

Geographic Trends in the Plastic Surgery Match

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BACKGROUND: The integrated plastic surgery match is among the most competitive residency matches in recent years. Although previous studies have correlated applicant characteristics with successful match outcomes, none have comprehensively investigated the role of geography in the match. This study elucidates regional biases in the match.

METHODS: Plastic surgery residents who matched during 2011-2015 were eligible for study inclusion. Names of residents were obtained from official residency program websites and cross-referenced with data obtained from the Student Doctor Network. For each resident, region of residency program and medical school were compared.

RESULTS: From 67 programs, 622 residents were identified. Most graduated from US medical schools (97.9%). A total of 94 residents matched at a home institution (15.1%). Half of the residents matched in the same region as their medical school (48.9%). Programs in the South matched the greatest number of residents from the same region (60.8%), whereas West programs matched the least (30.8%, $p < 0.001$). No regional differences existed regarding residents matching at their home institution ($p = 0.268$). More women matched at West programs (43.1%) versus East programs (30.6%, $p < 0.05$).

CONCLUSIONS: A significant number of residents matched at their home institution. Roughly, half matched at a program in the same region as their medical school. Whether this regional phenomenon stems from applicant or program factors remains unknown. Yet, given the limited number of interviews and the high costs of interviewing, applicants and programs can use these data to help optimize the match process. (*J Surg Ed* 73:270-274. © 2015 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

KEY WORDS: residency, education, medical student, application, resident, women

COMPETENCIES: Medical Knowledge, Interpersonal and Communication Skills, Professionalism

INTRODUCTION

Recent data from the 2015 National Residency Matching Program demonstrate the competitiveness of the Integrated Plastic Surgery Match.¹ A total of 67 plastic surgery residency programs participated in the 2015 Match, offering 148 training positions. Overall, 206 applicants competed for these residency spots, giving 1.39 applicants per position. Of the 168 US seniors applying, 136 matched (81% match rate). Matched US seniors in plastic surgery have a mean USMLE Step 1 score of 245 and 12.5 scholarly publications, placing these students among the most accomplished applicants.²

This high level of competitiveness is problematic for both applicants and residency programs. With so many qualified applicants, it may be challenging to interview those applicants with a genuine interest in a program. A recent survey found that 50% of applicants exaggerate an interest in a program during the application process.³ For plastic surgery applicants, the application process is costly, as an average student applies to 32.5 ± 13.0 programs and interviews at 7.0 ± 5.1 programs.⁴ This amounts to $\$4001 \pm \2947 spent on the interview trail, with an average investment of 15 travel days. For programs, the opportunity cost of interviewing involves time away from clinical responsibilities, often requiring multiple days to accommodate the large number of qualified applicants.⁵ This effort may be overdone, as the average program accepts only 1 or 2 residents. Thus, the optimization of resident selection is an important area of research for both programs and future residents.

Previous studies on this topic have described factors associated with a successful match in plastic surgery. In a single institutional survey of applicants, Wood and David⁶ found that more interview invitations and acceptances predict a successful match. Interview invitations correlate with high board scores, class rank, Alpha Omega Alpha

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status, and authorship.⁴ Janis and Hatef⁷ surveyed plastic surgery residency program directors and found high-quality letters of recommendation, performance on subinternship rotations, and interview scores were the most important factors in resident selection. Subjective factors such as leadership skills, maturity, and interest in academics are also important criteria.⁸ Although these studies describe a successful plastic surgery applicant, a comprehensive analysis of geographic factors in the match is lacking.

The purpose of this study was to describe geographic trends in the plastic surgery match since widespread adoption of the integrated model of plastic surgery training. Secondary aims sought to determine the percentage of students matching at a home institution, the top medical schools for matched plastic surgery residents, and a separate analysis of female applicants in plastic surgery.

METHODS

The Fellowship and Residency Electronic Interactive Database was used to generate a list of plastic surgery residency programs available to graduating medical students. Official residency program websites were accessed to generate a list of integrated and combined plastic surgery residents from the previous 5 match years: 2011-2015. In all, 2 training pathways existed for medical students interested in plastic surgery during this study period. Combined programs were mandated to transition to an integrated model by the American Council of Graduate Medical Education. To obtain a comprehensive list of medical school applicants matching into plastic surgery residency, the names of applicants and affiliated medical schools were cross-referenced with data from the Student Doctor Network, a social media platform for medical trainees.⁹ Each year, plastic surgery applicants post their match results in a peer-reviewed fashion. Names with overlap between both search methods were available for further analyses. For each resident, program and medical school region were determined from a regional map of the United States.¹⁰

Perceived sex was determined through photographs on residency programs websites and with knowledge of commonly assigned names by sex. For example, “John” was considered being male sex and “Lisa” was considered being female sex, a methodology consistent with previous literature on this topic.¹¹ When a photograph was unavailable or a name gave ambiguity regarding the sex, social media platforms (LinkedIn, Doximity, and Facebook) were reviewed to determine the sex. Residency programs were contacted if the sex of the individual could not be identified. A separate geographic analysis was then conducted for female residents.

Variables were presented descriptively with percentages as means with standard deviations. Trends in geographic biases over time were analyzed using chi-square goodness of

fit testing. Categorical differences were determined with chi-square tests and post hoc analyses with Fisher exact tests. Statistical tests were performed on STATA 13 (StataCorp, College Station, TX), were 2-tailed, and were considered significant if $p < 0.05$.

RESULTS

Overall, 668 residents were identified from 67 programs. A total of 13 foreign medical graduates were excluded (1.9%). Data were unavailable for 33 matched U.S. seniors (5.0%), leaving 622 residents for further analysis.

In this study, 17 Northeast programs had 173 residents (28.5%), 18 South programs had 145 residents (23.8%), 20 Midwest programs had 174 residents (28.6%), and 12 West programs had 116 residents (19.1%). There was a strong geographic relationship between medical school and residency program (Fig. 1). For each geographic region, an overwhelming majority of residents graduated from a regional medical school ($p < 0.001$ for each region). This phenomenon was greatest among Northeast program residents (56.7%) and weakest for South program residents (42.3%, $p = 0.011$). Over the study period, 48.9% of all residents matched at a program in the same region as their medical school. There were no significant trends over time (range: 43.6%-54.5%, $p > 0.05$).

Overall, 94 residents matched at their home institution (15.5%). Again, no significant trends were seen over time (range: 11.1%-21.6%, $p > 0.05$). Programs had on average 1.4 ± 1.5 residents who graduated from an affiliated medical school (15.1% \pm 17.4%). Programs in the South matched more affiliated applicants (20.0%) than programs in the Northeast (15.6%), Midwest (14.4%), or West (11.2%) did, but this difference did not reach significance ($p > 0.05$). Table 1 lists residency programs with the greatest percentage of home residents.

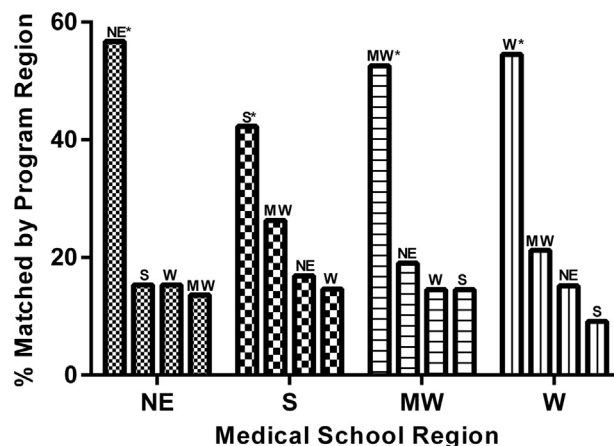


FIGURE 1. Percentage of Plastic Surgery Residents Matched in the Same Region.

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