Fellowship Match Outcomes in the U.S. From 2010 to 2017: Analysis of San Francisco Match

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• PURPOSE: To describe applicant characteristics and outcomes associated with the ophthalmology fellowship match.

• DESIGN: Retrospective case-control study.

• METHODS: This study took place in San Francisco and matched data for ophthalmology fellowship applicants in the USA. The study population was registrants for the 2010-2017 ophthalmology fellowship match cycles. The match rate took place during the 8-year study period. Applicant characteristics were stratified by match status and factors associated with matching to ophthalmology fellowship positions.

• RESULTS: Between 2010 and 2017, most applicants (2,558/3,471; 73.7%) were matched into ophthalmology fellowship programs. No difference over time in the proportion of applicants that matched for fellowship was identified ($P = .41$). On average, ophthalmology residents who were matched into fellowships had higher step 1 (difference: 9; 99% confidence interval [CI]: 6.8-10.9; $P < .001$), step 2 (difference: 9.5; 99% CI: 7-12; $P < .001$), and step 3 (difference: 7.4; 99% CI: 5-9.7; $P < .001$) scores than those who did not match. Applicants who matched also had a greater number of application distributions (difference: 9.6; 99% CI: 7.9-11.2; $P < .001$), and ranked programs on the match list (difference: 6.2; 99% CI: 5.8-6.7; $P < .001$). Among applicants who matched, 15% matched at the same institute, 29% matched in the same state, and 45% matched in the same region. On multivariable analysis, factors associated with an increased likelihood of matching into an ophthalmology fellowship program included graduates from the US versus graduates from non-US residency programs (odds ratio [OR]: 2.09; 99% CI: 1.27-3.44; $P < .001$), increasing percentage of applications ranked (number of ranked programs and/or number of applications distributed) (OR: 1.02; 99% CI: 1.02-1.03; $P < .001$) as well as having ranked more programs (OR: 1.24; 99% CI: 1.17-1.31; $P < .001$). Medical graduate status outside of the US (OR: 0.58; 99% CI: 0.36-0.93; $P < .001$) was associated with decreased odds of matching for fellowship.

• CONCLUSIONS: From 2010 to 2017, approximately three-quarters of residents applying for an ophthalmology fellowship position matched. Factors associated with increased likelihood of matching included the applicant's graduating from a U.S. residency, graduating from a U.S. medical school, ranking more programs, and having a higher percentage of applications ranked (number of programs ranked by applicant and/or number of applications distributed). The information gained from this study may help applicants as they consider applying to fellowship programs. (Am J Ophthalmol 2020;218:261–267. © 2020 Elsevier Inc. All rights reserved.)

THE PROPORTION OF OPHTHALMOLOGY RESIDENTS seeking fellowship training has been steadily increasing. In 2003, 64% of graduating ophthalmology residents pursued subspecialty training compared with 43% in 1987.[1] By 2018, this percentage increased to 72% (https://aupo.org/news/2019-03/residency-and-fellowship-match-statistics-available. Accessed September 11, 2019). The most commonly used criteria for resident selection to ophthalmology training programs are well described in literature, with quantitative metrics (eg, United States Medical Licensing Examination [USMLE] scores) often considered to be more important.[2,3] However, a paucity of similar data exists for the ophthalmology fellowship match. Moreover, the few studies that address this topic have been survey based, with relatively low participation. In these studies, the interview process, the applicant's ability to work and communicate with others, and letters of recommendation from subspecialty faculty were identified as the most important factors by program directors for fellowship selection.[1,4–6] Objective data describing the characteristics of ophthalmology fellowship applicants and factors associated with matching are lacking. As more residents choose to participate in fellowship training and the pool of competitive applicants continues to grow, evaluating such factors might be of substantial interest to residents considering fellowship training. The information gained from this study may also be useful to residency program and fellowship directors.

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METHODS

• **DATA SOURCE:** De-identified application and ophthalmology fellowship matching data collected by the San Francisco (SF) Match for the 2010-2017 match cycles were analyzed. Information for all ophthalmology subspecialties, except oculoplastics, was extracted. Unlike other fellowship applications, oculoplastics is an "early" match, with applicants applying in their second year of ophthalmology training instead of the final year. Oculoplastics represented approximately 11% of the available fellowship spots over the 8-year study period. The following variables were included: year of application, medical graduate (IMG) status outside of the US, osteopathic degree versus allopathic degree, USMLE Step 1 to Step 3 scores, the applicant's graduating residency program, the number of applications distributed, the self-reported number of interviews attended, number of programs ranked by the applicant, and the applicant's match status. For applicants who matched, their position on the program's rank list and the subspecialty they matched into were also recorded. Graduating residency programs were further assessed to determine whether they were: 1) US-based programs; and 2) ranked as reportedly top 10 (as reported by *Ophthalmology Times*: https://www.ophthalmologytimes.com/special-report. Accessed September 11, 2019).

Publicly available SF Match data were also used to determine the change in: 1) overall match rate; 2) subspecialty match rates; 3) the number of programs participating in the fellowship match; 4) the number of fellowship positions offered; and 5) the number of positions that were left vacant.

The study was deemed exempt by the institutional review board of the Johns Hopkins University School of Medicine.

A brief survey was also sent by the director of education (K.G.) at the International Council of Ophthalmology (ICO) to contacts in the following countries to determine whether ophthalmology fellowship programs existed in these countries and whether or not these programs were accredited: Australia, Argentina, Brazil, China, Egypt, Ethiopia, Ghana, Hong Kong, Indonesia, India, Iran, Japan, Jordan, Kuwait, Malaysia, Nigeria, Oman, Pakistan, Poland, Portugal, Qatar, Russia, Rwanda, Scandinavia, Slovenia, Turkey, UK, Ukraine and United Arab Emirates.

• **DATA ANALYSIS:** Statistical analysis was performed using Stata version 14.1 (Stata Corp, College Station, TX). Applicant characteristics were stratified by match status (matched vs did not match) and summarized using descriptive statistics. The χ^2 was used to assess differences in categorical variables between the 2 study groups. The independent sample *t*-test was used to compare continuous variables. A logistic regression model was created to explore the effects of covariates (IMG status, osteopathic degree vs allopathic degree, USMLE Step 1 to Step 3 scores, graduating residency program, number of applications distributed, number of programs ranked by the applicant) on matching for fellowship. We did not include the number of interviews in the regression model because of the presumed high degree of correlation between interviews attended and number of programs ranked by the applicant. We also computed a variable that was defined as the number of programs the applicant ranked and/or total number of programs the applicant applied to as a proxy of applicant desirability, assuming that most applicants ranked almost every fellowship program at which they had an interview. We termed this variable as the percent applications ranked (% applications ranked).

For applicants who matched, we also looked at factors associated with applicants being ranked in the top 3 by the fellowship program. Change-per-year estimates were obtained using linear regression models. *P* values were 2-sided, and statistical significance was set at $P < .001$ to account for the lack of adjustment for multiple analyses.

Applicants with incomplete applications and those who made "inquiries only but did not pay" or withdrew from the match were excluded from all analyses.

RESULTS

OF THE 3,935 APPLICANTS WHO APPLIED TO THE OPHTHALmology fellowship match between 2010 and 2017, 3,471 were included in the final analysis. Approximately three-quarters of applicants (2,558/3,471; 73.7%) matched into ophthalmology fellowship programs. No difference in the proportion of applicants that matched for fellowship was identified ($P = .41$) (Figure 1). Between 2010 and 2017, the overall match rate decreased 6.9% (mean 1.1% decrease per year; 99% CI: −2.4% to 0.2%; $P = .02$). Approximately three-fourths of all applicants (77%) were graduates of US ophthalmology residency programs, and 10% were from a reportedly top 10 residency program. The mean percentage of ophthalmology residents graduating from US residency programs who applied for fellowship between 2013 and 2017 was 73.2, ranging from 78.3% in 2013 to a low of 70.7% in 2014 and increasing to 74% in 2017. On average, applicants submitted a total of 20 ± 16.6 applications and received 7 ± 5.4 interview invites. The average number of programs ranked was 7 ± 5.3. The regional distribution of U.S. applicants was: South (33.6%), Northeast (29.5%), Midwest (22.8%), and West (14.1%).

Table 1 summarizes the characteristics of applicants stratified by their fellowship match status. On average, ophthalmology residents who matched into fellowship had higher Step 1 (236 vs 227, difference: 9; 99% CI: 6.8-10.9; $P < .001$), Step 2 (239 vs 227; difference: 9.5; 99% CI: 7-12; $P < .001$), and Step 3 (224 vs 216; difference: 7.4; 99% CI: 5-9.7; $P < .001$) scores than those who did not match. Applicants who matched also had a

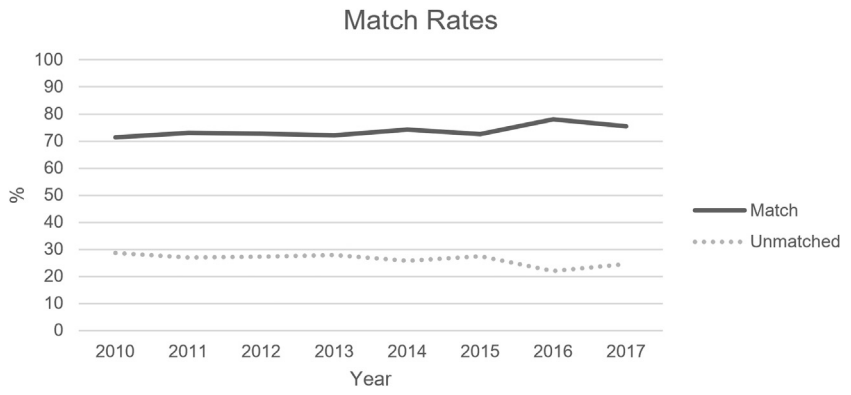

FIGURE 1. Ophthalmology fellowship match outcomes between 2010-2017.

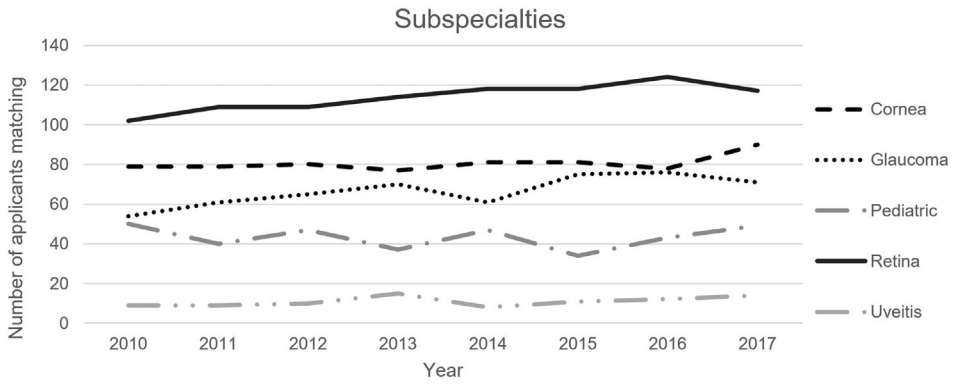

FIGURE 2. Subspecialty match rates for applicants between 2010-2017.

greater number of applications that were distributed (22.5 vs 12.9, difference: 9.6; 99% CI: 7.9-11.2; $P < .001$), interview invites (9 vs 2.7, difference: 6.4; 99% CI: 5.9-6.8, $P < .001$), or ranked programs on the match list (8.5 vs 2.3, difference: 6.2; 99% CI: 5.8-6.7; $P < .001$).

Among applicants who matched, 15% matched at the same institute (15.7% decrease between 2010 and 2017, mean 0.5% decrease per year; 99% CI: −1.9% to 1.1%; $P = .32$), 29% matched in the same state (13.3% decrease between 2010 and 2017, mean 0.3% decrease per year; 99% CI: −1.8% to 1.1%; $P = .44$), and 45% matched in the same region (3.3% decrease between 2010 and 2017, mean 0.7% decrease per year; 99% CI: −2.9% to 1.6%; $P = .31$).

The most frequent specialties to which applicants matched were retina (35.5%), cornea and external disease (23.5%), glaucoma (20.8%), pediatric ophthalmology and strabismus (13.5%), and uveitis (3.4%). We did not identify a change in the percentage of applicants matching into each of these specialties over time (Figure 2). The change in the match rate for subspecialty fellowships between 2010 and 2017 was retina (15.5% overall decrease between 2010 and 2017; mean 1.7% decrease per year; 99% CI: −2.9% to 0.5%; $P = .002$), cornea (3.6% overall decrease between 2010 and 2017; mean 1.3% decrease per year; 99% CI: −3.1 to 0.5%; $P = .04$), glaucoma (5.5% overall increase between 2010 and 2017; mean 0.1% increase per year; 99% CI: −4.3% to 4.6%; $P = .91$), pediatric ophthalmology and strabismus (14% decrease between 2010 and 2017, mean 1.4% decrease per year; 99% CI: −6.6% to 3.8%; $P = .30$) and uveitis (19% increase between 2010 and 2017, mean 0.02% decrease per year; 99% CI: −7.8% to 7.8%; $P = .99$); On multivariable analysis (Table 2), factors that were associated with an increased likelihood of matching into an ophthalmology fellowship program were graduating from US residency programs versus non-US residency programs (odds ratio [OR]: 2.09; 99% CI: 1.27-3.44; $P < .001$) and having ranked more programs (OR: 1.24; 99% CI: 1.17-1.31; $P < .001$). An increasing percentage of applications ranked (percentage applications ranked) was also associated with increased odds of matching (OR: 1.02; 99% CI: 1.02-1.03; $P < .001$). In contrast, IMG status (OR: 0.58; 99% CI: 0.36-0.93; $P < .001$) was associated with decreased odds of matching for fellowship. The match rate of IMGs who graduated from US residency programs was higher than those who graduated from non-US residency programs (69% vs 27%, difference: 42%; 99% CI: 31.4%-52.6%; $P < .001$).

TABLE 1. Characteristics of Applicants Stratified by Fellowship Match Status

Characteristics	Matched (n = 2,558)	Did Not Match (n = 913)	*P* Value[a]
Applicant year, n (%)			.41
2010	297 (71.4)	119 (28.6)	
2011	303 (73.0)	112 (27.0)	
2012	319 (72.7)	120 (27.3)	
2013	318 (72.1)	123 (27.9)	
2014	317 (74.2)	110 (25.8)	
2015	321 (72.6)	121 (27.4)	
2016	337 (78.0)	95 (22.0)	
2017	346 (75.4)	113 (24.6)	
Medical school, n (%)			<.001
US graduate	2,184 (85.4)	323 (35.4)	
Canadian	68 (2.7)	29 (3.2)	
International medical graduate	306 (11.9)	561 (61.5)	
Allopathic medical graduate, n (%)			.88
No	73 (2.9)	27 (3.0)	
Yes	2,485 (97.1)	886 (97.0)	
Place of residency, n (%)			<.001
US	2,113 (89.2)	338 (42.2)	
Non-US	257 (10.8)	463 (57.8)	
Mean USMLE Step 1 Score, mean ± SD	235.6 ± 16.7	226.7 ± 18.9	<.001
Mean USMLE Step 2 Score, mean ± SD	239.2 ± 18.4	229.6 ± 21.1	<.001
Mean USMLE Step 3 Score, mean ± SD	223.6 ± 15.2	216.1 ± 15.9	<.001
USMLE Step 3, mean ± SD			<.001
≤208	329 ± 17.4	111 ± 31.9	
209-239	1281 ± 67.8	216 ± 62.1	
≥240	279 ± 14.8	21 ± 6.0	
Top 10 ophthalmology program, n (%)			<.001
Yes	282 (11.9)	36 (4.5)	
No	2088 (88.1)	765 (95.5)	
No. of applications distributed, mean ± SD	22.5 ± 16.8	12.9 ± 13.6	<.001
Mean number of interviews attended, mean ± SD	9.0 ± 4.9	2.7 ± 3.8	<.001
Mean length of rank list, mean ± SD	8.5 ± 4.8	2.3 ± 3.5	<.001

USMLE, United States Medical Licensing Examination.
[a]*P* values computed using independent *t*-tests for continuous variables and χ^2 for categorial variables.

Among matched applicants, 1 factor found to be predictive of applicants being ranked in the top 3 was graduating from a reportedly top 10 ophthalmology residency program (OR: 2.10; 99% CI: 1.39-3.03; $P < .001$). No other factor (other than graduating from a reportedly top 10 ophthalmology residency program) was significantly associated with decreased odds of applicants being ranked in the top 3.

• **INTERNATIONAL FELLOWSHIP PROGRAMS:** The survey response rate that evaluated the availability of international fellowship programs was 89.6%, with 26/29 countries (Argentina, Australia, Brazil, China, Egypt, Hong Kong, India, Indonesia, Iran, Japan, Jordan, Kuwait, Malaysia, Nigeria, Oman, Pakistan, Poland, Portugal, Qatar, Scandinavia, Slovenia, Turkey, Ukraine, United Arab Emirates) responding. Of these, 50% have formal fellowship training programs, whereas none have a formal accreditation process.

• **PROGRAMS PARTICIPATING IN THE FELLOWSHIP MATCH:** The number of programs participating in the fellowship match between 2010 and 2017 increased from 236 programs in 2010 to 298 programs in 2017 (26.3% overall increase; mean increase 8.7 programs per year; 99% CI: 5.8-11.6 programs per year; $P < .001$). Retina had the greatest number of participating programs each year (mean ± SD) (97.6 ± 10.5 programs), followed by cornea (59.4 ± 5.5 programs), glaucoma (51.4 ± 4.9 programs), pediatric ophthalmology (43 ± 2 programs),and uveitis (11.5 ± 1.1). The change in the number of programs participating in subspecialty fellowship matches between 2010 and 2017 was retina (38.8% overall increase; mean increase 4.2 programs per year; 99% CI: 2.5-5.9; $P < .001$), cornea (26.4% overall increase; mean increase 2.2 programs per year; 99% CI: 1.3-3.1; $P < .001$), glaucoma (overall 21.7% increase; mean increase 1.8 programs per year; 99% CI: 0.6-3.1; $P < .002$), pediatric (overall

TABLE 2. Factors Associated With Matching into Ophthalmology Fellowship Match

Applicant Characteristics	Odds Ratio	99% Confidence Intervals	*P* Value
US residency			
No (ref)	-	-	-
Yes	2.09	1.27-3.44	<.001
Top 10 Ophthalmology program			
No (ref)	-	-	-
Yes	1.21	0.69-2.12	.38
Medical school graduate status			
US graduate (ref)			
Canadian	2.36	1.01-5.51	.01
IMG	0.58	0.36-0.93	<.001
Step 1 (continuous)	1.00	0.99-1.01	.87
Step 2 (continuous)	1.00	0.99-1.01	.77
Step 3 (continuous)	1.01	1.00-1.02	.004
No. of applications distributed	1.01	1.00-1.03	.02
No. of ranked programs	1.24	1.17-1.31	<.001
% Applications ranked (no. of ranked programs/number of applications distributed)[a]	1.02	1.02-1.03	<.001

[a]Proxy for applicant desirability.

6.8% increase; mean increase 0.1 programs per year; 99% CI: −1.2 to 1.3; $P = .84$), and uveitis (overall 20% increase; mean increase 0.3 programs per year; 99% CI: −0.1-0.8; $P = .03$).

• **POSITIONS OFFERED:** Between 2010 and 2017, the number of fellowship positions increased by 25.2% from 330 positions in 2010 to 413 in 2017 (mean increase 11.9 positions per year; 99% CI: 8.8-15.1 positions per year; $P < .001$). Retina had the highest number of positions available each year (mean ± SD) (132.4 ± 13.7 positions), followed by cornea (87.6 ± 5.8 positions), glaucoma (73 ± 7.0 positions), pediatric ophthalmology (59.6 ± 2.7 positions), and uveitis (15.3 ± 2.1 positions). The change in the number of positions available for subspecialty fellowship matches between 2010 NS 2017 was retina (overall 35.8% increase; mean increase 5.4 positions per year; 99% CI: 1.1-8.4; $P < .001$), cornea (overall 18.3% increase; mean increase 2.2 positions per year; 99% CI: 0.9-3.4; $P = .001$), glaucoma (overall 24.6% increase; mean increase 2.7 positions per year; 99% CI: 1.3-4.1; $P < .001$), pediatric (overall 14% increase; mean increase 0.8 position per year; 99% CI: −0.5 to 2; $P = .07$), and uveitis (overall 30.8% increase; mean increase 0.8 positions per year; 99% CI: 0.2-1.3; $P = .002$).

• **NUMBER OF VACANT POSITIONS:** The number of fellowship positions left vacant increased 103%, from 33 vacancies (10% of total fellowship positions) in 2010 to 67 vacancies (16.2% of total fellowship positions) in 2017 (mean increase 5.7 vacant positions per year; 99% CI: 0.6-10.8; $P = .01$). Uveitis had the highest percentage of positions that were left vacant between 2010 and 2017 (27.9% of total positions, mean ± SD; 4.3 ± 2.1 vacancies), followed by pediatric ophthalmology (27.3% of total positions; 16.3 ± 5.2 vacancies). The percentage of positions left vacant in retina, glaucoma, and cornea were 14% (18.5 ± 7.7 vacancies), 8.7% (6.4 ± 5.4 vacancies), and 8% (7 ± 3.9 vacancies), respectively.

DISCUSSION

APPROXIMATELY THREE-QUARTERS OF OPHTHALMOLOGY residents (73%) who applied for fellowship training between 2010 and 2017 matched. We did not identify changes in the match rate over the 8-year study period. Factors that were associated with an increased likelihood of matching into ophthalmology fellowship programs included graduating from an US ophthalmology residency, graduating from a reportedly top 10 program, being a US medical school graduate, and ranking more programs. Previous studies that attempted to characterize determinants of the ophthalmology fellowship selection criteria found interview performance, letters of recommendation, the ability to work and communicate with others, and applicant disclosure of their intention to rank a program A number 1 with improved match outcomes.[4–6] However, these studies were based on recall in a nonvalidated survey-based questionnaire with a participation rate of 78% among 435 participants. In contrast, our study offered a look at objective metrics of the applicants, including those predictive of matching.

Foreign-trained graduates consistently consisted of 20%-25% of the fellowship applicant pool. This was because internationally, there was significant variability in subspecialty fellowship availability and quality. Subspecialty training programs exist in Europe, Asia, Africa, and South America on a country-by-country basis. It is not possible to even estimate the number of available positions in the various subspecialties because many are informal, and most countries have no regulations, requirements, or accreditation systems. Duration and oversight of these programs is thus highly variable. Few such programs exist in Sub-Saharan Africa because of the lack of subspecialists in this general area. In contrast, fellowship training programs are more abundant in Europe but again vary widely on a country-to-country basis. Several countries in Asia and South America, including India, Iran, Indonesia, Pakistan, Singapore, Australia, Malaysia, Argentina, and Brazil offer a variety of fellowship programs, which can range in duration from weeks to years. However, no formal training programs are available in a wide spectrum of countries, including Germany, Ukraine, China, and the Scandinavian countries. The International Council of Ophthalmology (ICO) partners with training centers around the world to offer funded, primarily 3-month "fellowships" designed to augment further subspecialty training.

International accreditation of fellowship training is essentially nonexistent. The ICO has international guidelines for subspecialty training in most subspecialties (https://educators.icoph.org/Tsearch.php?Title=&Description=&Guideline=2&Source=&Importance=0&Contributor=&DateSelect=&date2=&Category[]=1&Audience[]=1&Audience[]=2&Audience[]=4&Extensions=0&Language=0&Interactivity=0&Search=Search). These guidelines are meant to serve as a modifiable template for anyone developing training programs. The West African College of Surgeons and Iran have fellowship training program guidelines but most countries do not. Thus, the quality of international programs is extremely variable.

Our study found graduates of US residency programs (OR: 2.09; 99% CI 1.27-3.44; $P < .001$) and US medical school graduates (OR: 1.72; 99% CI: 1.08-2.78; $P < .001$) were more likely to match into fellowship programs than graduates of non-US residency programs and IMGs, respectively. The findings did not contradict various other studies that showed IMG status to be a negative predictor of matching to US residency programs and that a similar trend exists for fellowship positions. Egro et al. found that applications from foreign graduates were viewed negatively by fellowship program directors, which they hypothesized might be attributable to concerns regarding differences in training, culture, primary language, as well as visa requirements.[7,8] Theoretically, international applicants also may face difficulty obtaining letters of recommendation from US faculty. In addition, a study by Riley et al. showed the proportion of IMGs in a residency program to be a factor in program selection by US medical students, with training programs that retain a large proportion of IMGs often viewed as less prestigious, although the findings did not adjust for multiple analyses to determine if the findings were statistically significant.[9]

The match rate for IMGs who completed their training at US residency programs was greater than that for IMGs completing their residency outside the US (difference: 42%; 99% CI: 31.4%-52.6%; $P < .001$).The match rate of graduates from both US medical schools and residencies appeared to be higher than all other groups, with 1,987/2,271 (87.5%) applicants matching over the study period. These data could be provided to trainees who are considering what factors might be associated with matching, provided they recognize these associations do not prove cause and effect.

In contrast to residency, step scores were not shown to be related to choosing a fellowship applicant.[10] Similarly, our study found no association of Step 1, Step 2, and Step 3 scores with matching.

The association between the number of ranked programs and the likelihood of matching was well-established in literature.[2,11] A 2012 study by Yousuf et al.[11] determined that ophthalmology residency applicants ranking >10 programs had a >90% likelihood of matching. Similarly, we found that applicants who ranked ≥7 (median) programs in our study were between 4.3 and 8.5 times more likely to match than those with <7 ranked programs. These findings suggested that stronger applicants are offered more interviews, rank more programs, and thus are more likely to match. We found an increasing percentage applications ranked (proxy for applicant desirability) to be associated with an increased likelihood of matching in our study.

The geographical location of the applicant's residency training program was shown to influence the results of the fellowship match. In a study that involved 1,489 gastrointestinal fellowship applicants between 2010 and 2019, Atsawarungruangkit et al. found that almost 40% of applicants matched at the same institution, 53% of applicants matched in the same state, and 72% matched in the same region.[12] We found geographic location appeared to play a role in the ophthalmology fellowship match as well, with 15% of all applicants matching at the same institute, 33% matching in the same state, and almost 50% in the same region.

Strengths of this study included using objective data provided by the Association of University Professors of Ophthalmology (AUPO), which potentially increased the accuracy of our dataset compared with other survey or self-reported data. Finally, the study included almost 3,400 applications over an 8-year period, which allowed us to have a large sample size and to assess trends over time.

Our study had several limitations. First, we reported data only on applicants who formally applied through the SF Match. The actual number of trained fellows might be

higher, because applicants might obtain a spot outside the match or fill vacant positions after the match. Second, our study did not include data on oculoplastics, because these data were not readily available from the AUPO because of oculoplastics being an early match. Third, our dataset only had information on subspecialties that applicants matched into and did not have information on how many subspecialties to which that applicant applied. Thus, some applicants might have applied in several areas and were not matched to their field of choice. Finally, these associations could not determine cause and effect, so that applicants should not believe, for example, that graduating a reportedly top 10 program will result in an increased likelihood of matching.

In summary, our study provided associations with the likelihood that applicants will match into a fellowship program that may be of value to future fellowship applicants.

CRediT AUTHORSHIP CONTRIBUTION STATEMENT

SIDRA ZAFAR: CONCEPTUALIZATION, METHODOLOGY, Formal analysis, Data curation, Writing - original draft, Writing - review & editing. **Neil M. Bressler:** Formal analysis, Data curation, Writing - original draft, Writing - review & editing. **Karl C. Golnik:** Formal analysis, Data curation, Writing - original draft, Writing - review & editing. **Divya Srikumaran:** Methodology, Data curation, Writing - review & editing. **Zara Ghous:** Formal analysis, Data curation, Writing - review & editing. **Samantha Ip:** Formal analysis, Data curation, Writing - review & editing. **Xinyi Chen:** Formal analysis, Data curation, Writing - review & editing. **Fasika A. Woreta:** Conceptualization, Methodology, Formal analysis, Data curation, Writing - review & editing.

ALL AUTHORS HAVE COMPLETED AND SUBMITTED THE ICMJE FORM FOR DISCLOSURE OF POTENTIAL CONFLICTS OF INTEREST and none were reported.

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