



The 2018 Compensation Survey of the American Society of Breast Surgeons

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ABSTRACT

Background. There is limited compensation data for breast surgery benchmarking. In 2018, the American Society of Breast Surgeons conducted its second membership survey to obtain updated compensation data as well as information on practice type and setting.

Methods. In October 2018, a survey was emailed to 2676 active members. Detailed information on compensation was collected, as well as data on gender, training, years in and type of practice, percent devoted to breast surgery, workload, and location. Descriptive statistics and multivariate analyses were performed to analyze the impact of various factors on compensation.

Results. The response rate was 38.2% ($n = 1022$, of which 73% were female). Among the respondents, 61% practiced breast surgery exclusively and 54% were fellowship trained. The majority of fellowship-trained surgeons within 5 years of completion of training ($n = 126$) were female (91%). Overall, mean annual compensation was \$370,555. On univariate analysis, gender, years of practice, practice type, academic position, ownership, percent breast practice, and clinical productivity were associated with compensation, whereas fellowship training, region, and

practice setting were not. On multivariate analysis, higher compensation was significantly associated with male gender, years in practice, number of cancers treated per year, and wRVUs. Compensation was lower among surgeons who practiced 100% breast compared with those who did a combination of breast and other surgery.

Conclusions. Differences in compensation among breast surgeons were identified by practice type, academic position, ownership, years of practice, percent breast practice, workload, and gender. Overall, mean annual compensation increased by \$40,000 since 2014.

In 2014, the American Society of Breast Surgeons (ASBrS) conducted its first compensation survey, comprised of 843 surgeons in the United States. This survey included surgeons who perform breast surgery exclusively and as part of a general surgery practice. Manahan et al.¹ Data were collected on practice type, annual volumes, work relative value units (wRVUs), and benefits. Since that time, this information has helped breast surgeons and employers benchmark both volumes and salaries. Limitations of the 2014 survey included lack of adjustment for part-time employment, little information on the structure of compensation plans and productivity measures, no data on compensation outside of clinical work, and lack of information about spousal employment, among others. In addition, both compensation data

TABLE 1 Demographic characteristics of survey respondents

Characteristic	Full sample		Male		Female		Difference: female-male	
	(N = 782)		(N = 217)		(N = 565)		Difference	p value
Age, mean (SD), years	49.7	(9.7)	55.4	(9.3)	47.5	(9.0)	- 7.9	< 0.001
<i>Race, # (%)</i>								
African American or black	26	(3.3%)	1	(0.5%)	25	(4.4%)	4.0	< 0.001
Asian or Pacific Islander	86	(11.0%)	9	(4.1%)	77	(13.6%)	9.5	
Native American/Alaskan	1	(0.1%)	0	(0.0%)	1	(0.2%)	0.2	
White	624	(79.8%)	198	(91.2%)	426	(75.4%)	- 15.8	
More than one race	22	(2.8%)	4	(1.8%)	18	(3.2%)	1.3	
Declined to report race	23	(2.9%)	5	(2.3%)	18	(3.2%)	0.9	
<i>Hispanic, # (%)</i>								
Yes	47	(6.0%)	12	(5.5%)	35	(6.2%)	0.7	0.302
No	723	(92.5%)	199	(91.7%)	524	(92.7%)	1.0	
Don't know	12	(1.5%)	6	(2.8%)	6	(1.1%)	- 1.7	
<i>Marital status, # (%)</i>								
Married/remarried	637	(81.5%)	201	(92.6%)	436	(77.2%)	- 15.5	< 0.001
Separated/divorced/widowed	53	(6.8%)	7	(3.2%)	46	(8.1%)	4.9	
Single, cohabitating	28	(3.6%)	7	(3.2%)	21	(3.7%)	0.5	
Single, living alone	64	(8.2%)	2	(0.9%)	62	(11.0%)	10.1	
<i>If married/remarried, spouse employed, # (%)</i>								
Yes	426	(66.9%)	96	(47.8%)	330	(75.7%)	27.9	< 0.001
No	211	(33.1%)	105	(52.2%)	106	(24.3%)	- 27.9	
<i>If married/remarried, percentage who earn majority of income in household, # (%)</i>								
I do	485	(76.1%)	184	(91.5%)	301	(69.0%)	- 22.5	< 0.001
It's about equal	72	(11.3%)	12	(6.0%)	60	(13.8%)	7.8	
My partner does	78	(12.2%)	5	(2.5%)	73	(16.7%)	14.3	
I don't know	2	(0.3%)	0	(0.0%)	2	(0.5%)	0.5	
<i>Children living in household, # (%)</i>								
Yes	462	(59.1%)	107	(49.3%)	355	(62.8%)	13.5	0.001
No	320	(40.9%)	110	(50.7%)	210	(37.2%)	- 13.5	
If children living in household, number, mean (SD)	1.95	(0.8)	2.02	(0.9)	1.93	(0.8)	- 0.1	0.329
If children living in household, number under age 6, mean (SD)	0.60	(0.9)	0.25	(0.6)	0.71	(0.9)	0.5	< 0.001

Difference between males and females is percentage point difference for variables measured as a percentage. *p* values reflect comparison between men and women using two-sided *t* tests and Chi squared comparisons where appropriate

and years of experience were obtained in ranges, which limited the ability to detect statistically significant differences between groups.

The ASBrS conducted a second compensation survey in 2018, with added questions about hours worked, income related to nonclinical work, income related to image-guided and office-based procedures, and household structure. Additionally, the current survey collected compensation as a discrete value.

METHODS

In October 2018, the ASBrS sent an online survey to 2676 active members. The survey included individual demographics (e.g., age, gender, race, ethnicity), household composition (e.g., marital status, presence of children, spousal employment), and medical training (e.g., fellowship trained, educational debt, years in practice). Other sections included questions about current practice (e.g., type, ownership, academic rank, years worked, location, setting, percent breast surgery), clinical activities (e.g., percent of time spent in patient care, number of breast cancers treated, number of image guided percutaneous

TABLE 2 Medical training of survey respondents

Characteristic	Full sample (N = 782)		Male (N = 217)		Female (N = 565)		Difference: female-male	
	(N = 782)		(N = 217)		(N = 565)		Difference	p value
Number of years in practice, mean (SD)	17.3	(10.3)	23.5	(10.1)	15.0	(9.4)	- 8.5	< 0.001
<i>Fellowship trained, # (%)</i>								
Yes, in breast surgery	292	(37.3%)	26	(12.0%)	266	(47.1%)	35.1	< 0.001
Yes, in surgical oncology	89	(11.4%)	44	(20.3%)	45	(8.0%)	- 12.3	
Yes, other	40	(5.1%)	13	(6.0%)	27	(4.8%)	- 1.2	
No	361	(46.2%)	134	(61.8%)	227	(40.2%)	- 21.6	
<i>Educational debt when completed medical school, # (%)</i>								
Yes	548	(70.1%)	127	(58.5%)	421	(74.5%)	16.0	< 0.001
No	187	(23.9%)	74	(34.1%)	113	(20.0%)	- 14.1	
Don't know	47	(6.0%)	16	(7.4%)	31	(5.5%)	- 1.9	
Total educational debt when completed medical school, mean (SD)	\$125,556	(\$97,676)	\$79,056	(\$73,295)	\$139,472	(\$99,805)	\$60,416	< 0.001
<i>Educational debt currently, # (%)</i>								
Yes	218	(27.9%)	30	(13.8%)	188	(33.3%)	19.4	< 0.001
No	530	(67.8%)	184	(84.8%)	346	(61.2%)	- 23.6	
Don't know	34	(4.3%)	3	(1.4%)	31	(5.5%)	4.1	
Total educational debt currently, mean (SD)	\$147,008	(\$195,858)	\$79,702	(\$75,811)	\$157,749	(\$206,834)	\$78,046	0.042

Difference between males and females is percentage point difference for variables measured as a percentage. *p* values reflect comparison between men and women using two-sided *t* tests and Chi squared comparisons where appropriate

biopsies performed), nonclinical activities (e.g., percent of time spent on research, management, medical education), and number of days of continuing medication education (CME). Productivity including full-time versus part-time work and number of wRVUs generated was also queried.

The main focus of the survey was to capture accurate data on compensation values and structure. Respondents were asked to report the actual numerical value of their total compensation as a breast surgeon for 2017. They were also asked whether their salary was based on a national survey on physician compensation, whether they received a productivity bonus, and if yes which activities were taken into consideration, whether their income was based on any measures of quality, and whether they worked outside of surgery to supplement their income.

Both descriptive and multivariate methods were used to examine the importance of various factors affecting the compensation of breast surgeons. Descriptive comparisons between males and females were performed using two-sided *t* tests for or Chi squared comparisons where appropriate. A one-way analysis of variance (ANOVA) was used to test for differences in the unadjusted mean income by each categorical variable. Multivariate analysis was conducted using a linear regression with income as the

dependent variable. The adjusted mean income at a given covariate value was derived by holding other covariates at their mean levels and using the estimated model to predict the corresponding mean income.

RESULTS

Among those surveyed, 1022 completed a portion of the survey yielding a 38.2% response rate. Respondents with non U.S.-based practice (41 observations), reporting incomes < \$10,000 (11 observations), and with missing values for variables used in the multivariate analysis (188 observations) were excluded. These sample restrictions yielded 782 observations used for analysis, similar to the number of responses obtained from the 2014 survey.

Demographics

The mean age of respondents was 49.7 years, and the majority identified as white (79.8%; Table 1). Nearly three-quarters of respondents were female (73.3%). Most respondents were married/remarried (81.5%), and of these, most had spouses who were employed (66.9%). Female surgeons were less likely than males to be married (77.2 vs.

TABLE 3 Practice characteristics of survey respondents

Characteristic	Full sample		Male		Female		Difference: female-male	
		(N = 782)		(N = 217)		(N = 565)	Difference	p value
<i>Practice type, # (%)</i>								
Academic practice	168	(21.5%)	33	(15.2%)	135	(23.9%)	8.7	0.001
Government practice	6	(0.8%)	3	(1.4%)	3	(0.5%)	- 0.9	
HMO-employed practice	18	(2.3%)	3	(1.4%)	15	(2.7%)	1.3	
Hospital-employed practice	334	(42.7%)	90	(41.5%)	244	(43.2%)	1.7	
Multispecialty group private practice	121	(15.5%)	32	(14.7%)	89	(15.8%)	1.0	
Single specialty private practice	68	(8.7%)	27	(12.4%)	41	(7.3%)	- 5.2	
Solo private practice	53	(6.8%)	26	(12.0%)	27	(4.8%)	- 7.2	
Other practice type	14	(1.8%)	3	(1.4%)	11	(1.9%)	0.6	
<i>Ownership if in private practice, # (%)</i>								
Owner	100	(16.3%)	43	(23.4%)	57	(13.3%)	- 10.1	0.007
Partial owner	59	(9.6%)	22	(12.0%)	37	(8.6%)	- 3.4	
Employee	455	(74.1%)	119	(64.7%)	336	(78.1%)	13.5	
<i>Academic rank if in academic practice, # (%)</i>								
Assistant professor	75	(44.6%)	8	(24.2%)	67	(49.6%)	25.4	0.001
Associate professor	49	(29.2%)	8	(24.2%)	40	(29.6%)	5.4	
Full professor	38	(22.6%)	17	(51.5%)	21	(15.6%)	- 36.0	
Other academic rank	6	(3.6%)	0	(0.0%)	7	(5.2%)	5.2	
<i>Region, # (%)</i>								
Northeast	184	(23.5%)	43	(19.8%)	141	(25.0%)	5.1	0.001
Midwest	190	(24.3%)	48	(22.1%)	142	(25.1%)	3.0	
South	242	(30.9%)	86	(39.6%)	156	(27.6%)	- 12.0	
West	143	(18.3%)	28	(12.9%)	115	(20.4%)	7.5	
Noncontiguous U.S.	23	(2.9%)	12	(5.5%)	11	(1.9%)	- 3.6	
<i>Setting, # (%)</i>								
Large urban city population (> 1,000,000)	223	(28.5%)	61	(28.1%)	162	(28.7%)	0.6	0.348
Urban city (> 150,000 and < 1,000,000)	262	(33.5%)	64	(29.5%)	198	(35.0%)	5.6	
Small city (≥ 50,000 and ≤ 150,000)	221	(28.3%)	65	(30.0%)	156	(27.6%)	- 2.3	
Rural (< 50,000)	67	(8.6%)	25	(11.5%)	42	(7.4%)	- 4.1	
Other urban	9	(1.2%)	2	(0.9%)	7	(1.2%)	0.3	
<i>Percentage of practice that is breast surgery, # (%)</i>								
Less than 25%	69	(8.8%)	45	(20.7%)	24	(4.2%)	- 16.5	< 0.001
Between 25 and 49%	53	(6.8%)	30	(13.8%)	23	(4.1%)	- 9.8	
Approximately half	49	(6.3%)	17	(7.8%)	32	(5.7%)	- 2.2	
Between 51 and 75%	57	(7.3%)	17	(7.8%)	40	(7.1%)	- 0.8	
Between 75 and 99%	77	(9.8%)	34	(15.7%)	43	(7.6%)	- 8.1	
Exactly 100%	476	(60.9%)	74	(34.1%)	402	(71.2%)	37.0	

Difference between males and females is percentage point difference for variables measured as a percentage. *p* values reflect comparison between men and women using two-sided *t* tests and Chi squared comparisons where appropriate

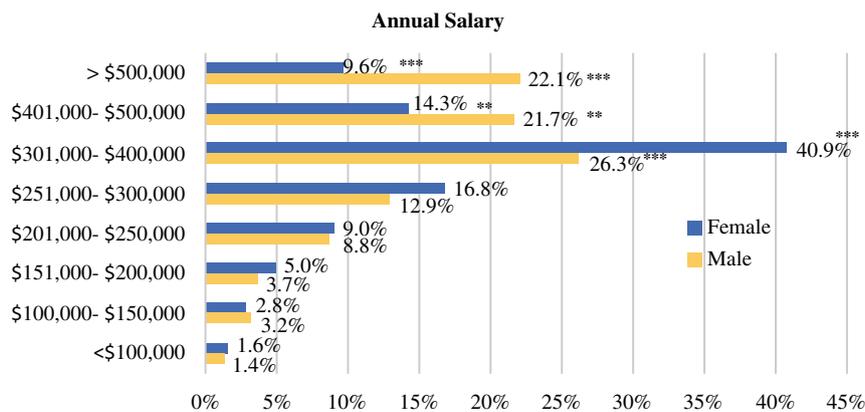
92.6%, $p < 0.001$) but were more likely than men to have spouses who worked outside the household (75.7 vs. 47.8%, $p < 0.001$). A majority (76.1%) of respondents reported that they earned the majority of the household income, including 69.0% of women and 91.5% of men ($p < 0.001$). More than half of the respondents (59.1%)

had children living in the home with a higher share of females living with children (62.8%) than males (49.3%; $p = 0.001$).

TABLE 4 Workload characteristics of survey respondents

Characteristic	Full sample (N = 782)		Male (N = 217)		Female (N = 565)		Difference: female-male	
							Difference	p value
<i>Number of breast cancers treated per year, # (%)</i>								
1–24	61	(7.8%)	33	(15.2%)	28	(5.0%)	– 10.3	< 0.001
25–50	69	(8.8%)	36	(16.6%)	33	(5.8%)	– 10.7	
50–100	157	(20.1%)	46	(21.2%)	111	(19.6%)	– 1.6	
100–150	191	(24.4%)	35	(16.1%)	156	(27.6%)	11.5	
150–200	146	(18.7%)	32	(14.7%)	114	(20.2%)	5.4	
200–300	112	(14.3%)	24	(11.1%)	88	(15.6%)	4.5	
> 300	28	(3.6%)	9	(4.1%)	19	(3.4%)	– 0.8	
Don't know/not applicable	18	(2.3%)	2	(0.9%)	16	(2.8%)	1.9	
<i>Number of image guided percutaneous biopsies, # (%)</i>								
Zero	352	(45.0%)	85	(39.2%)	267	(47.3%)	8.1	0.003
1–24	176	(22.5%)	42	(19.4%)	134	(23.7%)	4.4	
25–100	144	(18.4%)	43	(19.8%)	101	(17.9%)	– 1.9	
> 100	110	(14.1%)	47	(21.7%)	63	(11.2%)	– 10.5	
Salary based on wRVUs, # (%)	515	(65.9%)	138	(63.6%)	377	(66.7%)	3.1	0.936
Number of hours worked per week, mean (SD)	56.9	(13.7)	58.9	(13.8)	56.1	(13.6)	– 2.7	0.014
Number of weeks of vacation taken per year, mean (SD)	4.7	(1.7)	5.0	(1.9)	4.6	(1.6)	– 0.4	0.015
Number of CME days used per year, mean (SD)	6.6	(4.7)	7.1	(4.9)	6.4	(4.6)	– 0.7	0.083

Difference between males and females is percentage point difference for variables measured as a percentage. *p* values reflect comparison between men and women using two-sided *t* tests and Chi squared comparisons where appropriate



Note: *** indicates difference between female and male is statistically significant at $p < 0.001$.

** indicates difference between female and male is statistically significant at $p < 0.05$.

FIG. 1 Distribution of annual salary for male vs. female breast surgeons. ***Difference between female and male is statistically significant at $p < 0.001$; **Difference between female and male is statistically significant at $p < 0.05$

Medical Training

The mean time spent in practice was just over 17 years; men reported an average of 23.5 years compared with 15.0 years for women ($p < 0.001$; Table 2). Just over half

of respondents completed a fellowship; however, women were more likely to have done so (59.8%) compared with men (38.2%; $p < 0.001$). Among those completing a fellowship, women were four times more likely to have completed a fellowship in breast surgery compared with

TABLE 5 Annual income and factors affecting compensation of respondents

Characteristic	Full sample		Male		Female		Difference: female-male	
	(N = 782)		(N = 217)		(N = 565)		Difference	p value
Total income (salary plus bonus), mean (SD)	\$370,555	(\$177,086)	\$407,933	(\$170,719)	\$356,200	(\$177,537)	– \$51,733	< 0.001
Guaranteed income, mean (SD)	\$313,338	(\$224,332)	\$332,644	(\$398,434)	\$307,375	(\$130,237)	– \$25,269	0.246
<i>Compared to last year, total income, # (%)</i>								
Increased	275	(35.2%)	62	(28.6%)	213	(37.7%)	9.1	0.002
Decreased	145	(18.5%)	51	(23.5%)	94	(16.6%)	– 6.9	
Stayed the same	333	(42.6%)	100	(46.1%)	233	(41.2%)	– 4.8	
Don't know	29	(3.7%)	4	(1.8%)	25	(4.4%)	2.6	
<i>Income based on national survey of physician compensation, # (%)</i>								
Yes, AAMC	47	(6.0%)	7	(3.2%)	40	(7.1%)	3.9	0.001
Yes, MGMA	255	(32.6%)	63	(29.0%)	192	(34.0%)	5.0	
Yes, other	47	(6.0%)	13	(6.0%)	34	(6.0%)	0.0	
No	282	(36.1%)	102	(47.0%)	180	(31.9%)	– 15.1	
Don't know	151	(19.3%)	32	(14.7%)	119	(21.1%)	6.3	
<i>Income based on quality measures or quality performance, # (%)</i>								
Yes	278	(35.5%)	80	(36.9%)	198	(35.0%)	– 1.8	0.006
No	444	(56.8%)	129	(59.4%)	315	(55.8%)	– 3.7	
Don't know	60	(7.7%)	8	(3.7%)	52	(9.2%)	5.5	
Received a productivity bonus last year, # (%)	386	(49.4%)	98	(45.2%)	288	(51.0%)	5.8	0.339
Productivity bonus amount last year, mean (SD)	\$49,156	(\$76,728)	\$66,392	(\$80,942)	\$42,416	(\$74,163)	– \$23,976	0.026
Received a productivity bonus for non-revenue generating work, # (%)	138	(17.6%)	34	(15.7%)	104	(18.4%)	2.7	0.034
Productivity bonus for non-revenue generating work, mean (SD)	\$27,856	(\$28,667)	\$35,578	(\$30,702)	\$24,944	(\$27,563)	– \$10,634	0.130
Supplements salary outside of surgery, # (%)	154	(19.7%)	51	(23.5%)	103	(18.2%)	– 5.3	0.178

Difference between males and females is percentage point difference for variables measured as a percentage. *p* values reflect comparison between men and women using two-sided *t* tests and Chi squared comparisons where appropriate

men ($p < 0.001$). Women were also more likely than men to report educational debt at the end of medical school (74.3 vs. 58.1%, $p < 0.001$), and their educational debt was roughly double that of men (\$139,472 vs. \$79,056, $p < 0.001$).

Practice Description

The highest proportion of respondents worked in a hospital-based practice (42.7%), followed by 21.5% in academic medicine (Table 3). Among those in private practice, 16.3% had an ownership stake; men (19.8%) were twice as likely as women (10.1%) to be owners ($p = 0.007$). Among those with academic rank, only 22.6% were full professors. Men were three times more likely to have achieved that rank (51.5%) compared with women

(15.6%; $p = 0.001$). The majority of respondents (62.0%) practiced in urban areas with populations $> 150,000$, and most respondents practiced in the south (30.9%) compared with the west (18.3%), which is largely representative of ASBrS membership (“Appendix Table 7”). Although the majority of respondents (60.9%) practiced breast surgery exclusively, women were more likely to do so than men (71.2 vs. 34.1%; $p < 0.001$).

Workload

The number of breast cancers treated per year varied significantly, ranging from 36.7% of surgeons having 100 or fewer cases to 17.9% of surgeons having more than 200 cases (Table 4). Men were more likely to be on the lower end of the distribution with a greater share (53.0%) having

TABLE 6 Multivariate analysis of actual and predicted income by surgeon characteristics

Characteristic	Full sample		Unadjusted income			Adjusted income			
	N	(%)	Mean	(SD)	p value	Mean	(95% CI)	p value	
<i>Sex</i>									
Male	217	(27.7)	407,933	(170,719)	< 0.001	394,331	(368,459)	(420,202)	
Female	565	(72.3)	356,200	(177,537)		361,424	(346,767)	(376,080)	0.040
<i>Years of practice</i>									
Less than or equal to 5	123	(15.7)	324,989	(68,301)	0.007	335,411	(300,784)	(370,038)	
6–10	125	(16.0)	367,264	(128,301)		368,842	(336,308)	(401,375)	0.137
11–20	229	(29.3)	373,964	(147,977)		363,080	(340,181)	(385,979)	0.195
21–30	209	(26.7)	399,675	(258,400)		399,391	(374,335)	(424,448)	0.007
Greater than 30	96	(12.3)	361,693	(164,040)		372,868	(332,797)	(412,939)	0.204
<i>Fellowship trained</i>									
No	361	(46.2)	370,163	(213,380)	0.954	362,972	(342,878)	(383,066)	
Yes	421	(53.8)	370,892	(138,877)		377,058	(358,812)	(395,304)	0.363
<i>Practice type</i>									
Hospital-employed practice	333	(42.6)	380,424	(123,036)	< 0.001	392,905	(359,502)	(426,308)	
Multispecialty group private practice	119	(15.2)	388,008	(162,429)		393,704	(352,751)	(434,657)	0.970
Single specialty private practice	68	(8.7)	331,279	(174,144)		357,167	(296,795)	(417,539)	0.287
Solo private practice	53	(6.8)	273,078	(158,581)		304,213	(229,566)	(378,860)	0.032
Academic practice	168	(21.5)	388,757	(264,855)		336,947	(240,618)	(433,276)	0.367
Other practice	41	(5.2)	356,305	(118,036)		363,950	(297,034)	(430,866)	0.389
<i>Academic position</i>									
Other	6	(0.8)	278,417	(101,154)	0.010	356,340	(328,595)	(384,085)	
Assistant professor	75	(9.6)	367,703	(358,025)		419,191	(316,099)	(522,283)	0.330
Associate professor	49	(6.3)	376,163	(125,336)		407,810	(304,725)	(510,895)	0.422
Professor	38	(4.9)	464,132	(171,875)		458,452	(349,125)	(567,779)	0.128
<i>Ownership</i>									
Employee	623	(79.7)	380,524	(177,732)	0.003	374,549	(358,296)	(390,802)	
Partial owner	59	(7.5)	356,288	(144,477)		354,555	(300,344)	(408,767)	0.522
Owner	100	(12.8)	316,867	(181,762)		355,113	(299,942)	(410,285)	0.553
<i>Practice location</i>									
Noncontiguous U.S.	23	(2.9)	354,167	(245,325)	0.937	336,554	(265,510)	(407,599)	
Midwest	190	(24.3)	373,016	(124,727)		372,714	(348,002)	(397,425)	0.351
Northeast	184	(23.5)	364,110	(137,973)		368,211	(342,379)	(394,042)	0.413
South	242	(30.9)	369,803	(150,172)		361,623	(339,322)	(383,924)	0.508
West	143	(18.3)	379,334	(289,165)		391,289	(361,430)	(421,149)	0.162
<i>Practice setting</i>									
Rural	67	(8.6)	352,105	(119,275)	0.686	366,508	(345,926)	(387,091)	
Small city	221	(28.3)	371,615	(243,905)		354,642	(311,009)	(398,275)	0.633
Urban	262	(33.5)	364,751	(130,939)		371,698	(348,665)	(394,731)	0.744
Large urban	223	(28.5)	382,720	(161,104)		352,956	(224,565)	(481,347)	0.839
Other urban	9	(1.2)	349,444	(141,144)		379,547	(355,842)	(403,253)	0.417
<i>Percent of practice breast surgery</i>									
Less than 100%	306	(39.1)	391,017	(224,694)	0.010	396,133	(373,537)	(418,729)	
100%	476	(60.9)	357,401	(136,749)		354,112	(337,057)	(371,168)	0.010
<i>Percent of patients with Medicaid</i>									
Less than 25%	563	(72.0)	377,526	(186,823)	0.313	375,795	(362,448)	(389,142)	
25–75%	36	(4.6)	340,939	(186,209)		350,840	(323,102)	(378,579)	0.120
Greater than 75%	142	(18.2)	355,704	(115,194)		350,299	(237,002)	(463,597)	0.662

TABLE 6 continued

Characteristic	Full sample		Unadjusted income			Adjusted income		
	N	(%)	Mean	(SD)	p value	Mean	(95% CI)	p value
<i>Number of breast cancers treated</i>								
Less than 100	400	(51.2)	372,790	(200,659)	< 0.001	362,183	(341,044) (383,321)	
100–200	181	(23.1)	390,061	(150,649)		361,256	(342,686) (379,826)	0.951
Greater than 200	158	(20.2)	347,234	(150,873)		411,180	(380,667) (441,693)	0.016
<i>Number of biopsies</i>								
Zero	352	(45.0)	375,976	(127,478)	0.173	368,970	(350,659) (387,281)	
1–24	176	(22.5)	349,320	(120,442)		355,586	(330,057) (381,115)	0.406
25–100	144	(18.4)	365,098	(166,022)		368,109	(339,550) (396,668)	0.961
Greater than 100	110	(14.1)	394,329	(163,164)		402,781	(369,006) (436,555)	0.096
<i>Percent effort</i>								
Full-time	663	(84.8)	377,593	(175,428)	0.009	374,917	(362,142) (387,692)	
Part-time	119	(15.2)	331,348	(181,869)		346,253	(315,018) (377,488)	0.100
<i>Income based on quality</i>								
No	504	(64.5)	359,071	(196,416)	0.015	364,848	(349,809) (379,888)	
Yes	278	(35.5)	391,375	(132,995)		380,902	(360,116) (401,688)	0.238
<i>Receives a productivity bonus</i>								
No	396	(50.6)	359,262	(208,071)	0.071	374,119	(356,392) (391,847)	
Yes	386	(49.4)	382,141	(137,590)		366,899	(348,909) (384,888)	0.600
<i>Receives a productivity bonus for non-revenue generating work</i>								
No	644	(82.4)	365,555	(185,617)	0.088	369,209	(356,152) (382,266)	
Yes	138	(17.6)	393,888	(128,065)		376,838	(347,113) (406,562)	0.652
<i>Race</i>								
White/Caucasian	624	(79.8)	371,572	(184,640)	0.912	366,410	(353,049) (379,771)	
African American/Black	26	(3.3)	341,769	(150,969)		383,066	(316,492) (449,640)	0.631
Asian or Pacific Islander	86	(11.0)	377,516	(140,367)		388,098	(350,334) (425,862)	0.298
Native American/Alaskan	1	(0.1)	372,000	–		409,814	(72,756) (746,873)	0.801
More than one race	22	(2.8)	378,955	(149,050)		413,738	(340,777) (486,698)	0.214
Declined to report race	23	(2.9)	341,391	(149,824)		360,265	(289,068) (431,463)	0.869
<i>Marital status</i>								
Married/Remarried	637	(81.5)	376,614	(185,281)	0.181	372,548	(359,320) (385,776)	
Separated/Divorced/Widowed	53	(6.8)	360,000	(142,192)		361,488	(314,784) (408,193)	0.656
Single, cohabitating	28	(3.6)	322,989	(107,689)		363,587	(298,764) (428,410)	0.792
Single, living alone	64	(8.2)	339,802	(134,568)		361,279	(315,132) (407,426)	0.653
<i>Presence of children</i>								
No	320	(40.9)	360,578	(137,038)	0.190	359,446	(338,453) (380,439)	
Yes	462	(59.1)	377,466	(200,039)		378,250	(361,449) (395,051)	0.212
Total number of observations	782		782			782		

Unadjusted incomes are actual incomes by surgeon characteristic and the *p* value is that from an analysis of variance for ANOVA for differences in the means of income broken down by the levels of the categorical independent variable. Adjusted incomes are estimates from a multivariable linear regression of income as a function of gender, years of practice, fellowship training, practice type, academic rank, ownership, practice location, practice setting, percent of practice that is breast surgery, percent of practice Medicaid patients, number of breast cancers treated, number of biopsies performed, number of wRVUs, hours of work, whether income is based on quality, productivity bonus for revenue-producing work, productivity bonus for nonrevenue producing work, race, marital status, and presence of children

treated 100 breast cancer cases or fewer compared with women (30.4%; *p* < 0.001). Nearly half (45.5%) of the respondents did not perform image-guided biopsies. A

small percentage (14.1%) performed more than 100 biopsies, and this clinical activity was twice as likely among men (21.7%) compared with women (11.2%; *p* = 0.003).

Approximately half (52.3%) of respondents reported that their incomes were based on wRVUs, yet only 32.1% ($N = 251$) reported the actual numerical value for the previous year, and only 21.9% ($N = 171$) reported their conversion factor. Although women worked slightly fewer hours per week (56.1) than men (58.9; $p = 0.014$), they took fewer weeks of vacation (4.6 vs. 5.0; $p = 0.015$). Surgeons engaged in 6.6 days of CME per year with no significant differences between men and women.

Income

The average reported total annual compensation was \$370,555 (Table 5). Unadjusted income was significantly higher for men versus women: \$407,933 versus \$356,200 ($p < 0.001$). Women were more likely to report higher earnings compared with the previous year, and men were more likely to report a decrease ($p = 0.002$). Income for women was skewed toward lower salaries; among those earning more than \$400,000, men outnumbered women at every \$100,000 increment examined (Fig. 1).

Less than half of respondents (44.6%) reported that their income was based on a national database of physician compensation with Medical Group Management Association (MGMA most) frequently cited (Table 5). Women were more likely than men (47.1 vs. 38.2%) to have their salaries benchmarked to a national survey ($p = 0.001$). One-third of respondents (35.5%) reported that their incomes were based in some way on quality indicators of practice.

Approximately half of respondents received a productivity bonus with a mean amount of \$49,156. Although men and women were equally likely to receive a productivity bonus, men on average received \$23,976 more than women ($p = 0.026$). Less than one in five breast surgeons (17.6%) received a productivity bonus for nonrevenue generation work, and nearly the same percentage supplemented their salary outside of breast surgery (19.7%).

New Contracts

Among respondents, 126 (9 males) were within 5 years of completion of training. Average compensation was \$326,180, and nearly all (91.3%) received a signing bonus (average \$23,236), 80.2% received loan forgiveness (average \$6782), and 92.9% received relocation expenses (average \$7368).

Multivariate Analysis

Although a number of factors had a significant impact on compensation on univariate analysis, in the multivariate model, only gender, years of practice, practice type,

percent of practice of breast surgery, number of breast cancers treated, and number of wRVUs were significant (Table 6). After controlling for demographic, practice, pay and professional characteristics, there remained a persistent gender gap of \$32,907 or 8.3%.

DISCUSSION

With a response rate of nearly 40%, the average compensation for a surgeon practicing some or all breast surgery in the United States in 2017 was \$370,555. This represents a mean unadjusted increase of approximately \$40,000 (11%) since this survey was last performed in 2014. Surgeons with a practice limited only to breast surgery had an increase of \$31,000 (8.7%), while compensation for those who also practice general surgery increased by \$48,000 (12%). Academic surgeons reported the largest increase (20%) in compensation between the two time periods, a difference of \$80,000.

Several noteworthy differences in physician practice characteristics were observed between 2014 and 2018, including a decrease in the percentage of physicians in solo private practice from 12.3 to 6.8% and a corresponding increase in the percentage in hospital-based practice from 35.0 to 42.7%. This finding reflects national trends with regard to physician acquisition.² At the same time, the percentage of respondents whose practice was dedicated entirely to breast surgery increased from 54 to 61%. The reasons for these observations are likely multifactorial but may reflect both physician preferences and greater hospital demand for subspecialty care in breast surgery as comprehensive breast centers become more numerous across the country.³

More than half of the respondents reported supplementing their salary outside of surgery with various activities, such as expert witness testimony, various speaking engagements, and real estate investments. The rationale for these initiatives was not queried but highlights the opportunities that physicians commonly take advantage of to increase their total income, develop outside business interests, and/or diversify their revenue generating activities.

Workload may vary by practice type and setting, administrative and teaching responsibilities, and research funding. Previous studies have demonstrated that higher salaries for male physicians can be partly explained by increased clinical productivity. Yet based on our data, we cannot conclude that workload differences completely explain the gender gap, because only 52% of respondents in our study reported that their salary was based on wRVU targets and only 32% reported their wRVU totals. When considering other measures of workload, such as the

number of breast cancer cases treated, men were more likely to be in the lowest (< 100 cases/year) or the highest (> 300 cases/year) categories.

Among those who reported wRVUs, women generated less RVUs compared to men, although this may reflect several constraints that are more likely to affect women than men. First, women are still more likely than men to work part time, possibly to take time away from work to care for children or other family members and manage household responsibilities.⁴ However, it is notable that the majority (76%) of respondents were the primary breadwinners for their household, revealing that traditional gender norms may be shifting at least for this subpopulation of surgeons. Moreover, controlling for hours of work does not eliminate the significant difference in wRVUs between men and women.

Second, recent studies have noted women tend to spend more time with patients than men and do not see as many patients during a given workday on average. This may be due to women being more likely to either be assigned or take on additional, nonrevenue-generating roles, such as mentoring, teaching, and committee work.⁴ This type of work is less likely to be compensated. In our study, only 17.6% of respondents reported receiving a bonus for non-revenue-generating work.

Third, although there was no significant gender difference in the likelihood of receiving a productivity bonus, the amount was significantly lower for women (\$66 K vs. \$42 K, $p = 0.026$). This might reflect differences in compensation for different types of surgery. For example, in our current survey, women were less likely to practice general surgery, which typically generates higher billing than breast surgery alone. Accordingly, we observed those who practiced 100% breast surgery had slightly lower workloads compared with those who also practice general surgery.

Gender differences in compensation have been well documented in medicine.^{5,6} A recent survey by Doximity of all medical specialties reported a 27.7% wage gap (\$105,000) between men and women for 2017.⁷ Much of this overall gap between male and female physicians is due to gender differences in specialty, which is reduced in our survey given our focus on a narrow subspecialty within surgery. In the current survey, we report a gender wage gap among breast surgeons that is approximately half that reported among all physicians. It also has been observed that this gap tends to increase at higher salary brackets, and our survey captured fewer respondents at this level. In addition, one aspect that our survey is unable to assess is whether the higher starting salaries of new graduates persist as they mature in their practice. Yet controlling for a

rich set of practice, productivity, and pay characteristics, we find that an 8.3% gender gap persists after multivariate analysis.

In the 2014 survey, it was speculated that percutaneous needle biopsies were a source of greater income. This did not have any statistical significance in the current study. It was noted that among the survey participants 45% did not perform any percutaneous biopsies, and of those doing these procedures, 67% performed < 25 percutaneous biopsies during the previous year.

The percentage of women represented in the survey in 2018 was 73.3%, increased from 64.3% previously. There may be several reasons for this. Approximately 95% of breast surgery fellows in the United States are women, and our survey was well represented by those in the first few years out of training. Recent data highlighting the gender wage gap also has brought this issue to the attention of many young female physicians, who may be more eager to participate in such surveys compared to older men⁶.

Our study is limited by the fact that compensation data is self-reported. Other limitations include the fact that male members of the society were not as likely to participate compared with female members; the percentage of women who responded to the survey (73%) was higher than the overall percentage of women who are active members of the Society (58.5%). Our mean compensation value of \$370,555 is therefore likely less than the actual value of mean compensation, given the gender gap that we observed. There are likely additional variables that we were not able to control for in the multivariable model. Finally, there were several independent factors associated with income differences (Table 6). It is important to recognize that although gender is clearly an independent factor in compensation, there were many other independent associations related to these income differences.

Data on compensation for breast surgeons are limited, and commonly referenced sources, such as the AAMC and MGMA, lack significant granularity with regard to variation in practice type and setting. The ASBrS recognizes this shortcoming and sought to address this knowledge gap with expanded questions in the current survey. Additional work is needed to refine this survey further and establish benchmarks that are appropriate for those practicing breast surgery, and where possible continue to eliminate unexplained disparities.

DISCLOSURES The authors declare that they have no conflicts of interest.

APPENDIX

See Table 7.

TABLE 7 Demographic comparison of survey respondents and society membership

	Total			Male			Female		
	Members (%)	Survey (%)	Diff (%)	Members (%)	Survey (%)	Diff (%)	Members (%)	Survey (%)	Diff (%)
Percent of total	100.0	100.0		41.5	28.6	– 13.0	58.5	71.3	12.9
<i>Percent by region</i>									
Midwest	22.3	24.9	2.7	23.4	22.4	– 1.1	21.4	26.0	4.6
Northeast	21.2	23.4	2.2	17.4	21.2	3.8	23.8	24.3	0.5
South	35.3	32.9	– 2.4	43.1	42.1	– 1.0	29.7	29.1	– 0.7
West	20.2	18.0	– 2.2	14.5	13.1	– 1.4	24.2	19.9	– 4.3

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