# Applicant Perspective on the 2021 Ophthalmology Residency Cycle - A Post-Match Analysis

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# Abstract

### Objective:

To evaluate the experiences and preferences of applicants applying for the 2020 - 2021 application cycle for ophthalmology residences during the COVID – 19 pandemic.

### Methods:

A cross sectional survey was conducted online. All applicants to the Henry Ford ophthalmology residency program during the 2020-2021 application cycle were invited to complete the survey. The survey was open for completion from June 4, 2021, to July 4, 2021.

### Results:

Survey responses were collected from 94 applicants (17.2% completion); 71 (75.5%) US MD, 10 (10.6%) DO, and 13 (13.8%) IMG MD. Applicants reported a mean (SD) USMLE Step 1 score of 243.10 (12.59) and 5.60 (5.33) publications accepted and/or submitted. Applicants applied to a mean (SD) of 82.31 (22.12) programs, were offered 8.90 (11.47) interviews, and attended 8.26 (5.56) of them. The most important factors respondents believed in choosing programs to apply to were geographical location (n = 73 (81.1%)), perceived fit in a program (n = 72 (80.0%)), and program reputation (n = 68 (75.6%)). Most respondents believed they were adequately able to assess their fit through virtual interviews (n = 56 (59.2%)). In the event of another year of virtual interviews, respondents were asked for changes they would like to see changed/improved in the match process. The most frequent response was a better assessment of a programs (n = 16 (32.0%)), followed by a stronger cap on the number of programs applied to and/or number of interviews an applicant could attend (n = 10 (20.0%)), and better opportunities to speak and connect with residents (n = 8 (16.0%)).

### Conclusion:

Applying for ophthalmology residencies continues to be recognized as a highly competitive process with many complexities involved. Future cycles may investigate the value of replacing in-person interviews with virtual ones or may adopt a hybrid model to ease applicant financial burden and stress from travel. Given another cycle for virtual interviews, program directors may find value to offer more opportunities to interact with residents, improve virtual tours of facility, and limit technical difficulties during these interviews.


# Introduction

The coronavirus disease 2019 (COVID-19) pandemic has had numerous implications for ophthalmology residency applicants during the 2020–2021 match cycle. Applicants during this match year were faced with unique application conditions in which visiting rotations were not available and all interviews were

held virtually. Furthermore, limited domestic travel interfered with applicants in adequately assessing in-person ophthalmology residency programs to assess for location and “fit”.

Many individuals each year apply for ophthalmology residencies using the Centralized Application Services (CAS) administered by San Francisco Residency and Fellowship Matching Services (SF match). Ophthalmology continues to be considered among the most competitive medical specialties to match; demonstrated as an increasing trend in applications submitted per applicant from 48 in 2008 to 79 in 2021[1]. This trend results in an increased financial burden on applicants when applying to an increasing number of programs. Factors such as the United States Medical Licensing Examination (USMLE) performance, letters of recommendation, performance on core clerkships, and lack of in-person interviews could have all been affected by the COVID-19 pandemic[8]. Students who decided to pursue ophthalmology later in their educational careers and in parts of the country affected more so by the pandemic were particularly susceptible to these potentially affected factors[9].

The present study is designed to evaluate the experiences of ophthalmology residency applicants during the 2020-21 application cycle and to suggest possible improvements in future application cycles that may continue to experience residual effects of the pandemic.

## Methods

The Henry Ford Institutional Review Board approved this study (IRB 14770) so long the survey collected de-identified information and provided consent. All residency applicants (N = 547) to the Henry Ford Ophthalmology Residency Program during the 2020–2021 application cycle were invited by email to complete an online survey created via Google Forms. Questions assessed for respondent demographics, interview experiences, financial expenditure, match outcomes, and suggestions for improvement for the application cycle. The survey was available for completion from June 4th, 2021 to July 4th, 2021. Participation was voluntary and no compensation or incentives were provided. All responses were collected anonymously and data was de-identified.

## Results

# Respondent Demographics

Survey responses were collected from 94 applicants (17.2% completion); 71 (75.5%) US MD, 10 (10.6%) DO, and 13 (13.8%) IMG MD. Applicants reported a mean (SD) USMLE Step 1 score of 243.10 (12.59) and 5.60 (5.33) publications accepted and/or submitted. Of the 94 respondents, 23 identified their medical school as a top 40 National Institute of Health (NIH) research funded institution (24.7%), 16 were members of the Alpha Omega Alpha (AOA) Honor Society (17.0%), and 15 were members of the Gold Humanism Honor Society (16.0%). Most respondents attended medical school from the Midwest (n = 29 (31.2%)), followed by the South (n = 20 (21.5%)), East (n = 16 (17.2%)), West (n = 14 (15.1%)), and

Internationally (n = 12 (12.9%)). Atleast one gap year was taken by 26 applicants (27.7%) to improve their applications before applying for this year's match.

# SF Match Application

Applicants applied to a mean (SD) of 82.31 (22.12) programs, were offered 8.90 (11.47) interviews, and attended 8.26 (5.56) of them. Applicants answered by qualitative response on how many more programs they believed they applied to compared to a cycle without the effects of the pandemic, reporting on average 12.98 (11.90) more programs. In comparison to previous cycles, 31 (33.7%) applicants attended more interviews than usual while 15 (16.3%) applicants attended less interviews than usual. The most important factors respondents believed in choosing programs to apply to were geographical location (n = 73 (81.1%)), perceived fit in a program (n = 72 (80.0%)), and program reputation (n = 68 (75.6%)) (Fig. 1). The least important factors were compensation/benefits (n = 23 (25.6%)) and cost of living (n = 38 (42.2%)) (Fig. 1).

# Interview Experience

All interviews held for the 2020–2021 ophthalmology were done so virtually. Most respondents believed they were adequately able to assess their fit through virtual interviews (n = 56 (59.2%)). Many applicants experienced conflicts in scheduling interviews (n = 24 (26.4%)) and technical difficulties during these interviews (n = 49 (53.8%)). A majority of programs provided virtual tours for applicants (n = 80 (87.9%)) however our respondents believed that these virtual tours were not as effective in comparison to in person tours for assessing a program's facility (n = 73 (81.1%)). For future cycles, in-person interviews (n = 38 (41.8%)) seem to be equally preferred to virtual interviews (n = 35 (38.5)). Because all interviews were held virtually, the majority of respondents reported saving money from this cycle (n = 89) with 28 saving $2000 - $3000 (30.4%), 20 saving >$5000 (21.7%), and 19 saving $3000 - $4000 (20.7%).

# Impact of COVID-19 on Application Factors

For the 2020–2021 ophthalmology match year, all visiting rotations were cancelled, 37 (39.4%) respondents believed that this significantly impacted their match outcomes while 34 (36.2%) respondents believed it did not impact match outcomes. Given the impact of COVID-19 on the academic year, 24 (25.8%) respondents reported having difficulties in acquiring letters of recommendation for this cycle. With regards to scheduling USMLE Step 2 Clinical Knowledge (CK), 35 (37.2%) responded that the pandemic affected their decision in scheduling to take Step 2 CK. Because of the unique circumstances, 18 (19.6%) applicants dual applied to another specialty.

# Match Outcomes

Respondents reported ranking a mean (SD) of 8.79 (5.48) programs. A successful match was achieved by 64 (68.8%) of respondents with 28 (30.1%) matching at their first choice (Fig. 2). Of the respondents who did not match, 10 (34.5%) applied for a different specialty, 12 (41.4%) will take a year off to build their applications to reapply, and 7 (24.1%) accepted a position as a research fellow. The top factors

respondents believed that would have resulted in a better match outcome were stronger research productivity (n = 45 (49.5%)), USMLE Step 1 performance (n = 38 (41.8%)), clinical course grades (n = 32 (35.2%)), and the availability of in-person interviews (n = 26 (28.6%)) (Fig. 3).

# Suggestions for Improvement

In the event of another year of virtual interviews, respondents were asked for changes they would like to see changed/improved in the match process. The most frequent response was a better assessment of a programs (n = 16 (32.0%)), followed by a stronger cap on the number of programs applied to and/or number of interviews an applicant could attend (n = 10 (20.0%)), and better opportunities to speak and connect with residents (n = 8 (16.0%)).

For the 2021–2022 ophthalmology match cycle, programs may hold open houses, which can include tours of their facilities, campus, and nearby city. These open houses are to be held after interviews have been concluded and program directors have submitted their rank lists but before applicant's are to submit theirs. Respondents were asked if this option, were it available to them, would have influenced their final rank list; 19 (20.2%) responded definitely yes and 39 (41.5%) responded likely yes (Fig. 4). When asked if these open houses would be helpful in assessing a program, 17 (85%) respondents believed they would.

# Discussion

Our respondents displayed strong USMLE Step 1 performances, prolific research productivity, and the majority identified as graduates of US Allopathic medical schools. Most of our respondents reported that their medical school was in the Midwest region, which is unsurprising as this is where our institution resides. Roughly a quarter of our respondents come from a top 40 NIH research funded institution which can explain our cohort's strong research productivity of 5.60 submitted and/or accepted publications. Exactly 27.7% of our respondents took at least one gap year before applying for this year's cycle which may also explain our respondents' strong research productivity. Furthermore, 13.8% of our respondents were international medical graduates and it is commonly advised for successful applicants to have greater than 2 high impact publications when applying for ophthalmology residencies per *Driver et al*[10].

Our respondents reported an average USMLE Step 1 performance of 243.10 which is approximately the same as the nationally reported matched average of 245.0[3]. Many of the respondents believed that they applied to more programs (13 more than average) than usual given the unique circumstances with 33% believing they attended more interviews than they would have in prior application cycles. Attendance of more interviews as virtual IV eliminated the need for domestic travel; applicants therefore could interview at programs throughout the country at the comforts of their homes. Examining Fig. 5, we report a bimodal distribution when plotting the number of interviews offered to the number of programs applied to which is similar to what *Venincasa et al* reported in their study in which the greatest yield of interviews invitations was at 50 and 90 programs[4]. Similarly, *Siatkowski et al* reports that at 48 applications submitted yielded

the greatest amount of interview invitations[1]. We report from our analysis that for each applicant there seems to be the greatest yield of interview invitations at 55 and 105 programs.

Both geographical location and perceived fit were the highest rated factors in choosing programs to apply to from our respondents; however, *Yousef et al* in their survey study report that educational and interpersonal factors were rated by ophthalmology applicants as more important than geographical location [5] . Given a cycle of virtual interviews, one may question how well an applicant can assess for location and a residency program's culture. Despite these obstacles, more than half of our respondents still believed that virtual interviews were sufficient in being able to adequately assess their fit with a residency program. Although a majority felt that they could assess a residency program virtually, around a quarter felt their match outcomes were negatively affected. This is similar to what *Robinson et al* report in a survey for applicants to cardiothoracic fellowships with a virtual interview format, also reporting 25% of applicants believed their match outcomes were negatively affected [6] . Almost all our respondents reported saving money this cycle which is best explained by the removed financial burden of domestic travel and stay. *Robinson et al* also conclude applicants believe that virtual interviews should be offered in the future; amongst the reasons are decreased financial burden on applicants [6] . Whilst many applicants and faculty prefer in-person interviews to virtual interviews, *Quillen et al* further agree that virtual interviews offer substantial cost savings and decreased travel-related stress for applicants [10] . The most frequent response to how much money was saved for this cycle was $2000 - $3000 which is consistent with what *Venincasa et al* found in their survey for applicants applying for ophthalmology residencies during the COVID-19 pandemic, reporting an average of $2659 saved [11] .

Roughly 40 percent of our respondents believed the elimination of away rotations negatively impacted their match outcomes. Visiting rotations are a great opportunity for an applicant to assess and work with faculty at a given residency program. *Tso et al* in a survey study for program directors and medical student educators across 119 accredited ophthalmology residency programs investigated the value of visiting rotations in ophthalmology; they report most program directors and medical student educators recommend applicants to complete away rotations and believe that these rotations will increase their chances at matching a host institution[7]. Letters of recommendation when applying to ophthalmology are touted amongst the most important factors in receiving interview invites and ultimately matching at a residency program; a survey of program directors, chairpersons, and medical student educators conducted by *Nallsamy et al* found for ophthalmology residency programs, 83% felt that letters of recommendation were among the most important factors considered in the resident selection process[2]. A quarter of our respondents reported difficulties in acquiring letters of recommendations which may have contributed to a negatively affected match outcome. This difficulty can be explained not only by the advent of the COVID-19 pandemic but also by the shortened clerkships and virtual rotations. *Hammoud et al* state that both shortened clerkships and the switch to virtual rotations for the 2020–2021 residency match cycle may reduce student opportunities to obtain meaningful faculty evaluations and letters of recommendations[8].

A large proportion of our respondents reported an unmatched rate of 30.1 percent which is slightly higher than the national unmatch rate of 26 percent[3]. *Allison et. al* indicated in their survey the importance of higher performance on quantitative metrics, such as USMLE Step 1, as an advantage for matching[12]. Thus, it is unsurprising that the top factors selected by our respondents in improving one's match outcomes were USMLE Step 1 performance, research performance, and clinical course grades. Interestingly 28.6 percent of our respondents believed that in-person interviews would have positively affected their match outcomes; this may perhaps be explained by some of our respondents believing they would perform better at an in-person interview compared to a virtual interview. Interview performance is ranked as the most important metric for evaluating and selecting ophthalmology applicants, at 95.4% per *Nallasamy et al*[2].

Overall, the idea of open house tours to give applicant's a better idea of a program's facility, campus, and nearby city was well received by our respondents with more than half believing this would have influenced their final rank list. For future cycles, applicants are interested in ways to better assess a residency program and more opportunities to socialize and speak with residents. Even though half of our applicants believed they were able to adequately assess a residency program for fit, future cycles may find value in providing more opportunities to meet applicants in person and host in-person socials with residents present. Some of the applicants voiced that there should be a stronger cap on the number of programs applied to and/or number of interviews an applicant could attend. The present cycle decreased the number of interviews an applicant could attend from 20 to 18 while there were no caps put on the number of programs an applicant to apply to. *Siatkowski et al*[1]. conclude that when applying to more than 48 programs there are diminishing returns in the yield of interview invitations and overall did not affect an applicant's match outcome[1]. Future cycles may have to investigate the idea of capping interviews especially with the fact that virtual interviews may become the norm as many applicants are satisfied with this setup and have a decreased financial burden in an already expensive application process.

# Limitations

Potential fallacies in our study are important to point out in the generalizability of our data. Our survey did not ask our respondents if their institution had a home ophthalmology program to rotate through. This can significantly impact an applicant's chance of matching, as these programs provide not only clinical experience but also research opportunities and letters of recommendation. Our survey also did not ask if applicants were planning on doing an away rotation at the programs they ended up interviewing in and/or matched in. This information may also be relevant, as programs could have been signaled that an applicant was interested in their program and may have been extended an interview invitation upon closer look of their application. This was also a post-match survey so there may have been a disproportionate number of students who either matched or failed to match participating in the survey. Additionally, we asked our respondents to estimate how much money they saved from this cycle which

can be a source of bias. Finally, since most of our respondents reported their medical school was in the Midwest, it's possible that this was another source of bias as our institution resides there as well.

# Conclusions

Applying for ophthalmology residencies continues to be recognized as a highly competitive process with many complexities involved. Future cycles may investigate the value of replacing in-person interviews with virtual ones or may adopt a hybrid model to ease applicant financial burden and stress from travel. Visiting rotations may have not affected this year's overall match rate but may have impacted match outcomes regarding the geographic location an applicant ultimately matched. Discontinuing away rotations in the 2021 match cycle may have also decreased certain applicants' chance of matching due to the inability to obtain letters of recommendation for students without home programs. Providing in-person opportunities with the use of open houses may assist applicants in assessing programs and refining their final rank list. Finally given another cycle for virtual interviews, program directors may find value to offer more opportunities to interact with residents, improve virtual tours of facility, and limit technical difficulties during these interviews.

# Declarations

### Ethics approval and consent to participate

The first question of our survey informs participants that all data is deidentified and anonymous. An informed consent was obtained from all participants involved in our survey study. The Henry Ford Institutional Review Board (IRB 14770) reviewed our ethics and consent statement and approved this study. Methods were performed within relevant guidelines and parameters and Declaration of Helsinki in obtaining data for this study.

### Consent for publication

Consent was obtained from our participants in partaking in our study.

### Availability of data and materials

The datasets used and/or analyzed during the current study available from the corresponding author on reasonable request.

### Competing interests

Not Applicable

### Funding

Not Applicable

### Authors' contributions

All authors had significant contributions in survey formation, data collection, data analysis, and manuscript editing for this study.

### Acknowledgements

Not Applicable

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# Figures

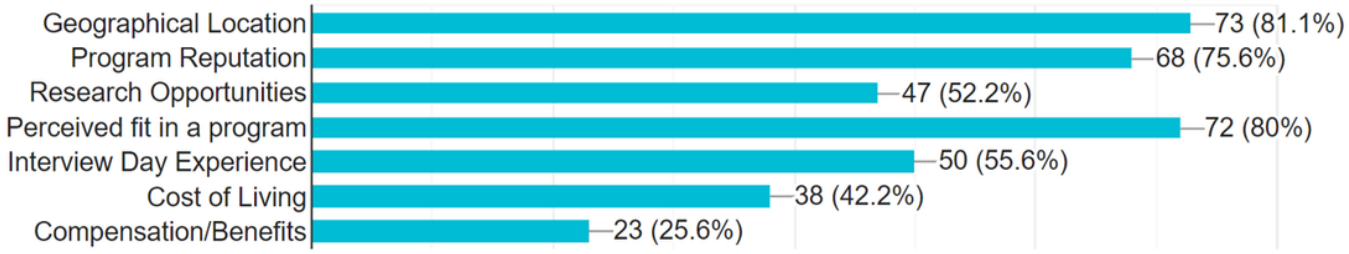


**Figure 1**

displays the factors applicants considered when choosing which programs to apply to (n = 90)

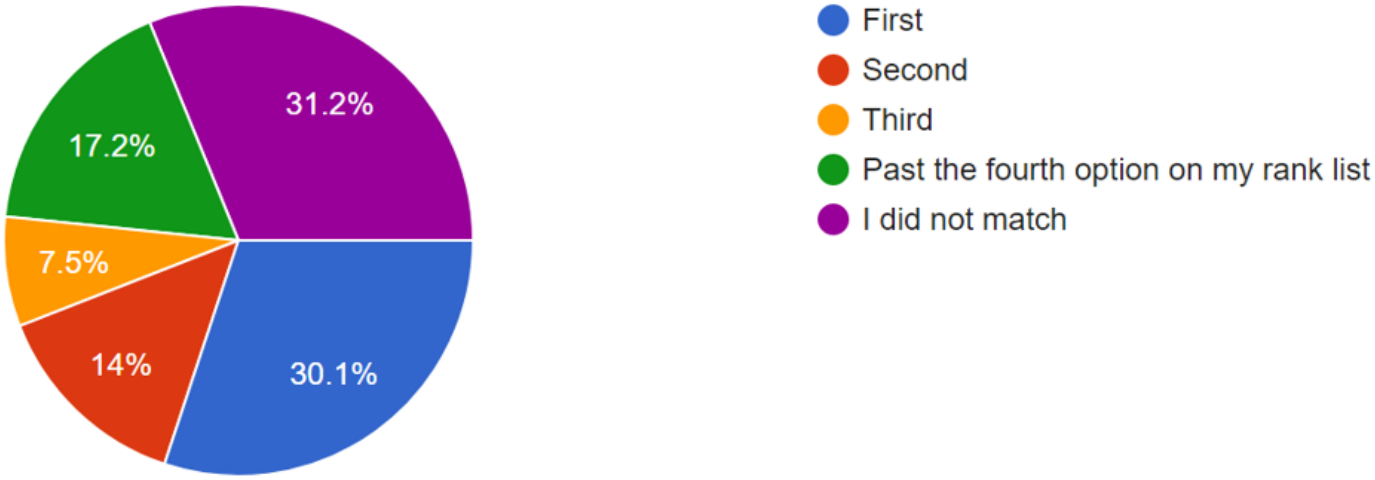


**Figure 2**

shows the results for our respondents on their match outcomes (n = 93)

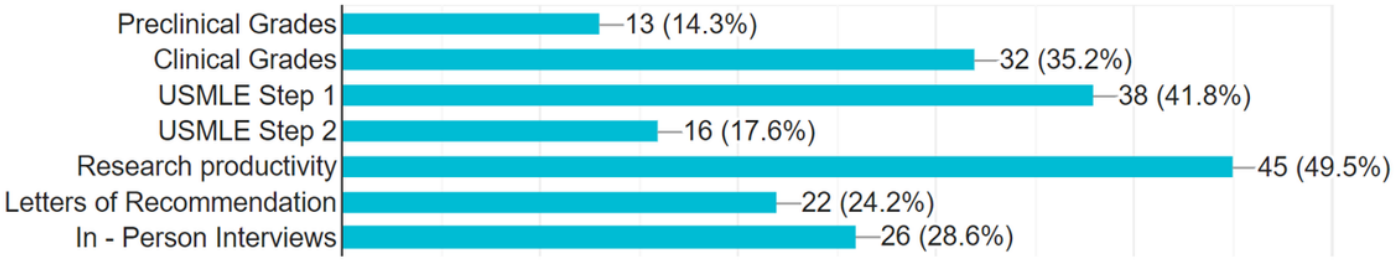


**Figure 3**

displays factors applicants believed could have improved upon that would result in a better match outcome. (n = 91)

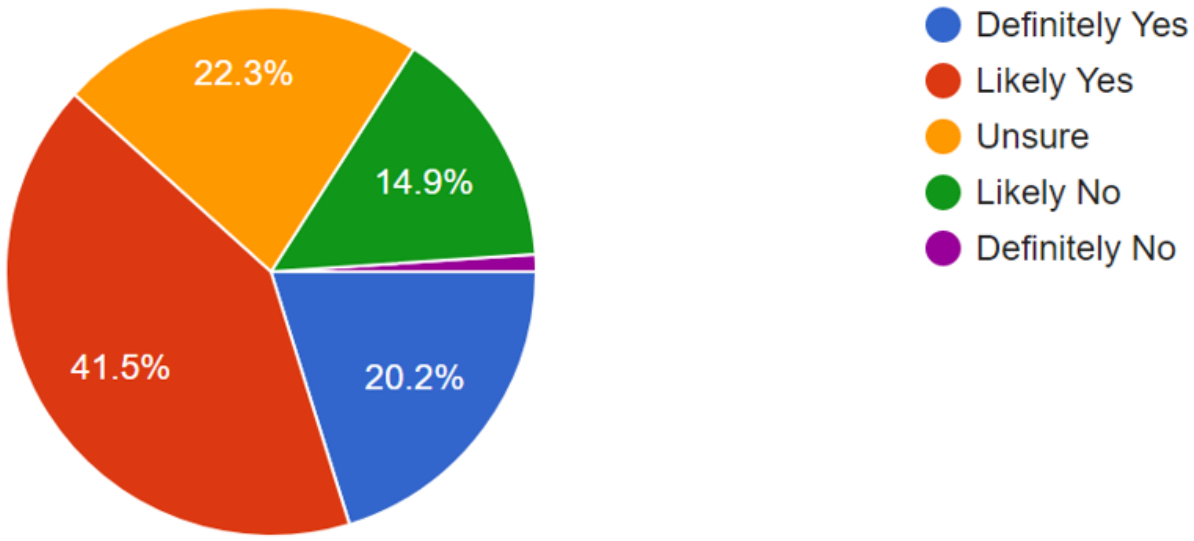


**Figure 4**

shows the results when respondents were asked if open houses were available would they have influenced your final rank list (n = 94)

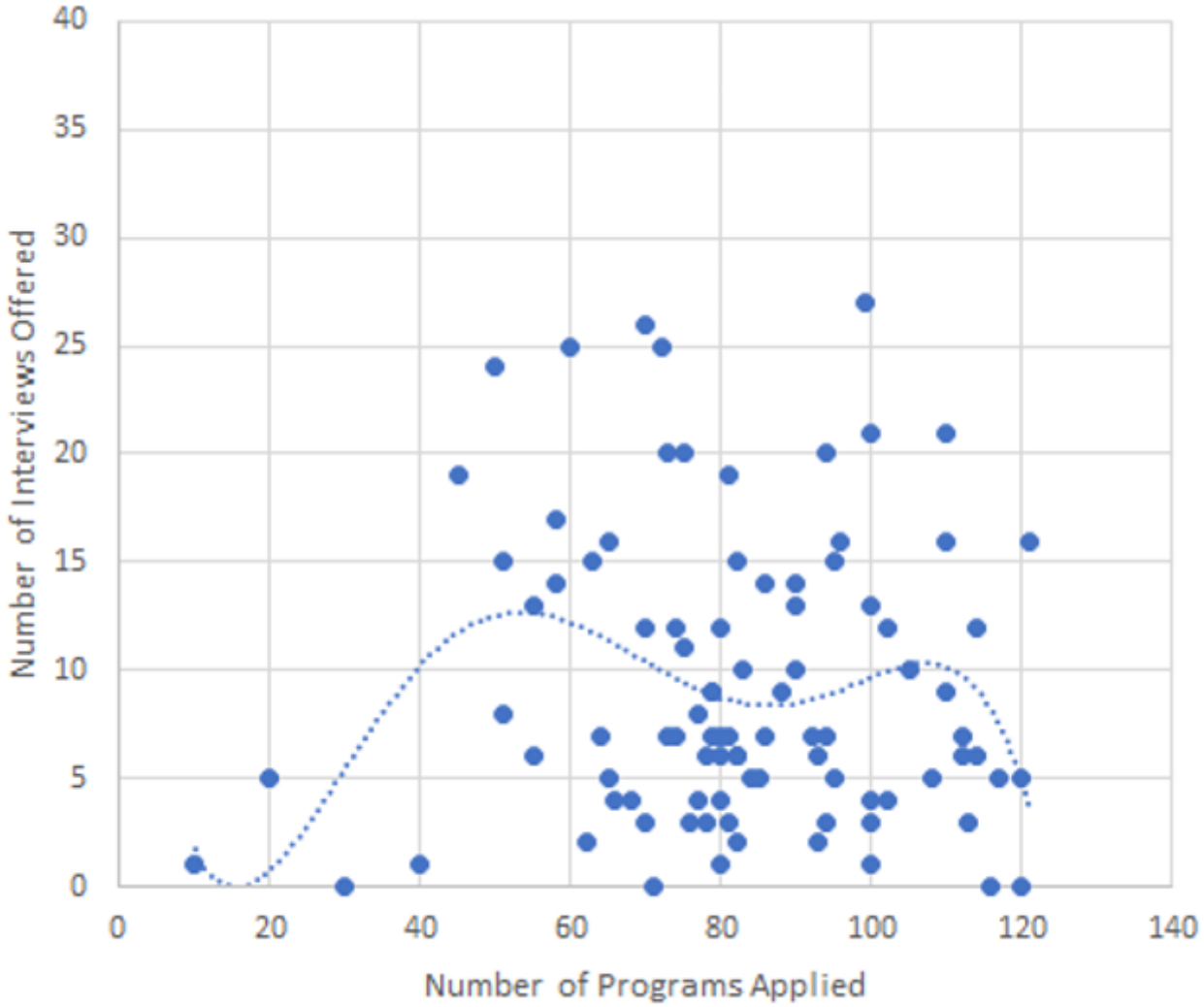


**Figure 5**

graphs the number of interviews offered to the number of programs applied to. A bimodal distribution is observed with peaks at 55 and 105 programs applied to.