

Optometry Compensation Study: Narrowing Down the Unexplained Gender Wage Gap in Optometry

Rachel S. Simpson, OD,^{1*} Breanna J. Scott, OD,¹ Kate J. Hamm, OD,¹ Jacquelyn M. Tyra, OD,¹ Heather M. Jackson, OD,¹ Marie L. P. Fermil, OD,¹ Leslie K. Kinder, OD,¹ and Carl J. Bassi, PhD¹

SIGNIFICANCE: Men earn at least 6.5% more than women in their first full-time jobs as optometrists. For current salaries, the gender wage gap is more than 13%. This study details the gender wage gap that remains after controlling for practice ownership, residency training, and employer-defined full-time work.

PURPOSE: The purpose of this study was to measure the gender wage gap by region and practice type for full-time optometrists who did not complete a residency and do not own their practice.

METHODS: Participants completed an online survey, providing data for their first and current optometry positions and demographic information. Respondents who reported full-time employment in the United States, not completing a residency, and not owning their practice were selected for further analysis by census region and practice type. In each category, the gender wage gap was calculated.

RESULTS: In all regions and practice types, men were paid higher starting salaries than women. For current salaries, men were paid higher in almost all regions and practice types. The wage gap increased from starting salary to current salary, although not in all regions and practice types.

CONCLUSIONS: When practice ownership, residency completion, and full-time work are controlled for, there remains a difference in the pay received by men and women in optometry. The salary data presented in this study may help optometrists narrow the wage gap.

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Author Affiliations:

¹College of Optometry, University of Missouri—St. Louis, St. Louis, Missouri
*rssxc9@outlook.com

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The gender wage gap is defined as the average difference in pay received by men and women. It serves as an overall look at the income of all working men compared with all working women without controlling for any factors. According to data for the United States, in 2018, the wage gap was 15%. This means women were paid 15% less than men.¹

The gender wage gap can be broken down into explainable and unexplainable portions. The explainable portion consists of differentiating factors that contribute to the wage gap, including differences in pay by location, professional segregation, hours worked, work interruptions, productivity, education, skill level, and experience.² When the explainable factors are controlled for, an unexplained gap in pay remains. The unexplained portion of the gender wage gap is considered attributable, at least in part, to gender discrimination.³ It is important to emphasize the difference between the overall wage gap and the unexplained wage gap, because, whereas the overall wage gap is often misunderstood to be describing the difference in pay for equal work, the unexplained wage gap does describe the difference in pay for equal work. The overall gender wage gap controls for no factors. According to a 2019 survey, the overall gender wage gap in optometry was 47%.⁴ Our investigation attempts to control for factors that will help optometrists get closer to determining the portion of the wage gap that is unexplained.

Optometry is an excellent profession in which to study the gender wage gap because it is possible to control for many explainable factors, such as full-time versus part-time work, practice ownership, practice type, and U.S. census region. By surveying optometrists who are employed by a single employer for what their employer defines as full-time work, it is possible to determine the average salaries offered by employers and accepted by employees. By surveying recent graduates about their initial positions as full-time optometrists, it is possible to determine what the wage gap is initially, before there is any difference in relevant optometric experience or productivity. Investigating starting salaries may show a difference between the value an employer places on a male optometrist with no relevant experience versus a female optometrist with no relevant experience. In addition, it may show the difference in what male and female optometrists are willing to accept as starting salaries. Comparing starting salary data with data about optometrists' current salaries, it may be possible to tell how the wage gap diverges over time. The potential professional implications of an investigation of the wage gap in optometry include identifying opportunities to promote equal pay. For example, by knowing the average salaries women and men are paid by region and practice type, optometrists can be better informed when they negotiate their own salaries.

This investigation aims to answer the following questions: what portion of the gender wage gap in optometry remains after controlling for employer-defined full-time work, practice ownership, and residency training, and how does this remaining portion of the wage gap vary by practice type and U.S. region?

METHODS

This research was reviewed and approved by the Institutional Review Board at the University of Missouri—St. Louis. The research conformed with the tenets of the Declaration of Helsinki, and informed consent was obtained from all subjects. In 2018, a confidential online survey administered via Google Forms (Appendix, available at <http://links.lww.com/OPX/A458>) was completed by 831 self-selected optometrists. Researchers recruited optometrists by the following online methods: (1) direct e-mail providing a link to the consent form and survey and (2) requesting that the moderators of optometrist-specific social media pages on Facebook and LinkedIn share a link to the consent form and survey. The Facebook and LinkedIn pages on which moderators were asked to post the survey included alumni groups from every optometry school in the United States that had alumni pages at the time of the survey, National Optometric Association and American Optometric Association groups in every state that had a page at the time of the survey, regional optometric associations and optometric society groups not affiliated with a national organization, regional Young OD groups, and other pages that discuss optometry, such as ODs on Facebook, ODs on Facebook 2.0, ODs off Facebook, OD Divas, and ODs on Finance. More than 150 Facebook and LinkedIn group moderators were contacted and provided with the link, but the link was not posted on every page contacted. In some instances, the social media moderators described previously provided e-mail addresses for group members who were then contacted directly via e-mail.

The survey was confidential but not anonymous because contact information (e-mail address or phone number) was collected to allow for the elimination of duplicate entries via Microsoft Excel. Respondents self-reported data about their demographics, salary history, benefits, and practice details. The inclusion criteria were defined as follows: full-time optometrists in the United States, who did not complete a residency and do not own a practice. The responses were then limited to 366 complete, non-duplicate surveys that reported working full-time within the United States, excluding optometrists who completed residency training and excluding practice owners. Respondents working part-time for multiple employers were excluded. The 366 respondents were employed full-time by a single employer. Each response pertained to a single employer-employee relationship.

The 366 full-time, non-owner, non-residency-trained optometrists were then stratified into two groups. Group 1 consisted of 196 respondents who graduated from 2015 to 2018 whose starting salaries were analyzed, and group 2 consisted of 170 respondents of all graduation years whose current non-starting salaries were analyzed. The intention was to obtain an up-to-date look at starting and current optometrist salaries. For that reason, group 1 was limited to graduation years 2015 to 2018 because those graduates had the most recent starting salaries when the survey was conducted in 2018. All graduation years were included for the analysis of current non-starting salaries. Salary was defined as base pay only. Respondents were asked to provide details about bonuses and benefits, but only the base salary provided by their employer for the purpose of work as an employed optometrist was analyzed.

Respondents' locations were divided to match the four U.S. census-designated regions and encoded as follows: Northeast

(Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont), Midwest (Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin), South (Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia), and West (Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming). The practice types were divided into five categories and encoded as follows: private practice, commercial practice, medical setting (including health maintenance organizations, hospitals, laser *in situ* keratomileusis/surgery centers, or ophthalmology/optometry team practices), educational institution, and federal (including Veterans Affairs centers, military, or Indian Health Services). The data were analyzed using SPSS (IBM Corp., Armonk, NY). The following equation was used to calculate the wage gap:

$$1 - (\text{average women's salary} / \text{average men's salary}) \\ = \text{gender wage gap identifier}$$

Positive results indicate that men were paid more than women. Negative results indicate that women were paid more than men.

RESULTS

Starting salaries were analyzed for optometrists meeting inclusion criteria within group 1 ($n = 196$; Table 1).

The starting salary wage gap for these respondents was 6.53%, with women's average starting salary at U.S. \$103,713.17 and men's average starting salary at U.S. \$110,955.84. By region, the starting salary wage gap was greatest in the West at 13.27%, followed by the Northeast at 10.08% and the South at 9.17%. The starting salary wage gap was smallest in the Midwest at 0.49%. By practice type, the starting salary wage gap was greatest in medical settings at 13.19%, followed by private practice at 6.63% and commercial at 4.86%. The sample size of respondents whose first practice type was federal was inadequate to analyze as a subset, but the responses were included in the overall average and regional subsets. Current salaries were analyzed for optometrists meeting inclusion criteria within group 2 ($n = 170$). The current salary wage gap for these respondents was 13.35%, with women's average current salary at U.S. \$120,798.18 and men's average current salary at U.S. \$139,414.92. By region, the current salary wage gap was greatest in the Midwest at 25.86%, followed by the Northeast at 8.67% and the South at 6.97%. The current salary wage gap was reversed in the West at -9.16%, with women outearning men. By practice type, the current salary wage gap was greatest in commercial practice settings at 16.81%, followed by medical settings at 12.30% and private practice at 7.36%. The sample size was inadequate to analyze subsets for both academic and federal practice settings, but the responses were included in the overall average and regional subsets (Figs. 1 to 4).

DISCUSSION

For recently graduated optometrists' first full-time jobs, no matter the practice type or the region of the country, this research shows that men are paid higher average starting salaries than

TABLE 1. Gender wage gap, median, and average full-time salaries for men and women, including 95% confidence intervals, for starting salaries of graduates 2015 to 2018 and current salaries of all graduation years, by U.S. region and by practice type, excluding practice owners and optometrists who completed residency training

	Wage gap, %	Women			Men		
		Average salary, U.S. \$	Median, U.S. \$	n	Average salary, U.S. \$	Median, U.S. \$	n
Overall starting	6.53	103,713.17 (95% CI, 99,934.73–107,491.61)	100,000.00	119	110,955.84 (95% CI, 105,502.17–116,409.51)	109,000.00	77
Overall current	13.35	120,798.18 (95% CI, 114,543.12–127,053.24)	115,000.00	111	139,414.92 (95% CI, 125,104.79–153,725.05)	125,000.00	59
Northeast starting	10.08	110,850.00 (95% CI, 105,748.28–115,951.72)	110,000.00	18	123,277.78 (95% CI, 110,263.41–136,292.15)	120,000.00	9
Northeast current	8.67	118,912.50 (95% CI, 110,444.14–127,380.86)	120,000.00	20	130,200.00 (95% CI, 115,692.29–144,707.71)	127,000.00	6
Midwest starting	0.49	102,151.68 (95% CI, 96,131.21–108,172.15)	99,833.50	40	102,651.52 (95% CI, 95,540.06–109,762.98)	100,000.00	33
Midwest current	25.86	111,837.76 (95% CI, 102,029.67–121,645.85)	110,000.00	41	150,845.71 (95% CI, 123,548.43–178,142.99)	130,000.00	28
South starting	9.17	106,045.45 (95% CI, 97,169.86–114,921.04)	110,000.00	33	116,754.55 (95% CI, 103,257.13–130,251.97)	105,000.00	22
South current	6.97	131,222.22 (95% CI, 119,179.05–143,265.39)	125,000.00	27	141,046.15 (95% CI, 118,784.83–163,307.47)	130,000.00	13
West starting	13.27	98,607.14 (95% CI, 90,858.99–106,355.29)	98,000.00	28	113,692.31 (95% CI, 106,956.01–120,428.61)	115,000.00	13
West current	−9.16	126,173.91 (95% CI, 108,162.57–144,185.25)	117,000.00	23	115,583.33 (95% CI, 106,256.84–124,909.82)	119,000.00	12
Private practice starting	6.63	97,929.34 (95% CI, 93,210.57–102,648.11)	98,000.00	50	104,877.50 (95% CI, 99,228.37–110,526.63)	100,000.00	40
Private practice current	7.36	109,523.81 (95% CI, 103,264.17–115,783.45)	108,000.00	42	118,230.00 (95% CI, 105,486.94–130,973.06)	117,500.00	20
Commercial starting	4.86	116,010.26 (95% CI, 110,072.10–121,948.42)	118,000.00	39	121,934.78 (95% CI, 109,715.25–134,154.31)	120,000.00	23
Commercial current	16.81	132,732.38 (95% CI, 118,884.08–146,580.68)	124,848.00	37	159,562.73 (95% CI, 127,728.98–191,396.48)	130,000.00	22
Medical starting	13.19	103,307.69 (95% CI, 96,400.15–110,215.23)	101,500.00	26	119,000.00 (95% CI, 108,087.38–129,912.62)	120,000.00	11
Medical current	12.30	123,314.81 (95% CI, 112,034.90–134,594.72)	117,500.00	27	140,607.14 (95% CI, 117,658.03–163,556.25)	125,000.00	14

CI = confidence interval.

women. All analyzed respondents were employed by a single employer for the purpose of optometry, so previous life experience and job skills were not considered factors affecting payment. These employees had no work history as optometrists to set them apart, and not having completed residencies, their degrees as doctor of optometry were equal. The Association of Schools and Colleges of Optometry does not endorse the ranking of optometry schools, and although data were collected on the respondents' almae matres, it was not considered a differentiating factor.⁵ The data show that employers are offering women lower starting salaries and that women are accepting them.

We also found that the remaining portion of the wage gap in optometry is wider in current salaries than in starting salaries, although not in all regions and practice types. In the West, women respondents outearned men in current salary. This result deserves further research. Interestingly, the region and practice type with

the smallest starting salary wage gaps, the Midwest and commercial settings, respectively, had the greatest current salary wage gaps. Further research is needed to understand why this is the case. It would be interesting to follow the 2015 to 2018 graduate cohort and study how the wage gap they experience changes over the course of their careers.

A potential limitation of the current salary data is that we did not include year of graduation as a covariate. As such, we did not control for time in practice for non-starting salaries. Rather, our current salary data are a look at the wage gap for non-residency-trained, non-practice-owning optometrist of all graduation years and all experience levels. To get closer to determining the unexplained wage gap for non-starting salary, future research should control for these variables.

Some other weaknesses of this study include the respondents being self-selected, the survey being conducted solely online, and not having diverse enough representation to analyze the

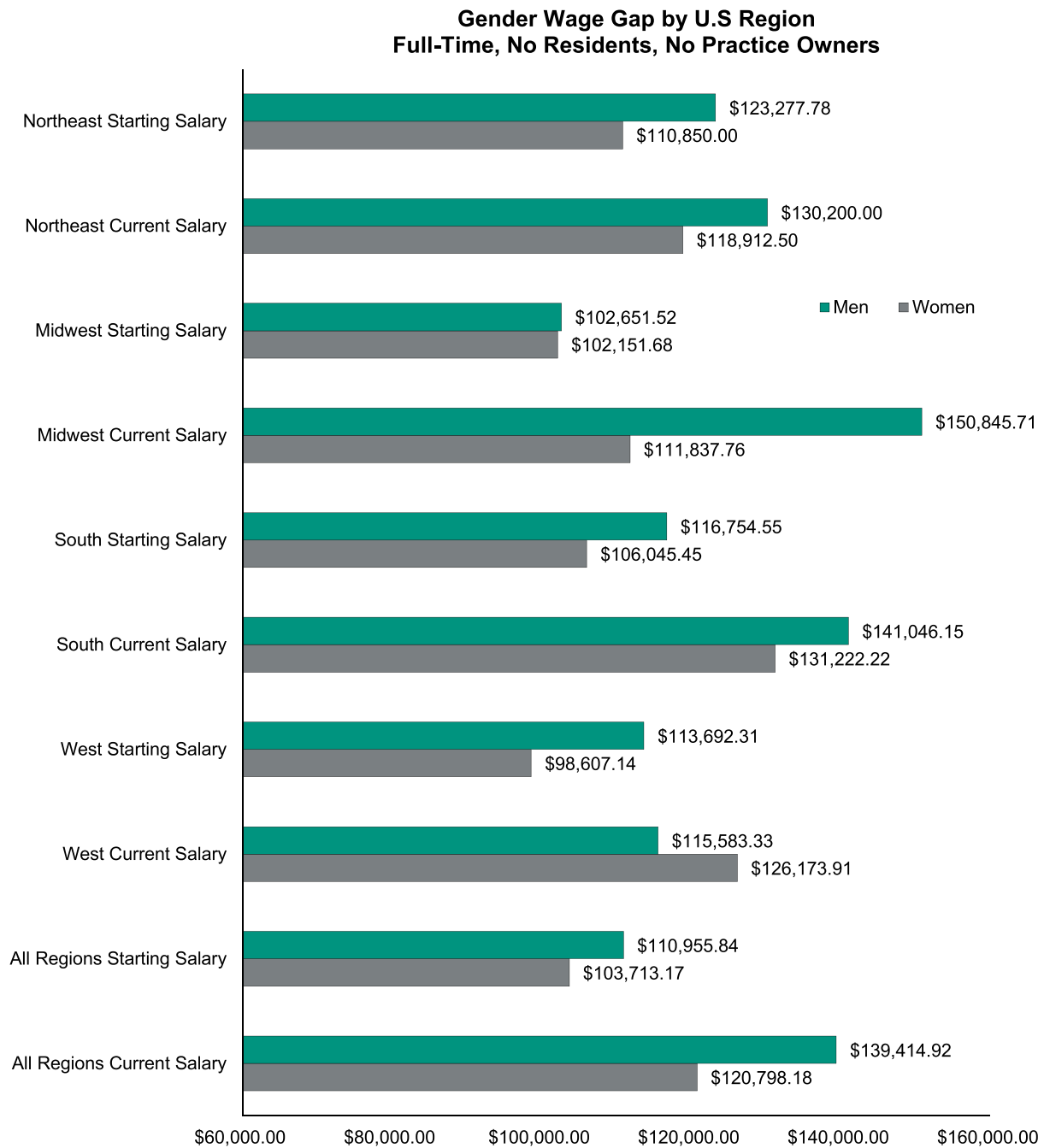


FIGURE 1. Bar graph depicting the gender wage gap for full-time optometrists who did not complete a residency and do not own a practice, by U.S. census region. Starting salary wage gap for graduates from 2015 to 2018 and current salary for all graduation years.

wage gap intersectionally. Intersectionality refers to overlapping and compounding discrimination due to multiple factors. Our survey included a question about race and ethnicity, but there were insufficient responses to analyze. An intersectional approach is necessary to look at the true impact of the wage gap on the individuals affected by it. This is evident in research that shows that Black and Hispanic women face a larger wage gap than White women because women of color encounter multiple factors of discrimination.⁶ The intersection of multiple sources of discrimination affects the wage gap at the point of hiring

when a worker may be offered a lower base salary and continues throughout a person’s career when they are less likely to be given a raise or bonus.⁷

Another limitation of this study was the small sample size for each subset investigated. Researchers attempted to reduce bias by recruiting geographically diverse optometrists via social media, yet there were more respondents from the Midwest than any other region. The survey included questions about location, with researchers hoping to analyze the data by state, but the response size was insufficient. A wage gap, independent of gender, exists

Gender Wage Gap by Practice Type Full-Time, No Residents, No Practice Owners

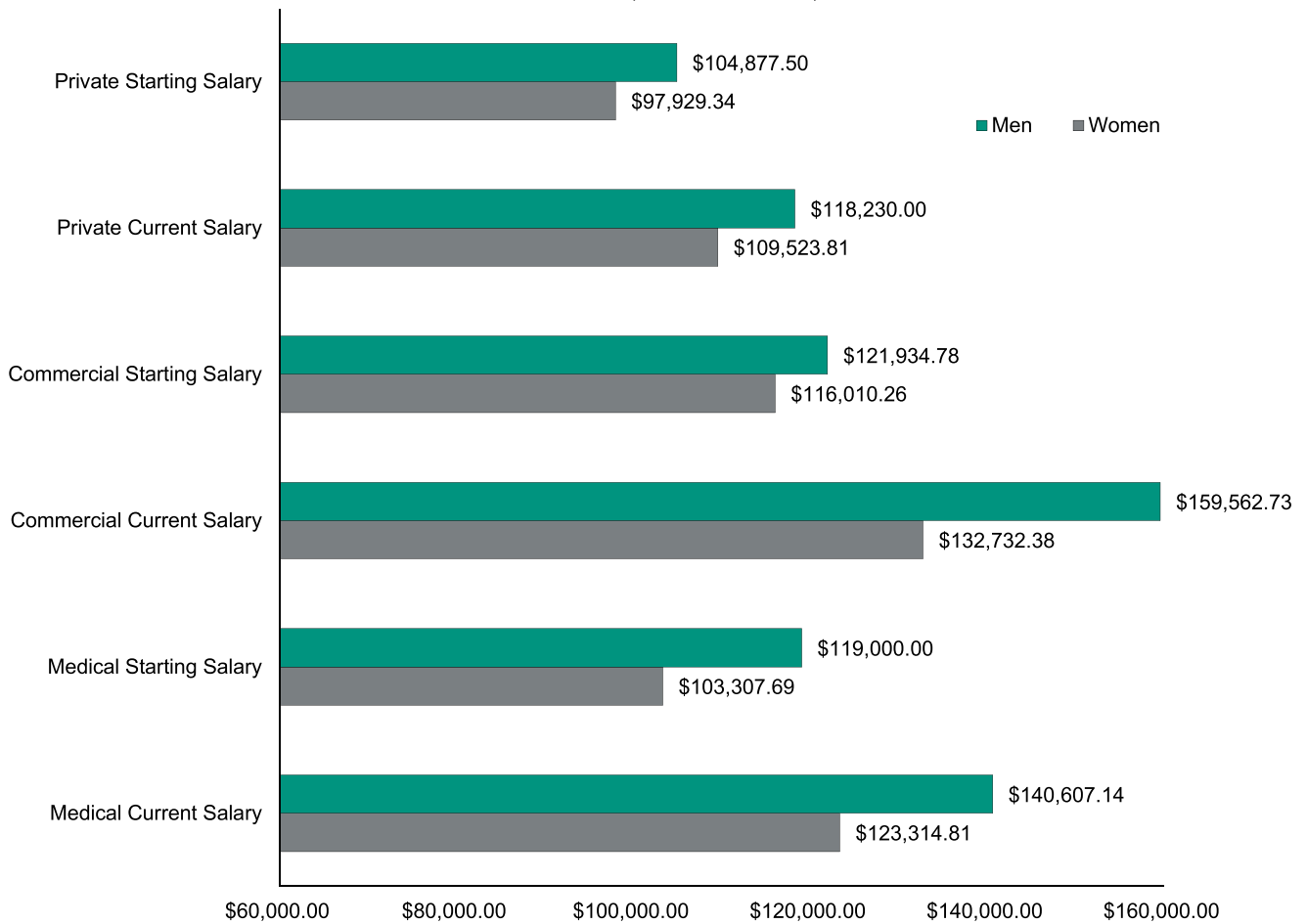


FIGURE 2. Bar graph depicting the gender wage gap for full-time optometrists who did not complete a residency and do not own a practice, by practice type. Starting salary wage gap for graduates from 2015 to 2018 and current salary for all graduation years.

between regions and by city size within the United States.⁸ Workers tend to be paid a higher rate in larger cities.⁹ Future research should consider further breaking down the wage gap by urban, suburban, and rural location.

In our survey, *full-time* was not specifically defined in terms of hours worked per week because the U.S. Department of Labor provides no definition.¹⁰ According to the Department of Labor, the definition of full-time employment is at the discretion of the employer. In our view, this is valid and worthy of comparison because each of the responses in our study pertained to a single employer-employee relationship. In each relationship, it was the employer who defined full-time and determined the base pay for the optometrist. Our goal was to investigate the salaries offered by employers and accepted by employees. However, future studies may wish to define full-time to the hour. For example, the Internal Revenue Service defines full-time employment as at least 30 hours per week.¹¹ Specifying this would add more definition to the data set in future research.

After controlling for practice ownership, residency training, and employer-defined full-time work, we found that female optometrists are, on average, paid less than male optometrists. This finding is consistent with research in other fields that shows that

women's base pay tends to be lower than men's, even when their jobs are exactly the same.¹² It is difficult to pinpoint a single reason for the wage gap that remains in optometry. An unexplained gender wage gap is considered, at least in part, to be due to discrimination, but there are certainly additional factors that future researchers could control for to further whittle down the unexplained wage gap.¹³ It is, however, worthwhile to explore hypotheses for why employers may be offering women lower pay and why women may be accepting less.

Perhaps women are unknowingly accepting lower salaries than men because of a lack of salary transparency. The Lilly Ledbetter Fair Pay Act of 2009 stemmed from an instance of a woman becoming aware that she was being paid less than men in her same position and then taking action based on that information.¹⁴ If a woman is informed of the average man's salary in her practice type and region, that information might be beneficial when she negotiates with her employer.

Women's negotiation skills are often blamed for the wage gap in base salary at the time of job offer.¹⁵ According to research and social theory, women are more hesitant to initiate negotiation, and when they do negotiate, they may be less effective at increasing

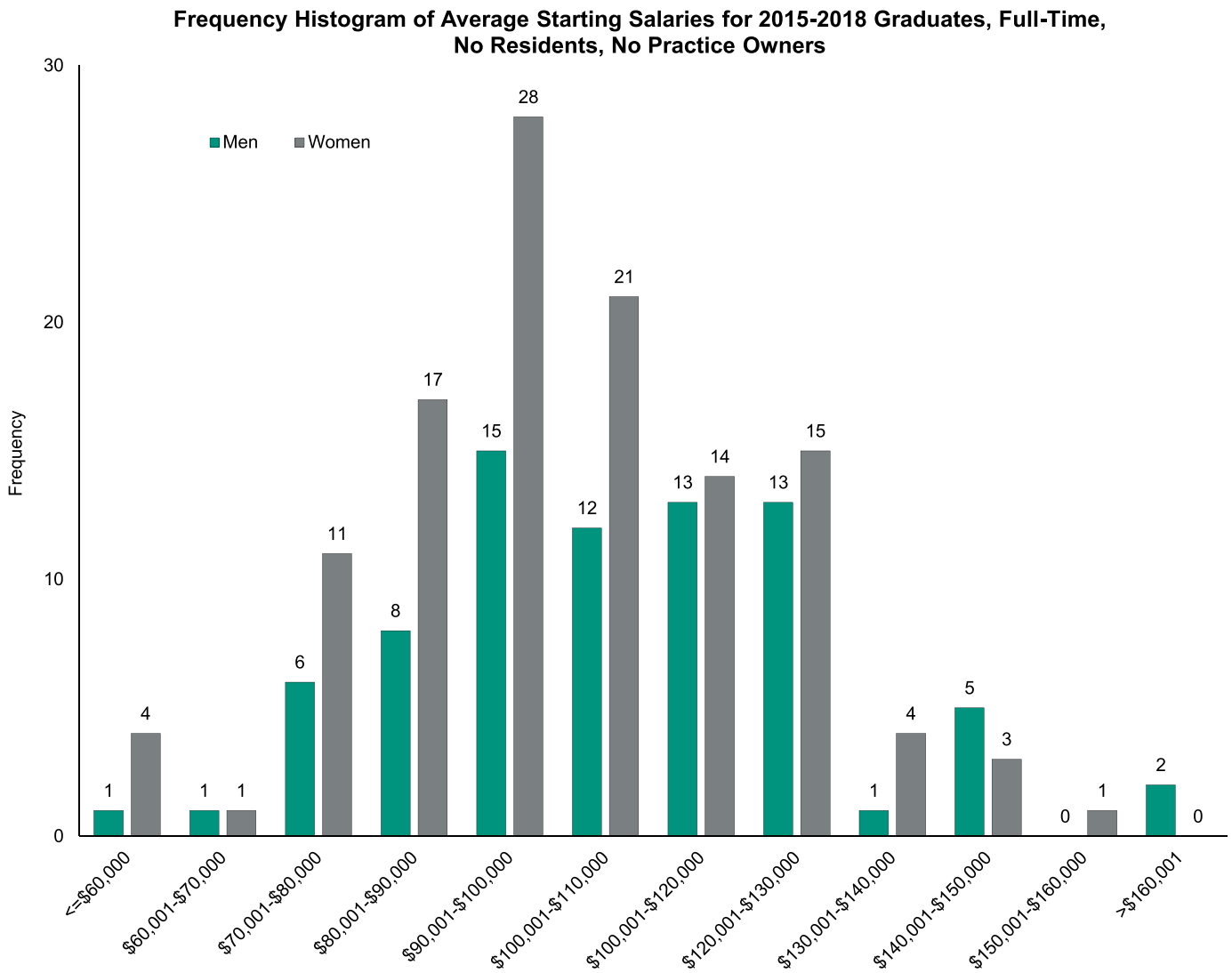


FIGURE 3. Frequency histogram depicting the distribution of respondents' starting salaries for full-time optometrists of graduation years 2015 to 2018 who did not complete a residency and do not own a practice.

their salaries than men are. When women negotiate, they face a potential backlash if the aggressive posture of negotiation is counter to gender norms that the employer values.¹⁶

The widening of the wage gap in optometry from starting salary to current salary is consistent with findings from previous studies in other health care fields. For example, research into the wages of physicians who work more than 20 hours per week showed that a gender wage gap was present in the first year of employment and worsened with time.¹⁷ Physicians' wage gap remained when comparing men and women who work 40 or more hours a week.¹⁸

One hypothesis for the worsening wage gap over the course of a career is a motherhood wage penalty, where mothers are seen as less committed to remaining in the workforce and less competent in their jobs.¹³ Women may be penalized for motherhood, even when they do not have children.¹⁹ Employers may assume that a female employee will eventually have children and then choose to cut her hours or leave the workforce entirely. These stereotypes about mothers and potential mothers can result in fewer responsibilities

being given to women, leading to less opportunity for promotion and advancement.²⁰ This is a self-perpetuating cycle, because if, for example, these stereotypes lead to a heterosexual woman being paid less than her male partner, she is more likely than he is to leave the workforce if one of the pair must.⁶ Stated more simplistically, the partner with the lower income is more likely to leave his/her job to care for the family.

Another hypothesis for the widening gap from starting to current salaries is the persistence of stereotypes regarding a work-life balance tradeoff. There is the impression that women prefer flexible schedules and that granting flexibility must come at the reduction of base salary. However, research shows that both men and women like flexible schedules, but men are not accepting less money in exchange for flexibility.²¹ Rather, the workers who have the most flexible schedules tend to be the workers with the most authority.²² The tradeoff of pay for flexibility is little more than a convenient myth that perpetuates the wage gap. Men in authority positions are not making a tradeoff in pay to get flexible schedules, they

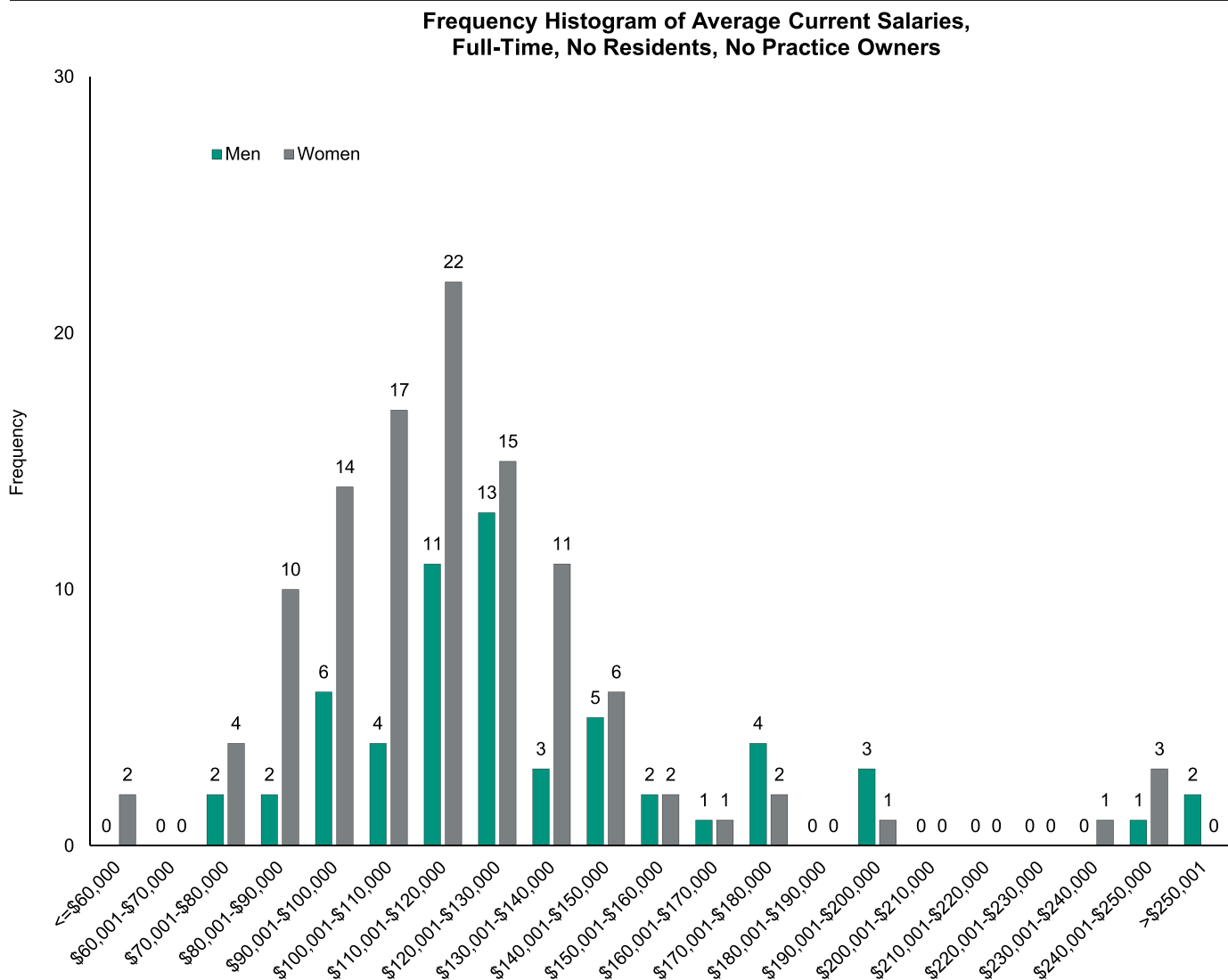


FIGURE 4. Frequency histogram depicting the distribution of respondents' current salaries for full-time optometrists of all graduation years who did not complete a residency and do not own a practice.

are enjoying both. Future research could include studying how stereotypes about negotiation, parenthood, and flexible schedules affect compensation for optometrists.

CONCLUSIONS

After controlling for employer-defined full-time work, practice ownership, and residency completion, the starting salary wage gap was 6.53%, and the current salary wage gap was 13.35%. Future research should control for additional factors, but the data

presented in this study help to narrow down the unexplained wage gap. There have been valuable surveys into the overall gender wage gap in optometry, but to our knowledge, this is the first research controlling for employer-defined full-time work, practice ownership, and residency completion.²³ This is relevant to the optometric community because pay inequity may cause financial and health consequences, with employees reporting greater depression and workplace dissatisfaction.²⁴ The average salaries presented in this study are useful for optometrists wishing to negotiate their salaries and to those working to close the gender wage gap.

ARTICLE INFORMATION

Supplemental Digital Content: APPENDIX: Optometrist Compensation Survey, available at <http://links.lww.com/OPX/A458>. A confidential online survey administered via Google Forms completed by 831 self-selected optometrists. Starred questions were required. Answer format is

included in parenthesis following the question. Respondents provided demographic information, salary history, benefits, and practice details. The responses were limited to those reporting full-time work for a single employer, not owning a practice, and not completing a residency (366 responses). Those responses were divided into graduation years 2015 through 2018 for analysis of starting

salary (196 responses), and all graduation years for analysis of current salary (170 responses). The results showed the gender wage gap by region and practice type.

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