

## Promotion Disparities in Academic Urology



**Benjamin N. Breyer, Christi Butler, Raymond Fang, William Meeks, Sima P. Porten, Amanda C. North, and Jennifer T. Anger**

<b>OBJECTIVE</b>	To better understand promotion timelines across gender and race/ethnicity and how academic output impacts promotion in urology.
<b>METHODS</b>	We examined the 2017 census. An academic subset was asked questions regarding their promotion timeline. We obtained demographic, academic output, and family responsibility data.
<b>RESULTS</b>	Of 2926 academic urologists who identified a position of Assistant, Associate, or Full professor, 11.2% were women, 75% were White, and 94% were non-Hispanic. Men authored more papers and achieved principal investigator status more often than women. Non-Hispanics authored more papers than Hispanics. On average, women took 1.2 years longer than men to advance from Assistant to Associate Professor (7.3 years [95% CI: 6.8-7.8] vs 6.1 years, [95% CI: 5.8-6.6, $P < .001$ ]). Advancement from Associate to Full Professor was similar between women and men (6.0 years [95% CI: 5.1-6.9] vs 6.6 [95% CI: 6.1-7.1, $P = .25$ ]). Compared to women, men were more likely to experience rapid promotion ( $\leq 4$ years) to Associate Professor (odds ratio 3 [95% CI: 1.8-5.1]). There was no statistical difference across race/ethnicity for promotion from Assistant to Associate, Associate to Full Professor, or rapid promotion.
<b>CONCLUSION</b>	We identified disparities in promotion times based on gender but not race and ethnicity. The number of <i>under-represented minority</i> faculty in urology is low. Understanding the causes of disparities should be a priority in order to support fair promotion practices and retention of diverse faculty. UROLOGY 138: 16–23, 2020. © 2020 Elsevier Inc.

In business, a diverse workforce confers a competitive market place advantage.<sup>1</sup> Similarly, advantages are seen when an academic medical center has diverse faculty, including novel idea generation, improved mentoring, and the training of a culturally competent physician workforce.<sup>2</sup> Evidence exists that racial/ethnic minority patients have higher satisfaction scores, better compliance, and increased clinical trial participation when a member of the clinical team is from a concordant racial/ethnic group.<sup>3-6</sup> Groups who are under-represented in medicine (URM) include African American, Hispanic/Latino, Alaskan and Hawaiian Natives, American Indian, and other Pacific Island populations. URM physicians are more likely to treat the underinsured and the uninsured, and are more likely to work in underserved communities.<sup>7,8</sup> Training more URM physicians has been suggested as a key mechanism to reduce health disparities.<sup>5</sup> While

URM represent 32%-35% of the US population, they accounted for only 9% of all US medical faculty in 2017.<sup>9,10</sup> Similarly, only 8.1% of urologists identified as an URM according to the 2017 American Urological Association (AUA) Census.<sup>11,12</sup>

Similar to URM, long-standing gender disparities exist in urology. Increases in the proportion of women entering urology have occurred over the past 2 decades. In 1995, women composed 1.2% of board certified urologists.<sup>13</sup> In 2017, 8.8% of all urologists and 21% of urologists under 45 years of age were women.<sup>11</sup> While the proportion of women in urology is increasing, women remain under-represented relative to the population of women seeking urologic care (women constitute 30% of urologic patients).<sup>11</sup> Compared to men, women in medicine remain under-represented in administrative leadership positions, have not achieved similar promotion progress and are paid less compared to men.<sup>14-16</sup>

Our group previously reported that, in a small cohort of academic urologists, men advanced to Associate Professor at an average of 1.2 years faster than women.<sup>17</sup> Academic promotion relies on multiple factors including scholarly output, administrative duties, service to one's institution or specialty, and involvement in medical education. In academic medicine, promotion has evolved with many institutions creating tracks specifically intended for

**Funding:** University of California San Francisco Department of Urology and Cedars-Sinai Medical Center Department of Surgery, Division of Urology.

From the Department of Urology, University of California – San Francisco, San Francisco, CA; the Department of Biostatistics and Epidemiology, University of California – San Francisco, San Francisco, CA; the American Urological Association, Department of Data Management & Statistical Analysis; the Department of Urology, Montefiore Medical Center, Bronx, NY; and the Division of Urology, Cedars-Sinai Medical Center, Los Angeles, CA

Address correspondence to: Christi Butler, M.D., University of California, San Francisco, Department of Urology, San Francisco General Hospital, 1001 Potrero Ave Suite 3A20, San Francisco, CA 94117. E-mail: christi.butler@ucsf.edu

Submitted: June 7, 2019, accepted (with revisions): October 9, 2019

clinicians or those focused in education. Timely promotion is important for retention of faculty and salary parity. It is unclear if gender and racial/ethnic promotion disparities exist in the larger academic urology population. Our objective was to understand whether gender or racial/ethnic disparities exist in the promotion of academic urologists by analyzing data from the AUA Annual Census. We sought to examine what factors were associated with rapid promotion. We hypothesized that variations in promotion timelines exist based on gender and racial/ethnic background.

## MATERIAL AND METHODS

### Study Population

We analyzed data from the 2017 AUA Census, which is a specialty-wide survey distributed to the urology community in the United States.<sup>11</sup> The AUA maintains a live master file of all practicing urologists (urologist population) in the United States while also collects responses (urologist samples) to its annual Census survey from all practicing urologists regarding their demographic profile, education, and practice characteristics. The 2017 AUA Annual Census responses were collected from May 2017 to September 2017. A total of 2323 derived from 12,517 practicing urologists in the country. Each urologist in the sample was assigned a weight to represent some similar urologists in the population using a standard poststratification weighting technique<sup>1</sup> to adjust for survey sampling bias. Factors used in determining sample weights were gender, geographic location, certification status, and years since initial certification. In all of the tables. A subset endorsed being an academic urologist (actual survey respondents  $n = 578$ ). The cohort of 578 was used to generate the final poststratification weighted academic cohort of

3157. Out of 3157 academic urologists, 2926 provided a date of becoming either an Assistant, Associate, or Full professor. In reporting the results, we provided both the unweighted (actual number of Census respondents) and the weighted (urologist population represented).

### Predictor Variables

We obtained self-reported race/ethnicity and gender data from the AUA Census. Respondents were asked: “Are you of Hispanic origin (yes, no, I prefer not to answer)?” and “What is your race (American Indian or Alaskan Native, Asian, Black/African American, Native Hawaiian or Other Pacific Islander, White, other/multiracial, and I prefer not answer)?” Participants reported numbers of weekly hours on clinical and nonclinical activities: “Provide your best estimate for the number of work hours spent on clinical activities (eg, rounding, seeing patients, ordering and reviewing laboratory tests, taking calls, etc.) in a typical week.” and “Provide your best estimate for the number of work hours spent on nonclinical activities (eg, administration, teaching, research, etc.) in a typical week.” Participants were asked to report the “primary subspecialty area in which you practice (General without subspecialty, Oncology, Pediatrics, Endourology/Stone Disease, Female Pelvic Medicine and Reconstructive Surgery, Erectile Dysfunction, Male Infertility, Renal Transplantation, Male Genitourinary Reconstruction, Robotic/Laparoscopic Surgery).” Given the small numbers of urologists after stratification, Erectile Dysfunction, Male Infertility, Renal Transplantation, Male Genitourinary Reconstruction, Robotic/Laparoscopic Surgery were grouped together as Other.

A subset of the Census respondents who endorsed an academic appointment were asked to report “What is your total number of published peer reviewed manuscripts? (<10, 10-29, 30-49, 50-99, ≥100)?” In addition, history of leadership in a funded research project was obtained: “Have you been a Principal Investigator

**Table 1.** Academic urologists characteristics stratified by gender and race/ethnicity (count [percentage]) (Total numbers of weighted [unweighted]: 2926 [546] academic urologists identified as either assistant, associate, or full professors)

	Women		Men		P Value
	Sample	POP (PCT)	Sample	POP (PCT)	
Published manuscripts	78	329 (100)	468	2597 (100)	
<50	61	261 (79.5)	228	1286 (49.5)	<.001
50-99	11	36 (10.9)	112	576 (22.2)	
≥100	6	32 (9.6)	128	735 (28.3)	
PI status					
PI	30	127 (38.5)	236	1227 (47.2)	.089
Non-PI	47	199 (60.6)	209	1208 (46.5)	
Subspecialty					
General without a primary subspecialty	9	33 (10.1)	70	442 (17.0)	<.001
Oncology	7	41 (12.5)	153	877 (33.8)	
Pediatrics	22	79 (23.9)	66	331 (12.7)	
Endourology/stone disease	5	26 (7.9)	47	258 (9.9)	
Female urology	28	101 (30.8)	36	167 (6.4)	
Others	7	48 (14.6)	96	522 (20.1)	
Clinical hours per week					
≤33	25	115 (35.1)	120	830 (32.0)	.75
34-49	25	101 (30.7)	136	731 (28.1)	
≥50	28	113 (34.2)	212	1036 (39.9)	
Nonclinical hours per week					
≤8	22	93 (28.2)	122	714 (27.5)	.66
9-17	29	116 (35.2)	193	1052 (40.5)	
≥18	27	120 (36.6)	153	831 (32.0)	

**Table 2.** Academic urologists characteristics stratified by gender and race/ethnicity (count [percentage]) (total numbers of weighted [unweighted]: 2926 [546] academic urologists identified as either assistant, associate, or full professors)

	Hispanic		Non-Hispanic		P Value	White Only		Asian Only		Black Only		Others		P Value
	Sample*	POP (PCT)†	Sample*	POP (PCT)†		Sample*	POP (PCT)†	Sample*	POP (PCT)†	Sample*	POP (PCT)†	Sample	POP (PCT)	
Published manuscripts‡	13	95 (100)	521	2765 (100)		412	2200 (100)	86	462 (100)	13	62 (100)	5	15 (100)	
<50	11	88 (92.6)	271	1415 (51.2)	.012	221	1173 (53.3)	42	226 (49.0)	7	33 (53.8)	3	7 (44.6)	.04
50-99	0	0 (0)	122	608 (22.0)		83	398 (18.1)	27	139 (30.0)	6	29 (46.2)	1	4 (26.8)	
≥100	2	7 (7.4)	128	743 (26.9)		108	629 (28.6)	17	97 (21)	0	0 (0.0)	1	4 (28.6)	
PI status§														
PI	6	22 (22.9)	256	1304 (47.2)	.097	206	1080 (51.4)	40	170 (40.2)	7	30 (48.9)	2	7 (43.7)	.31
Non-PI	6	60 (62.8)	244	1323 (47.9)		188	1020 (48.6)	43	254 (59.8)	6	32 (51.1)	3	8 (56.3)	
Subspecialty														
General w/o a subspecialty	3	21 (21.9)	76	455 (16.5)	.001	67	417 (19.0)	7	39 (8.4)	3	11 (18.2)	0	0 (0.0)	.93
Oncology	2	9 (9.0)	154	892 (32.2)		120	679 (30.9)	25	156 (33.8)	5	32 (51.0)	0	0 (0.0)	
Pediatrics	1	3 (3.6)	84	377 (13.6)		66	300 (13.6)	16	69 (15.0)	1	4 (6.5)	1	2 (15.1)	
Endo/stone disease	1	4 (4.1)	51	281 (10.2)		38	186 (8.5)	10	73 (15.7)	0	0 (0.0)	1	3 (19.1)	
Female Urology	1	2 (2.4)	61	259 (9.4)		48	205 (9.3)	9	39 (8.4)	2	8 (12.1)	3	10 (65.9)	
Others	5	56 (59.0)	95	502 (18.1)		73	412 (18.7)	19	86 (18.7)	2	8 (12.5)	0	0 (0.0)	
Clinical hours per week														
≤33	5	28 (29.5)	139	909 (32.9)	.98	109	689 (31.3)	23	180 (39.0)	4	24 (38.6)	2	6 (39.1)	.56
34-49	3	28 (29.3)	156	794 (28.7)		125	660 (30.0)	25	113 (24.4)	2	6 (10.3)	2	6 (41.8)	
≥50	5	39 (41.2)	226	1062 (38.4)		178	851 (38.7)	38	169 (36.6)	7	32 (51.1)	1	3 (19.1)	
Nonclinical hours per week														
≤8	7	56 (59.2)	132	726 (26.3)	.045	109	594 (27.0)	19	123 (26.6)	3	12 (19.8)	2	7 (45.8)	.64
9-17	3	29 (31.0)	217	1118 (40.4)		167	878 (39.9)	39	188 (40.7)	4	16 (26.2)	0	0 (0.0)	
≥18	3	9 (9.8)	172	921 (33.3)		136	728 (33.1)	28	151 (32.7)	6	34 (54.0)	3	8 (54.2)	

\* Sample = unweighted sample.

† POP (PCT) = weighted sample size (column percentage); subtotals may not add up to the overall total due to rounding errors.

‡ Number of peer-reviewed papers that have ever been published by 2017.

§ PI status, principal investigator. Being a PI means the person has ever been a PI with 1 or more grants by 2017, does not include nongrant funded clinical projects.

(PI) in grant-funded projects only? (No, Yes, I don't know/I prefer not to answer)?"

### Outcome Variables

Academic respondents were asked to report the calendar year in which they became an Assistant Professor, Associate Professor, and Full Professor. Based on these responses, we calculated time from Assistant to Associate and Associate to Full Professor in years. This did not take into account any leave time they may have had prior to the year of promotion. We defined "rapid" promotion as someone promoted from Assistant to Associate rank in 4 years or less (top 28% of cohort).

### Statistical Analysis

All data were analyzed using the Complex Samples module in SPSS (SPSS Statistics for Windows, Version 23.0. Armonk, NY) to report a representative estimate of all academic urologists. Continuous outcome variables were analyzed with Student's *t* tests, and binary outcomes were analyzed with the Pearson chi-square test. All data were assessed for normality. We used multivariate logistic regression with outcome of rapid promotion with a priori confounders and adjusted for sex, race, number of peer-reviewed papers, subspecialty, PI status, and nonclinical hours worked. All tests were 2-sided and statistical significance was defined as  $P \leq .05$ .

## RESULTS

Out of 2926 urologists, 2597 were men (88.8%) and 329 (11.2%) were women (Table 1). Academic urologists were

majority White (75.0%), followed by Asian (15.8%) Black (2%), and Hispanic (3%). The remainder of the academic cohort identified as multiracial or a race other than White, Asian, or Black (Table 2). Men and non-Hispanics on average authored more papers than women and Hispanic urologists ( $P < .001$  and  $P = .012$ , respectively).

Out of 1750 academic urologists who reported achieving Associate rank at the time of the census, 126 were women (7%) and 1624 were men (93%). Men were promoted to Associate Professor from Assistant in 6.1 years on average whereas it took 7.3 years for women to be promoted ( $P < .001$ ) (Table 3). The mean time for promotion to Associate from Assistant did not differ significantly between racial/ethnic groups. Other factors that significantly shortened time of promotion to Associate Professor included increased number of published peer-reviewed papers ( $P < .001$ ), PI status ( $P < .001$ ), and more nonclinical hours ( $P = .011$ ). Those who published <50 papers had an average of 7.6 years to promotion, publishing 50-99 papers had an average of 6.3 years to promotion, and greater than 100 papers had an average of 5 years to promotion. PIs were more likely (5.5 years) to be promoted on average than non-PIs (7.8 years,  $P < .001$ ). Urologists having 18 hours or more of nonclinical working time had faster promotion times on average (5.5 years) compared to those with 9-17 nonclinical hours (6.5 years) or those with less than 8 nonclinical hours (6.7 years;  $P = .011$ ). Subspecialty and number of clinical hours did not have an impact on promotional time to Associate Professor ( $P = .062$  and  $P = .082$ , respectively).

We also examined promotion time to Full Professor from Associate Professor (Table 4). Out of 1144 Urologists, 1092 (95%) were men and 51 (5%) were women. Men had an average of 6.6 years until promotion whereas women had an average of

**Table 3.** Average number of years from assistant to associate professor (total numbers of weighted and unweighted: 1750 [344])

	Group	Weighted (Unweighted) Count	No. of Years	95 Confidence Interval	P Value
Gender	Male	1624 (311)	6.1	(5.7-6.5)	<.001
	Female	126 (33)	7.3	(6.8-7.8)	
	Total	1750 (344)	6.2	(5.8-6.6)	
Race/ethnicity	White only	1334 (261)	6.1	(5.6-6.5)	.42
	Others	314 (64)	6.4	(5.7-7.2)	
	Asian only	273 (55)	6.5	(5.6-7.3)	.44
	Others	1376 (270)	6.1	(5.6-6.5)	
	Black only	33 (7)	6.4	(5.3-7.5)	.6
	Others	1615 (318)	6.1	(5.7-6.5)	
	Hispanic	17 (4)	4.3	(2.3-6.3)	.062
Non-Hispanic	1687 (333)	6.2	(5.8-6.6)		
Published manuscripts	<50	562 (119)	7.6	(6.8-8.5)	<.001
	50-99	488 (105)	6.3	(5.7-6.9)	
	≥100	700 (120)	4.9	(4.5-5.3)	
PI status	PI	1113 (215)	5.5	(5.1-5.9)	<.001
	Non-PI	514 (111)	7.8	(6.8-8.7)	
Subspecialty	General w/o subspecialty	184 (30)	8.5	(6.18-10.83)	.030
	Oncology	594 (110)	5.7	(5.1-6.3)	
	Pediatrics	266 (58)	6.8	(6.1-7.4)	
	Endourology/stone disease	176 (37)	6.10	(5.09-7.10)	
	Female urology	200 (44)	5.67	(4.97-6.38)	
	Others	330 (65)	5.65	(5.00-6.30)	
Clinical h/wk	<33	566 (91)	5.7	(5.0-6.5)	.082
	34-49	483 (101)	6.1	(5.5-6.7)	
	≥50	701 (152)	6.6	(6.1-7.1)	
Nonclinical h/wk	≤8	416 (76)	6.7	(5.8-7.5)	.01
	9-17	672 (137)	6.5	(5.8-7.2)	
	≥18	662 (131)	5.5	(5.2-5.9)	

**Table 4.** Average number of years from associate to full professor (total numbers of weighted and unweighted: 1144 [206])

		Weighted (Unweighted) Counts*	No. of Years	95 Confidence Interval	P Value
Gender	Male	1092 (195)	6.6	(6.1-7.1)	.25
	Female	51 (11)	6.0	(5.1-6.9)	
	Total	1144 (206)			
Race/ethnicity	White only	879 (156)	6.2	(5.6-6.8)	.21
	Others	177 (35)	7.0	(6.0-8.1)	
	Asian only	146 (28)	7.0	(5.7-8.2)	.33
	Others	911 (163)	6.3	(5.7-6.9)	
	Black only	23 (5)	6.8	(5.5-8.1)	.56
	Others	1033 (186)	6.4	(5.8-6.9)	
	Hispanic <sup>§</sup>	4 (1)	5.0	n/a	
Published manuscripts <sup>†</sup>	Non-Hispanic	1102 (199)	6.5	(6.0-7.0)	<.001
	<50	157 (30)	9.5	(7.5-11.4)	
	50-99	326 (64)	7.2	(6.0-8.5)	
	≥100	660 (112)	5.6	(5.1-6.1)	
PI status <sup>‡</sup>	PI	781 (139)	6.2	(5.8-6.6)	.10
	Non-PI	267 (53)	7.6	(6.0-9.2)	
Subspecialty	General w/o subspecialty	134 (18)	8.4	(5.5-11.3)	.013
	Oncology	422 (72)	6.1	(5.2-7.0)	
	Pediatrics	167 (31)	8.3	(7.0-9.5)	
	Endourology/stone disease	80 (18)	5.3	(4.1-6.4)	
	Female urology	120 (26)	6.4	(5.5-7.3)	
	Others	221 (41)	5.7	(4.8-6.6)	
Clinic h/wk	<33	415 (63)	6.8	(5.6-7.9)	.90
	34-49	306 (58)	6.4	(5.5-7.3)	
	≥50	422 (85)	6.5	(5.9-7.2)	
Nonclinic h/wk	≤8	240 (41)	6.7	(5.8-7.7)	.69
	9-17	458 (82)	6.8	(5.8-7.9)	
	≥18	446 (83)	6.3	(5.4-7.2)	

\* Weighted counts = subtotals may not add up to the overall total due to rounding errors.

<sup>†</sup> Number of peer-reviewed papers that have ever been published by 2017.

<sup>‡</sup> PI status, principal investigator. Being a PI means the person has ever been a PI with 1 or more grants by 2017, does not include non-grant funded clinical projects.

<sup>§</sup> Use with caution due to very small sample size.

6.0 years ( $P = .25$ ). Seventy-seven percent of urologists identified as White only, 13% identified as Asian only, 2% identified as Black only, and 0.3% identified as Hispanic. No race or ethnicity had any statistical differences in time to promotion to Full Professor in comparison to other races or ethnicities. As seen previously, the number of published papers ( $P < .001$ ) were statistically associated with shorter times to promotion to Full Professor. Those who published more had faster promotion times (less than 50 papers promoted on average in 9.5 years vs greater than 100 papers promoted in an average 5.6 years). Urologic oncologists were promoted faster than other subspecialties ( $P = .014$ ). Unlike promotion to Associate Professor, PI status and the number of clinical and nonclinical hours were not statistically significant ( $P = .1$ ,  $P = .9$ , and  $P = .69$ , respectively) with respect to promotion to Full Professor.

Finally, we examined which factors were associated with rapid promotion to Associate Professor (4 years or less) (Table 5). In the univariate analysis, men were more likely to be promoted quickly (odds ratio [OR] 3.0, 95%CI 1.8-5.1,  $P < .001$ ). Academics with 50-99 peer-reviewed manuscripts (OR 3.4, CI 1.5-8) and those with 100 and greater (OR 6.9, CI 3.2-14.8) were more likely to achieve a rapid promotion than urologists with less than 50 ( $P < .001$ ). PIs had a faster promotion than non-PIs (OR 0.4, CI 0.2-0.8,  $P = .01$ ). Race/ethnicity, subspecialty, and number of clinical and nonclinical hours had no statistical impact on rapid promotion in the univariate model and therefore these variables were excluded in the final multivariate analysis.

## DISCUSSION

We examined the academic cohort of the AUA Census and found disparities in the time taken for promotion across academic rank based on gender. During promotion from Assistant to Associate, women took 1.2 years longer than men. Furthermore, men's odds of achieving a rapid promotion were 3 times higher than women. Our previous analysis of 2014 AUA Census data revealed that more women were fellowship-trained (54.9% vs 34.9%,  $P < .001$ ) and in academic practices (33.2% vs 21.9%,  $P = .03$ ) as compared to men.<sup>18</sup> Given the higher rate of fellowship training and greater likelihood of pursuing academics among women, similar promotion rates between men and women might be expected. However, there was a 1.2 year delay in promotion for women.

The explanation for differences in promotion between men and women is likely multifactorial. First, women may disproportionately assume more clinical, administrative, and/or teaching roles, permitting less time to author publications or grants. This could be deduced based on the finding in the AUA census that women have the same average number of nonclinical hours, and less clinical hours, but less publication productivity according to Mayer et al.<sup>19</sup> Our findings suggest that faculty who have greater than 18 hours of nonclinical time will be promoted



**Table 5.** Fast promotion from assistant professor to associate professor (total numbers of weighted and unweighted: 1750 [344])

		Sample	Population*	Univariate			Multivariate		
				OR	95 CI	P Value	OR	95 CI	P Value
Gender	Female	33	126	1.0	Baseline	<.001	1.0	Baseline	.008
	Male	311	1624	3.0	(1.8-5.1)		2.3	(1.3-4.2)	
Race/ethnicity <sup>†</sup>	White only	261	1334	1.4	(0.6-3.0)	.41	—	—	—
	Others	64	314	1.0	Baseline		—	—	—
	Asian only	55	273	0.8	(0.4-1.9)	.67	—	—	—
	Others	270	1376	1.0	Baseline		—	—	—
	Black only	7	33	0.3	(0.04-2.8)	.30	—	—	—
	Others	318	1615	1.0	Baseline		—	—	—
	Non-Hispanic <sup>‡</sup>	333	1687	0.4	(0.05-2.6)	.31	—	—	—
Published manuscripts <sup>§</sup>	Hispanic	4	17	1.0	Baseline		—	—	—
	<50	119	562	1.0	Baseline	<.001	1.0	Baseline	<.001
	50-99	105	488	3.4	(1.5-8.0)		3.3	(1.4 - 7.8)	
PI status <sup>¶</sup>	≥100	120	700	6.9	(3.2-14.8)		6.6	(3.1 - 14.3)	
	PI	215	1113	1.00	Baseline	.01	1.00	Baseline	.33
Subspecialty <sup>†</sup>	Non-PI	111	514	0.4	(0.2-0.8)		0.72	(0.4 - 1.4)	
	General without subspecialty	30	184	1.0	Baseline	.24	—	—	—
	Oncology	110	594	2.4	(0.7-8.0)		—	—	—
	Pediatrics	58	266	0.9	(0.2-3.8)		—	—	—
	Endourology/stone disease	37	176	2.9	(0.7-11.5)		—	—	—
	Female urology	44	200	2.0	(0.5-7.9)		—	—	—
Clinical h/wk <sup>†</sup>	Others	65	330	1.9	(0.5-7.4)		—	—	—
	<33	91	566	1.0	Baseline	.10	—	—	—
	34-49	101	483	0.7	(0.3-1.3)		—	—	—
	≥50	152	701	0.5	(0.2-0.9)		—	—	—
Nonclinical h/wk <sup>†</sup>	≤8	76	416	1.0	Baseline	.31	—	—	—
	9-17	137	672	0.9	(0.5-1.8)		—	—	—
	>18	131	662	1.4	(0.8-2.7)		—	—	—

\* POP (PCT) = subtotals may not add up to the overall total due to rounding errors.

<sup>†</sup> Not included in multivariate analysis due to insignificance during univariate analysis.

<sup>‡</sup> Hispanic status was not included in this multivariate regression analysis due to very small sample size.

<sup>§</sup> Number of peer-reviewed papers that have ever been published by 2017.

<sup>¶</sup> PI status, principal investigator. Being a PI means the person has ever been a PI with 1 or more grants by 2017, does not include non-grant funded clinical projects.

more quickly and that both genders have similar amounts of nonclinical time. Women could be expected to undertake administrative and educational tasks that do not lead to easily quantifiable or recognized productivity outcomes for promotion. Based on a question from the 2018 AUA Census, women urologists bear more of the daily family responsibilities than men urologists.<sup>20</sup> With extra family care duties, women may have reduced time available for paper and grant writing.

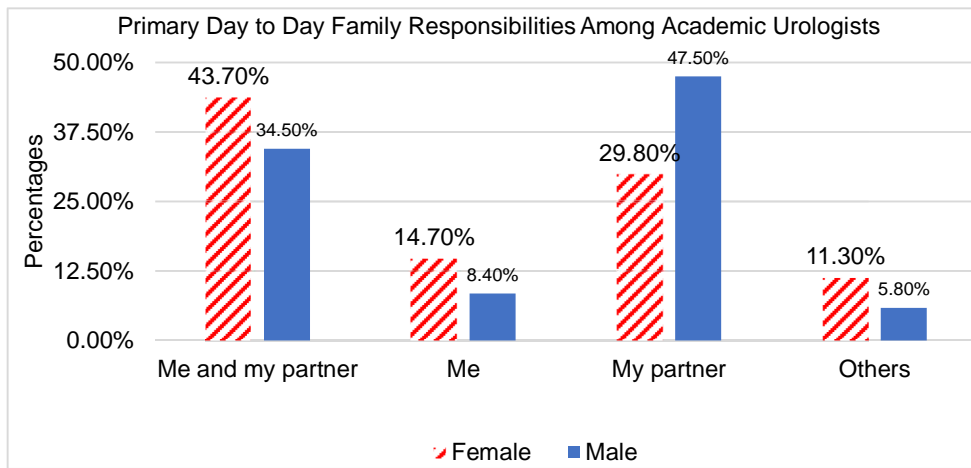
Another explanation for gender differences in promotion is that deserving women are less likely to be promoted than men because of ongoing gender bias in some academic centers. Women remain under-represented in senior faculty roles in urology.<sup>14</sup> Other possible explanations may include that there may be more opportunities for men than females within the field. The urologic patient population is majority male (70%), studies have shown that a majority of patients prefer a provider of the same gender.<sup>21</sup> Regardless of the reason, we must continue to mentor and encourage academic success among a diverse population of urologists so that the next generation of urologists—particularly women, since they are rapidly contributing to the

urology work force—has gender and racial/ethnic concordant role models.

Average promotion times were similar across urologists stratified by racial and ethnicity. The number of URM faculty in academic urology was extremely low when compared to the racial and ethnic composition of the United States and Canada. Encouraging racially and ethnically diverse populations of students to pursue surgical fields, particularly urology, is key to increasing the diversity in our specialty.<sup>12</sup>

Promotion was associated with PI status as well as the numbers of publications. More nonclinical time was associated with promotion. Assuming that nonclinical time is synonymous with dedicated research time, the finding emphasizes the importance of protected research time in achieving academic success. Further research focusing on the role of protected time and how one takes advantage of it (writing grants vs adding on emergency cases) is needed.

Our study has limitations. Data on the number of papers written and PI status were reported by the time the AUA Census was taken rather than before promotion. Many factors such as manuscripts written and hours worked are self-reported. It is possible that 1 gender or racial/ethnic group could over or under-report these data.



**Figure 1.** Gender comparison of who takes on primary, family responsibilities within the household. Compared to men, most women felt there was an even distribution of family responsibilities (female 43.7% vs male 34.5%). A larger percentage of woman felt they solely took on family responsibilities as compared to men (female 14.7 vs male 8.4%). Most men felt their partner took on the primary, family responsibility (female 29.8 % vs male 47.5%). Few urologists felt others assumed primary, family responsibility (female 11.3% vs males 5.8%). (Color version available online.)

Self-reporting could be subject to recall bias and, for older urologists, data may be less reliable due to distant recall. Further, our reported data of years to promotion does not take into account any time that was taken off for nonwork purposes, so this is not a reflection of actual working time to promotion. Differences in female promotion may be partially confounded by the observation that women represent a disproportionate number of the nononcology faculty as compared to oncology faculty. It is possible that our findings could be representative of differences in promotion between nononcology and oncology faculty, however we do not have the stratified data to discern this. Additionally, the number of African American and Hispanic urologists was quite low overall, making comparisons underpowered and potentially spurious.

Future research directions should seek to better understand causes of promotion disparity. We need to understand how work production and life priorities for both genders are impacted by child and elder care.<sup>18</sup> We can assume that motherhood plays a significant role in the promotion differences we identified. Further research should examine the impact of newer institutional policies enacted to ameliorate promotion disparities and promote faculty retention such as the ability to stop the promotion clock due to maternal leave, research bridge funding targeted to URM and assigning promotion credit for all contributing roles. Future research should attempt to understand the faculty member's perspective on whether their promotion was timely; were they appropriately informed of the promotion process early enough; were they mentored sufficiently; and did they have the needed support from their Chair.

Our findings highlight an opportunity to restructure how to better enhance promotional opportunities for women and URM. These results could spark the discussion for the consideration of nontraditional criteria for promotion such as interests in working with under-represented populations

or community driven work, which can negatively impact productivity. Achieving and maintaining greater diversity in our faculty ranks will give urology a competitive advantage over other specialties and promote recruitment of the most talented and diverse medical students into our residencies (Fig. 1).

## CONCLUSION

We identified disparities in promotion times based on gender but not race and ethnicity. The number of URM faculty in urology is low. Understanding the causes of disparities should be a priority in order to support fair promotion practices and retention of diverse faculty.

## References

1. Jayne MEA, Dipboye RL. Leveraging diversity to improve business performance: research findings and recommendations for organizations. *Hum Resour Manage.* 2004;43:409.
2. Kaplan SE, Raj A, Carr PL, et al. Race/ethnicity and success in academic medicine: findings from a longitudinal multi-institutional study. *Acad Med.* 2018;93:616–622.
3. Cooper-Patrick L, Gallo JJ, Gonzales JJ, et al. Race, gender, and partnership in the patient-physician relationship. *JAMA.* 1999;282:583–589.
4. Laveist TA, Nuru-Jeter A. Is doctor-patient race concordance associated with greater satisfaction with care? *J Health Soc Behav.* 2002;43:296–306.
5. Abelson JS, Symer MM, Yeo HL, et al. Surgical time out: our counts are still short on racial diversity in academic surgery. *Am J Surg.* 2018;215:542–548.
6. Hughes TB, Varma VR, Pettigrew C, et al. African Americans and clinical research: evidence concerning barriers and facilitators to participation and recruitment recommendations. *Gerontologist.* 2017;57:348–358.
7. Marrast LM, Zallman L, Woolhandler S, et al. Minority physicians' role in the care of underserved patients: diversifying the physician workforce may be key in addressing health disparities. *JAMA Intern Med.* 2014;174:289–291.

8. Moy E, Bartman BA. Physician race and care of minority and medically indigent patients. *JAMA*. 1995;273:1515–1520.
9. AAMC Faculty Data, <https://www.aamc.org/data/facultyroster/reports/486050/usmsf17.html>, Accessed December 20, 2018.
10. US Census Quick Facts, <https://www.census.gov/quickfacts/fact/table/US/PST045217>, December 20, 2018.
11. The State of the Urology Workforce and Practice in the United States 2017. <http://www.auanet.org/research/research-resources/aua-census/census-results> (Accessed November 2017).
12. Washington SL, Baradaran N, Gaither TW, et al. Racial distribution of urology workforce in United States in comparison to general population. *Transl Androl Urol*. 2018;7:526–534.
13. Bradbury CL, King DK, Middleton RG. Female urologists: a growing population. *J Urol*. 1997;157:1854–1856.
14. Han J, Stillings S, Hamann H, et al. Gender and subspecialty of urology faculty in department-based leadership roles. *Urology*. 2017;110:36–39.
15. Carr PL, Gunn CM, Kaplan SA, Raj A, Freund KM. Inadequate progress for women in academic medicine: findings from the national faculty study. *J Womens Health*. 2015;24:190–199.
16. Yang G, Villalta JD, Weiss DA, Carroll PR, Breyer BN. Gender differences in academic productivity and academic career choice among urology residents. *J Urol*. 2012;188:1286–1290.
17. Awad MA, Gaither TW, Osterberg EC, et al. Gender differences in promotions and scholarly productivity in academic urology. *Can J Urol*. 2017;24:9011–9016.
18. Porten SP, Gaither TW, Greene KL, et al. Do women work less than men in urology: data from the American Urological Association Census. *Urology*. 2018;118:71–75.
19. Mayer EN, Lenherr SM, Hanson HA, Jessop TC, Lowrance WT. Gender differences in publication productivity among academic urologists in the United States. *Urology*. 2017;103:39–46.
20. The State of the Urology Workforce and Practice in the United States 2018. <https://www.auanet.org/Documents/research/census/2018%20The%20State%20of%20the%20Urology%20Workforce%20Census%20Book.pdf> (Accessed March 2019).
21. Amir H, Beri A, Yechiely R, Amir Levy Y, Shimonov M, Groutz A. Do urology male patients prefer same-gender urologist? *Am J Mens Health*. 2018;12:1379–1383.