


# Predictors of otolaryngology applicant success using the Texas STAR database

Nicholas R. Lenze MPH<sup>1</sup>  | Angela P. Mihalic MD<sup>2</sup> | Christine E. DeMason MD<sup>3</sup> |  
Rupali N. Shah MD<sup>3</sup> | Robert A. Buckmire MD<sup>3</sup> | Brian D. Thorp MD<sup>3</sup> |  
Charles S. Ebert Jr MD, MPH<sup>3</sup> | Adam M. Zanation MD<sup>3</sup>

<sup>1</sup>University of North Carolina School of Medicine, Chapel Hill, North Carolina, USA

<sup>2</sup>Department of Pediatrics, University of Texas Southwestern Medical Center, Dallas, Texas, USA

<sup>3</sup>Department of Otolaryngology/Head and Neck Surgery, University of North Carolina School of Medicine, Chapel Hill, North Carolina, USA

## Correspondence

Nicholas R. Lenze, MPH, University of North Carolina at Chapel Hill School of Medicine  
170 Manning Drive Campus Box# 7070  
Chapel Hill, NC 27599.  
Email: nlenzemed@gmail.com

## Abstract

**Objectives:** To examine applicant characteristics and behaviors associated with a successful match into otolaryngology residency.

**Methods:** Self-reported survey data from applicants to otolaryngology residency between 2018 and 2020 were obtained from the Texas STAR database. Characteristics and predictors associated with a successful match were examined using Chi-square tests, two-sided t-tests, and logistic regression models.

**Results:** A total of 315 otolaryngology residency applicants responded to the survey of whom 274 matched (87%) and 41 did not match (13%). Matched applicants had a significantly higher mean USMLE Step 1 score ( $P = .016$ ) and Step 2 CK score ( $P = .007$ ). There were no significant differences in AOA status (45% vs 36%;  $P = .207$ ), mean number of applications submitted (70 vs 69;  $P = .544$ ), and mean number of away rotations (2.1 vs 2.0;  $P = .687$ ) between matched and unmatched applicants. Significant predictors of a successful match included receiving honors in 5 or more clerkships (OR 2.0, 95% CI 1.0-4.0;  $P = .040$ ), receiving honors in an ENT clerkship (OR 3.7, 95% CI 1.0-12.9;  $P = .044$ ), and having 3 or more peer-reviewed publications (OR 2.3, 95% CI 1.1-4.5;  $P = .020$ ). The majority of applicants (79.9%) matched at a program where they either did an away rotation, had a personal geographic connection, or attended medical school in the same geographic region.

**Conclusions:** Board scores, excelling on clinical rotations, and having productive research experience appear to be strong predictors of a successful match in otolaryngology. The majority of applicants report a personal or geographic connection to the program at which they match.

**Level of evidence:** 4.

## KEYWORDS

otolaryngology, personnel selection, residency, surveys

Meeting Information: This abstract was presented as a virtual poster at the Triological Combined Sections Meeting Virtual Sessions on January 29 and 30, 2021.

This is an open access article under the terms of the Creative Commons Attribution-NonCommercial-NoDerivs License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.

© 2021 The Authors. *Laryngoscope Investigative Otolaryngology* published by Wiley Periodicals LLC on behalf of The Triological Society.

## 1 | INTRODUCTION

Otolaryngology has historically been one of the most competitive specialties,<sup>1</sup> and many medical students consider matching into otolaryngology to be very difficult or even unattainable.<sup>2</sup> Given the relatively low number of first-year otolaryngology residency positions available compared to other specialties, the match rate is largely influenced by the number of applicants in any given cycle. This is evidenced by recent trends in data from the National Resident Matching Program (NMRP).<sup>3</sup> For instance, 276 (95.8%) of the 288 U.S. allopathic senior applicants matched into 315 available positions in 2018. In 2019, 308 (77.3%) of the 398 U.S. allopathic senior applicants matched into 328 available positions. In 2020, 310 (73.6%) of the 421 U.S. allopathic senior applicants matched into 350 available positions.

With such large fluctuations in the match rate (73.6% to 95.8% in the past three years for U.S. allopathic seniors), prospective otolaryngology applicants may harbor significant uncertainty about their chances of matching in any given cycle. To help mitigate this uncertainty, applicants may feel the need to apply to increasing number of programs,<sup>4,5</sup> making it difficult for residency programs to distinguish which applicants are most interested.<sup>6</sup> Other strategies used by applicants may include dual application to another specialty, taking a research year, or completing multiple away rotations.

Despite the multiple strategies used by prospective applicants to bolster their chances of matching, there is a paucity of objective data available to help guide applicants on which characteristics and behaviors are associated with a successful match into otolaryngology. The Texas STAR database contains unique self-reported survey data from otolaryngology applicants during the 2018, 2019 and 2020 match cycles, and it can help fill this gap in current knowledge.

## 2 | MATERIALS AND METHODS

This study was reviewed by the Institutional Review Board at the University of North Carolina at Chapel Hill and was considered exempt on the grounds that it does not constitute human subjects research under federal regulations.

### 2.1 | Sample selection

The sample consisted of all otolaryngology applicants during the 2018, 2019, and 2020 application cycles who responded to the Texas STAR survey. The survey was distributed by the student affairs dean at participating medical schools, and it was available for students to complete between match day and April 10th of each application cycle. The Texas STAR survey was distributed to participating allopathic and osteopathic medical schools in the United States. Specific medical schools were not disclosed in the dataset in effort to protect applicant confidentiality. Therefore, subset analysis could not be performed for applicants with and without a home otolaryngology program.

Furthermore, only one osteopathic medical school participant responded to the Texas STAR survey between 2018 and 2020 so subset analysis based on medical school designation could not be performed.

In 2018, a total of 4802 out of 10 431 students responded at 78 participating medical schools (46% response rate). In 2019, a total of 6127 out of 15 404 students responded at 108 participating medical schools (40.8% response rate). In 2020, a total of 7265 out of 15 783 students responded at 115 participating medical schools (46% response rate). Among the applicants responding to the survey in 2018, 2019, and 2020, there were 68, 105, and 142 otolaryngology applicants, respectively. The response rate for U.S. otolaryngology applicants was 19.5%, 22.5%, and 27.8% in 2018, 2019, and 2020, respectively, according to annual application numbers reported by the Electronic Residency Application Service.<sup>7</sup> Applicants designated as international medical graduates (IMG's) were excluded from this analysis because the Texas STAR survey was not distributed to international medical schools.

### 2.2 | Texas STAR survey

The survey asked applicants to report information as it would have appeared on their residency application (ie, number of publications at the time of application rather than at the time of survey completion). Demographic information such as age, sex, and race was not collected. USMLE Step 1 and Step 2 CK scores were reported within a 5-digit range (ie, 220-224) to help protect applicant confidentiality. Medical school geographic region was recorded using the Group on Student Affairs (GSA) designations defined by the Association of American Medical Colleges (AAMC): Central (CGSA), Western (WGSA), North-east (NEGSA), and Southern (SGSA).

### 2.3 | Statistical analysis

The primary outcome of interest was otolaryngology match success. Differences between matched and unmatched applicants were examined using Chi-square and two-sided *t*-tests. Univariate logistic regression models were used to assess for significant predictors of a successful match. A post-hoc multivariable logistic regression model was used to assess the association between timing of USMLE Step 2 CK score release and successful match after adjusting for USMLE Step 1 score. A univariate logistic regression model was also used to examine odds of match success with varying numbers of applications submitted. A simple linear regression model was used to examine the relationship between number of applications submitted and interview offer index. Descriptive statistics were used to examine the number of applicants reporting an away rotation or personal connection with the program at which they matched.

All continuous variables were dichotomized at their median value for logistic regression models. USMLE board scores were centered for the analysis (ie, a score of 220-224 was centered at 222). Variables

were examined for missing data and all were found to have less than 5% of missing observations except for AOA status (19 applicants, or 6%, without a home chapter) and Honors in ENT Clerkship (54 applicants, or 17%, not reporting). A statistical significance criterion of  $P < .05$  was used for all testing. Stata 16.0 (College Station, TX) was used for all analyses.

### 3 | RESULTS

#### 3.1 | Characteristics of applicants by match success

A total of 315 otolaryngology applicants responded to the Texas STAR survey between 2018 and 2020. Of these, 274 (87%) matched and 41 (13%) went unmatched. Differences between matched and unmatched applicants were summarized (Table 1).

Compared to applicants who went unmatched, matched applicants had a higher mean number of honored clerkships (4.6 vs 3.6;  $P = .010$ ), were more likely to have honors in an ENT clerkship (96.5% vs 88.2%;  $P = .032$ ), and had a higher mean USMLE Step 1 score (249 vs 245;  $P = .016$ ) and USMLE Step 2 CK score (257 vs 252;  $P = .007$ ).

Matched applicants also reported more research experiences (6.3 vs 5.2;  $P = .020$ ) and had more peer-reviewed publications (4.3 vs 3.1;  $P = .030$ ) than unmatched applicants. There were no significant differences in Alpha Omega Alpha (AOA) status, Gold Human Honor Society (GHHS) membership, couples match, second degree, research year, number of abstracts/posters/presentations, volunteer experiences, or leadership positions between matched and unmatched applicants (Table 1).

Applicants applied to a mean number of 70.2 programs, and this did not significantly differ between matched and unmatched applicants ( $P = .544$ ). Compared to applicants submitting 65 to 79 applications, there was no significant difference in match success for applicants submitting 80 or more applications (OR 1.40, 95% CI 0.61 to 3.21;  $P = .433$ ), 50 to 64 applications (OR 1.45, 95% CI 0.60 to 3.51;  $P = .409$ ), or less than 50 applications (OR 0.79, 95% CI 0.28 to 2.25;  $P = .664$ ). Matched applicants, however, had a significantly higher interview offer index (# of interview offers/# of applications) compared to unmatched applicants (27.6% vs 19.0%;  $P = .004$ ) (Table 1). There was a negative correlation observed between number of applications submitted and the interview offer index based on a simple linear regression model (beta-coefficient =  $-0.004$ ;  $P < .001$ ).

**TABLE 1** Characteristics of matched vs unmatched applicants

	Matched (n = 274)	Unmatched (n = 41)	Total (n = 315)	P-value
# Honored Clerkships (mean, SD)	4.6 (2.2)	3.6 (2.9)	4.5 (2.3)	.010
Honors in ENT Clerkship	219 (96.5)	30 (88.2)	249 (95.4)	.032
AOA	120 (46.7)	14 (35.9)	134 (45.3)	.207
GHHS	49 (18.8)	5 (12.2)	54 (17.9)	.300
Step 1 score, centered (mean, SD)	249 (11.1)	245 (12.8)	249 (11.4)	.016
Step 2 CK, centered (mean, SD)	257 (9.8)	252 (12.5)	256 (10.3)	.007
Couples Match	36 (13.1)	5 (12.2)	41 (13.0)	.867
Second Degree	54 (19.7)	10 (24.4)	64 (20.3)	.487
Research Year	39 (14.2)	9 (22.0)	48 (15.2)	.200
Number of Research Experiences (mean, SD)	6.3 (2.8)	5.2 (2.7)	6.1 (2.8)	.020
Number of Abstracts, Posters, or Presentations	7.2 (3.5)	6.3 (4.0)	7.1 (3.6)	.112
Number of Peer-Reviewed Publications	4.3 (3.3)	3.1 (3.2)	4.2 (3.3)	.030
Volunteer Experiences	7.3 (2.9)	7.5 (3.0)	7.3 (2.9)	.720
Leadership Positions	4.8 (2.8)	4.3 (2.7)	4.7 (2.8)	.276
Release Step 2 CK Scores After Mid-November	68 (25.1)	4 (10.0)	72 (23.2)	.035
Number of applications	70.5 (18.6)	68.5 (21.7)	70.2 (19.0)	.544
Number of interview invites <sup>a</sup>	18.3 (9.3)	12.1 (10.5)	17.4 (9.7)	<.001
Number of interviews attended	13.3 (4.3)	9.0 (5.6)	12.7 (4.7)	<.001
Interview Offer Index (SD)	27.6 (16.3)	19.0 (19.0)	26.3 (16.9)	.004
GSA Region				NA
CGSA	64 (23.4)	7 (17.1)	71 (22.5)	
NEGSA	61 (22.3)	12 (29.3)	73 (23.2)	
SGSA	119 (43.4)	20 (48.8)	139 (44.1)	
WGSA	30 (11.0)	2 (4.9)	32 (10.2)	

<sup>a</sup>Number of interview invites only available for 2019 and 2020 (n = 247).

### 3.2 | Univariate logistic regression model assessing for predictors of a successful match

In an unadjusted logistic regression model assessing for predictors of a successful match, honors in an ENT clerkship (OR 3.7, 95% CI 1.0 to 12.9;  $P = .044$ ), release of USMLE Step 2 CK score after mid-

**TABLE 2** Univariate logistic regression model for predictors of matching

	OR and 95% CI	P-value
Step 1 Score 250 or greater	1.8 (0.9 to 3.5)	.088
Step 2 CK Score 255 or greater	1.9 (1.0 to 3.6)	.065
5 or more Honored Clerkships	2.0 (1.0 to 4.0)	.040
Honors in ENT Clerkship	3.7 (1.0 to 12.9)	.044
AOA	1.6 (0.8 to 3.1)	.210
GHHS	1.7 (0.6 to 4.5)	.311
Couples Match	1.1 (0.4 to 3.0)	.867
Second Degree	0.8 (0.4 to 1.6)	.488
Research Year	0.6 (0.3 to 1.3)	.204
6 or more Research Experiences	1.8 (0.9 to 3.4)	.096
7 or more Abstracts, Posters, or Publications	1.3 (0.7 to 2.5)	.432
3 or more Peer-Reviewed Publications	2.3 (1.1 to 4.5)	.020
7 or more Volunteer Experiences	1.1 (0.6 to 2.1)	.825
4 or more Leadership Positions	1.4 (0.7 to 2.7)	.320
Release Step 2 CK Scores After Mid-November <sup>a</sup>	3.0 (1.0 to 8.8)	.043
70 or more applications	0.9 (0.5 to 1.8)	.844

<sup>a</sup>In a post-hoc model adjusting for Step 1 score, step 2 CK release after mid-November was no longer significantly associated with matching (OR 2.6, 95% CI 0.9 to 7.8;  $P = .087$ ).

November (OR 3.0, 95% CI 1.0 to 8.8;  $P = .043$ ), 3 or more peer-reviewed publications (OR 2.3, 95% CI 1.1 to 4.5;  $P = .020$ ), and 5 or more honored clerkships (OR 2.0, 95% CI 1.0 to 4.0;  $P = .040$ ) were the only variables that were significantly associated with a successful match (Table 2 and Figure 1).

In a post-hoc model adjusting for USMLE Step 1 score, the association between timing of USMLE Step 2 CK score release and a successful match was no longer statistically significant ( $P = .087$ ).

### 3.3 | Applicant connections with programs

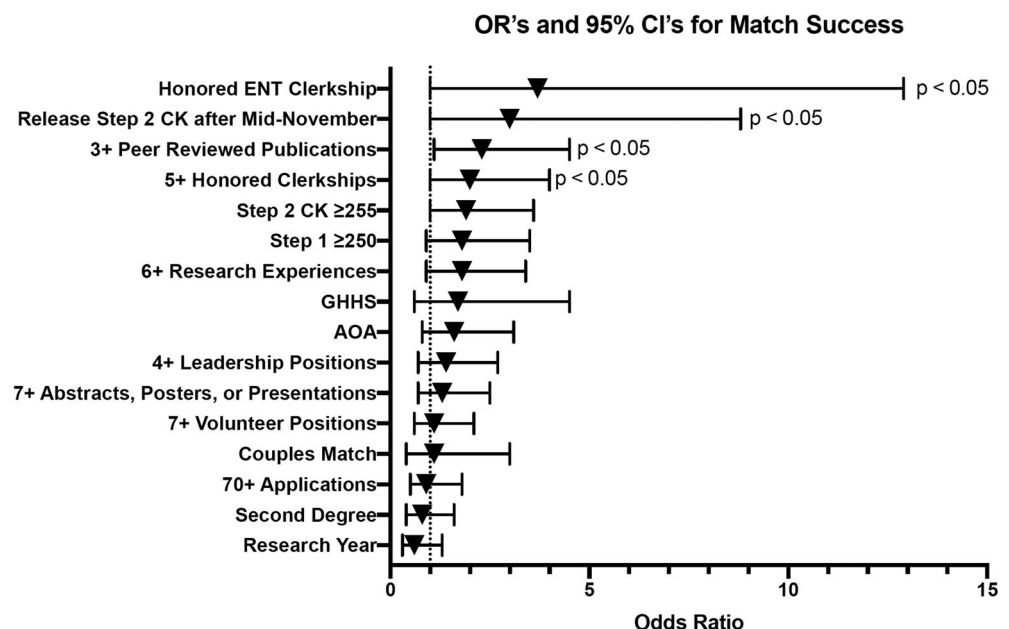
Connections that applicants had with programs included (a) doing an away rotation, (b) having a personal geographic connection to the program, or (c) attending a medical school in the same geographic region as the program.

The 315 applicants in this sample reported doing a total of 652 away rotations (mean 2.07, SD 1.19) per applicant. The number of away rotations did not significantly differ between matched and unmatched applicants (2.08 vs 2.00;  $P = .687$ ).

In a stepwise univariate logistic regression model, the odds of a successful match did not improve with doing an increasing number of away rotations (Figure 2). Applicants doing at least one away rotation had a marginally increased but non-statistically significant odds of matching compared to applicants with no away rotations (OR 2.25, 95% CI 0.90 to 5.63;  $P = .084$ ). There was no significant difference in odds of matching with doing at least 2 (relative to less than 2) away rotations (OR 1.01, 95% CI 0.50 to 2.06;  $P = .967$ ), or doing at least 3 (relative to less than 3) away rotations (OR 0.86, 95% CI 0.44 to 1.68;  $P = .652$ ).

Among matched applicants ( $n = 274$ ), there were 95 (34.7%) who reported matching at a program where they did an away rotation, 111 (40.5%) who reported matching at a program where they had a

**FIGURE 1** Forest plot of odds ratios and 95% confidence intervals for predictors of match success



personal geographic connection, and 156 (56.9%) who reported matching at a program in the same geographic region (GSA) as their medical school (Figure 3). In total, 219 (79.9%) of the matched applicants reported matching at a program where they had at least one of the aforementioned connections (away rotation, personal geographic connection, medical school in same geographic area).

#### 4 | DISCUSSION

This study uses unique applicant-reported information from the Texas STAR database to examine characteristics and outcomes of applicants to the otolaryngology match from 2018 to 2020. Our results suggest that excelling on USMLE Step 1 and Step 2 CK, receiving honors in clinical clerkships, and having peer-reviewed publications are important predictors of applicant success. Other commonly discussed metrics such as AOA status, GHHS membership, and number of applications submitted do not appear to be significantly associated with otolaryngology match success. Finally, the overwhelming majority of matched applicants (79.9%) report a connection to the program

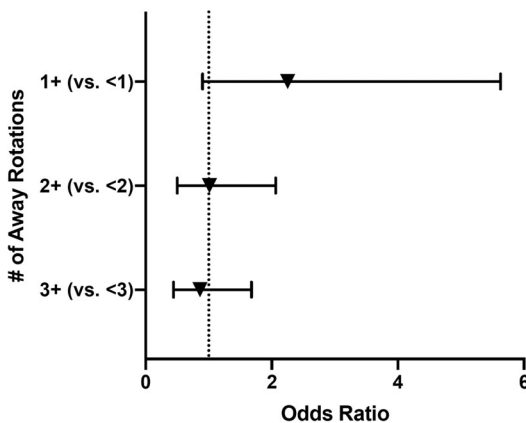
at which they match, whether that be an away rotation, personal geographic connection, or medical school in the same geographic region.

These findings underscore the importance of well-known variables for otolaryngology applicant success such as board scores, research, and clerkship grades.<sup>8-11</sup> They also provide novel insight into the importance of personal and geographic connections between applicants and programs. Aspiring otolaryngologists can use this information as an objective guide to assess their own competitiveness relative to past applicants. Furthermore, applicants can potentially save time and money with the knowledge that doing two or more away rotations and applying to more than 70 programs does not appear to increase one's odds of match success.

The finding that many otolaryngology applicants match at a program in the same geographic region of their medical school is supported by other studies in current literature. In a cross-sectional examination of 810 otolaryngology residents at 56 different programs, Johnson et al. found that 58.4% of residents attended a program within the same region as their medical school as defined by the United States Census Bureau (Northeast, Midwest, South, and West).<sup>12</sup> In a different study using smaller geographic subdivisions (9 in total), Gebhard et al, found that up to 40% of otolaryngology residents match at a program in the same region as their medical school.<sup>13</sup>

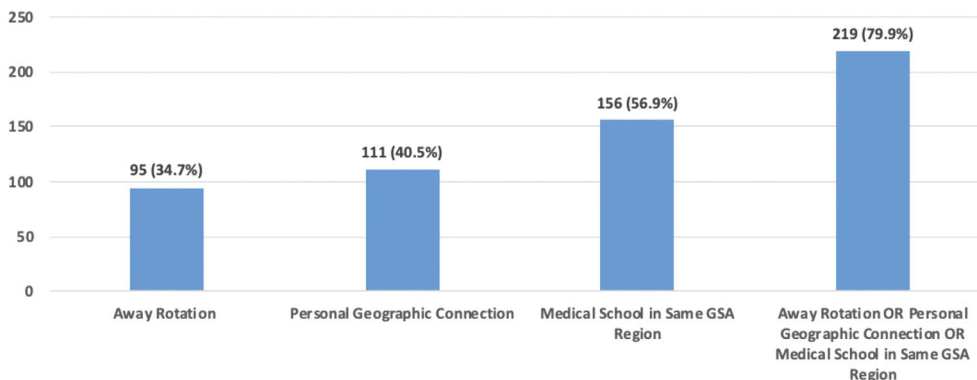
The findings from our stepwise analysis of away rotations, coupled with the finding that 34.7% of applicants matched at a program where they did an away rotation, may be useful for guiding future applicants. Doing at least one away rotation appeared to be beneficial for applicants in this dataset, with a non-significant trend towards increased odds of match success (OR 2.25, 95% CI 0.90 to 5.63;  $P = .084$ ). This trend was not observed for applicants doing at least 2 or 3 away rotations. Collectively, these findings suggest that otolaryngology applicants should consider doing at least one away rotation at a program where they may hope to match. These findings are supported by a recent cross-sectional survey sent to U.S. otolaryngology residents and graduates, which found that 32.7% of respondents matched at a program where they did an away rotation and 90.7% of respondents found away rotations to be valuable.<sup>14</sup>

OR's and 95% CI's for Match Success with # of Away Rotations



**FIGURE 2** Odds ratios and 95% confidence intervals for odds of matching based on number of away rotations

Connections between Matched Applicants (n = 274) and the Program at which They Matched



**FIGURE 3** Connections between matched applicants and the program at which they matched

Our analysis found no association between the number of applications submitted and odds of match success. This is an important finding given the trend of increasing applications submitted per applicant in recent years.<sup>15</sup> While the mean number of applications submitted by applicants in this sample was 70.2, applicants should be counseled that submitting less applications does not appear to be detrimental to match success. In fact, we found that submitting more applications is associated with a lower interview offer index (# of interview offers/# of applications). This finding suggests that there are diminishing returns for each additional application submitted. Finally, it is worth noting that the mean number of interviews attended by successful applicants in this sample was 13.3 (SD 4.3). Applicants should be counseled that they may not need to go on more than 13 to 14 interviews for a successful match. This would help combat the inequality in interview distribution that has been observed among otolaryngology applicants in past years.<sup>16</sup>

The association between release of USMLE Step 2 CK score after mid-November and a successful match is an interesting finding, and based on our post-hoc model, the effect appears to be driven by USMLE Step 1 score. Applicants with a lower Step 1 score may be more likely to take Step 2 CK earlier in effort to demonstrate improvement, whereas applicants with a higher Step 1 score may elect to postpone Step 2 CK to avoid the potential negative implications of a lower score. Our results suggest that delaying release of Step 2 CK scores does not appear to have a significant impact on match success when adjusting for Step 1 score.

This study has several limitations. The Texas STAR database did not contain information about letters of recommendation, which are considered by faculty to be one of the most important factors for otolaryngology match success.<sup>8</sup> Additionally, it did not contain information on medical school NIH-funding which has previously been shown to correlate with otolaryngology match success.<sup>10</sup> Another limitation is the potential for selection bias. Although completion of survey was voluntary, it is unknown if applicants completing the survey were representative of all otolaryngology applicants during the study period. In addition, there was regional bias in survey completion with 44.1% of applicants from medical schools in the Southern GSA and only 10.2% from the Western GSA. As a result, these findings may not be generalizable to applicants from all states.

Another limitation is that the Texas STAR survey did not distinguish between different clerkship grading schemes at medical schools. It is possible that medical students with a Pass/Fail grading system reported “0” for the number of honored clerkships. We would expect this to bias the results towards the null, as these students may still be highly competitive applicants since a “Pass” would not necessarily reflect suboptimal performance. Future research is warranted to better understand the influence of clerkship grading scheme on match outcomes. Finally, it is unknown how the findings from this study will be influenced by new changes to the residency selection process such as the transition of USMLE Step 1 to Pass/Fail<sup>17</sup> and the implementation of preference signaling in otolaryngology.<sup>18</sup>

Despite these limitations, our study helps address an important gap in literature for medical education in otolaryngology. It provides

objective evidence to help guide applicants on decisions such as away rotations and number of applications to submit, and it quantifies the relative importance of various factors in an application. This is especially relevant given the competitiveness of otolaryngology as a specialty. By providing medical students with transparent and evidence-based information, stakeholders in the field can hope to attract rather than discourage the next generation of otolaryngologists.

## 5 | CONCLUSION

Board scores, clerkship grades, and research productivity appear to be the most important predictors of success in the otolaryngology match. The vast majority of applicants match at programs where they have a personal or geographic connection. These findings can help aspiring otolaryngologists to navigate a competitive application process.

## ACKNOWLEDGMENTS

None.

## CONFLICT OF INTEREST

The authors declare no potential conflict of interest.

## ORCID

Nicholas R. Lenze  <https://orcid.org/0000-0002-2126-6663>

## REFERENCES

1. Cabrera-Muffly C, Sheeder J, Abaza M. State of otolaryngology match: has competition increased since the “early” match? *Otolaryngol Head Neck Surg*. 2015;152(5):838-842. <https://doi.org/10.1177/0194599815571318>.
2. Kaplan AB, Riedy KN, Grundfast KM. Increasing competitiveness for an otolaryngology residency: where we are and concerns about the future. *Otolaryngol Head Neck Surg*. 2015;153(5):699-701. <https://doi.org/10.1177/0194599815593734>.
3. National Resident Matching Program. Main Residency Match Data And Reports. Accessed September 11, 2020. <https://www.nrmp.org/main-residency-match-data/>.
4. Cabrera-Muffly C, Chang CWD, Pucas L. Current interview trail metrics in the otolaryngology match. *Otolaryngol Head Neck Surg*. 2017;156(6):1097-1103. <https://doi.org/10.1177/0194599817690723>.
5. Ward M, Pingree C, Laury AM, Bowe SN. Applicant perspectives on the otolaryngology residency application process. *JAMA Otolaryngol Head Neck Surg*. 2017;143(8):782-787. <https://doi.org/10.1001/jamaoto.2017.0231>.
6. Salehi PP, Benito D, Michaelides E. A novel approach to the national resident matching program—the star system. *JAMA Otolaryngol Head Neck Surg*. 2018;144(5):397-398. <https://doi.org/10.1001/jamaoto.2018.0068>.
7. AAMC. *ERAS Statistics*; Washington, D.C.: Association of American Medical Colleges; 2020. <https://www.aamc.org/data-reports/interactive-data/eras-statistics-data>.
8. Goshtasbi K, Abouzari M, Tjoa T, Malekzadeh S, Bhandarkar ND. The effects of pass/fail USMLE Step 1 scoring on the otolaryngology residency application process. *Laryngoscope*. 2020;3:E738-E743. <https://doi.org/10.1002/lary.29072>.
9. Hauser LJ, Gebhard GM, Blumhagen R, Carlson NE, Cabrera-Muffly C. Applicant characteristics associated with successful

- matching into otolaryngology. *Laryngoscope*. 2017;127(5):1052-1057. <https://doi.org/10.1002/lary.26236>.
10. Rinard JR, Mahabir RC. Successfully matching into surgical specialties: an analysis of national resident matching program data. *J Grad Med Educ*. 2010;2(3):316-321. <https://doi.org/10.4300/JGME-D-09-00020.1>.
  11. Ryan EM, Geelan-Hansen KR, Nelson KL, Dowdall JR. Examining the otolaryngology match and relationships between publications and institutional rankings. *OTO Open*. 2020;4(2):2473974X2093249. <https://doi.org/10.1177/2473974X20932497>.
  12. Johnson AP, Svider PF, Folbe AJ, et al. An evaluation of geographic trends in the otolaryngology residency match: home is where the heart is. *JAMA Otolaryngol Head Neck Surg*. 2015;141(5):424-428. <https://doi.org/10.1001/jamaoto.2015.0219>.
  13. Gebhard GM, Hauser LJ, Dally MJ, Weitzenkamp DA, Cabrera-Muffly C. Do otolaryngology residency applicants relocate for training? *Laryngoscope*. 2016;126(4):829-833. <https://doi.org/10.1002/lary.25501>.
  14. Thomas CM, Cabrera-Muffly C. Otolaryngology externships and the match: productive or futile? *Laryngoscope*. 2017;127(10):2242-2246. <https://doi.org/10.1002/lary.26639>.
  15. Bowe SN, Schmalbach CE, Laury AM. The state of the otolaryngology match: a review of applicant trends, "Impossible" qualifications, and implications. *Otolaryngol Head Neck Surg*. 2017;156(6):985-990. <https://doi.org/10.1177/0194599817695804>.
  16. Lee AH, Young P, Liao R, Yi PH, Reh D, Best SR. I dream of Gini: quantifying inequality in otolaryngology residency interviews. *Laryngoscope*. 2019;129(3):627-633. <https://doi.org/10.1002/lary.27521>.
  17. Salehi PP, Azizzadeh B, Lee YH. Pass/fail scoring of USMLE step 1 and the need for residency selection reform. *Otolaryngol Head Neck Surg*. 2021;164(1):9-10. <https://doi.org/10.1177/0194599820951166>.
  18. Chang CWD, Pletcher SD, Thorne MC, Malekzadeh S. Preference signaling for the otolaryngology interview market. *The Laryngoscope*. 2021;131(3):E744-E745. <https://doi.org/10.1002/lary.29151>.

**How to cite this article:** Lenze NR, Mihalic AP, DeMason CE, et al. Predictors of otolaryngology applicant success using the Texas STAR database. *Laryngoscope Investigative Otolaryngology*. 2021;6:188-194. <https://doi.org/10.1002/lio2.549>