INTRODUCTION
Letters of recommendation (LORs) are an important element of the residency application process. Previous publications have identified specific disadvantages of these narrative letters of recommendation (NLORs), including inability to predict future clinical performance, suboptimal inter-rater reliability, and intrinsic gender bias. A standardized letter of recommendation (SLOR) was developed in 1995 by the Council of Emergency Medicine Residency Directors. Advantages of the SLOR: less time to evaluate applicants and better inter-rater reliability compared to the traditional NLOR. Disadvantages: lack of variation in ratings preventing differentiation amongst applicants and the questionable utility of individual domains within the SLOR.

RESEARCH QUESTION
Does a “word cloud”-based visual letter of recommendation (VLOR) provide an efficient and effective alternative to standard narrative letters of recommendation (NLORs) in discerning applicant qualities?

METHODS
Collected NLORs for 48 otorhinolaryngology residency applicants interviewed in the 2016 application cycle. NLORs were mined for descriptors (e.g., adjectives, adverbs, etc.) QSR NVivo 11 used to narrow descriptors by synonym and to query them for a “word cloud” VLOR for each applicant. Blinded NLORs and VLORs were reviewed and rated by eight individuals within the department. Evaluators surveyed the usefulness and ease of use of the VLORs.

RESULTS
Applicants included 23 (48%) males and 25 (52%) females. 187 blinded NLORs and 48 VLORs were reviewed and rated. No significant difference in the distribution of median scores for VLORs and NLORs (p=0.289; Figure 1). Significantly more time required to review the NLORs vs VLORs (61 seconds IQR: 48-81 vs 18 seconds IQR: 15-19 (p<0.001)). Review time and VLOR score correlated positively (p=0.407, p=0.004). Positive correlation appeared with NLORs, but not statistically significant (p=0.268, p=0.066). Median NLOR and VLOR scores were statistically equivalent for both genders. All reviewers found VLORs easy to use and moderately/extremely useful.

DISCUSSION
Previous research has shown that the current “standard of practice” regarding letters of recommendation for otorhinolaryngology residency applicants fails to fairly convey distinct characteristics (i.e., the SLOR) and is time-consuming (i.e., the NLOR). The objective of this study was to propose and evaluate a new additive tool for letters of recommendation utilized in applications for residency programs. While existing literature has highlighted the shortcomings of SLORs, it has not yet proposed a solution to the problem. We developed a “word cloud”-based VLOR that preserves the descriptive context of the NLOR without sacrificing the efficiency of the SLOR. We evaluated the VLOR’s efficiency in discerning applicant quality and compared it to the standard NLOR’s. We found that NLOR and VLOR scores are not significantly different from one another and that VLORs are significantly faster to evaluate.

CONCLUSION
We have created a novel letter of recommendation that combines the best elements of both SLORs (i.e., efficiency) and NLORs (i.e., meaningful content). We found that VLOR ratings did not significantly vary from NLOR ratings. Additionally, VLORs had the added benefit of significantly decreasing evaluative time.

Future research on this topic will focus on prospective VLOR data generation for medical students and residents to create more effective “snapshots” of their achievements and strengths.

REFERENCES