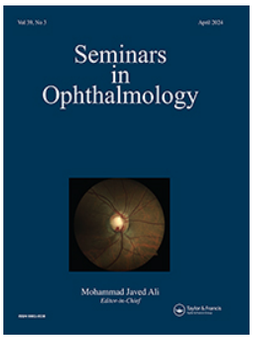

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Analysis of Reapplicants to Ophthalmology Residency: Factors Associated with Successful Matching

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ABSTRACT

Background: Ophthalmology residency programs are highly competitive and each year there are many unmatched reapplicants who must make time-sensitive decisions on how to prepare for their reapplication. Our analysis of reapplication factors will be the first evidence-based guide to reapplying ophthalmology.

Objective: To determine the components of a reapplicants application that contribute and that do not contribute to ophthalmology residency match success.

Methods: Eighty-eight total reapplicants to Dell Medical School's Department of Ophthalmology residency program for the year of 2022 and 2023 were analyzed in a retrospective review in 2023 based on their San Francisco match applications. We assessed match success in the context of demographics, academic performance, cognitive measures, letters of recommendation, personal statements, and extracurricular activities.

Results: Of 84 reapplicants who completed the San Francisco Match, 41 matched successfully (48.8%). Factors that significantly affected match success include quantity of LORs written by ophthalmologists ($P = .0143$), choice of interim year activity ($p = .0019$), and Step 2 Clinical Knowledge score ($P = .0017$). Our findings demonstrate that noncontributory factors to reapplicant match rate include number of publications during research years, demographics, clinical grades, Alpha Omega Alpha (AOA) membership, LOR qualities, and Step 1 score.

Conclusions: Ophthalmology residency reapplicants should focus their efforts on finding a research year or established pre-ophthalmology residency program for their interim year and bolstering their letters of recommendations within the field. The quality of in-specialty relationships and letters of recommendation are more impactful than the number of publications during a research gap year. Step 2 CK score is a significant factor but would have already been determined by the time of reapplication. Metrics such as Step 1 scores, AOA status, number of volunteering experiences, and LOR and personal statement qualities had no effect on a reapplicant's chance of matching.

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KEYWORDS
Matching; ophthalmology; reapplying; residency applicant; SF match; successful reapplicant; surgery; surgical residency

INTRODUCTION

Ophthalmology is a highly competitive surgical subspecialty with a match rate of 69%[1] in 2023, leaving many applicants unmatched. This is comparable to match rates in Orthopedic Surgery (65.8%)[2] and Otolaryngology (69.2%).[2] Every year, there is a substantial group of reapplicants who did not match to an ophthalmology residency in a previous San Francisco Match cycle but are applying again and need advice on how to bolster their application. There are many factors that play a role in determining match success, including clerkships grades, United States Medical Licensing Examination (USMLE) scores, letters of recommendation (LORs), and research experience.[3]

Unfortunately, there is a dearth of information for reapplicants, as the majority of advising information and articles focusing on steps for a successful ophthalmology match are tailored for first-time applicants.[4–6] There have been a handful of papers regarding factors for successful reapplication in other competitive specialties such as urology,[7] plastic surgery,[8] cardiothoracic surgery,[9] dermatology,[10] orthopedics,[11,12] and otolaryngology,[13] but there is no literature regarding reapplying into ophthalmology. This group of reapplicants only continues to grow as competition increases and match rates drop, and they need data-driven recommendations.

Match rates had remained stable around 75% until the 2022 cycle when it dropped to 68%.[14,15] In the 2023 San Francisco ophthalmology match, there were 742 applicants and 514 (69%) successfully matched, leaving 228 potentially qualified applicants unmatched.[14] Many of these unmatched applicants will plan to reapply, as shown by prior studies that found rates of 61.5%[15] to 82.1%[16] of applicants who failed to match into ophthalmology originally planned to reapply. After failing to match there are many important decisions that these reapplicants must make in a short period of time for their one year leading up to the next match cycle. One of these decisions includes: whether to do a pre-residency fellowship, research year, or preliminary year and where to apply for these programs. As reapplicants navigate this process, they turn to mentors and peers for advice, which is largely anecdotal because of the lack of research in this area.

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This article will analyze several factors that may lead to a successful reapplication in the results section, will provide a discussion of findings, and will offer final recommendations in the conclusion section to provide the first evidence-based guide to reapplying into ophthalmology residency.

METHODS

Our study analyzed reapplicants from the first two cohorts of applicants to Dell Medical School's ophthalmology residency in the years 2022 and 2023. This was a retrospective study completed in 2023 that had no interventions. The application data of 88 reapplicants over two years was analyzed in the context of whether they successfully matched into an ophthalmology residency position.

We collected demographic data on the characteristics of these reapplicants from their San Francisco match applications - including graduation from an allopathic medical (MD) program or osteopathic (DO) program, whether the applicant was an international medical graduate (IMG), gender identity, under-represented minority (URM) status, and whether the applicant was a traditional medical student (no gap years between undergraduate and medical education). Reapplicant personal statements were analyzed for mention of being a reapplicant, mention of what the reapplicant felt may have been lacking in their previous application, and mention of corrective measures the reapplicant undertook in order to become a more competitive candidate. This study also analyzed the following variables: number of LORs written by ophthalmologists, if any LORs mentioned they were reapplying, whether the applicant's medical school ranked among the top 25 on the 2021 US News medical school ranking, whether the applicant had a home institution ophthalmology department, number of away rotations, clinical grades, whether the applicant was accepted to Alpha Omega Alpha (AOA), USMLE Step scores, number of volunteer experiences, number of publications, and finally the choice of gap year activity (transitional year, research year, or other use of that time). All reapplicant data was secured on a private drive, and the investigators maintain the anonymity of the reapplicants.

Both categorical and continuous variables were statistically analyzed against outcome. Applicant characteristics were compared to match outcome using a combination of logistic regression for continuous variables and fisher-exact squared tests for categorical variables with one chi-square test with post-hoc analysis and Bonferroni correction to analyze choice of gap year as there were four categories. Data were recorded using Microsoft Excel 2016 (Microsoft Inc, Redmond, Washington, USA) and statistical analysis was performed with MATLAB R2021a (MathWorks, Natick, Massachusetts) with significance set to a P value of 0.05.

This study was considered IRB exempt under the regulation of the University of Texas Office of Research Support and Compliance.

RESULTS

The Dell Medical School Department of Ophthalmology received 37 reapplicants in 2022 and 51 in 2023 through the San Francisco match and 4 withdrew their applications and were excluded from analysis. Overall, 41 of the 84 (48.8%) successfully re-matched to a residency position in ophthalmology which, in-line with previous studies, was lower than rates of matching among first time applicants at 1325 of 1733 (76.5%)[4] ($P < .0001$). Sixty-eight percent of successful reapplicants matched regionally (28 of 41), with 11 of the 41 (26.8%) matching to their home program. There were 68 (81%) MD graduates and 16 (19%) DO graduates. Three of the reapplicants were IMGs. There was no difference between match rates of MD vs DO ($P = .1658$) and IMG vs non-IMG reapplicants ($P = .2438$). Of the 84 reapplicants included in the analysis, 64 (76.2%) were men and 20 (23.8%) were women with no significant difference in match rates between men and women ($P = .6121$). Thirteen reapplicants self-identified as coming from an under-represented minority background (URM) and there was no statistically significant difference in match rates versus non-URM reapplicants ($P = .2288$). Similarly, whether a reapplicant was a traditional medical student (no gap-years prior to matriculation) or non-traditional medical student did not affect reapplicant match rates ($P = .5214$).

Personal statements were qualitatively analyzed. Sixty-three of 84 (75%) applicants mentioned that they were reapplicants, and 47 (55.9%) discussed corrective actions they took prior to reapplying. Fifty-nine (70.2%) applicants had letters of recommendation that mentioned the applicant was reapplying. Only 27 (32.1%) applicants directly addressed in their personal statement what they attributed their past failure to match to. There was no statistically significant change in reapplicant match rate among any qualitative factor of either personal statements or LORs. We did find that the quantity of LORs written by ophthalmologists significantly increased match rate (OR = 2.81, 95% CI: [1.23–6.44], $P = .0143$). Thus, the odds of matching as a reapplicant is 181% higher per each additional LOR written by an ophthalmologist.

Seventy-three (86.9%) reapplicants did not graduate from top 25 US News medical schools. There was no difference between reapplicant match rates between graduates from top 25 medical schools versus the other reapplicants ($P = 1$). Whether or not a reapplicant graduated from a medical school with a home ophthalmology program also was a non-factor ($P = .8236$). The average amount of away rotations was 1.4 (range: 0–8) per applicant with a wide range, though the number of away rotations did not affect match rate ($P = .1264$). Reapplicants had clinical honors (or an equivalent score) in an average of 2.4 core (family medicine, neurology, psychiatry, surgery, medicine, obstetrics & gynecology, or pediatrics) clerkships (range: 0–7). Only 6 (7.1%) of the reapplicants were members of the AOA honors society. Interestingly, no metric of grading in medical school affected the likelihood of matching as a reapplicant as neither clinical grades ($P = .6405$), AOA status ($P = .0971$), nor class ranking ($P = .7304$) significantly affected match rate. Additionally, the average total number of publications of reapplicants was 5.7 (range: 0–27) and had no effect on successfully reapplying ($P = .4682$). The number of volunteer experiences also did not affect rates of successful reapplication ($P = .9772$). Regarding USMLE board

exams, Step 1 score did not affect success in the match (P = .0567), but Step 2 Clinical Knowledge (CK) score was directly correlated with the odds of a match (P = .0017). Every single increase in 5 points on Step 2 CK exam was associated with an increase in the odds of a match by 44% (OR = 1.44, 95% CI: [1.145–1.809]). That is to say, per each score jump of 5 points on step 2 the odds of being matched was 1.44 times higher.

Reapplicants opted for a variety of options for their interim year leading up to their reapplication. Among the 84 reapplicants 8 (9.5%) attended an organized pre-ophthalmology residency fellowship program, 15 (17.9%) participated in a residency intern year, the overwhelming majority with 57 (67.9%) participated in a research year, and 4 (4.7%) pursued independent interests (e.g., nonprofit work or non-structured year). A chi-squared test of independence was found that there was a significant relationship between choice of interim year and successfully reapplying X^2 (df = 3, N = 84) = 14.8, p = .0019. Post hoc comparisons revealed that reapplicant success rates of those who completed pre-residency fellowship programs (5 of 8, 62.5%) or research years (34 of 57, 59.6%) had higher rates of success than those who pursued an intern year (1 of 15, 6.7%) (P = .0221; P = .0016, respectively) (Figure 1). Important to note is that there was no statistically significant effect on the number of publications during a research year to successfully matching (P = .7851), for those who completed an interim research year.

DISCUSSION

Our findings demonstrate that there are many factors that are not statistically significant for ophthalmology reapplicant match success (Table 1) (Figure 2) such as clinical grades, AOA membership, and USMLE Step 1 score that are contrary to what has been shown to increase the odds of matching for first-time applicants.[5,17] Applicant attributes that were statistically significant for higher re-match rates are: more LORs from ophthalmologists, participation in a research year or an organized pre-ophthalmology residency program for the interim year, and USMLE Step 2 score (Table 2) (Figure 3). We will discuss these findings in further detail and will put our final recommendations for reapplicants in our conclusion.

When advising reapplicants, it's important to consider measures of reapplicants that are set and unchangeable so that you can further evaluate the odds of a successful rematch. Considering cognitive measures there has been a trend of increased reliance on quantifiable measures such as clinical grades and USMLE board scores in the ophthalmology match.[17] We found that Step 2 is the only important cognitive measure for ophthalmology reapplicants. In the context of Step 1 turning into pass/fail, the weight may shift over to Step 2 and other metrics.[18] USMLE Step exams are likely to continue to affect reapplicant success as it has been well-documented that program directors use scores as screening tools.[19] Contrary to first-time ophthalmology applicants, other cognitive measures such as graduating from a top 10 or top 25 program, clinical grades, AOA membership, number of publications, and USMLE Step 1[4–6,17] were not important to rematching. Additionally, students without home programs had no lower odds of rematching. Among demographic factors graduating from an MD vs DO school, IMG vs non-IMG, gender identity, URM identity, and being traditional vs nontraditional student had no effect on odds of rematching. Although these variables would be set at the time of reapplication, it is important to discuss with reapplicants their Step 2 score will affect their chance of matching and that there are many other fixed variables that hold no bearing on their odds.

There are also many changeable factors that reapplicants will have a degree of control over during their year leading up to reapplying. Regarding LORs we found that most

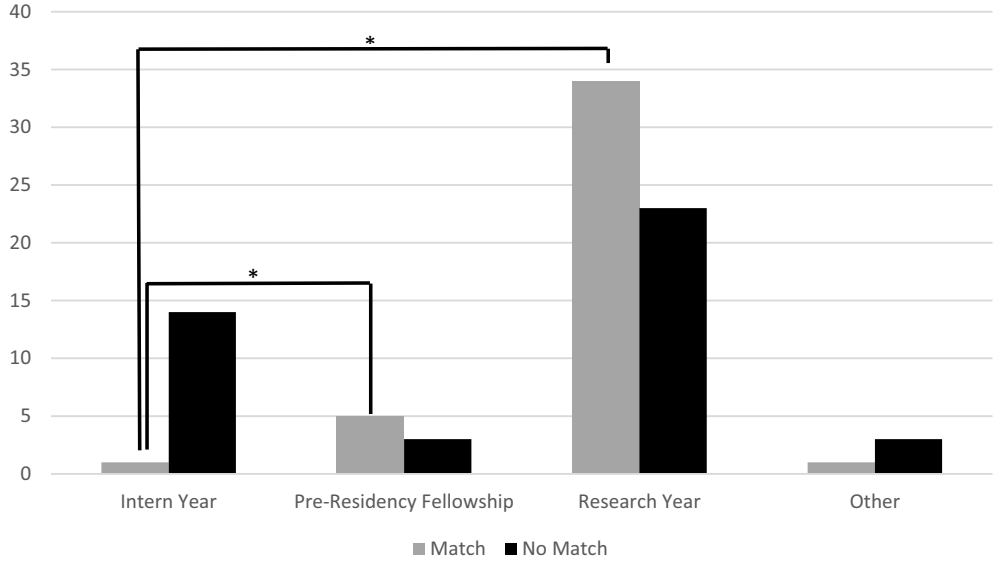

Figure 1. Ophthalmology reapplicant match rates among different interim year options pursued. **Indicates statistically significant difference in match rate at significance level of 0.05.*

Table 1. Factors that did not affect the odds of successfully reapplying to ophthalmology residency programs.

Factor	P Value
Demographic Factors	
Gender identity	0.6121
URM identity	0.2288
Traditional Medical Student	0.5214
Cognitive Factors	
USMLE Step 1 Score	0.0567
AOA Status	0.0971
Clinical Grades	0.6405
Class Ranking	0.7305
Medical School Factors	
US News Top 25	1.0000
MD or DO degree	0.1658
IMG or non-IMG	0.2438
Home Ophthalmology Residency Program	0.8236
Extracurricular Factors	
Number of Volunteer Experiences	0.9772
Number of Publications	0.4682
Number of Publications During Research Year	0.7851
Number of Away Rotations	0.1264
LOR/Personal Statement Factors	
Personal Statement mentions reapplicant status	0.6178
Personal Statement addresses corrective actions	0.6664
Personal Statement addresses previous shortcomings	0.6445
LOR mentions reapplicant status	0.3448

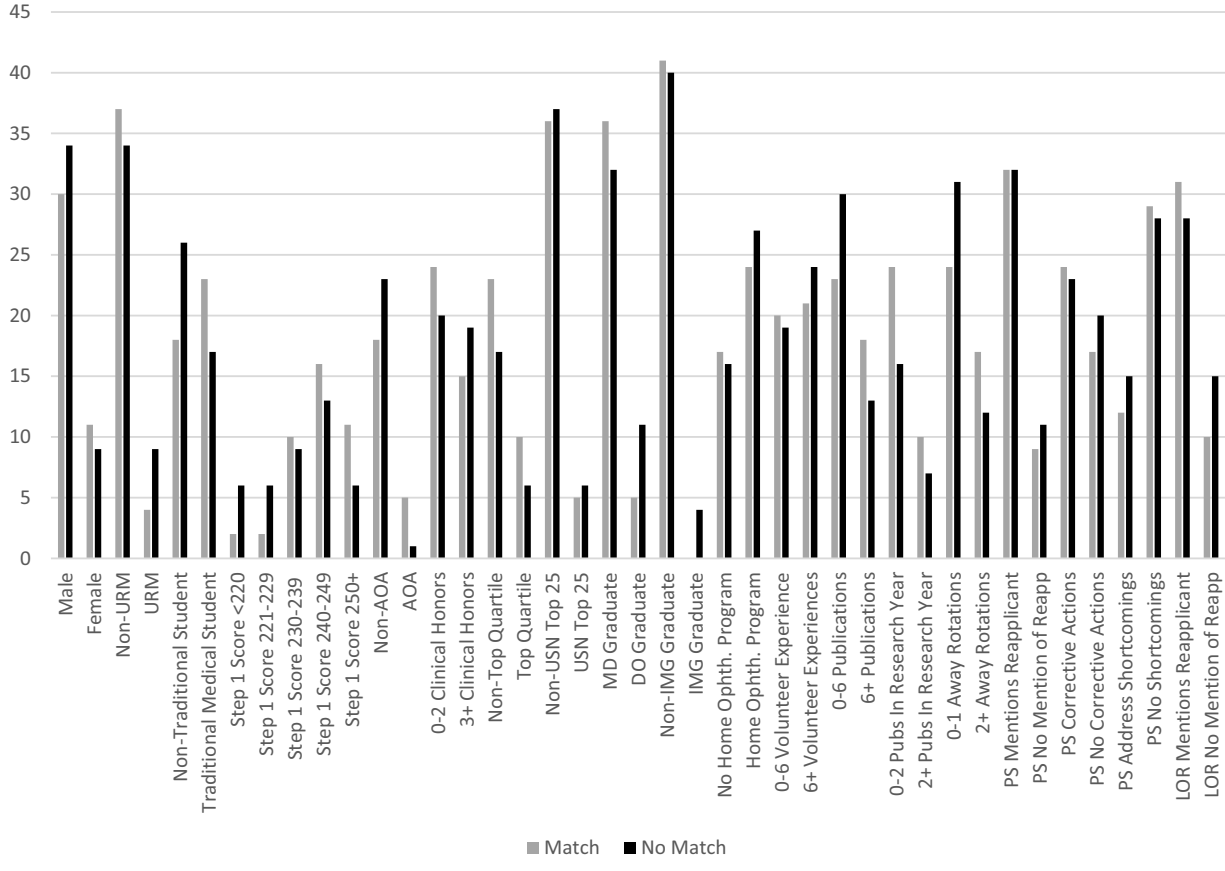

Figure 2. Factors that did not affect the odds of successfully reapplying to ophthalmology residency programs.

Table 2. Factors that significantly affect the odds of successfully reapplying to ophthalmology residency programs.

Factor	Odds Ratio (95% CI)	P Value
USMLE Step 2 score	1.44 (1.15–1.81) per 5 points	0.0017
Number of LORs written by ophthalmologists	2.81 (1.23–6.44)	0.0143
Choice of interim year activity	see figure 1	

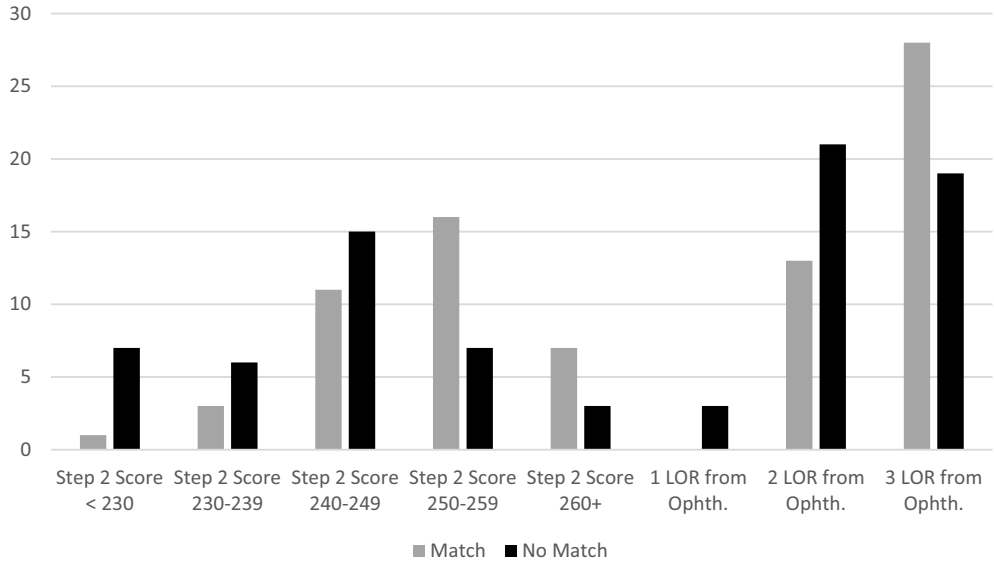

Figure 3. Factors that significantly affect the odds of successfully reapplying to ophthalmology residency programs.

LORs and personal statements mentioned that the applicant was reapplying, and most personal statements also described their corrective actions, but this had no effect on outcomes. Therefore, the qualitative content of a LOR is not an important factor. In a previous paper, the majority of (65.4%) orthopedic reapplicants also mentioned not matching in their personal statements, but unlike ophthalmology reapplicants this did increase the odds of matching for orthopedic reapplicants.[12] Among other competitive specialties, most dermatology reapplicants (86.9%) did not mention that they were reapplying in their personal statement. Additionally, the number of away rotations completed also did not affect match rates. The number of volunteer experiences was also a non-factor to rematching. The only two things within a reapplicants control that increased the odds of success were the number of letters of recommendation from ophthalmologists and participating in a research or organized pre-ophthalmology residency program during the interim year.

It is important to note that the choice of what to do in an interim year preparing for reapplication depends on the surgical subspecialty. Our cohort of ophthalmology reapplicants and a past study of urology reapplicants[7] had higher rates of reapplicant success from pursuing research years whereas plastic surgery,[8] orthopedic surgery,[11] and otolaryngology[13] reapplicants found no difference in success between intern and research years. It is also important to consider that new Accreditation Council for Graduate Medical Education (ACGME) guidelines went into effect in July 2021 requiring 3 months of ophthalmology during the first year of ophthalmology residency.[20] Thus, even if a reapplicant completed an intern year in medicine or surgery they would have to repeat their intern year again if they matriculated to ophthalmology residency. Although participating in a research year improves odds of matching, the number of publications during this time did not have an effect. Considering this fact in the context that the amount of LORs from ophthalmologists significantly improves odds of successfully reapplying, with a similar trend among dermatology reapplicants,[10] may indicate that knowing physicians in the field you are applying to is extremely valuable. We therefore advise reapplicants to pursue a research year or organized pre-ophthalmology residency program, to avoid an intern year due to new ACGME requirements, and to focus on building connections within the field rather than focusing on maximizing scholarly output.

The biggest limitation to our study was sample size. Our sample size was restricted to reapplicants who applied to Dell Medical School's ophthalmology residency program during the 2022 and 2023 cycles which may affect generalizability. Our small sample size particularly affected analysis for small subgroups within the sample such as IMGs and graduates of top 25 programs. It is also important to keep in mind that this study includes medical students who attended medical school during COVID-19, which affected away rotations, clinical experiences, and grading. Similarly, the number of away rotations may have also been affected for reapplicants if they completed their fourth year during COVID restrictions. Additionally, interview performance is a key aspect of successfully matching that is impractical to measure in a retrospective study and was not examined. No single program will interview all reapplicants and thus have a uniform source of data, but reapplicants should be aware that interviews are highly impactful. Lastly, the quantity of volunteer experiences and publications was analyzed but there was no measurement of quality of either.

Future studies could follow trends in USMLE Step 1 and Step 2 score relevance that follows the transition to a pass/fail score for Step 1. Also, as medical schools shift away from intense COVID-19 restrictions a sample of future cycles of reapplicants may shed further light on the effect of clinical grades, away rotations, and other metrics that may have been affected. It also remains to be studied whether ranking or reputation of the program where reapplicants conduct a research or intern year is associated with odds of matching. Future studies of reapplicants could increase generalizability by having a sample of more post COVID application cycles, and through multi-institutional study of reapplicants.

CONCLUSION

Overall, our findings indicate that ophthalmology residency reapplicants should focus their efforts on finding a research year or established pre-ophthalmology residency program for the year leading up to reapplication and bolstering their letters of recommendations within the field. USMLE Step 2 CK score did affect success of reapplication, but is not within a reapplicant's control, as their score would have already been determined by time of reapplication. Many other metrics such as Step 1 scores, AOA status, number of volunteering experiences, and discussion of rematching in both LORs and personal statements had no effect on a reapplicant's chance of matching.

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