

Not the Last Word

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Why Did You Apply in Orthopaedic Surgery?

Joseph Bernstein MD

Stop me if you heard this story before: “I was introduced to orthopaedic surgery when I injured my [body part] while playing [name of sport]. I met Dr. [wise and kindly orthopaedic surgeon]. He patched me up in no time, and I went

on to [postinjury athletic attainment]. Later, he invited to join me in the OR, and I saw firsthand how much I’d enjoy combining knowledge and skills to restore people to function.”

I have heard this story at least once per year for the past three decades. I have also told a version of this story more than a few times myself. (I had to leave out the part about subsequent athletic attainments. My crowning achievement in sports was catching a foul ball at Shea Stadium, after it bounced off my head.) Judging from its persistence alone, this story is probably an effective interview gambit.

Effectiveness aside, the story leaves out a detail many would consider relevant: Namely, that orthopaedic surgery is the highest-paying of all medical specialties. Surely that might have something to do with it, don’t you think?

By mentioning money, I am not questioning the character of orthopaedic surgery applicants. All else equal, better-paying jobs should be more attractive. Indeed, using data provided by the National Resident Matching Program [8] and Medscape [6] (Table 1), I found that a specialty’s appeal and its average pay (Fig. 1) are highly correlated ($r = 0.79$).

The relationship between financial prospects and appeal suggests that if salary differences between specialties were to narrow, the feverish competition for certain highly coveted

residency spots may cool off considerably. For instance, according to a recent report [10], orthopaedic surgery had 88,169 applications for just 717 positions; if primary care gets a permanent bump in pay (as has been tried temporarily [9]) the number of orthopaedic applicants might not stay in the stratosphere.

Although a world with fewer orthopaedic surgery applications would be welcomed in some quarters, even a slight decrease in the number of applicants may have drastic consequences. As Kenneth A. Egol MD, Director of the Orthopaedic Surgery Residency Program at NYU Langone Health, correctly observed [3], “Having a large, highly qualified pool of applicants ... ensures that all programs, regardless of size, type, or location will have their complement of outstanding students to begin training in orthopaedic surgery.”

On the other hand, if the number of positions were to exceed the number of candidates seeking to fill them, some programs may become desperate and lower their standards. In turn, other programs may feel compelled to follow them in a race to the bottom.

There is an answer to the threat of a shrinking applicant pool, and it lies in the realm of demographics. These data show that although orthopaedic surgery is the most avidly sought field, it does so despite drawing applicants from only about half of the graduating class. To the point: More than 85% of all orthopaedic surgery residents are

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Not the Last Word

Table 1. A comparison of mean salary [6] and number of American medical school senior applicants per available position [8]

Specialty	Mean salary [6]	Applicants per position [8]
Anesthesiology	USD 364,000	0.63
Dermatology	USD 386,000	1.11
Emergency medicine	USD 339,000	0.83
Family medicine	USD 209,000	0.45
General surgery	USD 352,000	0.91
Internal medicine	USD 225,000	0.48
Neurology	USD 249,000	0.59
Obstetrics and gynecology	USD 286,000	0.83
Orthopaedic surgery	USD 489,000 (#1)	1.25 (#1)
Otolaryngology	USD 398,000	1.00
Pathology	USD 293,000	0.45
Pediatrics	USD 202,000	0.67
Plastic surgery	USD 440,000	1.11
Psychiatry	USD 235,000	0.67
Radiology	USD 396,000	0.63

men [2] (Table 2). If women were to pursue training in orthopaedic surgery with a frequency comparable to that of men, an additional 600 applicants would enter the mix. With such a boost, orthopaedic surgery could

tolerate a 35% decrease in its current appeal without a net loss.

Orthopedists will always be able to couple knowledge and skills to restore function—but maybe not always at twice the pay of pediatricians. Whether

this equilibration happens sooner, later or never, I am not sure. As the saying goes, it’s hard to make predictions, especially about the future [4]. Still, orthopaedic surgery would be wise to hedge against the prospect of an erosion of its popularity. And the best hedge—making all students feel wanted and welcome—is the right thing to do, regardless of what the future may hold.

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How does someone choose a specialty? Attempts to predict the elements that influence this life decision have come up short. Priorities are personal and one individual’s explanation for selecting orthopaedics over neurosurgery is just that—one person’s explanation. Yet external factors, such as future earnings and debt, affect most applicants. Understanding the relative impact of these financial realities could inform work force predictions, especially if compensation were to change for any given specialty.

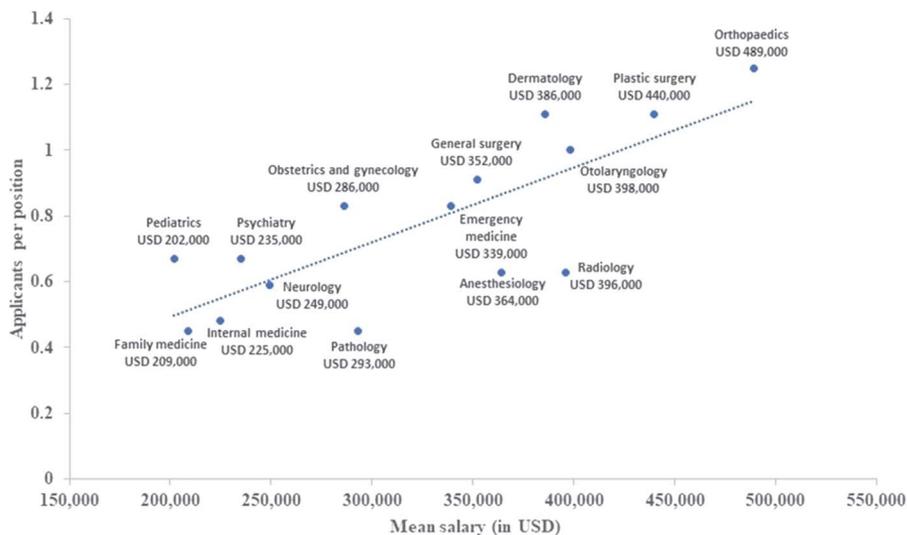


Fig. 1 A scatter plot shows the selectivity of a field (represented by the number of applicants per position [8]) as a function of its mean salary [6]. The regression line shows that these are highly correlated ($r = 0.79$).

Not the Last Word

Table 2. Gender distribution of American medical school graduates by residency [2]

Specialty	Men	Women	Total	% Men
Orthopaedic surgery	2957	515	3472	85.2%
Neurological surgery	1009	212	1221	82.6%
Nuclear medicine	19	5	24	79.2%
Thoracic surgery	246	74	320	76.9%
Urology	888	290	1178	75.4%
Radiology	2904	1014	3918	74.1%
Pain medicine	181	64	245	73.9%
Plastic surgery	212	79	291	72.9%
Radiation oncology	501	199	700	71.6%
Anesthesiology	3141	1795	4936	63.6%
Otolaryngology	926	531	1457	63.6%
Emergency medicine	3469	2032	5501	63.1%
Plastic surgery	577	343	920	62.7%
Physical medicine and rehabilitation	649	409	1058	61.3%
Colon and rectal surgery	37	25	62	59.7%
General surgery	4048	2812	6860	59.0%
Vascular surgery	135	94	229	59.0%
Ophthalmology	740	542	1282	57.7%
Internal medicine	7530	6232	13,762	54.7%
Neurology	781	678	1459	53.5%
Pathology	698	652	1350	51.7%
Psychiatry	1557	1857	3414	45.6%
Family medicine	2937	4006	6943	42.3%
Dermatology	438	786	1224	35.8%
Allergy and immunology	70	158	228	30.7%
Medical genetics	11	31	42	26.2%
Pediatrics	1749	5089	6838	25.6%
Obstetrics and gynecology	665	3691	4356	15.3%

In his provocative and thoughtful essay, Dr. Bernstein posits that a decrease in remuneration for orthopaedists could drive a decline in the number of applicants. Would that be a bad thing? While he appropriately notes that being influenced by financial incentives is not an indictment of the character of applicants, if finances, rather than a genuine love of orthopaedics, dominate an individual's career choice, would the specialty suffer if those people didn't apply? It is not now possible to ferret out through the interview process those for whom

money is the driving force. Were those individuals to self-select out of the pool, they could effectively enhance, rather than hurt, the quality of the future work force.

To have 123 applications for every spot (something that makes a primary-care internist like myself salivate) means that program directors need do very little to encourage applicants. Such comfortable statistics can lead to complacency and maintenance of the status quo. As Dr. Bernstein points out, women are woefully underrepresented in orthopaedics, especially given their

essentially equal numbers in graduating medical school classes. The situation is worse for individuals from racial and ethnic groups underrepresented in medicine [5]. With fewer total applicants, programs might increase their efforts to recruit candidates from underrepresented groups, thereby enhancing the excellence of the specialty. Understanding why women and minorities are drawn to some surgical specialties, such as obstetrics and gynecology, could inform strategies for increasing the diversity of the work force in orthopaedics [13]. Dr. Bernstein argues that orthopaedics needs to be welcoming to all, regardless of the future of orthopaedic compensation. As noted in their editorial on this topic, Drs. Caird and Weiss suggest that increasing women in leadership positions and attending to work life balance would be among the changes that could support such a welcoming environment [14].

The fear that orthopaedics could ever find itself with fewer applicants than there are positions seems unfounded, even if reimbursement were to decrease. Noting that orthopaedists are among the least satisfied with their salaries, it seems unlikely the discipline would allow salaries to decline to such a degree that compensation will influence applications [7]. However, contemplating such hypothetical scenarios could lead the field to pursue greater self-reflection as to what it is that makes orthopedics so attractive beyond remuneration and what it will take to diversify the workforce and ensure that orthopaedics is attractive to all.

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Not the Last Word

I read with interest Dr. Bernstein's article questioning the relationship between incomes and attractiveness of the specialty of orthopaedic surgery. I have long been a proponent of a theater in which we can have some of these tough conversations and I applaud Dr. Bernstein's efforts to do just that. Additionally, I have written about the residency application process and serve in the leadership of many orthopaedic surgery organizations [10-12]. As such, the comments that follow represent my own and in no way are meant to represent past coauthors or any organization to which I belong.

When I first read the piece, my first thoughts were, "yeah ... so what?" The fact that careers that guarantee such a handsome lifestyle are among the most highly desirable is neither newsworthy nor debatable. As long as a person gets into an orthopaedic surgery residency, graduates, and passes his or her board examinations, (s)he is nearly guaranteed an income many standard deviations above the American mean regardless of skill level or quality of outcomes.

What I do find interesting is the suggestion by Dr. Bernstein that if the salaries of orthopaedic surgeons dipped, any commensurate dip in our applications to the match would be tolerable due to a maintained or increased desirability in our specialty among women. Additionally, Dr. Bernstein implies that the definition of gender equity in employment would be a specialty that is 50% women. There are several problems that I see with this viewpoint. First, are we suggesting that men and women seeking a career would behave differently based upon a known change in one's compensation with respect to that career? A recent *Harvard Business Review* article

recommends that we not assume that lifestyle imbalances somehow weigh higher in the decision matrix of women who leave their firms for another [1]. In fact, the article's researchers uncovered that in their study population, four out of the top five reasons why men and women left an organization were similar. Two of those four reasons dealt directly with compensation [1].

Second, I am not certain when equity and a 50-50 distribution became synonymous in conversations about gender diversity, but this is a dangerous goal. At its best, it suggests a myopic appreciation of an applicant pool in which the beauty in the differences that gender allows is unrealized. At worst, it suggests a monolithic definition of what defines a desirable career. Though gender has undoubtedly influenced our current demographics, any suggestion that these disparities would be solved in part by an equilibration of salary seems to discount the free will of our students in this entire process.

Lastly, we must agree upon what it means to be an "outstanding student". While it is unquestionable that today's students are outstanding test-takers, outstanding scribes, outstanding research assistants, and the like, what is unknown is if our current methods of selection are yielding the best and most diverse field possible or simply a field that is best at checking a host of agreed-upon boxes that have yet to be shown to relate to a competent orthopaedic surgeon.

References

1. Arscott CH. Why so many thirtysomething women are leaving your company. Available at: <https://hbr.org/2016/03/why-so-many-thirtysomething-women-are-leaving-your-company>. Accessed November 15, 2017.
2. Association of American Medical Colleges. Number of active residents, by type of medical school, GME specialty, and gender: 2015-2016 active residents. Available at: <https://www.aamc.org/data/448482/b3table.html>. Accessed October 17, 2017.
3. Bernstein J. Not the last word. Want to match in an orthopaedic surgery residency? Send a rose to the program director. *Clin Orthop Relat Res*. 2017;475:2845-2849.
4. Bernstein J. The folly of forecasting. *Clin Orthop Relat Res*. 2013;471:1415-1418.
5. Deville C, Hwang WT, Burgos R, Chapman CH, Both S, Thomas CR. Diversity in graduate medical education in the United States by race, ethnicity, and sex, 2012. *JAMA Intern Med*. 2015;175:1706-1708.
6. Grisham S. Medscape physician compensation report 2017. Available at: <http://www.medscape.com/slideshow/compensation-2017-overview-6008547#4>. Accessed October 17, 2018.
7. Medscape Physician Compensation Report 2017. Slide 18. Available at: <https://www.medscape.com/slideshow/compensation-2017-overview-6008547#28>. Accessed November 6, 2017.
8. National Resident Matching Program Results and Data: 2016 main residency match®. Table 13: Applicant choices by specialty, 2016. Available at: www.nrmp.org/wp-content/uploads/2016/04/Main-Match-Results-and-Data-2016.pdf. Accessed October 17, 2017.
9. Polsky D, Richards M, Basseyn S, Wisnoker D, Kenney GM, Zuckerman S, Rhodes KV. Appointment availability after increases in Medicaid payments for primary care. *N Engl J Med*. 2015;372:537-545.
10. Porter SE. Navigating postgraduate orthopaedic surgery education. *J Am Acad Orthop Surg*. 2017;25:401-402.
11. Porter SE, Graves ML. Resident selection beyond the USLME. *J Am Acad Orthop Surg*. 2017;25:411-415.
12. Porter SE, Jobin CM, Lynch TS, Levine WN. Survival guide for the orthopaedic surgery match. *J Am Acad Orthop Surg*. 2017;25:403-410.
13. Riley LE. Ensuring a diverse physician workforce: Progress but more to be done. *JAMA Intern Med*. 2015;175:1708-1709.
14. Weiss J, Caird MS. Women and underrepresented minorities in orthopaedics. *Clin Orthop Relat Res*. 2016;474:1943-1944.