

Strength in Numbers: A SWOT Analysis of Plastic Surgery

Jessica D. Blum, MD, MSc*
 Meera Reghunathan, MD†
 Perry S. Bradford, MD‡
 Justin Camacho, BS§
 Gabriela Sendek, MS†
 Lynn Jeffers, MD, MBA¶
 Camille Cash, MD||
 Donald Mackay, MD**
 Paris D. Butler, MD, MPH††
 Amanda A. Gosman, MD†

Background: Plastic surgeons comprise the minority of practicing surgeons, with an even smaller minority practicing in an academic setting. As the practice of medicine and the systems in which we operate continue to evolve, it is essential that plastic surgeons have a say in the changing landscape. This study conducted a strengths, weaknesses, opportunities, and threats (SWOT) analysis of plastic surgery to identify unifying strengths and common threats.

Methods: An electronic survey was distributed to American Council of Academic Plastic Surgeons' Winter Meeting attendees on three separate occasions preceding the meeting. Respondents were asked to provide demographic information and to identify the top three strengths, weaknesses, opportunities, and threats (SWOT analysis) for the specialty. Subgroup analyses were performed based on demographic characteristics.

Results: A total of 187 responses were received from meeting attendees, representing an 89.0% response rate. Most respondents were non-Hispanic (78.6%), White (66.8%), women (59.5%), and faculty/independent physicians (65.8%). The most identified strength in plastic surgery was our problem-solving abilities (62.0%). The most identified weakness was poor public perception of plastic surgery (54.0%). The most identified opportunity was demonstration of value to health systems (67.9%), and the most identified threat was scope of practice creep by other specialties (78.1%). The SWOT analysis identified lack of surgeon diversity as a key weakness, improvement of surgeon diversity as a key opportunity, and lack of diversity among plastic surgeons as a key threat to the specialty.

Conclusion: Only through a diverse but united front can we effectively use our strengths to face our threats and employ opportunities to overcome our weaknesses. (*Plast Reconstr Surg Glob Open* 2023; 11:e5462; doi: [10.1097/GOX.00000000000005462](https://doi.org/10.1097/GOX.00000000000005462); Published online 14 December 2023.)

From the *Division of Plastic Surgery, University of Wisconsin, Madison, Wis.; †Division of Plastic Surgery, Department of Surgery, University of California San Diego, San Diego, Calif.; ‡Department of Plastic and Maxillofacial Surgery, University of Virginia Health, Charlottesville, Va.; §Department of Medicine, Drexel University College of Medicine, Philadelphia, Pa.; ¶St. John's Pleasant Valley Hospital, Camarillo, Calif.; ||Camille Cash MD Aesthetic Plastic Surgery, Houston, Tex.; **Department of Surgery, Penn State Health, Hershey, Pa.; and ††Division of Plastic and Reconstructive Surgery, Department of Surgery, Yale School of Medicine, New Haven, Conn.

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INTRODUCTION

Plastic surgery is a highly competitive field that requires a combination of technical skill, creativity, and aesthetic sensibility.^{1,2} Plastic surgeons work in a variety of practice settings and have the privilege of caring for patients of all backgrounds from birth to end-of-life. A successful match into plastic surgery is correlated with high test scores, honors on clinical rotations, and the pedigree of one's medical school, and requires an average of 28.4 research experiences, exceeding all other specialties.³ The field is selecting for an elite academically oriented student who is coached to present themselves as a dedicated academician and researcher, but the number of graduates who actually follow this pathway is very small (15%).^{4,5} Likewise, fewer and fewer plastic surgery graduates are pursuing

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fellowship training, with faculty who graduated in the past 5 years and those in nonacademic positions significantly less likely to complete a fellowship.⁶

Despite the breadth of plastic surgery practice, plastic surgeons comprise only a small fraction of the total number of surgeons. In the United States, plastic surgeons represent less than 5% of all surgeons and less than 1% of all practicing physicians.⁷ Logically, these numbers translate to minimal representation among the general surgical leadership. Currently, in the United States, 74% of plastic surgery training programs are divisions within larger surgical departments.⁸ You can count on one hand how many of these general surgery departments are headed by a plastic surgeon, resulting in insufficient power to advocate for plastic surgery's interests.

Bias in the house of medicine is only one of many current and potential threats to our success.^{9,10} Plastic surgery is plagued by public misconception about the breadth and depth of the field. Government regulation limits reimbursement for essential reconstructive services,^{11,12} and there is difficulty in demonstrating our financial value to colleagues in academia. Within the field of plastic surgery, there is bias against demographic-minority groups and even internal biases between academic and private practice surgeons.

As the practice of medicine and the systems in which we operate continue to evolve, it is essential that plastic surgeons have a say in the changing landscape. A SWOT (strengths, weaknesses, opportunities, and threats) analysis is a strategic planning tool that is used to identify and evaluate the current state of an organization, identify areas for improvement, and develop strategies to address challenges and capitalize on opportunities.¹³ The acronym stands for strengths, referring to internal factors that give the organization an advantage; weaknesses, or internal factors that disadvantage the organization; opportunities, representing external factors that the organization can leverage to its advantage; and threats, or external factors that pose a potential challenge to the organization.

This study sought to conduct a SWOT analysis of plastic surgery to serve as a unifying assessment of the diverse elements of our specialty. It is the authors' hope that by finding common ground and identifying sources of bias within and outside our specialty, we can harness our strengths to face any threats and elucidate what opportunities we can use to overcome our weaknesses.

METHODS

An electronic survey study was created using SurveyMonkey and distributed via the American Council of Academic Plastic Surgeons' (ACAPS) official email listserv on three occasions 4 days apart in the weeks leading up to the ACAPS 2023 10th Annual Winter Meeting. (See appendix, Supplemental Digital Content 1, which displays a copy of the electronic survey sent in this study, <http://links.lww.com/PRSGO/C919>.) All participants responded to demographic questions followed by identification of the top three strengths, weaknesses, opportunities, and threats (SWOT analysis) for the specialty. The survey was followed by in-person panels at the Winter Meeting and discussions that further contributed to the

Takeaways

Question: What are the unifying strengths, weaknesses, opportunities, and threats for the field of plastic surgery?

Findings: An electronic survey sent to 2023 American Council of Academic Plastic Surgeons' Winter Meeting attendees received 187 responses, with an 89% response rate. The most identified weakness was poor public perception of plastic surgery, and the most identified threat was scope of practice creep by other specialties.

Meaning: By performing a critical self-reflection of the field, plastic surgeons can unite to capitalize on important opportunities for the growth of the field and address threats that may hinder progress.

larger conversation and are described in another article in this series.

Descriptive statistics were used to analyze participant demographics, including age, gender identity, geographic region, and academic rank. Subgroup analyses were performed based on respondent practice setting (academic versus nonacademic); training level (faculty/independently practicing surgeon, resident/fellow, medical student); and gender, race/ethnicity, and "other" minority status [LGBTQIA+, first-generation low-income (FGLI)].¹⁴ Analyses included chi-square goodness of fit or Fisher exact test with adjusted standardized ratios for post hoc testing. All responses were analyzed using SPSS version 29 (IBM Corp., Armonk, N.Y.).

The study was deemed to be exempt from institutional review board review by the University of California San Diego (OIA-312). Data from the survey were collected anonymously without any associated identifying information.

RESULTS

A total of 187 responses were received from meeting attendees, representing an 89.0% response rate. Most respondents were non-Hispanic (78.6%) White (66.8%) women (59.5%) in the role of faculty/independently practicing physicians (65.8%). Two respondents identified as nonbinary. Approximately one third of respondents were FGLI and/or LGBTQIA+ identifying (34.2%). Half of respondents were a program chief/chair or program director, with 71% of respondents practicing in an academic setting (Table 1).

SWOT Analysis

The most frequently identified strengths in plastic surgery were our problem-solving abilities (62.0%), role in improving quality of life for patients (60.4%), breadth of clinical practice (58.8%), and penchant for innovation (58.3%). The most frequently identified weaknesses included poor public perception of plastic surgery (54.0%), overlapping scope of practice with other specialties (51.9%), and insurance coverage and reimbursement for plastic surgery (41.7%). The top three selected opportunities were to demonstrate value to health systems (67.9%), improve public perception of plastic surgery

Table 1. Respondent Demographics

Demographics	n (%)
Total cohort	187
Gender identity	
Female	96 (61.1)
Male	55 (35.0)
Nonbinary	1 (0.6)
Prefer not to answer	5 (3.3)
Race	
American Indian or Alaska Native	1 (0.6)
Asian or Asian American	27 (17.2)
Black or African American	10 (6.4)
Native Hawaiian or Other Pacific Islander	0 (NA)
White	109 (69.4)
Prefer not to answer	12 (7.6)
Ethnicity	
Non-Hispanic/Latino	126 (80.3)
Hispanic, Latino/a, or of Spanish origin	14 (8.9)
Prefer not to answer	17 (10.8)
Identities	
First-generation, low-income	33 (20.4)
LGBTQIA+	9 (5.7)
Prefer not to answer	9 (5.7)
Other	7 (4.2)
None of the above	106 (66.9)
Training stage	
Faculty/independently practicing physician	114 (72.6)
Resident/fellow	14 (8.9)
Medical student	29 (18.5)
Current practice model	
Academic	77 (49)
Employed	5 (3.2)
Group private practice	10 (7)
Solo	15 (9.6)
Large multispecialty group	1 (0.6)
Recently retired	1 (0.6)
Other	2 (1.3)
Academic titles	
Chief/chair	26 (16.6)
Program director	27 (17.2)
Assistant program director	17 (10.8)
Professor	24 (15.3)
Associate professor	26 (16.6)
Assistant professor	16 (10.2)
Clinical instructor	3 (1.9)
None of the above	22 (14)
Other	7 (4.5)
Clinical focus	
General reconstruction	41 (26.1)
Microsurgery	21 (13.4)
Craniofacial	13 (8.3)
Hand	19 (12.1)
Pediatric surgery	1 (7.0)
Aesthetic	23 (14.6)
Gender affirmation surgery	6 (3.8)
Burn surgery	2 (1.3)
Multiple	7 (4.5)

This table delineate the demographics of survey respondents.

(53.5%), and expand insurance coverage and reimbursements for plastic surgery services (43.9%). Finally, the most common threats were identified as scope of practice

creep by other specialties (78.1%), scope of practice creep by other nonphysicians (58.8%), and insurance coverage and reimbursement for plastic surgery (53.5%) (Fig. 1).

Gender Identity

Respondents who identified as male were significantly less likely to select improving patient quality of life as a top three strength of the specialty (chi-squared = 8.149, $P = 0.017$). However, male respondents were significantly more likely to select innovation as a top three strength (chi-squared = 6.871, $P = 0.032$) and expanding scope of practice as a top three opportunity when compared with their counterparts who identified as female (chi-squared = 7.889, $P = 0.019$). Moreover, female respondents were more likely to deem scope of practice creep by nonphysicians as top three threats (chi-squared = 8.705, $P = 0.013$). There were no other gender-based differences in perceived strengths, weaknesses, opportunities, or threats.

Surgeon Diversity

The SWOT analysis identified lack of surgeon diversity as a key weakness, improvement of surgeon diversity as a key opportunity, and lack of diversity among plastic surgeons as a key threat to the specialty. Subgroup analysis revealed that faculty/independently practicing surgeons were significantly less likely to deem lack of surgeon diversity as a top three weakness (chi-squared = 19.278, $P < 0.001$) compared with trainees, yet they did identify it as a top three threat to the specialty (chi-squared = 20.639, $P < 0.001$).

Black/African American, FGLI, and LGBTQIA+ respondents were significantly more likely than their counterparts to deem lack of surgeon diversity as a top three weakness ($P < 0.001$ for all) and a top three threat ($P < 0.05$ for all). LGBTQIA+ respondents were the only group that was statistically more likely to designate improved diversity of plastic surgeons as a top three opportunity (chi-squared = 10.883, $P = 0.028$). There were no other significant differences between demographic groups surrounding the importance of surgeon diversity. Notably, there was no significant difference in the perceived importance of diversity based on practice setting (academic versus nonacademic).

Academic versus Nonacademic Plastic Surgeons

When comparing academic and nonacademic surgeons, the former were more likely to deem collaboration with other specialists as a strength (chi-squared = 13.276, $P < 0.001$) and perception of plastic surgery by other specialties as a threat (chi-squared = 4.546, $P = 0.035$). On the other hand, nonacademic surgeons were more likely to identify improvement in patient quality of life as a strength (chi-squared = 7.325, $P = 0.006$) and scope of practice creep by nonphysicians as a threat (chi-squared = 7.242, $P = 0.011$).

DISCUSSION

The House of Plastic Surgery: Strength in Unity

Several themes emerged from our SWOT analysis. First, we found that respondents believe plastic surgeons'



Fig. 1. SWOT analysis responses. This describes a summary of the results of the most common answers from respondents in describing the SWOT to the field of plastic surgery.

problem-solving abilities, capacity to improve patient quality of life, breadth of clinical practice, and ability to innovate are notable strengths of the specialty. Poor public perception of plastic surgery was identified as both a weakness and opportunity. Issues surrounding insurance coverage and reimbursement were also identified as a source of weakness, an opportunity, and a threat. Finally, encroachment on plastic surgery by other specialties and nonphysicians was identified as a key weakness, threat,

and opportunity. Subgroup analyses revealed increased prioritization of surgeon diversity by respondents from demographic-minority groups and medical students. Also of interest was the difference in perceived strengths and threats based on practice setting, with nonacademic surgeons emphasizing patient quality of life as a strength of their practice and academic surgeons more so focusing on their ability to collaborate with other specialists as a key strength.

Bias within the specialty was a common thread of the identified threats, be it internal bias from fellow plastic surgeons or external bias from the house of medicine or regulators at large. A 2019 *Plastic and Reconstructive Surgery* publication by Chopan et al used language processing technology to evaluate over one million messages (Tweets) referencing plastic surgery and found phrases using the term “plastic” surgery trended toward negativity with unfavorable associative terms such as “fake,” “ugly,” “bad,” “fails,” and “wrong.” Conversely “reconstructive” was used with more positive associated terminology such as “honor,” “amazing,” “successful,” and “respect.”¹⁵ These findings reflect explicit biases of the layperson in respect to plastic surgery, which is often conflated with aesthetic surgery. Moreover, these findings echo biases of “reconstructive” or “academic” plastic surgeons against their aesthetic surgical counterparts. Anecdotally, this writer has been privy to conversations in which surgeons are labeled as “sell-outs” and “disappointments” for moving from academic to private aesthetic practice, despite their work to improve patient quality of life and advance the field through innovation and technology. It is critical that the value of aesthetic private practice surgery is recognized, both in its ability to improve patient quality of life and in required technical skill and ethical standards. Rather than arbitrarily ascribing societal value to different segments of plastic surgical practice, we should consider instead the strength gained in unity. This can take the form of increased collaboration between academic and aesthetic plastic surgical societies and standardized resident education of aesthetic surgery. Private practice surgeons should be encouraged to attend society meetings and be given speaking opportunities to demonstrate their expertise in the field. Residents should be given more opportunities to rotate in the community, and vice versa, allowing private practice providers to be educators and engage with so-called academic education.

Bias within the field of plastic surgery hits particularly hard on minority demographic groups based on factors such as gender, race/ethnicity, and sexual orientation. Our study revealed the unfortunate but unsurprising finding that those from minority demographic groups are more likely to endorse the lack of diversity as a weakness, opportunity, and threat. The importance of diversity in the plastic surgery workforce is critical to providing equitable care to patients and shaping the future of the specialty. Research has shown that diverse teams lead to improved patient outcomes, increased patient satisfaction, and enhanced innovation.^{16–18} A diverse workforce also ensures that the medical profession better reflects the communities it serves, which can improve trust and communication, and reduce healthcare disparities.^{19–21} We must pay special attention to our finding that minority demographic groups were more likely to identify the lack of surgeon diversity as a weakness, threat, and opportunity to improve plastic surgery. This finding in conjunction with the snail-paced rate of diversification of our field^{20,22,23} portends serious delay in the timeline to diversification. The only glimmer of hope is our finding that the

upcoming generation of plastic surgeons places a greater emphasis on diversity and equity in the workplace.

The House of Surgery: Demonstrating Our Value

Beyond the bias within the field, plastic surgery has historically faced bias and scrutiny within the larger house of surgery and house of medicine, demonstrated by the scarcity of plastic surgery leaders. This is likely a deep-rooted and multifaceted bias that varies over space and time, but contributing factors may be the perception that plastic surgeons do not do “serious” surgery, are simply “closers” who primarily work with soft tissue and do not perform life-saving operations. General surgery residents are not required to rotate in plastic surgery, depriving them of an opportunity to appreciate the extent of our practice. Moreover, when considering a career in plastic surgery, general surgery trainees report facing backlash in the form of demeaning comments or jokes by faculty (64.1%) or a lack of support altogether (20.5%).²⁴ In reality, plastic surgeons are involved in a broad range of aesthetic and reconstructive procedures working from head-to-toe with skin, soft tissue, bone, and visceral organs. As excellent technicians, plastic surgeons perform everything from laparoscopic abdominal wall surgery to liver transplant anastomoses and jejunal esophageal reconstruction. Plastic surgeons have the opportunity to collaborate with multiple other specialists, making them all the more equipped to serve in a leadership role within a surgical department. Alternatively, many plastic surgery divisions have begun the journey of attaining departmental status with the goal of gaining support from institutional stakeholders, having fiscal profitability within the institution, and coordinating an integrated plastic surgery training program; however, this process requires significant effort and time, taking anywhere from 1 to 3 or more years.²⁵ Addressing the misconceptions of plastic surgeons amongst our colleagues will take a multilevel, united effort. Potential interventions include standardized medical education of the breadth and depth of plastic surgery which has shown to be a desired addition to medical education.²⁶ An affordable and time-efficient educational model was demonstrated by Reghunathan et al²⁷ in their creation of a plastic surgery learning module for medical students. Encouraging general surgery residents to rotate on plastic surgery services and see the breadth and depth of procedures may improve the field’s perceived value amongst our surgical colleagues.

Plastic Surgery in the Healthcare System at Large

An additional critical opportunity identified by our respondents is demonstration of our value to the health care system. A study conducted at the University of Pennsylvania by Wang et al²⁸ reported the division of plastic surgery as the fourth most productive surgical division in terms of relative value units which serve as a measure of productivity. Moreover, plastic surgeons contributed an estimated \$2.2–\$3.7 million due to their role in complication salvage cases.²⁸ This is reinforced by research demonstrating that plastic surgery-assisted closures decrease adverse outcomes to the benefit of reimbursements and

decreased hospital penalties,²⁹ and expediting definitive treatment.³⁰ Compounding the issue, research has shown that work relative value units for plastic surgery procedures may be inappropriately low in many cases such as mastectomy for gynecomastia, debridement of muscle/fascia, and debridement of subcutaneous tissue.³¹ Dedicated effort to systematically evaluate our value within plastics surgery departments and in the health system at large is essential for gaining the negotiating power we need to advocate for appropriate resource allocation.

When it comes to regulation and reimbursement practices, the shift of the healthcare industry away from a fee-for-service system to one of value-based care places plastic surgeons especially at risk. For example, it would be difficult to argue that liposuction is valuable to a population with undertreated active cancer in a system that values outcomes over performance.³² As was eloquently verbalized by Fan et al³³ “quality and appropriate costs in plastic surgery defy consensus. Significant cost variation exists within procedures, and defining an episode of care is difficult. It is imperative that plastic surgeons step up to shape the dialogue around development and implementation of quality metrics and payment formulas.”

Fan et al go on to describe public reporting of clinical outcomes as a first-line measure followed by quality metrics such as rate of flap loss by indication to determine payment adjustments.³³ Quality of life measures such as BREAST-Q are essential in demonstrating the value of plastic surgical care³⁴ and are an area demanding more time and resource allocation.

Our results highlight the threat of encroachment by both physicians and nonphysicians, a well-known issue regardless of one’s practice setting. A 2022 publication by Rochlin et al³⁵ describes the decreasing market share of plastic surgeons relative to other specialists in facial reconstructive surgery including rhinoplasty (–2.1%), blepharoplasty (–2.0%), and skin cancer reconstruction (–3.0%). Organizations such as the American Board of Cosmetic Surgery (ABCS) pose a threat to plastic surgeons’ practices and, more importantly, to patient safety by allowing licensed physicians to earn a certification, often without any surgical training. In 2020, Long et al reviewed online information to assess residency training history and advertised ABCS-certified physicians, revealing nearly 10% of members were not trained in a surgical discipline and over half advertised surgical operations beyond the scope of their ACGME or CODA residency training. Out-of-scope procedures offered included liposuction (59.6%), abdominoplasty (50.0%), breast augmentation (49.7%), and buttock augmentation (36.5%).³⁶ Expanding on these findings, Gabrick et al in 2022 compared rates of punitive action between ABCS and the American Board of Plastic Surgery members. Of note, ABCS diplomats had significantly higher rates of disciplinary administrative action by their respective state medical boards, a higher proportion of repeated offenses, and more public letters of reprimand.³⁷ As a first measure, continued efforts to promote awareness surrounding the difference between American Board of Plastic Surgery and ABCS certification is essential for patient safety and the security of the specialty.³⁸

Limitations

Although survey studies provide valuable insights into the opinions and experiences of a particular group, there are several limitations to consider. First, the response rate of 89.0% may not accurately represent the views of all plastic surgeons and trainees but rather the subset that chose to attend the ACAPS Winter Meeting, with an academically focused majority. Along this vein, the study was conducted among meeting attendees, who may have different perspectives than nonattendees. Due to the anonymous nature of our survey, we are not able to conduct an analysis for nonresponse bias. Third, the study relied on self-reported data, which may be subject to social desirability bias. Fourth, the study was cross-sectional in nature and therefore cannot establish causality.

CONCLUSIONS

To overcome these challenges and capitalize on our opportunities, plastic surgeons must unite as a specialty while relying on our strengths. Collaboration with other specialties, our interest in increasing diversity and inclusion, and use of innovation/technology to improve patient outcomes are some of many tools in our armamentarium. Joining forces between our academic and private practice counterparts is another key ingredient in the recipe for our long-term success. By becoming a more inclusive specialty and appreciating all our differences, we will become stronger. Through a united front, we can effectively use our strengths to face our threats and employ opportunities to overcome our weaknesses.

Amanda A. Gosman, MD

Division of Plastic Surgery
Department of Surgery

UC San Diego

200 West Arbor Drive

San Diego, CA 92103-8890

E-mail: agosman@health.ucsd.edu

DISCLOSURE

The authors have no financial interest to declare in relation to the content of this article.

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