Association between gender and salary setting at the Houston College of Medicine

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# Introduction

Title VII of the Civil Rights Act of 1964 is a federal law that prohibits employers from discriminating against employees on the basis of sex, race, color, national origin and religion (1). Also, the equal pay act of 1963 requires that men and women in the same workplace be given equal pay for equal work. Income inequality between men and women who do the same work have been a point of debate over the years and efforts have been made to ensure women receive the same remuneration as men for doing equal work. While there have been several studies conducted about the income gap between both genders, it is almost impossible to find a single study that focuses on one profession or industry.

The U.S education system is one area that is not immune to this income gap problem. Several factors determines ones compansation in the education system such as the area of expertise, years of experience, title, the amount of research papers published, etc. Despite these legitimate factors that determines compansation, there are many cases that have been published claiming that female professors are getting paid less compared to their male colleagues while bearing the same, if not superior, titles or accolades.

The aim of this study is to examine the association between gender discrimination in setting salary within the Houston college of medicine where a female professor claimed, through a district court lawsuit, that there was evidence of discrimination against women in giving promotions and setting salaries. To do this, we will build multiple regression models using seven predictor variables such as the department in which a subject belongs to, their area of expertise, whether or not they are board certified, their publication rate, years of experience, and their position title. We will test for interactions and confounders that might be present between all the stated predictors and our main predictor of interest which is the subject’s gender. Our response variable will be both the baseline salary in year 1994 and the change in salary between year 1994 and year 1995.

# Methods

## Data Description

* Dept: Academic departments at Houston College of medicine. Biochemistry, Physiology, Genetics, Pediatrics, Medicine, and Surgery
* Gender: A dichotomous variable coded with dummy variables ‘1’ for Male subjects and ‘0’ for Female subjects
* Clin: A dummy variable with 1 = Primarily clinnical emphasis and 0 = Primarily research emphasis.
* Cert: 1 = Board certified and 0 = not certified
* Prate: Publication rate
* Exper: years of experience since obtaining Medical Doctor degree.
* Rank: 1 = Assistant professor, 2 = Associate professor, 3 = full professor
* Sal94: Salary in academic year 1994.
* Sal05: Salary in academic year 1995.

The *goal* of this project is to investigate if claims made by a Houston university professor that there is gender discrimination when it comes to salary are valid by building different multiple regression models that best captures the association between gender and salary.

**Descriptive Statistics:**

Note that Values are weighted meanSE for continuous variables or weighted %SE for categorical variables.

Baseline

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Male (N=155) | Female (N=106) | Total (N=261) | p value |
| Department |  |  |  | < 0.001 |
| - Biochemistry/Molecular Biology | 30 (19.4%) | 20 (18.9%) | 50 (19.2%) |  |
| - Physiology | 20 (12.9%) | 20 (18.9%) | 40 (15.3%) |  |
| - Genetics | 10 (6.5%) | 11 (10.4%) | 21 (8.0%) |  |
| - Pediatrics | 10 (6.5%) | 20 (18.9%) | 30 (11.5%) |  |
| - Medicine | 50 (32.3%) | 30 (28.3%) | 80 (30.7%) |  |
| - Surgery | 35 (22.6%) | 5 (4.7%) | 40 (15.3%) |  |
| Emphasis |  |  |  | 0.197 |
| - Clinical Emphasis | 100 (64.5%) | 60 (56.6%) | 160 (61.3%) |  |
| - Research Emphasis | 55 (35.5%) | 46 (43.4%) | 101 (38.7%) |  |
| Certification |  |  |  | 0.074 |
| - Board certified | 118 (76.1%) | 70 (66.0%) | 188 (72.0%) |  |
| - Not certified | 37 (23.9%) | 36 (34.0%) | 73 (28.0%) |  |
| Publication |  |  |  | 0.004 |
| - Mean (SD) | 4.65 (1.94) | 5.35 (1.89) | 4.93 (1.94) |  |
| - Median (Q1, Q3) | 4.00 (3.10, 6.70) | 5.25 (3.73, 7.27) | 4.40 (3.20, 6.90) |  |
| - Min - Max | 1.30 - 8.60 | 2.40 - 8.70 | 1.30 - 8.70 |  |
| Experience |  |  |  | < 0.001 |
| - Mean (SD) | 12.10 (6.70) | 7.49 (4.17) | 10.23 (6.23) |  |
| - Median (Q1, Q3) | 10.00 (7.00, 15.00) | 7.00 (5.00, 10.00) | 9.00 (6.00, 14.00) |  |
| - Min - Max | 2.00 - 37.00 | 1.00 - 23.00 | 1.00 - 37.00 |  |
| Title |  |  |  | < 0.001 |
| - Assistant Professor | 43 (27.7%) | 69 (65.1%) | 112 (42.9%) |  |
| - Associate Professor | 43 (27.7%) | 21 (19.8%) | 64 (24.5%) |  |
| - Full Professor | 69 (44.5%) | 16 (15.1%) | 85 (32.6%) |  |
| Salary (1994) |  |  |  | < 0.001 |
| - Mean (SD) | 177338.76 (85930.54) | 118871.27 (56168.01) | 153593.34 (80469.67) |  |
| - Median (Q1, Q3) | 155006.00 (109687.00, 231501.50) | 108457.00 (75774.50, 143096.00) | 133284.00 (90771.00, 200543.00) |  |
| - Min - Max | 52582.00 - 428876.00 | 34514.00 - 308081.00 | 34514.00 - 428876.00 |  |
| Salary (1995) |  |  |  | < 0.001 |
| - Mean (SD) | 194914.09 (94902.73) | 130876.92 (62034.51) | 168906.66 (88778.43) |  |
| - Median (Q1, Q3) | 170967.00 (119952.50, 257163.00) | 119135.00 (82345.25, 154170.50) | 148117.00 (99972.00, 218955.00) |  |
| - Min - Max | 58923.00 - 472589.00 | 38675.00 - 339664.00 | 38675.00 - 472589.00 |  |

# Save objects for knitr/markdown  
save(tab1, file = "table1.rda")

load("table1.rda")

# Reference

**1.** [Here](https://www.aauw.org/what-we-do/legal-resources/know-your-rights-at-work/title-vii/)