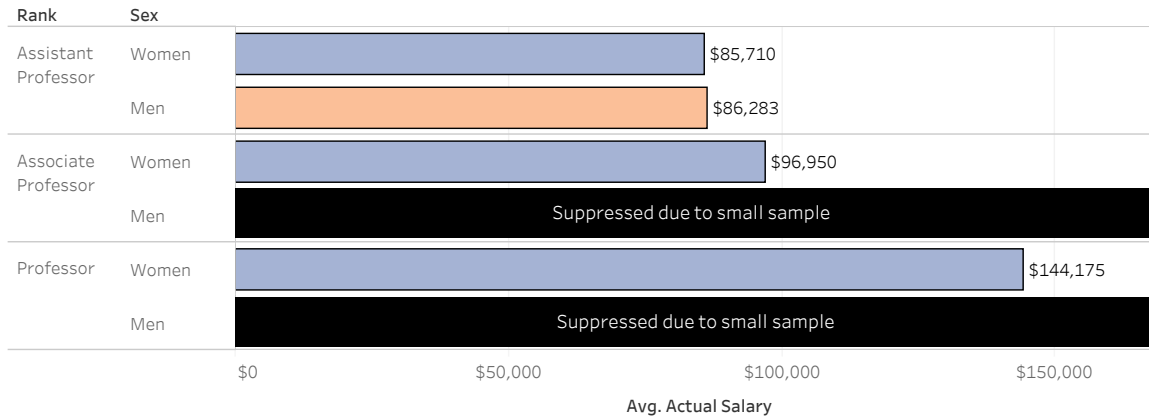


Faculty Salary Analysis

Mandel School of A..	Weatherhead School of Management	School of Law	Frances Payne Bolton School of Nursing	School of Medicine: Basic Sciences (Base+Incentive)	School of Dental Medicine	University General: Physical..
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Average Salary by Sex and Rank

School/Division
Nursing



Above or Below the Line

Sex	Above or Below	Percentage
Women	Above the line	43%
	Below the line	57%
Men	Above the line	56%
	Below the line	44%

Average Residuals

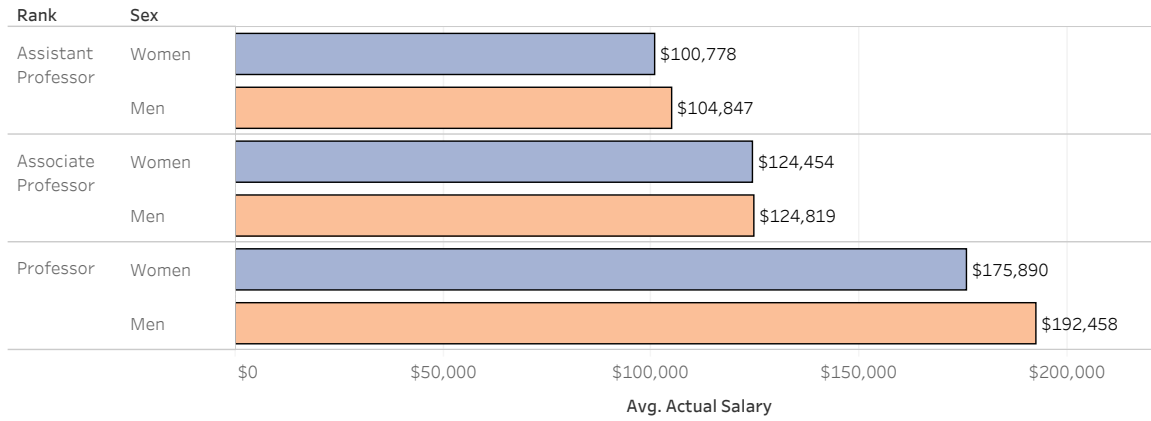


Faculty Salary Analysis

Weatherhead School of Management	School of Law	Frances Payne Bolton School of Nursing	School of Medicine: Basic Sciences (Base+Incentive)	School of Dental Medicine	University General: Physical Education and Athletics	Summer and Administrative Salaries
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Average Salary by Sex and Rank

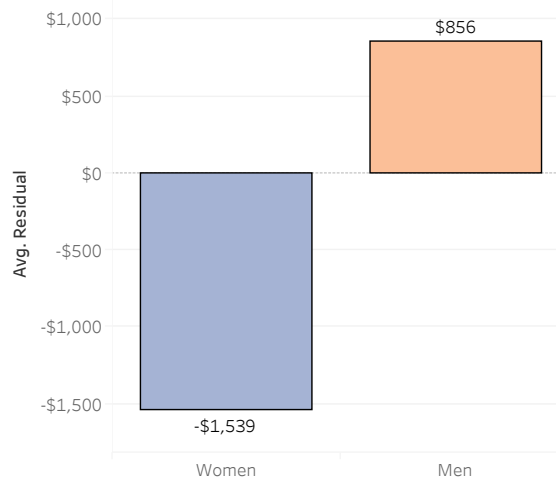
School/Division
Medicine



Above or Below the Line

Sex	Above or Below	Percentage
Women	Above the line	38%
	Below the line	62%
Men	Above the line	45%
	Below the line	55%

Average Residuals

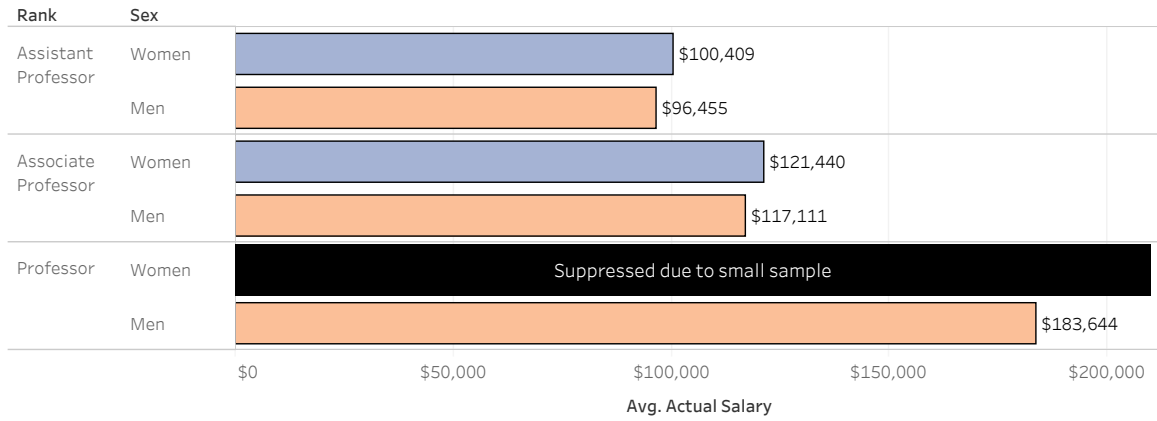


Faculty Salary Analysis

School of Law	Frances Payne Bolton School of Nursing	School of Medicine: Basic Sciences (Base+Incentive)	School of Dental Medicine	University General: Physical Education and Athletics	Summer and Administrative Salaries	College of Arts and Sciences: ...
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Average Salary by Sex and Rank

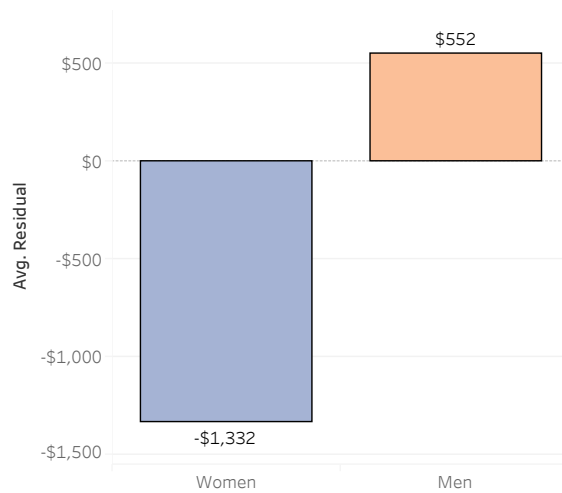
School/Division
Dental Medicine



Above or Below the Line

Sex	Above or Below	Percentage
Women	Above the line	41%
	Below the line	59%
Men	Above the line	41%
	Below the line	59%

Average Residuals

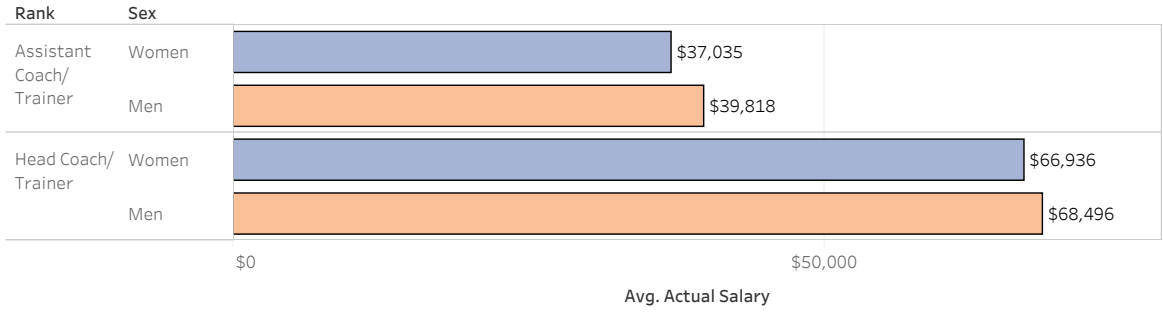


Faculty Salary Analysis

Frances Payne Bolton..	School of Medicine: Basic Sciences (Base+Incentive)	School of Dental Medicine	University General: Physical Education and Athletics	Summer and Administrative Salaries	College of Arts and Sciences: Arts and Humanities	College of Arts and Sciences: ..
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Average Salary by Sex and Rank

School/Division
PE/Athletics



Above or Below the Line

Sex	Above or Below	Percentage
Women	Above the line	45%
	Below the line	55%
Men	Above the line	64%
	Below the line	36%

Average Residuals



Faculty Salary Analysis

School of Medicine: B..	School of Dental Medicine	University General: Physical Education and Athletics	Summer and Administrative Salaries	College of Arts and Sciences: Arts and Humanities	College of Arts and Sciences: Math and Natural Sciences	College of Arts and Sciences: ..
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Summer and Administrative Salaries

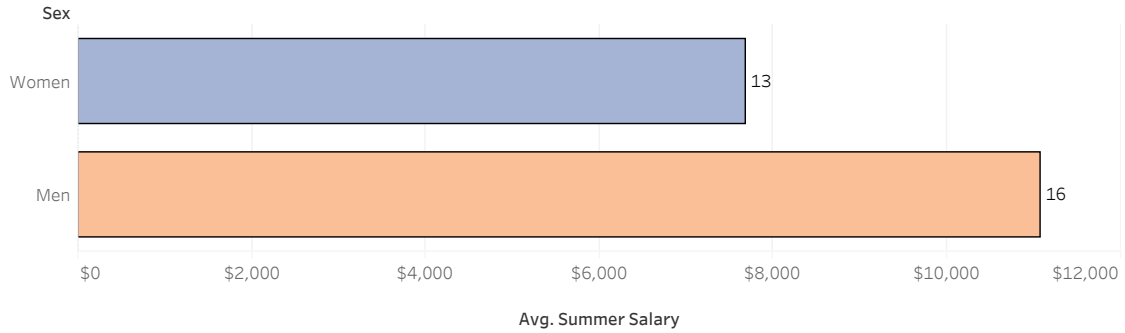
The next section provides data on Summer and Administrative salaries, broken down by school/division, for men and women.

Faculty Salary Analysis

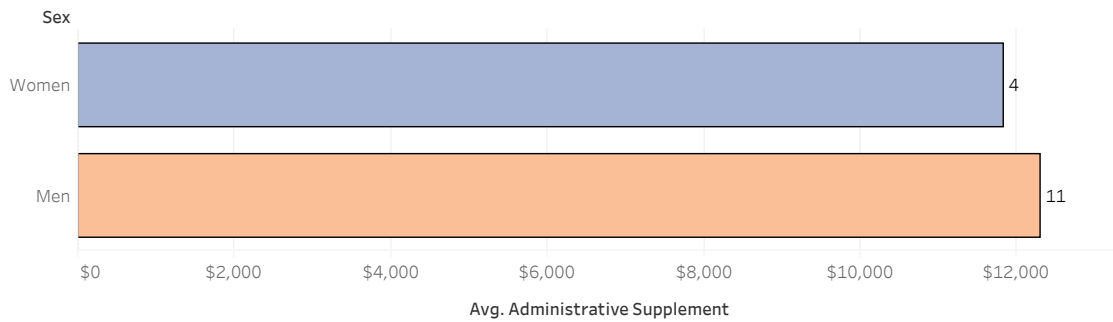
School of Dental..	University General: Physical Education and Athletics	Summer and Administrative Salaries	College of Arts and Sciences: Arts and Humanities	College of Arts and Sciences: Math and Natural Sciences	College of Arts and Sciences: Social Sciences	Case School of Engineering
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Summer Salary

School/Division
Arts and Humanities



Administrative Salary

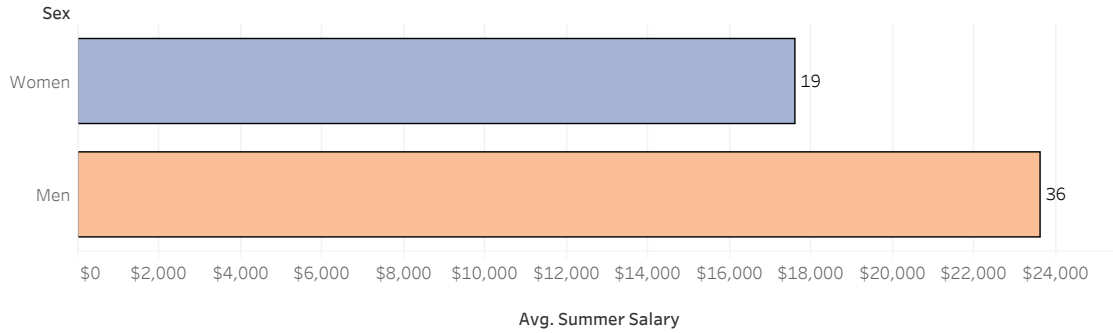


Faculty Salary Analysis

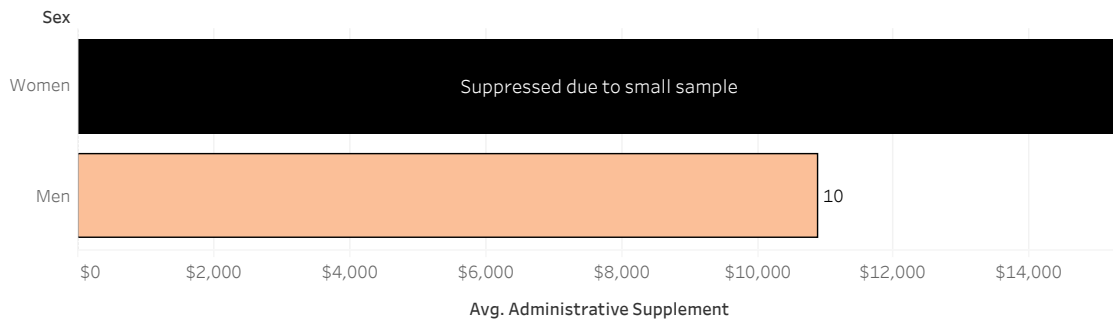
University General: Ph..	Summer and Administrative Salaries	College of Arts and Sciences: Arts and Humanities	College of Arts and Sciences: Math and Natural Sciences	College of Arts and Sciences: Social Sciences	Case School of Engineering	Mandel School of Applied S..
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Summer Salary

School/Division
Math and Natural Scienc..



Administrative Salary

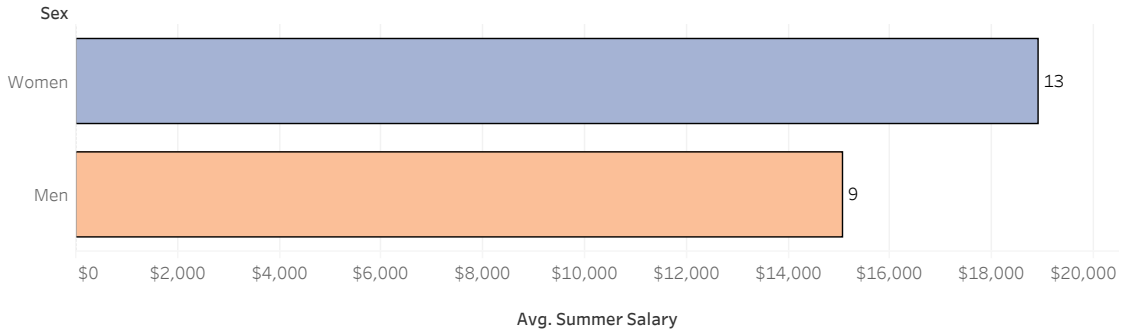


Faculty Salary Analysis

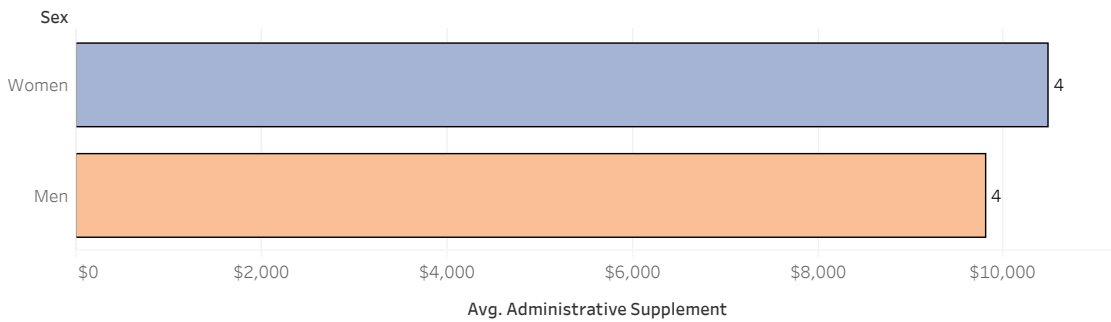
Summer and Administ..	College of Arts and Sciences: Arts and Humanities	College of Arts and Sciences: Math and Natural Sciences	College of Arts and Sciences: Social Sciences	Case School of Engineering	Mandel School of Applied Social Sciences	Weatherhead School of Manag..
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Summer Salary

School/Division
Social Sciences



Administrative Salary

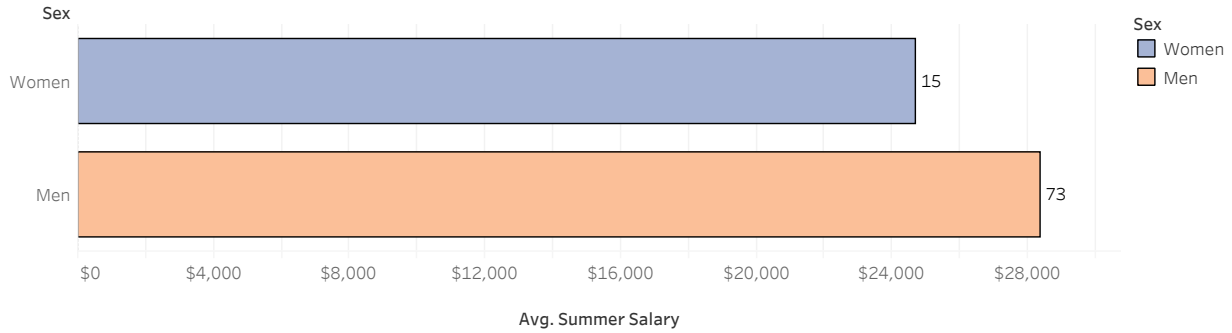


Faculty Salary Analysis

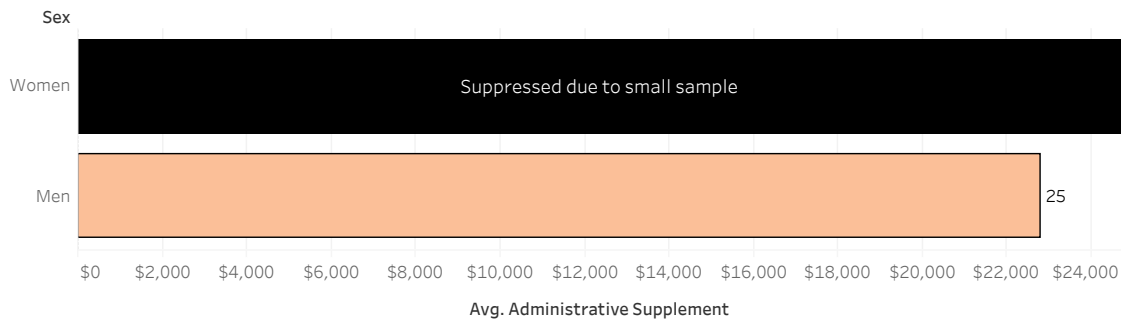
College of Arts and Sc..	College of Arts and Sciences: Math and Natural Sciences	College of Arts and Sciences: Social Sciences	Case School of Engineering	Mandel School of Applied Social Sciences	Weatherhead School of Management	School of Law
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Summer Salary

School/Division
Engineering



Administrative Salary

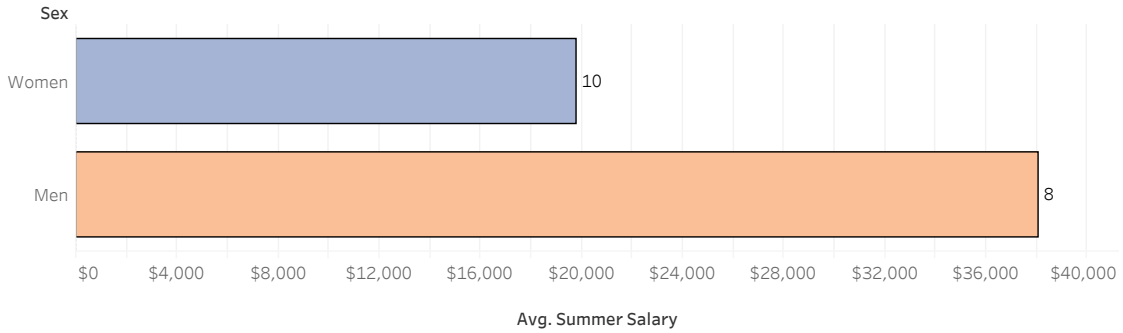


Faculty Salary Analysis

College of Arts and Sc..	College of Arts and Sciences: Social Sciences	Case School of Engineering	Mandel School of Applied Social Sciences	Weatherhead School of Management	School of Law	Frances Payne Bolton Sc..
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Summer Salary

School/Division
Social Work



Administrative Salary

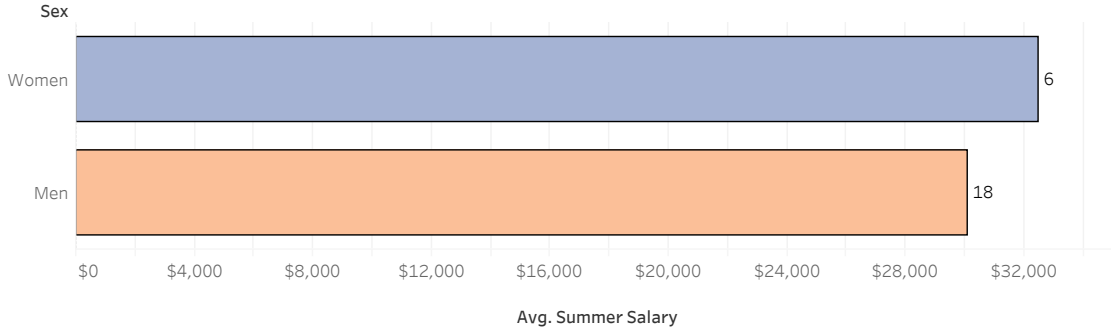


Faculty Salary Analysis

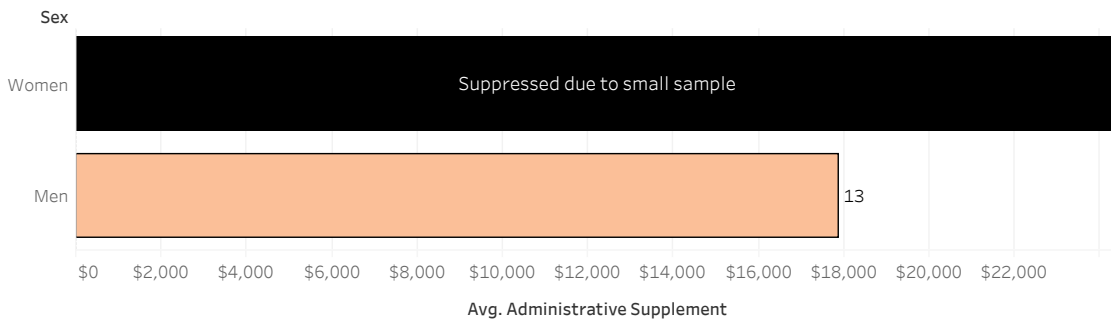
College of Arts and Sc..	Case School of Engineering	Mandel School of Applied Social Sciences	Weatherhead School of Management	School of Law	Frances Payne Bolton School of Nursing	School of Medicine: Basic Sci..
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Summer Salary

School/Division Management



Administrative Salary

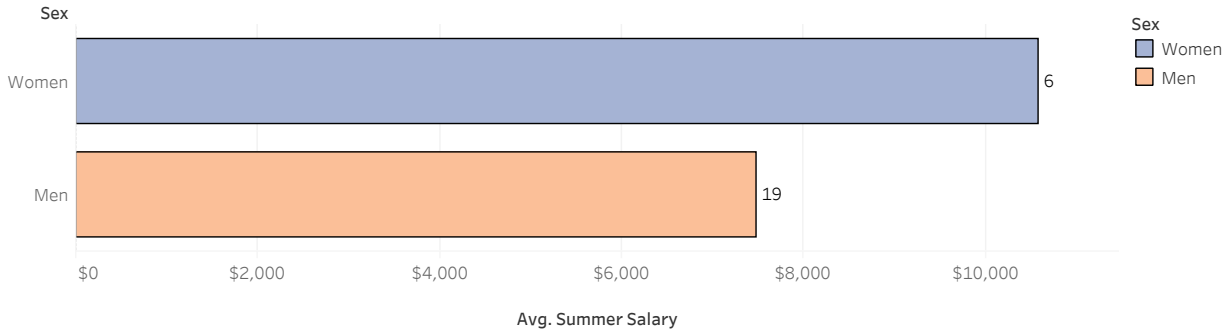


Faculty Salary Analysis

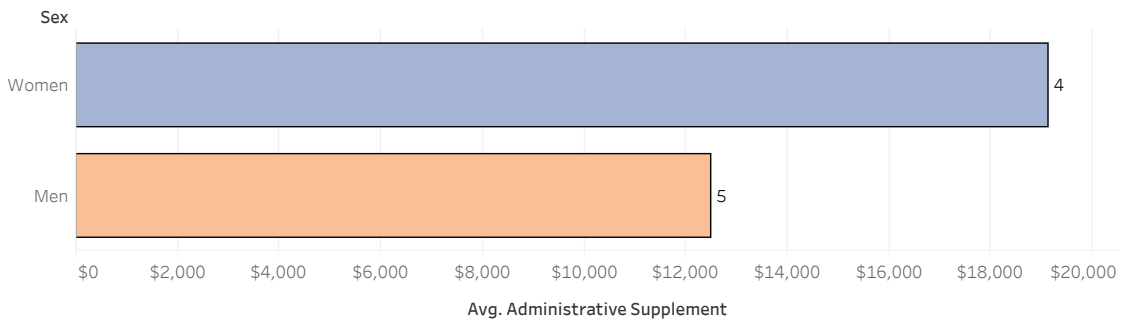
Case School of Engi..	Mandel School of Applied Social Sciences	Weatherhead School of Management	School of Law	Frances Payne Bolton School of Nursing	School of Medicine: Basic Sciences	School of Dental Medicine
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Summer Salary

School/Division
Law



Administrative Salary



Faculty Salary Analysis

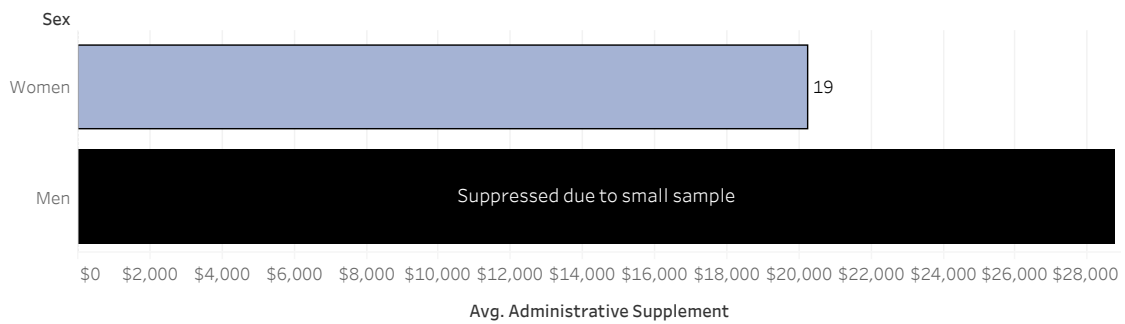
Mandel School of Applied Social Sciences	Weatherhead School of Management	School of Law	Frances Payne Bolton School of Nursing	School of Medicine: Basic Sciences	School of Dental Medicine
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Summer Salary

School/Division
Nursing



Administrative Salary



Faculty Salary Analysis

Mandel School of Applied Social Sciences	Weatherhead School of Management	School of Law	Frances Payne Bolton School of Nursing	School of Medicine: Basic Sciences	School of Dental Medicine
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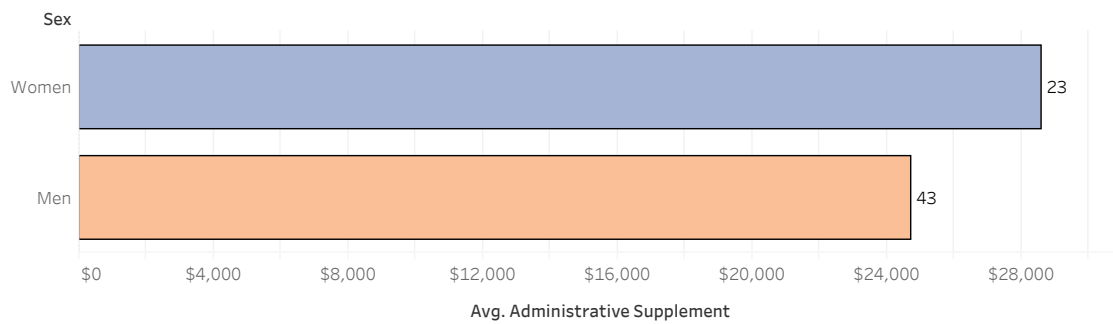
Summer Salary

School/Division
Medicine

Sex

Not applicable; salaries are based on 12-month appointments

Administrative Salary



Faculty Salary Analysis

Mandel School of Applied Social Sciences	Weatherhead School of Management	School of Law	Frances Payne Bolton School of Nursing	School of Medicine: Basic Sciences	School of Dental Medicine
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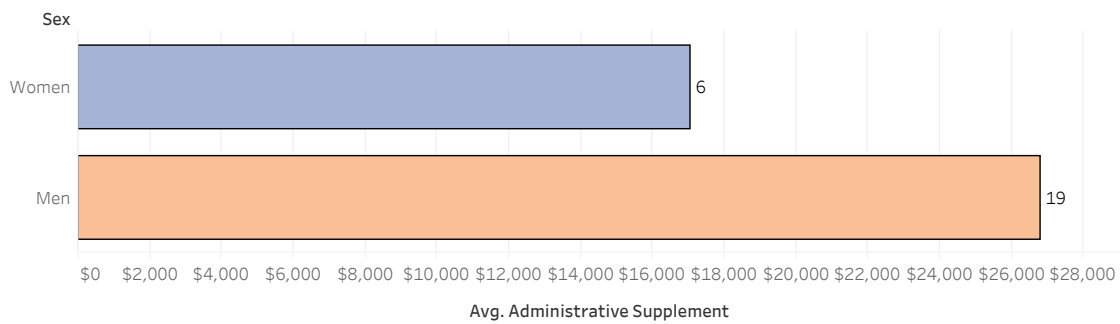
Summer Salary

School/Division
Dental Medicine

Sex

Not applicable; salaries are based on 12-month appointments

Administrative Salary



Faculty Salary Analysis

Analysis of Under-Represented Groups	Frequencies and Percentages by School/Division	Salary by Rank and Group
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Analysis of Under-Represented Groups

- Faculty salaries were also analyzed using race/ethnicity groupings to evaluate salaries of under-represented groups relative to faculty who are Asian or White.
- The following pages provide the same representations that were conducted for rank by sex, but this time using rank by race/ethnicity category.
- Due to the low number of faculty from under-represented groups, schools/divisions were combined in this analysis.
- Coaches and trainers from PE/Athletics were excluded due to small group sizes in their ranks.
- Faculty with unknown race/ethnicity were also excluded.
- Data are suppressed when there are less than four faculty in a certain group.

Faculty Salary Analysis

Analysis of Under-Represented Groups	Frequencies and Percentages by School/Division	Salary by Rank and Group
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Race/Ethnicity Representation: Frequencies and Percentages by School

	School/Division										
	Arts and Humanities	Math and Natural Sciences	Social Sciences	Engineering	Social Work	Management	Law	Nursing	Medicine	Dental Medicine	PE/Athletics
Under-Represented	6	5	2	6	5	3	1	7	7	7	1
Asian and White	86	83	40	111	21	67	31	49	199	51	24
Unknown				1	1						

	School/Division										
	Arts and Humanities	Math and Natural Sciences	Social Sciences	Engineering	Social Work	Management	Law	Nursing	Medicine	Dental Medicine	PE/Athletics
Asian and White	93%	94%	95%	94%	78%	96%	97%	88%	97%	88%	96%
Under-Represented	7%	6%	5%	5%	19%	4%	3%	13%	3%	12%	4%
Unknown				1%	4%						

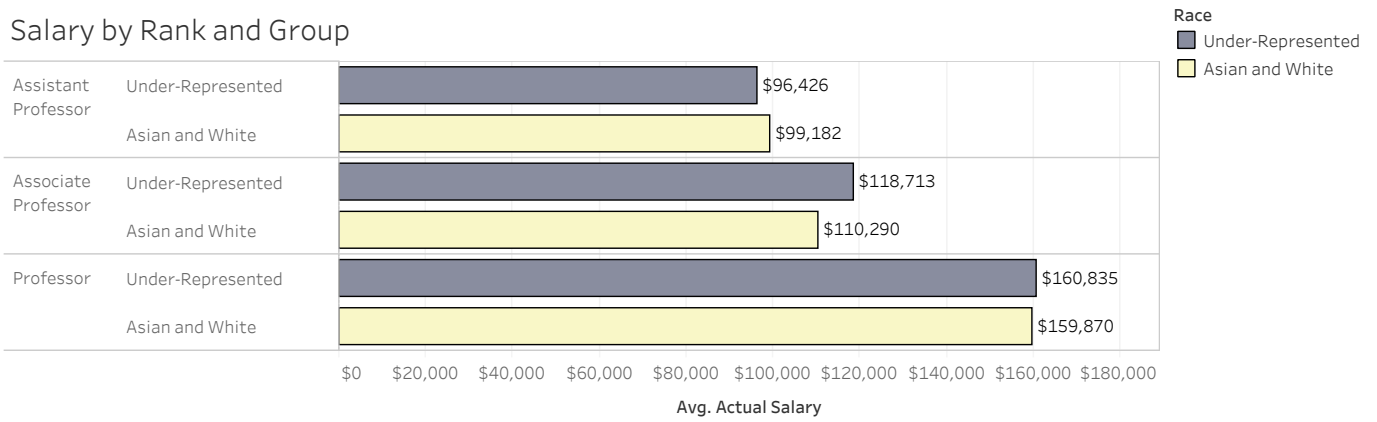
Race/Ethnicity Representation by Rank

	Rank		
	Assistant Professor	Associate Professor	Professor
Asian and White	175	219	344
Under-Represented	16	22	11

Faculty Salary Analysis

Analysis of Under-Represented Groups	Frequencies and Percentages by School/Division	Salary by Rank and Group
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Salary by Rank and Group



Under-Represented	Above the line	54%
	Below the line	46%
Asian and White	Above the line	44%
	Below the line	56%

Residual by Group



Longitudinal Analysis of Average Unstandardized Residuals

Longitudinal Analysis of Unstandardized Residual Values	College of Arts and Sciences: Humanities and Social Sciences	College of Arts and Sciences: Mathematics and Natural Sciences	Schools of Engineering and Social Work	Schools of Management and Law	Schools of Nursing and Dental Medicine	School of Medicine: Basic Sc..
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Longitudinal Analysis

Data over the past seven years were analyzed together to determine trends in the average unstandardized residual values (i.e., the difference between actual and predicted salaries). This part of the analysis focused strictly on the differences between men and women.

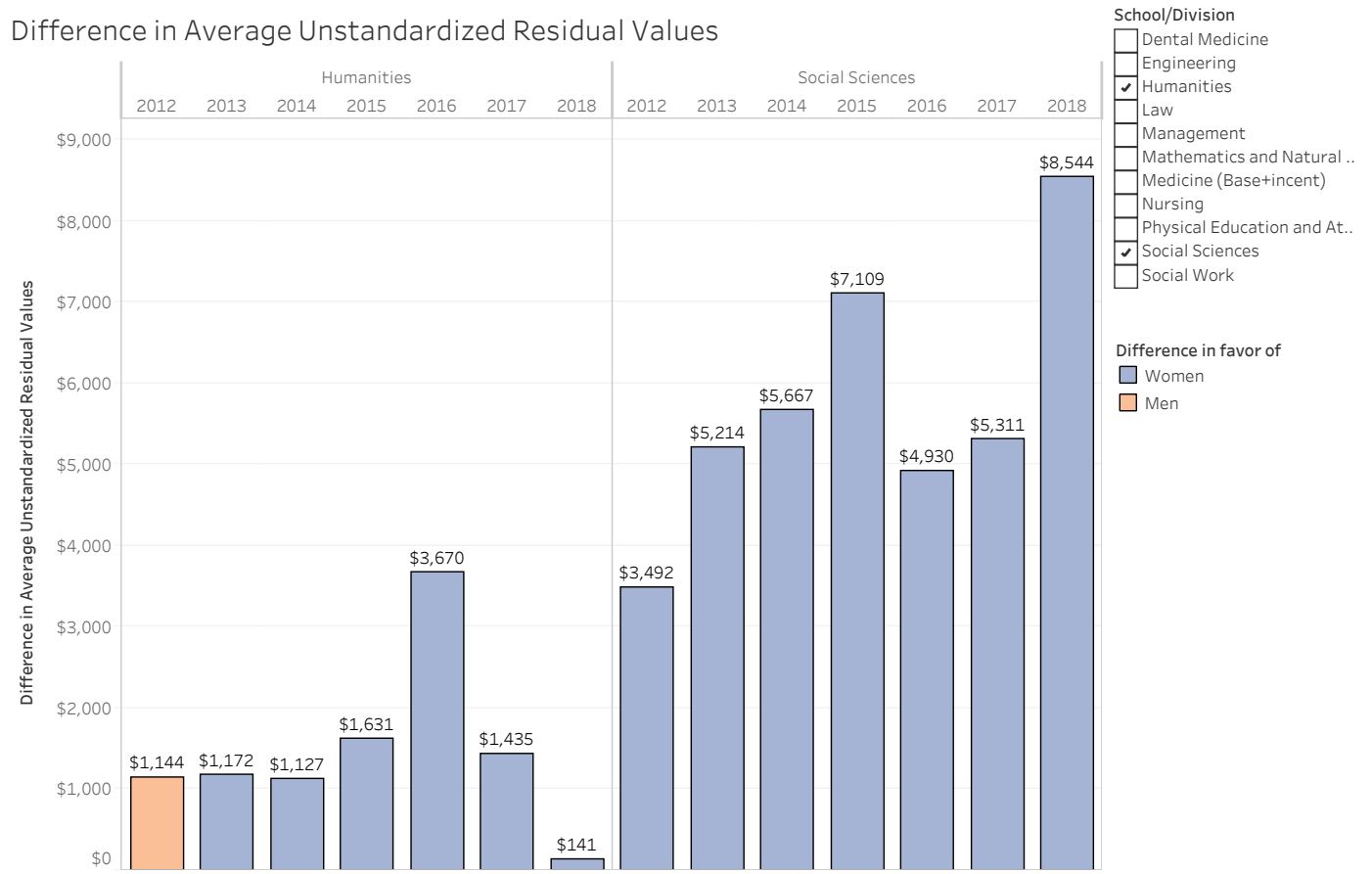
The charts that follow present the difference in average unstandardized residual values for men and women, broken down by school/division, over the past seven years.

- Blue bars reflect women receiving higher salaries than predicted when compared to men; Orange bars reflect men receiving higher salaries than predicted when compared to women.
- As trends approach 0, they represent less disparate salaries between men and women.
- Trends that remain consistent or spread further reflect continued or growing discrepancies between salaries of men and women.

Longitudinal Analysis of Average Unstandardized Residuals

Longitudinal Analysis of Unstandardized Residual Values	College of Arts and Sciences: Humanities and Social Sciences	College of Arts and Sciences: Mathematics and Natural Sciences	Schools of Engineering and Social Work	Schools of Management and Law	Schools of Nursing and Dental Medicine	School of Medicine: Basic Sc..
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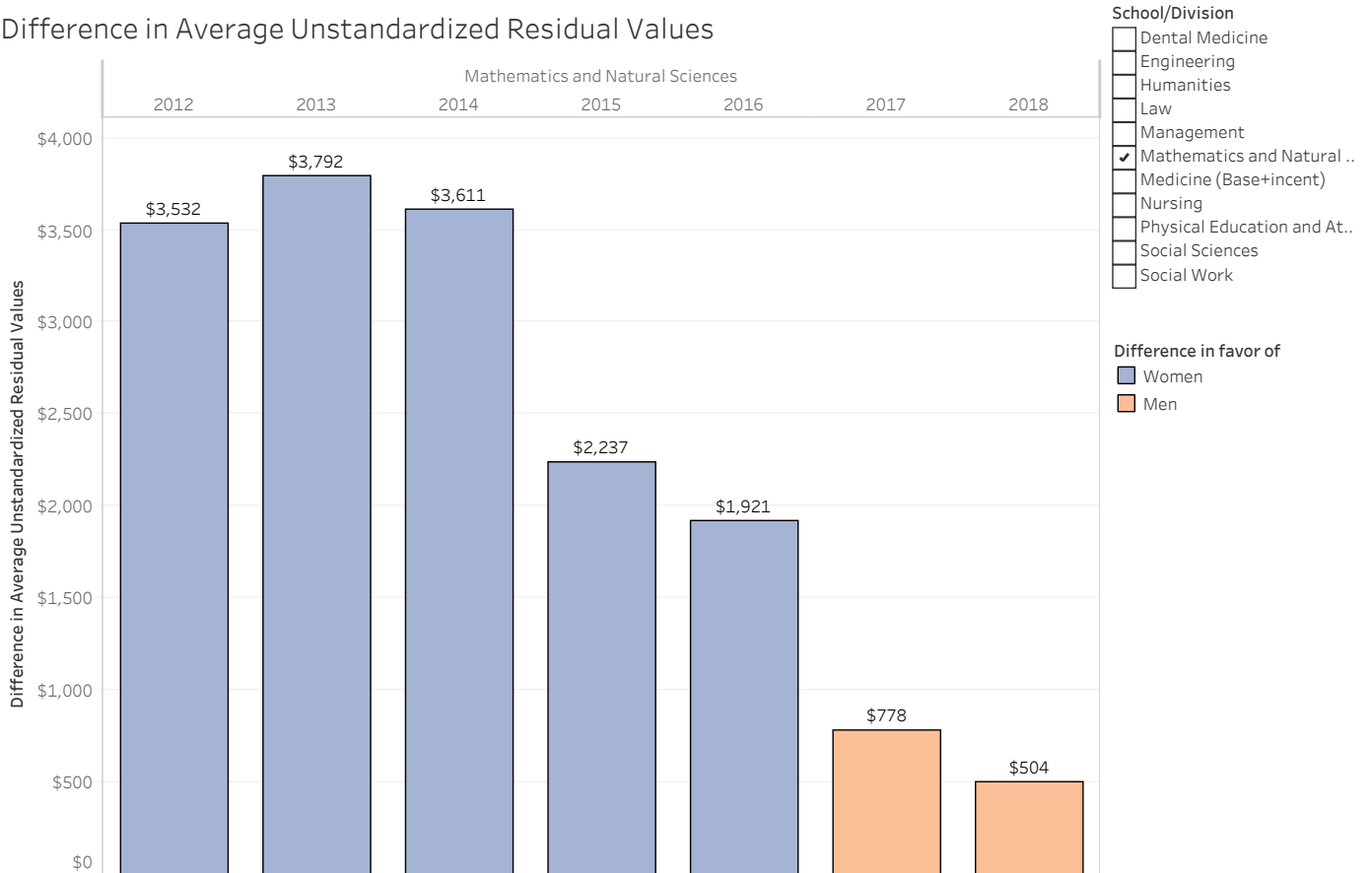
Difference in Average Unstandardized Residual Values



Longitudinal Analysis of Average Unstandardized Residuals

Longitudinal Analysis of Unstandardized Residual Values	College of Arts and Sciences: Humanities and Social Sciences	College of Arts and Sciences: Mathematics and Natural Sciences	Schools of Engineering and Social Work	Schools of Management and Law	Schools of Nursing and Dental Medicine	School of Medicine: Basic Sc..
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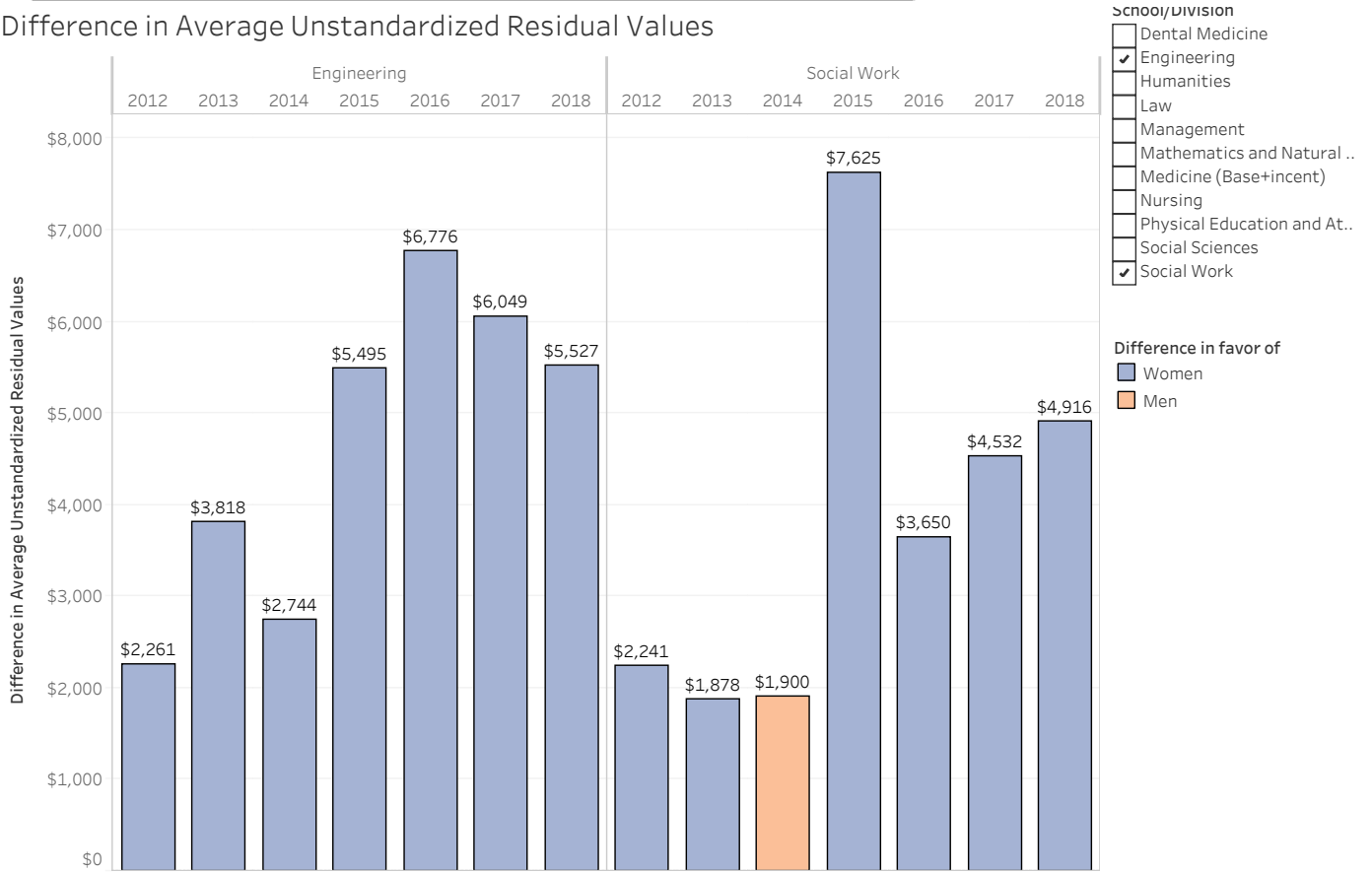
Difference in Average Unstandardized Residual Values



Longitudinal Analysis of Average Unstandardized Residuals

Longitudinal Analysis of Unstandardize.	College of Arts and Sciences: Humanities and Social Sciences	College of Arts and Sciences: Mathematics and Natural Sciences	Schools of Engineering and Social Work	Schools of Management and Law	Schools of Nursing and Dental Medicine	School of Medicine: Basic Sciences (Base + Incentive)
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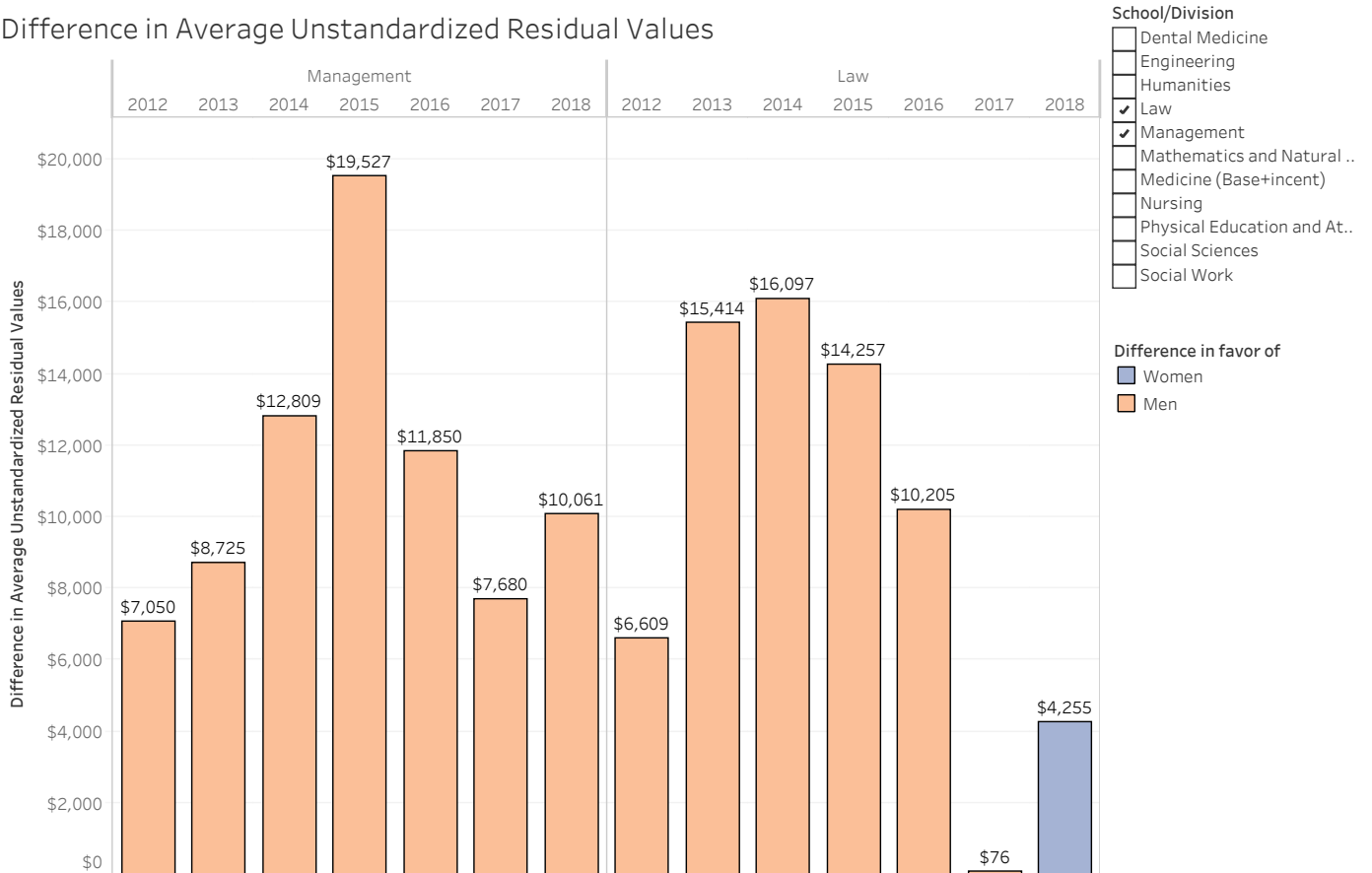
Difference in Average Unstandardized Residual Values



Longitudinal Analysis of Average Unstandardized Residuals

College of Arts and Sciences: Humanities and Social Sciences	College of Arts and Sciences: Mathematics and Natural Sciences	Schools of Engineering and Social Work	Schools of Management and Law	Schools of Nursing and Dental Medicine	School of Medicine: Basic Sciences (Base + Incentive)	University General: Physical Education and Athletics
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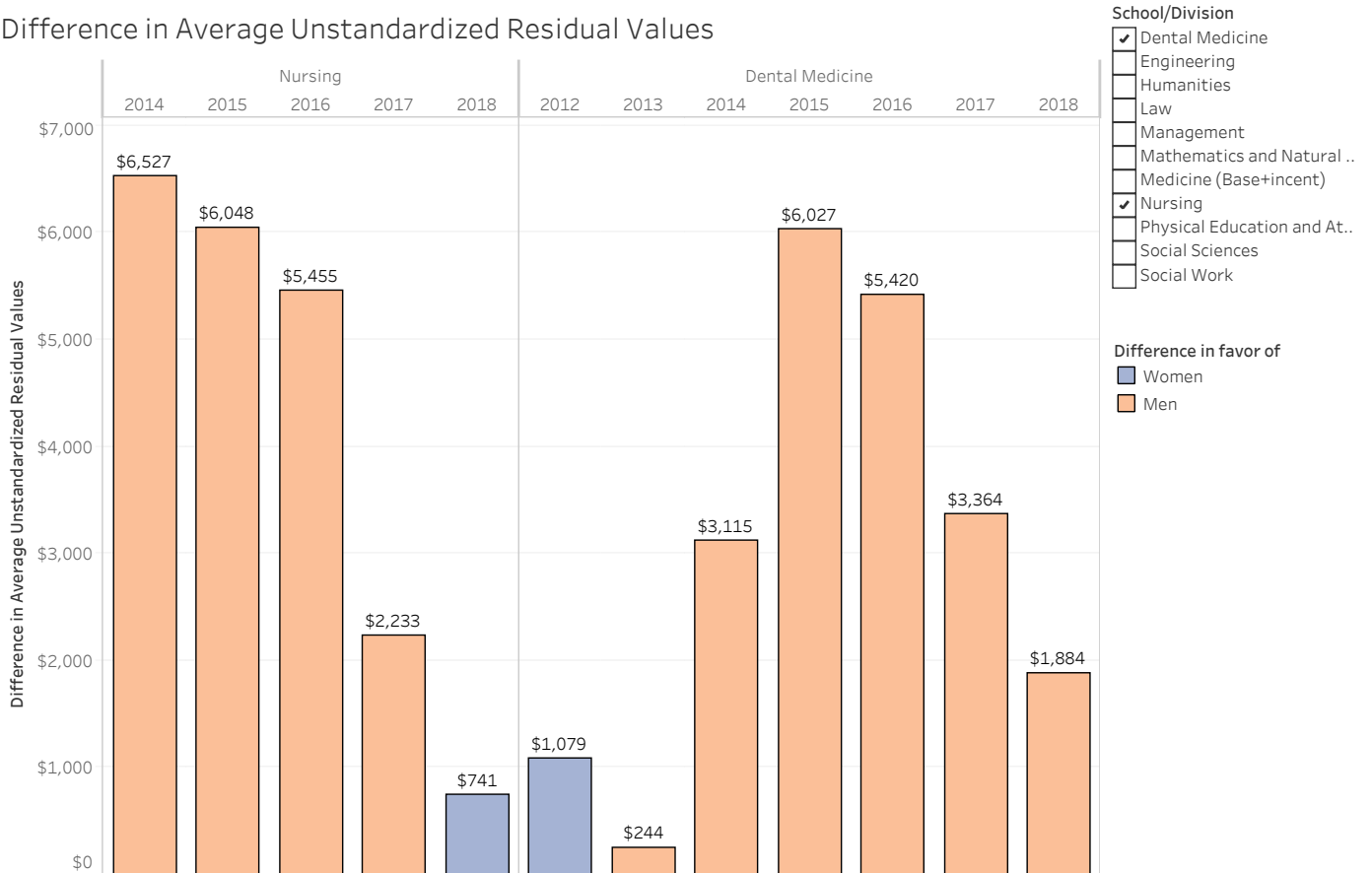
Difference in Average Unstandardized Residual Values



Longitudinal Analysis of Average Unstandardized Residuals

College of Arts and Sciences: Mathematics and Natural Sciences	Schools of Engineering and Social Work	Schools of Management and Law	Schools of Nursing and Dental Medicine	School of Medicine: Basic Sciences (Base + Incentive)	University General: Physical Education and Athletics	Results
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Difference in Average Unstandardized Residual Values



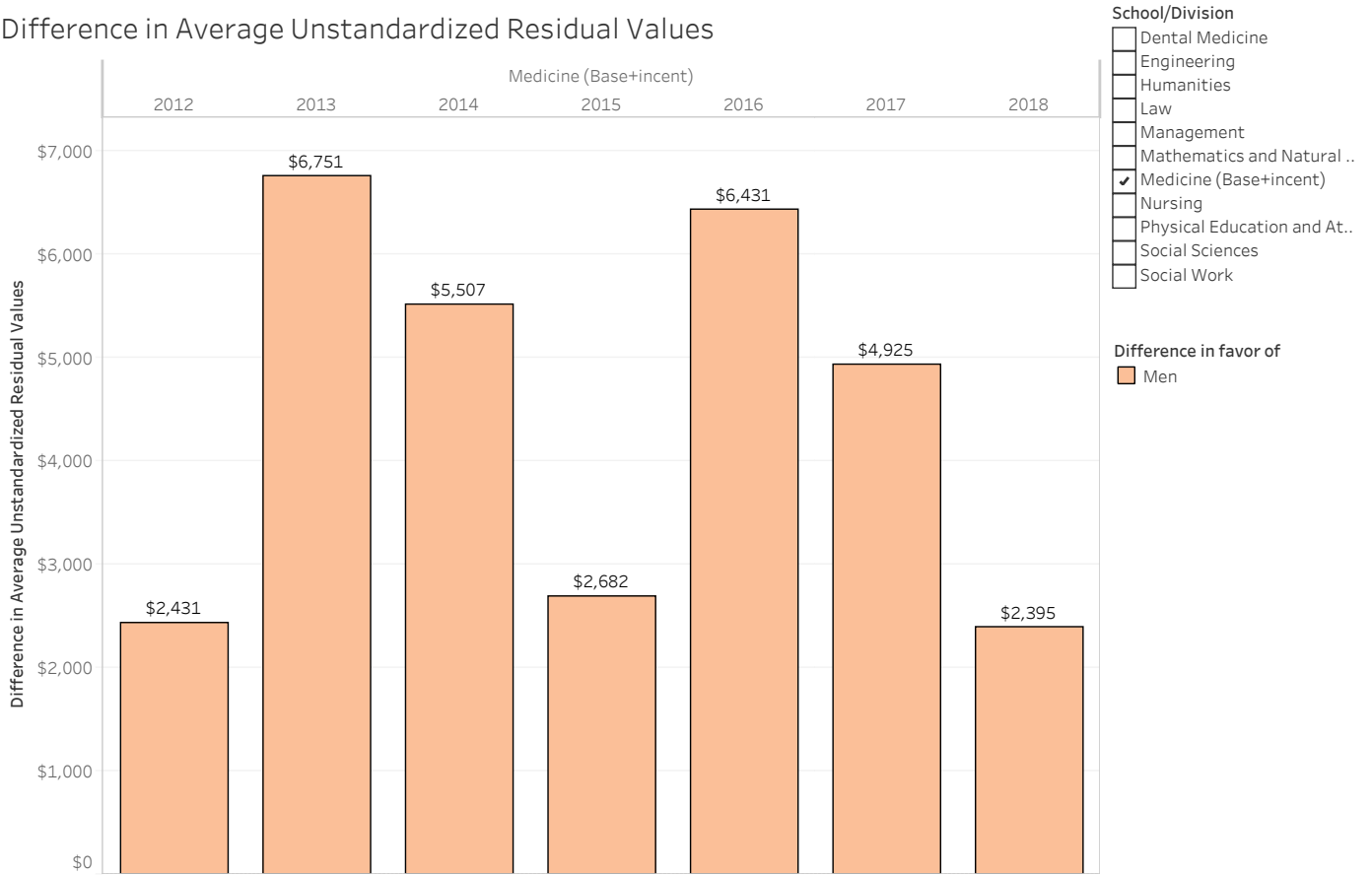
- School/Division
- Dental Medicine
 - Engineering
 - Humanities
 - Law
 - Management
 - Mathematics and Natural ..
 - Medicine (Base+incent)
 - Nursing
 - Physical Education and At..
 - Social Sciences
 - Social Work

- Difference in favor of
- Women
 - Men

Longitudinal Analysis of Average Unstandardized Residuals

Schools of Engineering and Social Work	Schools of Management and Law	Schools of Nursing and Dental Medicine	School of Medicine: Basic Sciences (Base + Incentive)	University General: Physical Education and Athletics	Results	Recommendations
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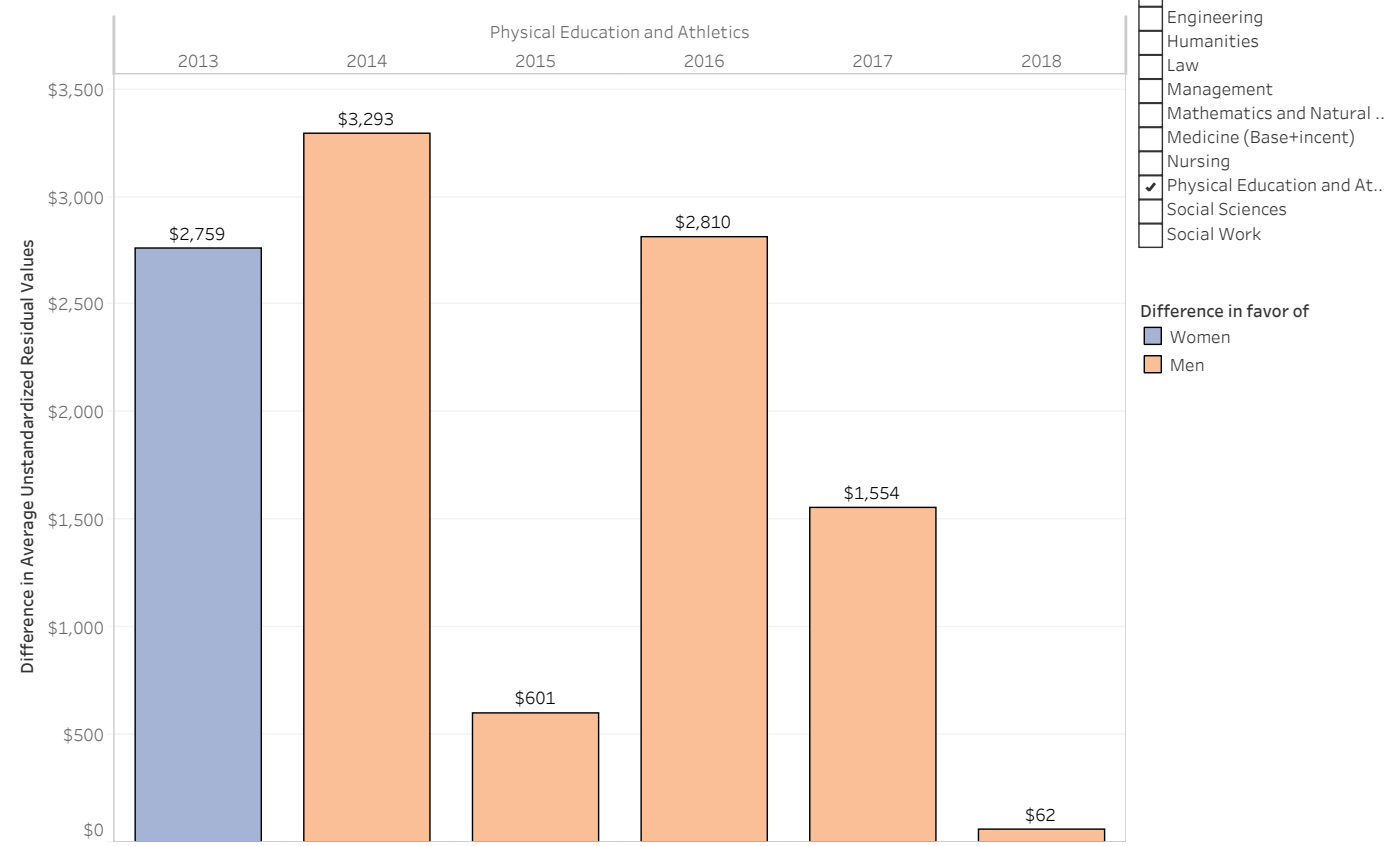
Difference in Average Unstandardized Residual Values



Longitudinal Analysis of Average Unstandardized Residuals

Schools of Engineering and S..	Schools of Management and Law	Schools of Nursing and Dental Medicine	School of Medicine: Basic Sciences (Base + Incentive)	University General: Physical Education and Athletics	Results	Recommendations
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Difference in Average Unstandardized Residual Values



Longitudinal Analysis of Average Unstandardized Residuals

Schools of Engineering and S..	Schools of Management and Law	Schools of Nursing and Dental Medicine	School of Medicine: Basic Sciences (Base + Incentive)	University General: Physical Education and Athletics	Results	Recommendations
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Results

- The largest discrepancies in favor of men reside in the Schools of Medicine, Management, and Dental Medicine.
- The largest discrepancies in favor of women occur in Engineering, Social Science, and Social Work.
- Differences in salaries between men and women are smallest in PE/Athletics, Arts and Humanities, Mathematics and Natural Sciences, and Nursing.
- For many Schools and Divisions, the difference in average unstandardized residual values has moved closer to 0 over the past few years, suggesting less discrepancy in salaries due to sex.
- In Law, Social Work, and Social Science, women were more likely to receive salaries greater than predicted, and are trending upward toward further separation from men.

Longitudinal Analysis of Average Unstandardized Residuals

Schools of Engineering and S..	Schools of Management and Law	Schools of Nursing and Dental Medicine	School of Medicine: Basic Sciences (Base + Incentive)	University General: Physical Education and Athletics	Results	Recommendations
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Recommendations

- Data on race/ethnicity should be included to allow the University and respective schools to explore issues related to inclusion, diversity, and equity.
- Metrics related to productivity could be included to help further explain potential salary discrepancies; however, this should be undertaken with sensitivity to differences across gender, subject area, and other considerations. Exploring productivity may only provide limited information and should be subject to discussion among faculty if found to be a useful predictor in such analyses.
- The data reflect continued movement toward salary alignment between men and women; however, discrepancies in several areas still exist and should be the focus of advancement opportunities.