2020-2021
Faculty Salary Analysis

February 10, 2021

Faculty Salary Analysis

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 combined Assistant and Associate Professors to allow for a comparison between women and men
- 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 2020. Changes made after November 1, 2020 are not reflected in this analysis
- Data represent **actual** faculty salaries reported during the 2020-2021 academic year. Any voluntary reductions or salary freezes are represented; data were not manipulated as part of this analysis.

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

- These analyses may be subject to outlying data points. That is, faculty with salaries near the extremes may impact residual values for the rest of their group
- 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

Preface to the Results

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

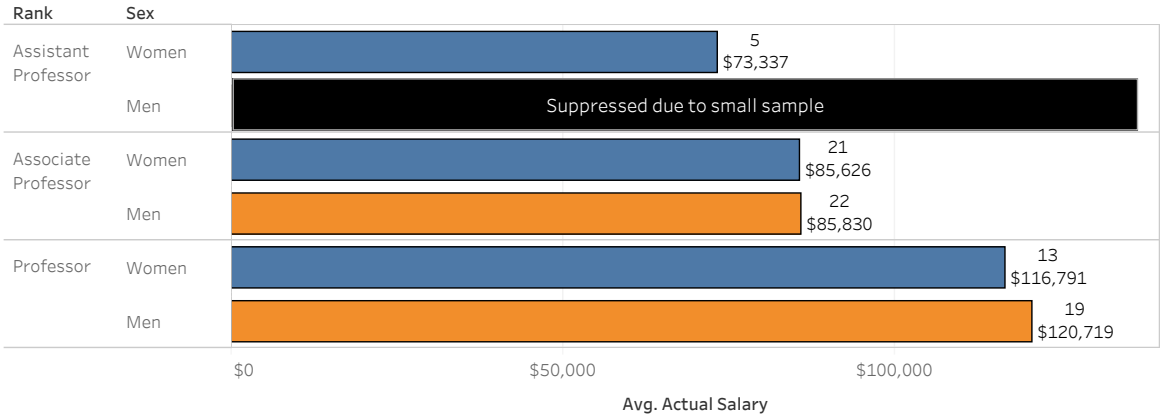
- The first is a bar graph charting average salary by rank and sex. Assistant, Associate, and full Professors are included, where average actual salaries are presented for women and men. In cases where there are less than four cases, no average was computed and the graphs are suppressed.
- Second, there 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

Average Salary by Sex and Rank: **Arts and Humanities**

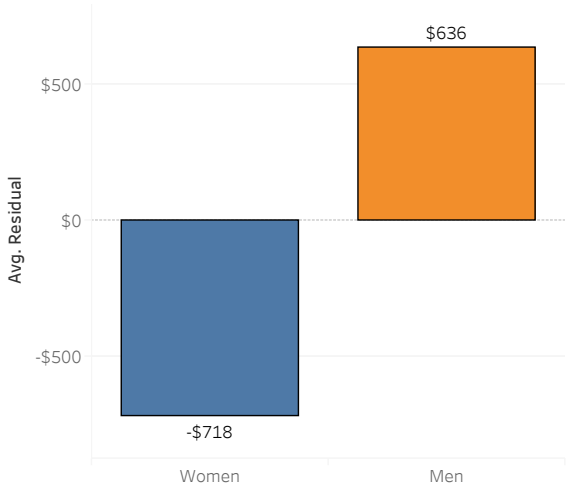
School/Division
Arts and Humanities



Above or Below the Line

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

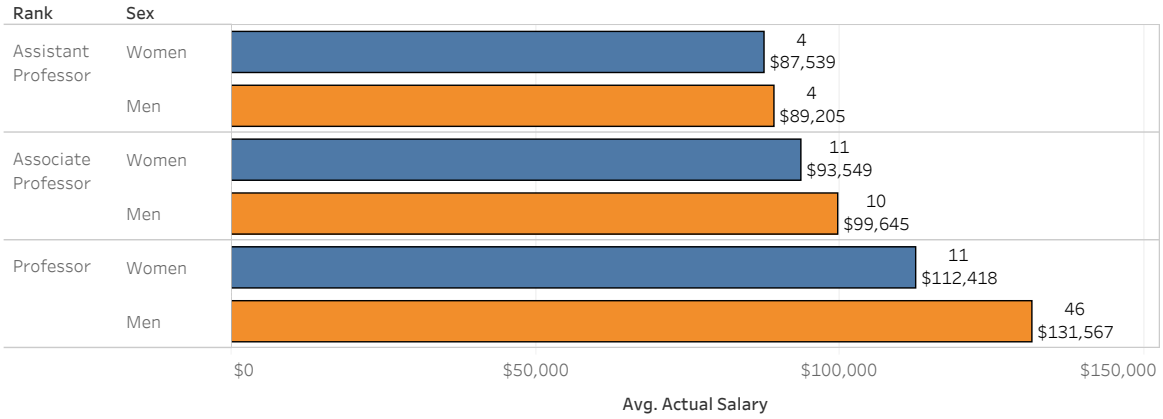
Average Residuals



Faculty Salary Analysis

Average Salary by Sex and Rank: **Math and Natural Sciences**

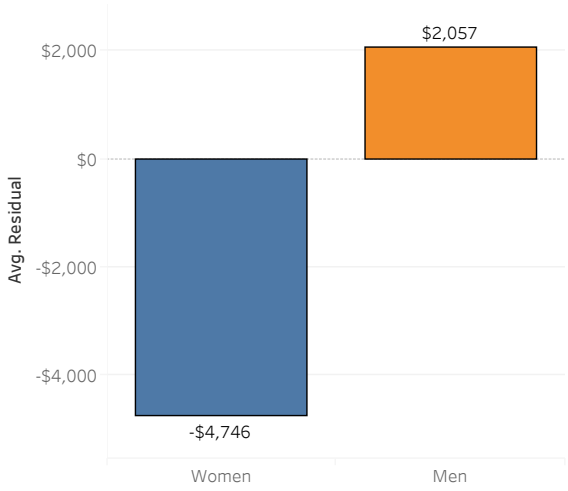
School/Division
Math and Natural Scienc..



Above or Below the Line

Sex	Above or Below	
Women	Above the line	42%
	Below the line	58%
Men	Above the line	50%
	Below the line	48%
	On the line	2%

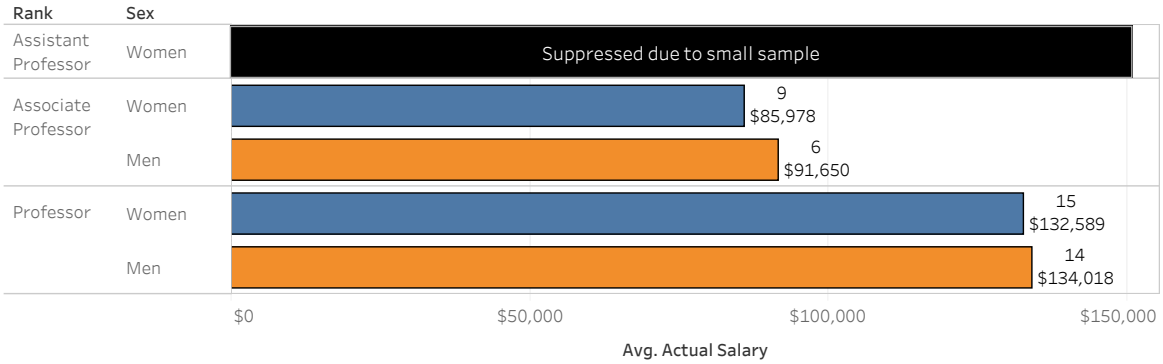
Average Residuals



Faculty Salary Analysis

Average Salary by Sex and Rank: **Social Sciences**

School/Division
Social Sciences



Above or Below the Line

Sex	Above or Below	
Women	Above the line	52%
	Below the line	48%
Men	Above the line	40%
	Below the line	60%

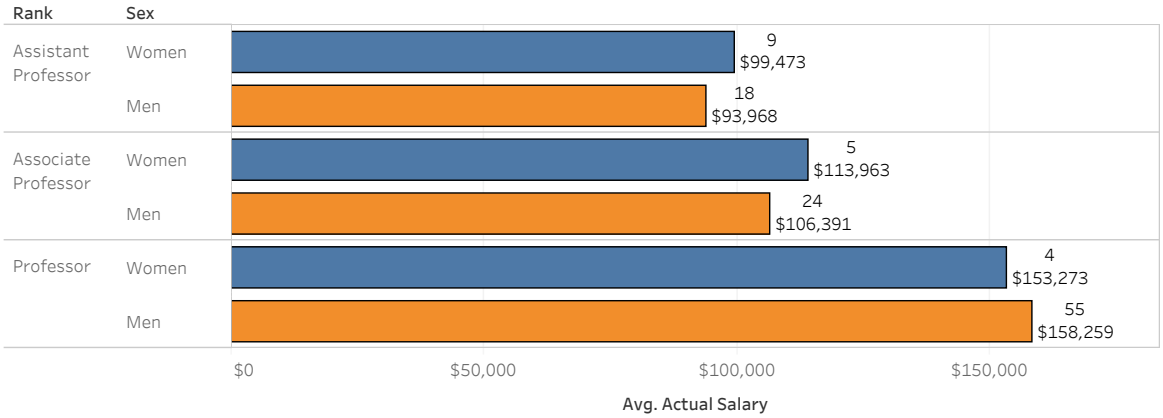
Average Residuals

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

Average Salary by Sex and Rank: **Engineering**

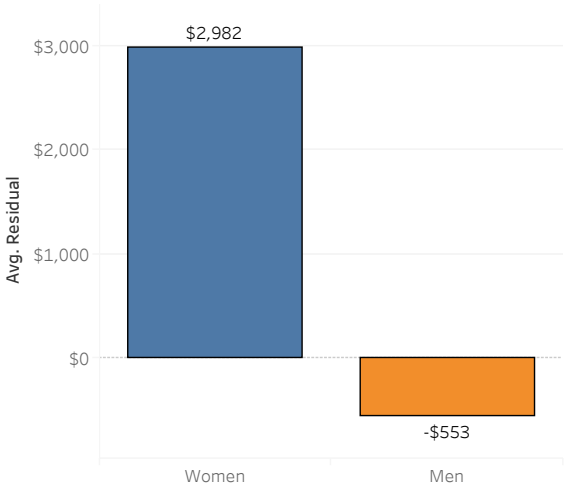
School/Division
Engineering



Above or Below the Line

Sex	Above or Below	
Women	Above the line	61%
	Below the line	39%
Men	Above the line	40%
	Below the line	60%

Average Residuals

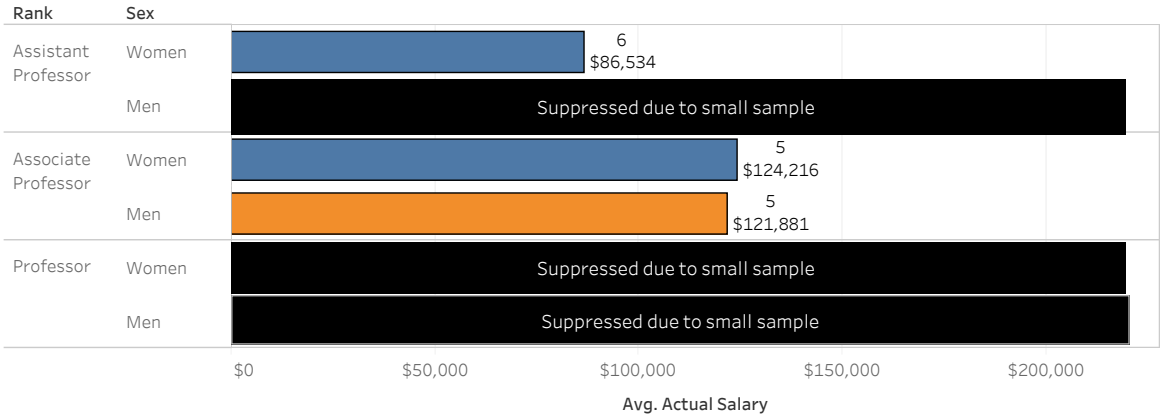


Faculty Salary Analysis

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..

School/Division
Applied Social Sciences

Average Salary by Sex and Rank: **Applied Social Sciences**



Above or Below the Line

Sex	Above or Below	
Women	Above the line	50%
	Below the line	50%
Men	Above the line	45%
	Below the line	55%

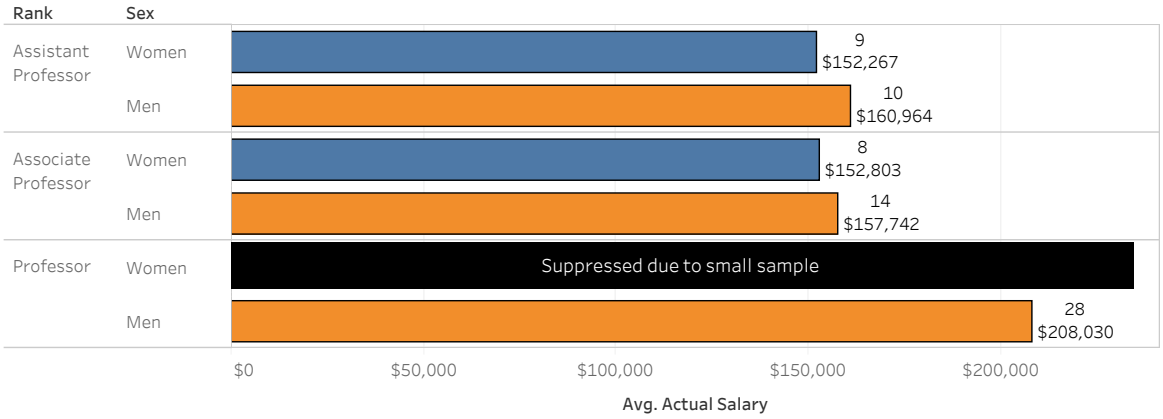
Average Residuals

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..

School/Division
Management

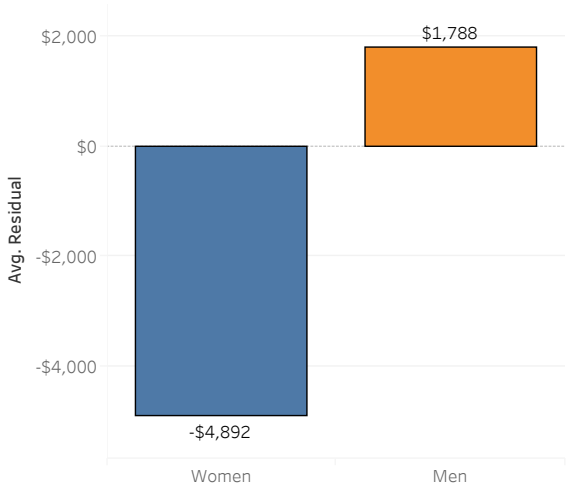
Average Salary by Sex and Rank: **Management**



Above or Below the Line

Sex	Above or Below	
Women	Above the line	37%
	Below the line	63%
Men	Above the line	48%
	Below the line	52%

Average Residuals



Faculty Salary Analysis

Average Salary by Sex and Rank: **Law**

School/Division
Law

Above or Below the Line

Sex	Above or Below	
Women	Above the line	33%
	Below the line	67%
Men	Above the line	38%
	Below the line	62%

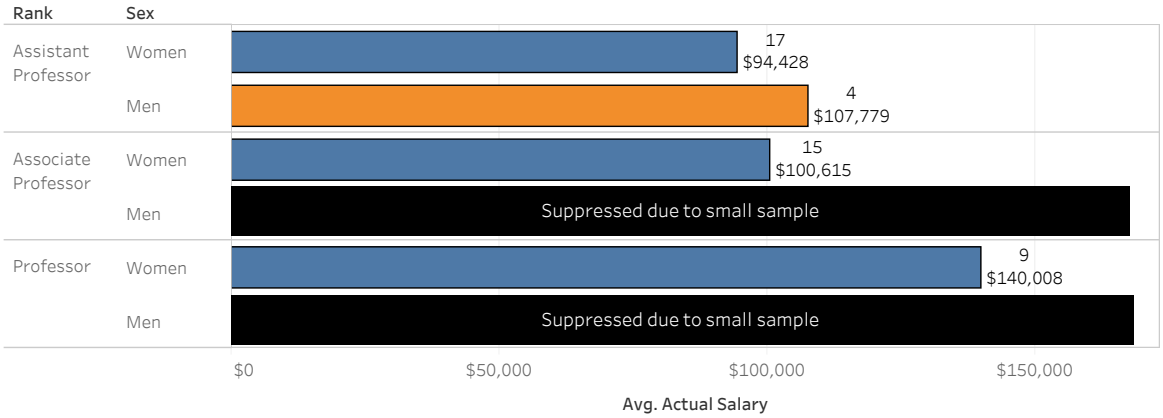
Average Residuals

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 ..

Average Salary by Sex and Rank: **Nursing**

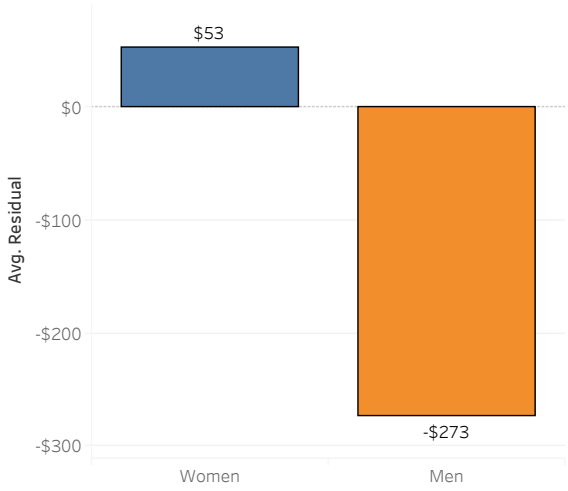
School/Division
Nursing



Above or Below the Line

Sex	Above or Below	
Women	Above the line	46%
	Below the line	54%
Men	Above the line	50%
	Below the line	50%

Average Residuals

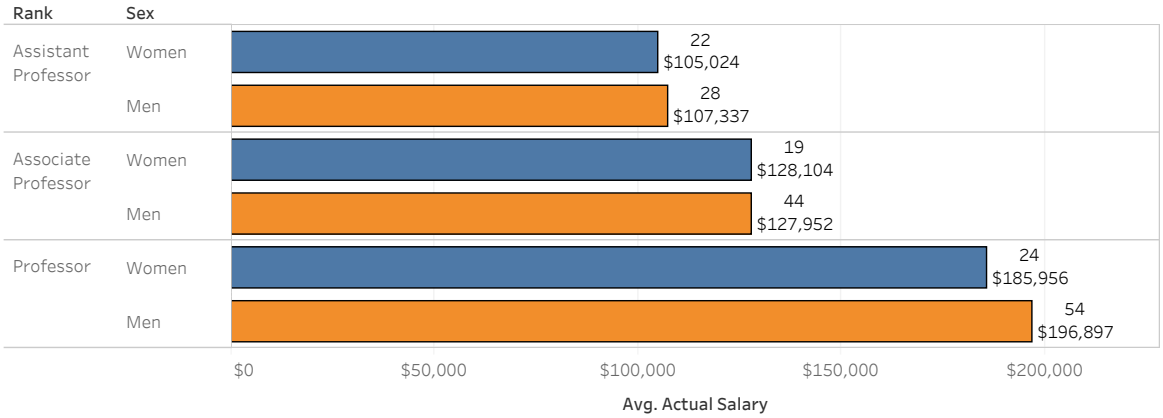


Faculty Salary Analysis

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

School/Division
Medicine

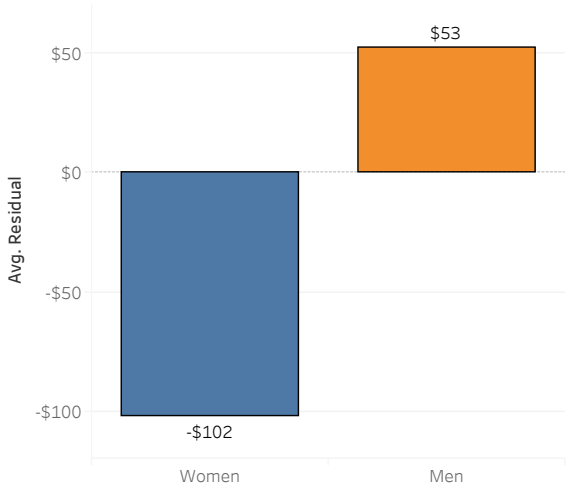
Average Salary by Sex and Rank: **Medicine**



Above or Below the Line

Sex	Above or Below	
Women	Above the line	46%
	Below the line	54%
Men	Above the line	44%
	Below the line	56%

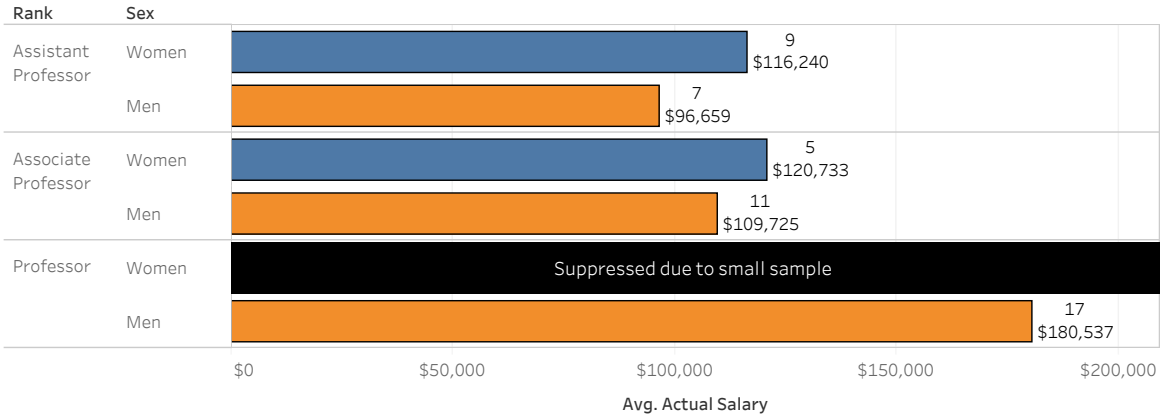
Average Residuals



Faculty Salary Analysis

School/Division
Dental Medicine

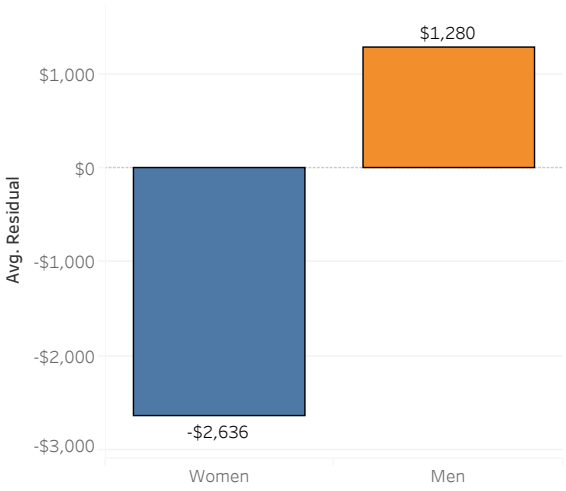
Average Salary by Sex and Rank: **Dental Medicine**



Above or Below the Line

Sex	Above or Below	
Women	Above the line	35%
	Below the line	65%
Men	Above the line	46%
	Below the line	51%
	On the line	3%

Average Residuals

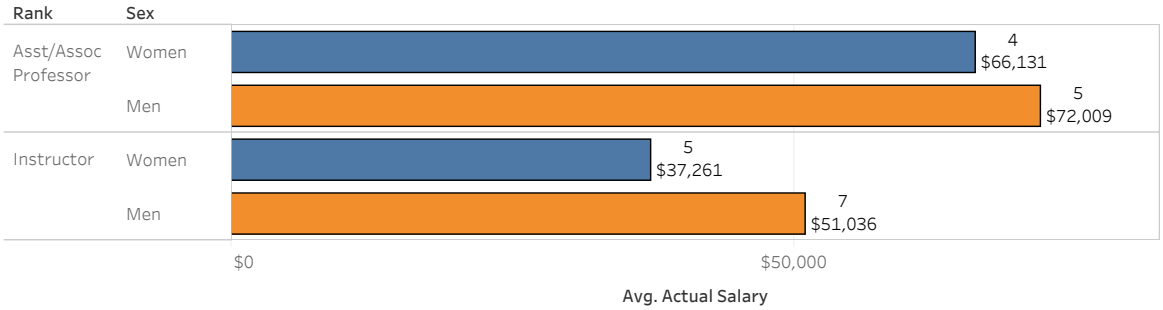


Faculty Salary Analysis

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

Average Salary by Sex and Rank: **PE/Athletics**

School/Division
PE/Athletics



Above or Below the Line

Sex	Above or Below	
Women	Above the line	56%
	Below the line	44%
Men	Above the line	42%
	Below the line	58%

Average Residuals

Faculty Salary Analysis

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
- Faculty 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

Race/Ethnicity Representation: Frequencies and Percentages by School

	School/Division									
	Arts and Humanities	Math and Natural Sciences	Social Sciences	Engineering	Applied Social Sciences	Management	Law	Nursing	Medicine	Dental Medicine
Under-Represented	7	6	2	5	5	3	2	7	4	7
Asian	8	8	3	31	1	18	1	2	39	9
White	68	70	42	76	18	47	27	40	142	32
International		2		3		3			6	2

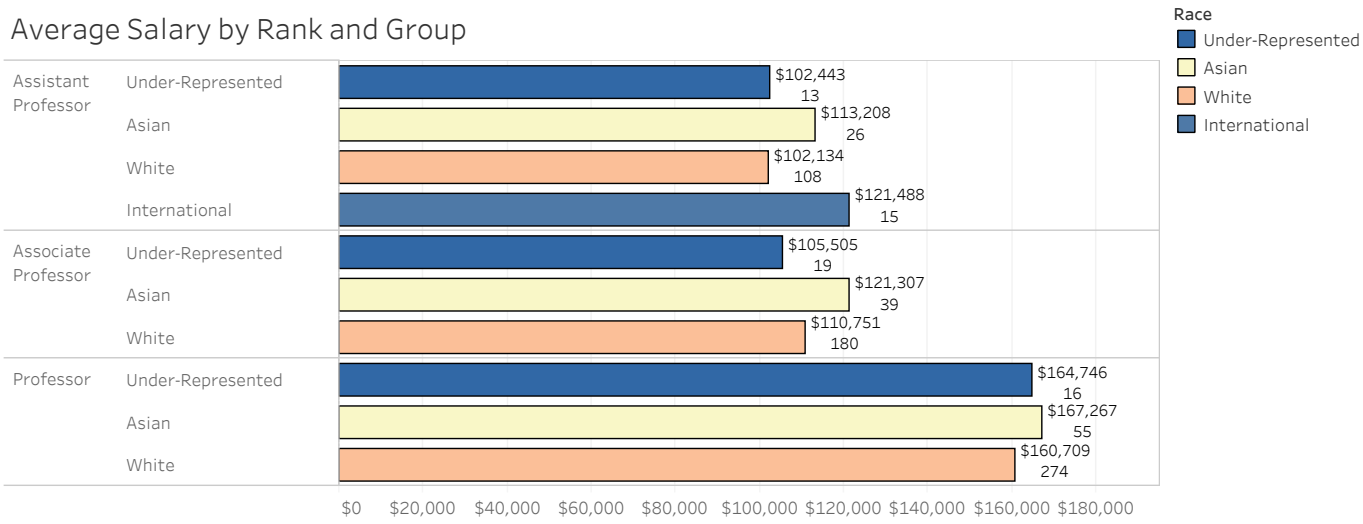
	Arts and Humanities	Math and Natural Sciences	Social Sciences	Engineering	Applied Social Sciences	Management	Law	Nursing	Medicine	Dental Medicine
Under-Represented	8%	7%	4%	4%	21%	4%	7%	14%	2%	14%
Asian	10%	9%	6%	27%	4%	25%	3%	4%	20%	18%
White	82%	81%	89%	66%	75%	66%	90%	82%	74%	64%
International		2%		3%		4%			3%	4%

Race/Ethnicity Representation by Rank

	Rank		
	Assistant Professor	Associate Professor	Professor
Under-Represented	13	19	16
Asian	26	39	55
White	108	180	274
International	15	1	

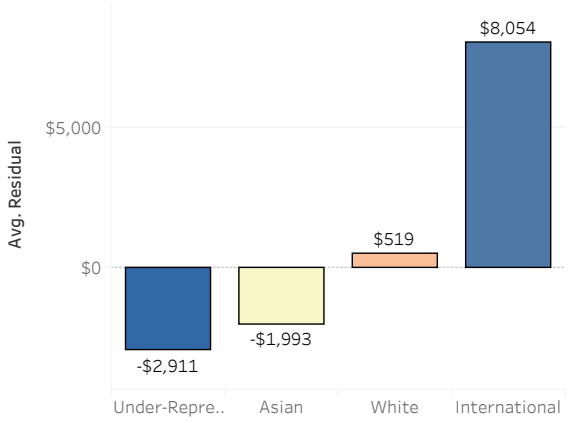
Faculty Salary Analysis

Average Salary by Rank and Group



Under-Represented	Above the line	44%
	Below the line & On the line	56%
Asian	Above the line	44%
	Below the line & On the line	56%
White	Above the line	44%
	Below the line & On the line	56%
International	Above the line	50%
	Below the line & On the line	50%

Residual by Group



Longitudinal Analysis of Average Unstandardized Residuals

Longitudinal Analysis

Data over the past nine 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.

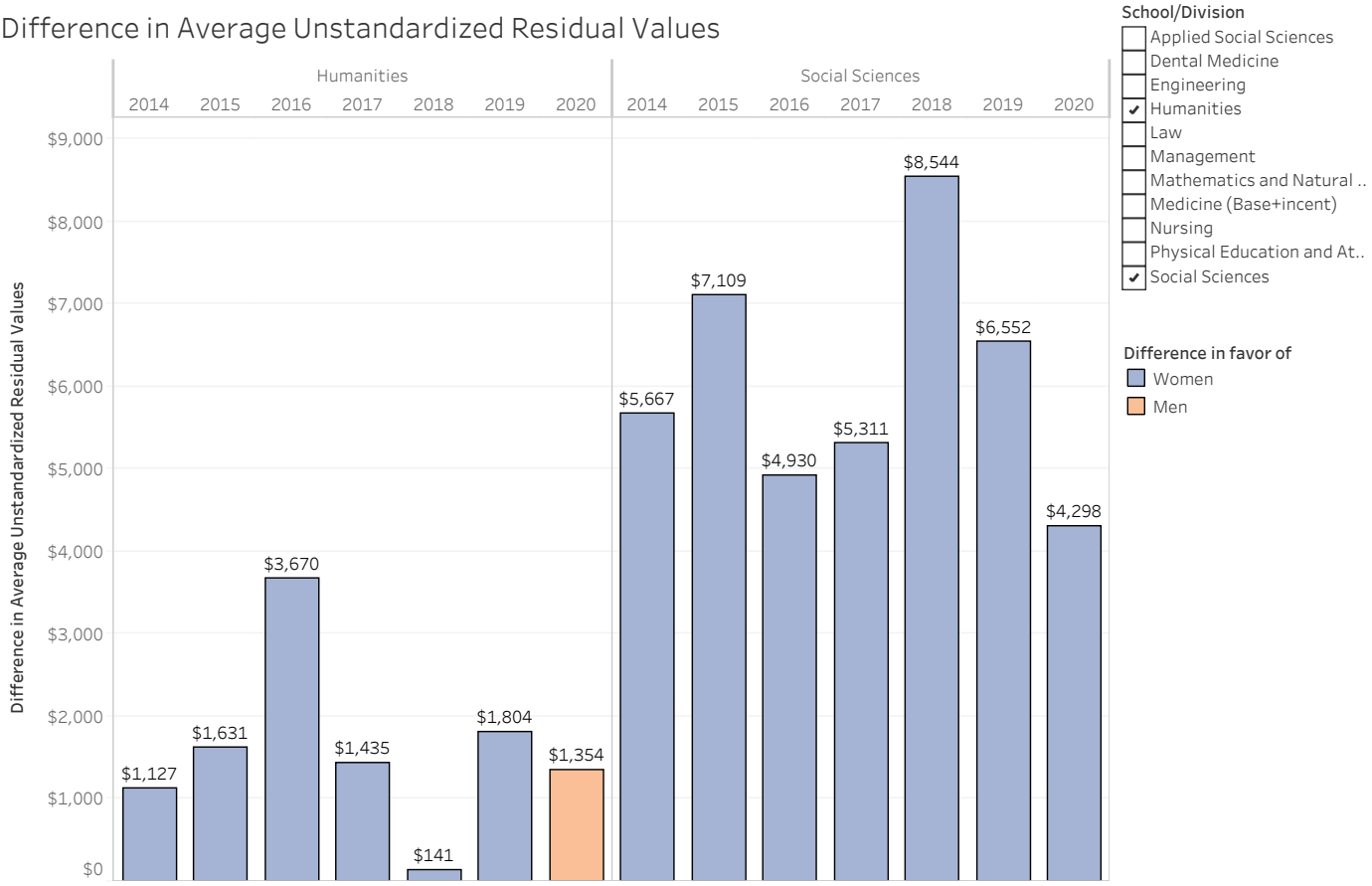
The charts that follow present the difference in average unstandardized residual values for men and women, broken down by school/division, over the past seven years.

- 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 Applied Social Sciences	Schools of Management and Law	Schools of Nursing and Dental Medicine	School of Medicine: Basic Sciences (Base + I..

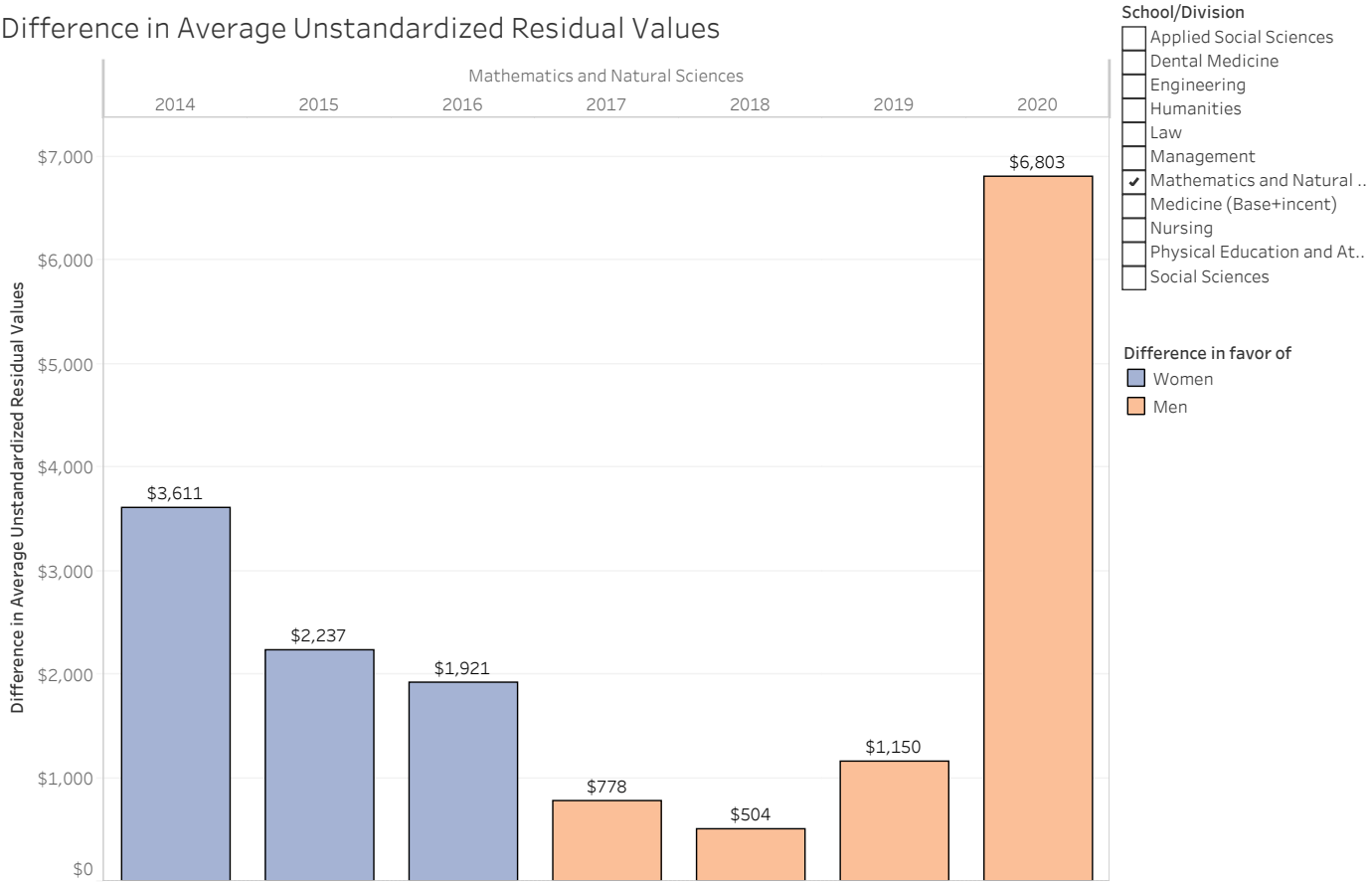
Difference in Average Unstandardized Residual Values



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 Applied Social Sciences	Schools of Management and Law	Schools of Nursing and Dental Medicine	School of Medicine: Basic Sciences (Base + I..

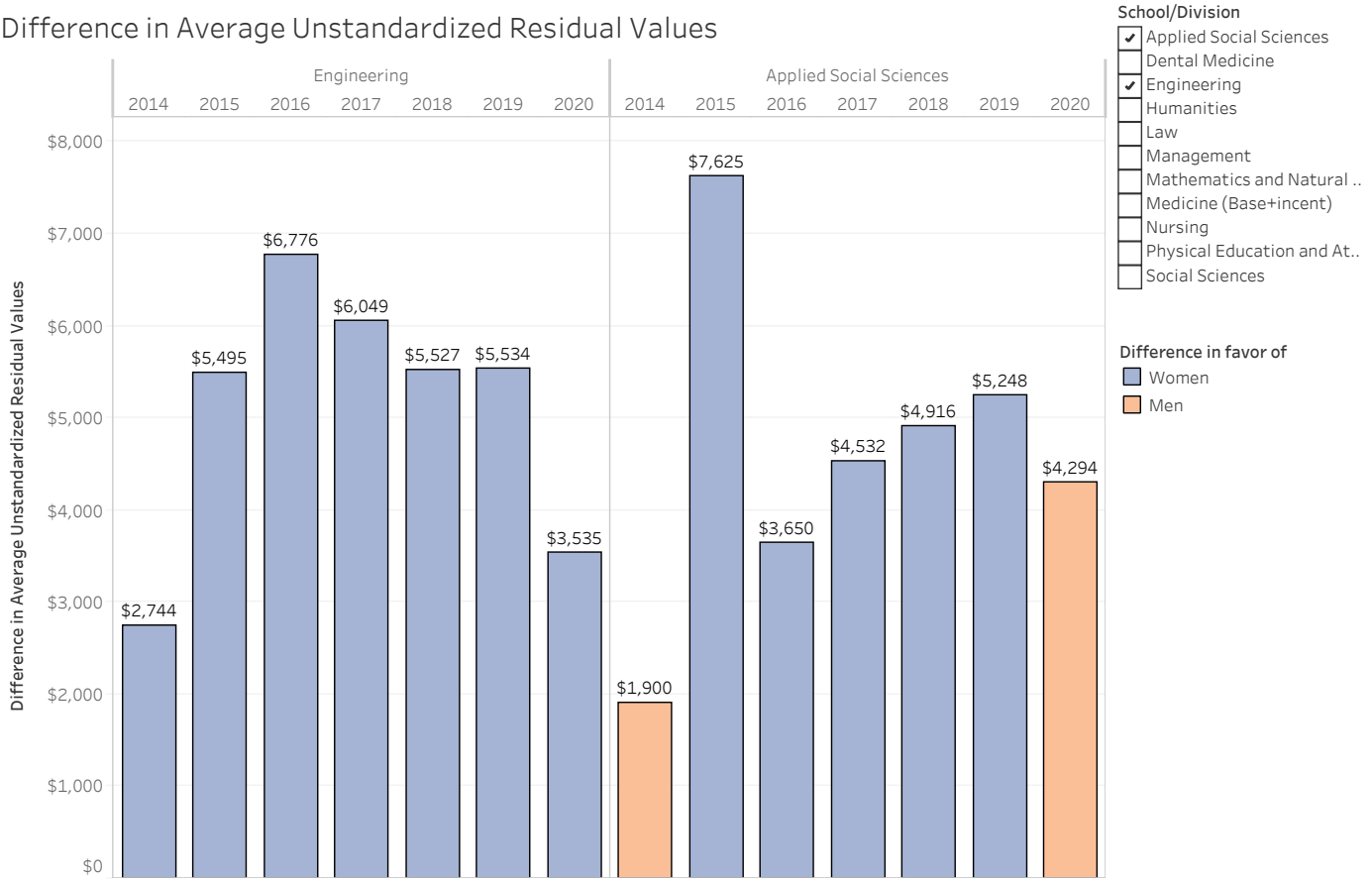
Difference in Average Unstandardized Residual Values



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 Applied Social Sciences	Schools of Management and Law	Schools of Nursing and Dental Medicine	School of Medicine: Basic Sciences (Base + Incentive)

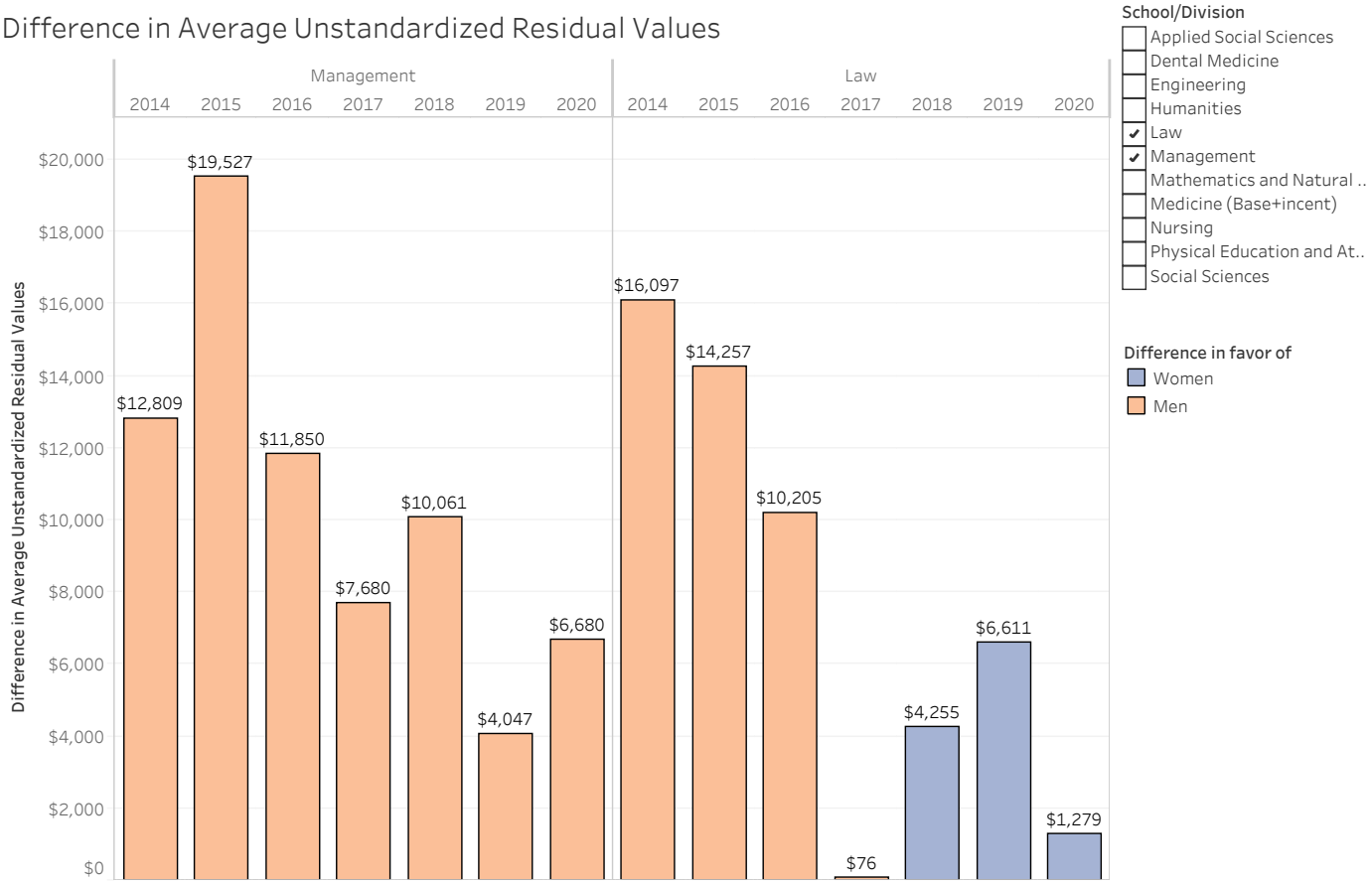
Difference in Average Unstandardized Residual Values



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 Applied Social Sciences | **Schools of Management and Law** | Schools of Nursing and Dental Medicine | School of Medicine: Basic Sciences (Base + Incentive) | University General: Physical Education and Athletics

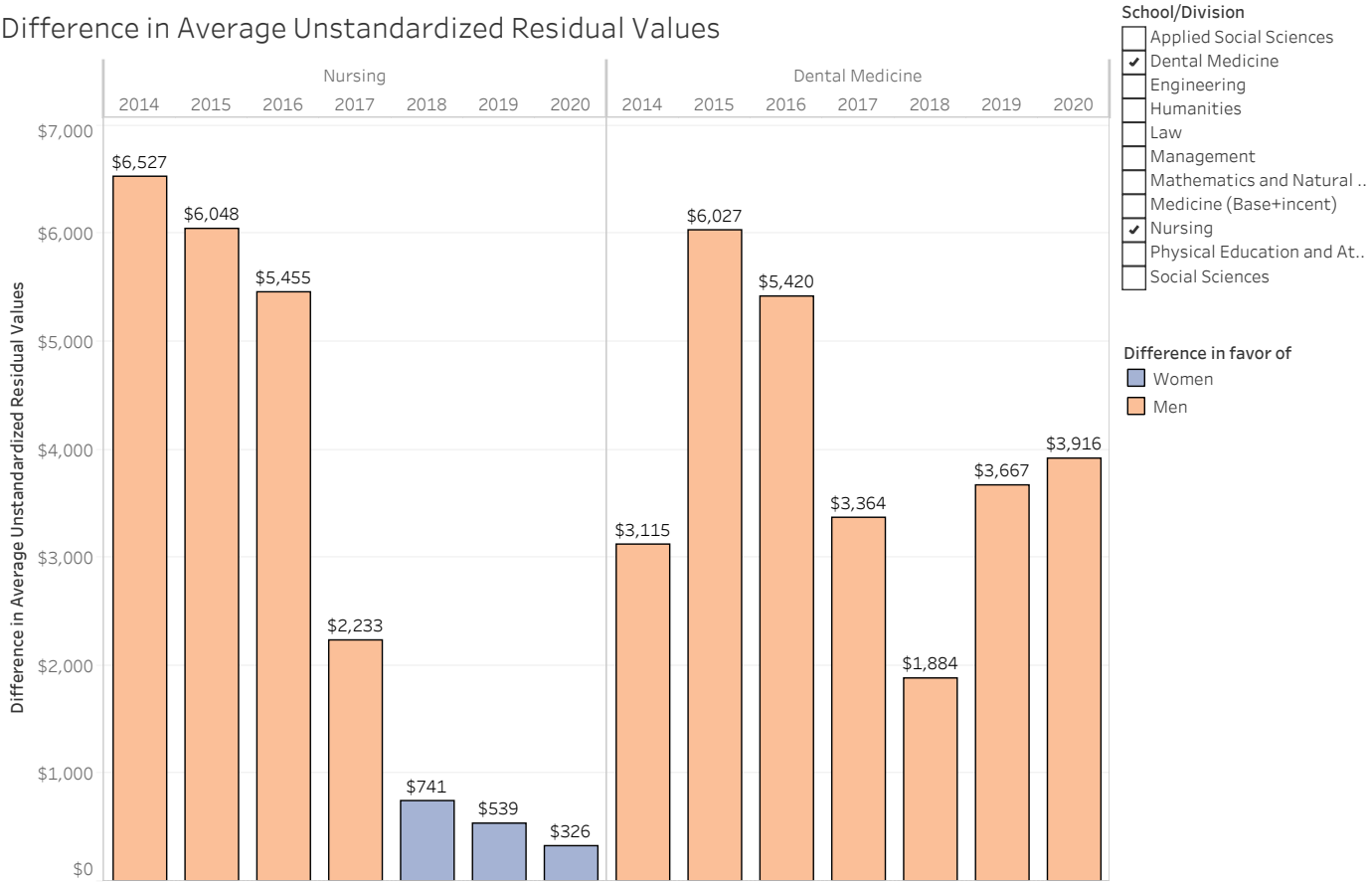
Difference in Average Unstandardized Residual Values



Longitudinal Analysis of Average Unstandardized Residuals

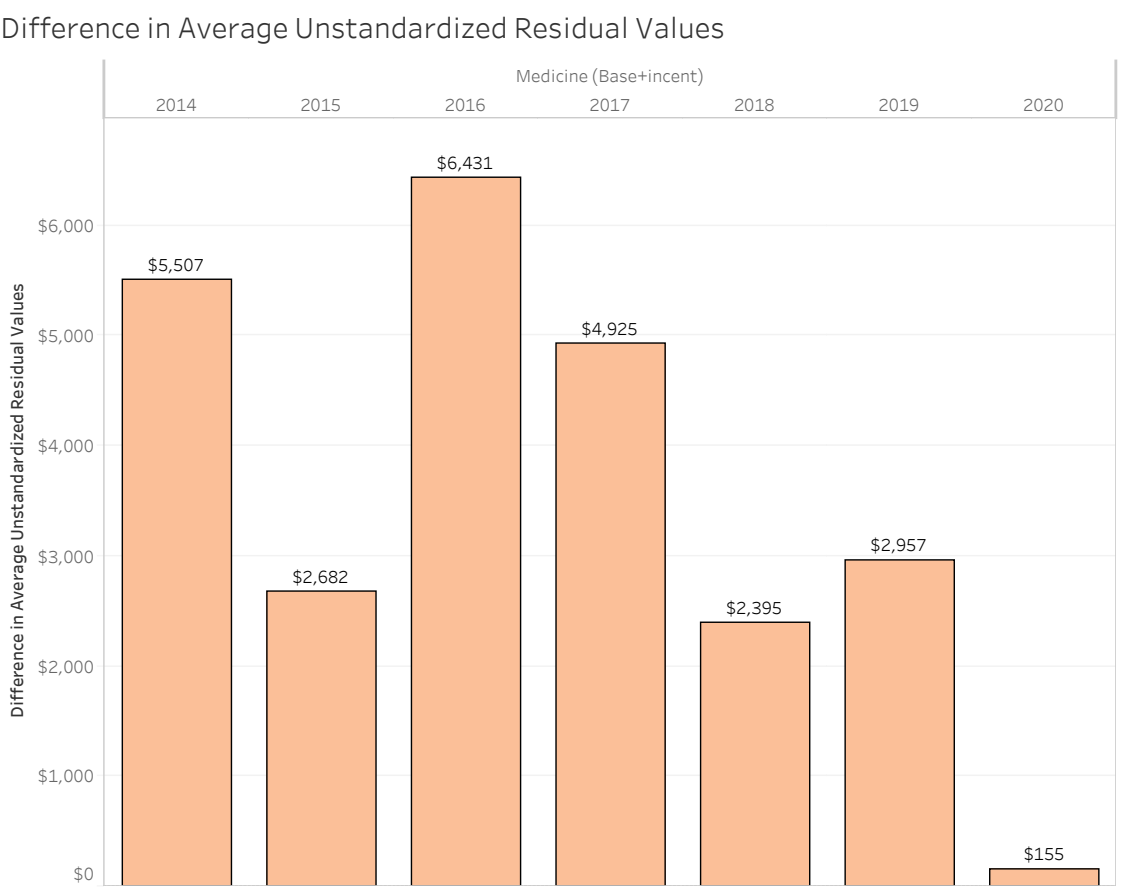
College of Arts and Sciences: Mathematics and Natural Sciences | Schools of Engineering and Applied Social Sciences | Schools of Management and Law | **Schools of Nursing and Dental Medicine** | School of Medicine: Basic Sciences (Base + Incentive) | University General: Physical Education and Athletics | Results

Difference in Average Unstandardized Residual Values



Longitudinal Analysis of Average Unstandardized Residuals

Difference in Average Unstandardized Residual Values

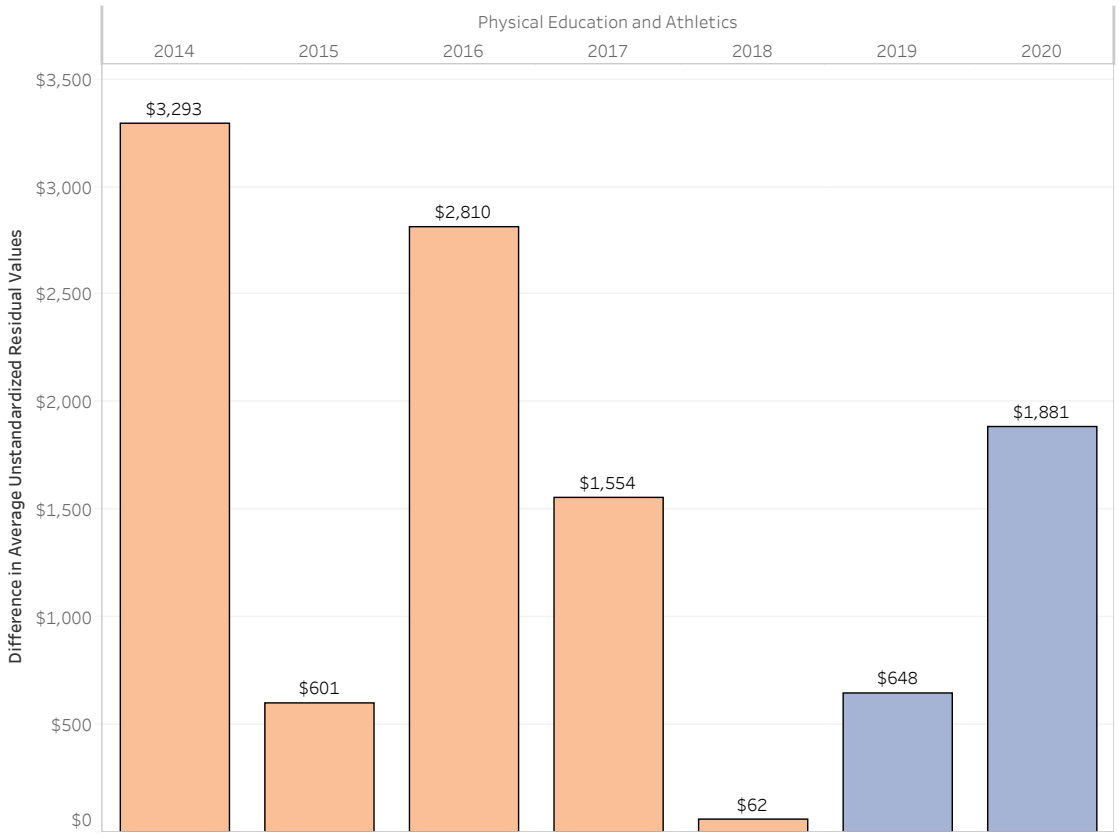


School/Division
- [ ] Applied Social Sciences
- [ ] Dental Medicine
- [ ] Engineering
- [ ] Humanities
- [ ] Law
- [ ] Management
- [ ] Mathematics and Natural ..
- [x] Medicine (Base+incent)
- [ ] Nursing
- [ ] Physical Education and At..
- [ ] Social Sciences

Difference in favor of
- Men

Longitudinal Analysis of Average Unstandardized Residuals

Difference in Average Unstandardized Residual Values



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

Difference in favor of
- Women
- Men

Longitudinal Analysis of Average Unstandardized Residuals

Results

- The largest discrepancies in favor of men reside in the School of Medicine and the Math and Natural Sciences division.
- The largest discrepancies in favor of women occur in Social Science and Engineering.
- Differences in salaries between men and women are smallest in Nursing and Medicine.
- 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.

Longitudinal Analysis of Average Unstandardized Residuals

Recommendations

- Data on race/ethnicity chould 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.