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Practice Characteristics and Job Satisfaction of Private Practice and Academic Surgeons

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IMPORTANCE Private practice and academic surgery careers vary significantly in their daily routine, compensation schemes, and definition of productivity. Data are needed regarding the practice characteristics and job satisfaction of these career paths for surgeons and trainees to make informed career decisions and to identify modifiable factors that may be associated with the health of the surgical workforce.

OBJECTIVE To obtain and compare the differences in practice characteristics and career satisfaction measures between academic and private practice surgeons.

DESIGN, SETTING, AND PARTICIPANTS In this cross-sectional survey performed from June 4 to August 1, 2018, an online survey accommodating smartphone, tablet, and desktop formats was distributed by email to 25 748 surgeons who were actively practicing fellows of the American College of Surgeons; had completed a general surgery residency or categorical fellowship in plastic, cardiothoracic, or vascular surgery; and had an active email address on file.

MAIN OUTCOMES AND MEASURES Demographic, training, and current practice characteristics were obtained, and satisfaction measures were measured on a 5-point Likert scale and compared by surgeon type. Nonresponse weights adjusted for respondent sex, age, and presence of subspecialty training between respondents and the total surveyed American College of Surgeons population.

RESULTS There were 3807 responses (15% response rate) from surgeons: 1735 academic surgeons (1390 men [80%]; median age, 53 years [interquartile range (IQR), 44-61 years]) and 1464 private practice surgeons (1276 men [87%]; median age, 56 years [IQR, 48-62 years]); 589 surgeons who reported being neither an academic surgeon nor a private practice surgeon and 19 surgeons who did not respond to questions on their practice type were excluded. Academic surgeons reported working a median of 59 hours weekly (IQR, 38-65 hours) compared with 57 hours weekly (IQR, 45-65 hours) for private practice surgeons. Academic surgeons reported more weekly hours performing nonclinical work than did private practice surgeons (24 hours [IQR, 14-38 hours] vs 9 hours [IQR, 4-17 hours]; $P < .001$). Academic surgeons were more likely than private practice surgeons to be satisfied with their career as a surgeon (1448 of 1706 [85%] vs 1109 of 1420 [78%]; $P < .001$) and their financial compensation (997 of 1703 [59%] vs 546 of 1416 [39%]; $P < .001$). Academic surgeons were less likely than private practice surgeons to feel that competition with other surgeons is a threat to financial security (341 of 1705 [20%] vs 559 of 1422 [39%]; $P < .001$) and less likely to feel that malpractice experience has decreased job satisfaction (534 of 1703 [31%] vs 686 of 1413 [49%]; $P < .001$).

CONCLUSIONS AND RELEVANCE This study suggests that, although overall surgeon satisfaction was high, academic surgeons reported higher career satisfaction on several measures when compared with private practice surgeons. Advocacy for private practice surgeons is important to encourage career longevity and sustain US surgeon workforce needs.

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The environment of a surgical career has been rapidly evolving during the past few decades. An increasing number of trainees are pursuing fellowship training, changing the scope and practice pattern of general surgeons.[1] Demographically, the percentage of women in surgery has increased considerably (the percentage of female surgery residents increased from 2% in 1980 to 40% in 2017).[2,3] Lifestyle and burnout have become prominent issues of discussion facing the modern surgical workforce.[4,5] The younger generation's perception of a poor lifestyle in surgery has been associated with decreased medical student interest in surgical careers and an increasing reliance on international medical graduates to fill surgery residency positions.[6,7] At the same time, there is a looming surgeon workforce shortage because of the aging US population.[8-10]

In this setting of the changing surgical landscape, it is important to continually assess the health of the workforce. Careers in private practice surgery and academic surgery vary significantly in their daily routines, compensation schemes, and ideas of productivity. Although there have been a limited number of job satisfaction surveys across a broad range of surgical specialties, to our knowledge, few have performed subanalyses to explore the differences in academic and private practice careers. A previous study reported job satisfaction data on a broad sample of the American College of Surgeons (ACS)[11]; now, we seek to focus on the differences in job characteristics and satisfaction between private practice surgeons and academic surgeons. These data will help to allow surgeons and trainees to make informed career decisions and identify factors associated with surgeon career satisfaction.

Key Points

Question How do practice characteristics and job satisfaction vary between academic and private practice surgeons?

Findings In this cross-sectional survey of the American College of Surgeons, academic surgeons were less clinically busy but reported higher satisfaction with career (85% vs 78%) and financial compensation (59% vs 39%) compared with private practice surgeons. Academic surgeons were also less likely to report competition with other surgeons as a threat to financial security (20% vs 39%) and decreased career satisfaction because of malpractice experience (31% vs 49%).

Meaning This study suggests that advocacy for private practice surgeons is important to encourage career longevity and sustain US surgeon workforce needs.

Methods

Study Design and Population

A cross-sectional survey of the 2018 membership roster of the ACS was performed using an online survey distributed by email. Fellows of the ACS who were actively practicing in the United States and had an active email address on file with the ACS were included. Specialties not traditionally associated with general surgery training (eg, orthopedics, gynecology, ophthalmology, and urology) were excluded. After these exclusions, 25 748 surgeons were eligible to participate and were contacted. The study was approved by the University of North Carolina Institutional Review Board. An informed consent document was distributed with the survey explaining the minimal risks of the survey and that participation in the survey implied consent. No financial compensation was provided for participation in the survey. All data were deidentified and stored in aggregate form. This process was approved by the University of North Carolina institutional review board.

Survey Design and Administration

The survey included 257 total items covering a broad spectrum of topics, including demographic information, surgical training, current practice characteristics, and questions on job satisfaction, harassment, and work-related discomfort. Of the 257 items, 115 were included in this subanalysis. Inapplicable questions were screened out as part of the online design. For example, surgeons who reported working in private practice did not answer the question set specifically about academic careers. After determination of eligibility, surgeons could skip questions as desired. The percentage of surgeons with a given response was calculated from the total number of surgeons who answered that item.

Surveys were administered using an online platform in Qualtrics software, version 2013 (Qualtrics), which accommodated smartphone, tablet, or desktop formats. All eligible ACS members were provided a unique survey link via email, along with a letter explaining the purpose of the survey and their rights as research participants. A total of 3 survey requests were distributed between June 4 and July 10, 2018. Survey responses were collected until August 1, 2018.

Weighting

To account for survey nonresponse and correct for potential bias, 12 strata were created using sex (male and female), age (<48 years, 48-59 years, and ≥60 years), and surgical specialty (general and subspecialty). As previously described,[11] nonresponse weights were calculated by dividing the response rate by the probability of response within each stratum (eTable in the Supplement). All results were weighted to account for potential nonresponse bias using these nonresponse weights.

Statistical Analysis

A 5-point Likert scale was used for job satisfaction questions, with the possible choices "strongly disagree," "disagree," "neutral," "agree," and "strongly agree." Results were collapsed into agree or strongly agree, neutral, and disagree or strongly disagree for analysis. A response of agree or strongly agree was considered a positive response to an item for the purpose of reporting results.

Surgeons were considered academic if they reported holding a medical school faculty appointment and answered no to the question, "Are you currently primarily in a private practice setting?" Surgeons were considered to be in private practice if they answered yes to that same question regardless of

whether they concurrently held an academic appointment. Respondents who reported neither holding a medical school faculty appointment nor having a primarily private practice setting were excluded from analysis (589 of 3807 respondents [16%]). Surgeons were considered to have specialty training if they reported at least 1 year of specialty training after general surgery training or having completed an integrated fellowship in vascular, plastic, or cardiothoracic surgery. Practice location was defined as urban or rural by linking the surgeon's self-reported county of primary practice to the US 2013 Rural-Urban continuum codes.[12] Rural-Urban continuum codes considered metropolitan (codes 1-3) were classified as urban, wherease codes considered nonmetropolitan (codes 4-9) were classified as rural.

To calculate *P* values for demographic data, practice differences, and satisfaction scores, χ^2 tests were used for comparison of variables. All *P* values were from 2-sided tests, and results were deemed statistically significant at $P < .05$. Nonresponse weights were used in all analyses unless otherwise specified. All analyses were performed using SAS, version 9.4 (SAS Institute Inc).

Results

Of the 25 748 surgeons contacted, 3807 surgeon responses were eligible for inclusion (15% unweighted response rate). Of these 3807 respondents, 1735 were classified as academic surgeons and 1464 were classified as private practice surgeons; 589 surgeons who were considered neither academic nor private practice surgeons and 19 surgeons who did not respond to questions on their practice type were excluded from further analysis. Demographic data are summarized in **Table 1**.[12]

Academic surgeons reported working a median of 59 hours per week (interquartile range [IQR], 38-65 hours per week), with 24 nonclinical hours per week (IQR, 14-38 hours per week) (**Table 2**). Private practice surgeons worked a median of 57 hours per week (IQR, 45-65 hours per week), with 9 nonclinical hours per week (IQR, 4-17 hours per week; $P < .001$). Private practice surgeons were more likely to report being in a solo or 2-partner practice compared with academic surgeons (524 of 1463 [36%] vs 27 of 1745 [2%]; $P < .001$). Compared with private practice surgeons, academic surgeons were more likely to report working in a city with a population of more than 500 000 (959 [55%] vs 508 [35%]; $P < .001$) and a hospital with more than 500 beds (787 of 1733 [45%] vs 228 of 1453 [16%]; $P < .001$). The specialties most likely to identify as academic included pediatric surgery (192 of 245 [78%]), transplant surgery (115 of 151 [76%]), and hepatobiliary surgery (57 of 78 [73%]). The specialties most likely to identify as private practice included plastic surgery (82 of 133 [62%]), vascular surgery (220 of 471 [47%]), and colorectal surgery (105 of 244 [43%]).

Academic and private practice surgeons reported differences in their inpatient rounding duties. A total of 454 of 1463 private practice surgeons (31%) reported conducting rounds for their inpatients both on weekdays and on the weekend unless they are on vacation compared with 324 of 1727 academic surgeons (19%). A total of 673 of 1463 private practice surgeons (46%) reported conducting rounds for their inpatients during the week but split conducting rounds with their partners on the weekend compared with 768 of 1727 academic surgeons (44%). A total of 156 of 1463 private practice surgeons (11%) reported that partners take turns conducting rounds for the entire group's inpatients during the week and

Table 1. Demographic Charateristics of Survey Respondents Who Are Actively Practicing US Fellows of the American College of Surgeons (2018)[a]

Charateristic	Respondents, No./total No. (%)	
	Academic surgeons (n = 1735)[b]	Private practice surgeons (n = 1464)[b]
Age, median (IQR), y	53 (44-61)	56 (48-62)
Men	1390/1735 (80)	1276/1463 (87)
Years in training, median (IQR)	7 (5-8)	6 (5-7)
≥1 y Dedicated research time during training	951/1723 (55)	408/1463 (28)
Years practicing surgery, median (IQR)	18 (10-27)	22 (15-29)
Practice location		
Urban[c]	1664/1711 (96)	1342/1439 (91)
Rural[c]	71/1711 (4)	122/1439 (9)
>1 y Specialty training[d]	1460/1712 (85)	888/1409 (63)
General surgery (no specialty training)[d]	253/1712 (15)	520/1409 (37)
Specific specialty training[e]		
Acute care surgery	48/1735 (3)	20/1464 (1)
Breast	38/1735 (2)	16/1464 (1)
Burn	27/1735 (2)	21/1464 (1)
Cardiothoracic	148/1735 (9)	86/1464 (5)
Critical care	303/1735 (17)	79/1464 (5)
Colorectal	116/1735 (7)	105/1464 (7)
Endocrine	28/1735 (2)	18/1464 (1)
Hepatobiliary	57/1735 (3)	17/1464 (1)
Minimally invasive surgery	110/1735 (6)	76/1464 (5)
Surgical oncology	168/1735 (10)	51/1464 (3)
Pediatric surgery	192/1735 (11)	43/1464 (3)
Plastic	46/1735 (3)	82/1464 (6)
Transplant	115/1735 (7)	28/1464 (2)
Trauma	159/1735 (9)	51/1464 (3)
Vascular	192/1735 (11)	220/1464 (15)

Abbreviation: IQR, interquartile range.

[a] Results weighted to account for potential nonresponse bias.

[b] Practice type was reported by respondents ("Are you currently primarily in a private practice setting?" and "Do you currently hold a medical school faculty appointment"); respondents who answered no to both questions were excluded. Respondents who answered yes to both questions were considered to be in a private practice setting.

[c] Practice location determined using US 2013 Rural-Urban continuum codes.[12] Rural-Urban continuum codes considered metropolitan (codes 1-3) were classified as urban, while codes considered nonmetropolitan (codes 4-9) were classified as rural.

[d] Surgeons were considered subspecialty if they completed an integrated residency program in cardiothoracic, vascular, or plastic surgery or reported completing at least 1 year of additional subspecialty fellowship training after general surgery.

[e] Surgeons were allowed to report more than 1 specialty. Percentage given represents the proportion of all surgeons of academic or private practice type.

Table 2. Practice Characteristics of Survey Respondents Who Are Actively Practicing US Fellows of the American College of Surgeons (2018)[a]

Characteristic	Respondents, No./total No. (%)	
	Academic surgeons (n = 1735)[b]	Private practice surgeons (n = 1464)[b]
Hospital size, No. of beds		
≤50	51/1733 (3)	117/1453 (8)
51-100	59/1733 (3)	108/1453 (7)
101-250	251/1733 (15)	449/1453 (31)
251-500	584/1733 (34)	551/1453 (38)
>500	787/1733 (45)	228/1453 (16)
Population of city of employment, No.		
≤50 000	111/1732 (6)	258/1462 (18)
50 0001-100 000	148/1732 (9)	211/1462 (14)
100 001-250 000	244/1732 (14)	283/1462 (19)
250 001-500 000	269/1732 (16)	201/1462 (14)
>500 000	959/1732 (55)	508/1462 (35)
Type of practice		
Solo practice	12/1735 (0.7)	400/1463 (27)
2-Physician practice	15/1735 (0.9)	124/1463 (9)
Group practice (>2 physicians)	216/1735 (12)	816/1463 (56)
Hospital	601/1735 (36)	106/1463 (7)
Medical school	768/1735 (44)	6/1463 (0.4)
Government facility	109/1735 (6)	0
Nights on call per month, median (IQR)	8 (3-15)	7 (5-14)
Hours spent working as surgeon per week, median (IQR)	59 (38-65)	57 (45-65)
Nonclinical hours per week, median (IQR)	24 (14-38)	9 (4-17)
No. of clinic patients seen per week, median (IQR)	24 (14-35)	38 (24-50)
No. of operative cases per week, median (IQR)	6 (4-9)	9 (5-14)
Emergency department consultations per week, median (IQR)	3 (1-9)	3 (1-6)
Weeks of vacation yearly, median (IQR)	3 (2-4)	3 (2-5)
Job benefits		
On-site day care	430/1734 (25)	72/1460 (5)
Formal leave	1118/1733 (65)	517/1461 (35)
Paternity leave	809/1734 (47)	310/1460 (21)
Maternity leave	1372/1733 (79)	585/1459 (40)
Job sharing	155/1730 (9)	158/1461 (11)

Abbreviation: IQR, interquartile range.

[a] Results weighted to account for potential nonresponse bias.

[b] Practice type was reported by respondents ("Are you currently primarily in a private practice setting?" and "Do you currently hold a medical school faculty appointment?"); respondents who answered no to both questions were excluded. Respondents who answered yes to both questions were considered to be in a private practice setting.

on weekends compared with 458 of 1727 academic surgeons (27%). A total of 151 of 1463 private practice surgeons (10%) and 127 of 1727 academic surgeons (7%) reported that they rarely have inpatients.

Private practice surgeons were slightly more likely to report that they were seriously considering leaving surgery in the next 2 years compared with academic surgeons (361 of 1280 [28%] vs 318 of 1464 [22%]; $P < .001$). We asked surgeons who reported considering leaving practice questions about potential factors associated with this consideration; these results, stratified by academic and private practice, are summarized in **Table 3**. Notable differences between private practice and academic surgeons included private practice surgeons being more likely to report dissatisfaction with the electronic medical record (191 of 342 [56%] vs 112 of 309 [36%]; $P < .001$), inadequate reimbursement (179 of 344 [52%] vs 70 of 306 [23%]; $P < .001$), malpractice concerns (95 of 344 [28%] vs 54 of 302 [18%]; $P < .001$), and inadequate referral patterns (78 of 340 [23%] vs 26 of 297 [9%]; $P < .001$).

Job satisfaction data are summarized in **Table 4**. Academic surgeons were more likely to report career satisfaction (1448 of 1706 [85%] vs 1109 of 1420 [78%]; $P < .001$), use of their full range of surgical skills (1203 of 1701 [71%] vs 893 of 1416 [63%]; $P < .001$), and adequate financial compensation (997 of 1703 [59%] vs 546 of 1416 [39%]; $P < .001$) and were more likely to recommend surgery as a career to both male (1406 of 1707 [82%] vs 967 of 1421 [68%]; $P < .001$) and female medical students (1314 of 1709 [77%] vs 781 of 1426 [55%]; $P < .001$). Academic surgeons were less likely than private practice surgeons to feel that competition with other surgeons is a threat to financial security (341 of 1705 [20%] vs 559 of 1422 [39%]; $P < .001$). Private practice surgeons were more likely than academic surgeons to report negative associations of malpractice experiences with career satisfaction (686 of 1413 [49%] vs 534 of 1703 [31%]; $P < .001$) but were also more likely to report that work leaves enough time for family (594 of 1429 [42%] vs 622 of 1711 [36%]; $P < .008$) and slightly less likely to report that work encroaches on personal time (930 of 1421 [65%] vs 1176 of 1709 [69%]; $P = .01$).

Overall, 1140 of 1410 private practice surgeons (81%) reported that they have been named in a malpractice case compared with 1181 of 1691 academic surgeons (70%) ($P < .001$). Academic surgeons were slightly more likely to report a personal history of work-related harassment compared with private practice surgeons (509 of 1720 [30%] vs 361 of 1438 [25%]; $P = .02$). A higher percentage of academic surgeons than private practice surgeons reported job benefits of on-site day care (430 of 1734 [25%] vs 72 of 1460 [5%]; $P < .001$), formal leave (1118 of 1733 [65%] vs 517 of 1461 [35%]; $P < .001$), paternity leave (809 of 1734 [47%] vs 310 of 1460 [21%]; $P < .001$), and maternity leave (1372 of 1733 [79%] vs 585 of 1459 [40%]; $P < .001$).

Among academic surgeons, 415 of 1709 (24%) reported considering leaving academic medicine within 2 years. The top reasons given were personal time requirements (230 of 386 [60%]), overall stress (189 of 380 [50%]), and family responsibilities (166 of 377 [44%]) (**Table 5**). Only 64 of 369 academic surgeons (17%) reported research responsibilities and 36 of 375 (10%) reported teaching responsibilities as reasons for considering leaving academic surgery. Similarly, we asked private practice surgeons why they chose not to pursue academics. The top reasons given were research responsibilities (466 of 1306 [36%]), inadequate reimbursement (406 of 1328 [31%]), and family responsibilities (367 of 1320 [28%]).

Table 3. Reasons Given by Actively Practicing US Fellows of the American College of Surgeons for Considering Leaving Practice in the Next 2 Years (2018)[a]

Reason	Respondents, No./total No. (%)		
	Academic surgeons (n = 298)[b]	Private practice surgeons (n = 340)[b]	*P* value[c]
Retirement plans	221/312 (71)	219/352 (62)	.28
Personal time requirements	190/314 (63)	209/353 (61)	.09
Overall work time demands	183/314 (58)	225/353 (64)	.60
Overall stress	150/312 (48)	200/353 (57)	.24
Family responsibilities	136/308 (44)	146/346 (42)	.63
Dissatisfaction with electronic medical record	112/309 (36)	191/342 (56)	<.001[d]
Changing career interest	73/299 (24)	66/341 (19)	.48
Sense of isolation	67/294 (23)	103/337 (31)	.07
Inadequate reimbursement	70/306 (23)	179/344 (52)	<.001[d]
Harassment	65/300 (22)	117/333 (35)	<.001[d]
Malpractice concerns	54/302 (18)	95/344 (28)	<.001[d]
Inadequate career advancement	19/293 (15)	12/320 (9)	.12
Inadequate referral pattern	26/297 (9)	78/340 (23)	<.001[d]
Inadequate mentoring	19/281 (7)	12/318 (4)	.02[d]
Inadequate case diversity	19/300 (6)	32/336 (10)	.02[d]

[a] Results weighted to account for potential no-response bias. Questions were asked in a 5-point Likert scale with responses of 4 (agree) and 5 (strongly agree) considered positive responses.

[b] Practice type was reported by respondents ("Are you currently primarily in a private practice setting?" and "Do you currently hold a medical school faculty appointment?"); respondents who answered no to both questions were excluded. Respondents who answered yes to both questions were considered to be in a private practice setting.

[c] The χ^2 test was used to assess differences.

[d] $P < .05$ was considered statistically significant.

Discussion

In this survey, overall surgeon satisfaction was high, with approximately 4 of 5 surgeons reporting job satisfaction and that they would choose surgery as a career again. Academic surgeons were somewhat more likely to report overall career satisfaction as well as greater satisfaction with several more specific job satisfaction measures. Results of work-life balance questions were more mixed, with private practice surgeons reporting modestly greater satisfaction with family time, personal time, and respect in the community. Other studies of surgeon satisfaction that have examined these 2 groups have found some similar findings. Some of the authors of this survey previously distributed a similar survey to academic and private practice surgeons in 1999.[13] At that time, private practice surgeons had similar rates of reported career satisfaction but, similar to the present survey, were less likely to report that they would choose surgery as a career again and reported lower rates of satisfaction with malpractice experiences and higher rates of competition with other surgeons as a threat to job security. In a more recent surgeon career satisfaction survey in 2008, Balch et al[14] reported that private practice surgeons were more likely to experience burnout, had lower rates of career satisfaction, and were less likely to recommend a career in surgery to their children. Also in 2008, Troppmann et al[15] found that a nonuniversity career in surgery was associated with career dissatisfaction and a decreased likelihood of recommending a surgical career to one's children.

Our study found that 1 of the major differences in practice characteristics was that, despite working similar hours, private practice surgeons were more clinically busy and academic surgeons had significantly more nonclinical hours. Some of these factors typically associated with private practice and academic careers have previously been studied in association with burnout. In their study on burnout, Shanafelt et al[4] found that incentive pay based entirely on billing was independently associated with burnout, while more than 50% of time devoted to nonpatient care was protective against burnout. Troppman et al[15] suggest multiple potential factors for improved satisfaction in academic surgeons, including resident assistance with irregular work hours, less exposure to economic pressures owing to salary rather than productivity-based pay, and increased group-style practice for sharing of call duties. It may also be true that surgeons who choose private practice have certain traits that make them more susceptible to burnout. Elmore et al[16] found that surgery residents planning to pursue a career in private practice were more likely to have positive screening results for burnout, depersonalization, and emotional exhaustion compared with surgery residents planning to pursue academic surgery.

Another interesting finding in this survey was the difference in the proportion of academic and private practice surgeons who would recommend a career in surgery to male and female medical students. A significant proportion of private practice surgeons reported personal career satisfaction but would not recommend surgery to a future generation, a finding that was not as prevalent with academic surgeons. This finding is concerning in the setting of a workforce shortage in which the recruitment of the next generation of surgeons is considered a critical societal need.[17] Furthermore, private practice surgeons are 22% less likely than academic surgeons to recommend a career in surgery to female medical students. This response could, perhaps, represent a viewpoint that a career in private practice is not as amenable to women, who are felt more likely to take on the traditional gender role as childcare provider. A previous analysis of this survey focusing on sex differ-

Table 4. Reported Job and Childcare Satisfaction of Actively Practicing US Fellows of the American College of Surgeons (2018)[a]

Response	Respondents, No./total No. (%)						P value[b]
	Academic surgeons (n = 1735)			Private practice surgeons (n = 1464)			
	Disagree	Neutral	Agree	Disagree	Neutral	Agree	
Job satisfaction							
Would choose surgery as a career again	103/1708 (6)	154/1708 (9)	1451/1708 (85)	159/1426 (11)	159/1426 (11)	1107/1426 (78)	<.001[c]
Satisfied with career	108/1706 (6)	150/1706 (9)	1448/1706 (85)	143/1420 (10)	168/1420 (12)	1109/1420 (78)	<.001[c]
Satisfied with technical challenges	50/1709 (3)	104/1709 (6)	1555/1709 (91)	55/1428 (4)	114/1428 (8)	1259/1428 (88)	.04[c]
Satisfied with case variety	218/1708 (13)	272/1708 (16)	1219/1708 (71)	220/1420 (16)	200/1420 (14)	999/1420 (70)	.06
Use full range of surgical skills in practice	343/1701 (19)	174/1701 (10)	1203/1701 (71)	355/1416 (25)	168/1416 (12)	893/1416 (63)	<.001[c]
Receive adequate financial compensation	444/1703 (26	262/1703 (15)	997/1703 (59)	637/1416 (45)	233/1416 (16)	546/1416 (39)	<.001[c]
Would recommend surgery to female medical student	147/1709 (9)	248/1709 (15)	1314/1709 (77)	319/1426 (22)	325/1426 (23)	781/1426 (55)	<.001[c]
Would recommend surgery to male medical student	72/1707 (4)	229/1707 (13)	1406/1707 (82)	154/1421 (5)	299/1421 (21)	967/1421 (68)	<.001[c]
Career goals influenced by need to control personal time	979/1703 (5)	305/1703 (18)	419/1703 (25)	645/1416 (46)	282/1416 (20)	489/1416 (35)	<.001[c]
Malpractice experiences have decreased job satisfaction	886/1703 (52)	283/1703 (17)	534/1703 (31)	485/1413 (34)	242/1413 (17)	686/1413 (49)	<.001[c]
Competition with other surgeons threatens financial security	1052/1705 (62)	311/1705 (18)	341/1705 (20)	553/1422 (39)	311/1422 (22)	559/1422 (39)	<.001[c]
My work leaves me enough time for family	701/1711 (41)	388/1711 (23)	622/1711 (36)	556/1429 (39)	278/1429 (19)	594/1429 (42)	.008[c]
Satisfied with amount of time for hobbies	908/1700 (53)	351/1700 (21)	441/1700 (26)	715/1415 (51)	295/1415 (21)	405/1415 (29)	.21
Work encroaches on my personal time	224/1709 (13)	309/1709 (18)	1176/1709 (69)	242/1421 (17)	249/1421 (18)	930/1421 (65)	.01[c]
Interruption of my personal life because of work is a problem	511/1709 (30)	488/1709 (29)	711/1709 (42)	360/1421 (25)	347/1421 (24)	714/1421 (50)	<.001[c]
Colleagues support balance of family and work responsibilities	262/1708 (15)	438/1708 (26)	1009/1708 (59)	240/1420 (17)	401/1420 (28)	780/1420 (55)	.08
Mentor relationships facilitated my success as a surgeon	311/1703 (18)	227/1703 (13)	1165/1703 (68)	279/1416 (19)	245/1416 (17)	901/1416 (64)	.01[c]
I am well respected in my community	21/1699 (1)	207/1699 (12)	1471/1699 (87)	26/1416 (2)	107/1416 (8)	1283/1416 (91)	<.001[c]
Childcare satisfaction[d]							
Satisfied with childcare arrangement	178/1474 (12)	252/1474 (17)	1045/1474 (71)	119/1259 (9)	209/1259 (17)	931/1259 (74)	.29
My surgical practice has been modified because of childcare	1040/1474 (71)	187/1474 (13)	247/1474 (17)	825/1264 (65)	191/1264 (15)	249/1264 (20)	.04[c]

[a] Results weighted to account for potential nonresponse bias; questions were asked in Likert-scale format (1-2 = disagree, 3 = neutral, and 4-5 = agree).

[b] χ^2 Tests were used to assess differences in the proportion of academic surgeons who agreed with the specific job satisfaction measure compared with private practice surgeons who agreed with the specific job satisfaction measure.

[c] $P < .05$ was considered statistically significant.

[d] Among surgeons with children only.

ences in surgeon satisfaction found that women were more likely to report problematic interruptions of their personal life due to work and less likely to report sufficient time for family and hobbies.[18] Furthermore, among surgeons with children, women were less likely to be married to a homemaker, more likely to rely on employed help for childcare, and less likely to be satisfied with the division of parenting responsibilities. In this survey, private practice surgeons report smaller partner group sizes that may make coverage for unpredictable personal, family, and childcare needs more difficult, as well as a much lower rate of on-site day care, maternity leave, and formal leave. Richardson[17] asserts that women are vital in meeting the future needs for a surgical workforce and that new solutions and increased flexibility are needed to encourage a balanced life and fulfillment of meaningful life roles. The fact that a larger proportion of private practice surgeons would not recommend a surgical career to women suggests a particular need for solutions to the work-life balance dilemma of surgeons in the private practice sector.

Although private practice positions will face greater challenges in providing the resources and flexibility to accommodate personal life needs with smaller group sizes, it is particularly important to encourage these solutions because our

findings support that rural areas are more likely to be covered by private practice surgeons and rural areas are known to be particularly at risk of facing a shortage of surgeons.[19-22] Increased regionalization of care, a potential solution for rural areas, could potentially allow a group of surgeons to consolidate to cover a large area, but the benefits of a larger group size must be weighed against the potential for increased morbidity if patients must travel a longer distance for surgical emergencies. The creation of more job sharing and part-time job opportunities have also been proposed as solutions that could enable flexibility for surgeons.[9] With 61% of surgery residents reporting lifestyle and 38% family commitments as factors associated with future practice choice,[23] undoubtedly, lifestyle concerns will continue to be an important determinant in the availability and distribution of the surgical workforce.

Strengths and Limitations

This study has some strengths, including its detailed question set and that it has one of the largest sample sizes of recent surveys of US surgeon job satisfaction. Furthermore, the survey distribution with personalized links to a population with certain known demographic characteristics allowed for calculation of a meaningful response rate and control of nonresponse bias that would not be possible in anonymous web-based surveys.

This study also has some limitations, including its relatively low response rate (15%), although this rate is consistent with other recent job satisfaction surveys that have used a broad sample of the US across surgical specialties.[24,25] Although the analysis controlled for nonresponse bias using sex, age, and presence of specialty training, the results could be biased if those who responded to the survey vary systematically from those who do not.

Table 5. Reasons Given by Academic Surgeons for Considering Leaving Academic Practice Within the Next 2 Years and by Private Practice Surgeons for Not Pursuing a Primarily Academic Career Among Actively Practicing US Fellows of the American College of Surgeons (2018)[a]

Reason	Respondents, No./total No. (%)	
	Academic surgeons (n = 376)[b]	Private practice surgeons (n = 1309)[b]
Personal time requirements	230/386 (60)	346/1328 (26)
Overall stress	189/380 (50)	267/1318 (20)
Family responsibilities	166/377 (44)	367/1320 (28)
Changing career interests	122/373 (33)	177/1292 (14)
Inadequate career advancement	112/369 (30)	262/1309 (20)
Sense of isolation	100/363 (28)	110/1278 (9)
Inadequate reimbursement	101/374 (27)	406/1328 (31)
Inadequate mentoring	90/366 (24)	184/1285 (14)
Harassment	72/366 (20)	189/1275 (15)
Research responsibilities	64/369 (17)	466/1306 (36)
Inadequate job opportunities	63/369 (17)	194/1302 (23)
Uncertainty of grant funding	55/359 (15)	264/1269 (21)
Malpractice concerns	46/368 (12)	73/1305 (6)
Teaching responsibilities	36/375 (10)	210/1325 (16)
Inadequate case diversity	27/364 (8)	202/1308 (16)

[a] Results weighted to account for potential nonresponse bias. Only academic surgeons considering leaving surgery within the next 2 years are included. All surgeons considered as primarily private practice are included. Questions were asked in a 5-point Likert scale with responses of 4 (agree) and 5 (strongly agree) considered positive responses. *P* values were not calculated as the question stem differed between academic and private practice surgeons.

[b] Practice type was reported by respondents ("Are you currently primarily in a private practice setting?" and "Do you currently hold a medical school faculty appointment?"); respondents who answered no to both questions were excluded. Respondents who answered yes to both questions were considered to be in a private practice setting.

Conclusions

Overall surgeon job satisfaction is high, but academic surgeons report a slightly greater prevalence of overall career satisfaction as well as many other more specific job satisfaction measures compared with private practice surgeons. These findings may benefit trainees determining whether to pursue an academic career in surgery. Given the impending surgeon shortage, recruitment and retention of surgeons is crucial. Future work should focus on ways in which surgeon lifestyle can be improved to attract a younger generation while maintaining excellent patient care. Advocacy for nonacademic surgeons is particularly important because they may face irregular work hours and higher clinical volume while serving a rural population that is vulnerable to surgeon shortage.

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Invited Commentary

All Surgeons Are in This Together

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Health care delivery and surgical practice have evolved rapidly over the past decade, driven in part by the increasing complexity of patients, the severity of their diseases, rapidly evolving new technologies, and a deluge of evidence to support best practices. These forces, together with shifts in practice models and greater administrative burden, have been held responsible for stealing some of the joy that has traditionally been associated with the service mission of surgical practice. Importantly, Mahoney et al[1] in their article in this issue of *JAMA Surgery* document and measure the unequal outcomes of this sea change on our profession, based on surgical practice setting. The results of a survey conducted with American College of Surgeons members demonstrated that private practice surgeons are more likely to be working in small group practices outside of major metropolitan areas and dedicating more time to patient care compared with their academic counterparts. One of the starkest contrasts between private practice and academic surgeons is that while academic surgeons report spending a median of 24 hours a week on nonclinical work, private practice surgeons dedicate minimal time to nonclinical work and are seeing 50% more patients in the office and operating room than academic surgeons. Furthermore, while academic surgeons have perks such as on-site day care, maternity leave, and paternity leave, private practice surgeons worry far more about malpractice, referral patterns, and reimbursement challenges. Importantly, it is likely that the angst of private practice surgeons has only been exacerbated by the coronavirus disease 2019 pandemic, and an updated survey may be even more concerning.

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Private practice surgeons are vital to the health of our profession as well as for our society. Too often they are the only surgeons for hundreds of miles, especially in the western US, serving essential roles in their hospitals and communities. Based on these survey results, their service appears to be coming at considerable personal cost. But importantly, the landscape is changing rapidly. Many smaller hospitals and practices are joining forces with large health systems, and this trend has only been accelerated by the coronavirus disease 2019 pandemic. These new alignments could serve as a strategy to support more connec-