

# Matching into Plastic Surgery: Insights into the Data

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**Summary:** Matching into plastic and reconstructive surgery residency, whether integrated or independent, is a competitive process. This article serves to examine, review, and summarize data published on both residency application processes. Through the results summarized, applicants should carefully review the objective and subjective factors used in evaluation to strategize how to make themselves as competitive as possible. Specifically, though, early review of the data presented may allow applicants time to focus on what modifiable factors still remain before their respective application seasons. (*Plast Reconstr Surg Glob Open* 2022;10:e4323; doi: 10.1097/GOX.0000000000004323; Published online 20 May 2022.)

## INTRODUCTION

Across all medical specialties, application numbers to the Electronic Residency Application Service have increased over recent years despite the number of available residency positions not meeting the same metric.<sup>1</sup> In fact, 2021 had the highest number of residency applicants than any previous year in history. Applications to integrated plastic surgery residency positions have also seen large increases in the number of applications each year, despite not having an equal representation of increased spots.<sup>2</sup> The increasing competitiveness is not only seen in the integrated match, but in the independent match as well.<sup>3-5</sup>

With the rising competitiveness of both the integrated and independent plastic surgery matches, applicants should become experts of what they can do to best increase their chances of matching and acquiring a plastic surgery residency position. This article serves to review and summarize the existing literature for both match processes to aid prospective applicants in achieving their ultimate goals of becoming a plastic and reconstructive surgeon.

## THE INDEPENDENT MATCH

Although the independent match rate has decreased in recent years, it remains higher than what it was in the 2000s before changes in training requirements for applicants and programs.<sup>6</sup> During this posttraining requirement era, the number of applicants has decreased both from 2010 and on, and during the period of 2010–2018.<sup>7</sup> More importantly, the total number of approved and filled

positions has decreased from 2012 to 2022, as shown in Figure 1.<sup>8</sup> Further, the 2021 independent match resulted in the second lowest match rate (70%) in the past 12 years, with 0 unfilled positions.<sup>3</sup>

When considering factors associated with a successful match, increasing numbers of interviews has been shown to be a significant predictor.<sup>7,9</sup> Specifically, five or more interview offers was associated with a 96% chance of matching. Further, higher United States Medical Licensing Examination (USMLE) Step 1 scores were also seen in matched versus unmatched applicants.<sup>7</sup> However, of all academic measures, letters of recommendation, specifically “what it says” and “who says it,” were ranked most important among independent program directors (PDs).<sup>10</sup> For subjective measures, faculty interview performance was the most important factor, with applicant “fit” as the second highest rank.

As those pursuing the independent match are likely surgical residents in another field, it is too late for them to have an influence on Step 1 scores, as they would have already taken the examination 10 years prior. What they can focus on, however, is achieving high-quality letters of recommendation from well-known plastic surgeons, though this may be difficult if an applicant is training in a hospital system that does not have a department or division of plastic surgery. Moreover, while research productivity is often discussed when evaluating an applicant, publications were the eighth most important academic quality rank, suggesting that focusing on other areas may be more beneficial in overall applicant strength.<sup>10</sup> Further, preparing for and excelling during the interview may drastically increase an applicant’s chances of matching.

## OVERVIEW OF THE INTEGRATED MATCH

The data presented in this section are a review of the most contemporary and up-to-date information available,

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which is notably after the 2020–2021 COVID-19–impacted virtual interview application cycle, and likely will differ from past and future cycles. In the 2021 integrated plastic surgery match, 416 applicants applied (an increase from 358 in 2020)<sup>2</sup> for 187 spots<sup>1</sup>—2.2 applicants per available spot. Additionally, there has been only one unfilled position in the past 4 years, which occurred in 2018.<sup>11</sup>

In the 2021 National Resident Matching Program (NRMP) applicant survey, of the respondents, the average matched applicant applied to 74 programs and was offered a mean of 16 interviews, compared with those who did not match, who applied to 78 programs and were offered a mean of nine interviews.<sup>12</sup> Both groups of matched and unmatched applicants attended the same number of interviews that they were offered, suggesting that the average applicant attends all interviews received. In the 2021 NRMP program director survey, the average program received 282 applications, sent out 42 invitations, interviewed 35 applicants, and ranked 31.<sup>13</sup> These data coincide with a survey sent to all integrated PDs following the 2020 application cycle, in which the number of invitations sent out was 41.4 for an average of 2.4 available spots.<sup>14</sup> However, 37% of PDs in the survey reported increasing the number of interview slots in the previous cycle, which may be a result of the virtual nature due to the COVID-19 pandemic.

The most recent data characterizing those who matched were released by the NRMP for the 2019–2020 application cycle and are shown in Table 1.<sup>15</sup> Notably, those who matched had higher numbers of contiguous ranks, USMLE Step 1 and Step 2 CK scores, research productivity (despite similar number of research experiences), Alpha Omega Alpha (AOA) membership, and were more likely to have graduated from a top-40 medical school with highest NIH funding. A 2016 review of the integrated plastic surgery match by Tadisina et al, also showed that successful match rates were associated with AOA status and graduating from a top-40 ranked medical school.<sup>16</sup>

### Takeaways

**Question:** What does the available literature regarding applying to plastic surgery residency show applicants they can/should do before applying?

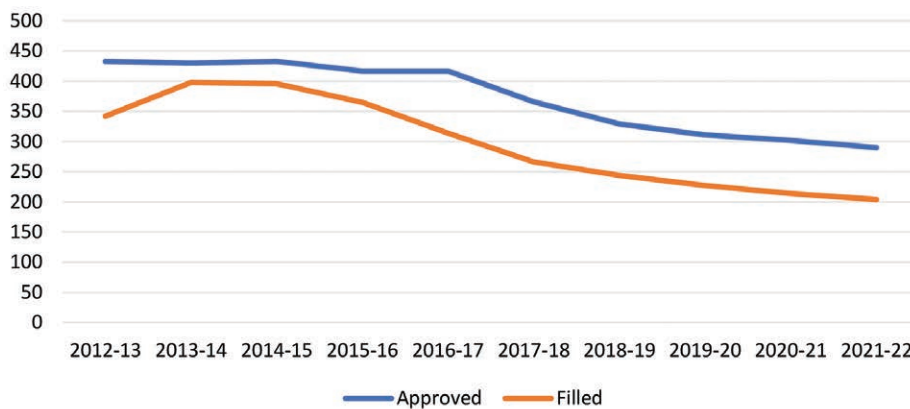
**Findings:** Of subjective and objective factors, letters of recommendation and passing/succeeding on board examinations are among the top factors evaluated.

**Meaning:** Early decision on a career in plastic surgery may allow applicants to focus on the factors highly sought after/evaluated by program directors.

Matching is certainly competitive and a daunting task to many, and as such, Weissler et al, studied why students may not apply to plastic surgery residency.<sup>17</sup> They found that of first and second year students, the most commonly noted reasons to not pursue plastic surgery were competitiveness of the match, followed by greater interest in other fields. Further, exposure to plastic surgery (ie, students who attend schools with plastic surgery training programs) have a higher percentage of students applying to plastic surgery residency.<sup>18</sup> Students without home programs often then seek out opportunities with plastic surgery faculty outside their home institution.<sup>19</sup>

It should be noted that the advent of the Plastic Surgery Common Application, known as PSCA, may encourage more applicants to apply as it removes the barrier of cost from the equation, allowing applicants to have a greater degree of financial flexibility if considering dual applying to another specialty.<sup>20</sup> Moreover, if applicants are to apply and not match, they are faced with a difficult decision to make with how to proceed. The 2019 NRMP applicant survey detailed the likelihood to pursue different routes postmatch, and is shown in Table 2.<sup>21</sup> Patel et al demonstrated that reapplicants to plastic surgery have a decreased chance of matching in additional cycles than in their initial match cycle; therefore, the suggestion has

### Independent Plastic Surgery 10 Year Complement Trend



<sup>8</sup>Fox C, Neumeister M. SES 065 Review Committee for Plastic Surgery Update. ACGME Annual Education Conference, online. 2022.

**Fig. 1.** Independent plastic surgery 10-year complement trend.<sup>8</sup> Used with permission from Chris Fox, Executive Director of Plastic Surgery Review Committee, Accreditation Council for Graduate Medical Education. Presented at the ACGME Annual Education Conference on March 30, 2022.

**Table 1. 2020 NRMP Matched versus Unmatched Statistics**

	Matched (n = 158)	Unmatched (n = 56)
No. contiguous ranks	13.7	7.3
USMLE Step 1 score	249	245
USMLE Step 2 score	256	250
Research experiences	5.9	5.9
Abstracts, presentations, publications	5.9	5.9
Percentage who are AOA members	43.0%	19.6%
Percentage who graduated from a top-40 NIH funding medical school	34.2%	28.6%

Data are presented as means unless otherwise noted.

<sup>15</sup>Data retrieved from: National Resident Matching Program. Charting Outcomes in the Match: Senior Students of U.S. MD Medical Schools. Published 2020. Accessed 11 Nov 2021. Available at [https://mk0nrmp3oyqui6wqfm.kinstacdn.com/wp-content/uploads/2020/07/Charting-Outcomes-in-the-Match-2020\\_MD-Senior\\_final.pdf](https://mk0nrmp3oyqui6wqfm.kinstacdn.com/wp-content/uploads/2020/07/Charting-Outcomes-in-the-Match-2020_MD-Senior_final.pdf)

**Table 2. Likelihood to Pursue Different Strategies if Applicant Does Not Match among Those Who Did Not Match**

Strategy	Likelihood (Max = 5)
Participate in SOAP for a position in plastic surgery	4.4
Participate in SOAP for a preliminary year position and re-enter plastic surgery match next year	3.9
Pursue research and re-enter plastic surgery match next year	3.9
Participate in SOAP for a position in a less competitive back-up specialty	3.9

<sup>21</sup>Data Retrieved From: National Resident Matching Program. Results of the 2019 NRMP Applicant Survey by Preferred Specialty and Applicant Type. Published 2019. Accessed 11 Nov 2021. Available at <https://www.nrmp.org/wp-content/uploads/2022/01/Applicant-Survey-Report-2019.pdf>

been made to analyze one's initial application for potential weaknesses and address those before the initial application to maximize chances of a successful match.<sup>4</sup>

### WHAT PROGRAM DIRECTORS LOOK FOR

Identifying what factors programs and PDs look for in applicants is of paramount importance to the medical student interested in becoming a plastic surgeon. The 2021 NRMP survey gives insight into the most recent factors considered by PDs for interviewing and ranking applicants.<sup>13</sup> Performance on the USMLE/COMLEX examinations is the most important education/academic performance factor, as failure of either one are the top two considerations for deciding who to interview. Cutoff scores on USMLE Step 1 have been described in the literature, ranging from scores of 190–245+.<sup>22,23</sup> However, with the transition of W to a pass/fail system, Step 2 Clinical Knowledge (CK) may become a new metric for cutoff,<sup>24</sup> and applicant familiarity will likely become a more important factor.<sup>25</sup> Further, as mentioned previously, many have reported that membership in AOA is often considered in evaluation.<sup>16,22,23</sup> However, there is a decreasing number of medical schools with AOA, which may further complicate assessing objective factors in application review. Lastly, research is often considered, and applicants who complete research fellowships are found to have a greater chance of matching after completing one than not completing one.<sup>26</sup>

When analyzing subjective variables, letters of recommendation received the top score for importance of personal factors deciding who to interview.<sup>13</sup> This coincides with similar data from LaGrasso,<sup>27</sup> Hatéf,<sup>23</sup> and Zins.<sup>16</sup> Specifically, Hatéf and Janis found that “what it says” and “who says it” are the two highest academic quality ranks by PDs.<sup>23</sup> However, the American Council of Academic Plastic Surgeons now requires a standardized letter of recommendation for each letter writer, attempting to turn this subjective process to a more objective one.<sup>28</sup> A recent

analysis of this process, though, revealed skewed data with more applicants being ranked either “1” or “2–5,” which questions the objectivity of the letter.<sup>29</sup> Thus, additional investigations into the usefulness of the standardized letter are warranted. Other commonly cited subjective factors include performance on away rotations (discussed more below) and “grit.”<sup>16</sup> Recently, Luce described both the importance of having and testing for emotional intelligence and grit in plastic surgery applicants, though the methods in which this may be carried out have not yet been validated, and are an area for future study.<sup>30</sup>

### AWAY ROTATIONS

An in-depth analysis of away rotations in plastic surgery was performed by Drolet et al, in 2016.<sup>31</sup> Before the COVID-19 pandemic, when there was no limit on the number of away rotations an applicant could partake in, applicants averaged 2.6 away rotations over an average of 9.2 weeks. When asked about the objective of away rotations, nearly 50% of PDs reported it was for “finding a ‘good fit’ program” for an applicant, whereas 44.6% of applicants reported it was to make a good impression at that program. Specifically, interactions with residents and faculty were reported to be the most valuable activities during the away rotation, by both PDs and applicants.

The financial burden, however, can be significant. In the previously mentioned study by Drolet et al, applicants spent an average of over \$3500 on away rotation costs.<sup>31</sup> Additionally, Gordon et al reported a similar number of roughly \$4000 on away rotation costs for applicants in the 2019–2020 application cycle.<sup>32</sup> Despite these known expenditures, over 90% of applicants report that the away rotations made them more competitive, and PDs agree that strong performance can make a candidate more competitive. Further, 27% of matched PGY-1 positions in the 2014–2015 application cycle were composed of away rotations, further strengthening this point.

## TIERS OF APPLICANTS

It is important for applicants to keep in mind that the ultimate goal of a program director is to find prospective residents who will become competent, confident, ethical, and safe plastic surgeons. However, among those who are selected, PDs are also interested in identifying “superstars,” as described by Luce.<sup>33</sup> These residents are 2–3 SDs above the mean in terms of performance and professionalism. Who these “superstars” are, however, may vary based on “program personality” and what characteristics they choose to prioritize and value in an ideal applicant. Moreover, PDs want to do their best to avoid selecting the “problematic finisher,” who may create issues for themselves and the training program in terms of skill and/or professionalism.<sup>33</sup> Regardless, most applicants will fall somewhere between the two extreme groups, though they should put immense effort in proving they will not be a “problematic finisher” and have potential to be a “superstar.”

## LIMITATIONS

This article utilized the most up-to-date and available information regarding the match for integrated and independent plastic surgery residencies. Data included are limited by what is published by the NRMP, SF Match, and the existing literature, which may be impacted by publication delay/lag times. Further, with the COVID-19 pandemic and a transition to virtual interviews during the 2020–2021 and 2021–2022 application cycles with potential for hybrid models in the future, this aspect of the evaluation process is understudied and requires further exploration.

## CONCLUSIONS

The plastic surgery match, both integrated and independent, is an extremely competitive process for applicants. Many factors go into applicant evaluation, both objective and subjective, and are routinely scrutinized by program directors to pick the best residents for their programs. Applicants should carefully review the objective and subjective factors used in evaluation to strategize how to make themselves as competitive as possible.

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