

Unveiling Hidden Patterns: Analysis of Recommendation Letters in General Surgery Residency Match

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Background: Recommendation letters (LORs) are a quintessential part of the general surgery residency application. Here, we investigate various demographic and academic factors through the lens of LORs to uncover significant patterns and prejudices present.

Methods: Demographic information of the student and letter writer were collected from application files. Applicants' position on final rank list and their medical schools' general surgery program ranking on Doximity were noted. LORs were analyzed using linguistics analysis software to determine word count, objective writing quality, readability score, and unique/rare word use. Statistical analysis was performed with ANOVA, T-tests, and Pearson correlation tests where appropriate ($p < 0.05$).

Results: We performed a retrospective analysis of 2892 LORs from 1205 applicants applying to a general surgery residency program in the US during the 2020-2021 cycle. Notably, 78.3% of letter writers were male and 94.4% were a Doctor of Medicine (MD). LOR writing quality ($p > 0.30$), word count ($p > .100$), and readability score ($p > 0.06$) did not correlate with applicant rank or applicant sex. USMLE Step Scores also did not correlate with LOR writing quality ($p = 0.063$) or final applicant rank ($p = 0.491$). While a school's Doximity rank did not correlate with LOR writing quality ($p = 0.887$), it did negatively correlate with word count ($r = -0.116$, $p < 0.001$). Female letter writers produced LORs with better writing quality than male letter writers (83.61 vs. 82.58, $p = 0.017$). Doctor of Osteopathy letter writers produced LORs of higher writing quality (84.04 vs. 82.47 vs. 78.26, $p < 0.001$) than MD and PhD letter writers. Caucasian applicant LORs had the greatest readability (45.7) while Hispanic applicants' had the worst (43.5), with an overall average of 45.1 ($p = 0.002$). However, Hispanic applicant LORs had the highest unique word usage (51.94%), compared to Asian applicant LORs, which had the lowest (43.5%), with an overall average of 50.1%.

Conclusions: There are significant patterns of imbalance and prejudice within the LOR writing process. Residency programs should reflect on methods to achieve more objective student assessments during the application process. Applicants should realize that neither LOR nor USMLE scores decisively

determine their final placement on the rank list, and that other components of their application portfolio are considered.

Learning Objectives

Understand that there are significant patterns of imbalance and prejudice within the LOR writing process.

Residency programs should reflect on methods to achieve more objective student assessments during the application process.

Applicants should realize that neither LOR nor USMLE scores decisively determine their final placement on the rank list, and that other components of their application portfolio are considered.