UNIVERSITY OF CALIFORNIA,

IRVINE

Assessing the Factors and Barriers That Affect the Experience of Applicants Participating in the National Matching Services (NMS) Genetic Counseling Match Program

THESIS

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by

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DEDICATION

To my parents, sister and partner.

For your unconditional love, support and sacrifices that have made it possible for me to pursue this work.

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ABSTRACT OF THE THESIS

Assessing the Factors and Barriers That Affect the Experience of Applicants Participating in the National Matching Services (NMS) Genetic Counseling Match Program

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Previous studies assessing the genetic counseling graduate program (GCGP) application experience have been limited and largely focused on admitted applicants; half of applicants are not admitted annually, but there is a significant gap in the understanding of their experiences. This study aimed to evaluate the factors affecting GCGP selection, barriers in the application process and factors affecting the overall application experience for 2021-2024 GCGP applicants. The factors and barriers affecting various GCGP applicant subgroups were also compared. Of the 377 participants who completed the online survey, 30% were matched, 41% were unmatched, and 28% were first-time applicants in 2024. The top factor influencing GCGP selection across all participants was the cost of tuition (74%), while the cost of individual program applications was a frequently selected barrier in the application process (68%) and a factor influencing the overall application experience (49%).

GCGP selection by unmatched applicants was notably influenced by the cost of living in a program's area when compared to matched applicants (p=0.020). Unmatched applicants also

more frequently indicated that obtaining advocacy ($p<0.001$), volunteer ($p=0.002$), or research ($p=0.007$) experience were barriers in the application process, when compared to matched applicants. Matched applicants more frequently reported that exam-related costs were barriers in the application process, when compared to unmatched applicants ($p=0.002$).

One notable theme in this study was diversity. Diversity within the patient, faculty and student populations were each more frequently cited by non-White applicants as factors influencing GCGP selection when compared to White applicants ($p<0.001$ for all three comparisons). Diversity within the genetic counseling field was also cited more frequently as a barrier by non-White ($p<0.001$) and LGBTQ2IA+ ($p=0.007$) applicants when compared to White and non-LGBTQ2IA+ applicants, respectively. In addition, diversity within programs was more frequently selected as a barrier by these two subgroups, when compared to White ($p<0.001$) and non-LGBTQ2IA+ applicants ($p=0.031$), respectively. A lack of diversity within programs and the field of genetic counseling was cited more frequently by non-White applicants as affecting their overall application experience when compared to White applicants ($p<0.001$ for both comparisons). Working to address these factors and barriers, particularly for underrepresented groups in medicine, could advance diversity within the genetic counseling field, guide recruitment strategies, and enhance the match/application process and experience.

INTRODUCTION

1.1 The Current State of Genetic Counseling Graduate Programs in North America

As of May 2024, there are sixty accredited genetic counseling graduate programs (GCGPs) in North America (*Accreditation Council for Genetic Counseling (ACGC)*, 2024). Fifty-six of these programs are in the United States, with the highest concentration of programs located in the eastern and western states. According to the Accreditation Council for Genetic Counseling (ACGC), there are also several emerging GCGPs including three in California, one in Pennsylvania and one in Louisiana. In contrast to the many current and emerging GCGPs in the United States, only four accredited programs currently exist in Canada. These include one on the west coast, one in central Canada and two in eastern Canada.

With the exception of one Canadian program, all accredited GCGPs in North America participate in the National Matching Services (NMS) genetic counseling admissions match (*National Matching Services Inc.*, 2023). Fifty-five accredited GCGPs participated in the match in 2021, and similarly, fifty-eight participated in the match for the 2024 cycle. From 2021 to 2024, the available training positions also increased from 553 to 613. The number of applicants registered in the match has also steadily increased throughout most of the last six years, with an average of approximately 1800 applicants registering annually. Although the number of program placements has been increasing, approximately 50% of applicants participating in the match are unmatched each year. This is a notable percentage of the overall applicant pool that is not admitted each year, highlighting the competitive nature of the admissions process.

1.2 The National Matching Services (NMS) Genetic Counseling Admissions Match Program

Since 2018 the admissions process for genetic counseling graduate programs accredited by the ACGC has involved participation by both applicants and the graduate programs in the National Matching Services (NMS) genetic counseling admissions match (*National Matching Services Inc.*, 2023). Applicants must register in the match and pay the associated $100 registration fee for their applications to be considered by participating programs. For those with financial need, a limited number of Match fee waivers became available beginning with the Fall 2020 application cycle. In addition, applicants must submit and pay for individual applications directly to universities associated with the genetic counseling graduate programs they choose to apply to, which can range from $25 USD to $140 USD for some programs (Augustana University Master of Science in Genetic Counseling, 2024; University of California San Francisco Genetic Counseling Program, 2024). Interviews are then offered to a subset of applicants by the graduate programs. Following the completion of interviews, graduate programs submit lists of desired applicants in numerical order of preference for each program in association with each registered track. Applicants similarly submit a list of their desired program tracks in numerical order of preference. Some programs have more than one track, which is primarily determined by available spaces at differing levels of funding. Lastly, NMS uses a matching algorithm to process the submitted rank order lists. This algorithm works to place each applicant with their most preferred program track on their rank order list, given that the applicant was also ranked for that program track and applicants ranked higher by the program did not already fill all positions in that program track. Program tracks are similarly matched with the most preferred applicants on their rank order list, up to the number of positions they have available, who have ranked the program track and who are not matched with other program

tracks they ranked higher. The results of this match program are binding in nature, meaning that a program must offer admission to an applicant with whom they are matched, and an applicant must accept the admission offer and attend the program with which they are matched. Prior to 2018, each program managed their own individual offers of admission, with most programs participating in a common window of time in which admission offers were made.

1.3 Lack of Diversity in the Field of Genetic Counseling

A lack of diversity within the field of genetic counseling remains an ongoing concern which has been highlighted by studies examining demographics within the applicant pool and the field as a whole (Lee et al., 2024; Odem et al., 2022; O'Sullivan et al., 2023; Stoddard et al., 2021). Consistent with the applicant data reported on the NMS genetic counseling admissions match program website, in their 2020 study, Stoddard and colleagues described the majority of students in genetic counseling graduate programs identifying as female (91.9%) and White (83.3%), and whose parents had a high socioeconomic status (SES) with an annual income greater than $160,000 USD (Stoddard et al., 2021). Each year, non-White and non-female applicants have represented a higher proportion of non-matched applicants when compared to the overall applicant pool. This suggests that there may be barriers and factors influencing whether individuals from underrepresented groups in medicine (URM) choose to apply to GCGPs and/or the chances that they will be admitted to a GCGP. According to the Association of American Medical Colleges (AAMC), "Underrepresented in medicine means those racial and ethnic populations that are underrepresented in the medical profession relative to their numbers in the general population." (Association of American Medical Colleges, 2024). This definition has also been expanded by medical schools to include nonracial and ethnic identities such as

LGBTQ2IA+ community members, individuals with a disability and first-generation college students (Westervelt et al., 2021).

The 2024 Professional Status Survey (PSS) released by the National Society of Genetic Counselors (NSGC) also further supports the need for diversification within the field and similarly reported that most respondents identified as White (87%) and as women (92%) (National Society of Genetic Counselors, 2024). According to the 2022 American Community Survey, the United States' population is estimated to be approximately 61% White, 12% Black or African American, 6% Asian and 19% Hispanic or Latino (United States Census Bureau, 2022). In comparing these population demographics to the demographics present among genetic counseling applicants, students and practicing genetic counselors, racial and ethnic diversity is clearly lacking within the genetic counseling field.

When Hadinger et al. (2017) examined Black/African American and Hispanic/Latino medical students' perspectives of the medical school admission process, they found that the majority felt the admissions process was, "...overwhelming, stressful and expensive". Many respondents expressed that the process was particularly challenging in the absence of resources for information, guidance and social support. The majority of participants also highlighted feelings of stress due to expenses and being hindered by financial factors during the application process. This study highlights factors in the application process for medical school that appear to be creating barriers to increasing racial and ethnic diversity in the medical field. Although not explicitly studied, it is reasonable to expect that similar factors and barriers may hinder efforts to increase diversity in the genetic counseling field.

In addition to the need for greater diversity in racial/ethnic background and SES, increasing LGBTQ2IA+ diversity has more recently been an additional area of focus for the

genetic counseling field. O'Sullivan et al. (2023) analyzed the experiences of lesbian, gay, bisexual, transgender, queer or questioning, two-spirited, intersex, asexual plus (LGBTQ2IA+) genetic counseling applicants during the admissions process and identified specific challenges this population faces that may contribute to a lack of gender diversity in the genetic counseling field. Participants of this study highlighted the lack of diversity among genetic counselors as a consideration when deciding whether to disclose their identity and described hesitation to disclose their identity due to a fear of discrimination. Although many of the factors that influenced applicants' rank decisions were similar to the general applicant pool, some considerations for those with LGBTQ2IA+ identities were found to be unique. As an example, the geographical location of a program was evaluated to avoid areas that had historically been discriminatory toward individuals with LGBTQ2IA+ identities. This is just one way in which URM groups may experience additional barriers or factors that influence their application experiences more negatively than other non-URM groups. The findings of O'Sullivan et al. (2023) are similar to those of previous studies examining the experiences of sexual and gender minority (SGM) students applying to medical schools (Lockman, 2021). Lockman (2021) found that SGM applicants had a heightened fear of and experienced more discrimination when compared to cisgender applicants. This fear of discrimination led to many SGM applicants choosing to withhold their identities during the application process. SGM applicants also had lower expectations of and experienced less support and resources from medical schools in relation to their identities. It is reasonable to expect that these types of barriers would deter some LGBTQ2IA+ individuals from applying to GCGPs or make it more challenging for them to match with a program, both of which would further contribute to the lack of diversity that exists within the field of genetic counseling.

1.4 Factors and Barriers Affecting Program Choice and the Application Process

When deciding how many and which genetic counseling graduate programs to apply to, applicants are known to consider a multitude of factors (Odem et al., 2022, Lee et al, 2024). Program location and financial considerations have recently been identified as two of the most influential factors (Odem et al. 2022). More specifically, applicants have expressed a desire to remain close to family and friends, to attend programs in specific locations, and have considered the local community and patient population at a program's given location. The inability to relocate has also been found to influence program choice. In terms of financial considerations, the cost of tuition, the availability of financial aid and minimizing loans have also been highlighted as important factors in the selection of programs (Odem et al, 2022).

Lee et al. (2024) examined the financial barriers experienced by genetic counseling applicants in detail and described the costs related to applications, interviews, the graduate record examination (GRE) and obtaining coursework prerequisites as barriers for prospective genetic counseling students (Lee et al., 2024). Specifically, these costs were emphasized as potential deterrents for prospective genetic counseling students who are URM or have limited financial resources. This may explain the findings of previous studies that cite genetic counseling students' parents tend to be of a higher socioeconomic status (Stoddard et al., 2021; Lee et al., 2024; Lega et al., 2005).

In addition, applicants have also described burnout associated with applying to GCGPs (Odem et al., 2022). Related barriers were cited as the time-consuming nature of filling out separate applications for each program, costs of applications, the psychological impact of competitive acceptance rates, and prerequisite course requirements. Utilizing a common application across all programs been suggested as a potential way to reduce some of these

barriers, however there are concerns that a universal, standardized application could result in the submission of more generic applications and increase the competition for admission to individual GCGPs. The current administrative structures within GCGPs were also commonly cited as a barrier to implementation (Beasley et al., 2022). Although implementing a common application may help alleviate burnout associated with filling out separate applications for each program, Odem et al. (2022) and Beasley et al. (2022) also caution that this approach may increase application costs.

1.5 Purpose of the study

In 2021, the NSGC diversity, equity and inclusion assessment provided by The Exeter Group specifically identified the need to address barriers to entering the genetic counseling field as a recurring theme (The Exeter Group, 2021). Unfortunately, previous studies assessing the factors and barriers affecting genetic counseling graduate program selection and the experiences of applicants were significantly limited in their ability to survey applicants who were not admitted (Lee et al., 2024; Odem et al., 2022; O'Sullivan et al., 2023; Stoddard et al., 2021). As approximately 50% of applicants participating in the match program have been unmatched each year, there exists a significant proportion of applicants who have not yet been adequately surveyed regarding their experiences (*National Matching Services Inc.*, 2023). In their 2020 study, Stoddard and colleagues assessed areas such as demographics within the applicant pool and application experiences, however they specifically highlight that their findings, "…likely do not generalize to applicants who either were not accepted into a program or who decided to pursue alternative options" (Stoddard et al., 2021). In addition, more recent studies assessing the factors and barriers that affect the application experience also had extremely limited responses

from applicants who did not match to a program. Odem et al. (2022) identified various factors and barriers that influence program selection and the overall application experience while attempting to capture the experience of applicants who did not match to a program, however they only received responses from 22 individuals who had not matched into a program (11.1% of all respondents). Lee et al. (2024), also report that unadmitted applicants only comprised 18% (n=69) of the total number of respondents in their 2024 study assessing the financial barriers experienced by applicants.

Developing a more complete and inclusive understanding of the factors and barriers affecting the experiences of all applicants, particularly those factors initially identified by the studies mentioned above, will provide valuable data which could be used by programs to improve the overall experience of applicants. As an example, this data could be used to guide the recruitment strategies of individual programs or be used to improve the match/application process. In addition, the results of this study could guide efforts to promote greater equity and diversity in the applicant pool.

This study aimed to provide a more comprehensive view of the application experience by surveying both matched and unmatched applicants who applied to GCGPs for admission between Fall 2018 – Fall 2024. Specifically, this study aimed to: 1) Identify factors and barriers that impact matched and unmatched applicants' selection of GCGPs and their overall application experience, 2) Describe *why* and *how* factors and barriers impact the application experience of prospective genetic counseling students, and 3) Determine if these factors and barriers significantly differ between various subgroups.

METHODS

2.1 IRB Protocol

This research study was determined to be exempt upon review by the Institutional Review Board (IRB) of the Office of Research at the University of California, Irvine (UCI). A confirmation letter of exempt research registration from the UCI IRB (protocol #3956) can be found in Appendix A.

2.2 Survey

A 29-question anonymous online survey (Appendix B) was created through UCI's RedCap platform. After participants provided informed consent, a single screening question was used prior to displaying the other survey questions to assess whether a respondent had applied for genetic counseling graduate programs in North America during the Fall 2018-Fall 2024 admissions cycles. If respondents selected "yes" to this screening question, the first section of survey questions were displayed. If respondents selected "no" the survey ended. Survey questions included multiple choice, checkbox fields and free-response text boxes. Branching logic was used in thirteen questions to enable respondents to elaborate on their responses from a previous question. Survey questions were presented to participants in two sections. The first section asked participants about their history of applying to genetic counseling graduate programs in North America for Fall 2018-Fall 2024 admission, including which application cycles they participated in, how many programs they applied to and interviewed with, as well as factors influencing how many programs they applied to during each admissions cycle. The second section asked participants about their experiences of applying to genetic counseling graduate programs in North America for Fall 2018-Fall 2024 admission. This section included

questions about factors that were important when deciding which programs to apply to, factors that created barriers in the genetic counseling application process and factors having the greatest overall influence on the application experience. The remainder of this section asked participants at the time of their last application cycle about demographic information including age, gender identity, disability status, racial/ethnic background, languages spoken, relationship status a, parent/caregiver status and first-generation college student status. The final questions of the survey asked participants about when and how they first learned about the field of genetic counseling and how they learned about this study.

Regardless of whether they were eligible or chose to complete the anonymous online survey for this study, individuals had the option to enter a drawing for one of 100 $5 gift cards to an online retailer of their choice (ie. Starbucks, Target or Amazon). To enter the drawing, individuals provided their email addresses in a separate survey. These email addresses were not tied to survey responses and were used only to notify those who were selected in the draw. The funding for this draw was provided by the NSGC Student/New Grad SIG and NSGC Research SIG (Appendix C).

2.3 Recruitment

From March 8, 2024, to March 15, 2024, email invitations (Appendix E) with a link to the online survey were directly distributed by the GCEA Match Committee to 5,158 unique email addresses of 2022-2024 National Matching Services (NMS) Genetic Counseling Match Program participants.

From February 6, 2024, to March 15, 2024, a recruitment flyer (Appendix D) with a link to the online survey was also posted on the Slack and Discord channels of the Genetic

Counseling Prospective Student Network (GCPSN) and the Gene Pool: A Genetic Counseling Community Discord Channel. The recruitment flyer and survey link were also posted to X (formerly Twitter) and Instagram during this time.

In addition, emails with the recruitment flyer and survey link for the study were sent to leadership members of the UCI, UCLA, and UCSD student interest groups (SIGs), the Genetics Opportunities, Learning, Development, and Empowerment Network (GOLDEN) and the GC Experience Initiative on March 3, 2024 with a request to distribute the recruitment flyer and survey link to their members.

2.4 Consent

Implied informed consent was obtained from individuals prior to study participation. After clicking the survey link, a study information sheet was displayed which contained the names and contact information of the lead researcher and faculty sponsor. This study information sheet also contained the purpose of the study, eligibility criteria, information about possible risks, discomforts and benefits associated with study participation, information about data storage and optional draw entry, and the contact information for the UCI Institutional Review Board (IRB). By clicking "Agree" at the bottom of this study information sheet, respondents indicated that they consented to participate in the study.

2.5 Participants

Eligibility for study participation required individuals to be 18 years of age or older, and to have enrolled in the National Matching Services (NMS) Genetic Counseling Match Program during the 2018-2024 match cycles (the academic term for which they applied to begin a

program, not the year they submitted the application materials), regardless of the outcome of their application(s).

Five hundred thirteen recorded responses were collected between February 6, 2024, and March 31, 2024. Two responses were not included in data analysis as the respondents indicated enrollment in GCGPs outside of North America. Due to changes in GRE requirements and interview formats following the Fall 2020 application cycle, respondents who indicated participation in only the Fall 2021-Fall 2024 application cycles were analyzed as a separate cohort. Due to the low response rate from individuals who indicated participation in application cycles prior to 2021, the focus of this study was shifted to only include the more recent application cycles from 2021 to 2024. The 28 responses received from individuals who indicated participation in application cycles prior to 2021 (in addition to participating in at least one cycle in 2021-2024 as a reapplicant) were excluded from the final analysis. A total of 377 survey responses that were at least 80% complete were included in the final data analysis.

2.6 Protection of participant privacy

All research data collected was stored securely and confidentially using UCI's HIPAA compliant OneDrive and RedCap platforms, where password protection and two factor authentication were in place. Research data was not stored on any other platform or device.

2.7 Data analysis

SPSS was used to perform descriptive statistic data analysis for all quantitative data. Independent comparisons of factors and barriers between sub-groups were described using descriptive statistics. Sub-groups consisted of (1) matched vs unmatched applicants, (2) first-

time applicants vs reapplicants (3) first-generation college students vs continuing-generation college students, (4) individuals identifying as women vs individuals not identifying as women, (5) individuals identifying as LGBTQ2IA+ community members vs non-LGBTQ2IA+ community members and (6) White vs non-White applicants. Due to a small number of participants who selected each of the various “non-White" racial/ethnic backgrounds, racial backgrounds were grouped into either “White” or “non-White”. As participants were able to select multiple options when asked about their racial background, respondents who only identified as White/Caucasian were compared to respondents who selected any “non-White” race, regardless of if they selected multiple options in addition to White/Caucasian. As the match statuses of 2024 applicants were not known at the time of data collection, individuals who were first-time applicants or reapplicants in the 2024 application cycle were not included in the comparisons involving first-time applicants and reapplicants. First-time applicants in 2021 were also not included in the comparisons of first-time applicants and reapplicants as 2021 reapplicants were not present in the analyzed cohort (i.e. the analyzed cohort included individuals who indicated participation in only the 2021-2024 application cycles). Therefore, only participants who were a first-time applicant or reapplicant in the 2022/2023 cycles were included in the comparisons of first-time applicants and reapplicants. Chi-square analysis was performed to determine if the difference in selected barriers between sub-groups were statistically significant. Nominal p-values are reported with no correction for multiple comparisons. A p-value of ≤ 0.05 was considered statistically significant.

RESULTS

3.1 Demographic Characteristics of Participants

A total of 377 completed responses were analyzed for the participants who applied to GCGPs during only the 2021-2024 application cycles. Table 1 summarizes participants' demographic characteristics. Of these participants, the majority identified as women (n=346, 91.8%). Twenty-two (5.8%) participants identified as men and 9 (2.4%) as non-binary/third gender. Ninety (23.9%) participants identified as being part of the lesbian, gay, bisexual, transgender, queer or questioning, two-spirited, intersex, asexual plus (LGBTQ2IA+) community and 52 (13.8%) participants identified as having a disability at the time of their last application cycle. Most participants were between the ages of 21-29 (n=349, 92.6%) at the time of their last application cycle and indicated that they were single (n=165, 43.8%) or were in a long-term relationship (n=155, 41.1%). Sixteen (4.2%) participants indicated they had children, and 18 (4.8%) identified as being a caregiver for someone other than a child at the time of their last application cycle. Eighty-nine (23.6%) participants identified as first-generation college students.

The majority of participants (n=295, 78.2%) indicated that they only spoke English at the time of their last application cycle. Of the 82 (21.8%) participants who indicated they spoke a language other than English, Spanish was the most common (n=33, 11.2%), followed by French (n=12, 4.1%), Chinese (including Mandarin, Cantonese and Taishanese) (n=7, 2.4%), Vietnamese (n=5, 1.3%) and Hindi (n=5, 1.3%).

Table 1. Participants' demographic characteristics at the time of their last application cycle

		N=377	Percent (%)
Gender	Man	22	5.8
	Woman	346	91.8
	Non-Binary/third gender	9	2.4
Member of the LGBTQ2IA+ Community	Yes	90	23.9
	No	274	72.7
	Prefer not to say	13	3.4
Age	20-29	349	92.6
	30-39	17	4.5
	40-49	7	1.9
	50-59	4	1.1
Disability	Yes	52	13.8
	No	313	83
	Prefer not to say	12	3.2
Parent	Yes	16	4.2
	No	361	95.8
Caregiver to a Dependent	Yes	18	4.8
	No	359	95.2
First-Generation College Student	Yes	89	23.6
	No	288	76.4
Relationship Status	Single	165	43.8
	Engaged	11	2.9
	Long-term relationship	155	41.1
	Married or in a domestic partnership	39	10.3
	Divorced/separated	1	0.3
	Prefer not to say	4	1.1
	Other	2	0.5
Languages other than English (top 5)*	Spanish	33	11.2
	French	12	4.1
	Chinese (Cantonese, Mandarin, Taishanese)	7	2.4
	Vietnamese	5	1.3
	Hindi	5	1.3

*Participants could indicate more than one language.

Table 2a summarizes participants' self-reported racial/ethnic backgrounds. Tables 2b and 2c have been further broken down by the number of backgrounds selected by participants. Participants predominantly identified as being White/Caucasian (n=289, 76.7%), with the

remainder identifying as Hispanic/Latino/Latinx (n=38, 10.1%), Black/African American (n=16, 4.2%), South Asian (n=16, 4.2%), Southeast Asian (n=12, 3.2%), West Asian/Middle Eastern/North African (n=6, 1.6%), Ashkenazi Jewish (n=4,1.1 %), Native American/Alaskan Native/First Nations (n=3, 0.8%), East African (n=2, 0.5%) and Afro-Caribbean (n=1, 0.3%). Seven participants (1.9%) preferred not to report a racial/ethnic background.

Table 2a. Participants' racial/ethnic backgrounds

Racial/Ethnic Background*	**N=377**	**Percent (%)**
Afro-Caribbean	1	0.3
Ashkenazi Jewish	4	1.1
Black/African American	16	4.2
East African	2	0.5
East Asian	24	6.4
Hispanic/Latino/Latinx	38	10.1
Native American/Alaskan Native/First Nations	3	0.8
South Asian	16	4.2
Southeast Asian	12	3.2
West Asian/Middle Eastern/North African	6	1.6
White/Caucasian	289	76.7
Prefer not to say	7	1.9

*Participants could select more than one racial/ethnic background

Table 2b. Breakdown of racial/ethnic backgrounds for participants who selected a single background

Single Background Selected	N=333	Percent of total study population
Black/African American	14	3.7
East African	2	0.5
East Asian	16	4.2
Hispanic/Latino/Latinx	20	5.3
Jewish/Ashkenazi Jewish	3	0.8
South Asian	13	3.4
Southeast Asian	6	1.6
West Asian/Middle Eastern/North African	3	0.8
White/Caucasian	256	67.9

Table 2c. Breakdown of racial/ethnic backgrounds for participants who selected multiple backgrounds.

Multiple Backgrounds Selected (2 or more)	N=36	Percent of total study population
Black/African American and White/Caucasian	1	0.3
East Asian and White/Caucasian	7	1.9
Hispanic/Latino/Latinx and White/Caucasian	13	3.4
Native American/Alaskan Native/First Nations and White/Caucasian	2	0.5
South Asian and White/Caucasian	2	0.5
Southeast Asian and White/Caucasian	5	1.3
East Asian and Southeast Asian	1	0.3
Hispanic/Latino/Latinx and South Asian	1	0.3
Hispanic/Latino/Latinx and West Asian/Middle Eastern/North African	1	0.3
Black/African American, Hispanic/Latino/Latinx, Native American/Alaskan Native/First Nations	1	0.3
Hispanic/Latino/Latinx, West Asian/Middle Eastern/North African and Afro-Caribbean	1	0.3
West Asian/Middle Eastern/North African, White/Caucasian, Ashkenazi Jewish	1	0.3

3.2 Participants' Application History and Outcomes

Table 3a summarizes the application history for all 377 participants. Approximately 29% (n=109) of participants were students currently enrolled in a GCGP, while 1% (n=4) had already graduated from a GCGP. Forty-one percent of participants were unmatched (n=155), with 60 (15.9%) participants receiving interview offers and 95 (25.2%) not receiving interviews. First time applicants in the 2024 application cycle made up approximately 28% (n=107) of participants; two (0.5%) participants indicated that they interviewed with GCGPs but chose to withdraw from the Match. The majority of participants indicated that they applied during one (n=261, 69.2%) or two (n=102, 27.1%) application cycles. Ten (2.7%) participants indicated that they applied during three application cycles and four (1.1%) applied during four application cycles. The majority of participants submitted applications during the Fall 2024 (n=211, 56.0%) and the Fall 2023 (n=151, 40.1%) cycles. One hundred one (26.8%) participants submitted applications during the Fall 2022 cycle and 48 (12.7%) applied during the Fall 2021 cycle.

Figures 1a-d show the distribution of number of GCGPs applied to per application cycle, stratified by application cycle. On average, respondents applied to 6.11 programs per application cycle (SD = 3.4; median = 6; range: 1-19). Figure 2 illustrates the average number of interview offers received by the number of programs applied to per application cycle. Participants who applied to six programs in an application cycle received an average of two interview offers (SD = 1.8). Table 5 summarizes the number of interviews offered per cycle compared to the number of interviews accepted per cycle. The majority of participants accepted all interviews they were offered in each cycle (n=354).

Table 3b shows the proportion of matched and unmatched participants in various subgroups. Approximately 43% (n=71) of 2022/2023 first-time applicants were matched to a

GCGP and 93 (56.7%) were unmatched. For 2022/2023 reapplicants, 38 (64.4%) were matched to a GCGP and 21 (35.6%) were unmatched. When comparing the Match status of 2022/2023 first-time applicants and reapplicants, reapplicants were more likely to be matched to a GCGP than first-time applicants (p=0.005).

When comparing the Match status of women and non-women, individuals with and without a disability, first-generation and continuing-generation college students, non-White and White participants, and LGBTQ2IA+ and non-LGBTQ2IA+ participants, no statistically significant differences were found in the number of matched and unmatched individuals

Table 3a. Participants' application history and outcomes

			N=377	Percent (%)
Admissions/Match Status	Matched	Currently Enrolled	109	28.9
		Graduated From GCGP	4	1.1
	Unmatched	Offered Interviews	60	15.9
		Not Offered Interviews	95	25.2
	First Time 2024 Applicant (Match status not known at the time of data collection)		107	28.4
	Interviewed, but Withdrew from Match		2	0.5
Number of Application Cycle Attempts	1		261	69.2
	2		102	27.1
	3		10	2.7
	4		4	1.1
Academic Cycle(s) Applied[1,2]	Fall 2024		209	55.4
	Fall 2023		151	40.1
	Fall 2022		101	26.8
	Fall 2021		48	12.7

[1]Fall 20XX denotes the academic term for which participants applied to begin a program, not the year they submitted application materials.
[2]Participants could select more than one academic cycle.

Table 3b. Comparisons of the proportions of matched and unmatched participants in various subgroups. A p-value of less than or equal to 0.05 was considered statistically significant.

Subgroup of Participants[1]	N[2]	Matched (%)	Unmatched (%)	p-value
First-Time 2022/2023 Applicants	164	43.3	56.7	0.005
2022/2023 Reapplicants	59	64.4	35.6	
Total 2022/2023 First Time Applicants and Reapplicants	223			
Women	244	42.6	57.4	0.628
Non-Women	24	37.5	62.5	
Total Women and Non-Women	268			
Individuals with a Disability	40	40.0	60.0	0.653
Individuals without a Disability	219	43.8	56.2	
Total Individuals with and without a Disability[3]	259			
First-Generation College Students	65	35.4	64.6	0.203
Continuing Generation College Students	203	44.3	55.7	
Total First-Generation and Continuing-Generation College Students	268			
Non-White	75	49.3	50.7	0.166
White	190	40.0	60.0	
Total Non-White and White Applicants[4]	265			
LGBTQ2IA+	62	35.5	64.5	0.216
Non-LGBTQ2IA+	196	44.4	55.6	
Total LGBTQ2IA+ and non-LGBTQ2IA+ Community Members[5]	258			

[1]Does not include first-time 2024 applicants as the match status for this group was unknown at the time of data collection

[2]Total N values differ for each subgroup comparison

[3]Nine study participants preferred not to provide disability status and were not included in the subgroup comparison

[4]Three study participants preferred not to provide ethnicity information and were not included in the subgroup comparison

[5]Ten study participants preferred not to provide LGBTQ2IA+ community membership status and were not included in the subgroup comparison

Table 4 shows the proportions of White and non-White participants in the first-generation and continuing-generation college student subgroups. Approximately 46% (n=40) of first-generation college students were White and 48 (54.5%) were non-White. For continuing-generation college students, 214 (75.9%) were White and 68 (24.1%) were non-White. When compared, first-generation college students were more likely to be non-White than continuing-generation college students ($p<0.001$).

Table 4. Comparison of the proportions of White and non-White participants in the first-generation and continuing-generation college student subgroups.

Subgroup of Participants	N	White (%)	Non-White (%)	p-value[2]
First-Generation College Students	88	45.5	54.5	
Continuing Generation College Students	282	75.9	24.1	<0.001
Total First-Generation and Continuing-Generation College Students[1]	370	68.6	31.4	

[1]Seven study participants preferred not to provide ethnicity information and were not included in the subgroup comparison

[2]A p-value of less than or equal to 0.05 was considered statistically significant.

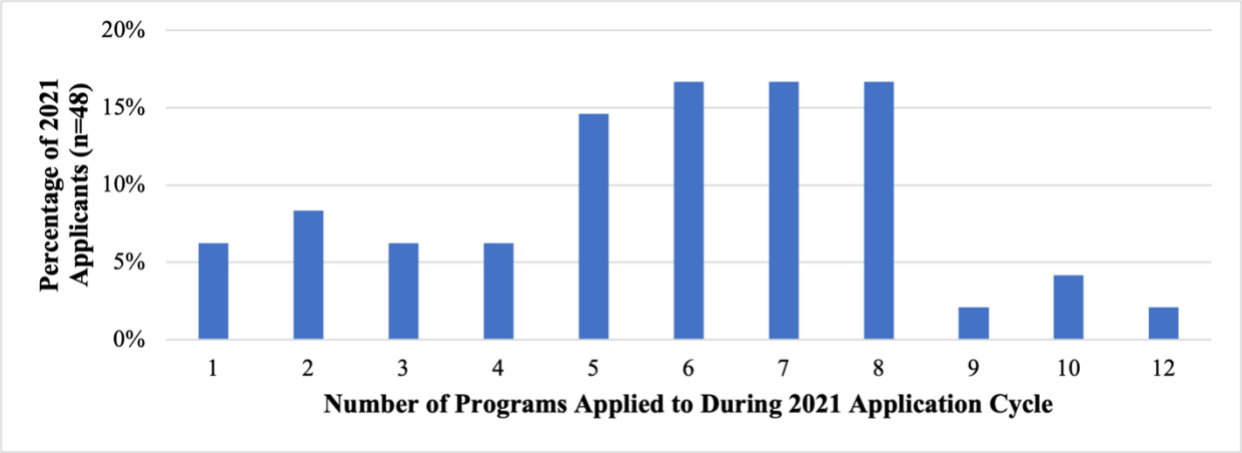

Figure 1a. Percentage of 2021 applicants stratified by the number of programs applied to during the 2021 application cycle.

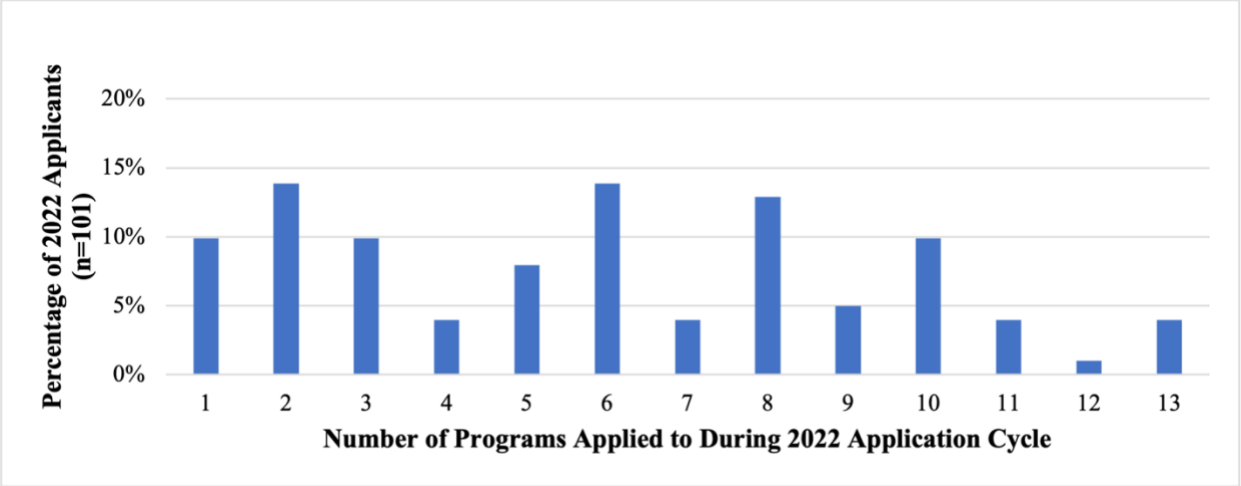

Figure 1b. Percentage of 2022 applicants stratified by the number of programs applied to during the 2022 application cycle.

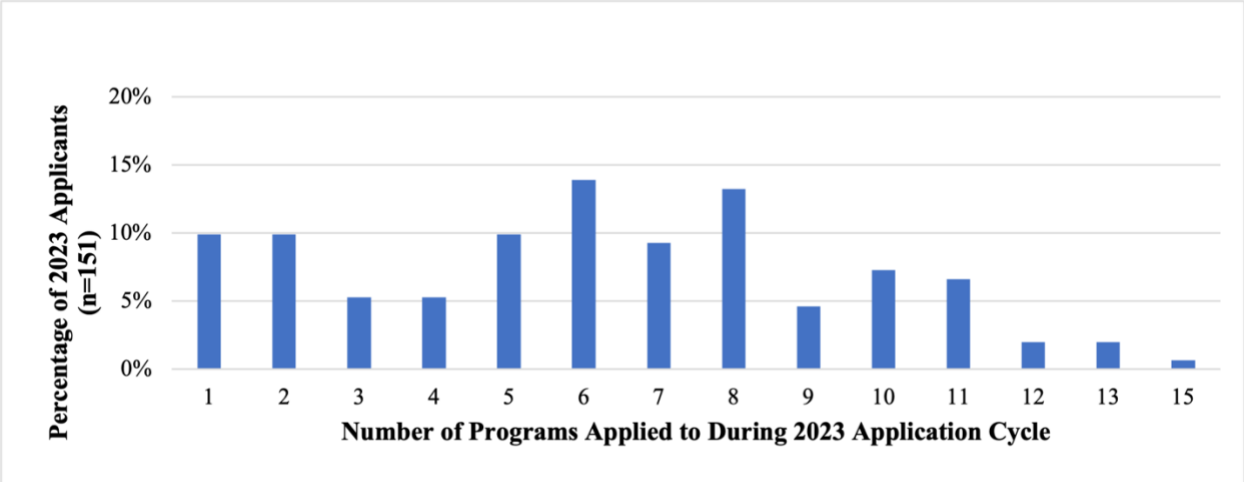

Figure 1c. Percentage of 2023 applicants stratified by the number of programs applied to during the 2023 application cycle.

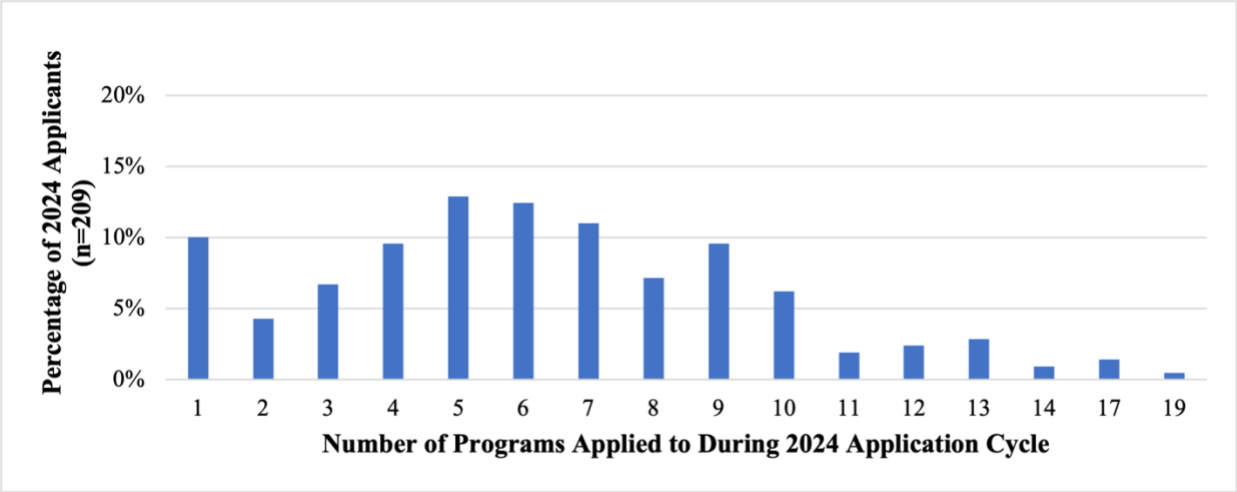

Figure 1d. Percentage of 2024 applicants stratified by the number of programs applied to during the 2024 application cycle.

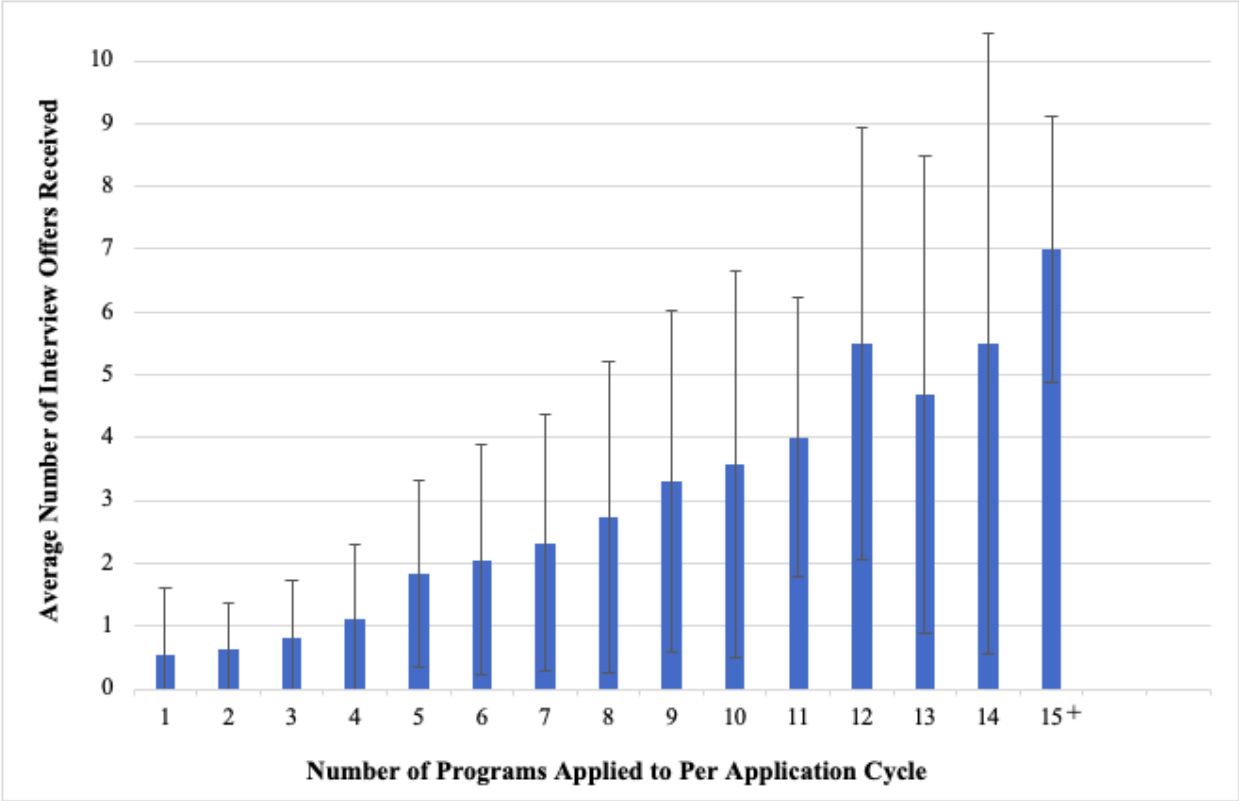

Figure 2. Average number of interview offers received by the number of programs applied to per application cycle. Error bars show one standard deviation above and below the mean.

Table 5. Number of interviews offered per cycle compared to the number of interviews accepted per cycle.

	Number of Interviews Accepted											
Number of Interview Offers Received	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**12**
1	**1**	**105**										
2	-	-	**72**									
3	-	-	-	**55**								
4	-	-	-	-	**37**							
5	-	-	-	-	-	**28**						
6	-	-	-	-	-	-	**22**					
7	-	-	-	-	-	-	**1**	**13**				
8	-	-	-	-	-	**1**	-	-	**7**			
9	-	-	-	-	-	-	-	**1**	-	**7**		
10	-	-	**1**	-	-	-	-	-	-	-	**1**	
12	-	-	-	-	-	-	-	-	-	-	-	**2**

*The number of participants is indicated in each box and corresponds to the number of interviews offered and the number of interviews accepted per cycle. *Participants who were offered or accepted interviews in multiple cycles are counted more than once in this figure (e.g. an applicant who received and accepted 3 interview offers in one cycle and then received and accepted 5 in another cycle would be included in the two boxes corresponding to 3 interview offers, 3 accepted and 5 interview offers, 5 accepted).*

3.3.1 Factors Affecting Program Selection - All Participants (N=377)

Table 6 summarizes the factors affecting program selection and their selection frequencies for all applicants. Factors were categorized into seven categories: diversity, faculty reputation and program interactions, financial, location, program curriculum, program structure and other. Figures 3a-g show the percentages of all applicants who selected the various factors in each category. Out of all 36 factors, the most selected factor influencing participants' program selection was the cost of tuition (n=277, 74%). Other financial factors were also selected by greater than half of participants and included the availability of additional financial support (e.g. scholarships, grants, etc.) (n=239, 63%) and the cost of living in a program's area (n=232, 62%).

Greater than half of participants also indicated that the ability to live near family/partner/friends (n=247, 66%), the preference for a specific geographic area (n=232, 62%) and the availability of rotation/fieldwork options (n=249, 66%) influenced their program selection. The program size (i.e. the number of students per cohort) and a program's rotation/fieldwork schedule were each selected by 44% (n=164) of participants as factors influencing program selection. Diversity-related factors such as the diversity within the patient population (n=170, 45%), the diversity within students (n=117, 31%) and the diversity within faculty (n=98, 26%) were additional notable factors influencing the program selection of participants as well.

Table 6. Factors influencing the selection of programs for all participants.

	Factor*	N=377	Percent (%)
Diversity-Related Factors	Within faculty	98	26
	Within patient population	170	45
	Within students	117	31
Faculty Reputation and Program Interactions	Faculty member(s) reputation(s)	74	20
	Interaction with alumni	88	23
	Interaction with current students	143	38
	Interaction with Program Director/faculty	141	37
Financial Factors	Ability to keep current job	34	9
	Availability of additional financial support	239	63
	Availability of part time work	141	37
	Cost of living in the area	232	62
	Cost of tuition	277	74
Location-Related Factors	Ability to live at home	87	23
	Ability to live near family/partner/friends	247	66
	Politics of the state where the program is located	132	35
	Preference for a specific geographic area	232	62
Program Curriculum	Fieldwork options	249	66
	Clinical observation(s) before rotations	104	28
	No Thesis	54	14
	Thesis	33	9
	Disability focus	47	13
	Psychosocial focus	89	24
	Science focus	82	22
	Fieldwork schedule	164	44
Program Structure	Availability of online coursework	43	11
	Courses consist of students from various training programs	47	13
	Courses restricted to genetic counseling students	28	7
	Faculty:student ratio	84	22
	Program size (number of students per cohort)	164	44
	Not part of a medical center	7	2
	Part of a medical center	94	25
Other	Board pass rate	146	39
	Campus and program facilities	123	33
	Job placement rate	111	29
	Program website	113	30
	Program's values, philosophy, culture	149	40
	Other	16	4

A darker blue color in cells indicates a higher number and percentage of participants who selected a factor. A lighter blue color in cells indicates a lower number and percentage of participants who selected a factor.
*Participants could select more than one factor
[1]A table with a full summary of free text responses and their frequencies can be found in Appendix G.

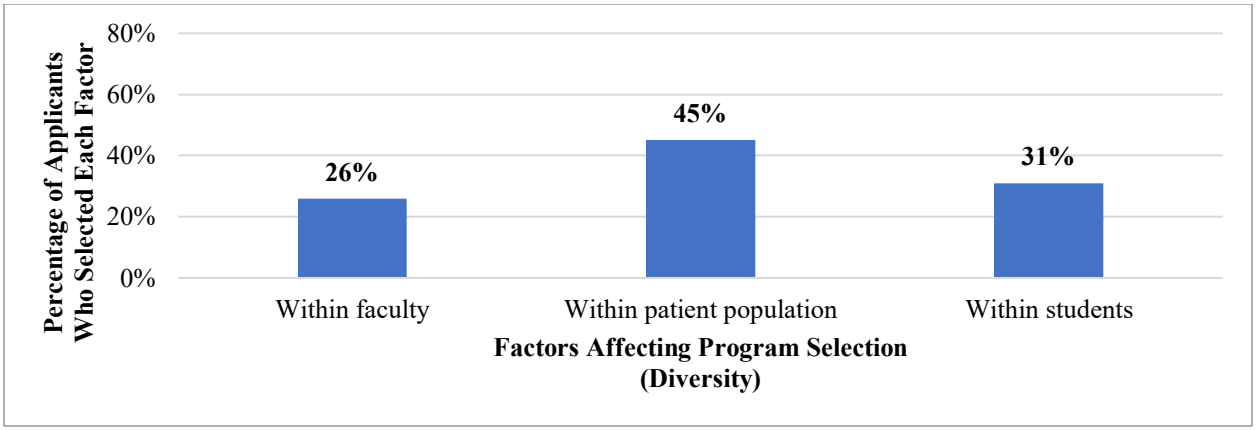

Figure 3a. Percentage of applicants who selected diversity-related factors as influencing their program selection. Participants could select more than one factor.

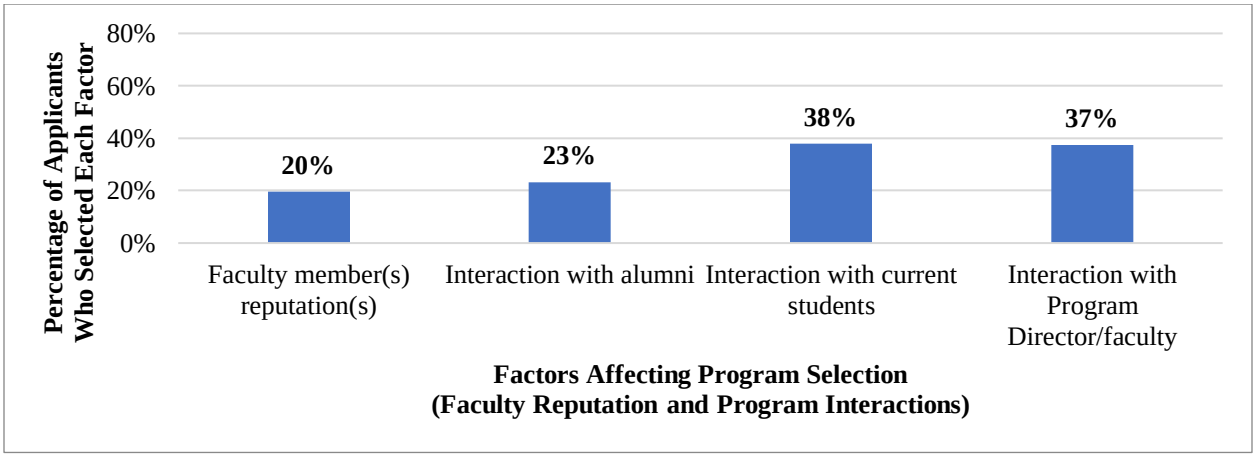

Figure 3b. Percentage of applicants who selected faculty reputation and program interaction-related factors as influencing their program selection. Participants could select more than one factor.

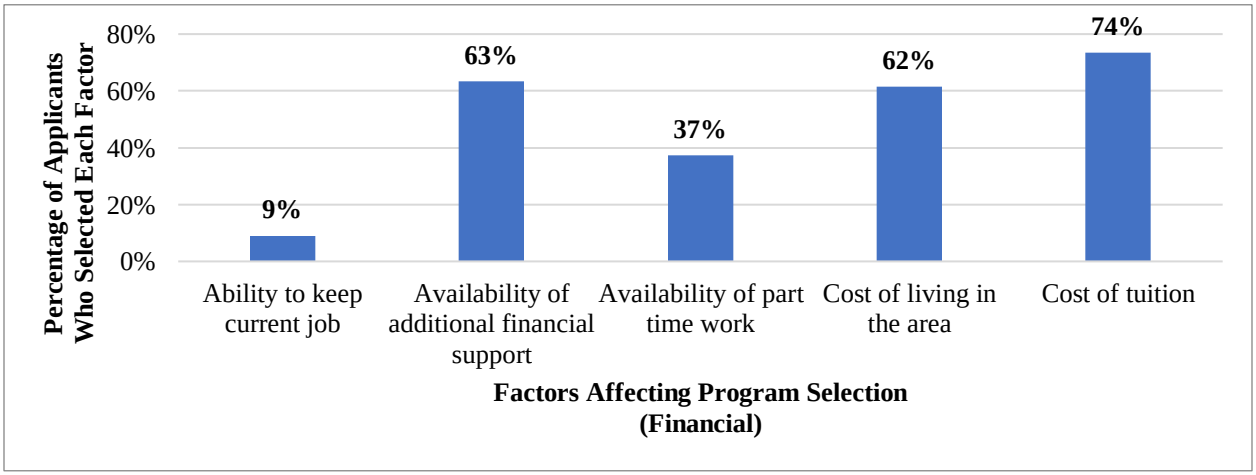

Figure 3c. Percentage of applicants who selected financial-related factors as influencing their program selection. Participants could select more than one factor.

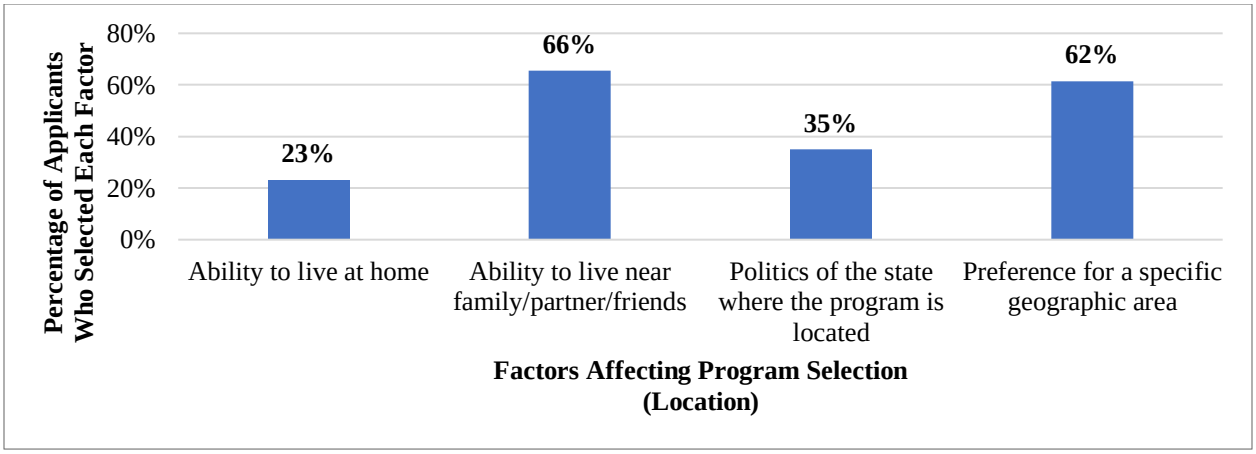

Figure 3d. Percentage of applicants who selected location-related factors as influencing their program selection. Participants could select more than one factor.

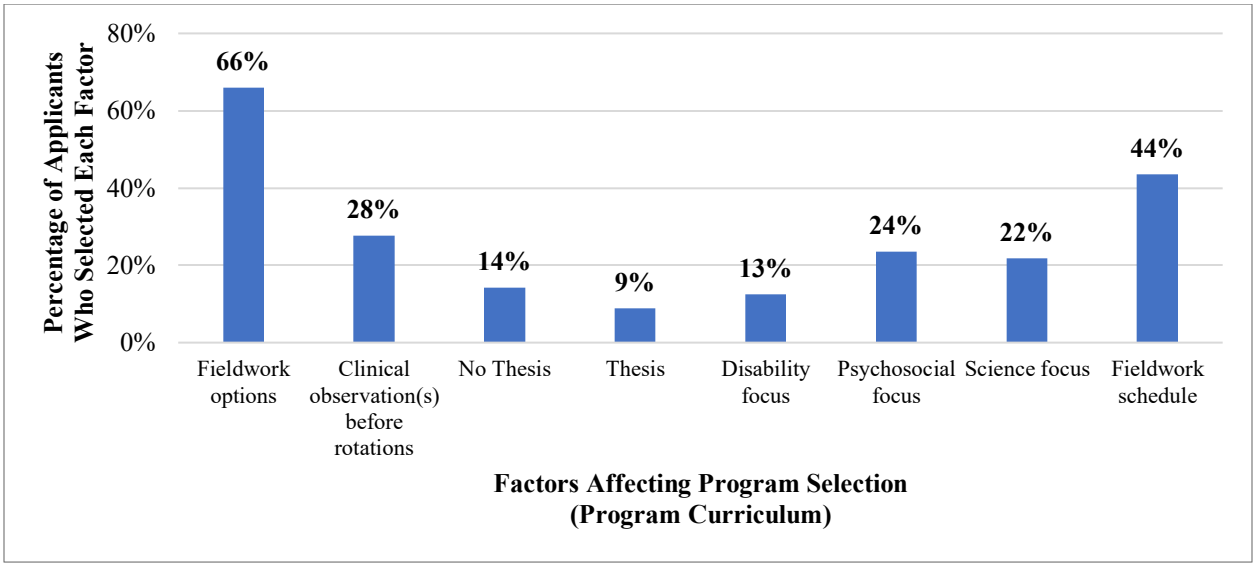

Figure 3e. Percentage of applicants who selected program curriculum-related factors as influencing their program selection. Participants could select more than one factor.

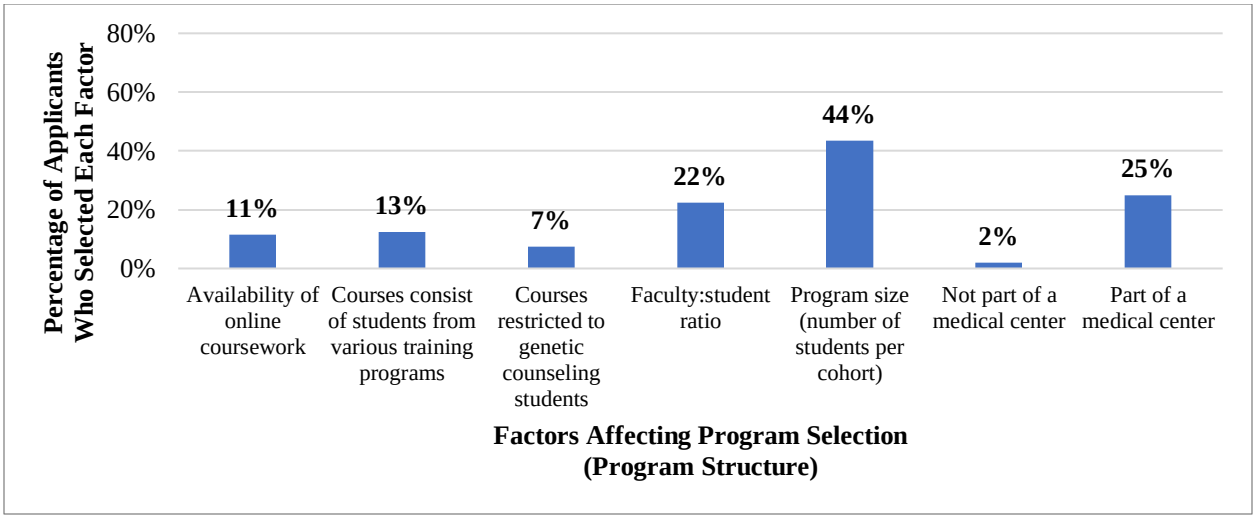

Figure 3f. Percentage of applicants who selected program structure-related factors as influencing their program selection. Participants could select more than one factor.

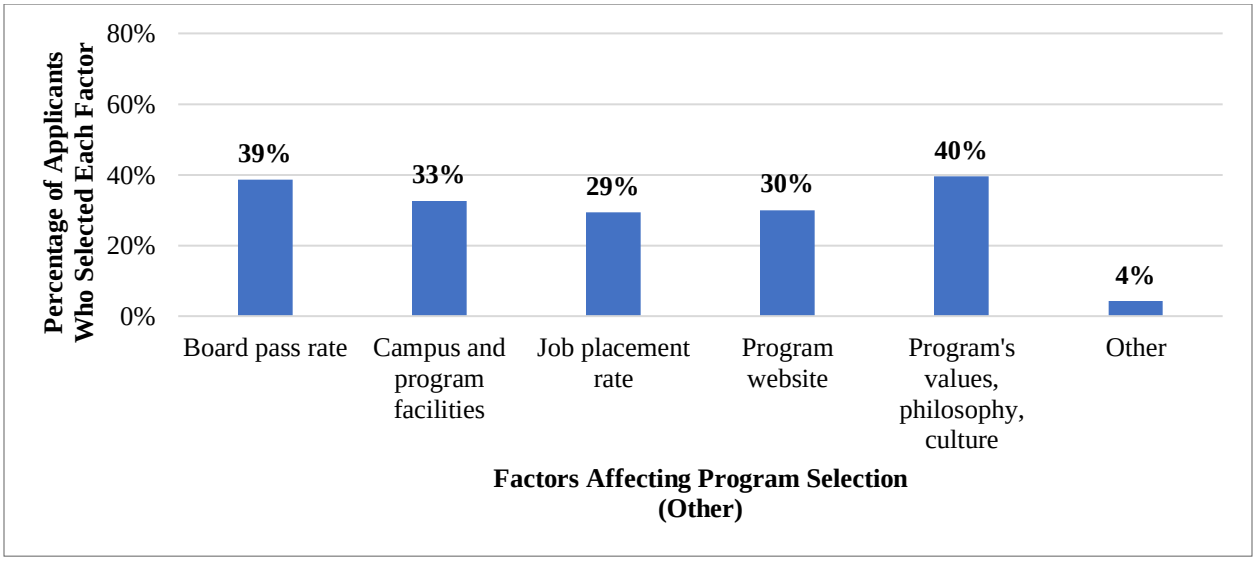

Figure 3g. Percentage of applicants who selected other factors as influencing their program selection. Participants could select more than one factor.

3.3.2 Factors Affecting Program Selection – Stratified by 2021-2023 Matched (N=113) and Unmatched (N=155) Participants

Figures 4a-e show the percentages of matched and unmatched participants who selected the various factors affecting program selection in each category. When comparing the responses of matched and unmatched participants, matched participants were significantly more likely to select the interaction with a program director/faculty ($p<0.001$), interaction with current students

(p=0.005), faculty member(s) reputation(s) (p=0.007), the preference for a specific geographic area (p<0.001), the availability of rotation/fieldwork options (p=0.006), rotation/fieldwork schedule (p=0.017), courses being restricted to genetic counseling students (p=0.009), a school being part of a medical center (p=0.012) and a program's values/philosophy/culture (p=0.005) as factors influencing their program selection. In contrast, the cost of living in a program's area was significantly more likely to be selected by unmatched participants (p=0.020).

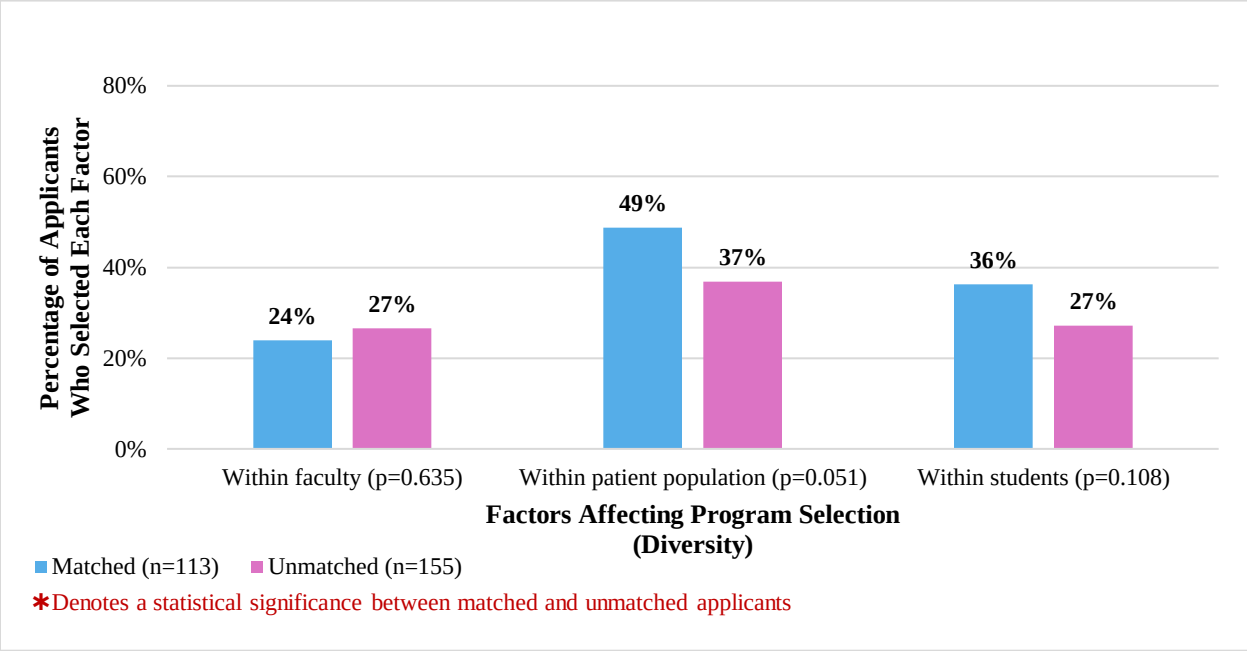

Figure 4a. Percentage of matched and unmatched applicants who selected diversity-related factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

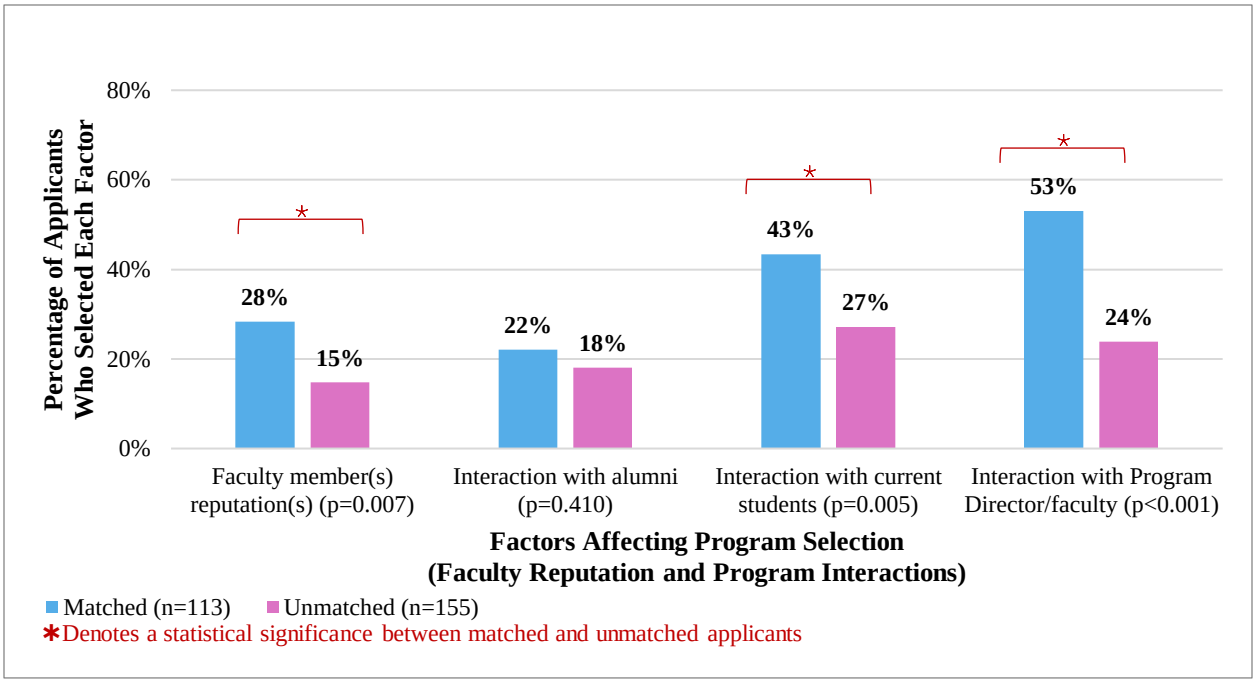

Figure 4b. Percentage of matched and unmatched applicants who selected faculty reputation and program interaction-related factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

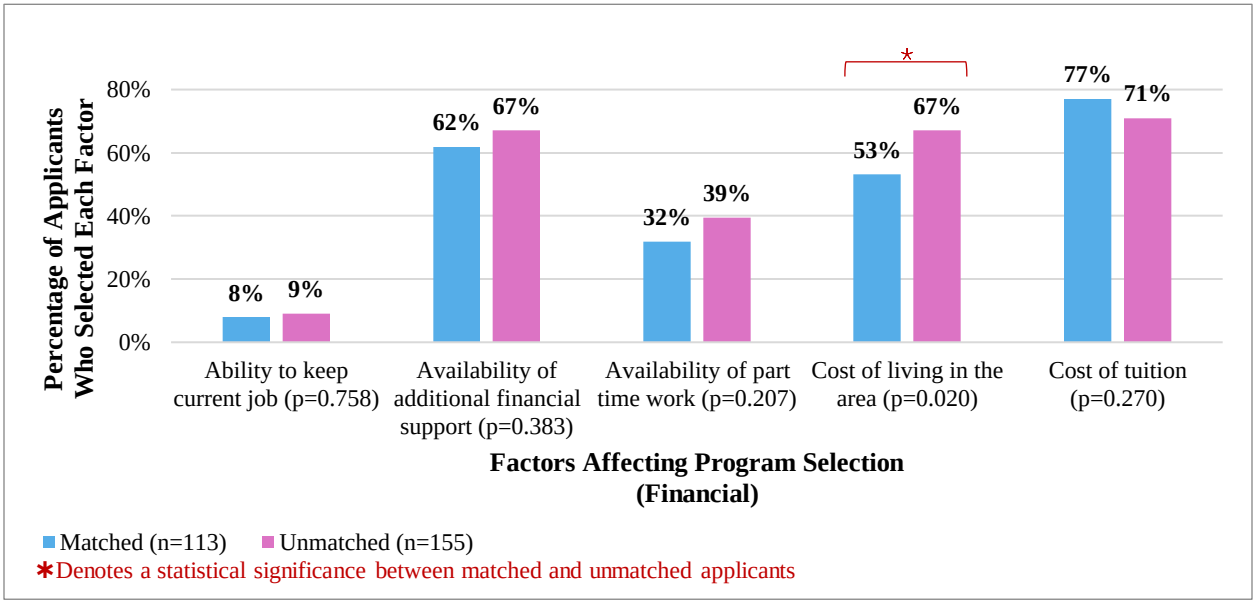

Figure 4c. Percentage of matched and unmatched applicants who selected financial factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

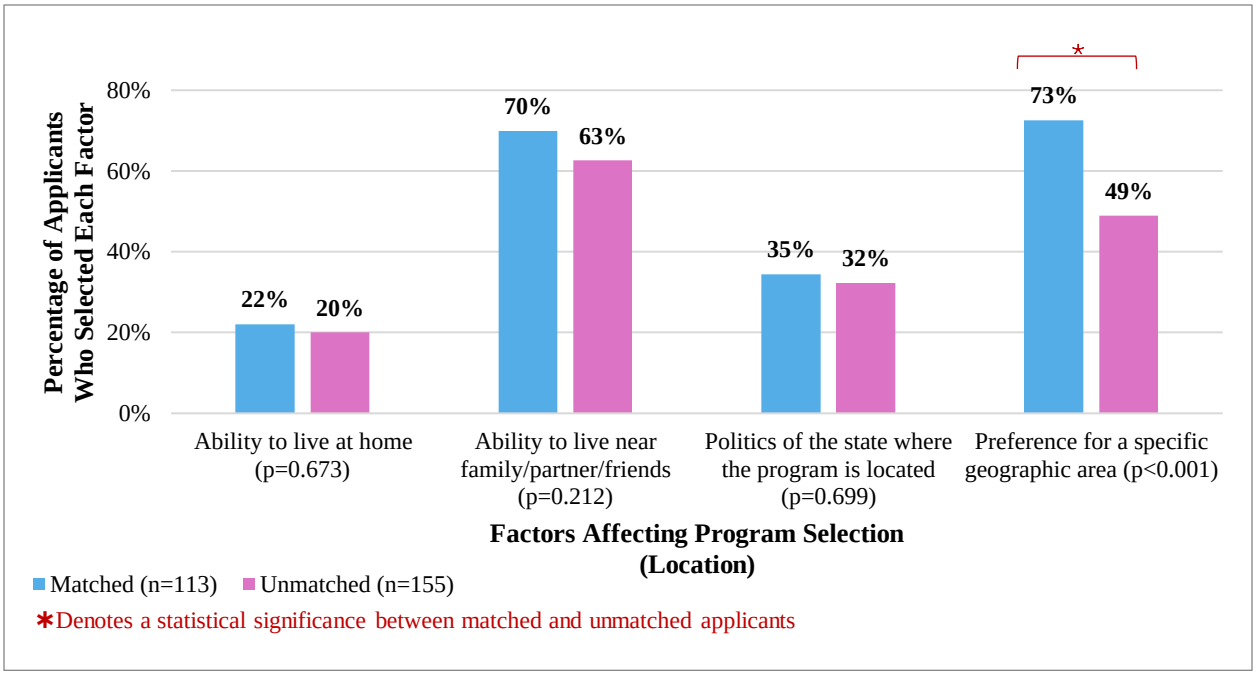

Figure 4d. Percentage of matched and unmatched applicants who selected location-related factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

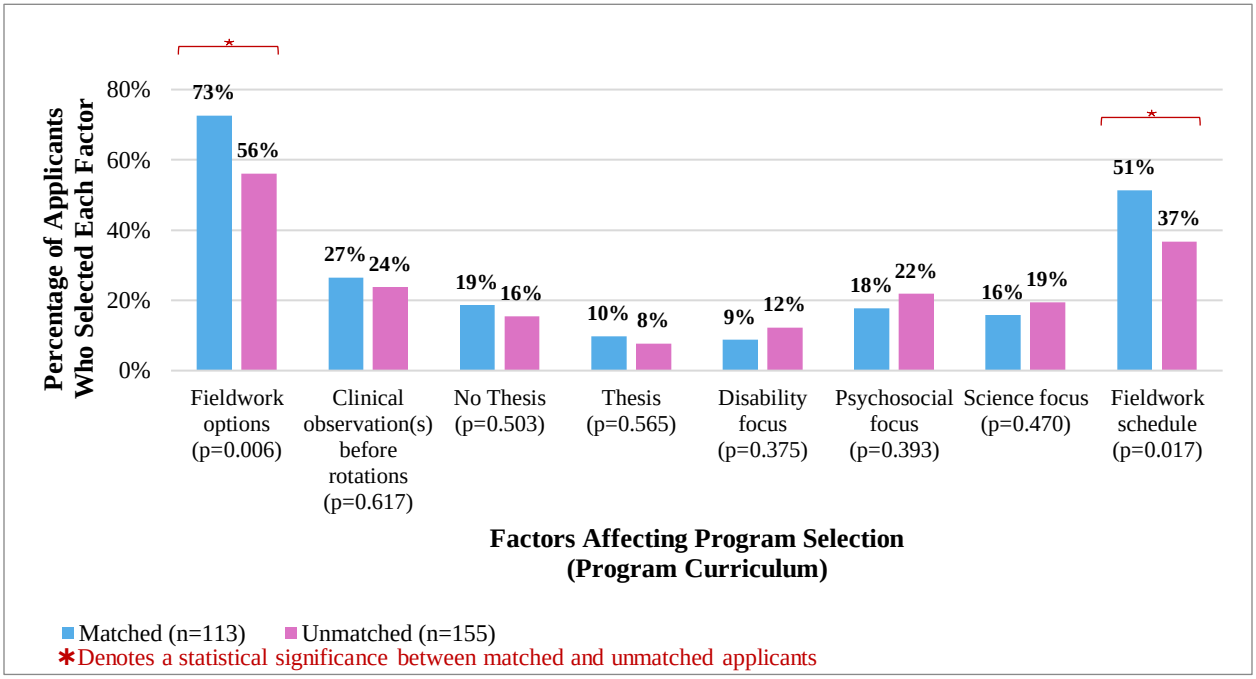

Figure 4e. Percentage of matched and unmatched applicants who selected program curriculum-related factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

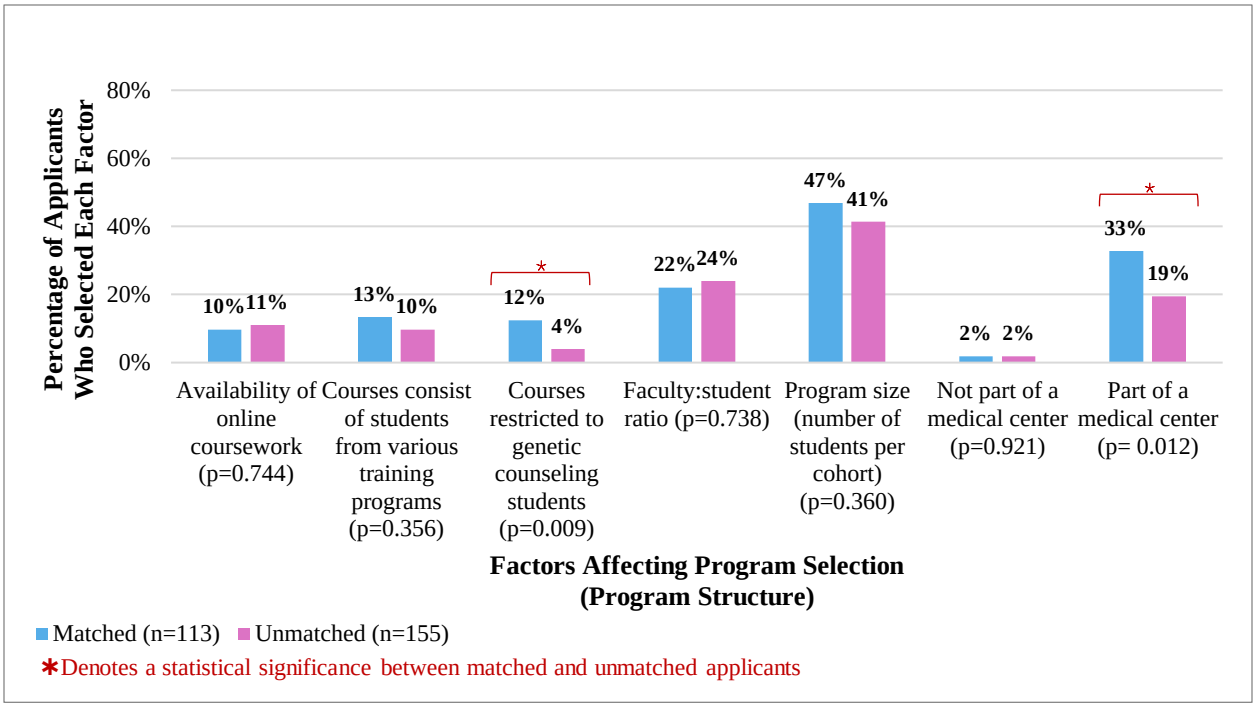

Figure 4f. Percentage of matched and unmatched applicants who selected program structure-related factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

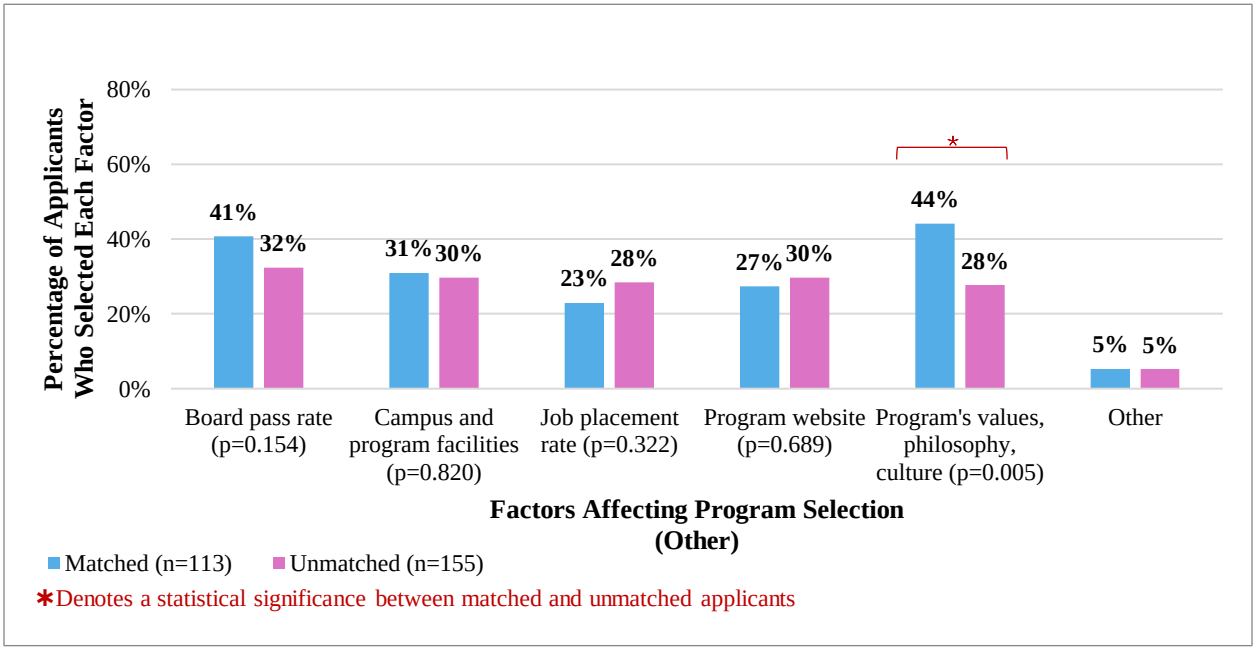

Figure 4g. Percentage of matched and unmatched applicants who selected other factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

3.3.3 Factors Affecting Program Selection – Stratified by 2022/2023 First-Time Applicants (N=164) and Reapplicants (N=59)

Figures 5a-e show the percentages of 2022/2023 first-time applicants and reapplicants who selected the various factors affecting program selection in each category. When comparing the responses of first-time applicants and reapplicants, it was found that none of the 36 factors were more likely to be selected by either group (p>0.05 for all comparisons).

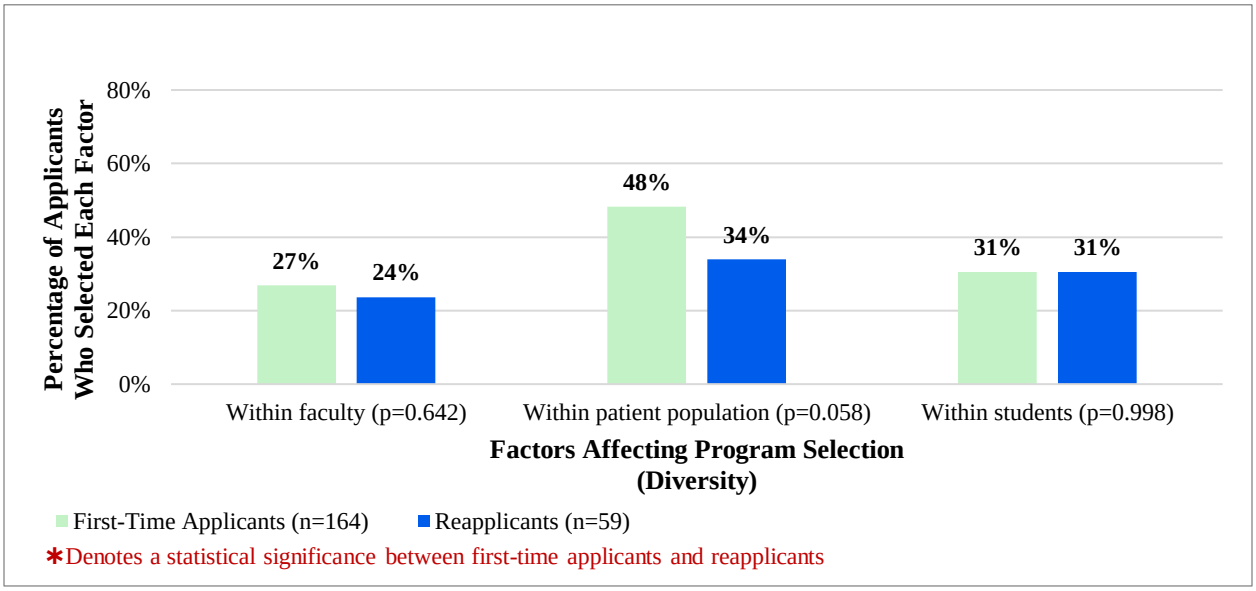

Figure 5a. Percentage of first-time applicants and reapplicants who selected diversity-related factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

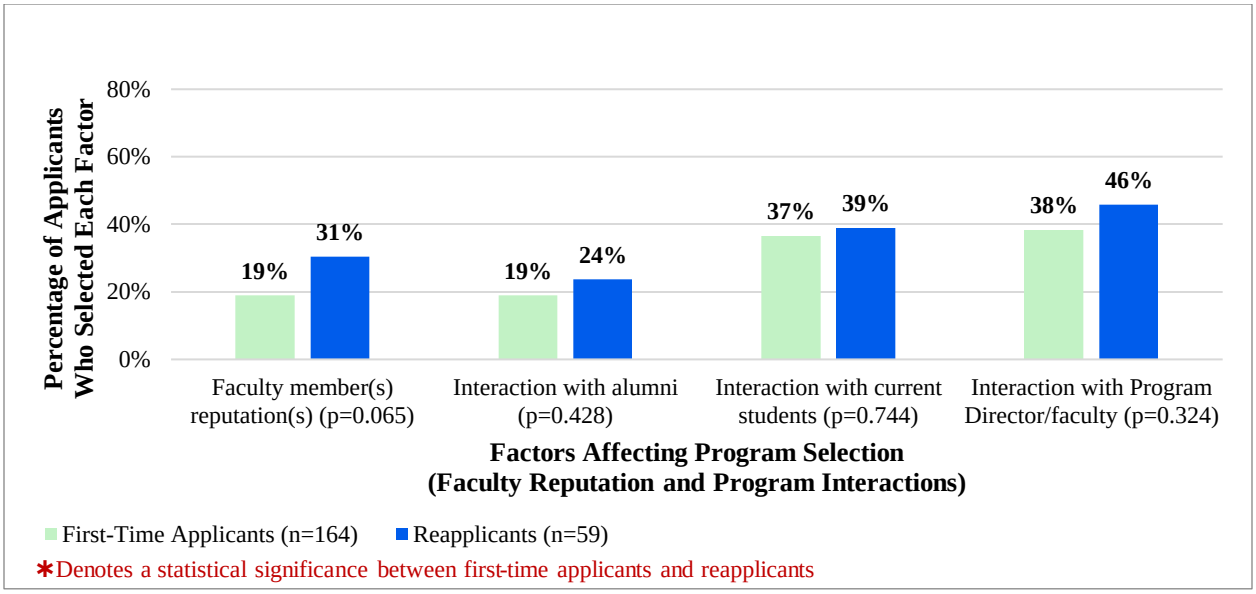

Figure 5b. Percentage of first-time applicants and reapplicants who selected faculty reputation and program interaction-related factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

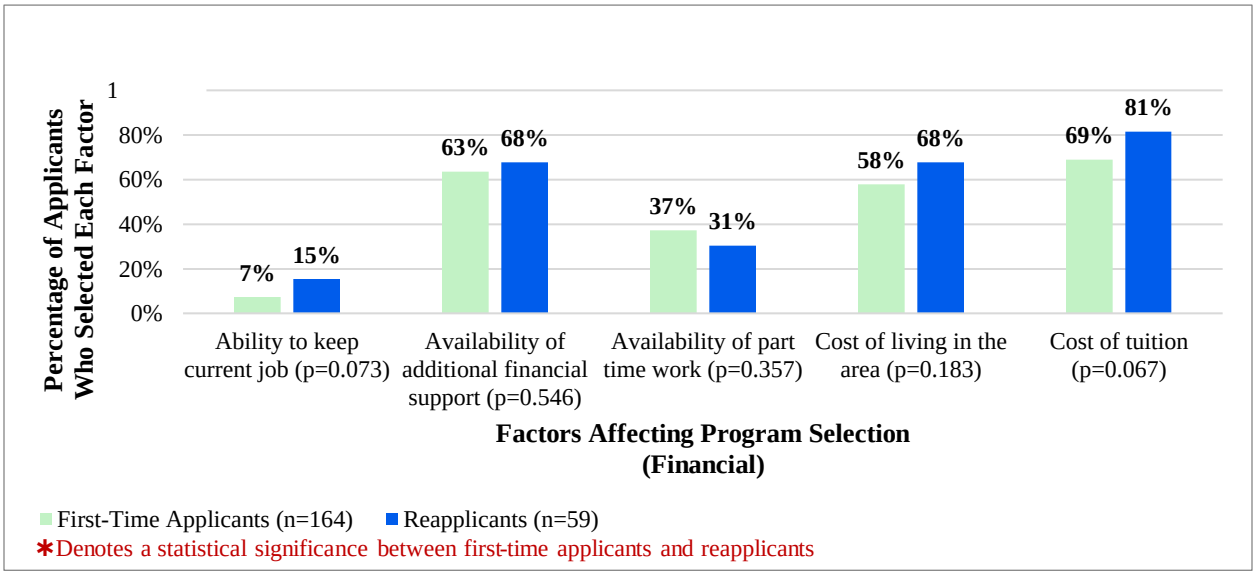

Figure 5c. Percentage of first-time applicants and reapplicants who selected financial factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

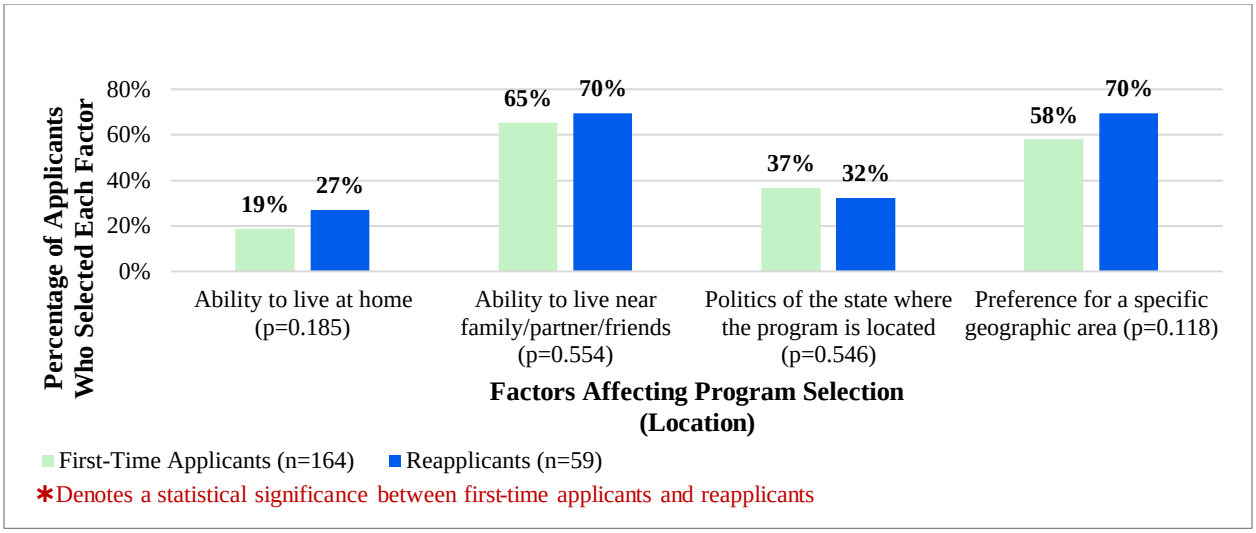

Figure 5d. Percentage of first-time applicants and reapplicants who selected location-related factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

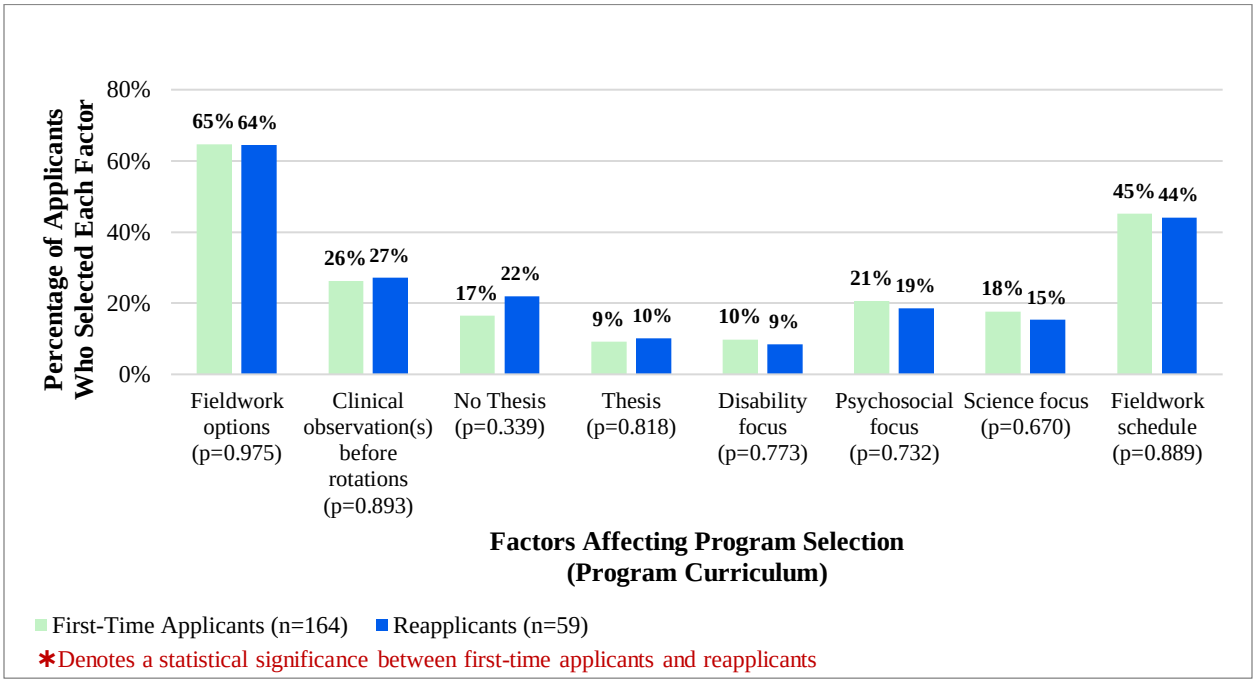

Figure 5e. Percentage of first-time applicants and reapplicants who selected program curriculum-related factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

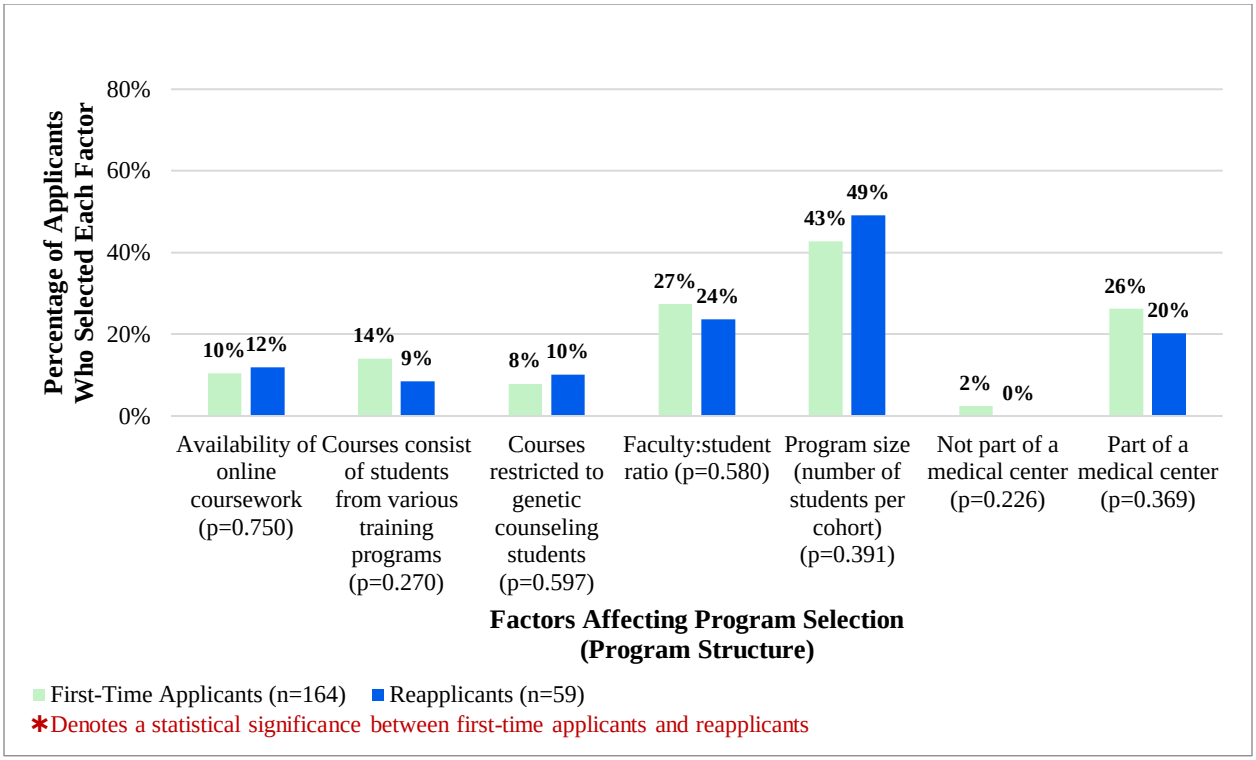

Figure 5f. Percentage of first-time applicants and reapplicants who selected program structure-related factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

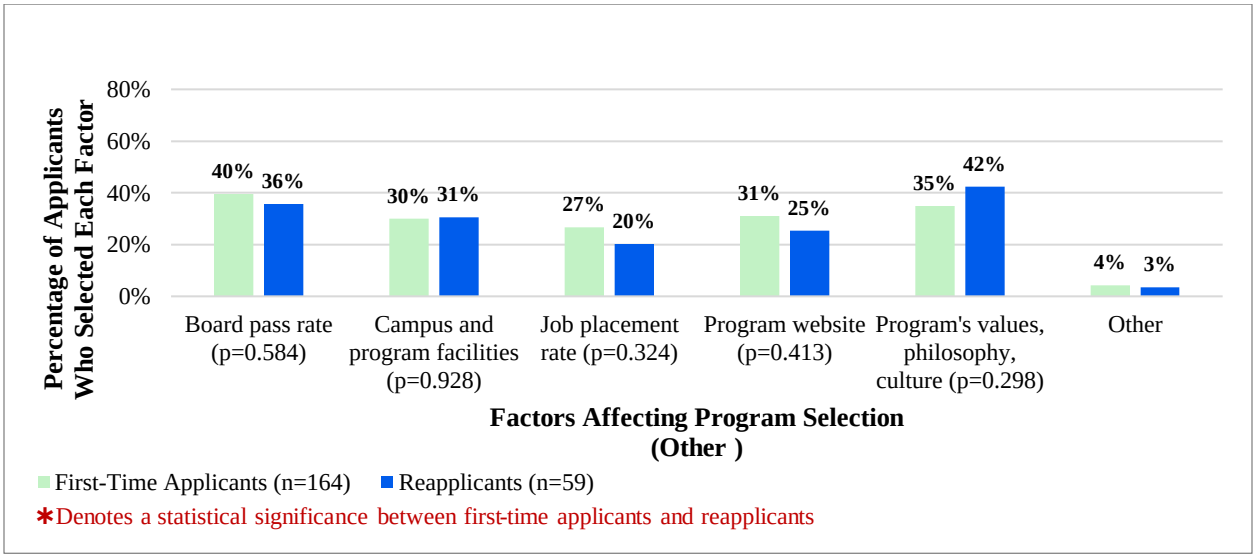

Figure 5g. Percentage of first-time applicants and reapplicants who selected other factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

3.3.4 Factors Affecting Program Selection – Stratified by Individuals Identifying as Women (N=346) and Non-Women (N=31)

Figures 6a-g show the percentages of women and non-women who selected the various factors affecting program selection in each category. It was found that the politics of the state where a program is located (p=0.043) and a program's thesis requirement (p=0.029) were less likely to be selected by women as factors influencing their program choice, when compared to non-women.

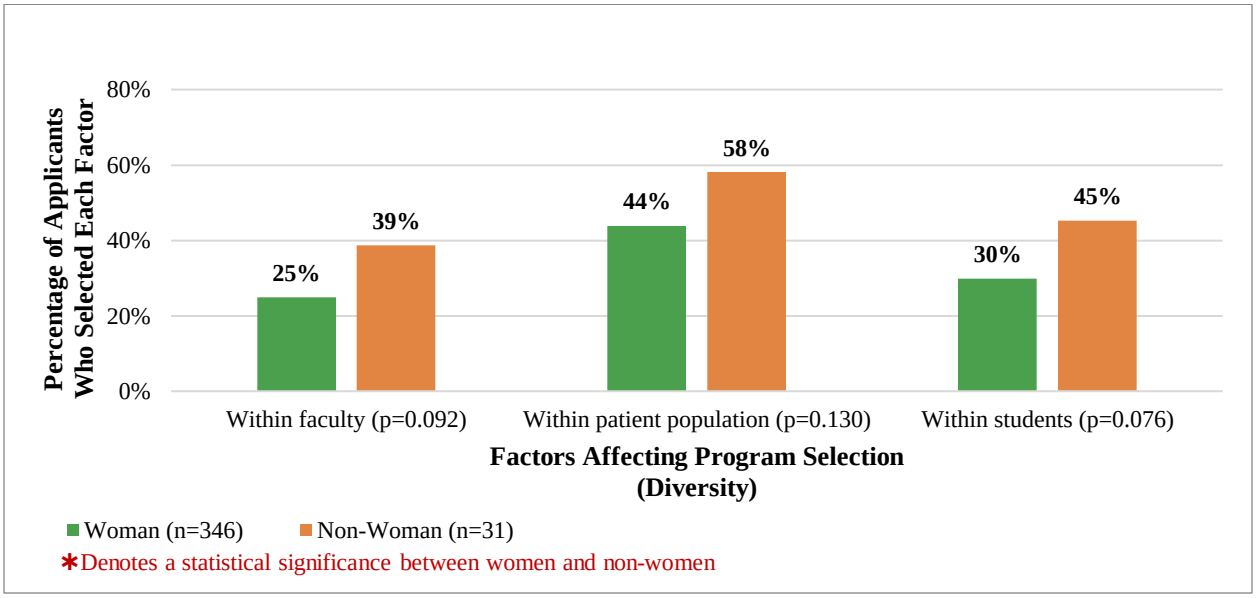

Figure 6a. Percentage of applicants identifying as women and non-women who selected diversity-related factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

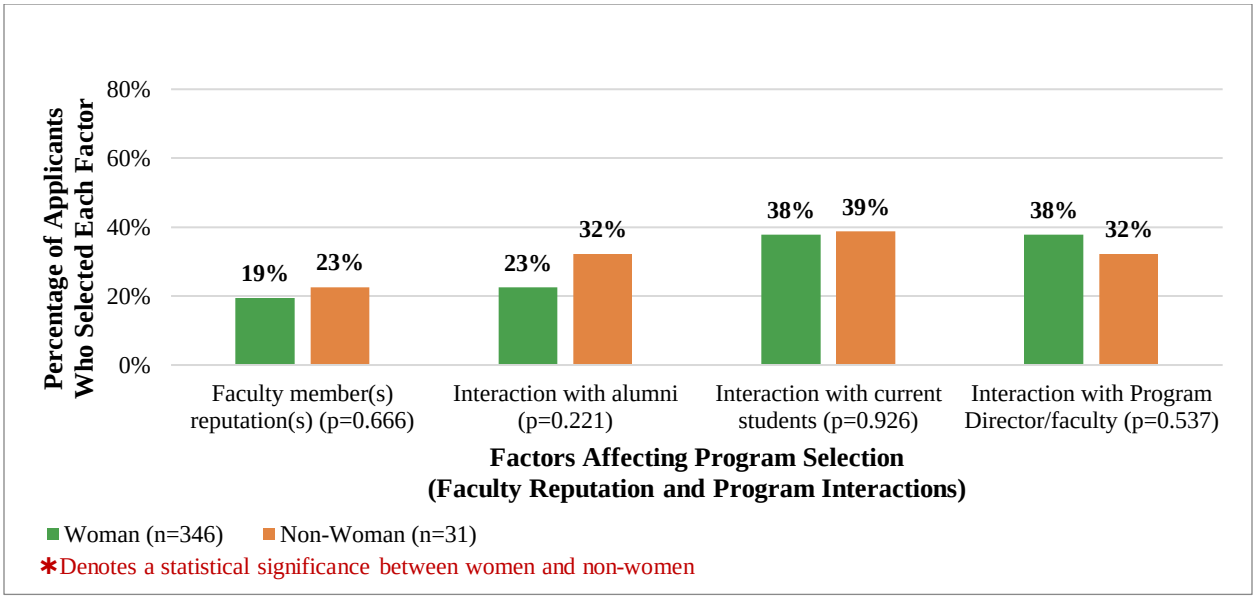

Figure 6b. Percentage of applicants identifying as women and non-women who selected faculty reputation and program interaction-related factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

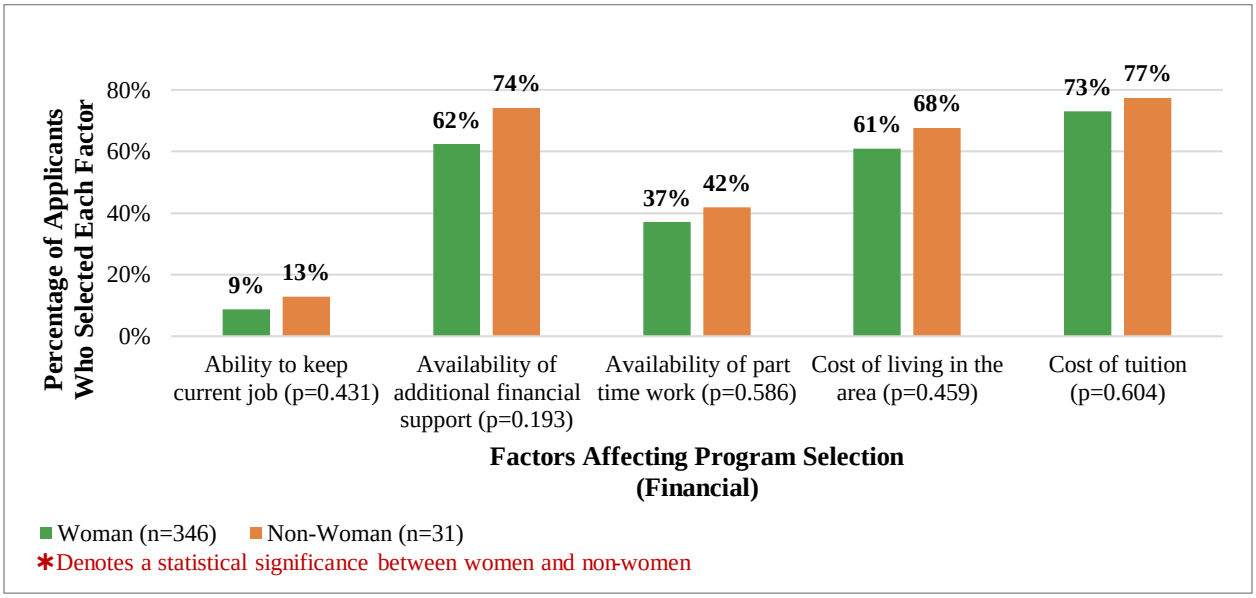

Figure 6c. Percentage of applicants identifying as women and non-women who selected financial factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

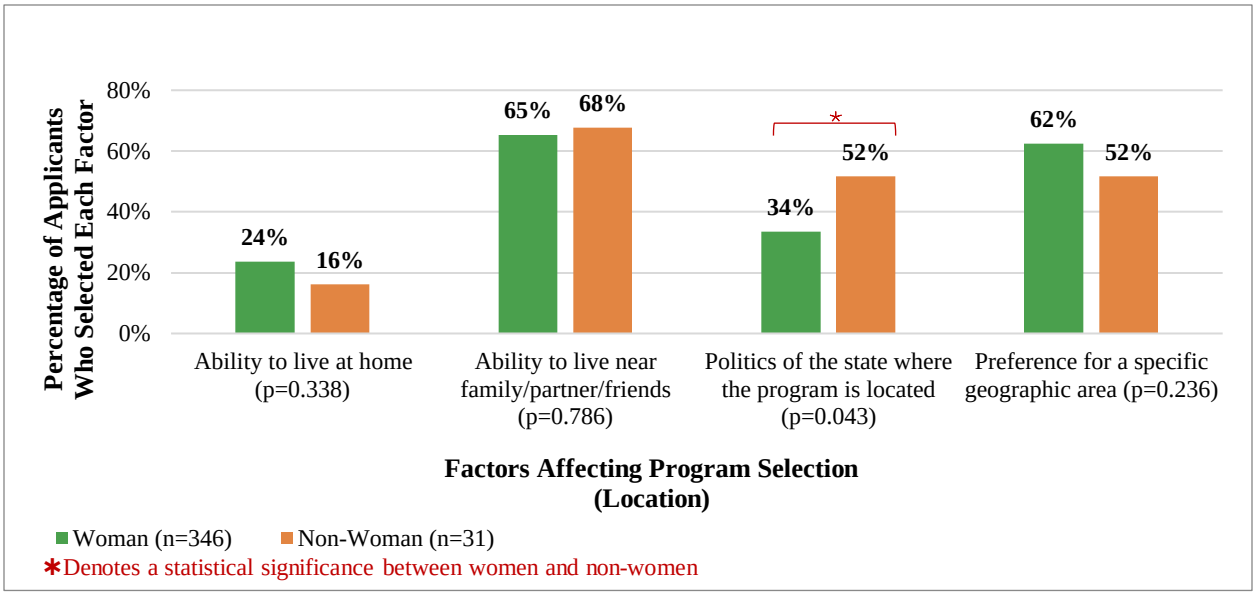

Figure 6d. Percentage of applicants identifying as women and non-women who selected location-related factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

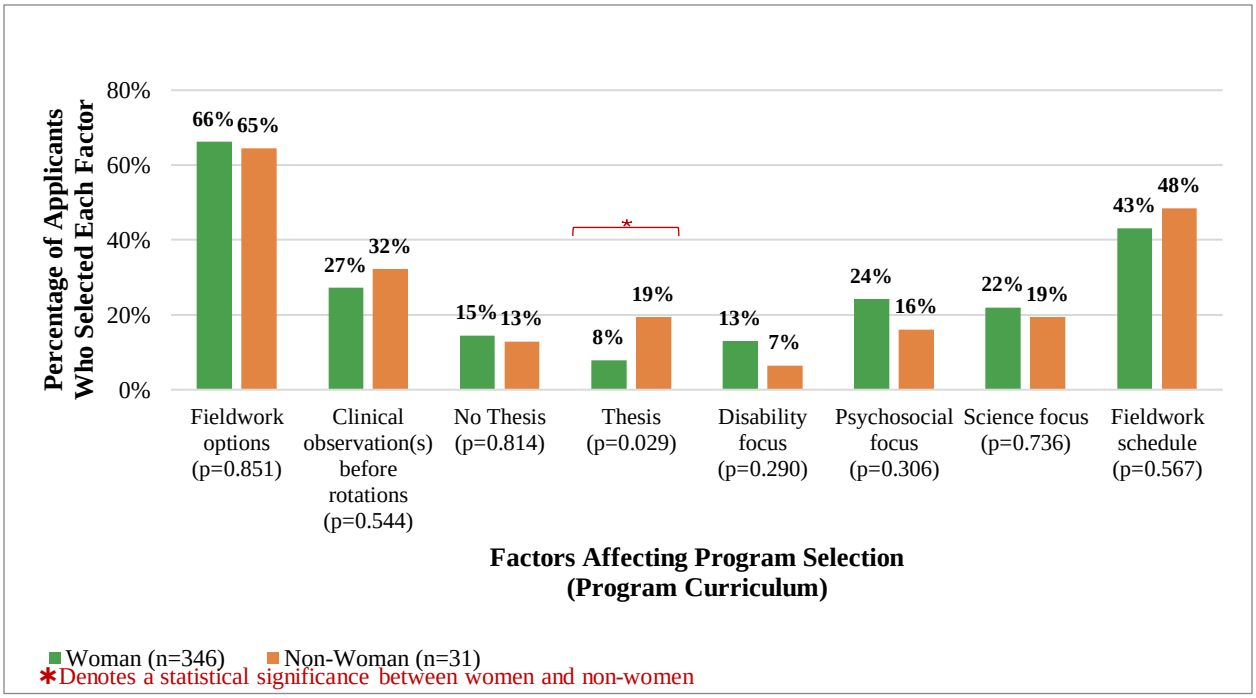

Figure 6e. Percentage of applicants identifying as women and non-women who selected program curriculum-related factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

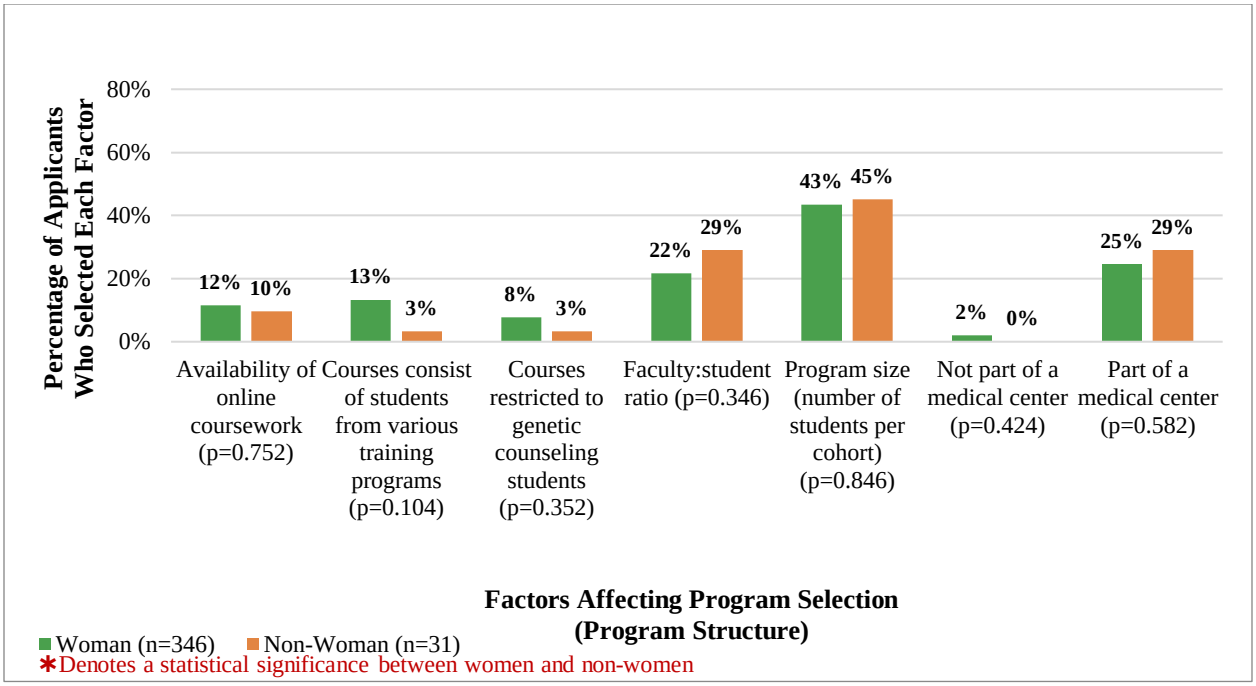

Figure 6f. Percentage of applicants identifying as women and non-women who selected program structure-related factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

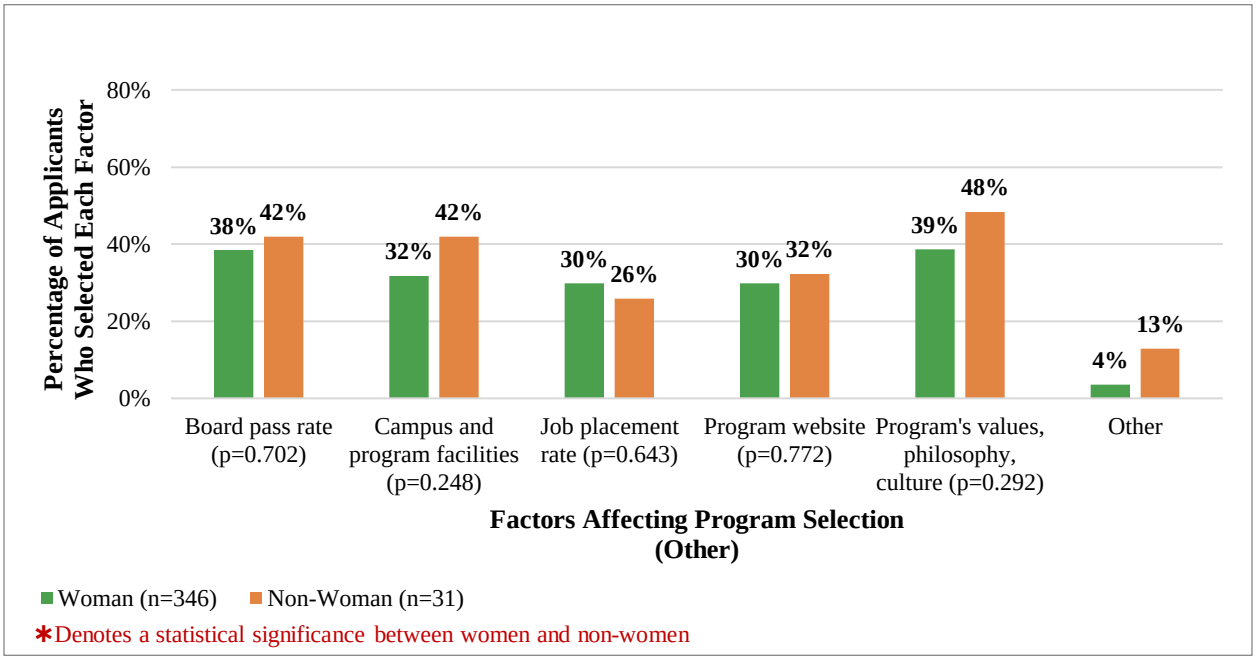

Figure 6g. Percentage of applicants identifying as women and non-women who selected other factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

3.3.5 Factors Affecting Program Selection – Stratified by Individuals With a Disability (N=52) and Without a Disability (N=313)

Figures 7a-g show the percentages of individuals with and without a disability who selected the various factors affecting program selection in each category. When comparing the responses of individuals with and without a disability, it was found that a program's disability-related curriculum focus ($p<0.001$), a school not being part of a medical center ($p=0.029$) and a program's values/philosophy/culture ($p=0.047$) were factors more likely to influence the program selection of individuals with a disability. Diversity-related factors and interaction with a program director/faculty or students were not more likely to be selected by either group ($p>0.05$ for all comparisons).

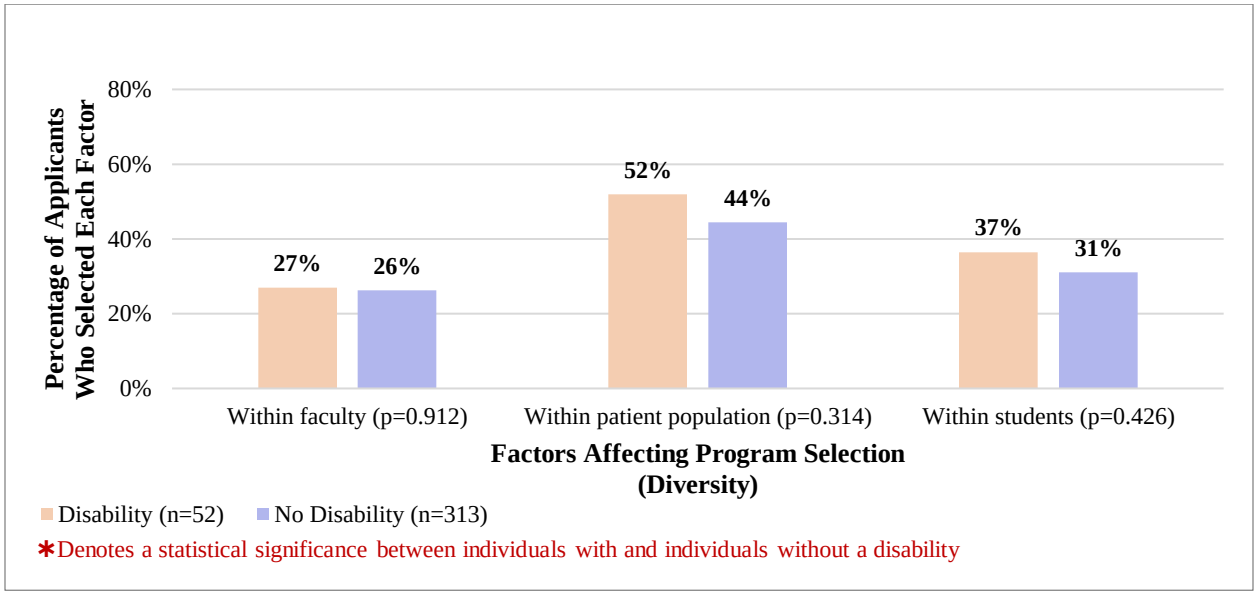

Figure 7a. Percentage of individuals with and without a disability who selected diversity-related factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

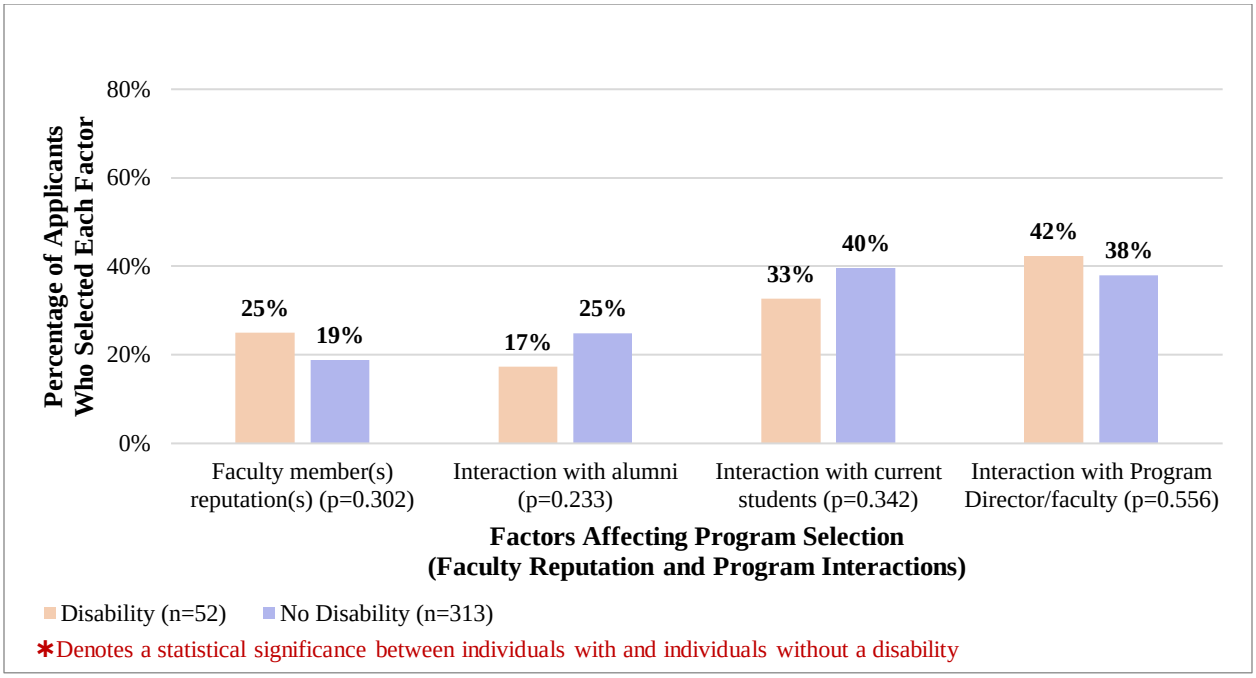

Figure 7b. Percentage of individuals with and without a disability who selected faculty reputation and program interaction-related factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

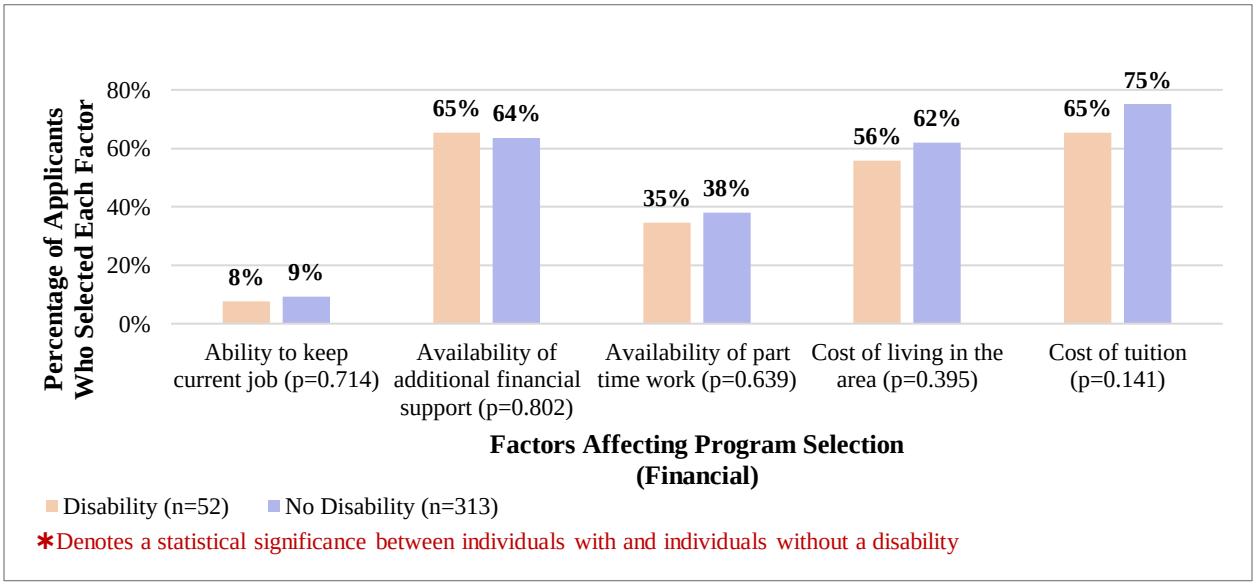

Figure 7c. Percentage of individuals with and without a disability who selected financial factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

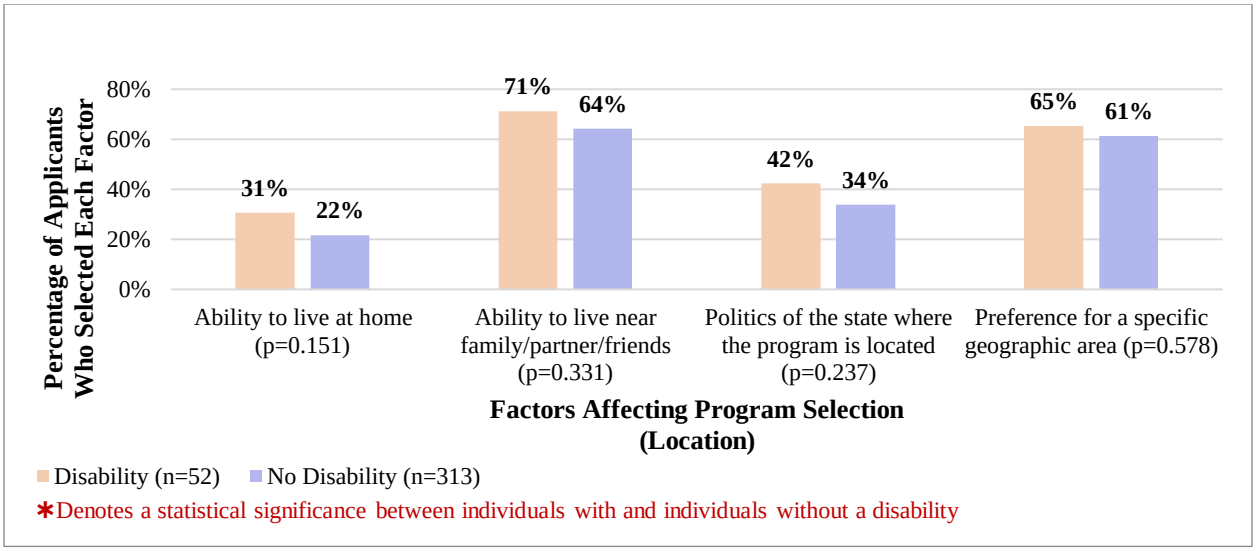

Figure 7d. Percentage of individuals with and without a disability who selected location-related factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

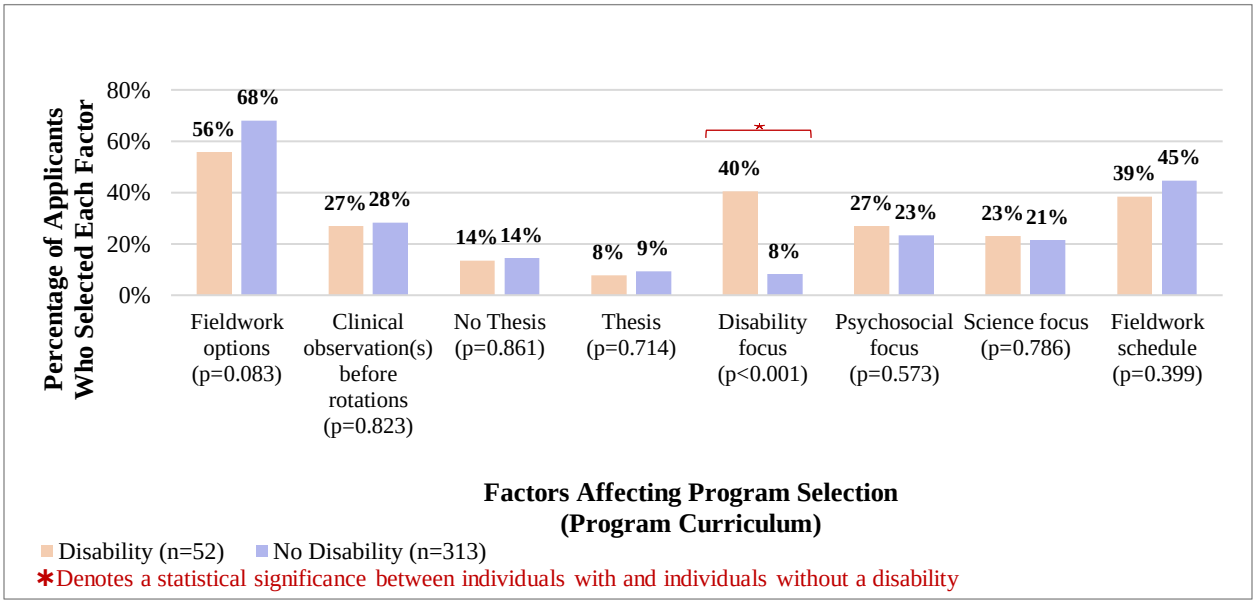

Figure 7e. Percentage of individuals with and without a disability who selected program curriculum-related factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

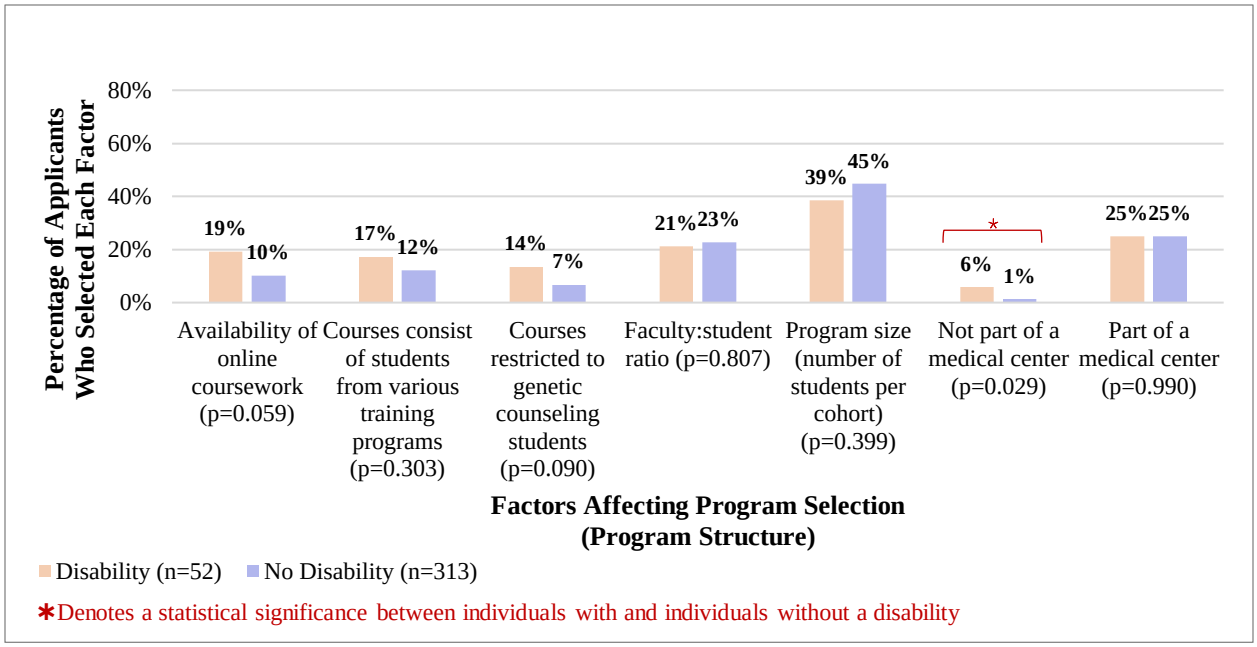

Figure 7f. Percentage of individuals with and without a disability who selected program structure-related factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

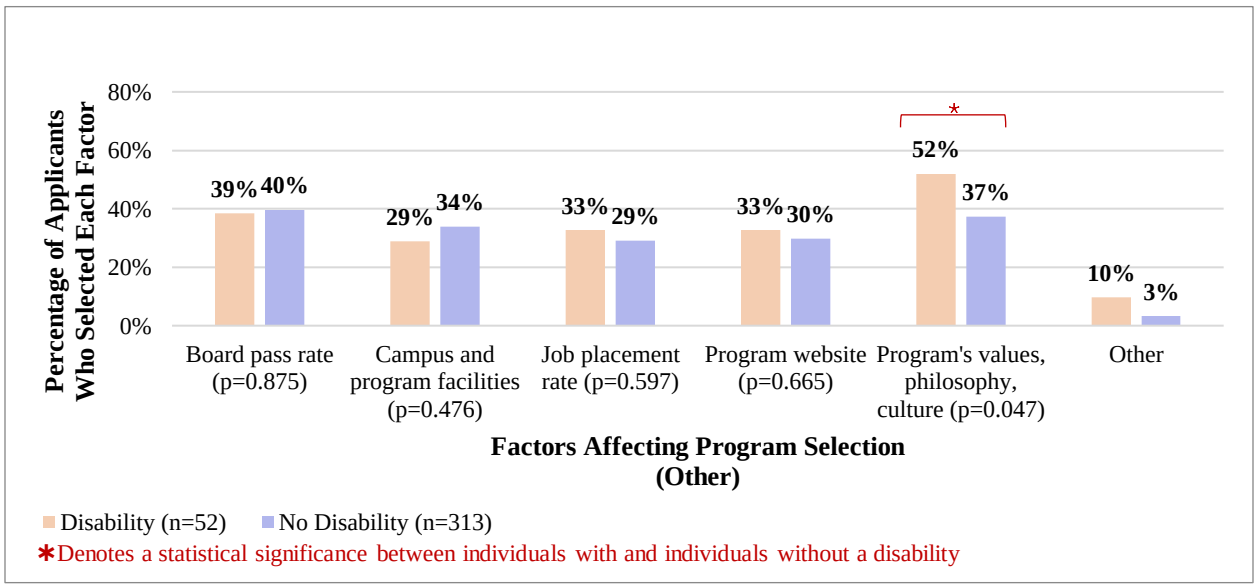

Figure 7g. Percentage of individuals with and without a disability who selected other factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

3.3.6 Factors Affecting Program Selection – Stratified by First-Generation College Students (N=89) and Continuing-Generation College Students (N=288)

Figures 8a-g show the percentages of first-generation college students and continuing-generation college students who selected the various factors affecting program selection in each category. When comparing the responses of these two subgroups, it was found that first-generation college students were more likely to select the diversity within faculty (p=0.003), the diversity within students (p=0.001), availability of part-time work (p=0.029) and the availability of additional financial support (p=0.031), as factors influencing their program selection. In contrast, courses being restricted to genetic counseling students was more likely to influence the program selection of continuing-generation college students (p=0.009). Other financial factors such as the cost of tuition (p=0.206) and the cost of living in a program's area (p=0.421) were not more frequently selected by first-generation college students.

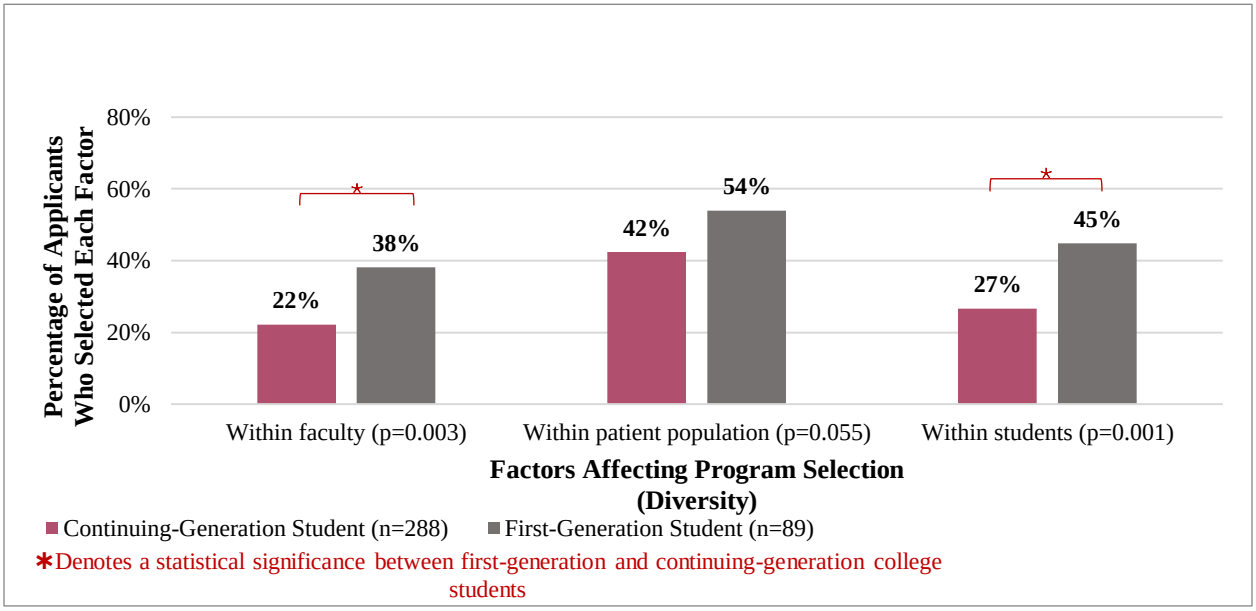

Figure 8a. Percentage of first-generation college students and continuing generation college students who selected diversity-related factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

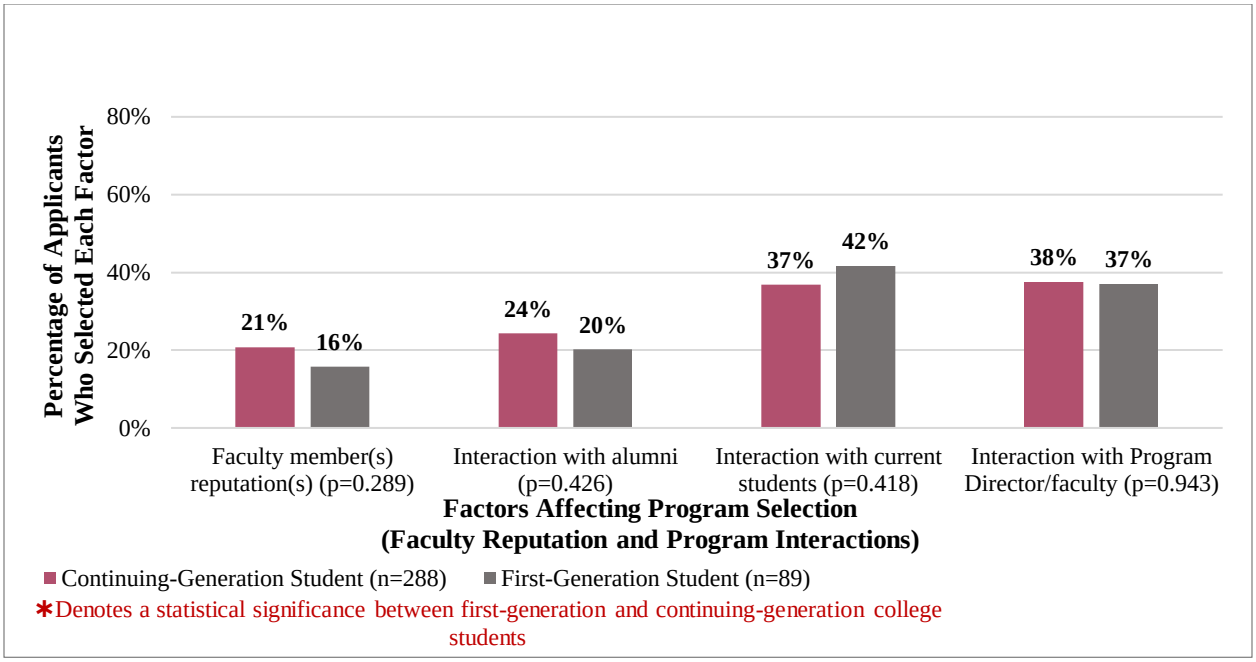

Figure 8b. Percentage of first-generation college students and continuing generation college students who selected faculty reputation and program interaction-related factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

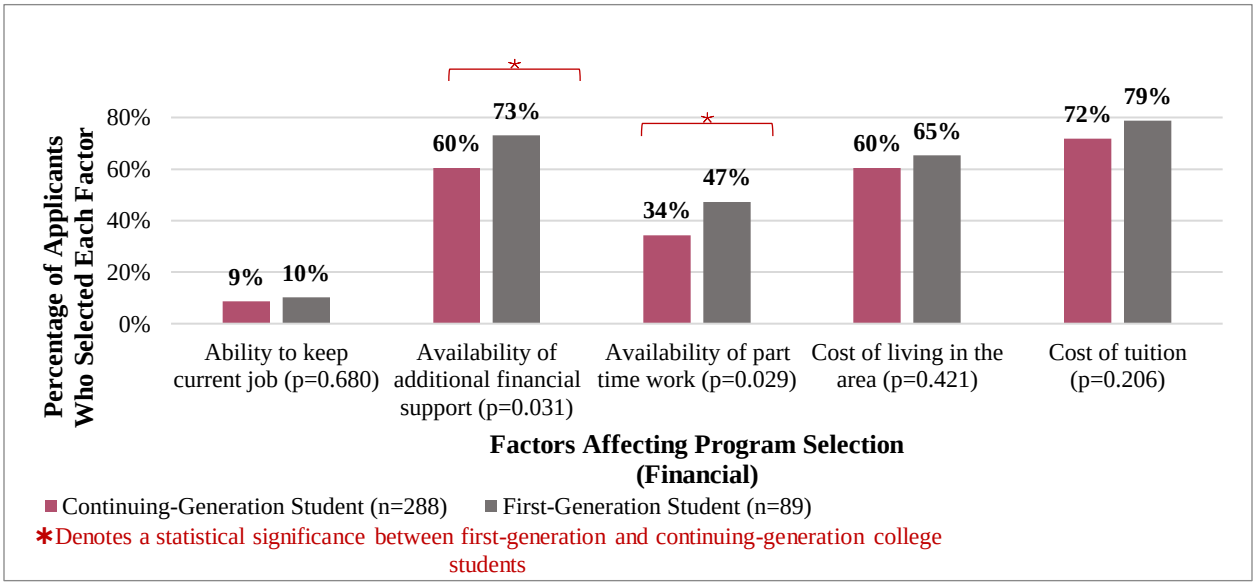

Figure 8c. Percentage of first-generation college students and continuing generation college students who selected financial factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

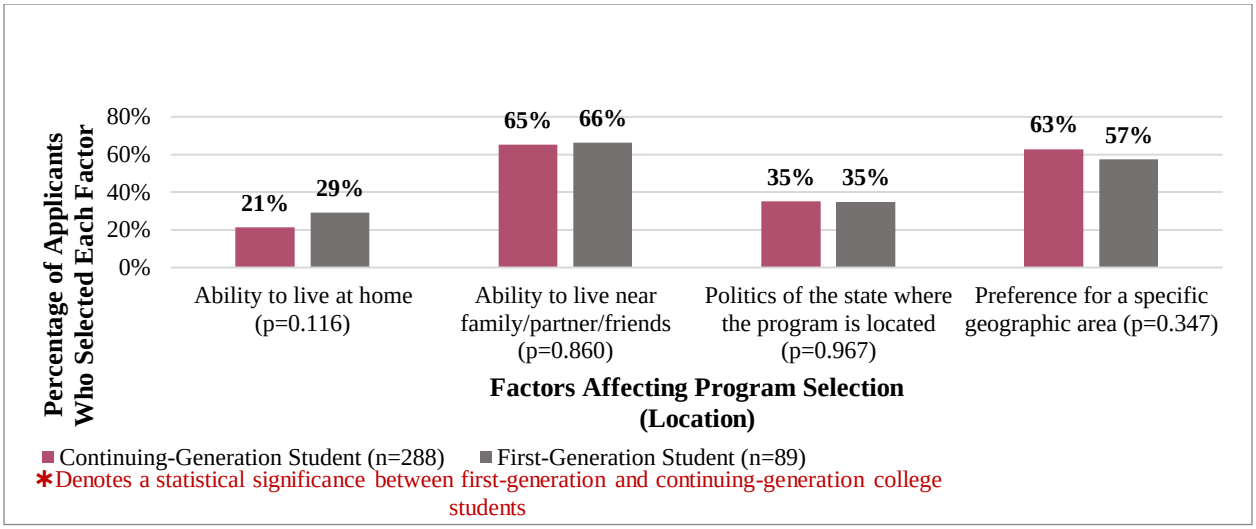

Figure 8d. Percentage of first-generation college students and continuing generation college students who selected location-related factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

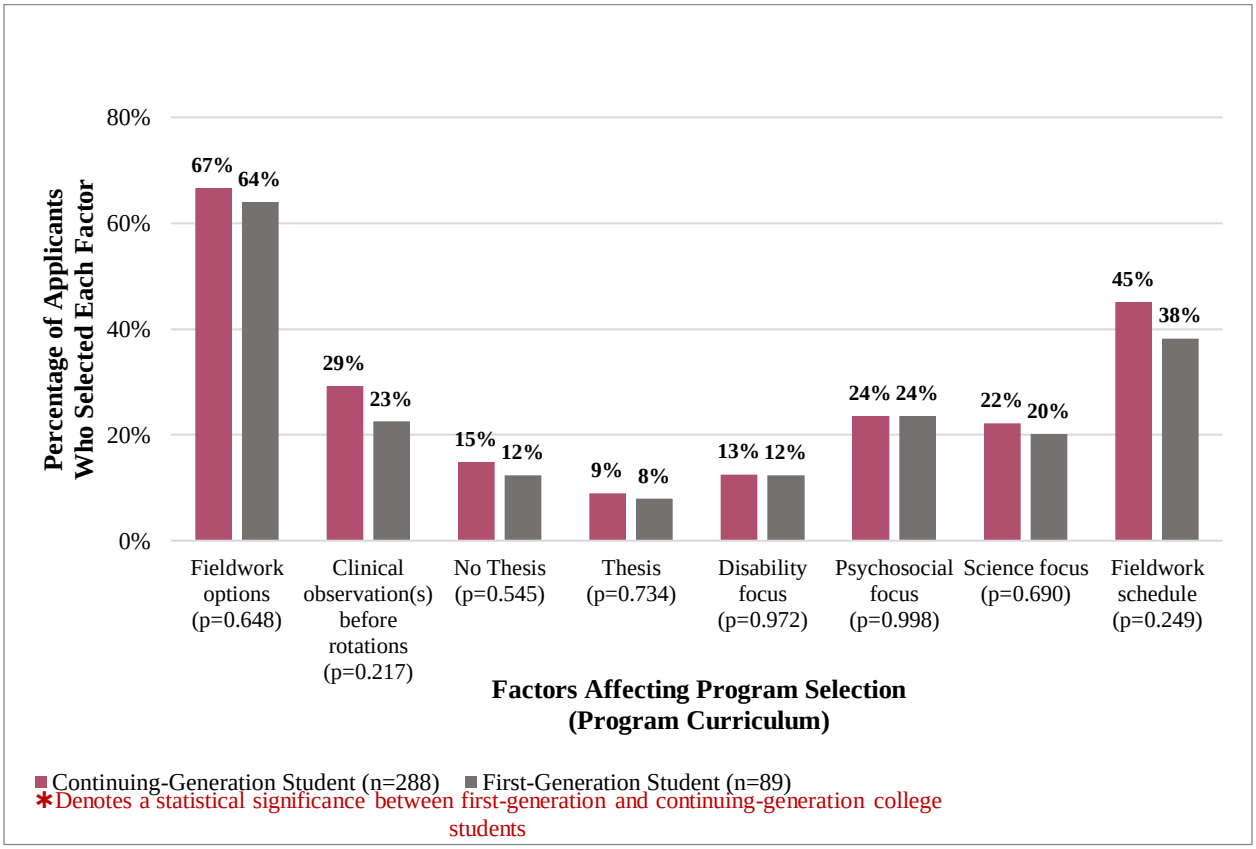

Figure 8e. Percentage of first-generation college students and continuing generation college students who selected program curriculum-related factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

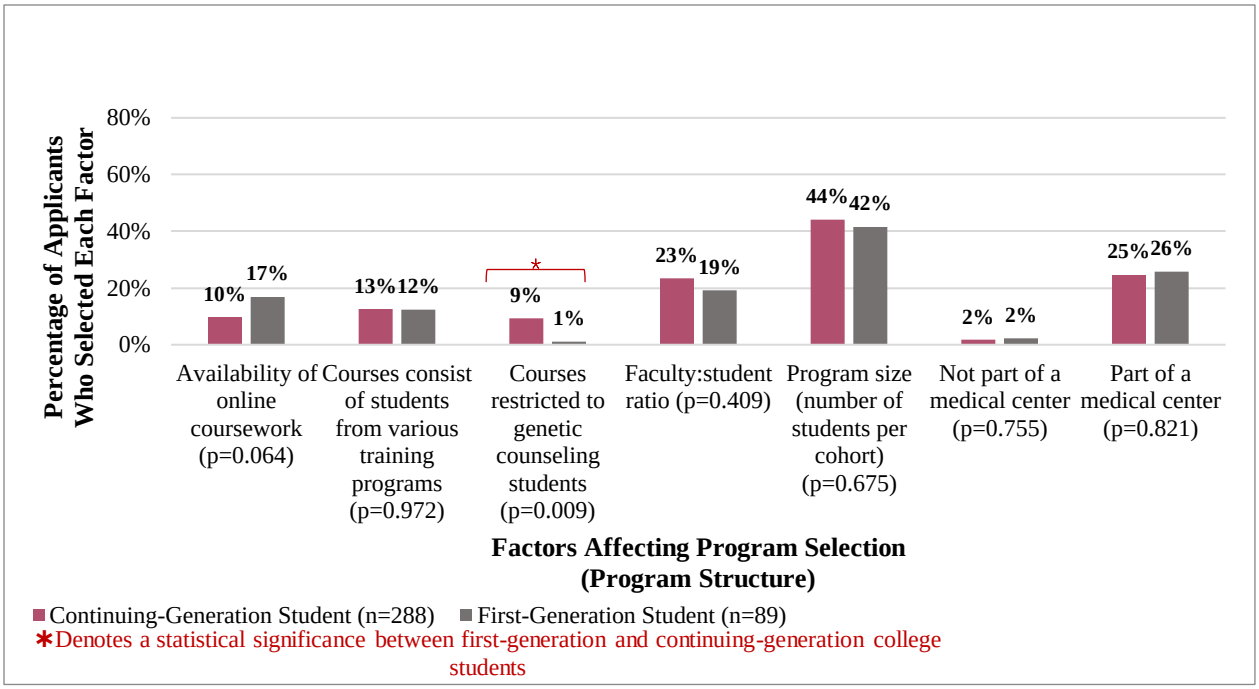

Figure 8f. Percentage of first-generation college students and continuing generation college students who selected program structure-related factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

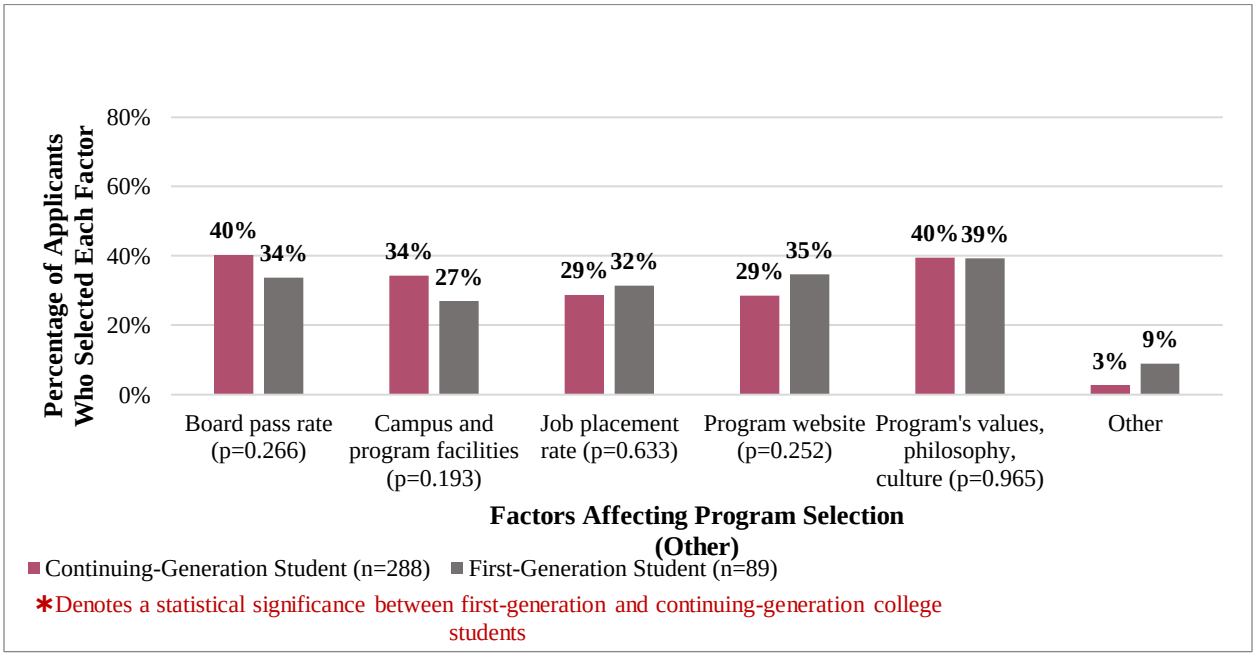

Figure 8g. Percentage of first-generation college students and continuing generation college students who selected other factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

3.3.7 Factors Affecting Program Selection – Stratified by White (N=254) and Non-White (N=116) Participants

Figures 9a-g show the percentages of White and non-White participants who selected the various factors affecting program selection in each category. Notably, it was found that diversity related factors including the diversity within faculty, students and the patient population were significantly more likely to be selected by non-White participants as factors influencing their program selection ($p<0.001$). Faculty member(s) reputation(s) ($p=0.045$), interaction with current students ($p<0.001$), the ability to live near family/partner/friends ($p=0.013$), the preference for a specific geographic area ($p=0.029$), courses consisting of students from various training programs ($p=0.035$) and the board pass rate ($p=0.013$) were also factors more frequently selected by non-White participants. Financial factors and a program's values, philosophy and culture were factors not more likely to be selected by either subgroup ($p>0.05$ for all comparisons).

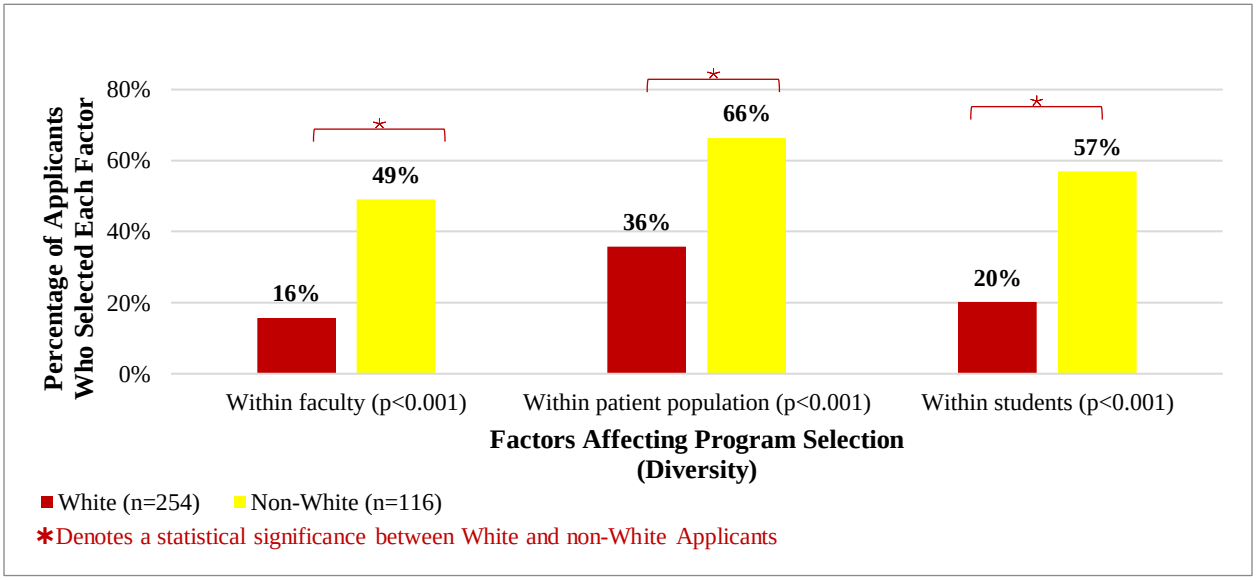

Figure 9a. Percentage of White and non-White individuals who selected diversity-related factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

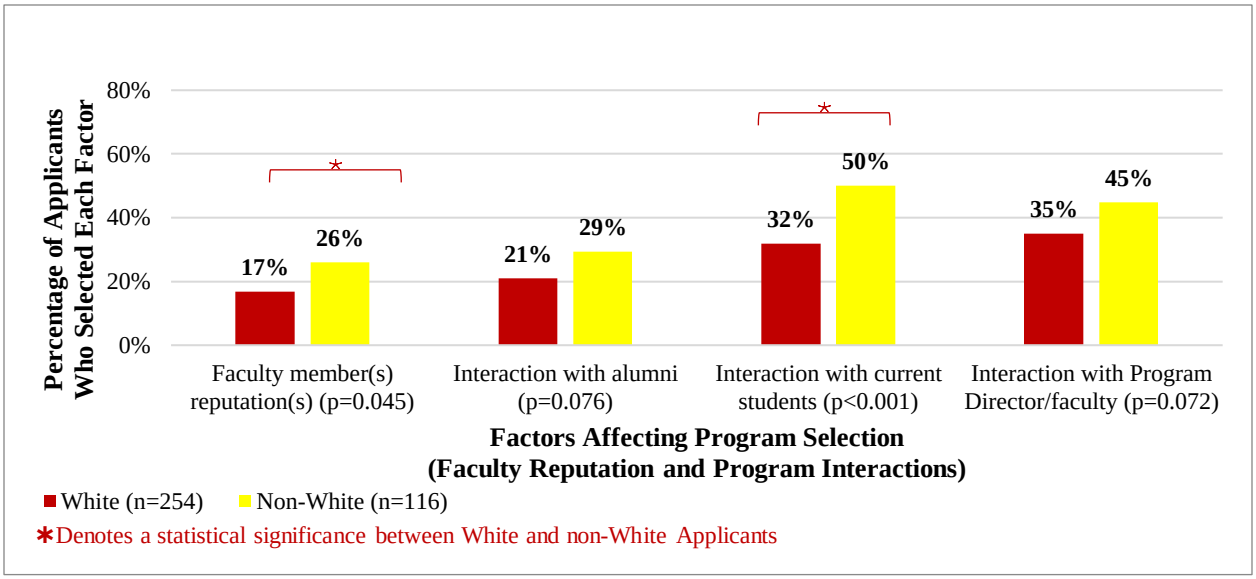

Figure 9b. Percentage of White and non-White individuals who selected faculty reputation and program interaction-related factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

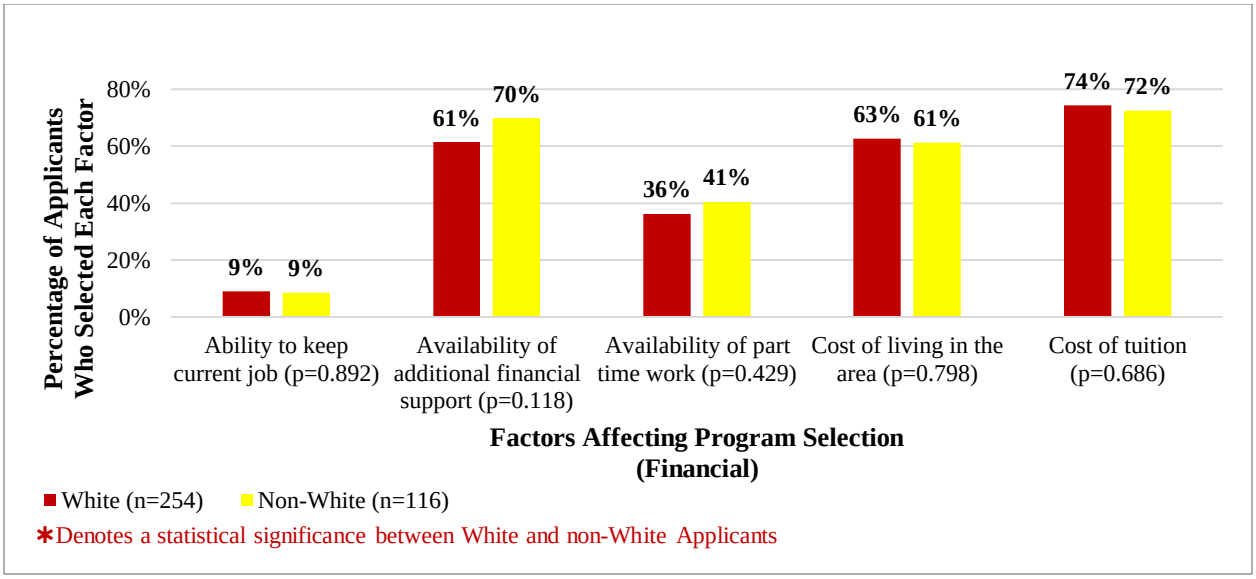

Figure 9c. Percentage of White and non-White individuals who selected financial factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

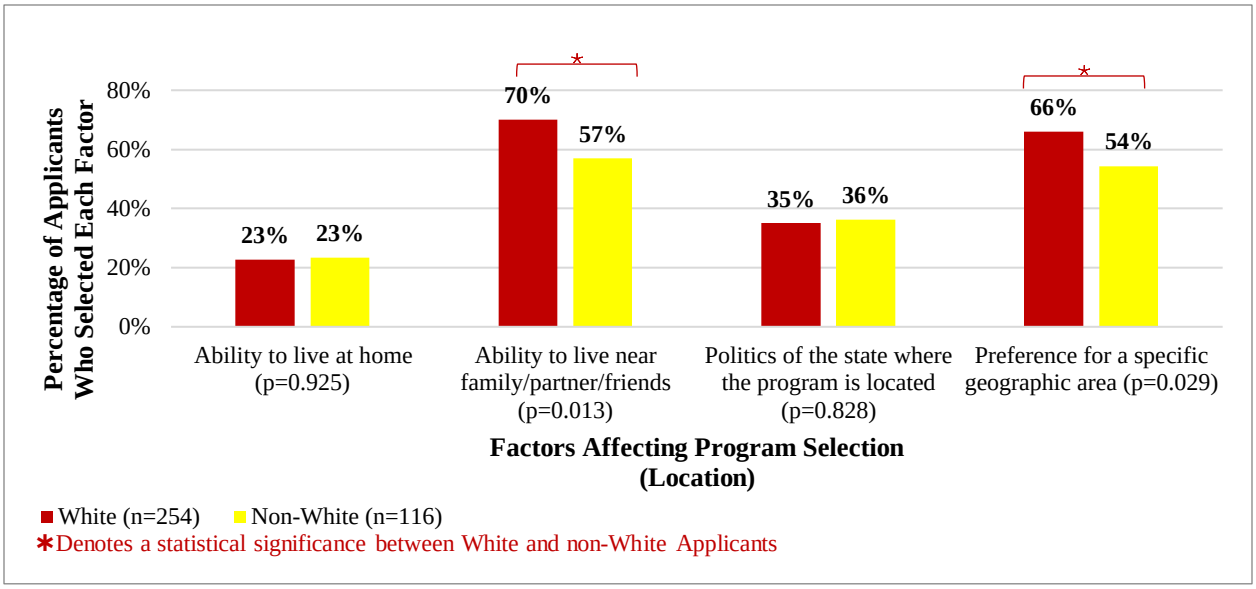

Figure 9d. Percentage of White and non-White individuals who selected location-related factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

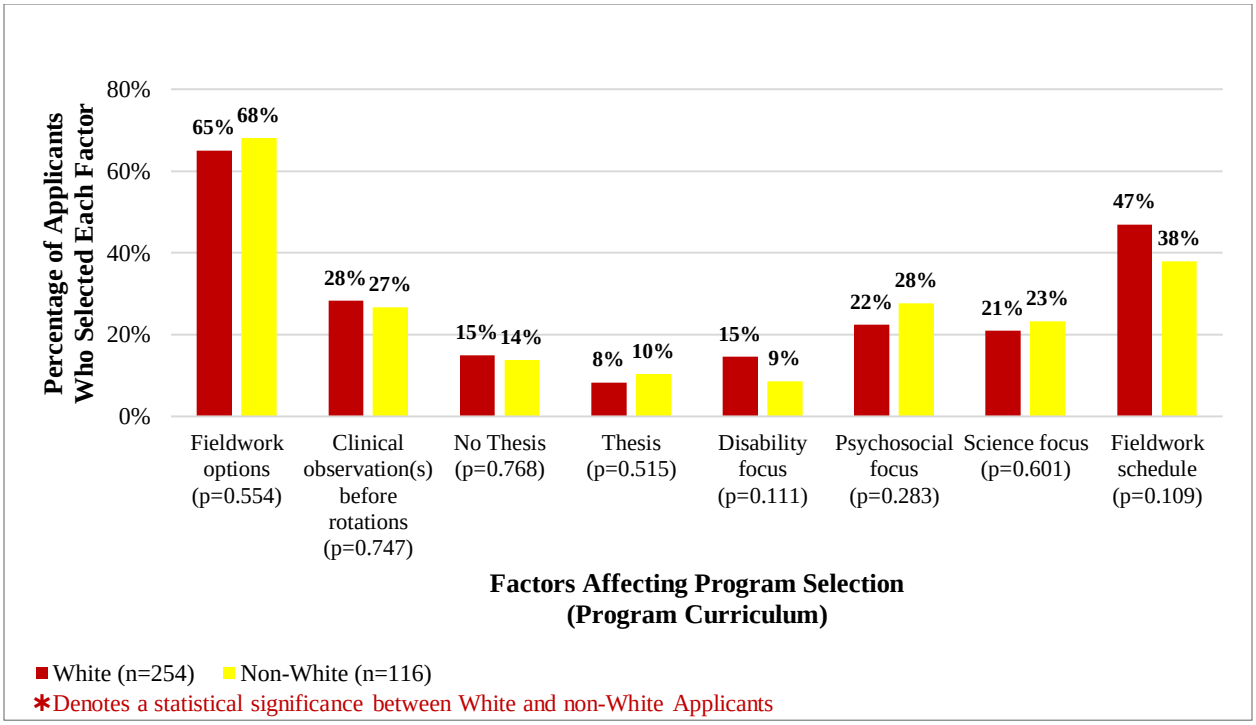

Figure 9e. Percentage of White and non-White individuals who selected program curriculum-related factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

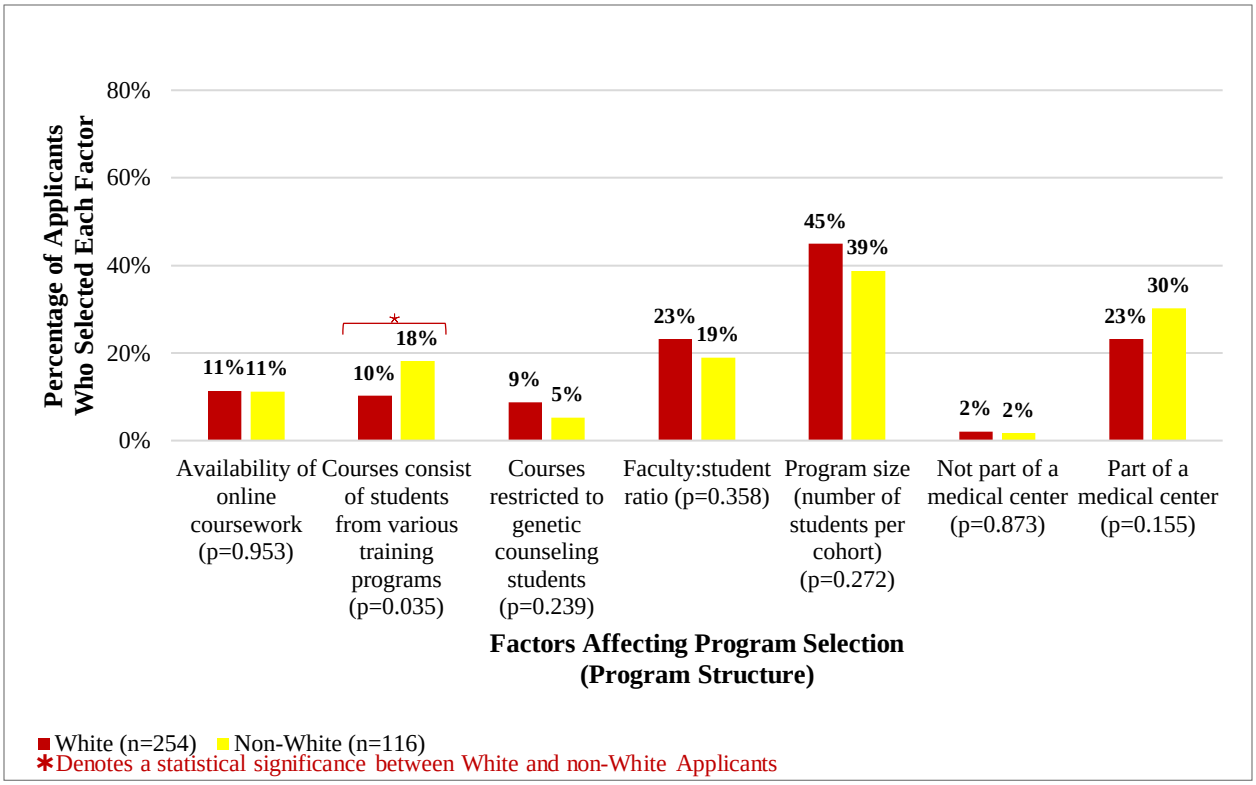

Figure 9f. Percentage of White and non-White individuals who selected program structure-related factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

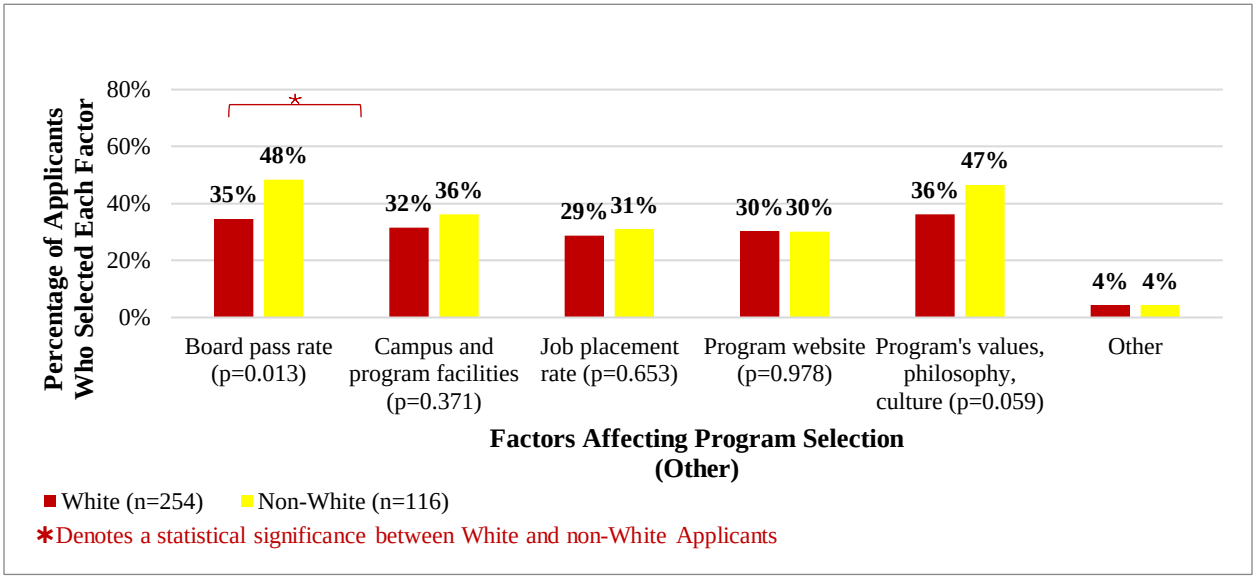

Figure 9g. Percentage of White and non-White individuals who selected other factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

3.3.8 Factors Affecting Program Selection – Stratified by LGBTQ2IA+ Community Members (N=90) and non-LGBTQ2IA+ Community Members (N=274)

Figures 10a-g show the percentages of LGBTQ2IA+ and non-LGBTQ2IA+ community members who selected the various factors affecting program selection in each category. When comparing the responses of these two subgroups, LGBTQ2IA+ participants were significantly more likely to indicate that the diversity within students ($p=0.024$) and the politics of the state where a program is located ($p<0.001$) influenced their program selection. The diversity within faculty, a program's values, philosophy and culture, interactions with faculty, students and alumni, and program size were not more frequently selected by LGBTQ2IA+ participants ($p>0.05$ for all comparisons).

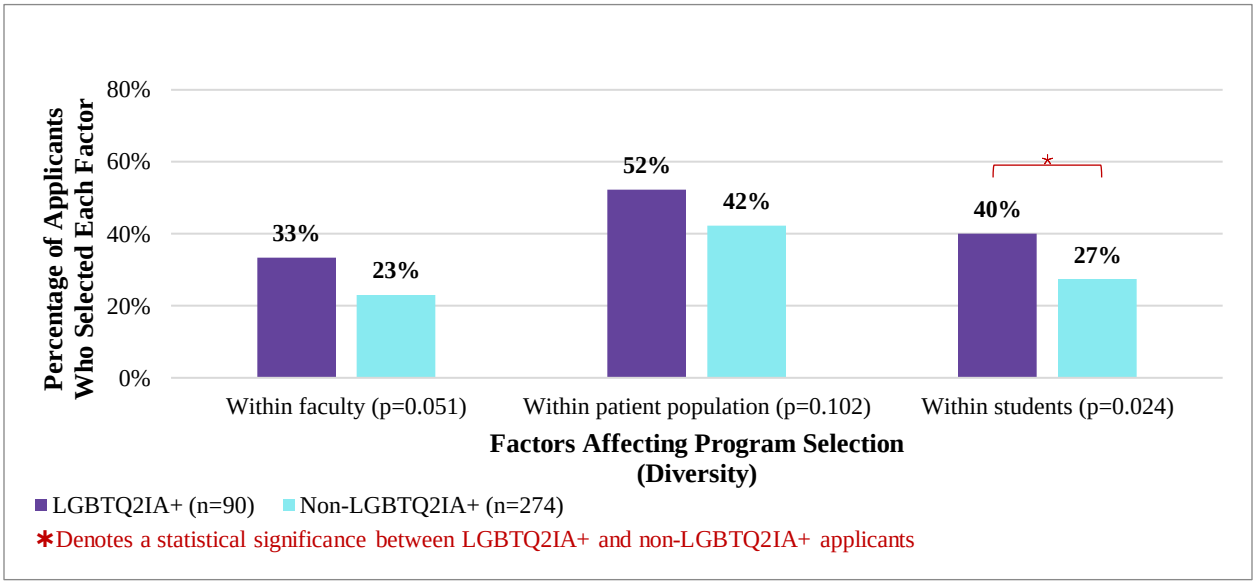

Figure 10a. Percentage of LGBTQ2IA+ community members and non-LGBTQ2IA+ community members who selected diversity-related factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

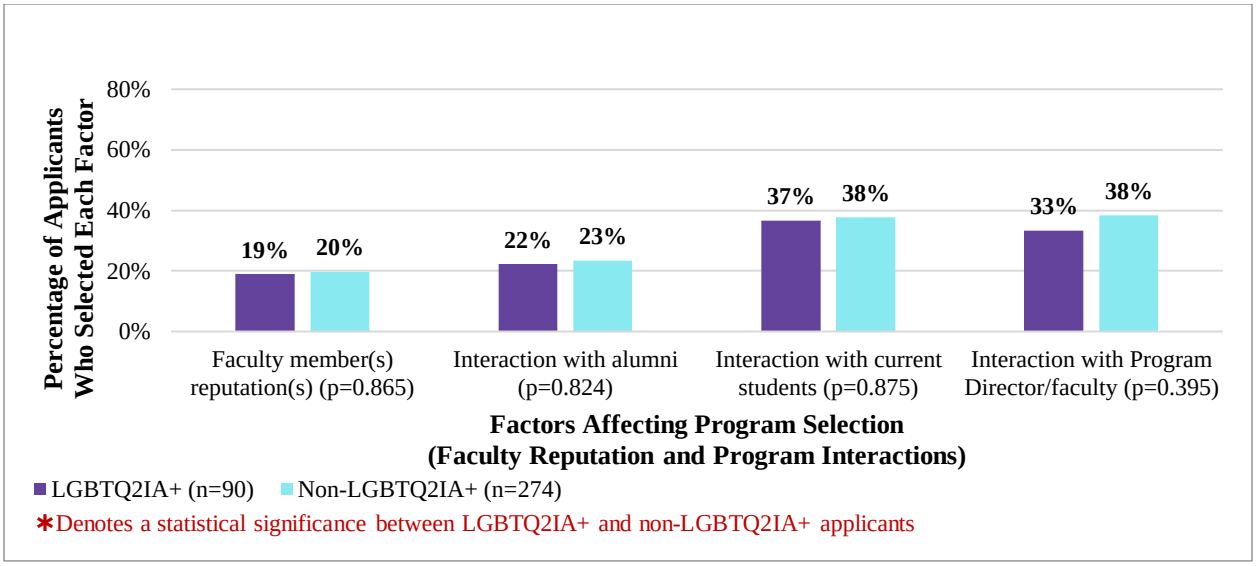

Figure 10b. Percentage of LGBTQ2IA+ community members and non-LGBTQ2IA+ community members who selected faculty reputation and program interaction-related factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

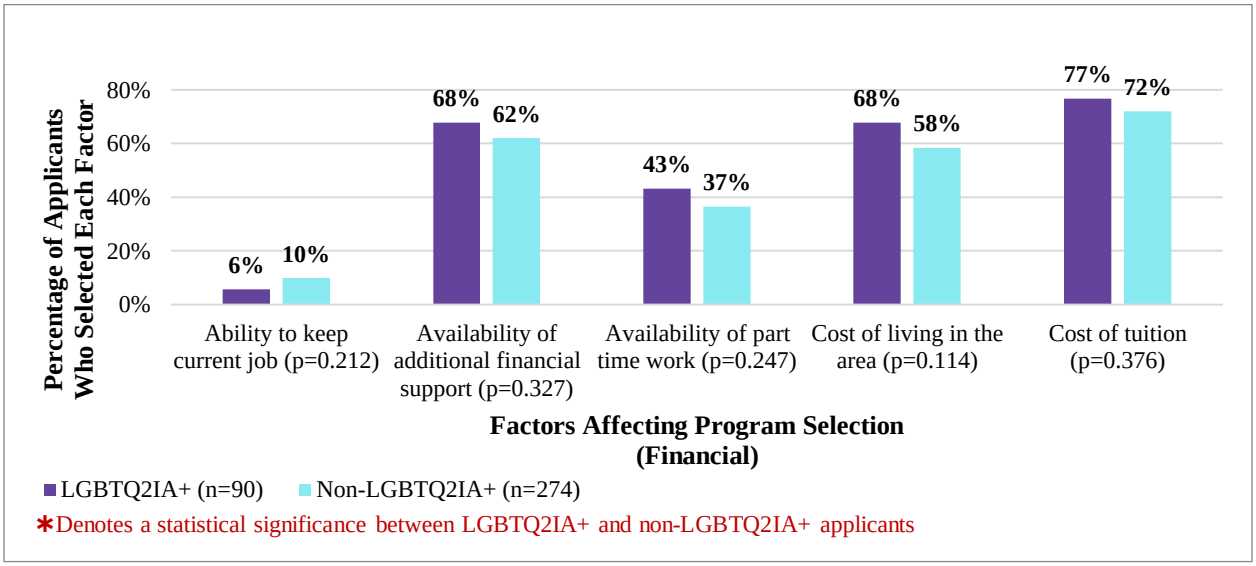

Figure 10c. Percentage of LGBTQ2IA+ community members and non-LGBTQ2IA+ community members who selected financial factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

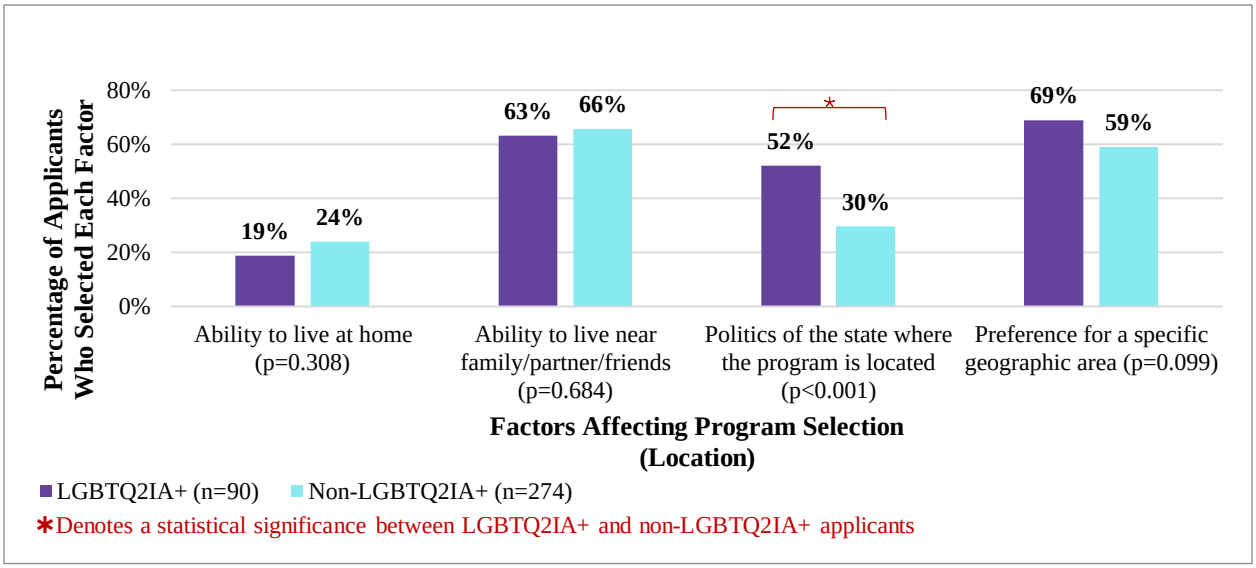

Figure 10d. Percentage of LGBTQ2IA+ community members and non-LGBTQ2IA+ community members who selected location-related factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

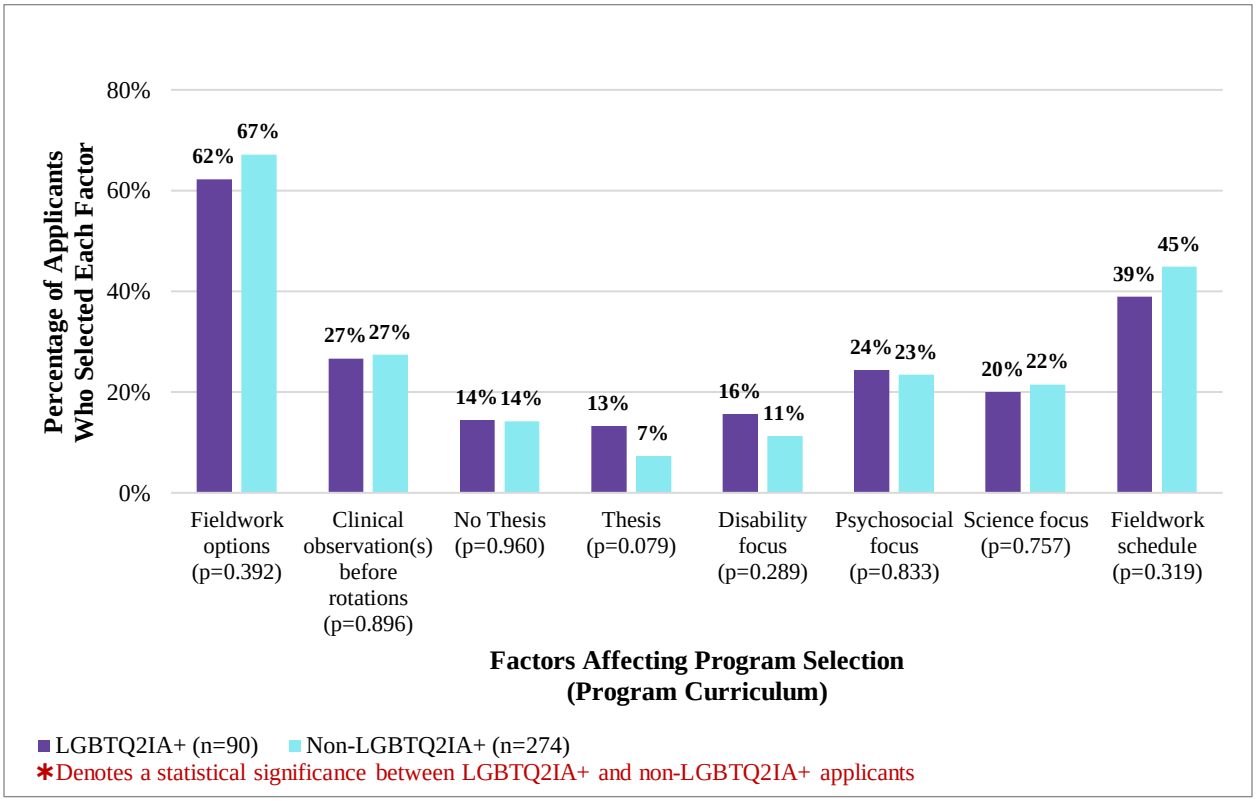

Figure 10e. Percentage of LGBTQ2IA+ community members and non-LGBTQ2IA+ community members who selected program curriculum-related factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

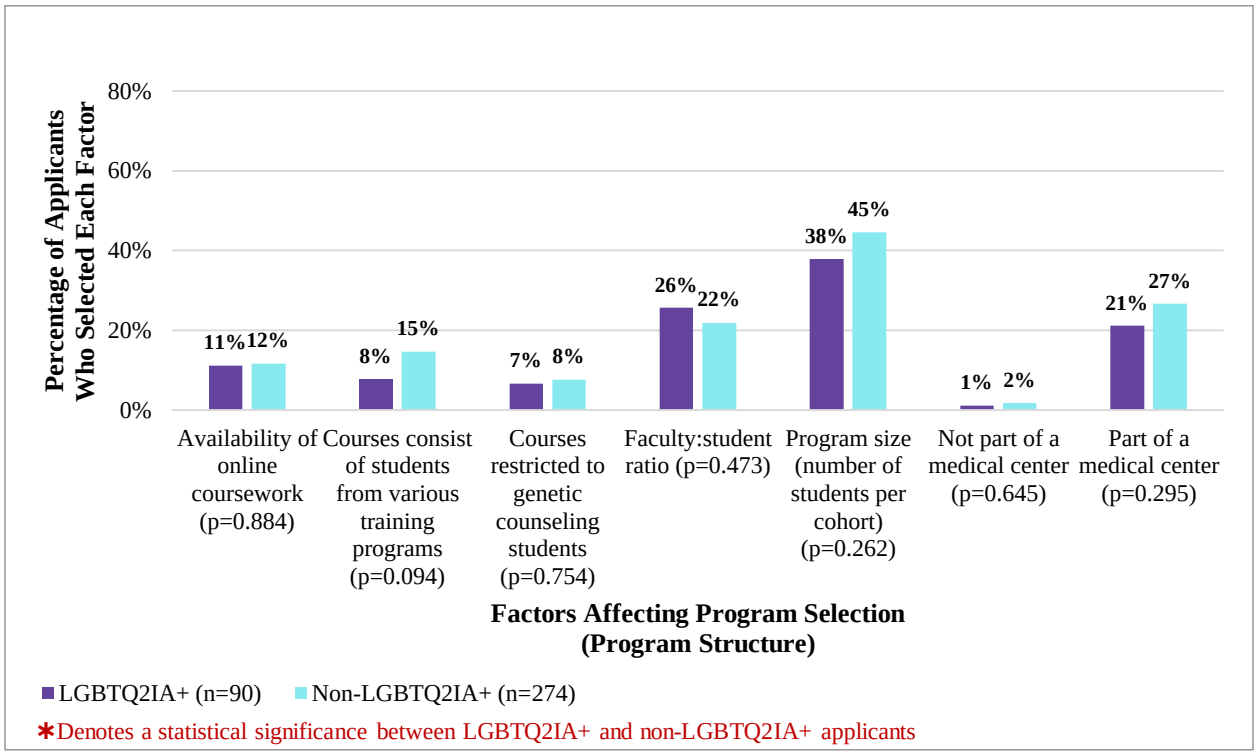

Figure 10f. Percentage of LGBTQ2IA+ community members and non-LGBTQ2IA+ community members who selected program structure-related factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

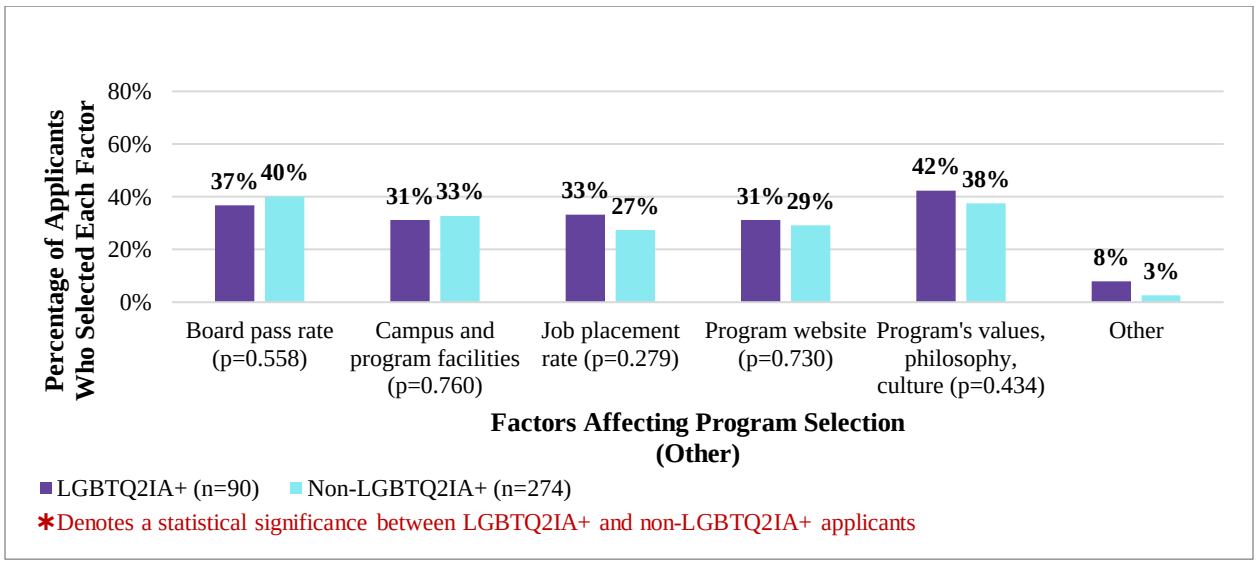

Figure 10g. Percentage of LGBTQ2IA+ community members and non-LGBTQ2IA+ community members who selected other factors as influencing their program selection. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

3.4.1 Barriers in the Application Process - All Participants (N=377)

Table 7 summarizes barriers in the application process and their selection frequencies for all applicants. The barriers in the application process were categorized into five categories: application requirements and obtaining relevant experiences, diversity and accessibility, psychological, financial, and other. Figures 11a-e show the percentages of all applicants who selected the various barriers in each category. Out of all 26 barriers, the overall likelihood of acceptance into a program (n=280, 74%) and costs associated with individual program applications (n=255, 68%) were most frequently chosen as barriers in the application process. Other psychological barriers, including the pressure of competition (n=219, 58%) and anxiety associated with the Match ranking process/anxiety associated with the Match process (n=194, 52%) were selected by more than half of all participants. Obtaining observation/shadowing experience (n=200, 53%) was also identified as a barrier in the application process for greater than half of all participants. Additional factors frequently selected by participants as barriers in the application process included the time commitment in filling out different applications for each program (n=177, 47%), costs associated with the National Matching Service (n=175, 46%) and a lack of programs in participants' current geographical area or the geographic location of programs being undesirable (n=166, 44%). A lack of diversity in the field of genetic counseling (n=74, 20%) and in individual programs (n=64, 17%) were notable barriers selected by participants as well. Infrequently selected barriers included the costs associated with exams (e.g. GRE or TOEFL/IELTS) and the sending of test scores (n=49, 13%), exam scores (e.g. GRE, TOEFL/IELTS etc.) (n=30, 8%), costs associated with interview(s) (n=23, 6%) and the requirement to travel for interviews (n=14, 4%).

Table 7. Barriers in the genetic counseling application process for all participants.

	Factor*	N=377	Percent (%)
Application requirements and obtaining relevant experiences	Advocacy	126	33
	Crisis counseling	131	35
	Observation and shadowing	200	53
	Other volunteering	43	11
	Letters of recommendation	110	29
	Research	77	20
	Prerequisite courses	96	26
	Undergraduate GPA	71	19
Diversity and Accessibility	Lack of diversity in individual programs	64	17
	Lack of diversity in the field of genetic counseling	74	20
	Lack of information and resources about the application process	108	29
	Lack of knowledge about the application process	125	33
	Lack of programs in your current geographical area/geographic location of programs are not desirable	166	44
Psychological	Anxiety associated with the Match ranking process/anxiety associated with the Match process	194	52
	Overall likelihood of acceptance into a program	280	74
	Pressure of competition	219	58
Financial	Exams such as the GRE or TOEFL/IELTS and the sending of test scores	49	13
	Individual program applications	255	68
	Interview(s), including travel, food and lodging, attire etc.	23	6
	Sending transcripts	127	34
	GRE and sending of test scores	33	9
	National Matching Service	175	46
Other	Exam scores (e.g. GRE, TOEFL/IELTS etc.)	30	8
	Necessity to take time off of work/school to attend interview(s)	119	32
	Requirement to travel for interview(s)	14	4
	Time commitment in filling out different applications for each program	177	47
	Other	16	4

A darker red color in cells indicates a higher number and percentage of participants who selected a barrier. A lighter red color in cells indicates a lower number and percentage of participants who selected a barrier.
*Participants could select more than one barrier
[1]A table with a full summary of free text responses and their frequencies can be found in Appendix H.

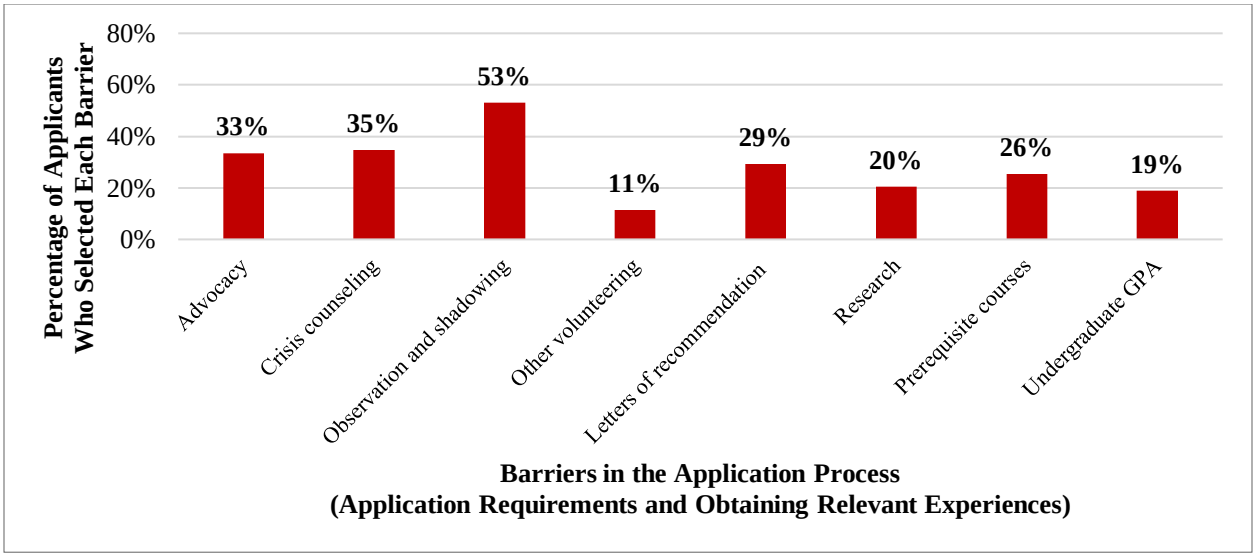

Figure 11a. Percentage of applicants who selected application requirements and obtaining relevant experiences as barriers in the application process. Participants could select more than one factor.

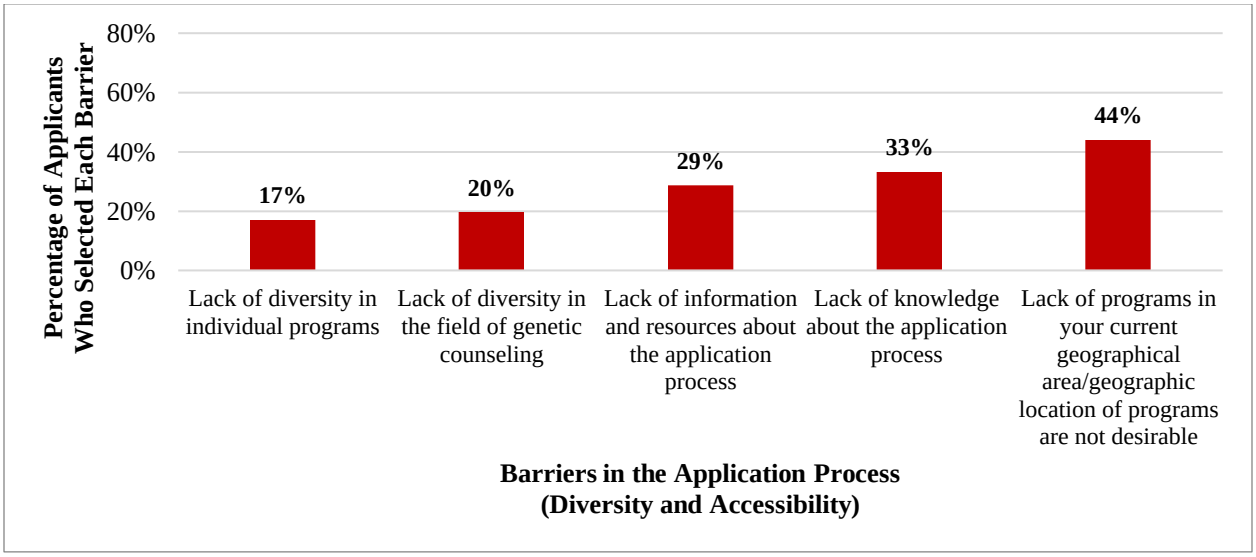

Figure 11b. Percentage of applicants who selected diversity and accessibility-related factors as barriers in the application process. Participants could select more than one factor.

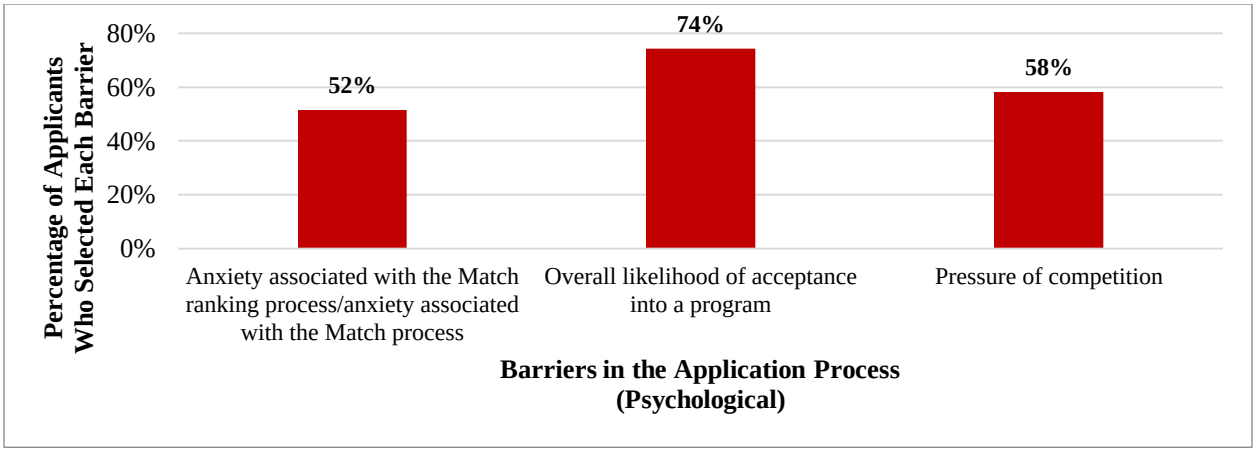

Figure 11c. Percentage of applicants who selected psychological factors as barriers in the application process. Participants could select more than one factor.

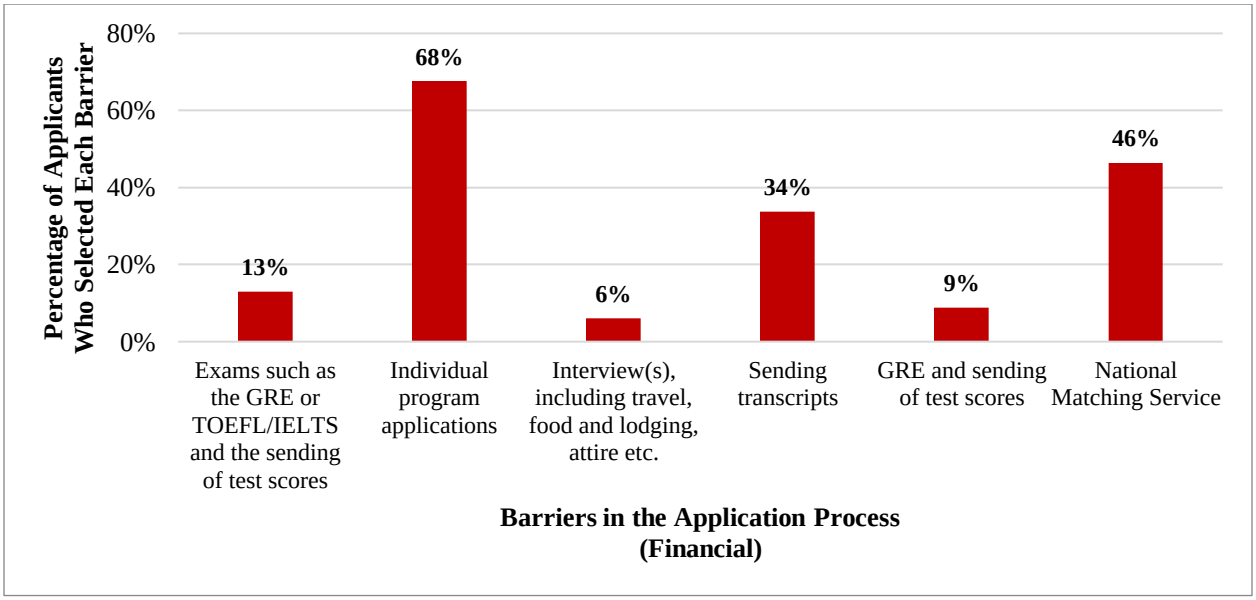

Figure 11d. Percentage of applicants who selected financial factors as barriers in the application process. Participants could select more than one factor.

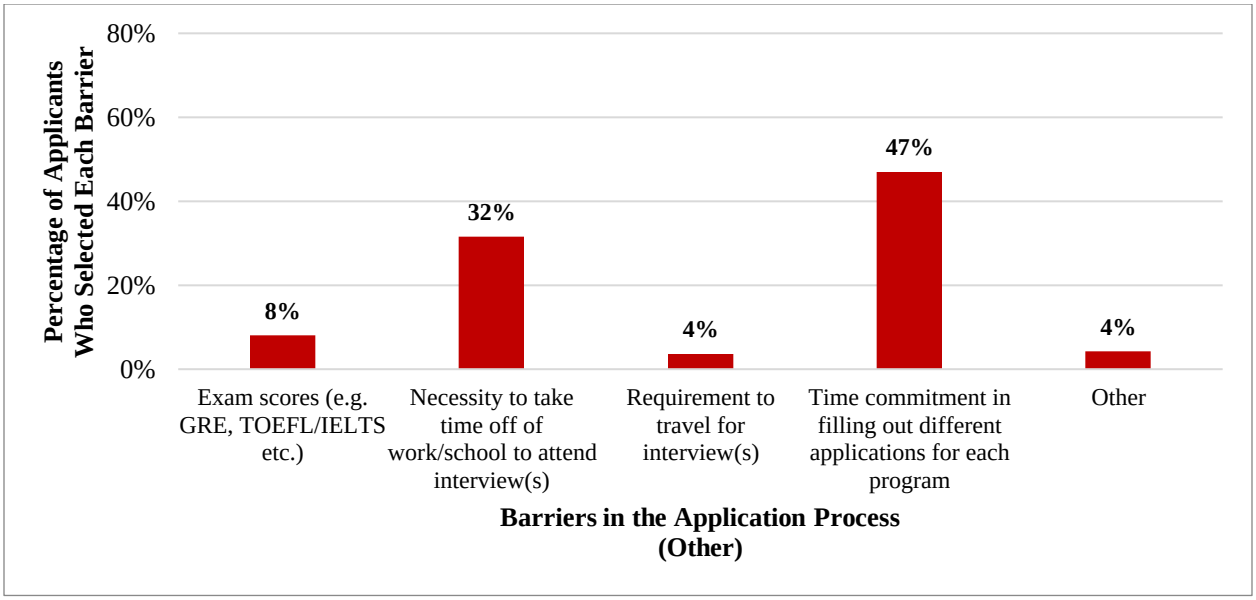

Figure 11e. Percentage of applicants who selected other factors as barriers in the application process. Participants could select more than one factor.

3.4.2 Barriers in the Application Process - Stratified by 2021-2023 Matched (N=113) and Unmatched (N=155) Participants

Figures 12a-e show the percentages of matched and unmatched participants who selected the various barriers in each category. When comparing the responses of these two subgroups, unmatched participants were more likely to report that obtaining advocacy experience ($p<0.001$), research experience ($p=0.007$), other types of volunteer experience ($p=0.002$) and relevant letters of recommendation ($p=0.012$) were barriers in the application process. Several other barriers were also more frequently selected by unmatched participants including undergraduate GPA ($p=0.001$), a lack of programs in one's geographic area/geographic location of programs are not desirable ($p=0.048$), the overall likelihood of acceptance into a program ($p=0.004$) and costs associated with the National Matching Service ($p=0.046$). Although infrequently selected overall, costs associated with exams such as the GRE or TOEFL/IELTS and the sending of test scores was more frequently selected as a barrier by matched participants when compared to unmatched participants ($p=0.002$).

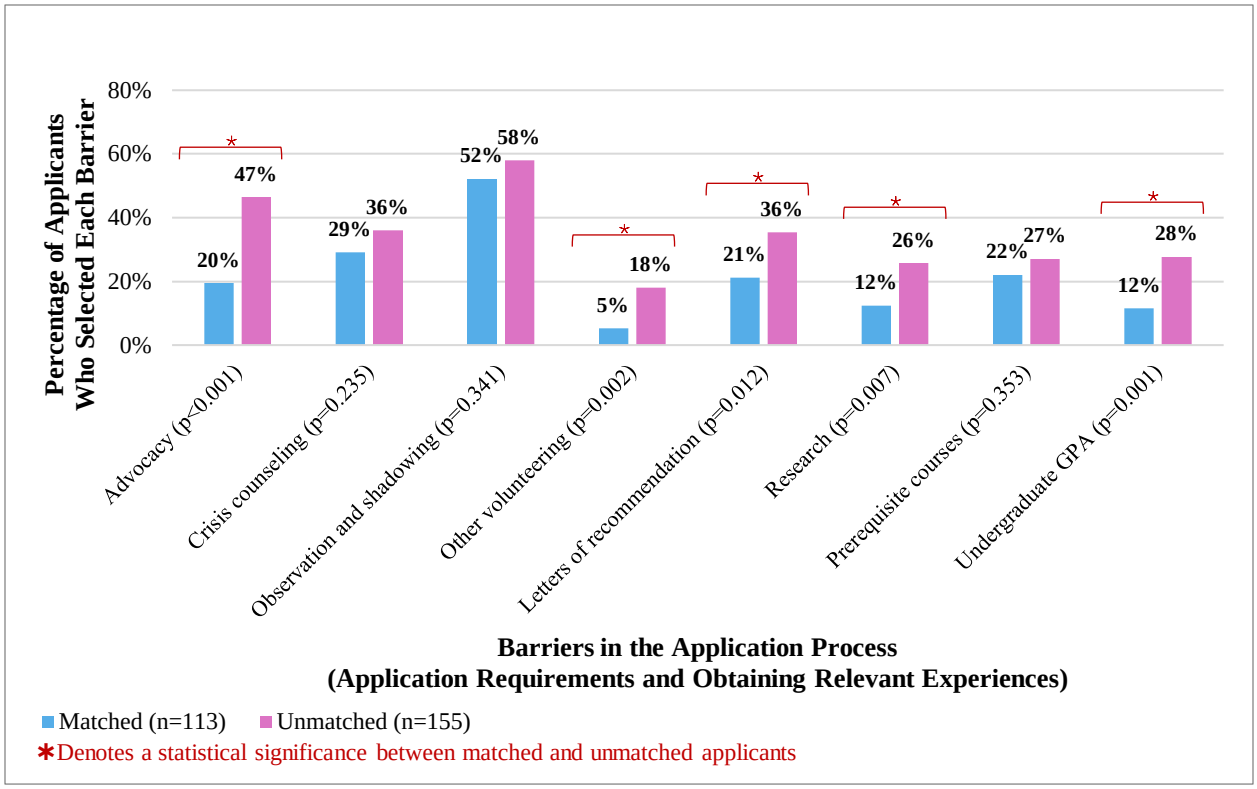

Figure 12a. Percentage of matched and unmatched applicants who selected application requirements and obtaining relevant experiences as barriers in the application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

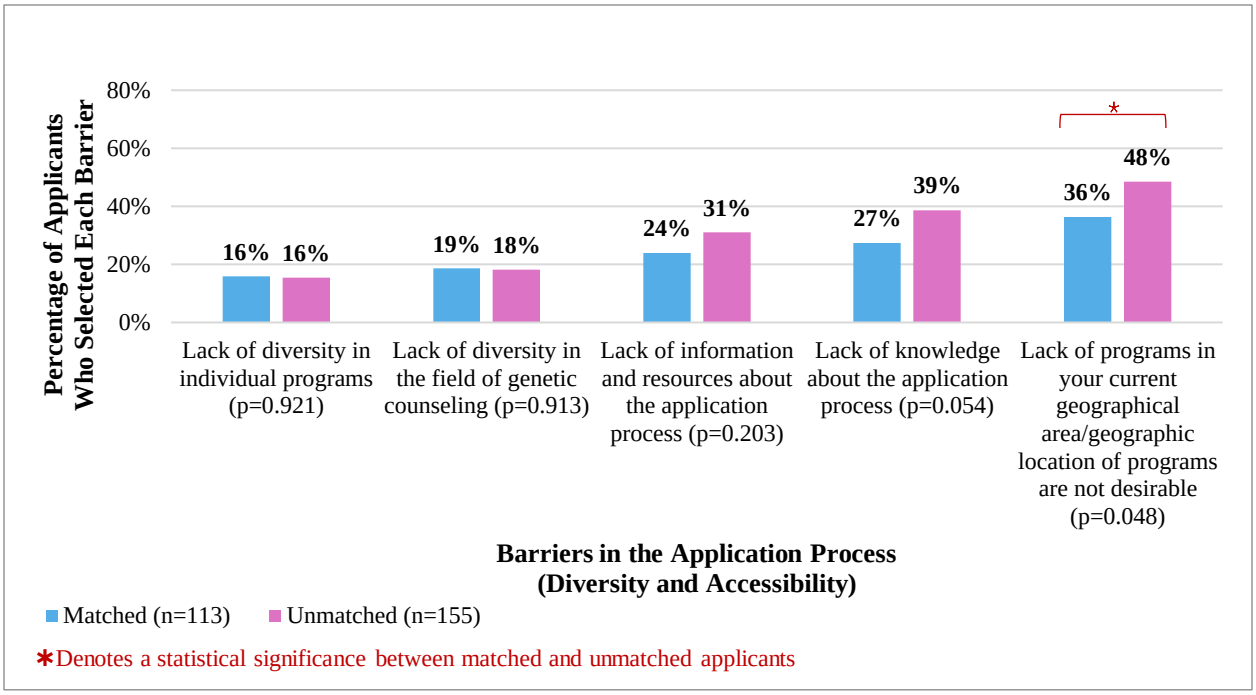

Figure 12b. Percentage of matched and unmatched applicants who selected diversity-related barriers in the application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

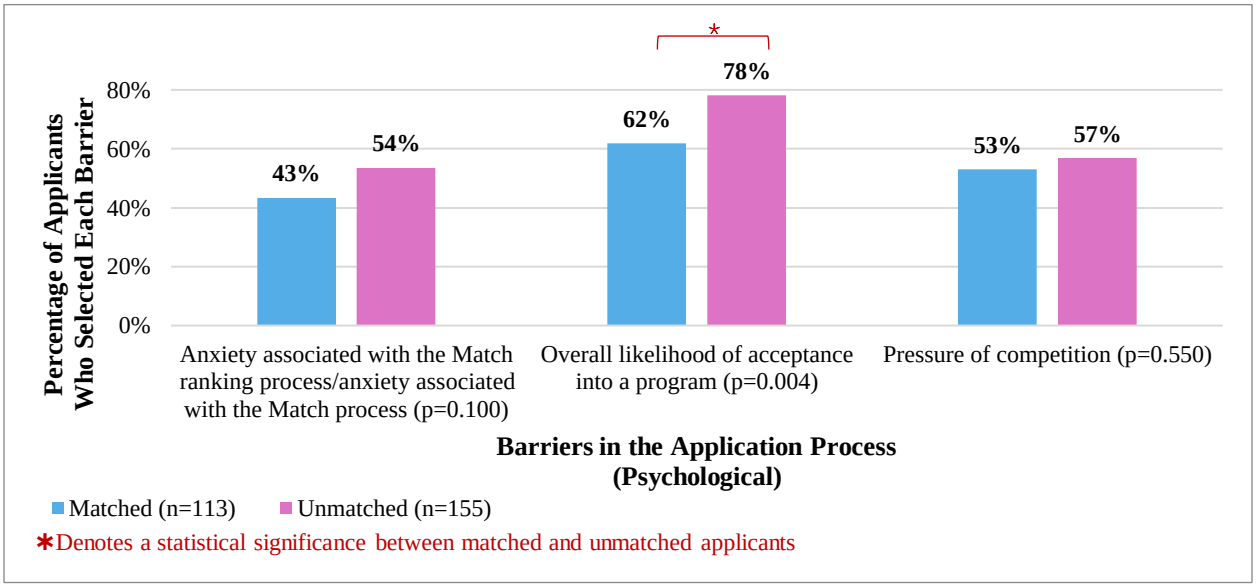

Figure 12c. Percentage of matched and unmatched applicants who selected psychological barriers in the application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

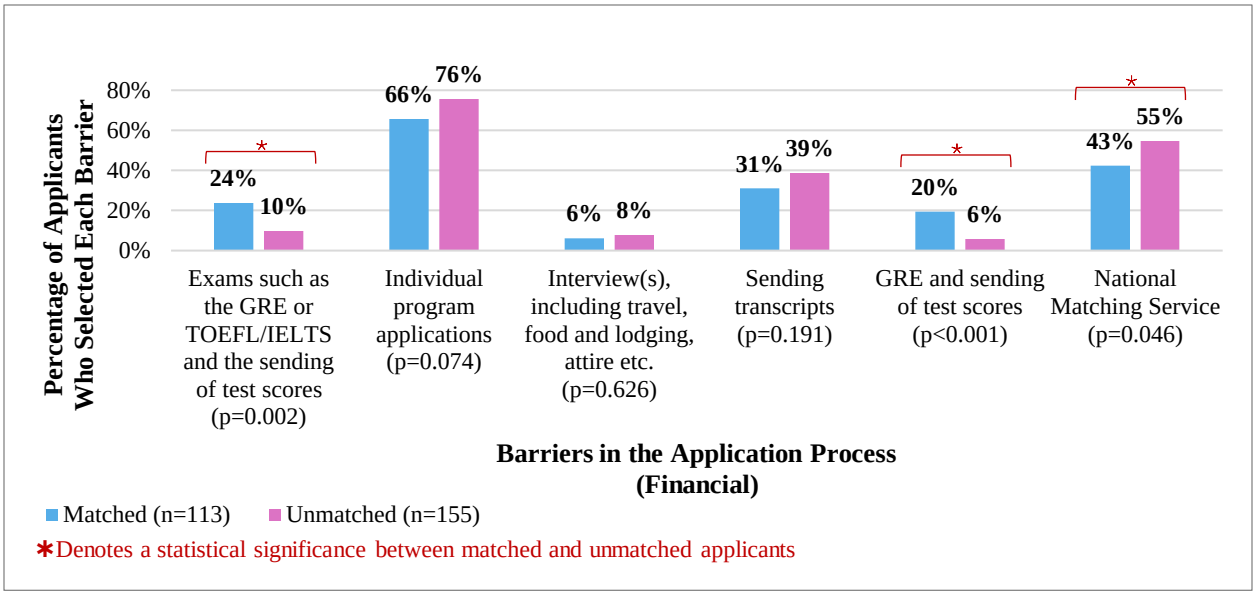

Figure 12d. Percentage of matched and unmatched applicants who selected financial barriers in the application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

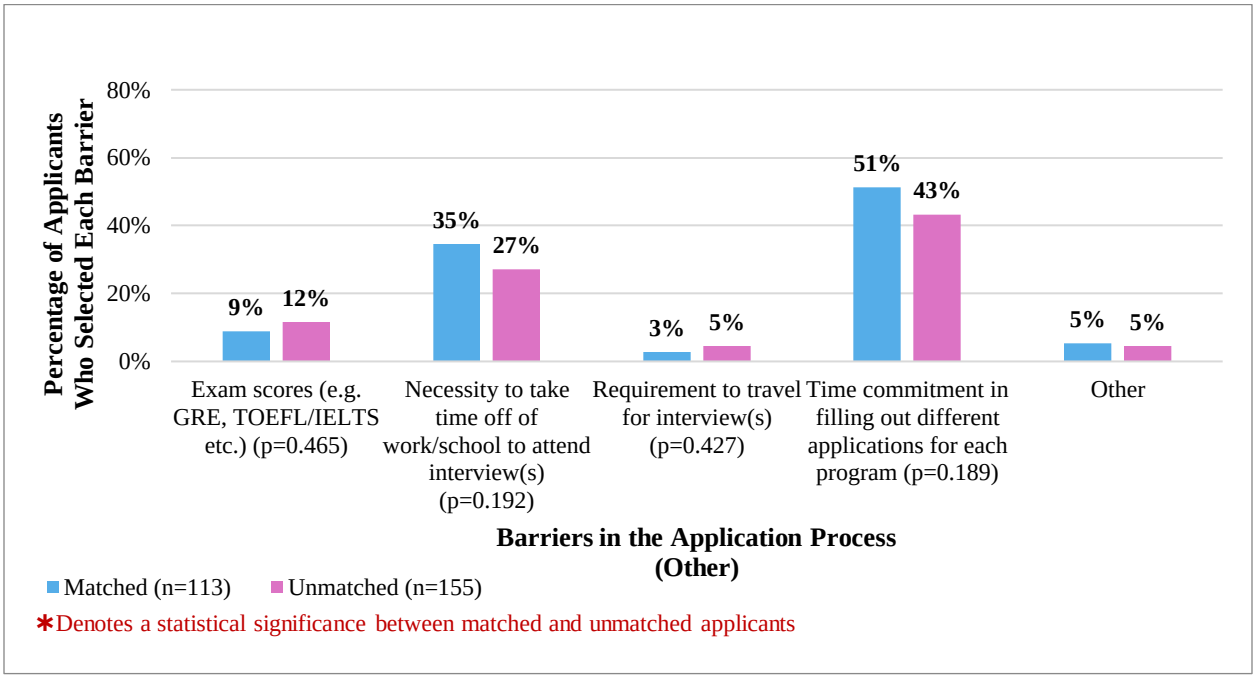

Figure 12e. Percentage of matched and unmatched applicants who selected other barriers in the application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

3.4.3 Barriers in the Application Process – Stratified by 2022/2023 First-Time Applicants (N=164) and Reapplicants (N=59)

Figures 13a-e show the percentages of 2022/2023 first-time applicants and reapplicants who selected the various barriers in each category. When comparing the responses of these two subgroups, prerequisite coursework requirements was more frequently selected as a barrier by reapplicants ($p=0.033$). Although infrequently selected overall, exam scores (e.g. GRE, TOEFL/IELTS) ($p<0.001$), and costs associated with the GRE and the sending of test scores ($p=0.010$) were also more frequently selected by reapplicants as barriers in the application process. The time commitment in filling out different applications, a lack of knowledge about the application process and a lack of information and resources about the application process and other financial factors were not more likely to be selected by either group ($p>0.05$ for all comparisons).

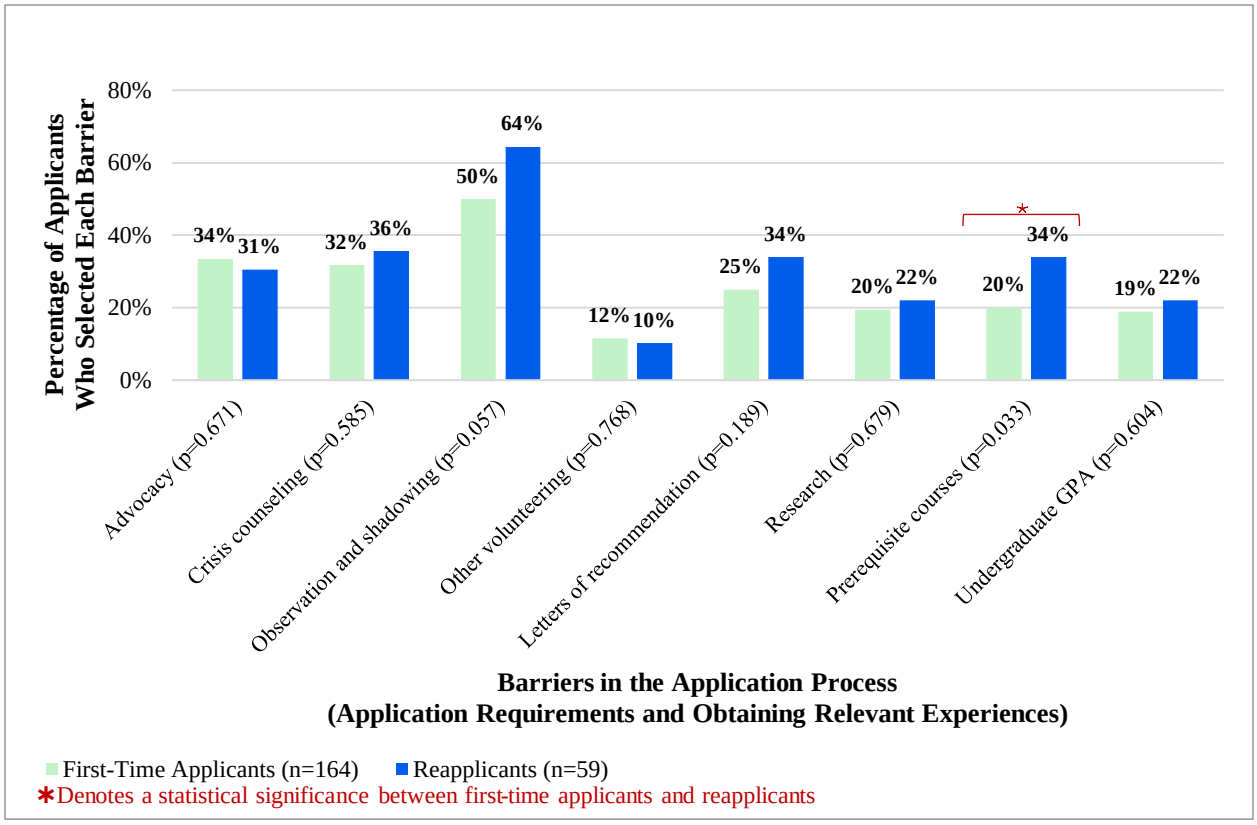

Figure 13a. Percentage of first-time applicants and reapplicants who selected application requirements and obtaining relevant experiences as barriers in the application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

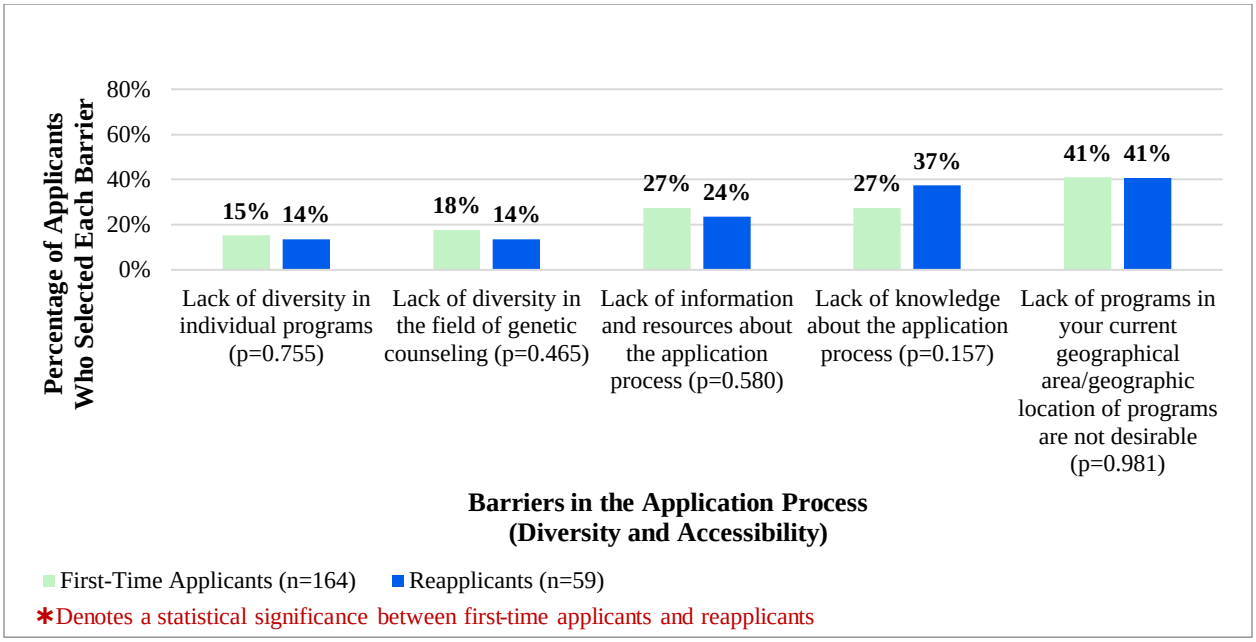

Figure 13b. Percentage of first-time applicants and reapplicants who selected diversity and accessibility-related barriers in the application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

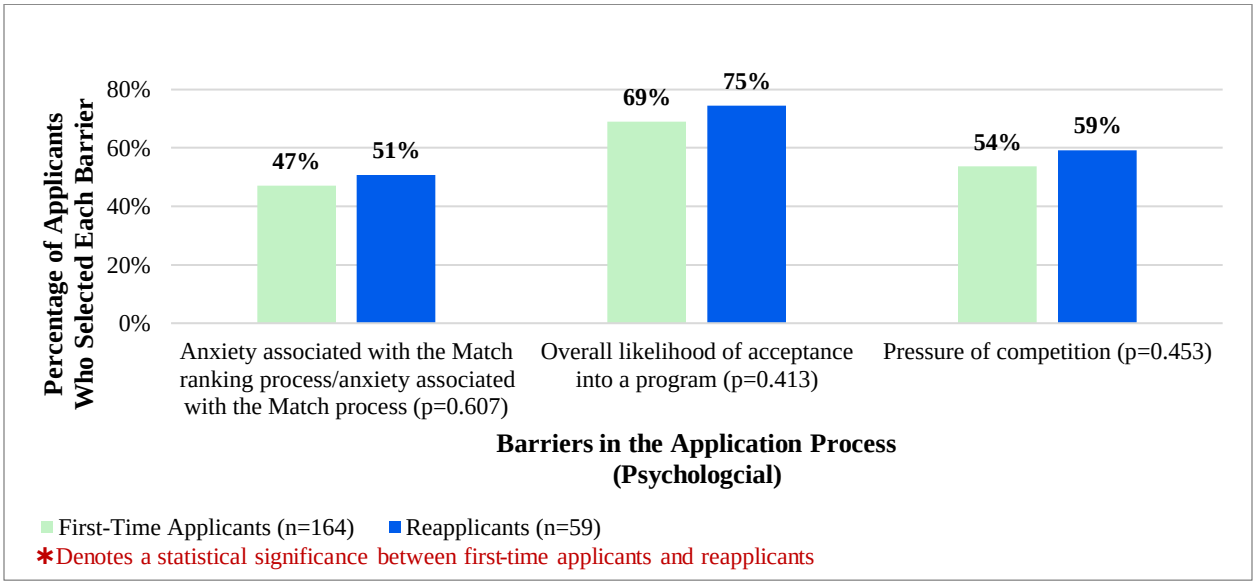

Figure 13c. Percentage of first-time applicants and reapplicants who selected psychological barriers in the application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

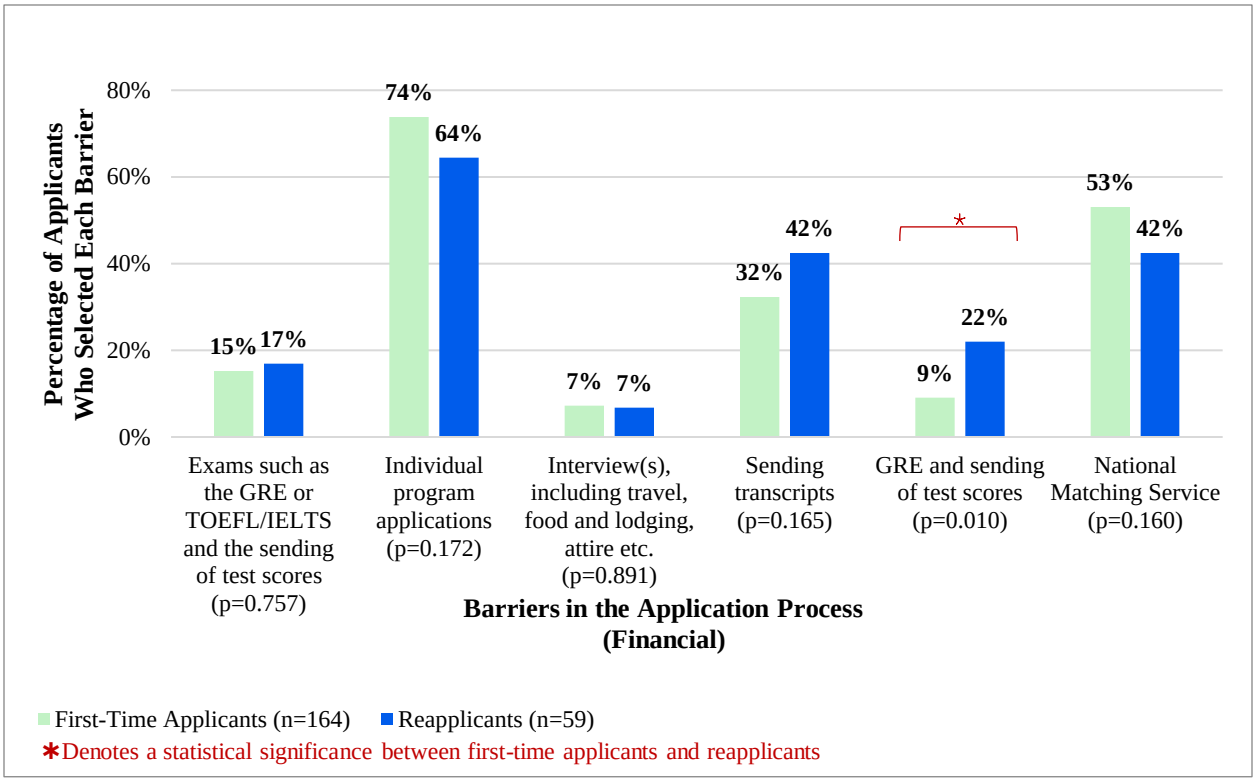

Figure 13d. Percentage of first-time applicants and reapplicants who selected financial barriers in the application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

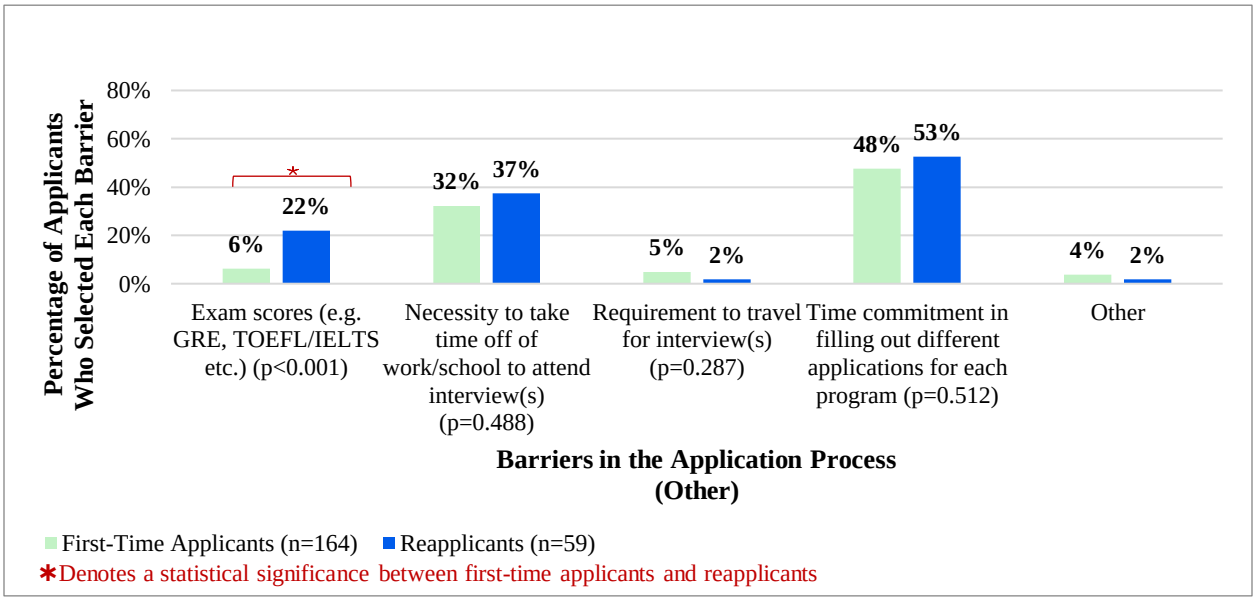

Figure 13e. Percentage of first-time applicants and reapplicants who selected other barriers in the application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

3.4.4 Barriers in the Application Process – Stratified by Individuals Identifying as Women (N=346) and Non-Women (N=31)

Figures 14a-e show the percentages of women and non-women who selected the various barriers in each category. When comparing the responses of these two subgroups, it was found that diversity-related factors, such as the lack of diversity in the field of genetic counseling ($p<0.001$) and the lack of diversity in individual programs ($p=0.004$) were more likely to be selected by non-women as barriers in the application process. Although infrequently selected overall, costs associated with exams such as the GRE or TOEFL/IELTS and the sending of test scores was also more frequently selected by non-women as a barrier ($p=0.027$). In contrast, the overall likelihood of acceptance into a program was a highly selected barrier overall and was more likely to be selected by women ($p=0.003$).

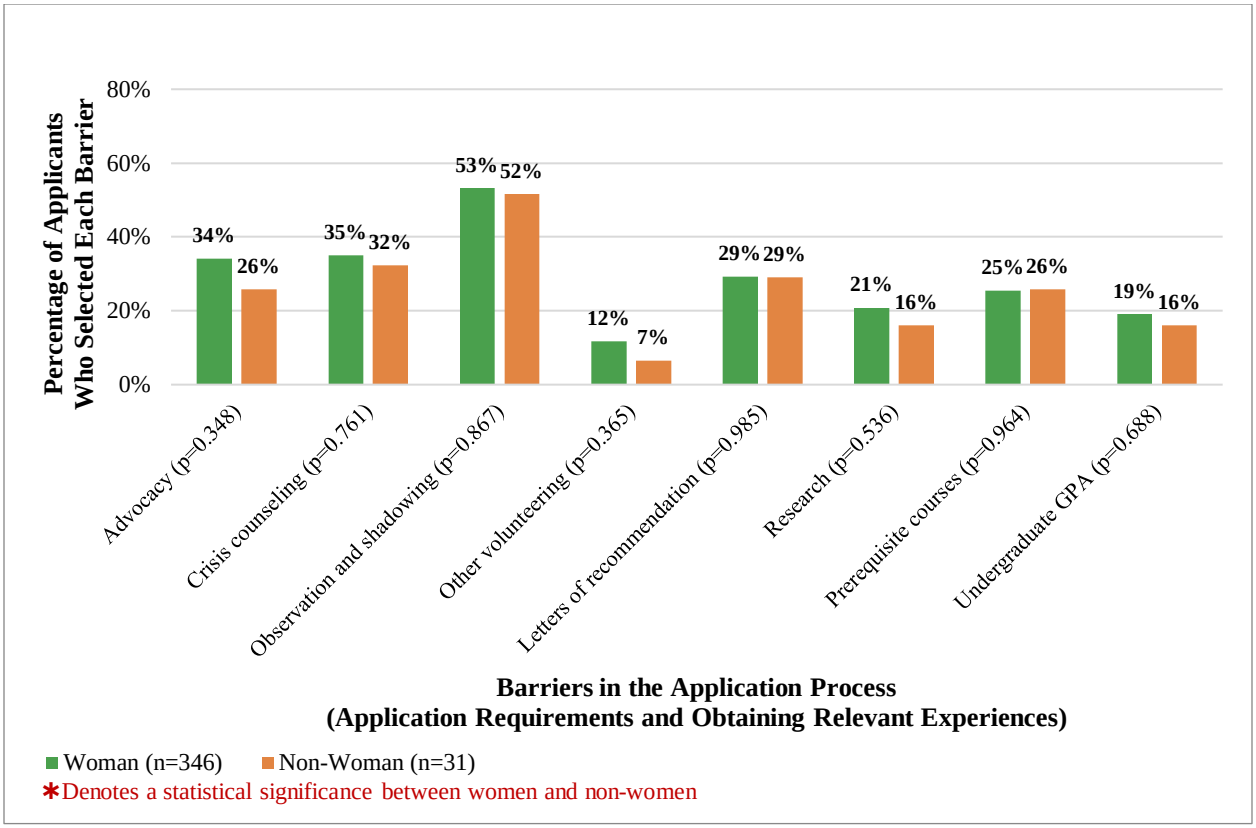

Figure 14a. Percentage of women and non-women who selected application requirements and obtaining relevant experiences as barriers in the application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

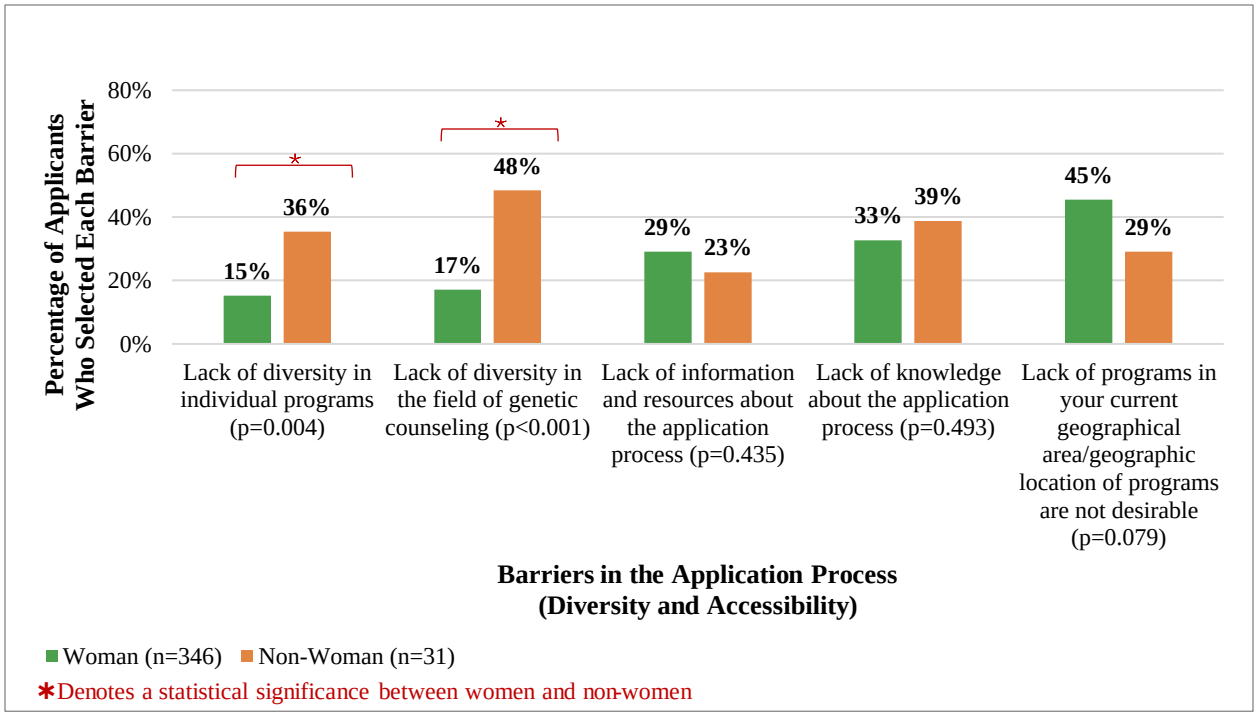

Figure 14b. Percentage of women and non-women who selected diversity and accessibility-related barriers in the application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

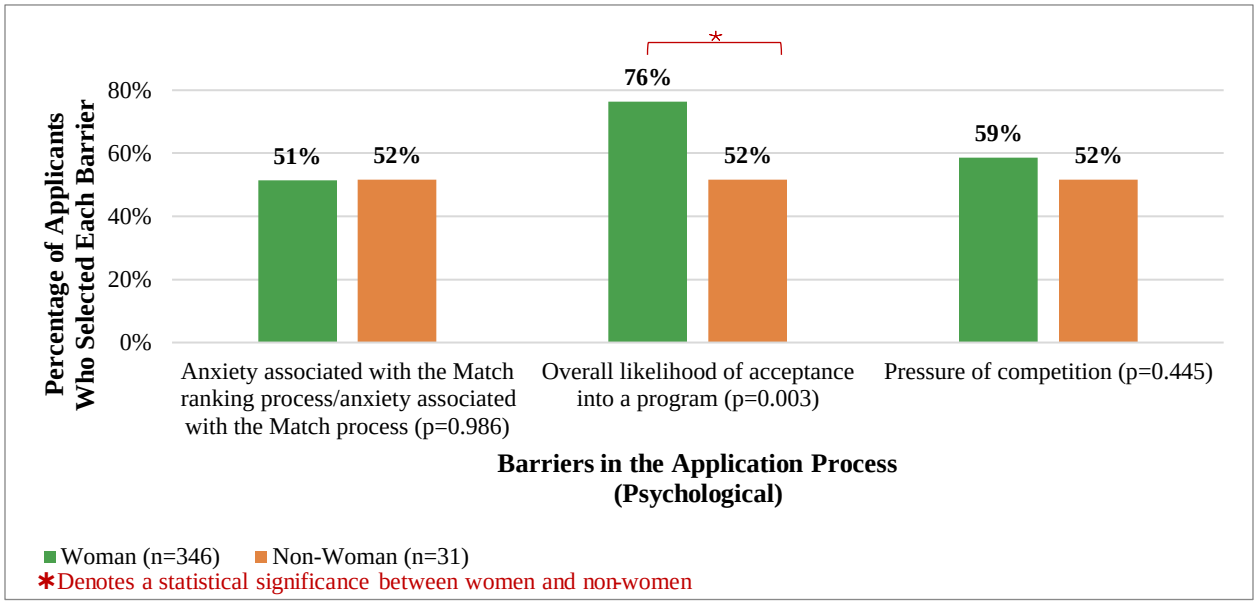

Figure 14c. Percentage of women and non-women who selected psychological barriers in the application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

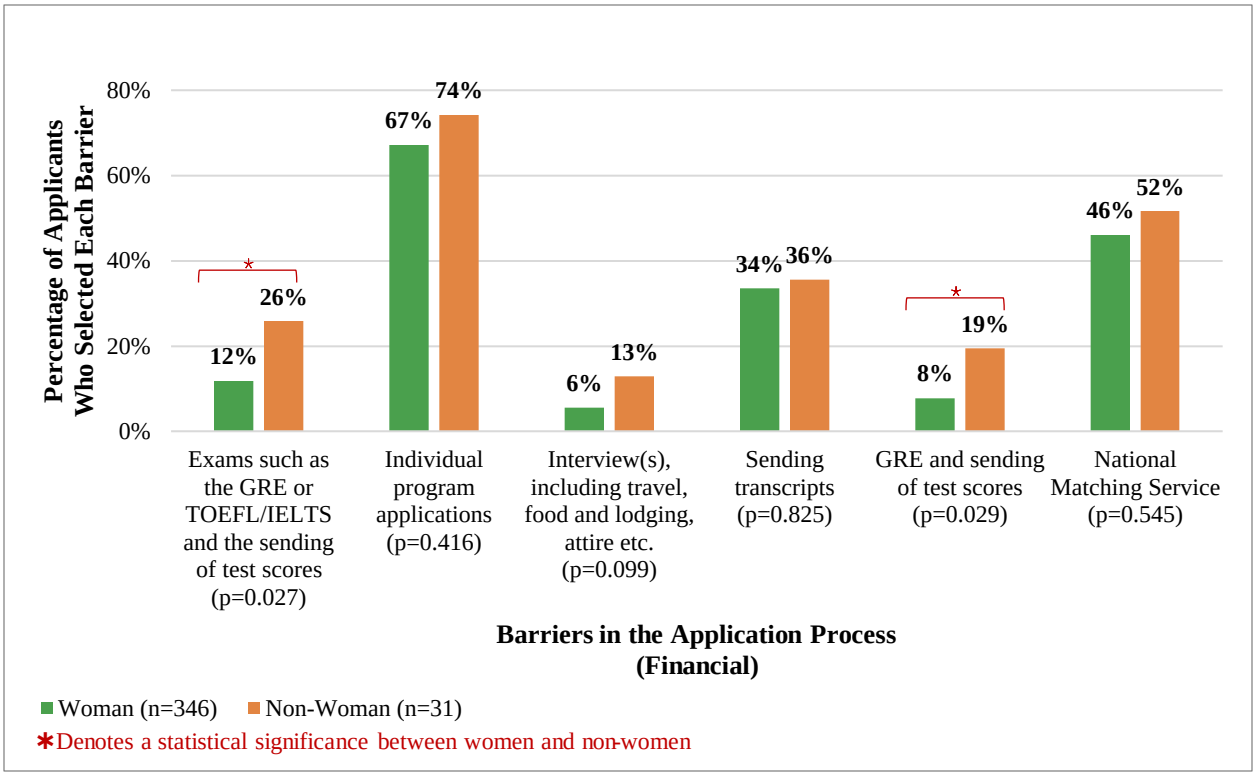

Figure 14d. Percentage of women and non-women who selected financial barriers in the application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

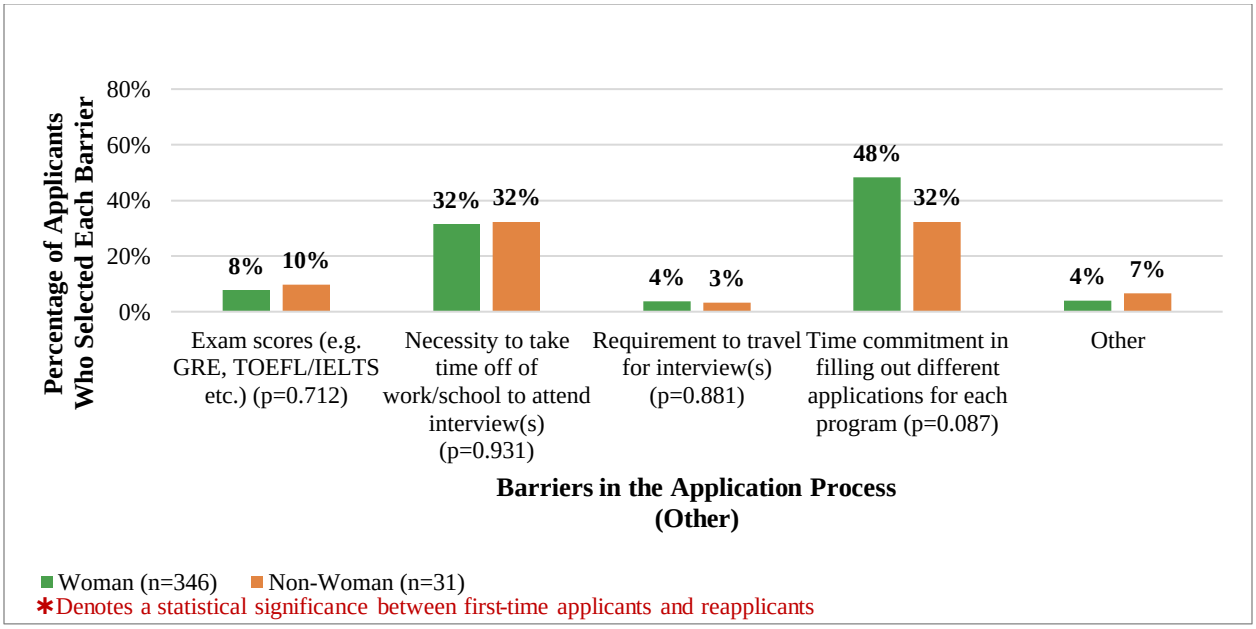

Figure 14e. Percentage of women and non-women who selected other barriers in the application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

3.4.5 Barriers in the Application Process – Stratified by Individuals With a Disability (N=52) and Without a Disability (N=313)

Figures 15a-e show the percentages of individuals with and without a disability who selected the various barriers in each category. When comparing the responses of these two subgroups, none of the 36 barriers were more likely to be selected by either group, including diversity related factors (p>0.05 for all comparisons).

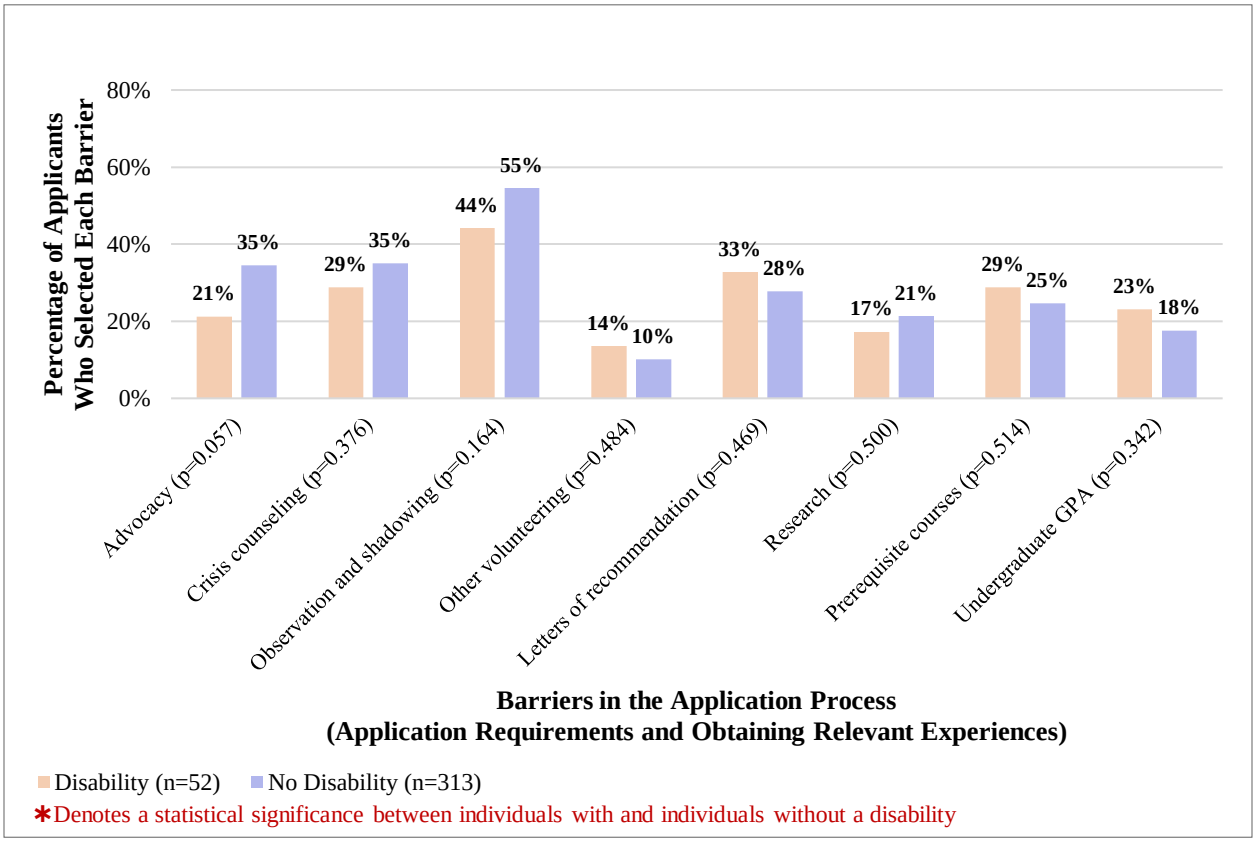

Figure 15a. Percentage of individuals with and without a disability who selected application requirements and obtaining relevant experiences as barriers in the application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

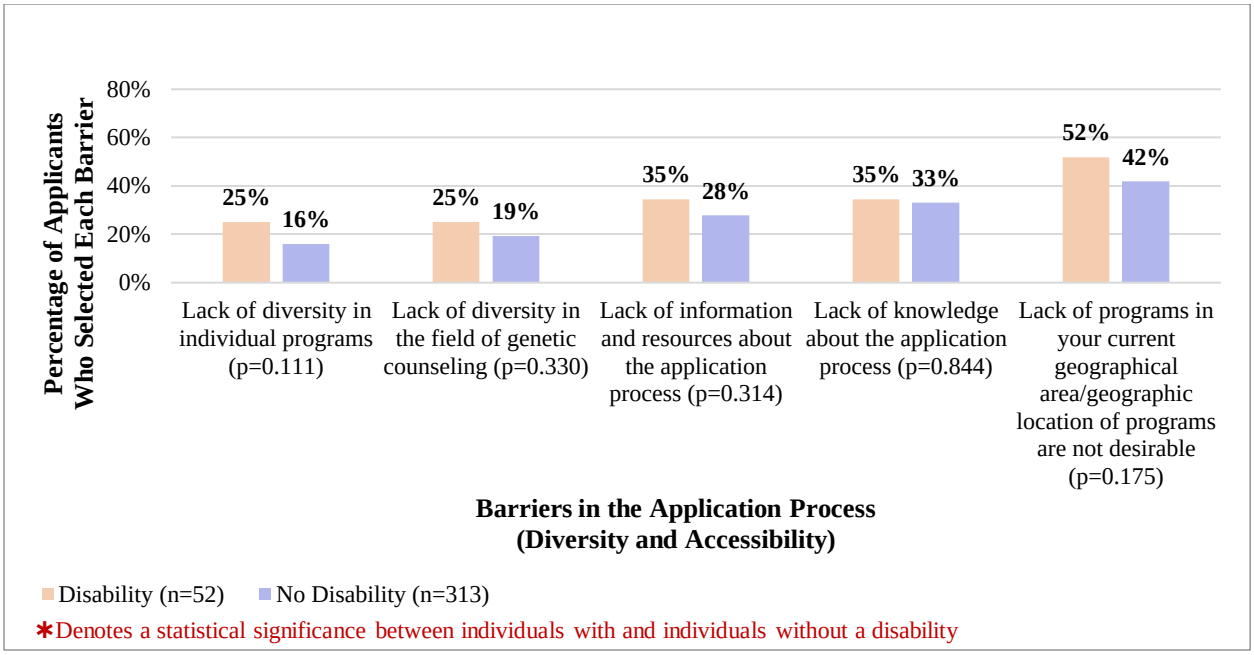

Figure 15b. Percentage of individuals with and without a disability who selected diversity and accessibility-related barriers in the application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

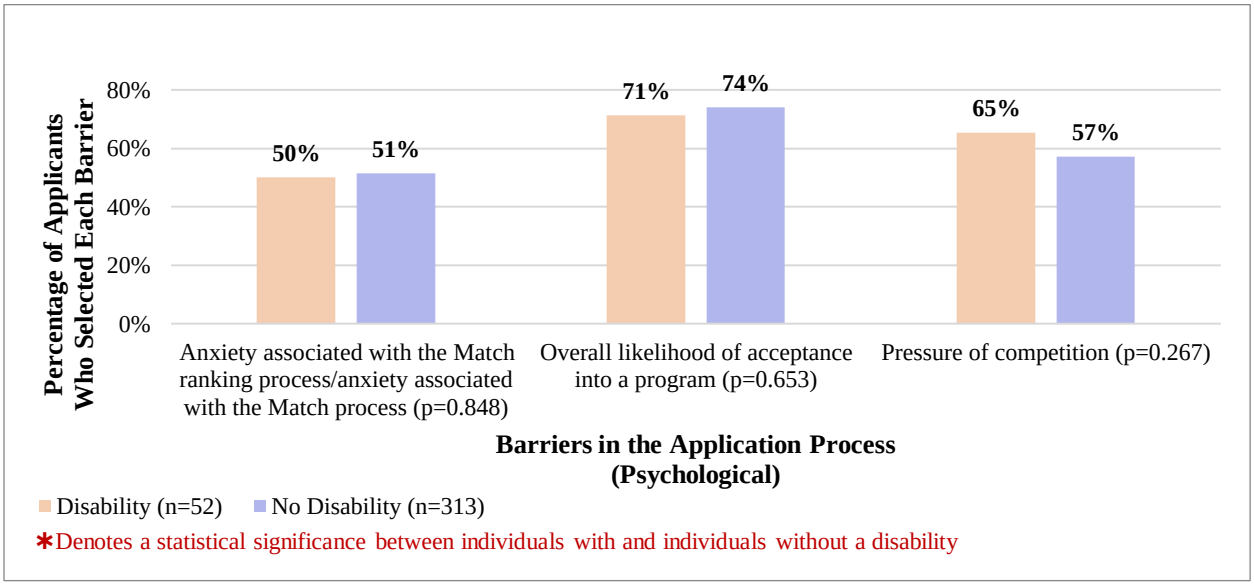

Figure 15c. Percentage of individuals with and without a disability who selected psychological barriers in the application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

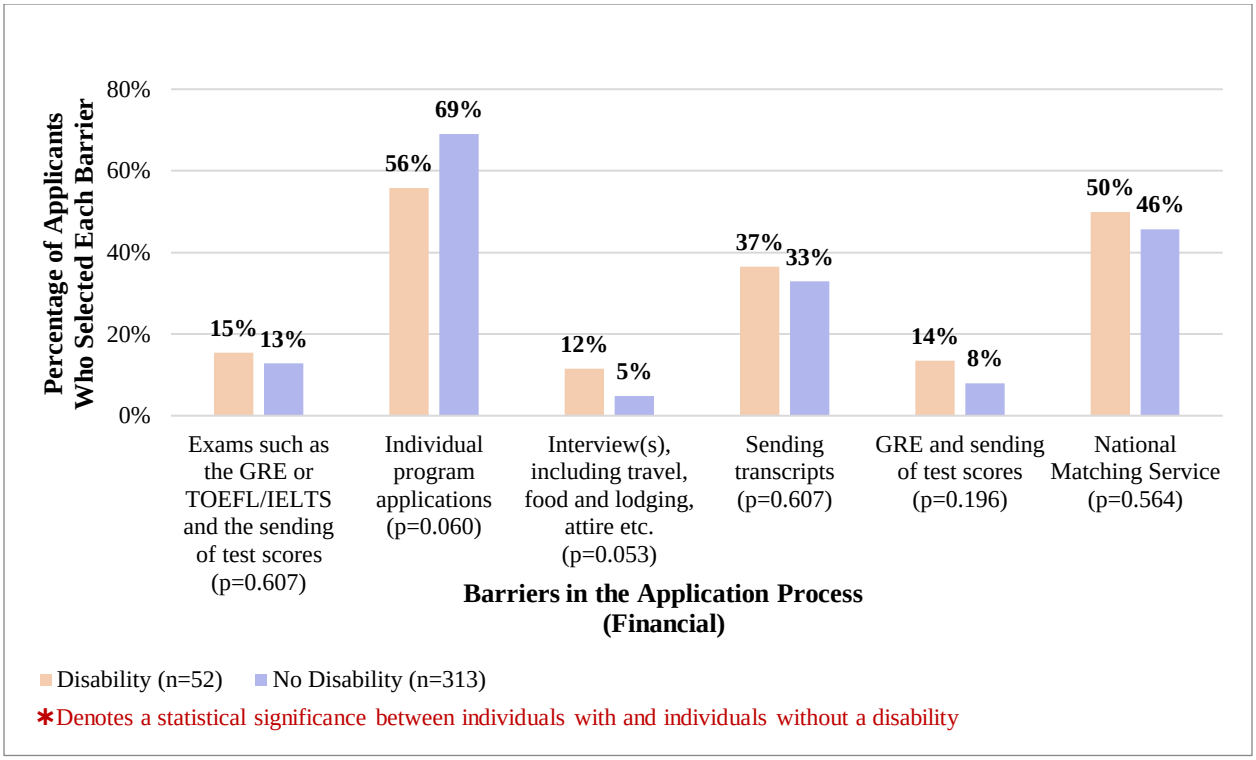

Figure 15d. Percentage of individuals with and without a disability who selected financial barriers in the application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

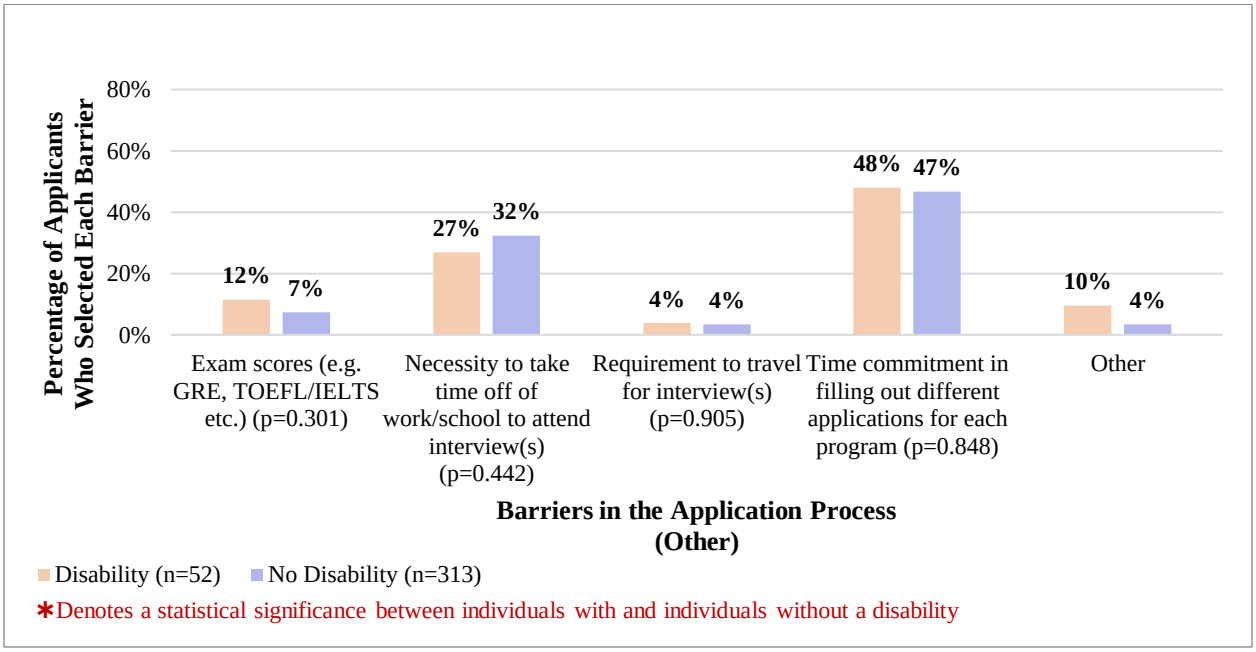

Figure 15e. Percentage of individuals with and without a disability who selected other barriers in the application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

3.4.6 Barriers in the Application Process – Stratified by First-Generation College Students (N=89) and Continuing-Generation College Students (N=288)

Figures 16a-e show the percentages of first-generation college students and continuing-generation college students who selected the various barriers in each category. Comparisons of the responses from these two subgroups found that financial factors, including costs associated with individual program applications ($p=0.005$), costs associated with the National Matching Service ($p<0.001$) and costs associated with the GRE and the sending of test scores ($p=0.008$) were barriers more frequently selected by first-generation college students. In addition, a lack of knowledge ($p<0.001$) and a lack of information and resources ($p=0.023$) about the application process and obtaining relevant letters of recommendation ($p=0.016$) were also barriers more frequently selected by first-generation college students. A lack of diversity in the field of genetic counseling ($p<0.001$) and in individual programs ($p=0.001$) were more likely to be selected as barriers for first-generation college students.

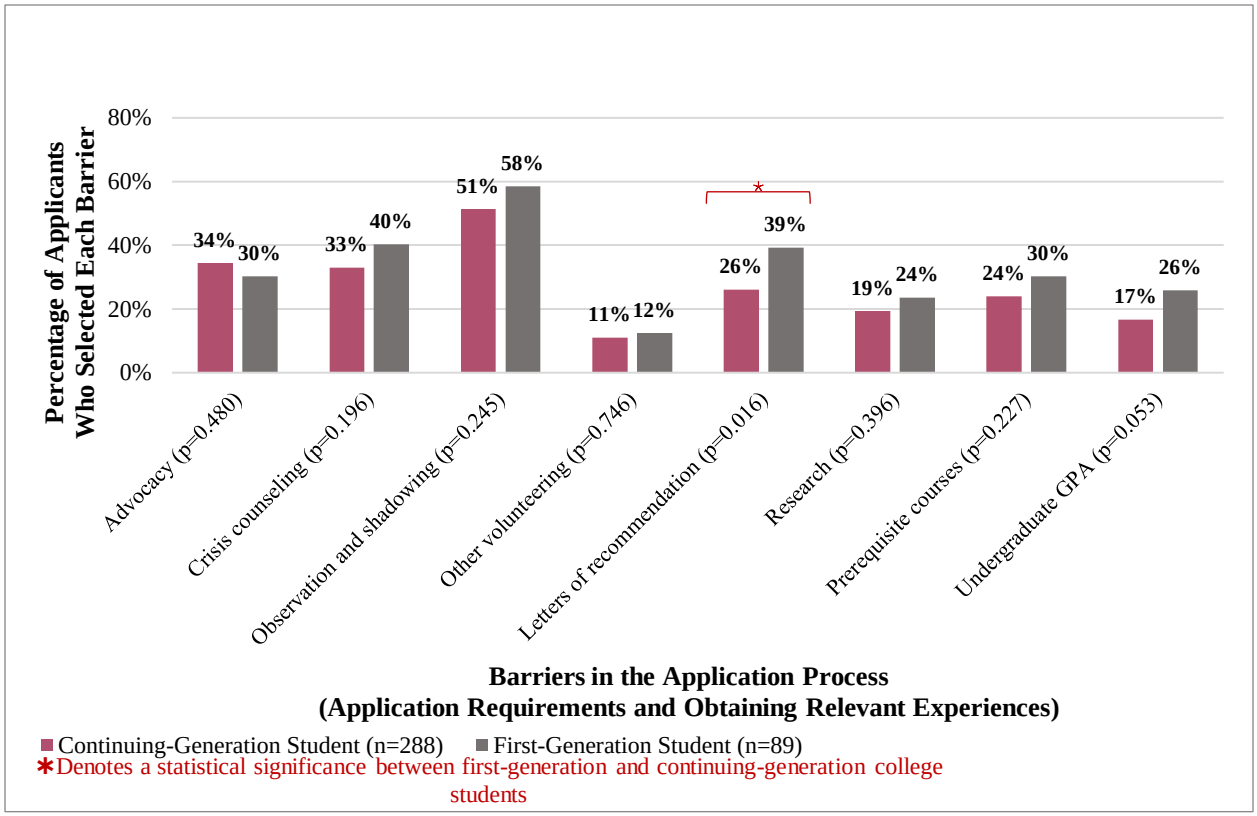

Figure 16a. Percentage of first-generation college students and continuing-generation college students who selected application requirements and obtaining relevant experiences as barriers in the application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

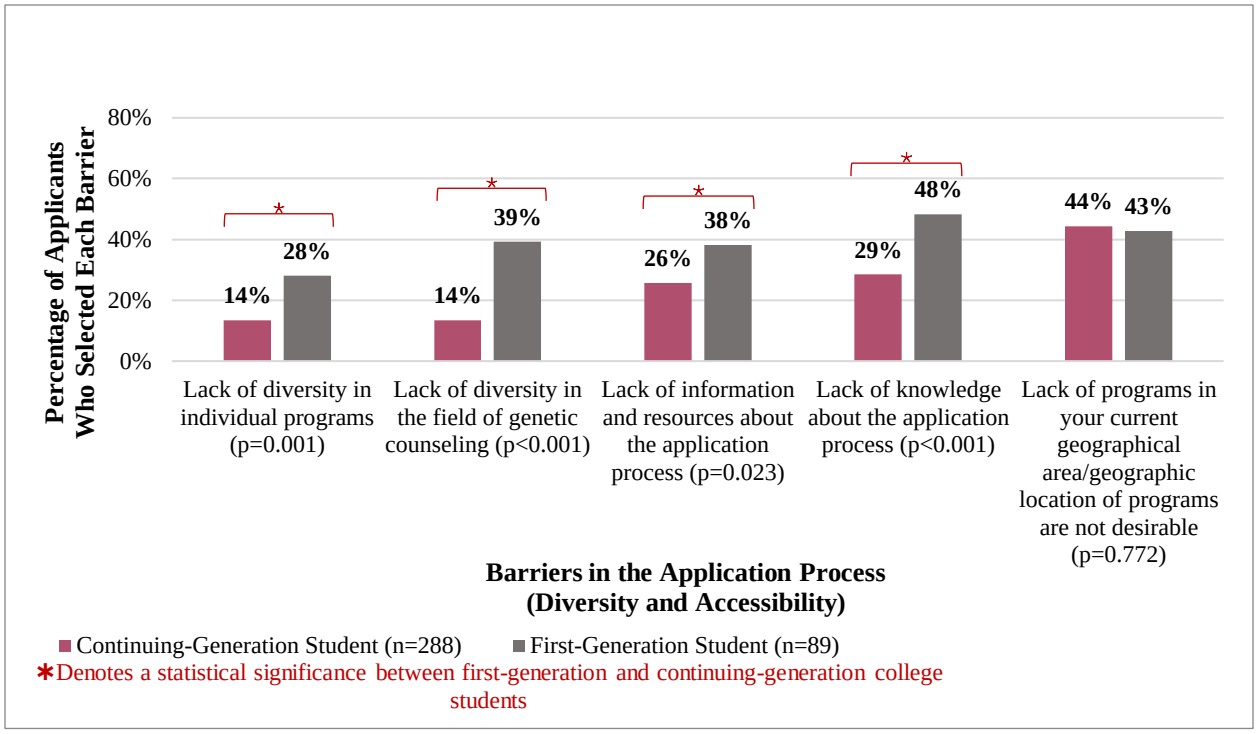

Figure 16b. Percentage of first-generation college students and continuing-generation college students who selected diversity and accessibility-related barriers in the application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

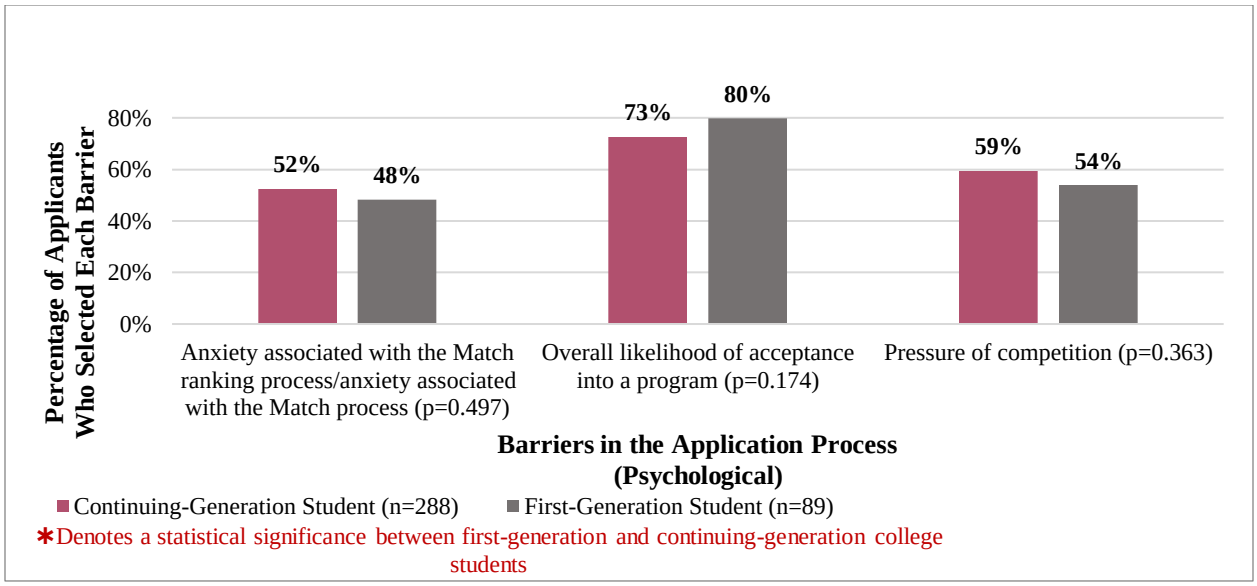

Figure 16c. Percentage of first-generation college students and continuing-generation college students who selected psychological barriers in the application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

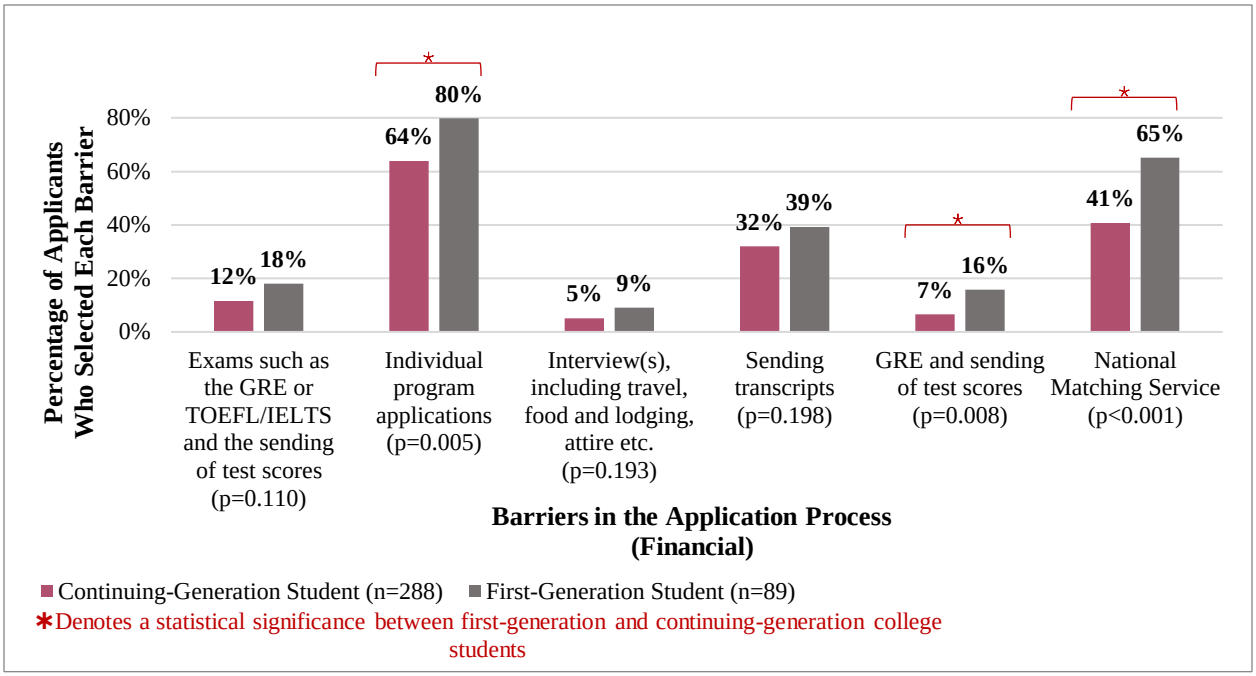

Figure 16d. Percentage of first-generation college students and continuing-generation college students who selected financial barriers in the application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

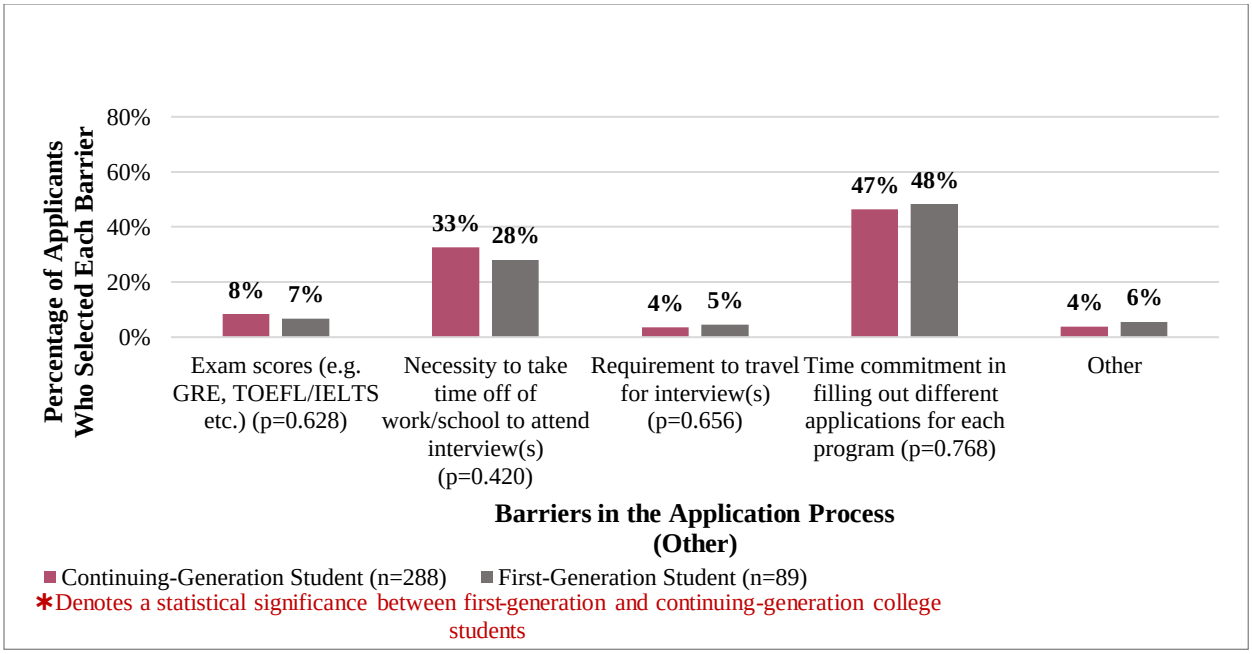

Figure 16e. Percentage of first-generation college students and continuing-generation college students who selected other barriers in the application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

3.4.7 Barriers in the Application Process – Stratified by White (N=254) and Non-White (N=116) Participants

Figures 17a-e show the percentages of White and non-White participants who selected the various barriers in each category. Comparisons of the responses from these two subgroups found non-White participants were more likely to report that undergraduate GPA ($p=0.003$), acted as a barrier in the application process. Diversity-related factors including a lack of diversity in the field of genetic counseling and a lack of diversity in individual programs were also barriers more frequently cited by non-White participants ($p<0.001$). The overall likelihood of acceptance into a program ($p=0.018$), the necessity to take time off work/school to attend interviews ($p=0.024$) and obtaining other volunteer experiences ($p=0.023$) were more likely to be selected as barriers by White participants.

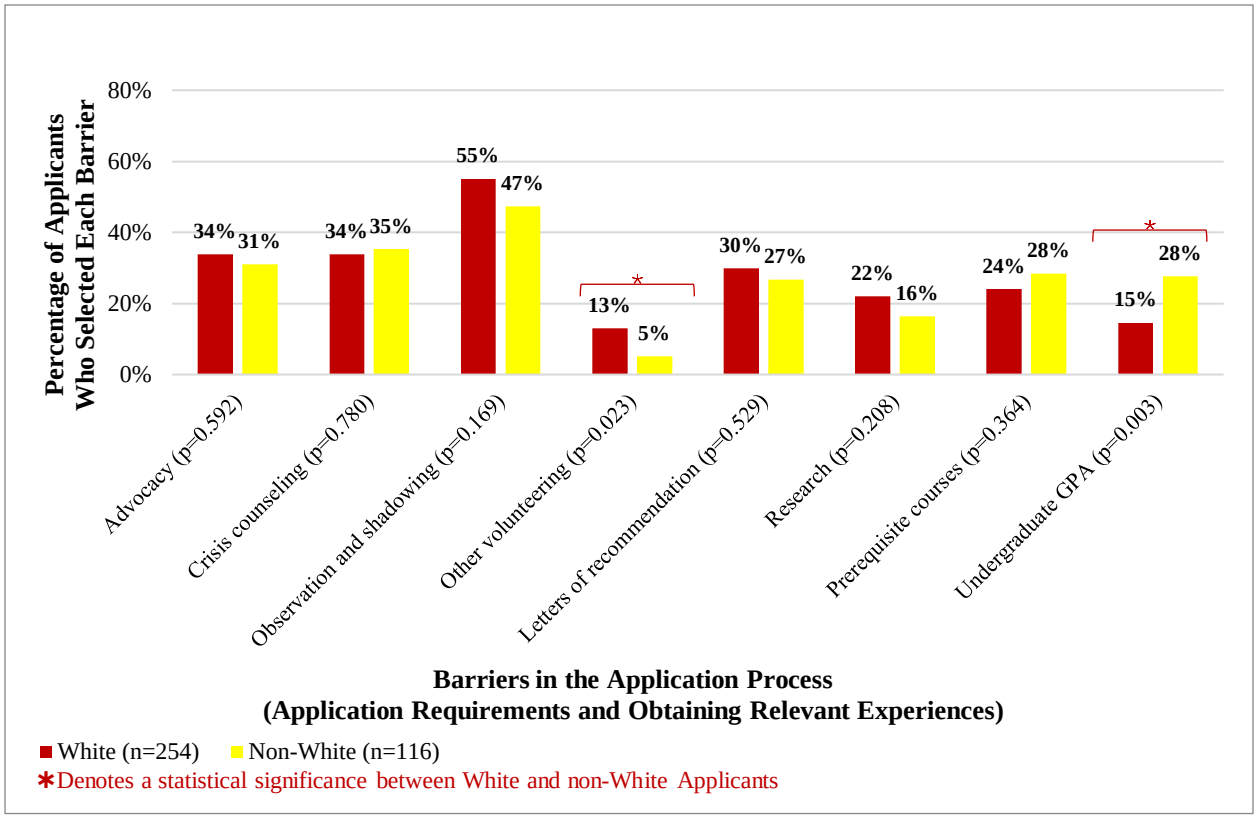

Figure 17a. Percentage of White and non-White individuals who selected application requirements and obtaining relevant experiences as barriers in the application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

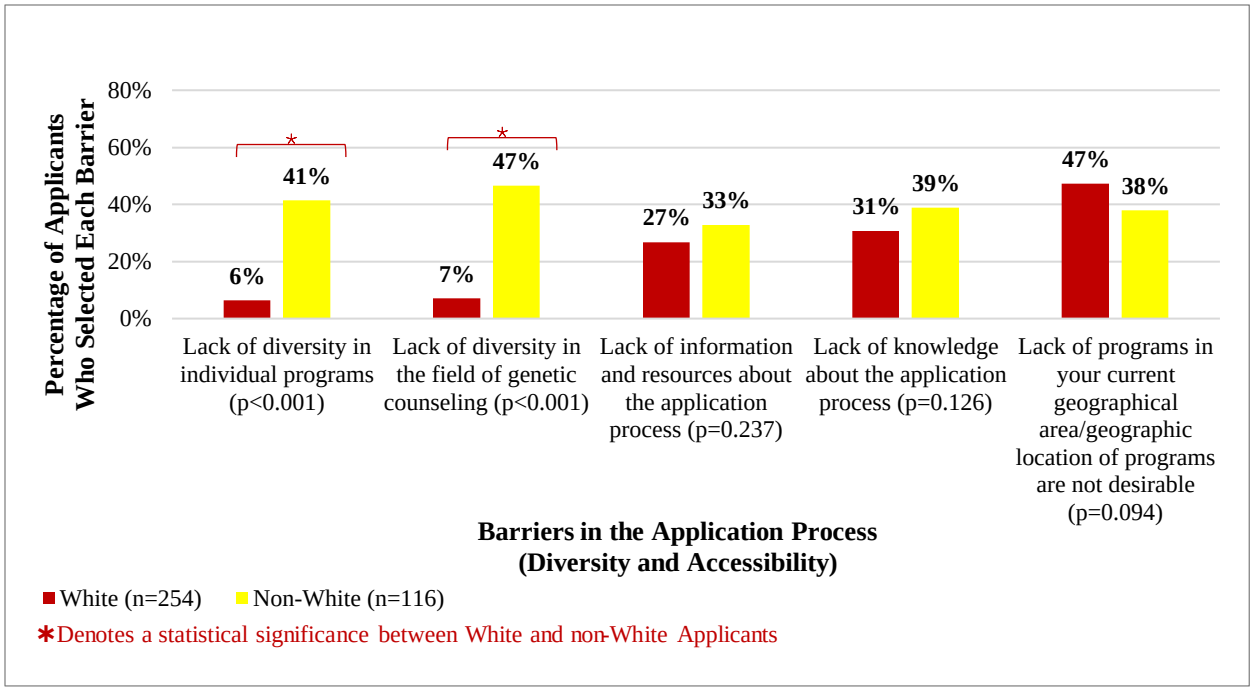

Figure 17b. Percentage of White and non-White individuals who selected diversity and accessibility-related barriers in the application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

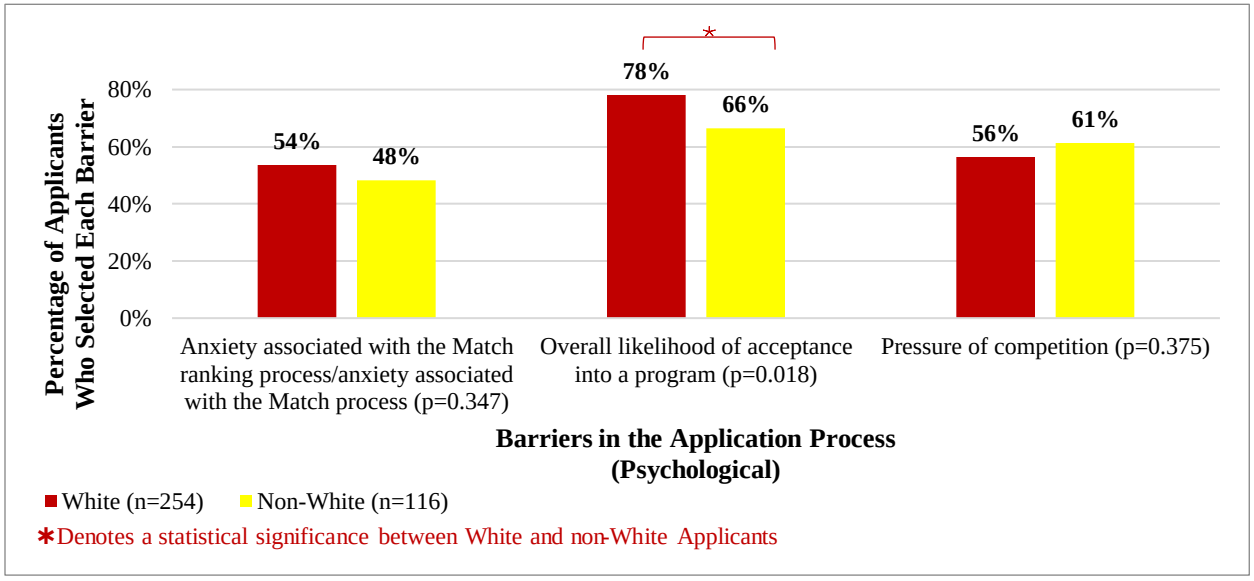

Figure 17c. Percentage of White and non-White individuals who selected psychological barriers in the application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

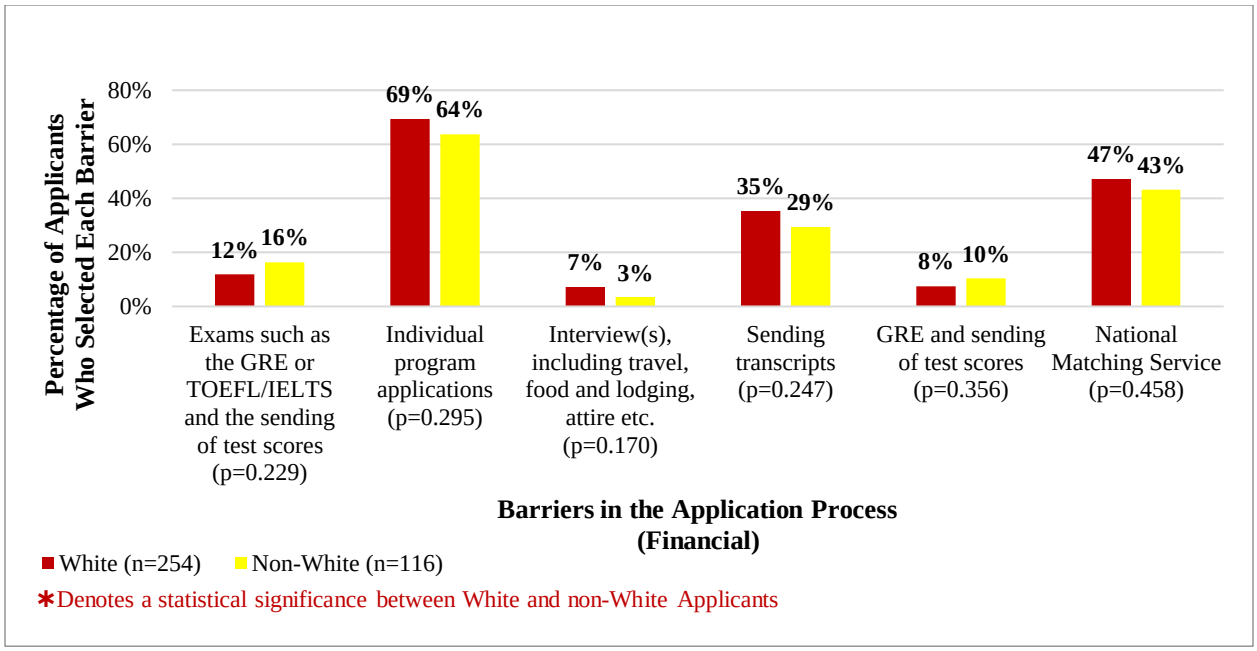

Figure 17d. Percentage of White and non-White individuals who selected financial barriers in the application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

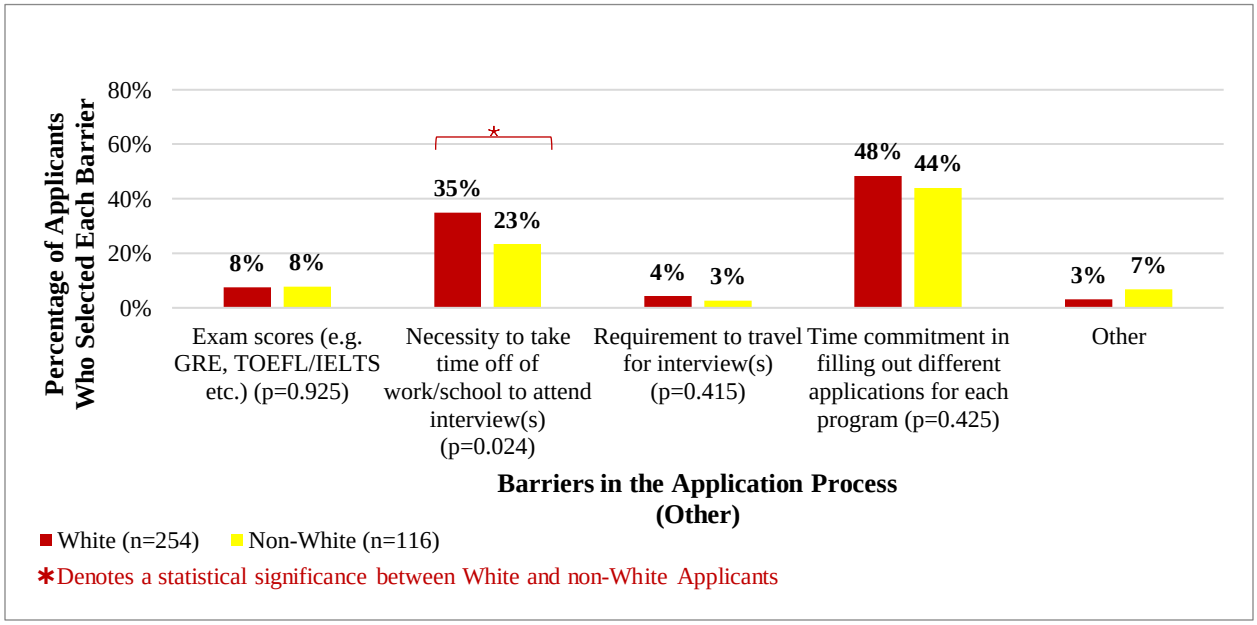

Figure 17e. Percentage of White and non-White individuals who selected other barriers in the application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

3.4.8 Barriers in the Application Process – Stratified by LGBTQ2IA+ Community Members (N=90) and non-LGBTQ2IA+ Community Members (N=274)

Figures 18a-e show the percentages of LGBTQ2IA+ and non-LGBTQ2IA+ community members who selected the various barriers in each category. Comparisons of the responses from these two subgroups found that diversity and accessibility-related factors including a lack of diversity in the field of genetic counseling (p=0.007), a lack of diversity in individual programs (p=0.031) and a lack of information and resources about the application process (p=0.001) were more likely to be selected by LGBTQ2IA+ participants as barriers in the application process. LGBTQ2IA+ participants also more frequently reported that anxiety associated with the Match ranking process/anxiety associated with the Match process (p=0.024) and costs associated with individual program applications (p=0.025) acted as barriers.

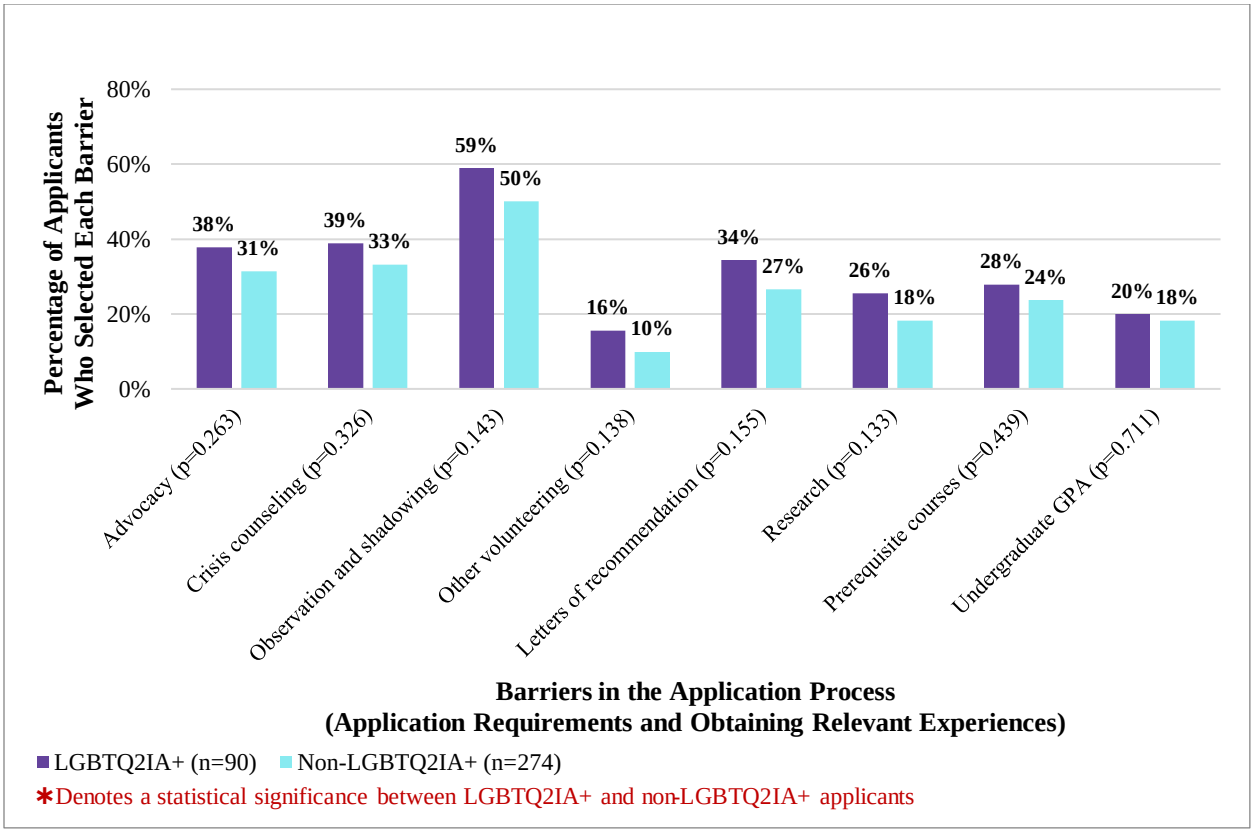

Figure 18a. Percentage of LGBTQ2IA+ community members and non-LGBTQ2IA+ community members who selected application requirements and obtaining relevant experiences as barriers in the application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

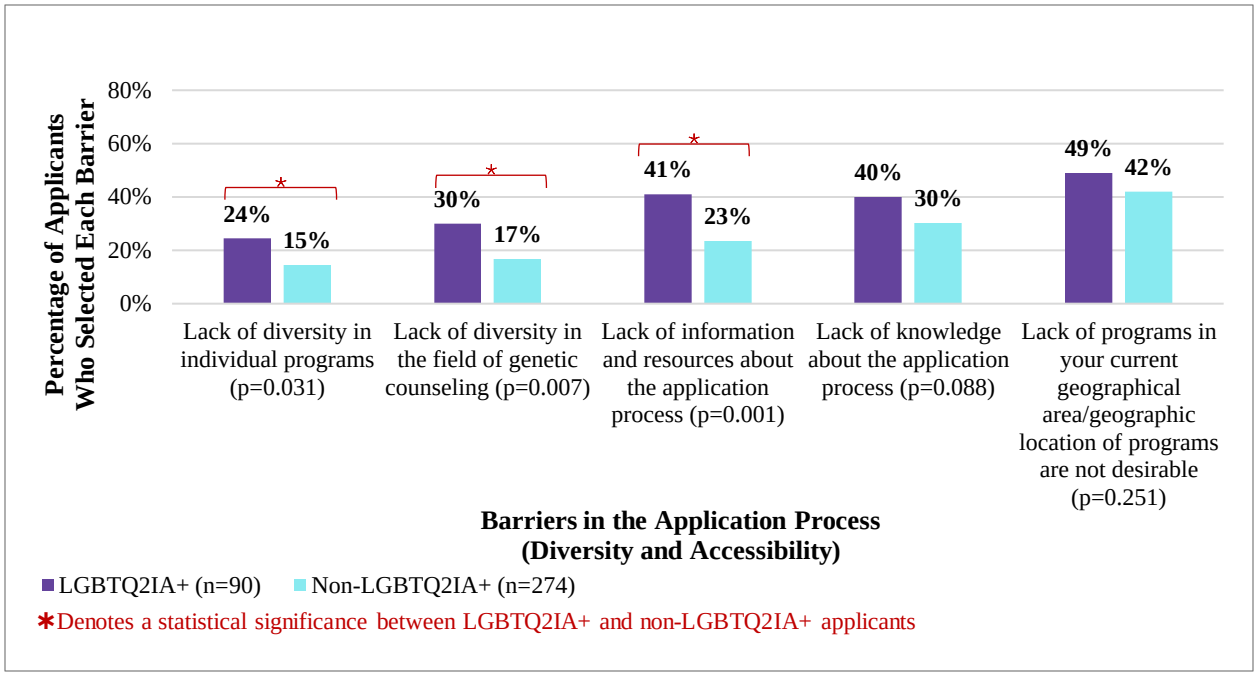

Figure 18b. Percentage of LGBTQ2IA+ community members and non-LGBTQ2IA+ community members who selected diversity and accessibility-related barriers in the application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

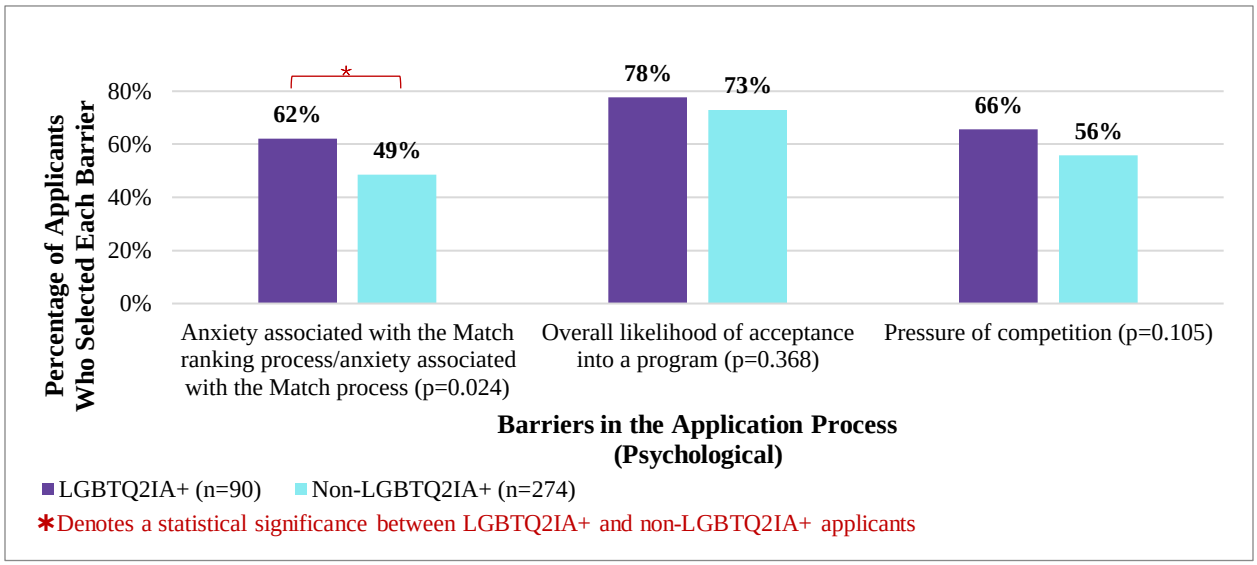

Figure 18c. Percentage of LGBTQ2IA+ community members and non-LGBTQ2IA+ community members who selected psychological barriers in the application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

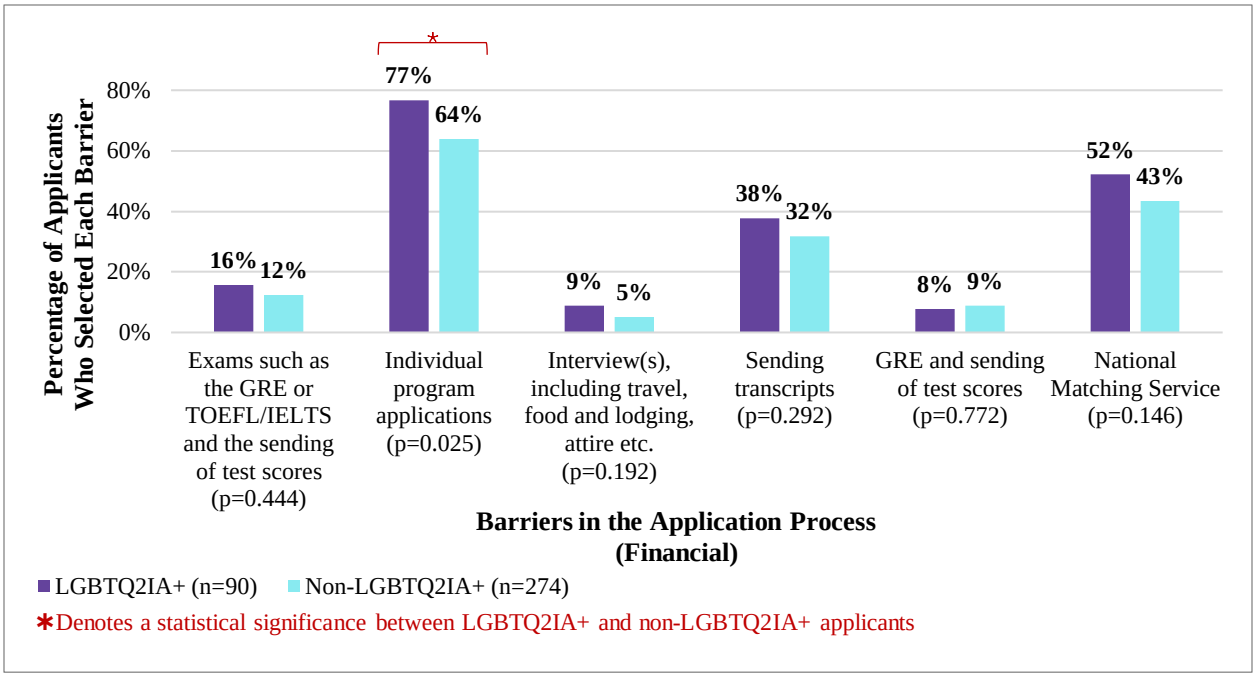

Figure 18d. Percentage of LGBTQ2IA+ community members and non-LGBTQ2IA+ community members who selected financial barriers in the application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

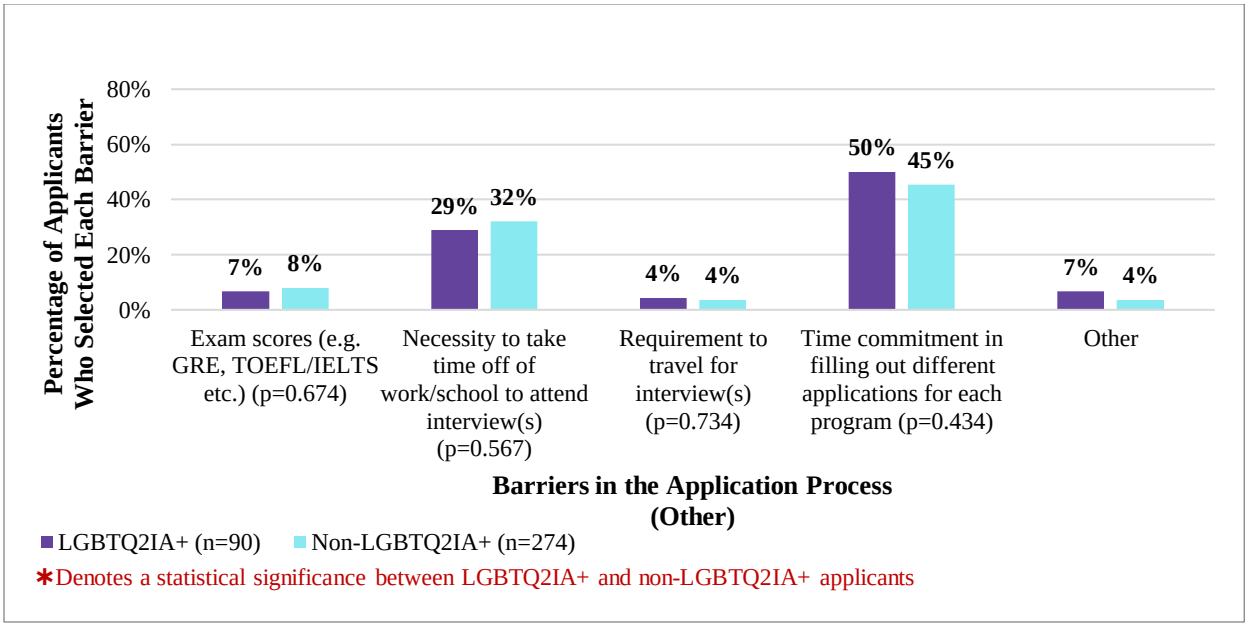

Figure 18e. Percentage of LGBTQ2IA+ community members and non-LGBTQ2IA+ community members who selected other barriers in the application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

3.5.1 Factors Affecting the Overall Application Experience - All Participants (N=377)

Table 8 summarizes the factors affecting the overall application experience across all applicants and their selection frequencies. Factors were categorized into five categories: diversity and accessibility, finances, interviews, program interactions and other. Figures 19a-e show the percentages of all applicants who selected the various factors in each category. Out of all 18 factors, the most selected factor influencing participants' application experience was the overall likelihood of acceptance into a program (n=242, 64%). This was followed by the costs associated with individual program applications, which was selected by 183 participants (49%). Additional factors influencing the application experience included interactions with program faculty (n=169, 45%) and current students (n=146, 39%), the time commitment in filling out different applications for each program (n=146, 39%), the Match ranking process/the Match process overall (n=130, 35%), knowledge about the application process (n=92, 24.4%) and information and resources about the application process (n=130, 35%). Infrequently selected factors influencing the application experience included costs associated with exams such as the GRE or TOEFL/IELTS and the sending of test scores (n=14, 4%), costs associated with interviews (n=15, 4%), taking time off school/work to attend interviews (n=75, 20%) and the requirement to travel for interviews (n=5, 1%). A lack of diversity in the field of genetic counseling (n=40, 11%) and a lack of diversity in individual programs (n=36, 10%) were also selected by less than 15% of participants.

Table 8. Factors affecting the overall application experience for all participants.

	Factor*	N=377	Percent (%)
Diversity and Accessibility	Information and resources about the application process	137	36
	Knowledge about the application process	130	35
	Lack of diversity in individual programs	36	10
	Lack of diversity in the field of genetic counseling	40	11
Financial	Sending transcripts	62	16
	Exams such as the GRE or TOEFL/IELTS and the sending of test scores	14	4
	National Matching Service	101	27
	Interview(s), including travel, food and lodging, attire etc.	15	4
	Individual program applications	183	49
Interviews	Requirement to travel for interview(s)	5	1
	Taking time off of work/school to attend interview(s)	75	20
Program Interactions	Interaction with alumni	73	19
	Interaction with current students	146	39
	Interaction with program faculty	169	45
Other	The Match ranking process/the Match process overall	130	35
	Overall likelihood of acceptance into a program	242	64
	Program website	87	23
	Time commitment in filling out different applications for each program	146	39
	Other[1]	17	5

A darker green color in cells indicates a higher number and percentage of participants who selected a factor. A lighter green color in cells indicates a lower number and percentage of participants who selected a factor.
*Participants could select more than one factor
[1]A table with a full summary of free text responses and their frequencies can be found in Appendix H.

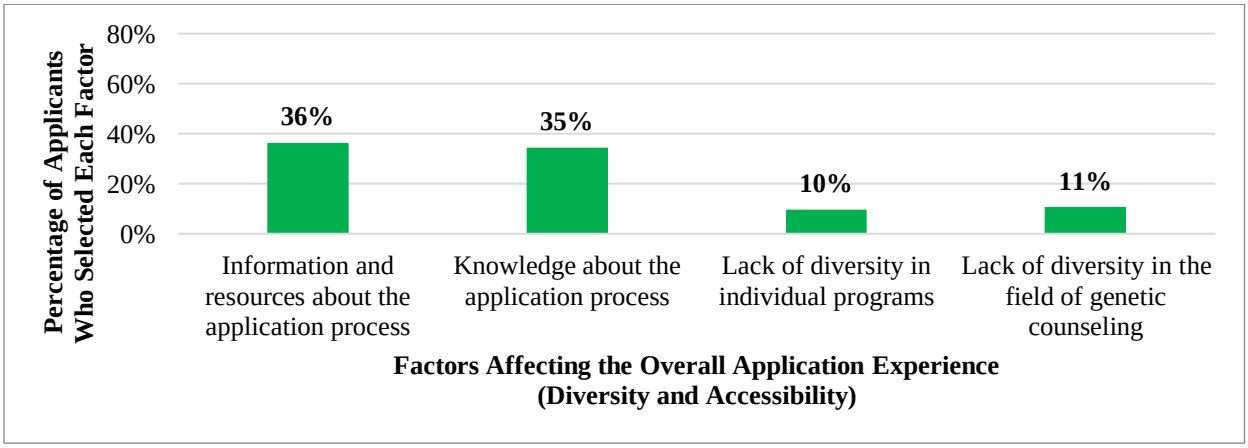

Figure 19a. Percentage of applicants who selected diversity and accessibility-related factors as influencing their overall application experience. Participants could select more than one factor.

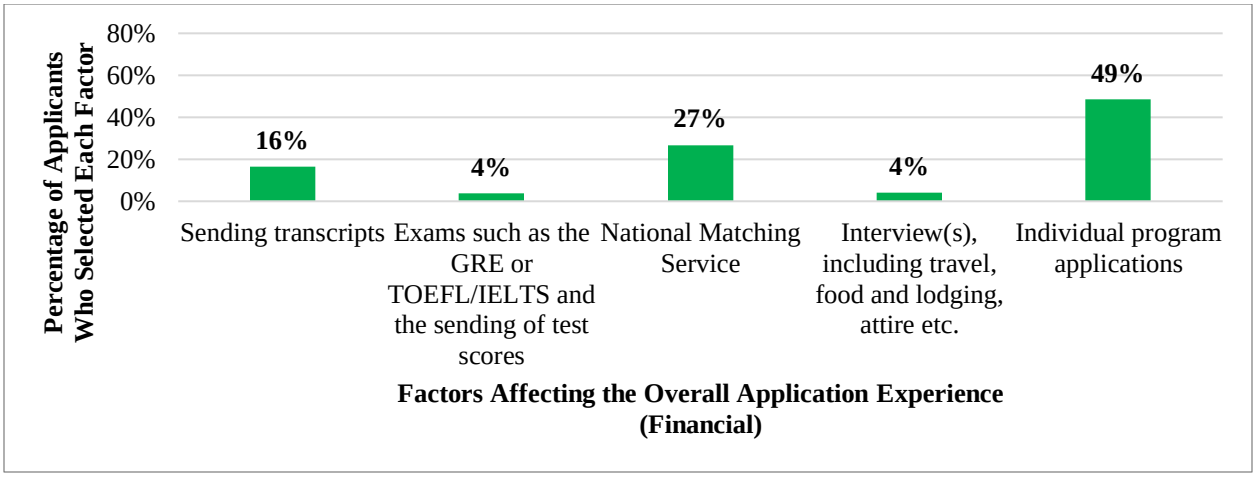

Figure 19b. Percentage of applicants who selected financial factors as influencing their overall application experience. Participants could select more than one factor.

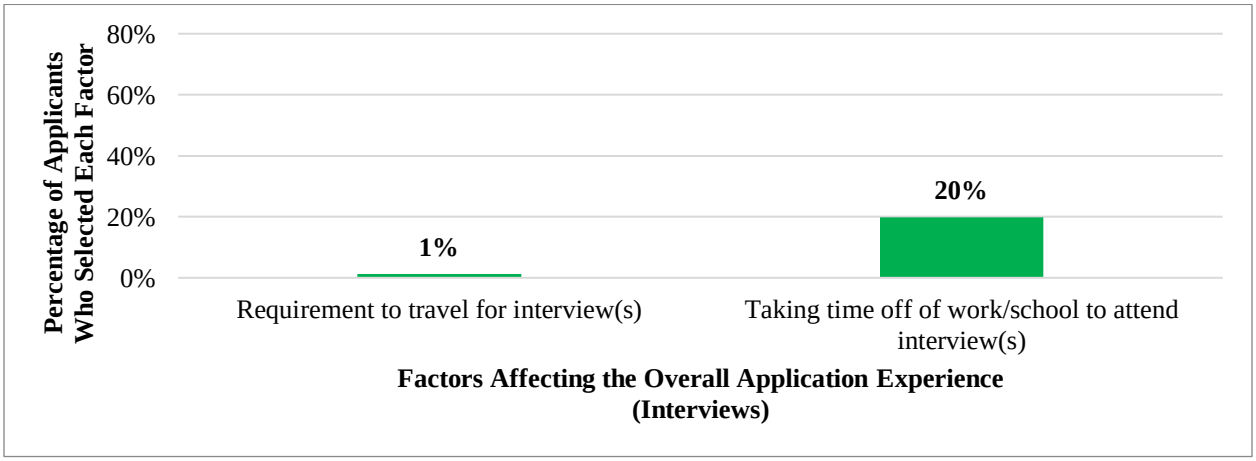

Figure 19c. Percentage of applicants who selected interview-related factors as influencing their overall application experience. Participants could select more than one factor.

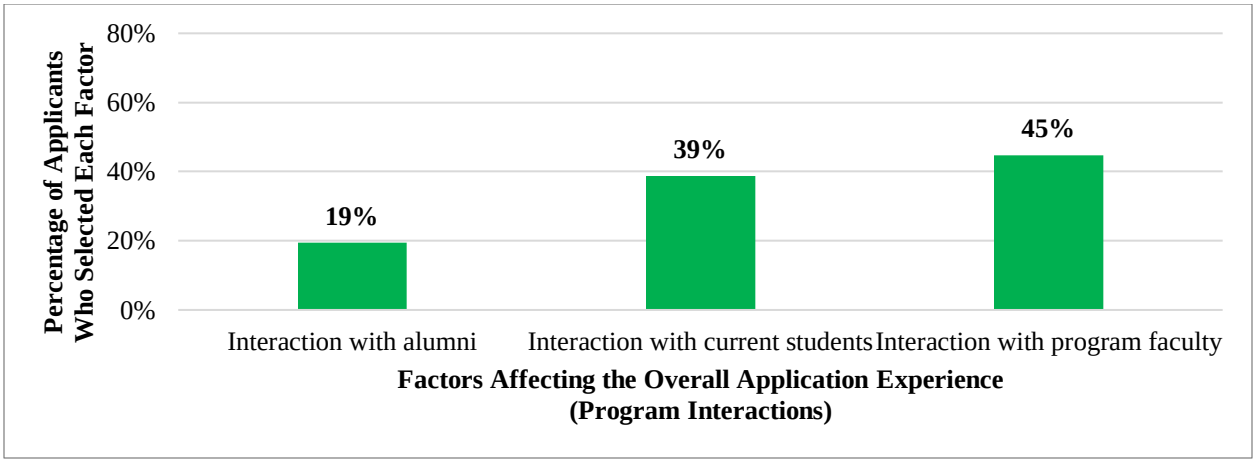

Figure 19d. Percentage of applicants who selected program interaction-related factors as influencing their overall application experience. Participants could select more than one factor.

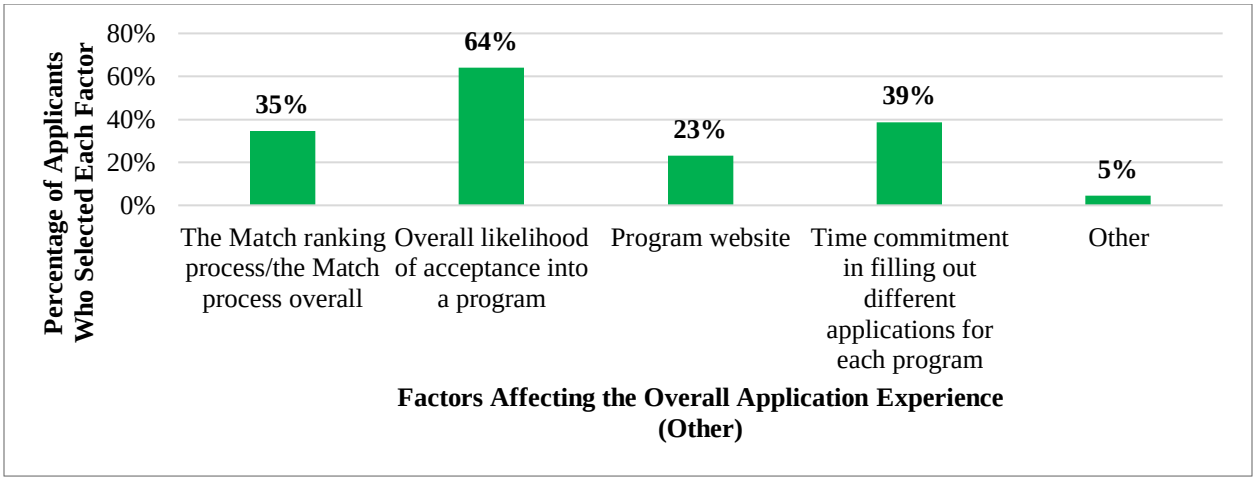

Figure 19e. Percentage of applicants who selected other factors as influencing their overall application experience. Participants could select more than one factor.

3.5.2 Factors Affecting the Overall Application Experience – Stratified by 2021-2023 Matched (N=113) and Unmatched (N=155) Participants

Figures 20a-e show the percentages of matched and unmatched participants who selected the various factors affecting the overall application experience in each category. Comparisons of the responses from these two subgroups found that some financial factors, including costs associated with individual program applications (p=0.039), the National Matching Service (p=0.015) and sending transcripts (p=0.048) were more likely to affect the overall application experience of unmatched participants. The overall likelihood of acceptance into a program was

also reported more frequently by unmatched participants as a factor influencing the overall application experience (p=0.046). In contrast, interaction with program faculty and current students was more likely to be selected by matched participants (p<0.001). Costs associated with exams such as the GRE or TOEFL/IELTS and the sending of test scores was also reported more frequently by matched participants as a factor influencing their overall application experience (p=0.043).

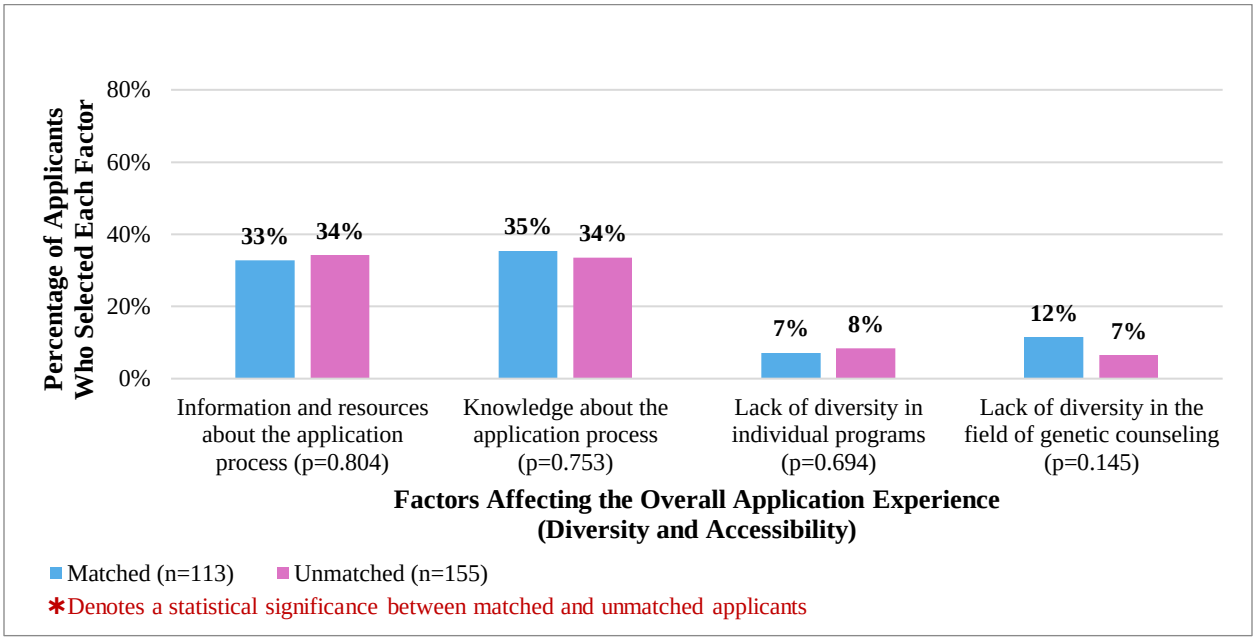

Figure 20a. Percentage of matched and unmatched applicants who selected diversity and accessibility-related factors as influencing their overall application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

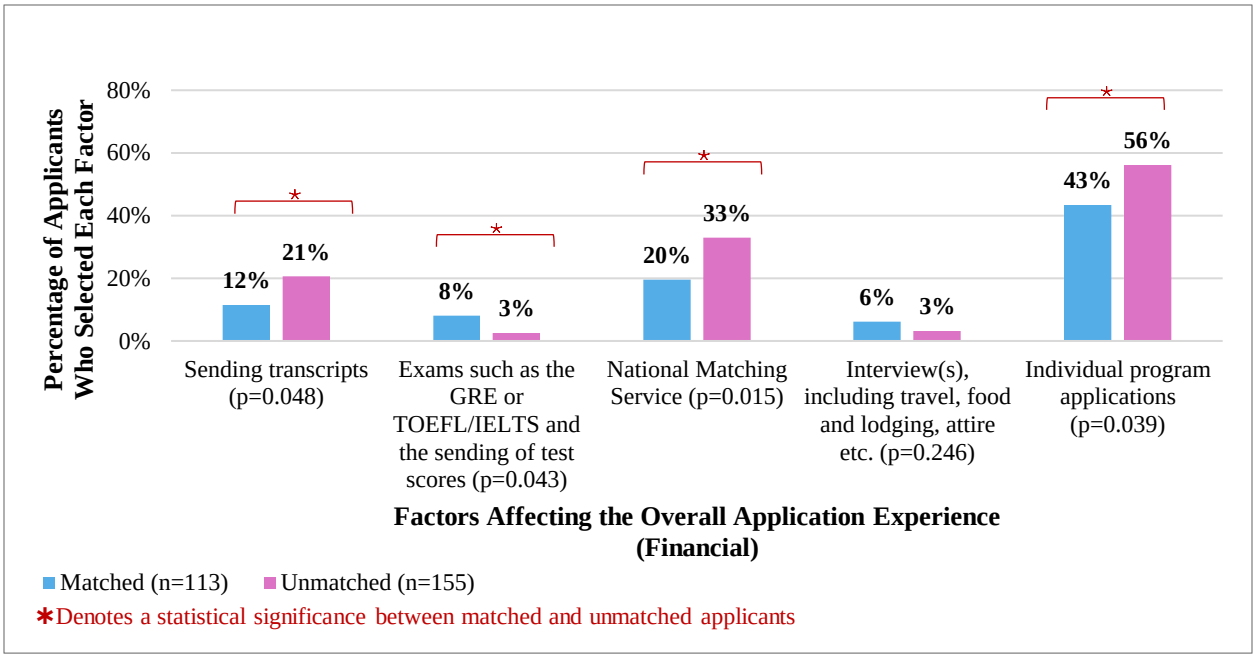

Figure 20b. Percentage of matched and unmatched applicants who selected financial factors as influencing their overall application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

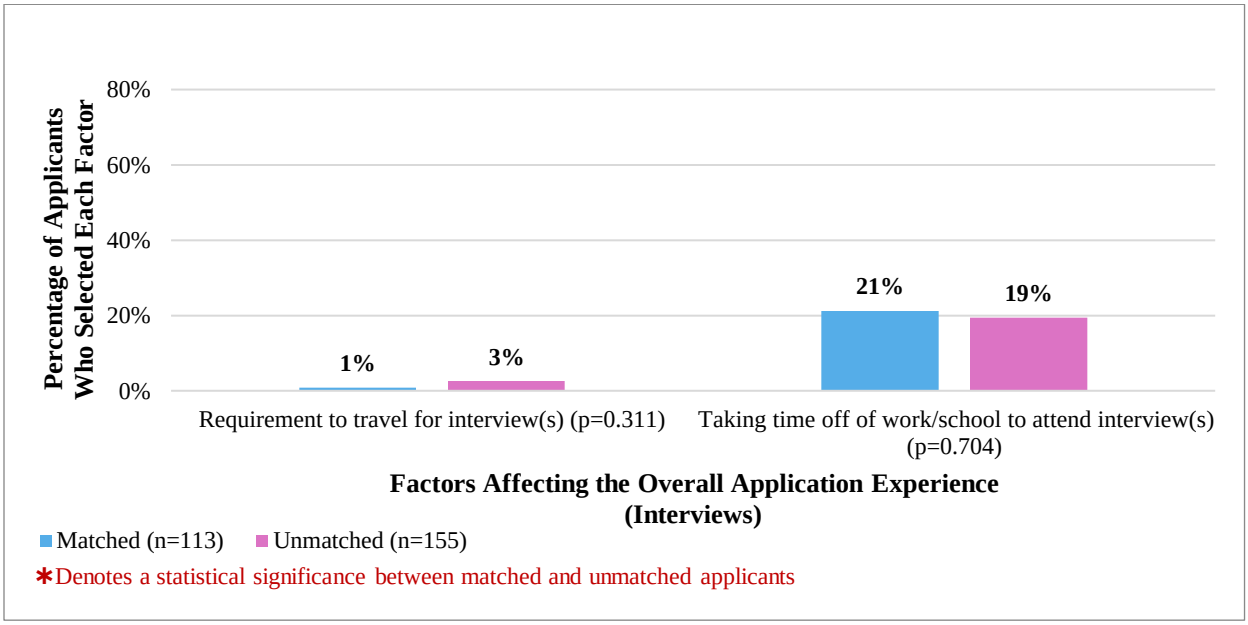

Figure 20c. Percentage of matched and unmatched applicants who selected interview-related factors as influencing their overall application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

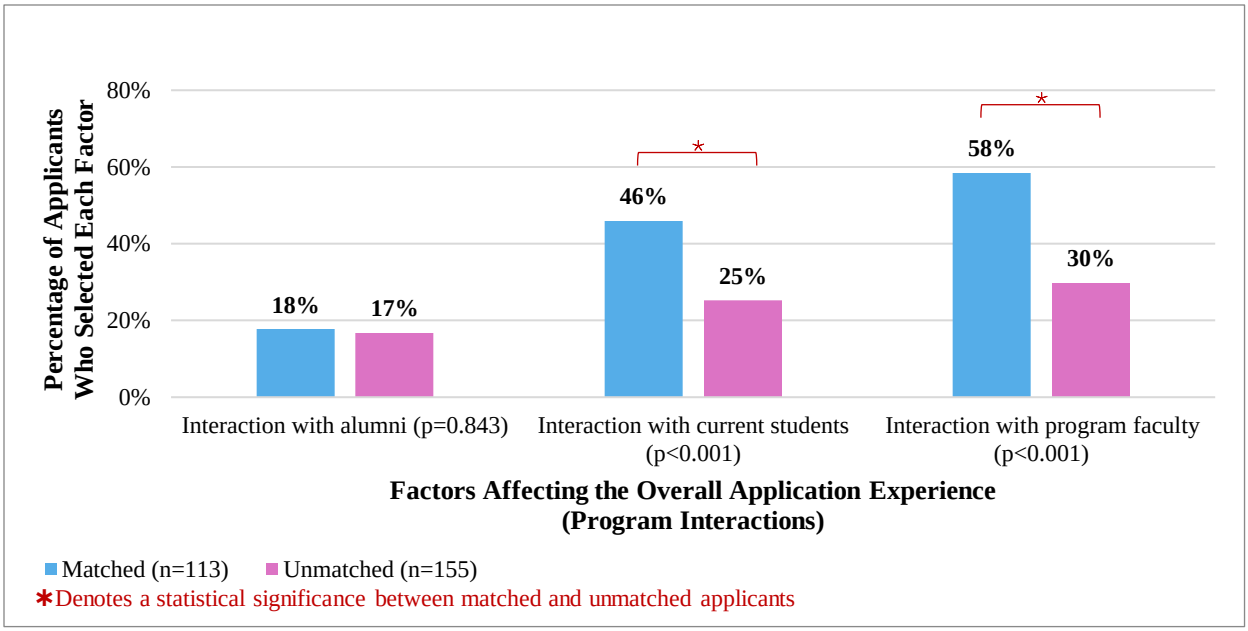

Figure 20d. Percentage of matched and unmatched applicants who selected program interaction-related factors as influencing their overall application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

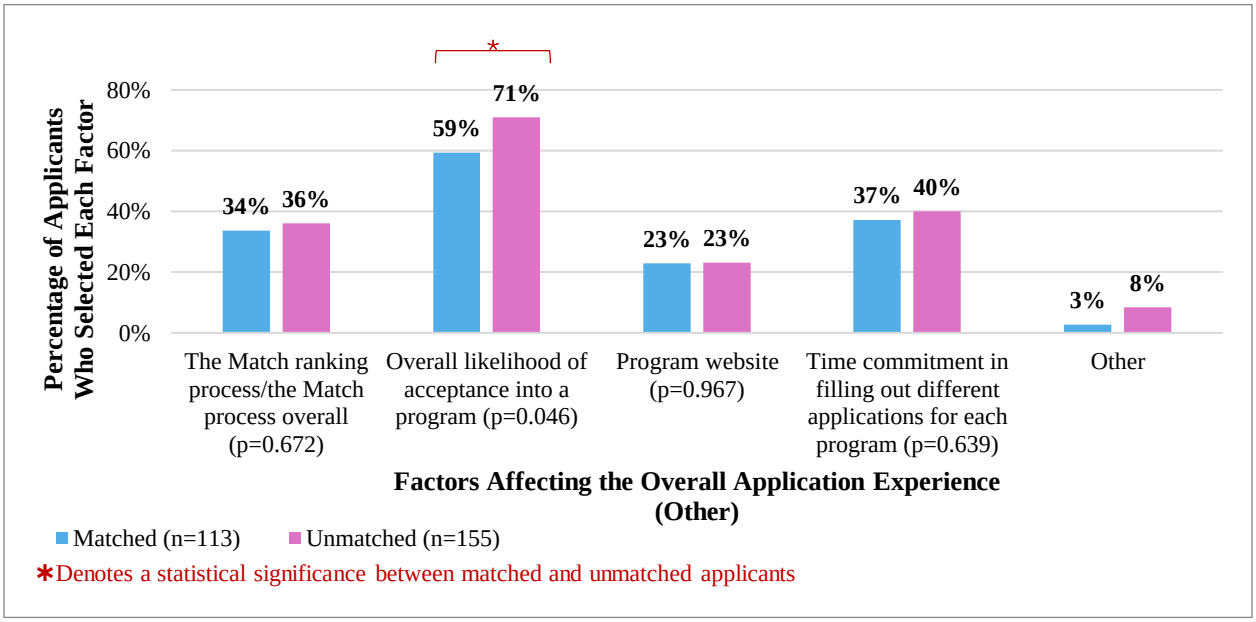

Figure 20e. Percentage of matched and unmatched applicants who selected other factors as influencing their overall application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

3.5.3 Factors Affecting the Overall Application Experience – Stratified by 2022/2023 First-Time Applicants (N=164) and Reapplicants (N=59)

Figures 21a-e show the percentages of 2022/2023 first-time applicants and reapplicants who selected the various factors affecting the overall application experience in each category. Comparisons of the responses from these two subgroups found that reapplicants were more likely to report interaction with program faculty as having an influence on their overall application experience (p=0.033). Interaction with current students, knowledge about the application process, information and resources about the application process and financial factors were not more likely to be selected by either subgroup as factors influencing their application experience (p>0.05 for all comparisons).

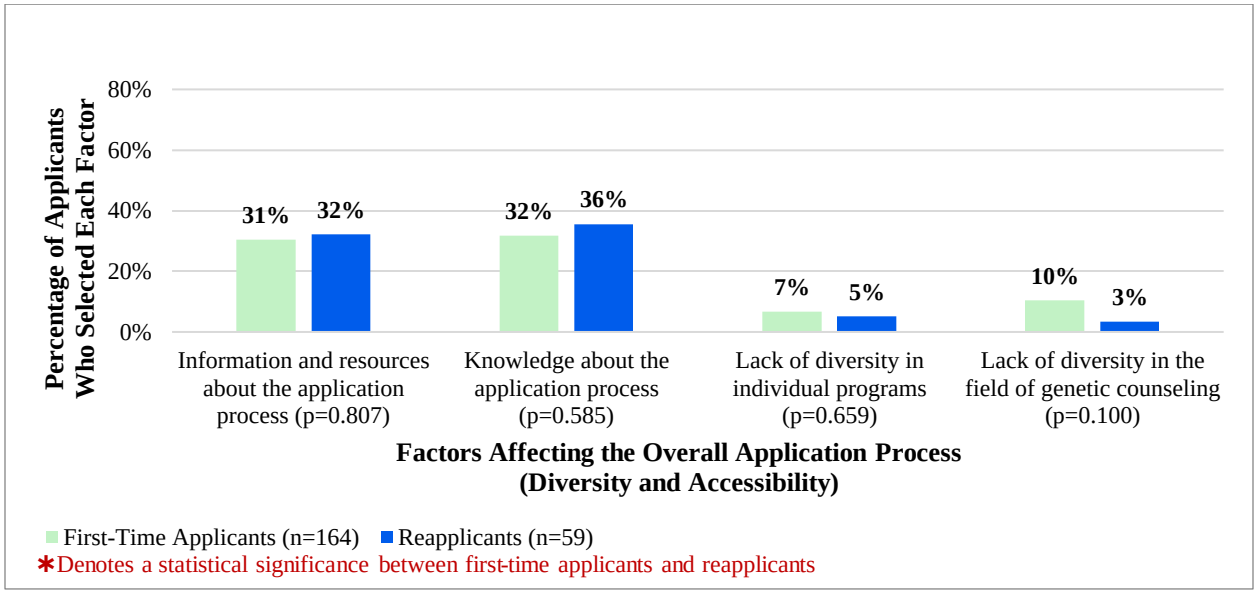

Figure 21a. Percentage of first-time applicants and reapplicants who selected diversity and accessibility-related factors as influencing their overall application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

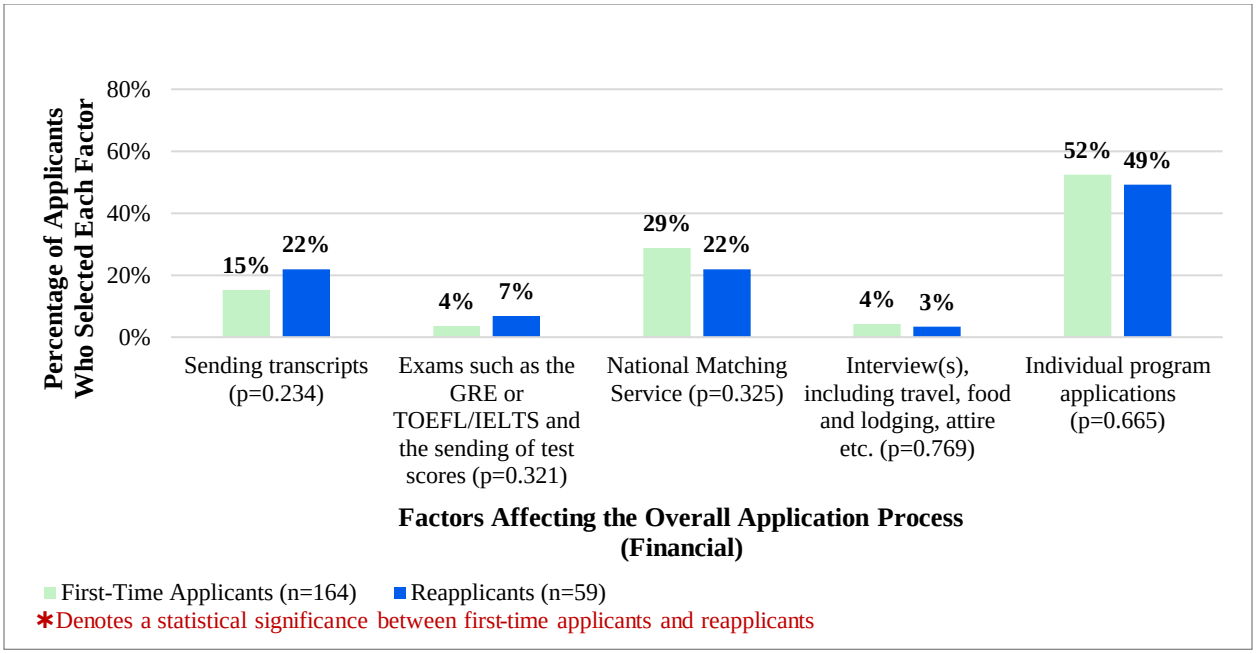

Figure 21b. Percentage of first-time applicants and reapplicants who selected financial factors as influencing their overall application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

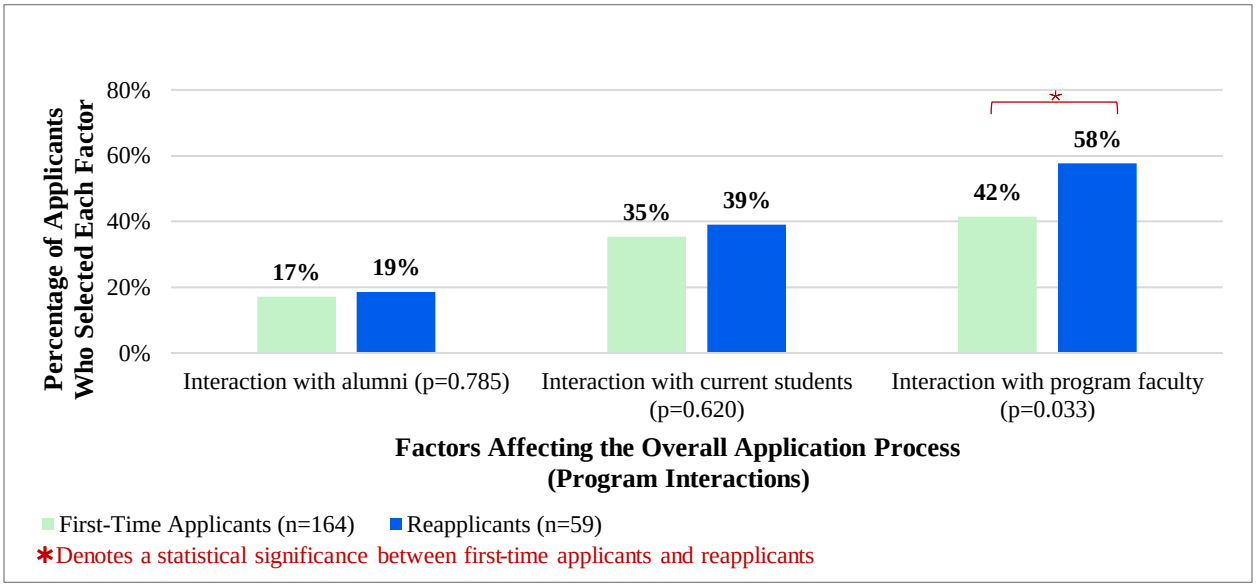

Figure 21c. Percentage of first-time applicants and reapplicants who selected program interaction-related factors as influencing their overall application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

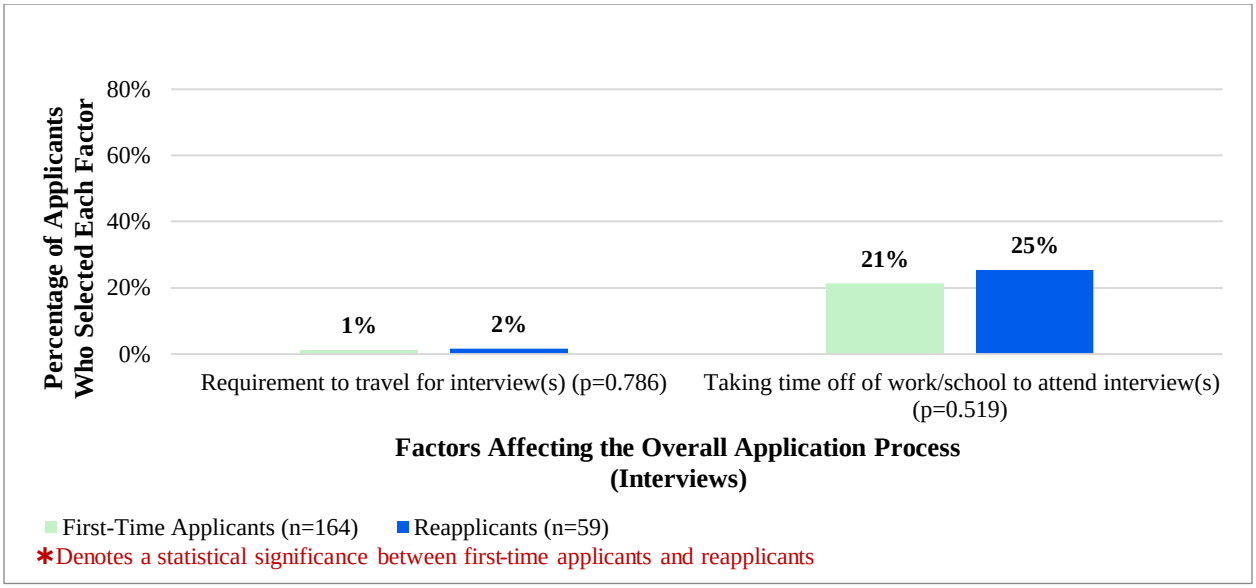

Figure 21d. Percentage of first-time applicants and reapplicants who selected interview-related factors as influencing their overall application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

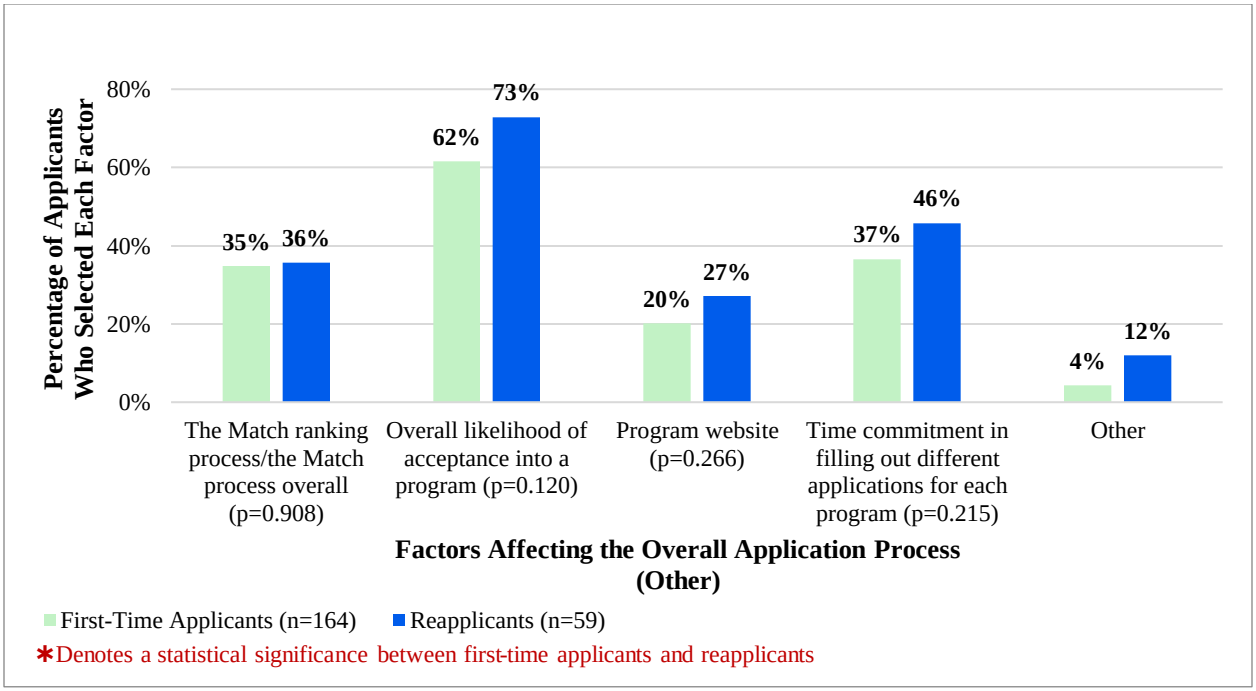

Figure 21e. Percentage of first-time applicants and reapplicants who selected other factors as influencing their overall application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

3.5.4 Factors Affecting the Overall Application Experience – Stratified by Individuals Identifying as Women (N=346) and Non-Women (N=31)

Figures 22a-e show the percentages of women and non-women who selected the various factors affecting the overall application experience in each category. Comparisons of the responses from these two subgroups found that knowledge about the application process was more likely to be selected by women as a factor influencing their overall application experience (p=0.008). None of the other factors were more likely to be selected by either subgroup, notably including diversity related factors (p>0.05 for all comparisons).

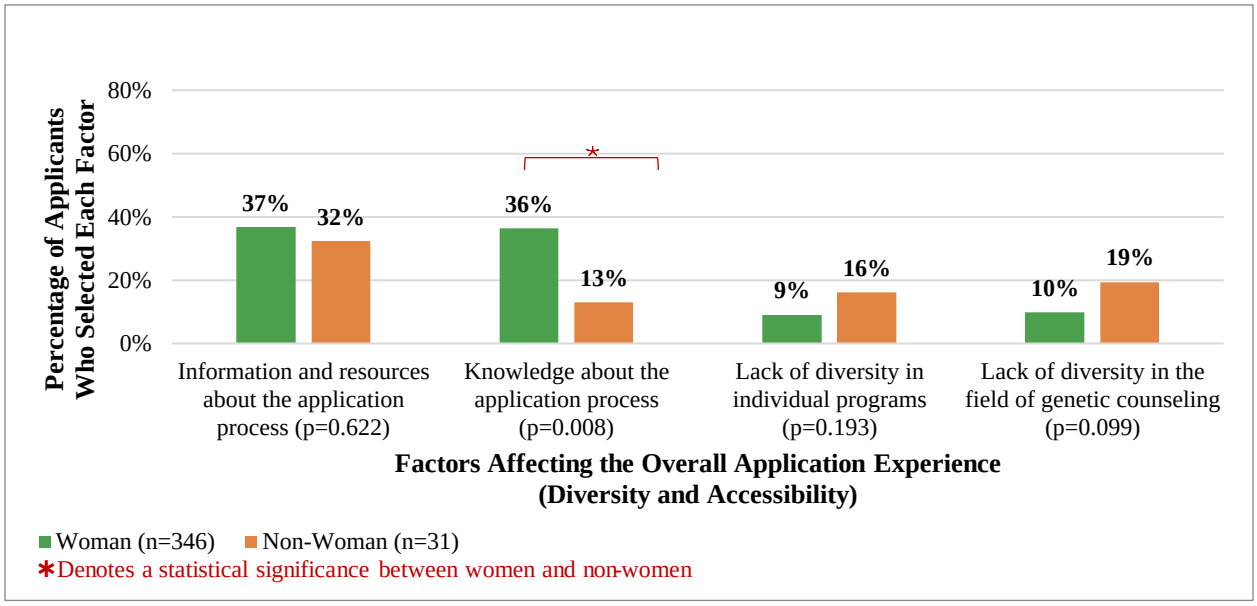

Figure 22a. Percentage of women and non-women who selected diversity and accessibility-related factors as influencing their overall application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

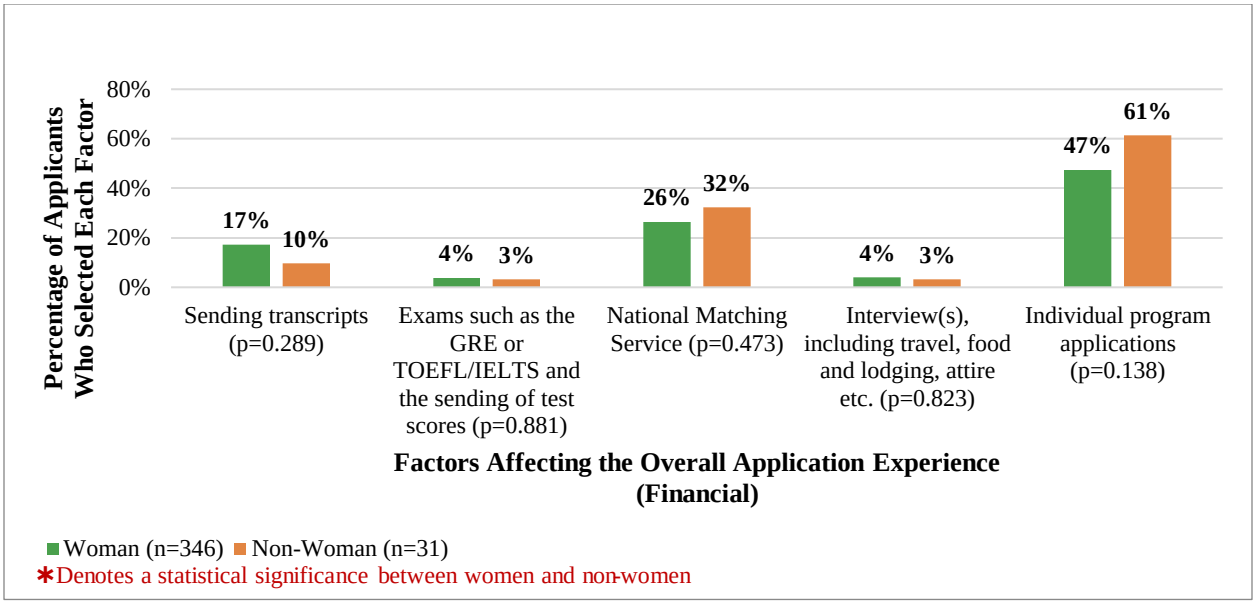

Figure 22b. Percentage of women and non-women who selected financial factors as influencing their overall application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

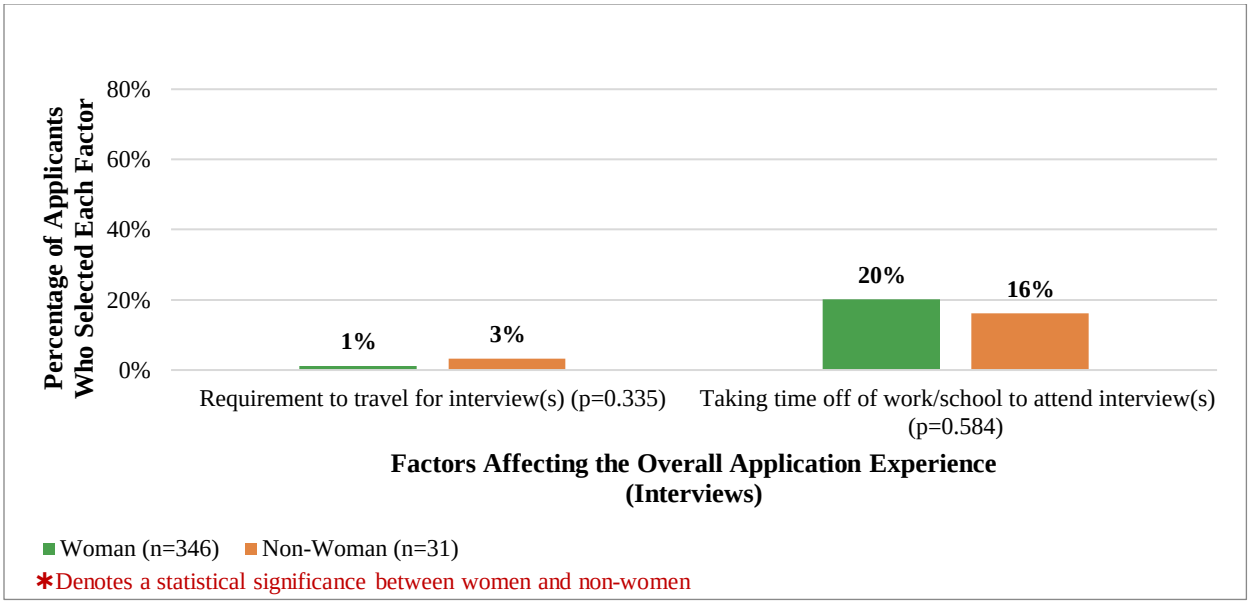

Figure 22c. Percentage of women and non-women who selected program interview-related factors as influencing their overall application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

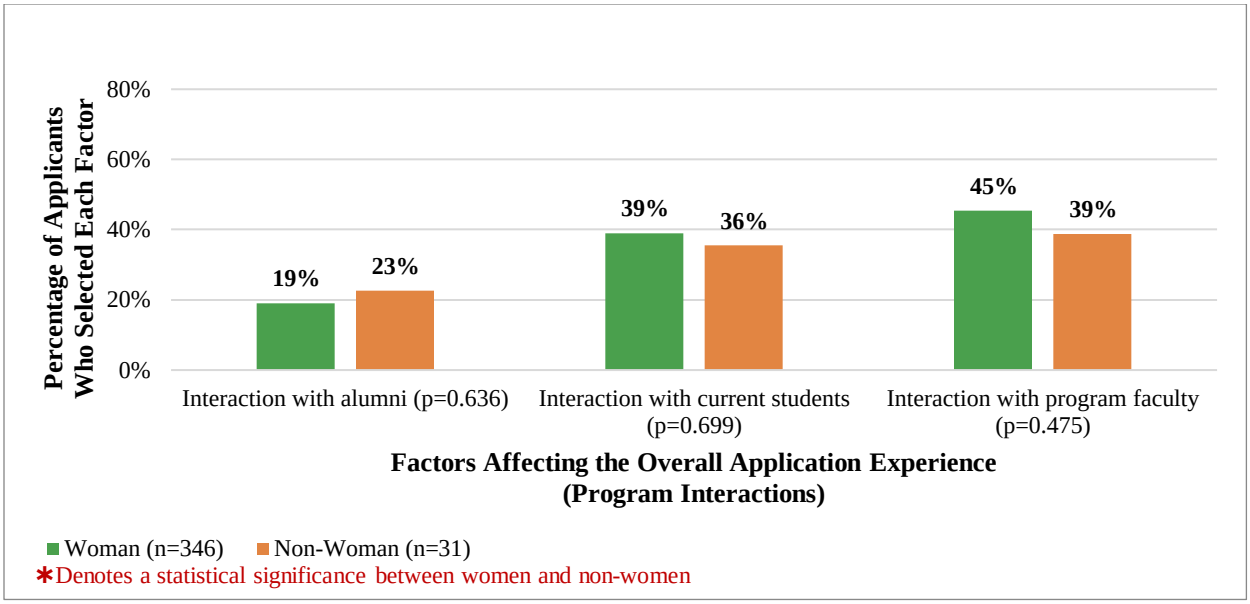

Figure 22d. Percentage of women and non-women who selected program interaction-related factors as influencing their overall application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

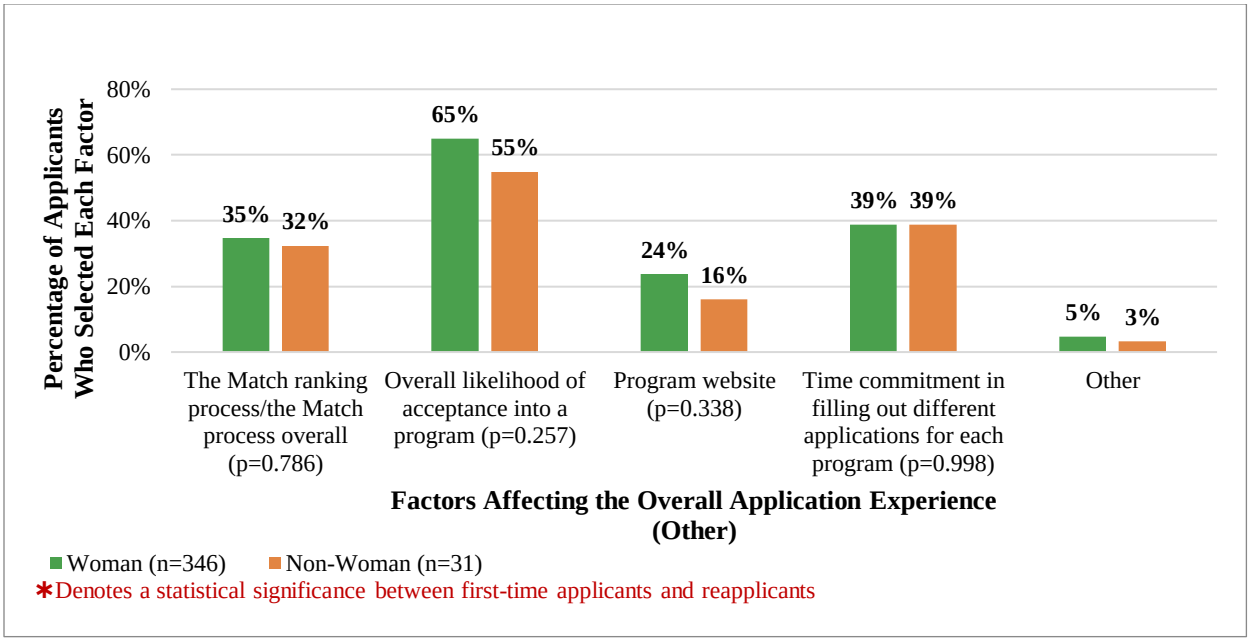

Figure 22e. Percentage of women and non-women who selected other factors as influencing their overall application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

3.5.5 Factors Affecting the Overall Application Experience – Stratified by Individuals With a Disability (N=52) and Without a Disability (N=313)

Figures 23a-e show the percentages of individuals with and without a disability who selected the various factors affecting the overall application experience in each category. Comparisons of the responses from these two subgroups found that individuals with a disability were more likely to cite a program's website (p=0.049) as a factor influencing their overall application experience. None of the other factors were more likely to be selected by either subgroup, including diversity related factors (p>0.05 for all comparisons).

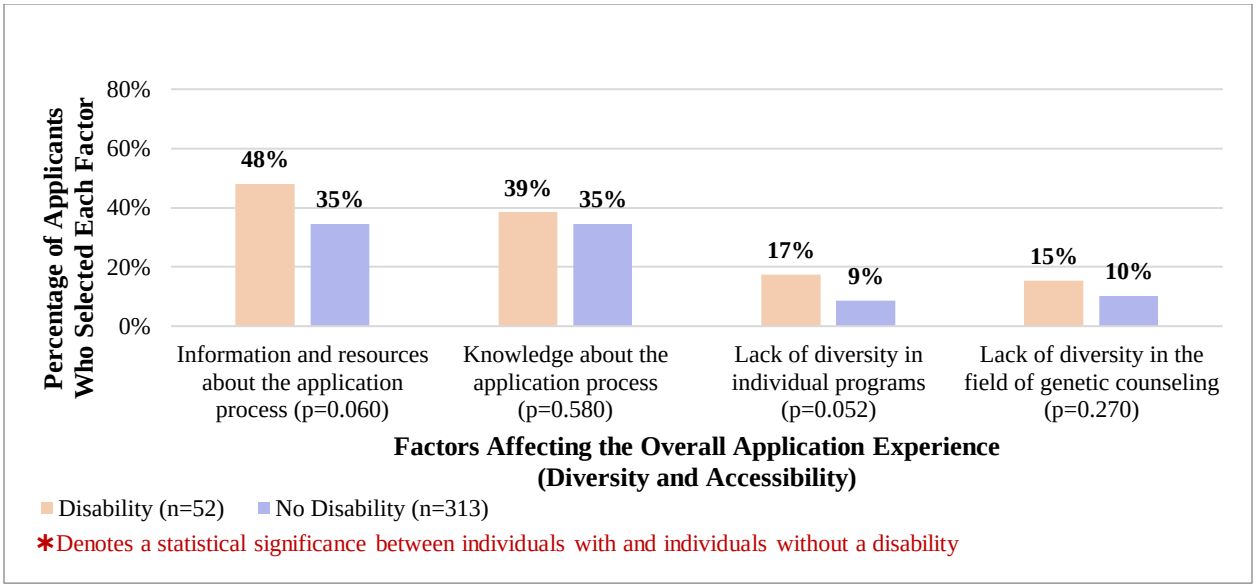

Figure 23a. Percentage of individuals with and without a disability who selected diversity and accessibility-related factors as influencing their overall application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

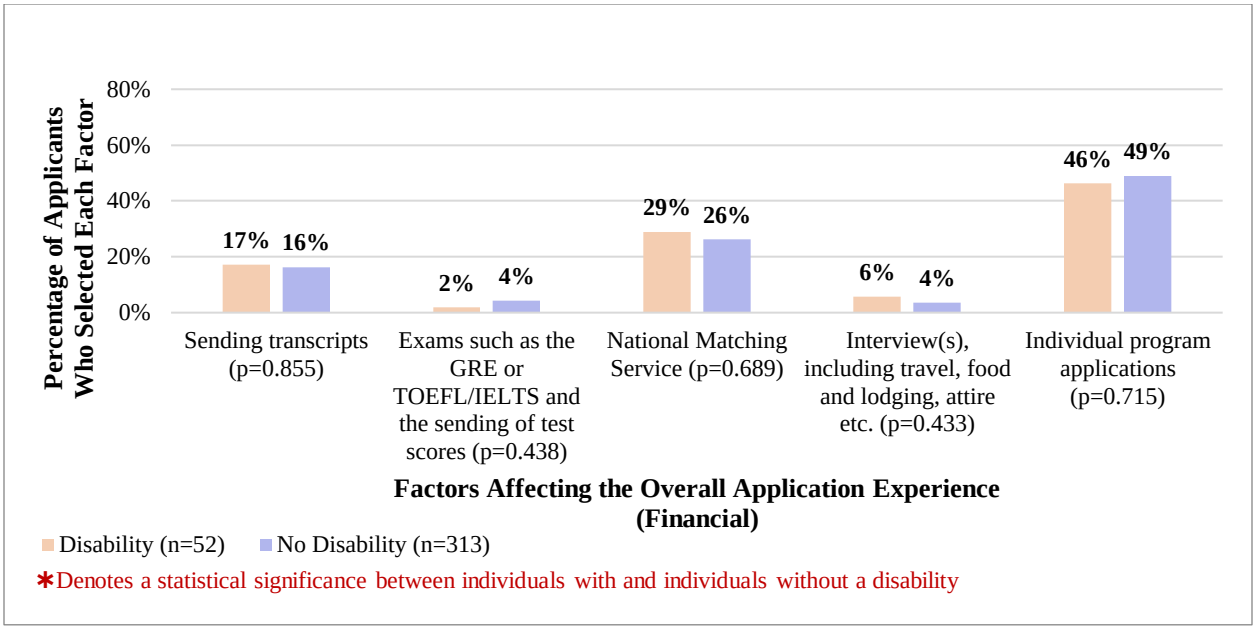

Figure 23b. Percentage of individuals with and without a disability who selected financial factors as influencing their overall application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

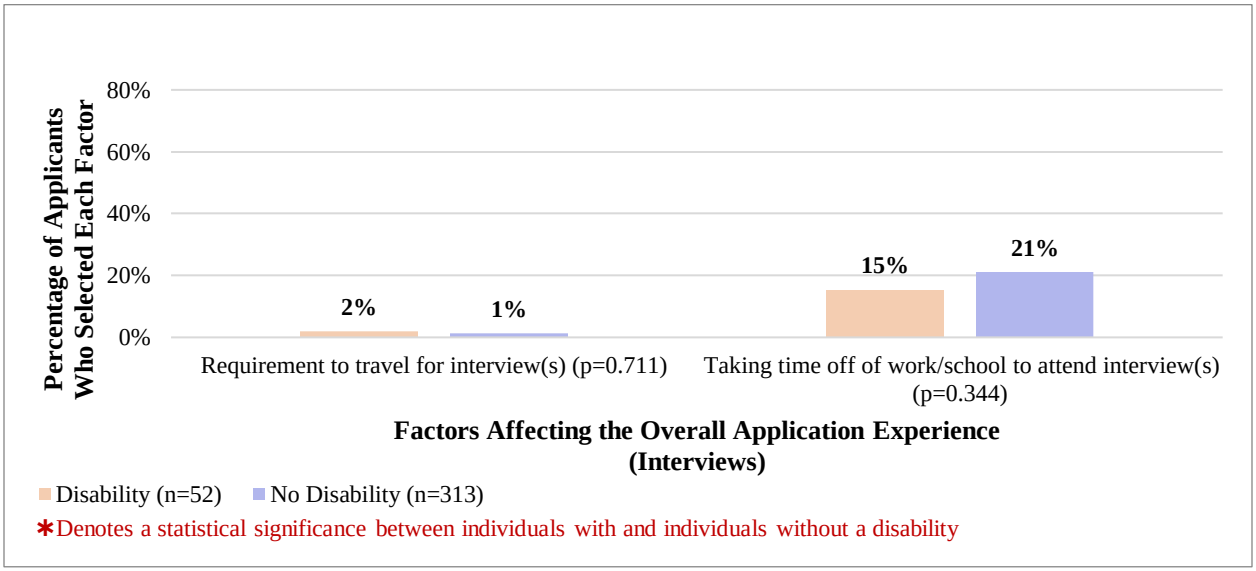

Figure 23c. Percentage of individuals with and without a disability who selected interview-related factors as influencing their overall application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

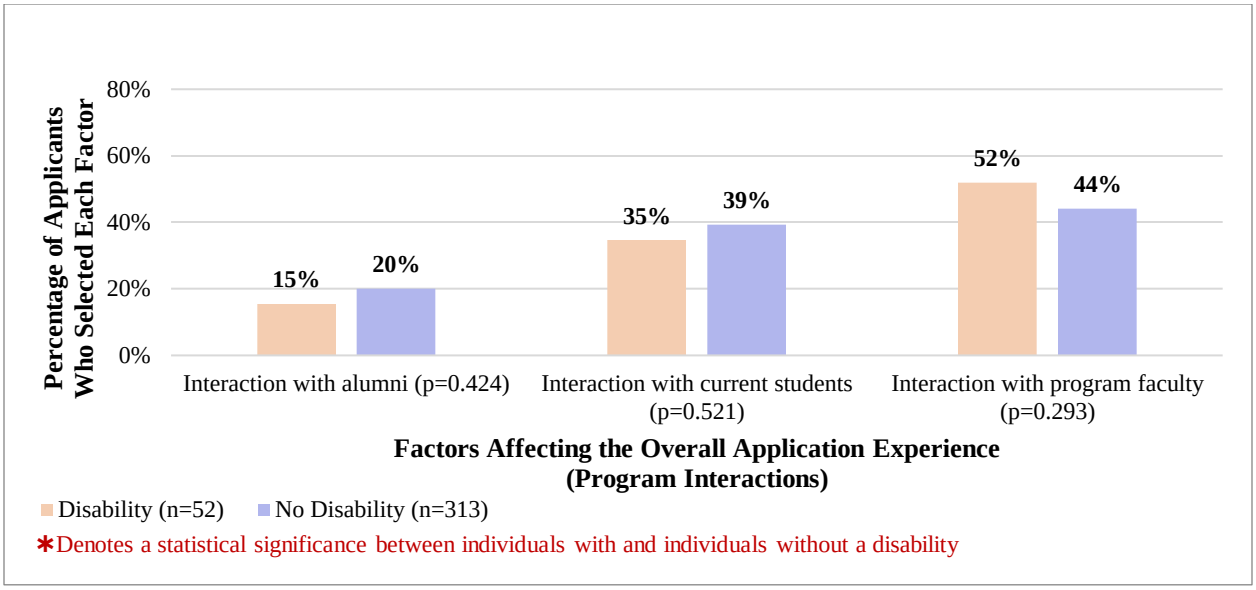

Figure 23d. Percentage of individuals with and without a disability who selected program interaction-related factors as influencing their overall application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

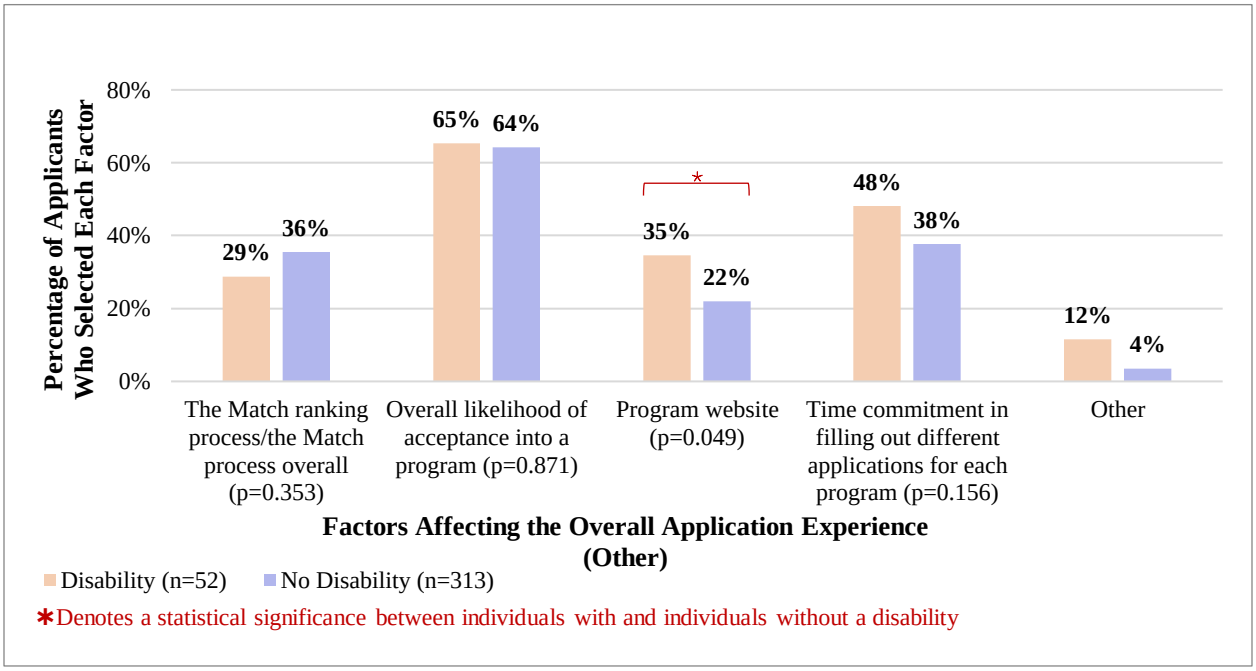

Figure 23e. Percentage of individuals with and without a disability who selected other factors as influencing their overall application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

3.5.6 Factors Affecting the Overall Application Experience – Stratified by First-Generation College Students (N=89) and Continuing-Generation College Students (N=288)

Figures 24a-e show the percentages of first-generation college students and continuing-generation college students who selected the various factors affecting the overall application experience in each category. Comparisons of the responses from these two subgroups found that first-generation college students were more likely to cite diversity-related factors, including a lack of diversity in the field of genetic counseling (p=0.003) and a lack of diversity in individual programs (p=0.007) as factors influencing their overall application experience. Costs associated with the National Matching Service (p<0.001) and interaction with alumni (p=0.038) were also factors more frequently selected by first-generation college students. Interaction with program faculty and current students, knowledge about the application process and information and resources about the application were not more likely to be selected by either subgroup (p>0.05 for all comparisons).

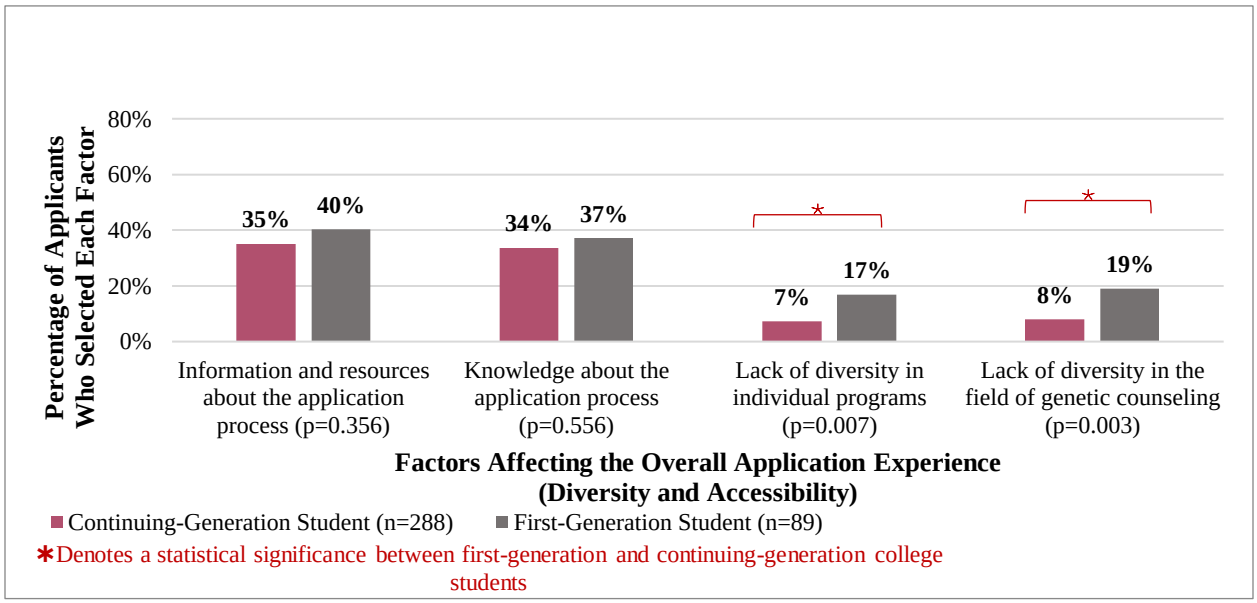

Figure 24a. Percentage of first-generation college students and continuing-generation college students who selected diversity and accessibility-related factors as influencing their overall application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

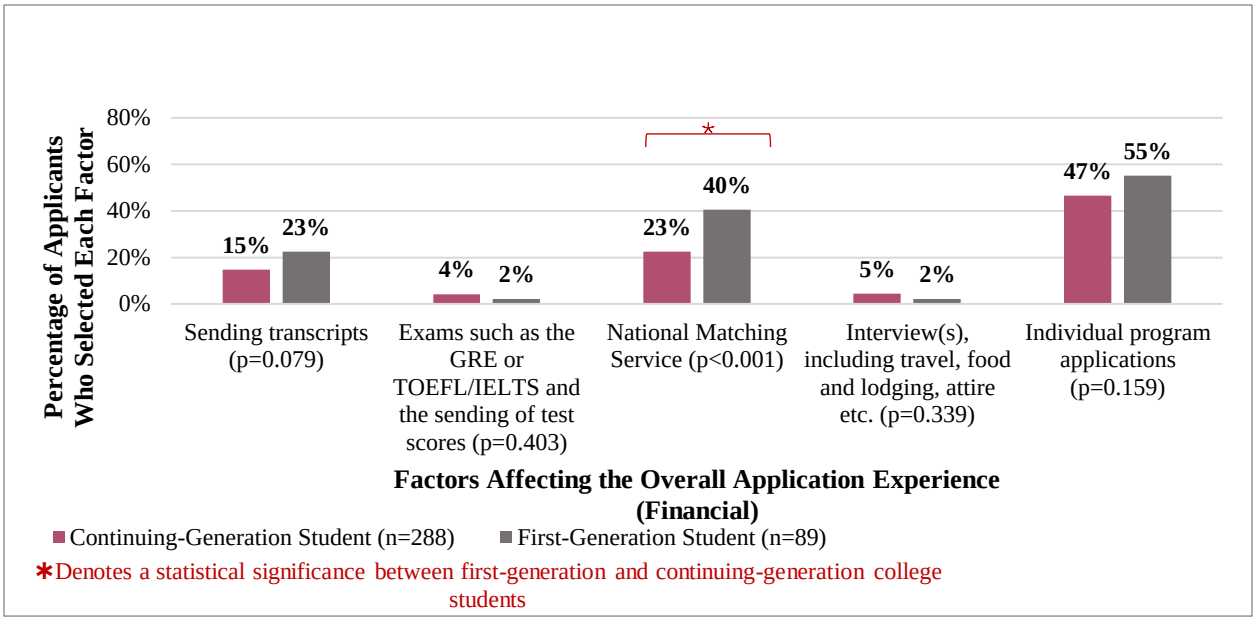

Figure 24b. Percentage of first-generation college students and continuing-generation college students who selected financial factors as influencing their overall application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

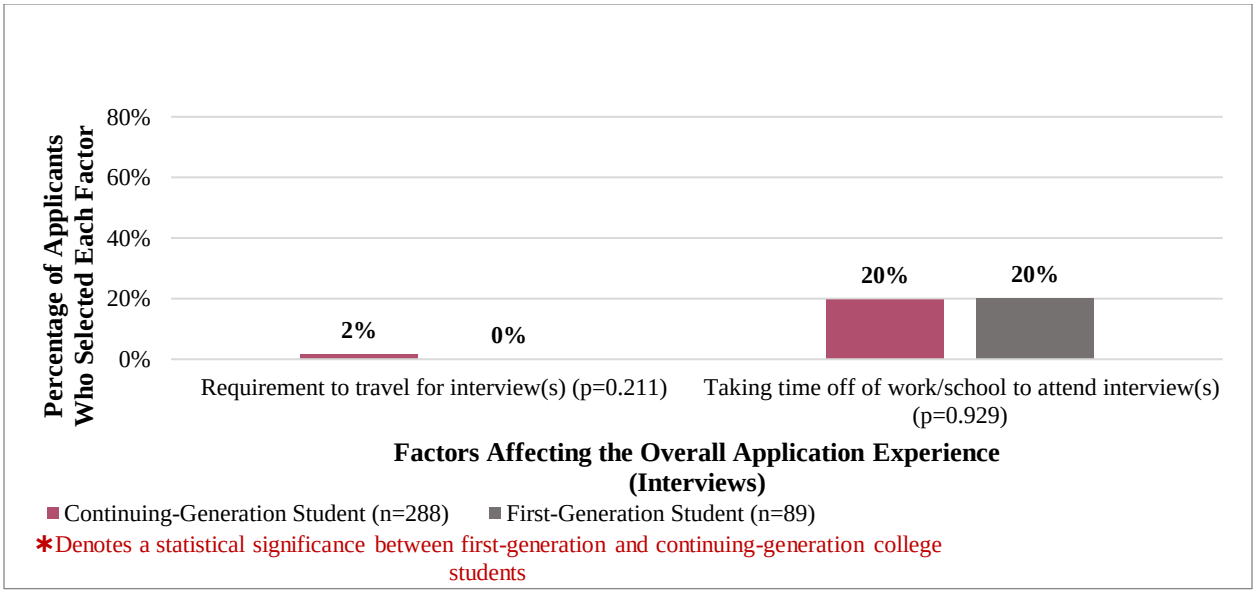

Figure 24c. Percentage of first-generation college students and continuing-generation college students who selected interview-related factors as influencing their overall application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

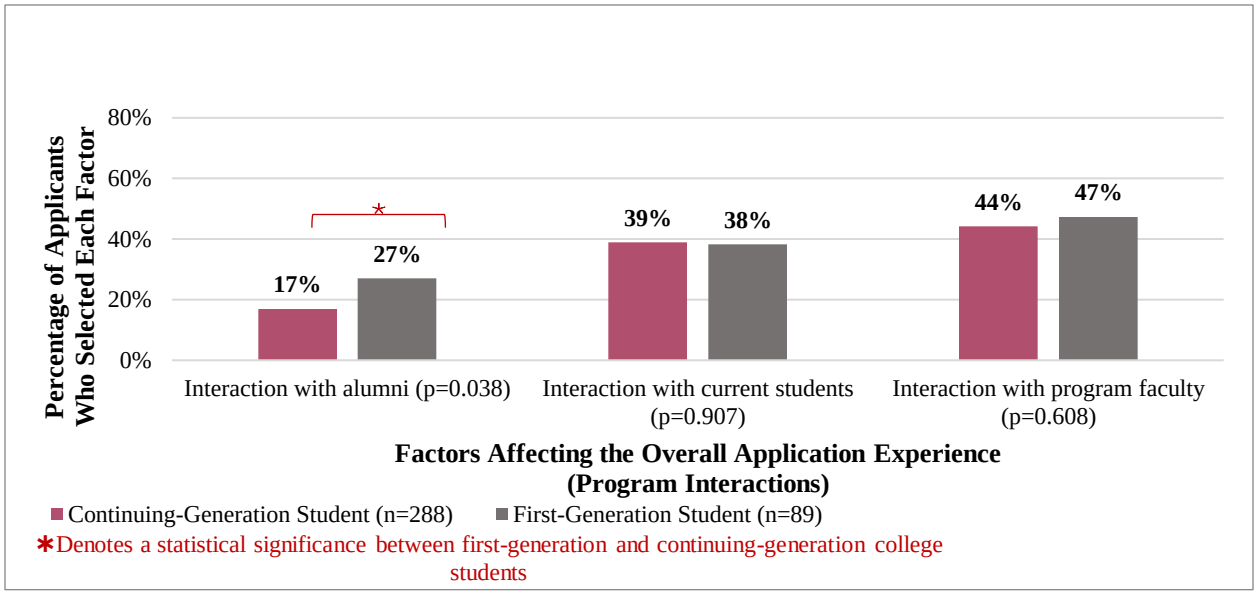

Figure 24d. Percentage of first-generation college students and continuing-generation college students who selected program interaction-related factors as influencing their overall application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

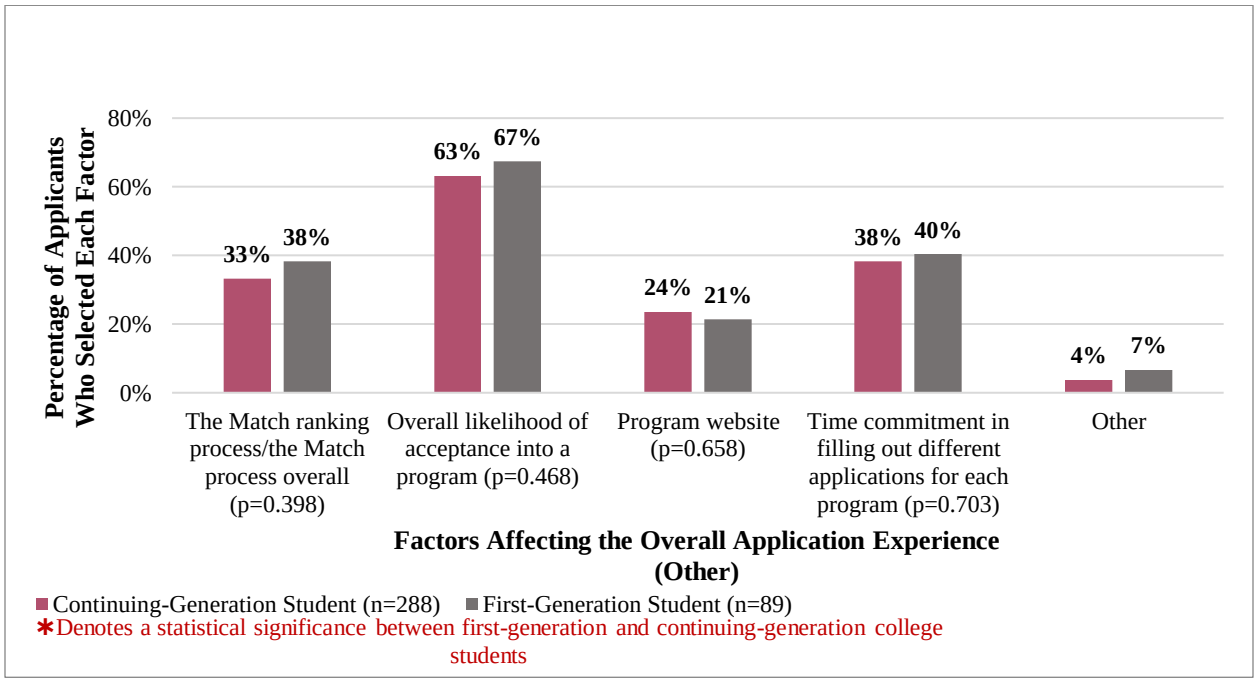

Figure 24e. Percentage of first-generation college students and continuing-generation college students who selected other factors as influencing their overall application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

3.5.7 Factors Affecting the Overall Application Experience – Stratified by White (N=254) and Non-White (N=116) Participants

Figures 25a-e show the percentages of White and non-White participants who selected the various factors affecting the overall application experience in each category. Comparisons of the responses from these two subgroups found that diversity-related factors, including a lack of diversity in the field of genetic counseling and a lack of diversity in individual programs, were more likely to be selected by non-White participants as factors influencing the overall application experience ($p<0.001$). Although interaction with current students was also more frequently selected by non-White participants ($p=0.010$), interaction with program faculty was not more likely to be selected by either subgroup ($p=0.600$). The overall likelihood of acceptance into a program ($p=0.020$) and costs associated with the National Matching Service ($p=0.008$) were factors more frequently selected by White participants as influencing the overall application experience.

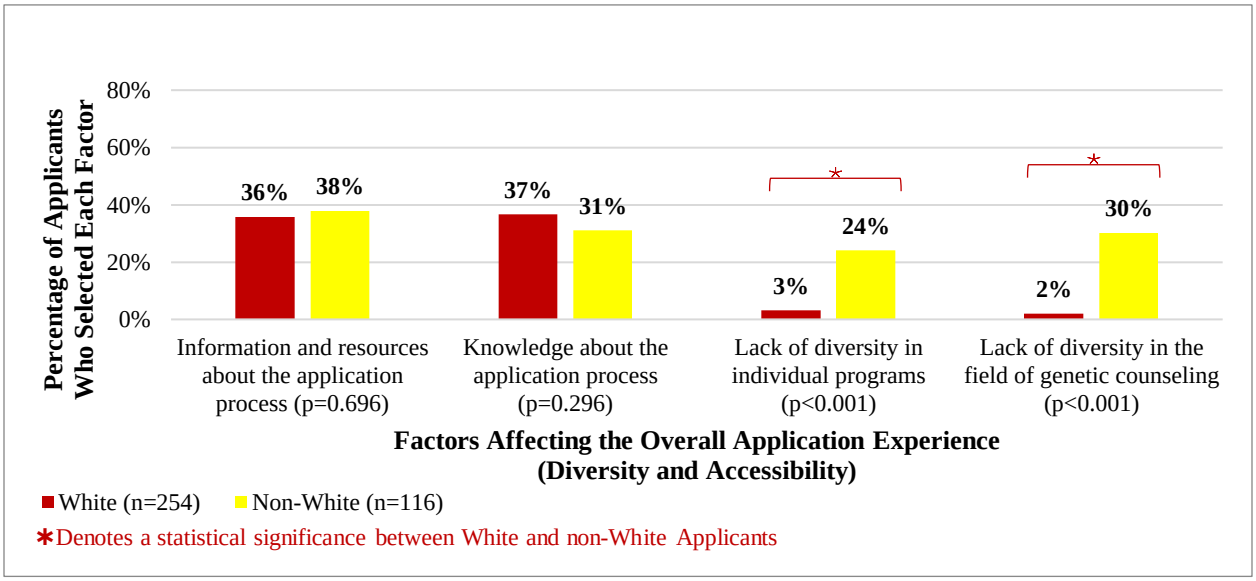

Figure 25a. Percentage of White and non-White individuals who selected diversity and accessibility -related factors as influencing their overall application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

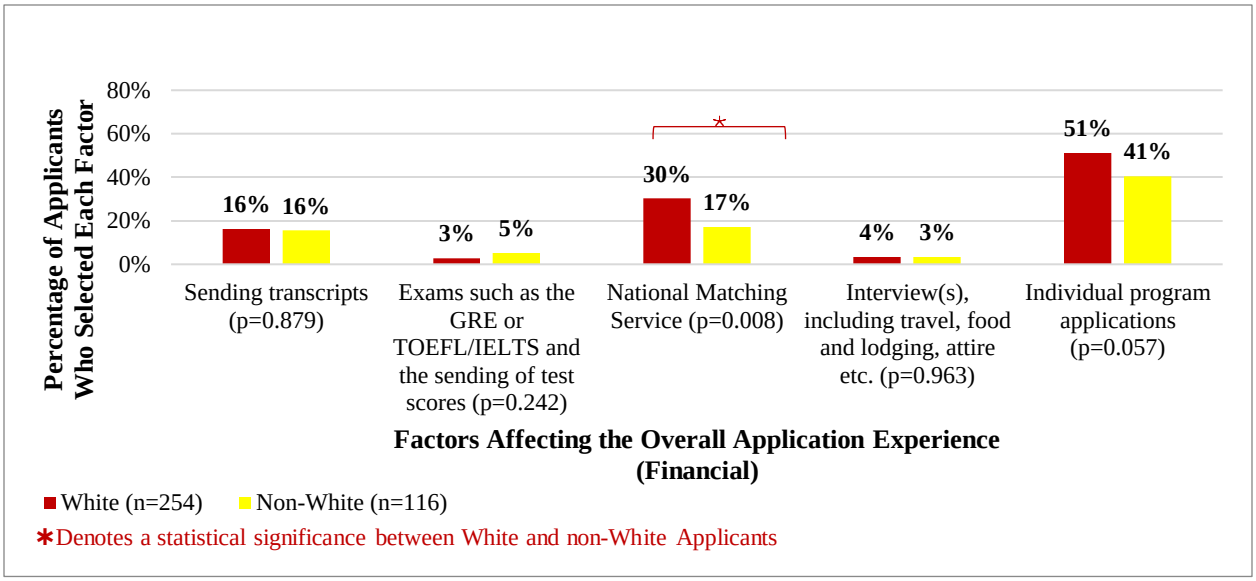

Figure 25b. Percentage of White and non-White individuals who selected financial factors as influencing their overall application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

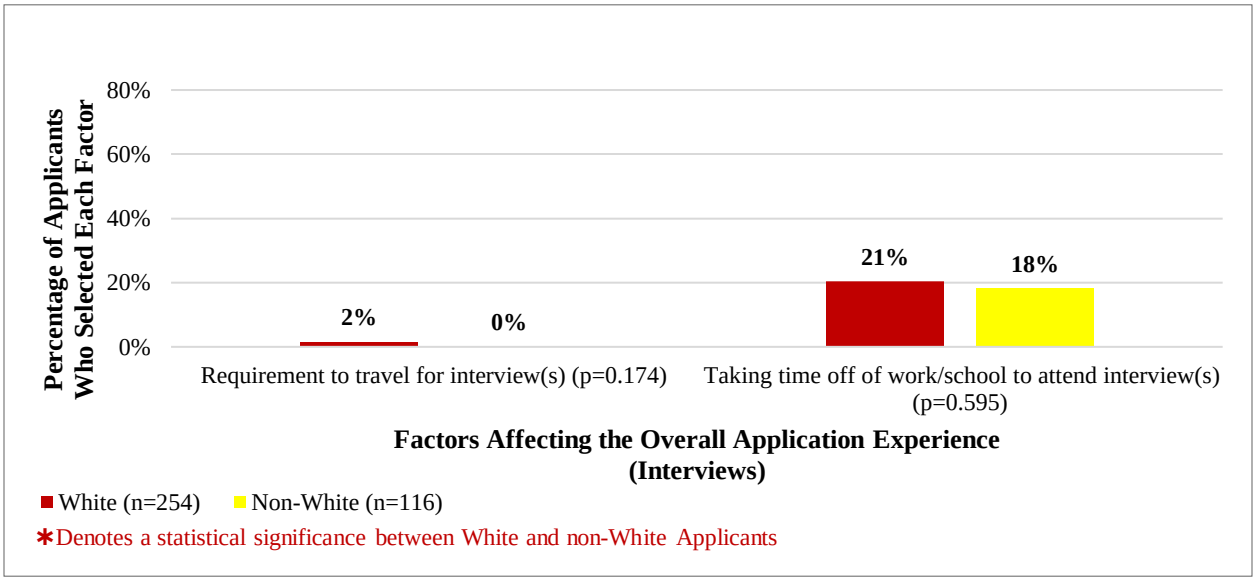

Figure 25c. Percentage of White and non-White individuals who selected interview-related factors as influencing their overall application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

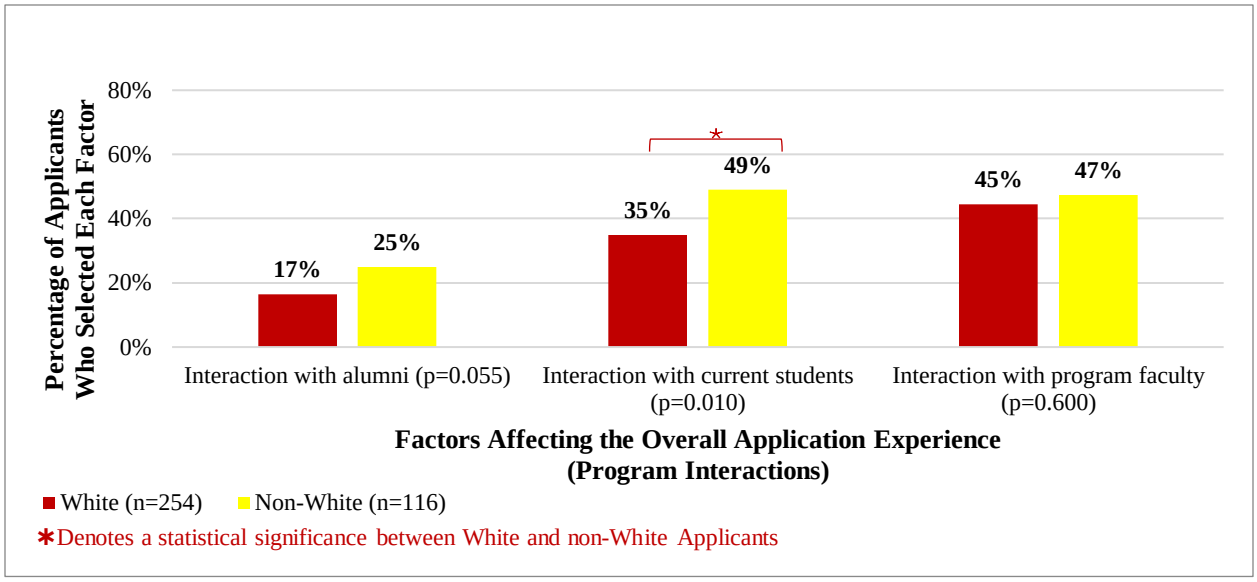

Figure 25d. Percentage of White and non-White individuals who selected program interaction-related factors as influencing their overall application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

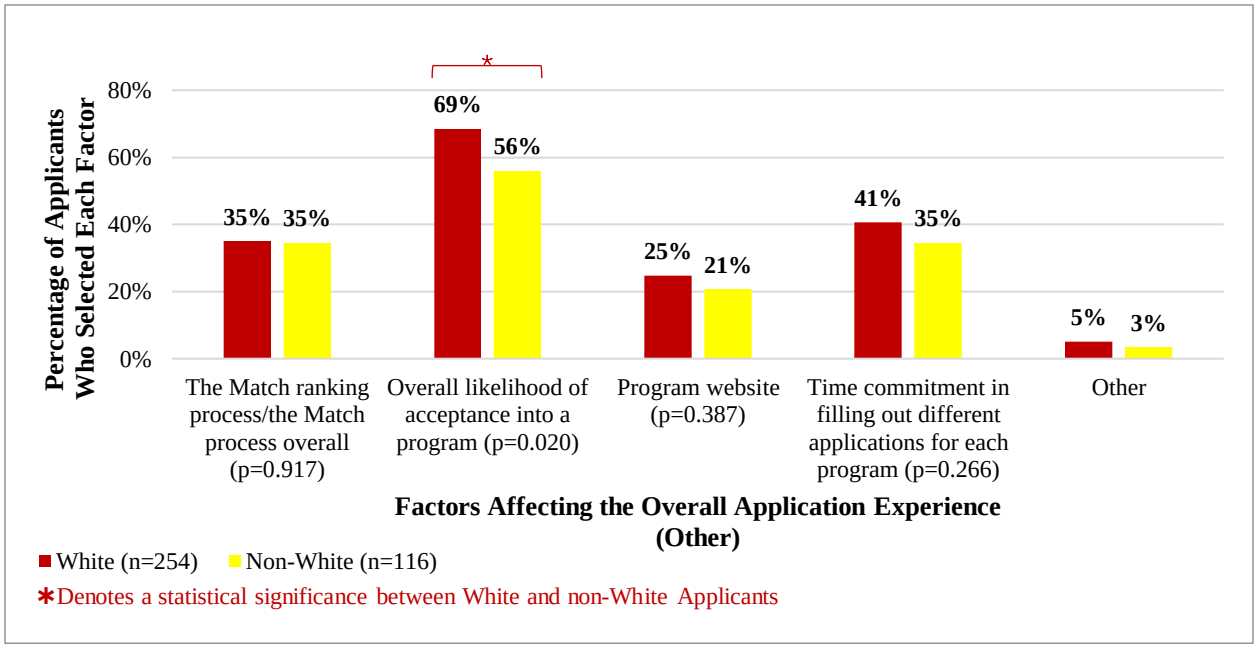

Figure 25e. Percentage of White and non-White individuals who selected other factors as influencing their overall application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

3.5.8 Factors Affecting the Overall Application Experience – Stratified by LGBTQ2IA+ Community Members (N=90) and non-LGBTQ2IA+ Community Members (N=274)

Figures 26a-e show the percentages of LGBTQ2IA+ and non-LGBTQ2IA+ community members who selected the various factors affecting the overall application experience in each category. Comparisons of the responses from these two subgroups found that a lack of diversity in the field of genetic counseling was more likely to be selected by LGBTQ2IA+ participants as a factor affecting the overall application experience (p=0.047). A lack of diversity in individual programs was not more likely to be selected by either subgroup (p=0.168). Information and resources about the application process (p=0.029), were also factors more frequently selected by LGBTQ2IA+ participants as a factor affecting the overall application experience. The only factor more likely to be reported by non-LGBTQ2IA+ participants was taking time off work/school to attend interviews (p=0.038).

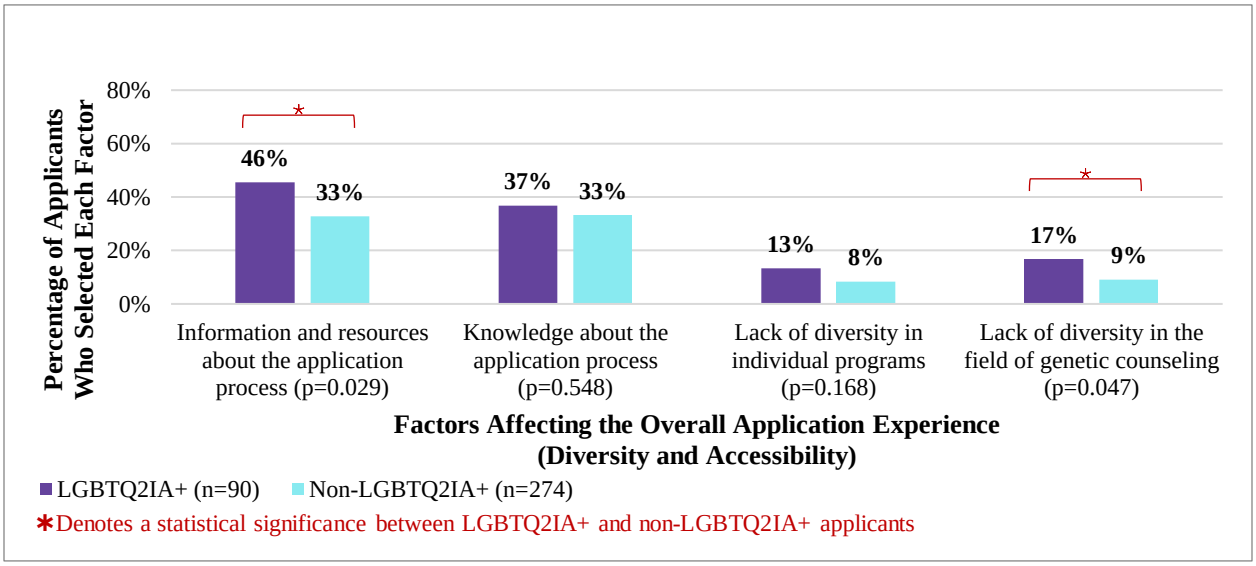

Figure 26a. Percentage of LGBTQ2IA+ community members and non-LGBTQ2IA+ community members who selected diversity and accessibility-related factors as influencing their overall application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

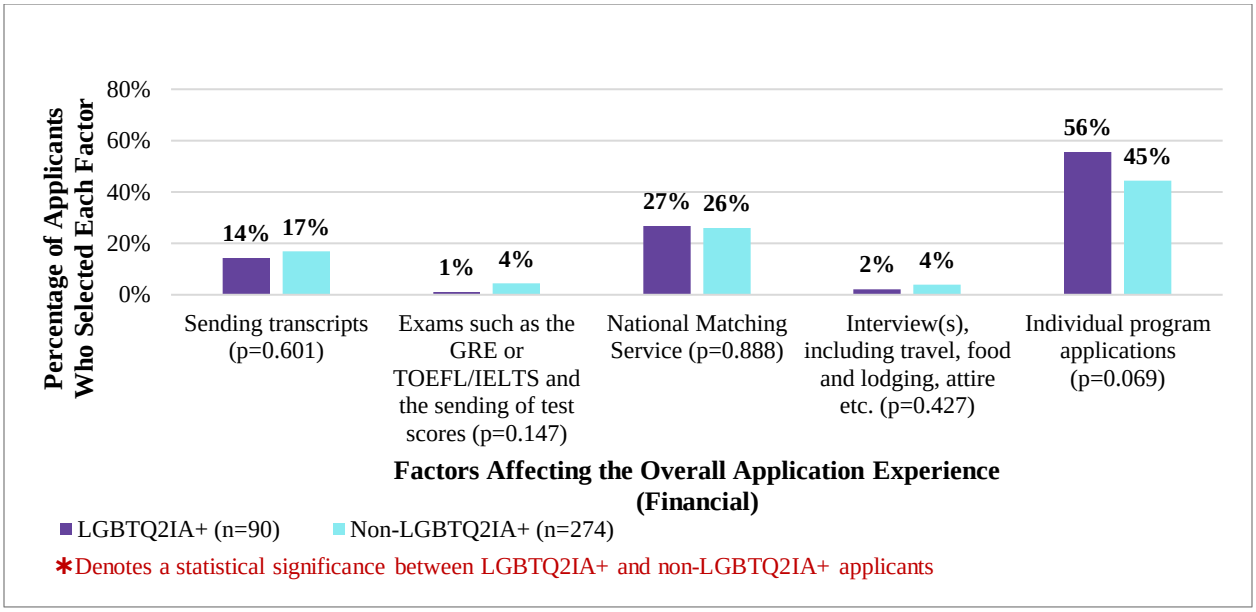

Figure 26b. Percentage of LGBTQ2IA+ community members and non-LGBTQ2IA+ community members who selected financial factors as influencing their overall application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

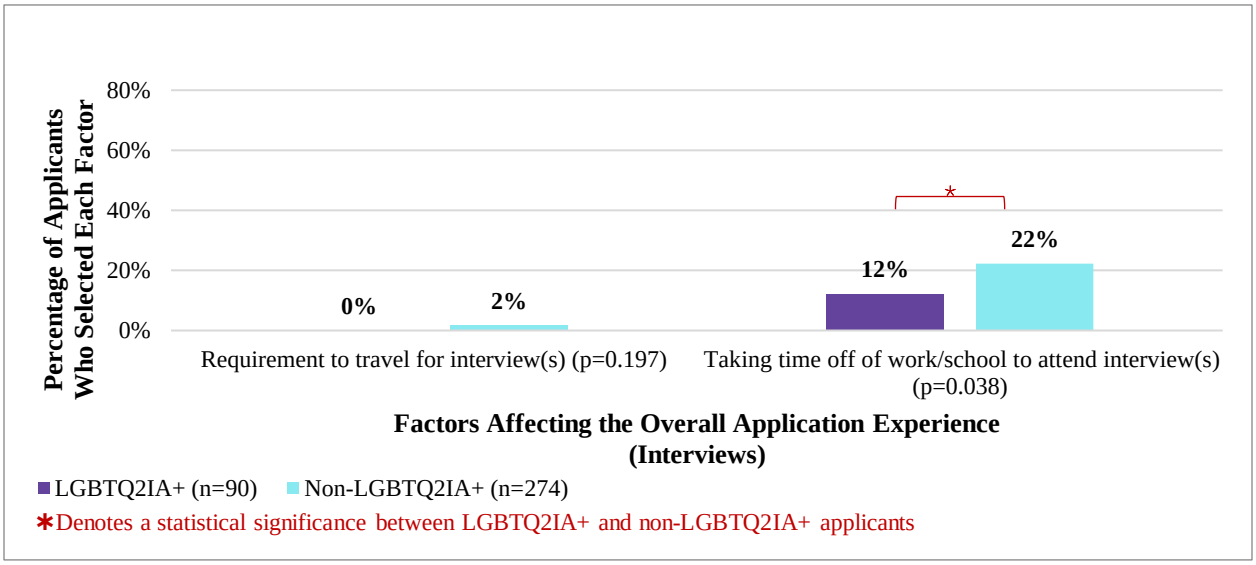

Figure 26c. Percentage of LGBTQ2IA+ community members and non-LGBTQ2IA+ community members who selected interview-related factors as influencing their overall application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

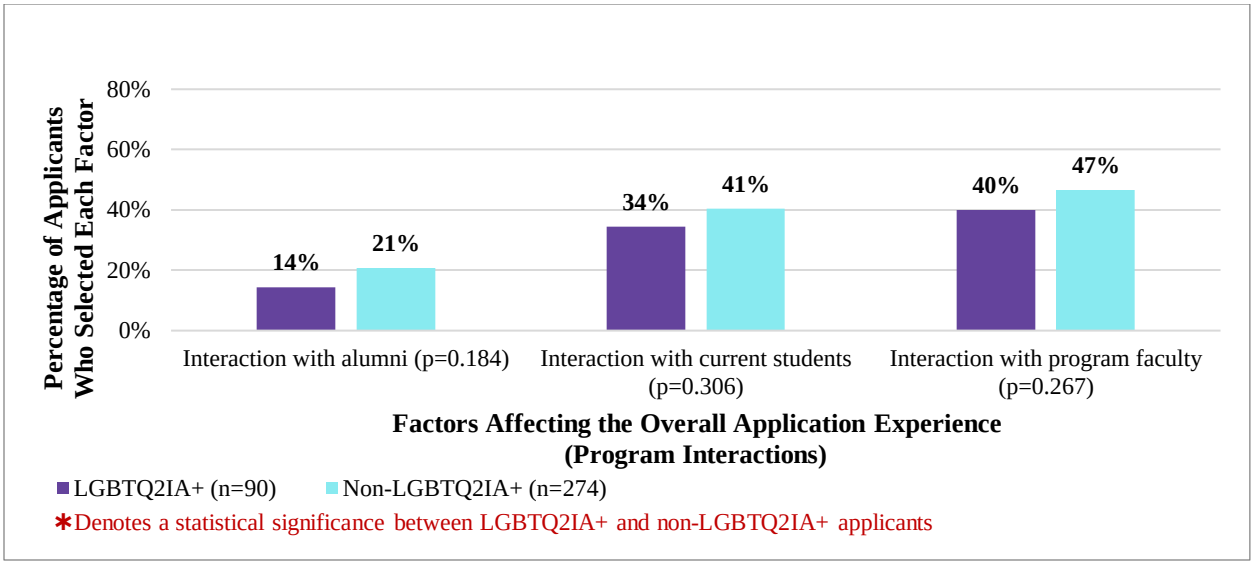

Figure 26d. Percentage of LGBTQ2IA+ community members and non-LGBTQ2IA+ community members who selected program interaction-related factors as influencing their overall application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

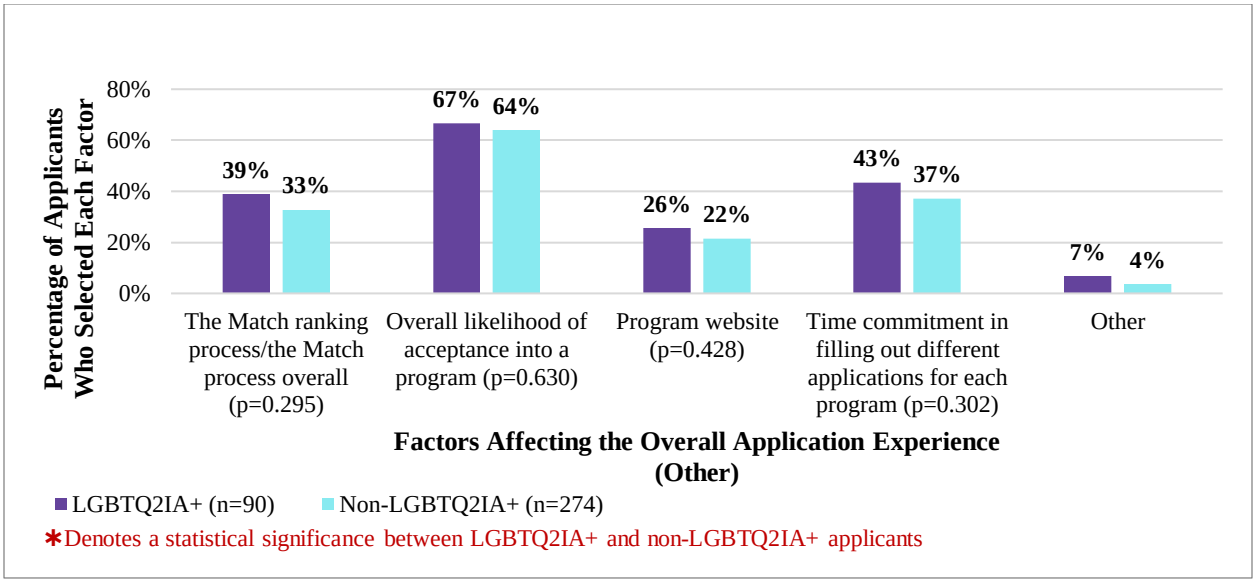

Figure 26e. Percentage of LGBTQ2IA+ community members and non-LGBTQ2IA+ community members who selected other factors as influencing their overall application experience. Participants could select more than one factor. A p-value of less than or equal to 0.05 was considered statistically significant and is indicated by a red asterisk.

DISCUSSION

This study aimed to identify the following: 1) Factors affecting GCGP program selection 2) Barriers in the GCGP application process and 3) Factors affecting the overall GCGP application experience. Although previous studies assessed various factors and barriers affecting GCGP selection and the overall application experience, they were limited in their ability to capture the experiences of certain applicant subgroups, particularly unmatched applicants, who are a significant proportion of applicants that have yet to be studied comprehensively. In addition, a lack of diversity within the field of genetic counseling remains an ongoing concern, despite previous and existing justice, equity, diversity and inclusion (JEDI) efforts. Thus, this study also aimed to compare the application experiences of the following applicant subgroups: 1) Matched and unmatched applicants 2) First-time applicants and reapplicants 3) Women and non-women 4) Individuals with and without a disability 5) First-generation and continuing-generation college students 6) White and non-White applicants and 7) LGBTQ2IA+ and non-LGBTQ2IA+ community members.

4.1 Financial Factors Affecting Program Selection

As shown in Table 5, across all participants in this study, the cost of tuition was the most frequently selected factor influencing the choice of which GCGPs to apply to (n=277, 74%). This finding is similar to the results of previous research by Kuhl et al. in 2014, who assessed the impact of student debt on program choice and found that greater than three quarters of respondents felt program cost was “very important” or “extremely important” in program selection by genetic counseling applicants. The median debt of GCGP graduates was reported to be approximately $40,000-$50,000 USD by Kuhl et al. (2014) and their findings indicate that

program choice is highly impacted by student debt or the threat of future student debt. Given that tuition costs for GCGPs can be as high as $120,000 USD total for two years of graduate study (Jagannathan et al., 2024) and 78% of the respondents in the Kuhl et al. study reported using federal loans to fund GCGP tuition and living costs, it is reasonable to infer that tuition costs are likely contributing to prospective students' debt or fear of debt, and therefore influencing program selection. The cost of living in a program's area (n=232, 62%) and the availability of additional financial support (n=239, 63%) were also both selected as factors influencing GCGP selection by greater than half of all participants in this study and can be seen in Table 5. As varying costs of living and availability of financial support, such as scholarships and grants, have the potential to significantly impact prospective students' debt in the future, it is unsurprising that these were frequently selected as factors influencing GCGP selection.

Interestingly, the cost of living in a program's area was more frequently selected by unmatched applicants in this study as a factor influencing GCGP selection, when compared to matched applicants ($p=0.020$, Figure 4c). It is possible that unmatched applicants may be choosing GCGPs more selectively, based on factors such as the cost of living in a GCGP's area, and subsequently not applying to programs that would be a better fit. This may decrease the chances of an applicant matching with a GCGP. It is important to note however, that there were no statistically significant differences in the number of GCGPs applied to per cycle, when comparing matched and unmatched applicants participating in the 2021, 2023 and 2024 application cycles, ($p>0.05$ for all three comparisons, data not shown in results). This does not clearly suggest that unmatched applicants are applying to fewer GCGPs overall and that this is a factor reducing their likelihood of matching with a GCGP.

When compared to continuing-generation college students, first-generation college students more frequently considered the availability of part time work (p=0.029) and additional financial support (p=0.031) when selecting GCGPs, as shown in Figure 8c. This is supported by previous research that found first-generation college students are more likely than continuing-generation college students to be from a lower socioeconomic status or to have less financial support from family members (Barkley & Fuller, 2019; Lee et al. 2024: Rubio et al., 2017). It is reasonable that this population of applicants would have a greater concern for the availability of part-time work and financial support when selecting GCGPs, if they are in a less fortunate financial position to begin with.

4.2 Financial Factors as Barriers in the Application Process

As illustrated in Table 6, the costs associated with individual program applications were also selected as one of the top barriers in this study (n=255, 68%). For each program applicants choose to apply to, they are required to pay an associated institutionally determined application fee. As these fees can be greater than $100 USD for an individual program application (UCLA Graduate Education, 2024; Stanford Medicine, 2024; UCI Graduate Division, 2024), it is understandable that an accumulation of these costs when applying to multiple GCGPs would create a financial barrier for applicants, making it more difficult or impossible to apply to some programs. Previous research has highlighted the burden of these financial barriers for prospective genetic counseling students and suggests that financial barriers may deter individuals not accepted during their first application cycle from reapplying to GCGPs or may deter them from applying altogether (Stoddard et al., 2021, Lee et al., 2024). This is consistent with the findings of the current study in which less than half of participants (~31%) were reapplicants.

This is particularly important to consider for groups which are underrepresented within GCGPs and in the genetic counseling field. As shown in Figure 18d, LGBTQ2IA+ community members more frequently cited the costs associated with individual applications as a barrier in this study, when compared to non-LGBTQ2IA+ community members (p=0.025). If underrepresented groups such as the LGBTQ2IA+ community members are experiencing these financial barriers, which make it more challenging for them to apply to GCGPs, existing and future JEDI efforts may be hindered. In 2021, Beasley et al. surveyed GCGP program directors to assess perceived barriers and opinions related to the implementation of a standardized application. Although some program directors in this study felt a standardized application would reduce redundancy and application costs for applicants and would make the application process more efficient for GCGPs, some also felt that a standardized application would result in the submission of more generic applications (n=7/30, 23.3%) and would increase the competition for admission to individual GCGPs (n=2/30, 6.7%). The current administrative structures within GCGPs were also commonly cited as barriers to implementation. This included concerns about a loss of revenue from application fees, a larger volume of applications for GCGPs to review and institution-specific policies that would not permit the implementation of a standardized application.

Interestingly, interview-related barriers (e.g. travel and costs) were not identified as significant barriers in the application process in this study, as shown in Table 6. This is in contrast to previous studies that found these to be the most frequently cited barriers (Lee, 2024; Odem, 2022; Stoddard et al., 2021). Since the beginning of the COVID-19 pandemic in 2020, many programs have performed interviews virtually, and an increasing number of programs have removed the requirement for GRE scores (Myers et al., 2021). If these changes in the application

process are correlated with the findings of the current study, it is reassuring to see that these changes are contributing to a reduction of some barriers in the genetic counseling application process and improving the feasibility of the application process for prospective students.

While costs associated with exams, such as the GRE, and the sending of test scores were not frequently selected as barriers by participants overall (Table 6), matched applicants selected these as barriers more frequently than unmatched applicants ($p=0.002$), as illustrated in Figure 12d. Although not assessed in this study, it would be interesting to learn if matched applicants spend more money on or have greater access to preparation materials than unmatched applicants. Perhaps having access to or using additional resources, either to retake the GRE or invest in preparation materials, created what felt like more of a barrier for matched applicants, but subsequently contributed to an increased chance of acceptance (Lee et al., 2024).

In addition, as seen in Figures 13d and 16d, reapplicants and first-generation students in this study cited costs associated with exams and the sending of test scores as barriers more frequently than first-time applicants and continuing-generation college students ($p=0.010$ and 0.029, respectively). Reapplicants also more frequently selected exam scores as a barrier in the application process when compared to first-time applicants, as shown in Figure 13e ($p<0.001$). Reapplicants may be citing this as a barrier if they have chosen to invest in additional preparation materials or choose to retake an exam like the GRE with the hopes of improving their score for future application cycles. This population of applicants are also potentially subject to paying additional test score submission fees for each reapplication cycle, depending on whether they choose to send test scores from a previous exam session (Educational Testing Service, 2024). In addition, as illustrated in Figure 13a, reapplicants in this study more frequently cited prerequisite coursework as a barrier in the application process, when compared to first-time applicants

(p=0.033). It is possible that the time and financial resources required to complete prerequisite coursework may be creating a financial burden on top of those associated with exams and the sending of test scores (Lee et al., 2024). The costs associated with taking exams like the GRE and the sending test scores may also be more burdensome for first-generation students in the context of a pre-existing financial disadvantage, when compared to continuing-generation college students (Barkley & Fuller, 2019; Lee et al. 2024: Rubio et al., 2017). Interestingly, even with the availability of Match fee waivers, first-generation college students more frequently indicated that NMS-associated costs acted as a barrier in the application process, when compared to continuing-generation students (p<0.001) (*National Matching Services Inc.*, 2023). According to the NMS website, these waivers are also only available in limited quantities and not all qualified applicants will receive a waiver. This in combination with the requirements to demonstrate financial need, have a cumulative GPA of 3.0 or greater and write a short essay, may make it more challenging to access these waivers as a resource. For example, the requirement to write an essay for the waiver application, although reportedly "short," is another task applicants would be required to complete in addition to the many other application materials they are already preparing for individual programs. Some applicants also may not have access to the documents required to demonstrate financial need or may have concerns about sharing them. It is possible that some applicants may be unable or choose not to apply for a Match fee waiver, given these additional requirements.

This study also found that unmatched applicants were more likely to experience barriers related to obtaining advocacy and research experiences (Figure 12a), when compared to matched applicants (p<0.001 and p=0.007, respectively). Similar to shadowing and observation requirements, these types of experiences may be strongly recommended or required by GCGPs

prior to applying (Zahavich & Babul-Hirji, 2023). Given that financial factors are frequently cited as barriers for applicants, both in this study and in previous studies, applicants with limited financial capabilities may be unable to take time off of work in order to obtain experiences in advocacy and research (Lee, 2024; Odem, 2022; Stoddard et al., 2021; Zahavich & Babul-Hirji, 2023). Individuals who live in more rural regions where there may be less frequent and less varied opportunities for these types of experiences may also be limited in their ability to gain experience in these areas. In addition, advocacy and research experiences may not be available for all international applicants in their home countries, making it more challenging, if not impossible, for some to obtain these types of experiences (Galada et al., 2024). Furthermore, Lee et al. also found that URM respondents who applied in more than one application cycle experienced higher costs and fewer volunteer hours when compared to non-URM respondents. One possible solution that has been suggested to mitigate these barriers is offering paid internships to prospective applicants from URM groups to increase their exposure to and experiences in the field of genetic counseling (Kessler et al., 2023). Additionally, it would also be helpful for GCGPs to reach an agreement on which types of volunteer experiences are essential for applicants to obtain (Lee et al., 2024). This may allow applicants to focus on the quality of their experiences as opposed to the quantity.

The average GPA across applicants registered in the Match has also steadily increased since 2018, and the average GPA of unmatched applicants has remained between 0.14 and 0.20 points lower than matched applicants (*National Matching Services Inc.*, 2023). For unmatched applicants and non-White applicants in this study, undergraduate GPA was more frequently selected as a barrier in the application process when compared to Matched applicants and White applicants (Figures 12a and 17a). Undergraduate GPA may be acting as a barrier for some

applicants, as individuals with a lower undergraduate GPA may not be eligible to apply to certain GCGPs. Alternatively, regardless of an applicant's actual GPA, the perception of a lower chance of being accepted to a GCGP based on undergraduate GPA may also deter applicants from applying to certain GCGPs for which they are eligible. Applicants may also choose to retake classes in order to raise their undergraduate GPA, which takes additional time and financial resources, and may not be available to all applicants. In particular, individuals from URM groups have been found to incur higher total application costs and may lack resources to cope with additional financial burdens, such as those created by the need to retake classes (Lee, 2024; Schoonveld et al., 2007).

4.3 Financial Factors Affecting the Overall Application Experience

In addition to being one of the top selected barriers in this study, costs associated with individual program applications were also found to be a frequently selected factor influencing the overall application experience (n=183, 49%), as shown in Table 7. It is reasonable to infer from this data that an accumulation of application costs may be creating additional financial stress during the application process and contributing to a more negative overall experience. This is supported by previous studies that highlighted the financial burden and feelings of stress experienced during the application process due to expenses (Lee et al., 2024, Hadinger, 2017).

In addition, as illustrated in Figures 20b and 24b, unmatched applicants and first-generation students indicated that costs associated with NMS affected their overall application experience more frequently than matched applicants and continuing-generation students, respectively ($p=0.015$ and $p<0.001$, respectively). Given that first-generation students also cited NMS associated costs as a barrier more frequently than continuing-generation students, these

costs may be contributing to the financial burden and a more negative overall experience of the application process. It is important to note that some applicants may have incurred these costs over multiple application cycles if they chose to reapply after not matching in a previous cycle, however, cost-related factors were not more frequently selected by reapplicants as influencing the overall application experience in this study, when compared to first-time applicants. This may suggest there are unmatched applicants who choose not to reapply to GCGPs due to cost-related factors.

4.4 Diversity and Accessibility-Related Factors Affecting Program Selection

When compared to White applicants, non-White applicants more frequently indicated that the diversity within faculty, students and patient populations and interaction with current students were factors affecting their program selection ($p<0.001$ for all comparisons), as shown in Figure 9a. It is plausible that a lack of racial and ethnic diversity within students and faculty may contribute to a perception among non-White applicants that they are less likely to be accepted to particular GCGPs, potentially deterring them from considering certain programs. It is also possible that the experience of applicants when interacting with current genetic counseling students would impact program selection. Non-White applicants may use their interactions with current students to gauge the level of diversity within programs, and whether a program is more likely to provide a safe and inclusive environment that is free from discrimination (Quintero-Rivera et al., 2020). In addition, approximately two thirds of non-White participants also indicated that the diversity of the patient population served was important for their program selection. In contrast, only approximately one-third of White applicants selected as influencing their program selection. The lack of relevance of diversity in the patient population for White

applicants may be associated with recent research showing genetic counselor bias favoring White individuals (Hagiwara et al., 2023, Lowe et al., 2020, Pollock et al., 2022). Perhaps similar biases among White genetic counseling applicants are reducing the level of value they place on diversity within the patient populations served. It is also possible that non-White applicants may be placing a higher value on the diversity of patient populations when selecting GCGPs in an effort to serve patient populations with shared, or historically marginalized backgrounds. Previous research has found that URM physicians are more likely to locate their practices in areas with higher proportions of residents from minority groups and care for a higher proportion of patients of their own race or ethnicity (Komaromy et al., 1996, Walker et al., 2012, Xierali and Nivet, 2018). As the population served by genetic counselors is diverse, and will continue to diversify, it is increasingly important to recruit and train genetic counselors who reflect this diversity, and to ensure that all genetic counselors gain experience working with diverse patient populations.

Another notable finding of the current study is that first-generation college students were found to more frequently consider the diversity within program faculty ($p=0.003$) and students ($p=0.001$) when selecting GCGPs, when compared to continuing-generation college students (Figure 8a). Previous studies have found that first-generation college students are more likely to be from URM groups (Ives & Castillo-Montoya, 2020). This was also true in this study cohort, with first-generation students being more likely to be non-White ($p<0.001$) (Table 4). It is understandable that this population would also more frequently consider visible diversity within faculty and students when selecting GCGPs, for reasons similar to those noted above for non-White participants (Ives & Castillo-Montoya, 2020). However, this diversity may not be present across GCGPs. In their 2022 study, Kamran et al. found that over time medical school faculty in

the US became *less* representative of the distribution of URM seen in the US census data (Faiz et al., 2023). Given that Genetic Counseling is also a healthcare profession and justice, equity, diversity and inclusion (JEDI) have already been identified as areas needing attention within the profession, it is reasonable to infer that the level of diversity among genetic counseling faculty may show similar, or perhaps more concerning, trends to those seen in medical school faculty. This would further support the need for JEDI efforts to not only focus on the diversity within applicant and student pools, but also on diversity within program faculty.

The current study also found that LGBTQ2IA+ applicants were more likely than non-LGBTQ2IA+ applicants to consider the politics of the state where a program is located ($p<0.001$) and the diversity within the student population ($p=0.024$) when deciding which GCGPs to apply to (Figures 10d and 10a). As O'Sullivan et al. (2023) highlighted, training in an unsupportive environment can negatively affect the mental and physical health of students, so it is important for applicants to find a program and area that is a good fit. For LGBTQ2IA+ community members, having diversity within the student population may provide some indication that a program is a better fit and has a more supportive and accepting environment. If current and former students are members of the LGBTQ2IA+ community, applicants may feel reassured that they are less likely to experience discrimination within a program or a program's area. Consistent with the findings of the current study, LGBTQ2IA+ community members have also previously been found to prefer avoiding geographic areas that were historically more conservative or discriminatory (O'Sullivan et al., 2023). Furthermore, previous research has found that many LGBTQ2IA+ applicants prefer a larger cohort size as this maximizes the chances of other classmates also being members of the LGBTQ2IA+ community or having another minority identity (O'Sullivan et al., 2023).

When compared to individuals without a disability, individuals with a disability in the current study more frequently considered a program's disability-related curriculum focus when selecting GCGPs to apply to (Figure 7e). Sanborn & Patterson (2014) effectively illustrate the importance of disability-related curriculum in GCGPs and state, "By the very nature of the profession genetic counselors may have a much greater impact on influencing societal views of disability, which can have direct implications for individuals with disabilities and their families, both in terms of how they are perceived and how they perceive themselves." Individuals with a disability may be more likely to consider a program's disability-related focus when selecting GCGPs to apply to as they are more attuned to the potential influence of program curriculum on views and perceptions of disability in general.

In 2020, Lund et al. highlighted the importance of creating a disability-affirmative training environment for psychology trainees, and specifically note that the most concerning discrimination for individuals with disabilities often occurs in clinical fieldwork and supervision. Like psychology trainees, a significant portion of genetic counseling training involves clinical fieldwork, so it is possible that genetic counseling trainees may have similar experiences of discrimination and biases during supervised clinical rotations. Individuals with disabilities may be concerned about the possibility of experiencing discrimination and bias, or about the ability to receive accommodations during their training. Both factors are possible contributors to why selecting a GCGP with a disability-related curriculum focus may be of particular importance for individuals with a disability.

4.5 Diversity and Accessibility-Related Factors as Barriers in the Application Process

This study also found that first-generation college students, non-women, non-White participants and LGBTQ2IA+ community members were more likely to select a lack of diversity

within GCGPs and the field of genetic counseling as barriers in the application process, when compared to continuing-generation students, women, White participants and non-LGBTQ2IA+ community members, respectively (Figures 16b, 14b, 17b and 18b). This lack of diversity may be creating concerns among applicants from URM about the environment in which they would find themselves if admitted and may even be deterring them from applying to GCGPs altogether. This is understandable, as previous research has found that medical geneticists and genetic counseling students experience microaggressions, racial insensitivity and bias throughout their education and careers. (Pollock et al., 2022; Quintero-Rivera, 2020, Ramsey et al., 2024).

In addition, it has been found that heightened levels of stress are experienced by LGBTQ2IA+ community members during the admissions process in general (O'Sullivan et al., 2023). The current study also revealed differences in how LBGTQ2IA+ community members experienced the application process, in comparison with non-LGBTQ2IA+ applicants. In this study, LGBTQ2IA+ community members more frequently indicated that anxiety associated with the ranking process and the Match program presented a barrier in the genetic counseling application process, when compared to non-LGBTQ2IA+ community members (Figure 18c). This anxiety may at least partially be derived from the existing lack of diversity in the genetic counseling field, fear of discrimination and hesitancy to disclose identities during the admission process (O'Sullivan et al., 2023). As training in an unsupportive environment has the potential to negatively affect the mental and physical health of students, LGBTQ2IA+ applicants may be experiencing additional pressures when determining which programs are the best fit for them to apply to. If LGBTQ2IA+ applicants are hesitant to disclose their identities during the application process, they may not feel comfortable asking questions to determine which programs will provide a supportive and accepting environment. If relevant resources are not routinely

advertised to all applicants, LGBTQ2IA+ applicants may not feel comfortable asking about these resources as well, for fear of disclosing their identity and subsequently experiencing discrimination. The current study also found that LGBTQ2IA applicants more frequently selected a lack of information and resources about the application process as a barrier (Figure18b). This further supports the need to improve the accessibility and inclusiveness of the genetic counseling application process for LGBTQ2IA+ applicants.

First-generation college students also more frequently cited a lack of information and resources about the application process as a barrier, when compared to continuing-generation college students in this study (Figure16b) and were previously identified as more likely to be from URM groups than continuing-generation students (Ives & Castillo-Montoya, 2020). In their 2023 study, Faiz et al. found that URM MCAT examinees, "…had lower parental educational levels and greater financial and educational barriers (eg, outstanding premedical loans) than White examinees." They also found that these barriers were associated with a lower likelihood of applying and being admitted to medical schools and suggested that this may deter URM groups from applying to medical school in general. More recently in 2024, Lee et al. similarly found that the parents of URM genetic counseling applicants were more likely to have lower levels of education when compared to the parents of non-URM applicants. As first-generation college students typically do not have the same traditional support networks as continuing-generation college students, they are more likely to be navigating the application process without the level of guidance as their peers whose parents have earned degrees (Rubio et al., 2017, Faiz et al., 2023). It is possible that a lack of information and resources about the application process, (e.g. financially or via parental guidance) negatively affects the ability of first-generation students to submit strong application materials and therefore acts as a barrier.

In addition, this study found that obtaining relevant letters of recommendation was more frequently selected as a barrier in the application process by unmatched applicants and first-generation college students (Figures 12a and16a). The current requirement for genetic counseling applicants to have references submit letters to multiple individual programs, each with its own unique submission process (e.g. via online portal or via email), has previously been cited as a burden by international genetic counseling applicants who indicated that they "feel bad asking" for letters (Galada et al., 2024). Similarly, engineering students in a study by Baker et al. (2002) expressed feeling that they were burdening potential references by asking them to take time out of their schedules to write letters. Some students even indicated that the requirement of obtaining letters of recommendation had the potential to discourage them from applying to graduate school altogether. With large class sizes being common in the college setting, students may also have difficulty finding a professor who knows them well enough to provide a strong recommendation for them (Baker et al., 2002). Furthermore, obtaining relevant letters of recommendation from former professors may be even more challenging for applicants who do not apply to graduate school immediately after completing an undergraduate degree. For example, individuals who did not decide to pursue a graduate education until years after they completed their undergraduate degree may not have built or maintained relationships with undergraduate professors, making it difficult, if not impossible, to obtain a relevant letter of recommendation years later. Given that first-generation students cited a lack of knowledge about the application process as a barrier in this study, perhaps there is also a lack of knowledge and resources in this group about how to request and obtain strong letters of reference for GCGP applications. Applicants may also assume that GCGPs require letters of recommendation from specific individuals, like former professors, when this may not be the case; some programs allow letters to be from anyone who

can speak to the experiences and qualifications of the applicant (The University of California, Irvine, School of Medicine, 2024). In addition, previous research has highlighted that letters of recommendation are often biased in terms of content and can be biased against marginalized groups (Dalal et al., 2021). This underscores the importance for GCGPs to clearly communicate the types of letters of recommendations and the content they are seeking and to make this information easily accessible for all applicants.

Given that the disability community is underrepresented in the field of genetic counseling, the current study also sought to determine if there was a difference in the barriers experienced by individuals with a disability when compared to individuals without a disability (Zahavich & Babul-Hirji, 2023). Although there are limited studies suggesting that individuals with disabilities may experience additional barriers in the genetic counseling application process, the specifics of these potential barriers are not yet known. This study did not identify any barriers selected more frequently by individuals with disabilities than individuals without a disability (Figures 15a-e), however identification of barriers for this subgroup was limited due to a small sample size (n=52/377). It is also possible that the list of potential barriers provided to study participants was not comprehensive enough to capture this subgroup's experiences. Notably, when given the opportunity to describe “other” barriers in the application process, two individuals (~0.01%) indicated that they experienced barriers related to personal health or requirements for medical accommodations (Appendix G). Consistent with previous studies, this finding may suggest that the needs of applicants with a disability, either permanent or temporary, are not well met in the application process, specifically in terms of accessibility and the ability to obtain necessary accommodations (Zahavich & Babul-Hirji, 2023).

4.6 Diversity and Accessibility-Related Factors Affecting the Overall Application Experience

In the current study, a lack of diversity within programs and the genetic counseling field was found to more frequently affect the application experiences of non-White applicants, first-generation students and LGBTQ2IA+ community members, when compared to White applicants, continuing-generation students and non-LGBTQ2IA community members, respectively (Figures25a, 24a and 26a). Previous research has found that individuals from underrepresented racial and ethnic minorities experience pressure to be diversity representatives on their journeys to becoming genetic counselors, a well-known phenomenon in academic medicine called the minority tax (Alvarado-Wing et al., 2021; Schoonveld et al., 2007; Amuzie and Jia, 2021, Campbell and Rodriguez, 2019; Balzora, 2021; Duque Lasio and Quintero-Rivera, 2023). Previous research has shown that the pressure to represent their communities well when entering a homogenous genetic counseling field results in an increased level of stress. Although a "minority tax reform" has been proposed to protect URM students and faculty, the existing lack of diversity within programs could be contributing to a perception among non-White applicants that they are less likely to be accepted into a GCGP, further contributing to this stress and anxiety (Williamson et al., 2021). This increased level of pressure and stress on top of typical stressors during the application process, may result in a more negative experience for non-White applicants when compared to White applicants. In this study cohort, first-generation students were also more likely to be non-White ($p<0.001$) (Table 4), which is consistent with previous studies (Ives & Castillo-Montoya, 2020). It is likely that the application experience of this group would also more frequently be affected by diversity within programs and the genetic counseling field, for reasons like those noted above for non-White participants.

LGBTQ2IA+ applicants may also be experiencing additional stressors related to a lack of diversity within programs and the genetic counseling field. LGBTQ2IA+ applicants may experience higher levels of stress and anxiety if they feel they are more likely to encounter discrimination within a program or even the field as a whole. These stress levels as well as feelings of frustration may also be increased if LGBTQ2IA+ applicants are afraid to ask for relevant resources, due to a fear of disclosing their identities. This is supported by the additional finding in this study that the overall application experience of LGBTQ2IA+ applicants is also more frequently affected by the availability of information and resources about the application process (Figure 26a). Feeling less supported or less likely to be accepted by programs and the genetic counseling field, with heightened stress levels, has the potential to result in a more negative application experience for LGBTQ2IA+ applicants.

4.7 Study Limitations

One important limitation for this study is that all data was self-reported by participants. Given that it had been as many as three years since the application process for some participants, recollection of influential factors and barriers may have been affected by recall bias. This study had a response rate of approximately 8% and may not be reflective of the entire population of applicants/potential applicants to GCGP. Individuals who chose not to respond may have also had different experiences from those in this study. Similarly, it should be acknowledged that the current study did not survey *potential* applicants to GCGPs who did not ultimately participate in the match. It is likely that barriers experienced by these individuals may be different than those captured in the current study.

Another limitation for this study is that the comparisons of first-time applicants and reapplicants were restricted to individuals who applied in the 2022/2023 application cycles. As the match status was unknown for 2024 applicants at the time of data collection, these applicants were excluded from the comparisons of first-time applicants and reapplicants. The analyzed cohort also consisted of individuals who applied to GCGPs only during the 2021 to 2024 application cycles, so 2021 reapplicants were not included in the analysis (since by definition, they had applied in a cycle prior to 2021). In addition, it was not possible to separate the factors and barriers experienced by reapplicants during their first application cycle from those experienced in subsequent cycles. Although the current study found that reapplicants were more likely to be matched to a GCGP when compared to first-time applicants, this was not found to have been reported in the existing literature, suggesting that the data set analyzed in the current study may not be representative of a typical applicant pool.

Subgroup comparisons in this study were also likely affected by confounding interactions between variables, as the analyses in this study did not control for participant characteristics in each subgroup comparison. This may have masked the significance of some comparisons or falsely created a significant association where there may not really have been one.

4.8 Recommendations for Future Study

Given that obtaining advocacy and research experience was a notable barrier and is frequently recommended or required by GCGPs, future studies should further examine the underlying reasons that make obtaining advocacy and research experience challenging for applicants, and investigate ways to mitigate this barrier, particularly for unmatched applicants. It may be valuable to study how applicants interpret admission requirements and recommendations

and how GCGPs can ensure these are clearly communicated. Additionally, GCGPs should continue to assess the value and benefits of experiences they recommend or require.

Although this study identified factors affecting the program selection of individuals with a disability, it did not identify any barriers more frequently experienced by this group. It is important to note however that analysis was limited by a small sample size. Although there are existing JEDI initiatives in place within the genetic counseling community, the disability community has historically been excluded from discussions about diversity and inclusion (Zahavich & Babul-Hirji, 2023). There has also been limited research on the experiences of genetic counseling applicants and students within the disability community to support these JEDI initiatives (Darr et al., 2023). As such, additional research is needed to more accurately determine what barriers individuals with disabilities may be experiencing in the application process, and to identify ways to make JEDI initiatives more comprehensive.

Although not assessed in this study, it would be interesting to determine what proportion of unmatched applicants have a gap between completion of their undergraduate degree and applying to GCGPs. If unmatched applicants are more likely to have taken time between their undergraduate degree and applying to GCGPs, this could provide some explanation for why this group felt obtaining letters of recommendation was a barrier.

It will also be important to know whether prospective applicants, particularly first-generation college students, are aware of the existence of Match fee waivers. If this population is not aware of these waivers, they may not be accessing them as a resource, and therefore experiencing the Match fee as a financial barrier.

Another area of focus for future research is to more extensively assess the feasibility of a standardized application for genetic counseling admissions. Identifying ways to address

implementation barriers and solutions to make a standardized application feasible has the potential to reduce barriers in the application process for prospective students, such as financial barriers created by having to submit and pay fees for multiple individual program applications.

Although the findings of this study suggest a decrease over the last several years in interview-related barriers in terms of time-commitment and cost, further research should more comprehensively investigate whether the implementation of virtual interviews has created new, significant barriers for applicants, particularly for applicants who are international or from URM groups. Based on limited/preliminary research, these barriers may be related to having limited access to a private space or technical resources or being in a different time zone than a program (Galada et al., 2024).

This study also asked participants how and when they first learned about the field of genetic counseling, however due to time-constraints this data was not analyzed. Future studies could also examine this data to identify ways to increase knowledge and awareness of genetic counseling as a potential career choice, particularly among URM groups. Similarly, future studies could analyze the qualitative data collected in this study to further clarify how different factors influenced the overall application experience.

Lastly, it is important to recognize that the experiences of the 2024 applicants surveyed in this study were not influenced by match status, as these applicants did not know their match status at the time of data collection. Future studies could compare the responses of matched and unmatched 2024 applicants to assess whether their perceptions of barriers are consistent with the findings in the current study.

4.9 Conclusion

Compared to previous studies, the current study provides a more comprehensive view of factors affecting program selection, barriers in the application process and factors affecting the overall application experience, across all applicants and for several applicant subgroups. Across all applicants, the cost of tuition was found to be the top factor influencing program selection, and the cost of individual applications was found to be a frequently selected factor influencing the overall application experience. Subgroups including matched applicants, reapplicants, non-women, first-generation students and LGBTQ2IA+ community members were found to more frequently experience financial barriers during the application process.

Diversity-related factors, such as the diversity of faculty and students within programs and the genetic counseling field, were also found to act as barriers in the application process, affect program selection and affect the overall application experience, for several subgroups including LGBTQ2IA+ community members, non-White applicants and first-generation college students. The results of this study support that unmatched applicants, non-women, first-generation college students, non-White applicants and LGBTQ2IA+ community members more frequently experience diversity-related barriers in the application process. For individuals with a disability, a program's disability-related curriculum focus was an important factor influencing program selection, however this study did not identify any barriers more frequently experienced by individuals within this community.

The findings of this study contribute to developing a more complete and inclusive understanding of the factors and barriers affecting the experiences of all applicants and reinforces the need for GCGPs and stakeholders to develop solutions to address existing JEDI concerns in the application process. Developing this understanding is an essential first step to

improve the overall application experience, promote greater diversity in the applicant pool, and therefore the genetic counseling field, guide the recruitment strategies of individual programs and to revise the genetic counseling Match/application process in the future.

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APPENDIX A: Letter of Confirmation of Exempt Research Registration and IRB Amendment Letter

UCI University of California, Irvine

CONFIRMATION OF EXEMPT RESEARCH REGISTRATION

November 21, 2023

TAYLOR ANN LEM
PEDIATRICS

RE: UCI IRB #3956 Assessing the Factors and Barriers That Affect the Experiences of Applicants participating in the National Matching Services (NMS) Genetic Counseling Match Program

The human subjects research project referenced above has been registered with the UC Irvine Institutional Review Board (UCI IRB) as Exempt from Federal regulations in accordance with 45 CFR 46.101. This exemption is limited to the described activities in the registered UCI IRB protocol and extends to the performance of such activities at the sites identified. Informed consent from subjects must be obtained unless otherwise indicated below. UCI IRB conditions for the conduct of this research are included on the attached sheet.

Questions concerning registration of this study may be directed to the UC Irvine Office of Research, 160 Aldrich Hall, Irvine, CA 92697-7600; 949-824-8170.

Less than Minimal Risk (Exempt) Review Category(ies): 2i

Will Kettler
Administrator, Institutional Review Board

Approval Issued: November 21, 2023
Expiration Date: November 20, 2026
UCI (FWA) 00004071, Approved: January 31, 2003

Determinations as Conditions of Exemption:

Informed Consent Requirements:
1. **Signed Informed Consent Not Required**
    a. **Study Information Sheet Required**

APPROVAL CONDITIONS FOR ALL UCI HUMAN RESEARCH PROTOCOLS

POST-APPROVAL INVESTIGATOR RESPONSIBILITIES (PAIR):
In accordance with Federal regulations and HRP policies, there are Investigator responsibilities during the conduct, as well as after completion, of your research. Use the PAIR Worksheet to ensure adherence with your post-approval regulatory responsibilities.

UCI RESEARCH POLICIES:
All individuals engaged in human-subjects research are responsible for compliance with all applicable UCI Research Policies. The Lead Researcher (and Faculty Sponsor, if applicable) of the study is ultimately responsible for assuring all study team members adhere to applicable policies for the conduct of human-subjects research.

LEAD RESEARCHER (LR) RECORDKEEPING RESPONSIBILITIES:
LRs are responsible for the retention of protocol–related records. For more information about the LR's recordkeeping responsibilities for the preparation and maintenance of research files, visit: Post-Review Responsibilities.

APPROVED VERSIONS OF CONSENT DOCUMENTS, INCLUDING STUDY INFORMATION SHEETS:
Unless a waiver of informed consent is granted by the IRB, the consent documents (consent form; study information sheet) with the UCI IRB approval stamp must be used for consenting all human subjects enrolled in this study. Only the current approved version of the consent documents may be used to consent subjects. **Approved consent documents are not to be used beyond the expiration date provided on the IRB approval letter.** IRB approved materials can be found in Kuali Research Protocols (KRP) in the attachments section.

PROTOCOL EXPIRATION:
The UCI IRB expiration date is provided on the exempt registration letter. Exempt confirmation may be granted for no more than three (3) years. A Renewal may be submitted to continue the research.

AMENDMENTS:
The UCI HRP does not require the submission of minor changes to exempt research. For those studies in which a lead researcher (and faculty sponsor (FS), if applicable) has submitted to and received UCI IRB confirmation of exemption, minor changes may be made without notifying the UCI IRB. For more information about this including what constitutes a minor change versus a change that must be prospectively submitted for review and approval by the UCI IRB via a formal amendment, visit: Post-Review Responsibilities.

CHANGES IN FINANCIAL INTEREST:
Any changes in the financial relationship between the study sponsor and any of the investigators on the study and/or any new potential conflicts of interest must be reported immediately to the UCI Conflict of Interest Oversight Committee (COIOC). If these changes affect the conduct of the study or result in a change in the text of the approved informed consent document, these changes must also be reported to the UCI IRB via an amendment.

GRANT CONGRUENCE REVIEWS:
If this human subject research is funded or supported by a Federal Agency, it is the LR's responsibility to submit amendments, as necessary, to assure that the IRB protocol continues to be identical in principle and congruent with the scope of work outlined in the proposal application.

REPORTING A PROBLEM:
In accordance with Federal regulations and HRP policies, only internal (where UCI serves as the IRB of record), Unanticipated Problems must be reported to the UCI IRB. Unanticipated Problems should also be reported to the UCI IRB when UCI is relying on an external IRB, and the incident occurred at UCI or

the incident occurred at an offsite location on a study conducted by a UCI LR. Unanticipated Problems must be submitted to the IRB within 5 business days upon the LR's knowledge of the event. For more information, visit: Post-Review Responsibilities.

CLOSING REPORT:
A closing report should be filed with the UCI IRB when the research concludes. For more information, visit: Post-Review Responsibilities.

February 15, 2024

TAYLOR ANN LEM
PEDIATRICS

RE: UCI IRB #3956 Assessing the Factors and Barriers That Affect the Experiences of Applicants participating in the National Matching Services (NMS) Genetic Counseling Match Program

The amendment(s) for the above-referenced human-subjects research project has been approved by the University of California, Irvine Institutional Review Board (UCI IRB). Specific changes approved by the IRB are noted below.

The IRB may not have approved all changes proposed in the amendment application. Review the below summary of approved changes and any revised documents provided with this letter. If a requested change does not appear in the summary or in the revised documents, the IRB did not approve that change. Please consult with Human Research Protections (HRP) Staff for further information.

If the approved amendment(s) includes changes to the informed consent document, the approved stamped consent form is enclosed. Please discontinue use of any previous versions of the informed consent document and use only the most updated version for enrollment of all new subjects.

Changes in approved research, during the period for which IRB approval has already been given, may not be initiated without IRB review and approval except where necessary to eliminate apparent immediate hazards to the human subjects [21 CFR Part 56.108 (a)(4), and if applicable 45 CFR 46.108 (a)(3)(iii)].

Below is a summary of the approved changes requested:

Request: Change in Recruitment
Rationale: The original recruitment protocol indicated, "Contact information (email addresses) for individuals who participated in the 2018-2024 cycles of the National Matching Services (NMS) Genetic Counseling Match Program has been requested from the Association of Genetic Counseling Program Directors/Genetic Counseling Educators Association (AGCPD/GCEA) Match Committee through their research application process. These email addresses will be used to distribute email invitations to potential survey participants via the RedCap survey platform." This has changed and now the AGCPD Match Committee will send the email invitations and email reminders for survey participation on behalf of the research team and the research team will not have access to participant email addresses (other than those voluntarily provided through separate raffle survey). Per the AGCPD Match Committee requirement, we made an update to the recruitment email (attached below) to indicate "GCEA reviewed the research request from Taylor Lem at the University of California Irvine and determined it was consistent with the terms of the applicant match agreement for registrants from 2022-2024 to receive this invitation". We have also removed the option for participants to "unsubscribe" from emails from the research team because this is no longer relevant. Because we are no longer receiving email addresses from the AGCPD Match Committee for recruitment, we have modified the data retention section to indicate that any email addresses provided voluntarily through a separate survey for the draw will only be retained until compensation is complete and will then be destroyed.

Request: Change in Study team

Rationale: Dr. Fabiola Quintero-Rivera is being added as an additional co-researcher.

Questions concerning approval of this study may be directed to the UC Irvine Office of Research, 160 Aldrich Hall, Irvine, CA 92697-7600; 949-824-8170.

Level of Review of Amendment: Less than Minimal Risk (Exempt) Review

Will Kettler / Cheree DuBose
Administrator, Institutional Review Board

Approval Issued: February 15, 2024
Expiration Date: November 20, 2026
UCI (FWA) 00004071, Approved: January 31, 2003

APPENDIX B: Survey

Assessing the Factors and Barriers That Affect the Experience of Applicants Participating in the National Matching Services (NMS) Genetic Counseling Match Program

University of California, Irvine

Study Information Sheet

Assessing the Factors and Barriers That Affect the Experience of Applicants Participating in the National Matching Services (NMS) Genetic Counseling Match Program

Lead Researcher

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714-456-6883, kesingh@hs.uci.edu

Please read the information below and ask questions about anything that you do not understand. A researcher listed above will be available to answer your questions.

You are being asked to participate in a research study. Participation in this study is voluntary. You may choose to skip a question or a study procedure. You may refuse to participate or discontinue your involvement at any time without penalty or loss of benefits. You are free to withdraw from this study at any time. If you decide to withdraw from this study you should notify the research team immediately.

A lack of diversity among students admitted to genetic counseling graduate programs remains an ongoing concern, and previous studies have not adequately described the factors and barriers impacting the application experience for prospective genetic counseling students. Further, previous studies have been limited in their ability to survey individuals who applied to genetic counseling programs, but were not admitted. Developing a more comprehensive understanding of the factors and barriers affecting ALL applicants' experiences will provide valuable data that could support the improvement of the application process for applicants.

We would like you to complete an anonymous survey to learn more about your history of applying to GC program(s), the factors and barriers that may have impacted your application experience, and other demographic information. The survey will take about 15-20 minutes.

All applicants who are 18 years or older and have enrolled in the National Matching Services (NMS) Genetic Counseling Match program during the 2018-2024 match cycles (the academic term for which you applied to BEGIN the program, NOT the year in which you submitted the application materials), regardless of the outcome of their application(s), are invited to participate in the study.

Possible risks/discomforts associated with the study are psychological distress and a potential breach of confidentiality.

There are no direct benefits from participation in the study. However, this study may help identify inequities experienced by prospective genetic counseling (GC) students, an important step towards broadening diversity within

inclusion in the GC field.

You may provide your email address in a separate survey (linked here) to enter a draw for one of 100, $5 gift cards to an online retailer of your choice (eg. Amazon, Target, Starbucks). Your email address will NOT be tied to your survey responses. Study participation is not required to enter the draw.

All research data collected will be stored securely and confidentially using UC Irvine's HIPAA compliant OneDrive and RedCap platforms (password protection and two factor authentication is in place). Research data will not be stored on any other platform or device.

Future Research Use: Researchers will use your information to conduct this study. Information gathered during this research study will only be used for this study. They will not be shared with other researchers.

Questions? If you have any comments, concerns, or questions regarding this study please contact the researchers listed at the top of this form.

If you have questions or concerns about your rights as a research participant, you can contact the UCI Institutional Review Board by phone, (949) 824-8170, by e-mail at IRB@research.uci.edu or at 160 Aldrich Hall, Irvine, CA 92697-7600.

What is an IRB? An Institutional Review Board (IRB) is a committee made up of scientists and non-scientists. The IRB's role is to protect the rights and welfare of human subjects involved in research. The IRB also assures that the research complies with applicable regulations, laws, and institutional policies.

If you want to participate in this study, click the Agree button, then click the arrow button to start the survey.

	◯ Agree
Did you apply to GC program(s) in North America for Fall 2018-Fall 2024 admission?	◯ Yes ◯ No

Part I Instructions:
The first part of the survey will ask about your history of applying to GC program(s) in North America for Fall 2018-Fall 2024 admission. Click the arrow at the bottom left of each page to view a previous screen of questions. Do not use the back button on your browser or mobile device.

1 Which of the following best describes you?

- ○ I am currently applying to a genetic counseling training program for the first time
- ○ I am currently enrolled in a genetic counseling training program
- ○ I graduated from a genetic counseling program
- ○ I applied to a genetic counseling program but was not offered an interview
- ○ I applied and interviewed, but I did not match to a genetic counseling program
- ○ I applied, interviewed, and matched to a genetic counseling program, but I did not enroll in a genetic counseling program
- ○ Other

1.1 Specify your year of graduation: _____

1.2 Describe your reasons for not enrolling: _____

1.3 Please specify: _____

2 Indicate the application cycle(s) you applied for admission (the cycle is defined as the year you would start the program if you matched). For example, if you started or intended to start a genetic counseling training program in Fall 2021, your application cycle would be "2021".

- ☐ Fall 2024
- ☐ Fall 2023
- ☐ Fall 2022
- ☐ Fall 2021
- ☐ Fall 2020
- ☐ Fall 2019
- ☐ Fall 2018
- ☐ Fall 2017
- ☐ Fall 2016
- ☐ Fall 2015
- ☐ Prior to Fall 2015

2.1 Specify which application cycle(s) prior to Fall 2015 that you applied for admission (eg. Fall 2013, Fall 2014): _____

3 For each of the application cycles you participated in, how many genetic counseling training programs did you apply to?

3.1 Fall 2024 _____

3.2 Fall 2023 _____

3.3 Fall 2022 _____

3.4 Fall 2021

_____

3.5 Fall 2020

_____

3.6 Fall 2019

_____

3.7 Fall 2018

_____

3.8 Fall 2017

_____

3.9 Fall 2016

_____

3.91 Fall 2015

_____

3.92 Prior to Fall 2015 (specify the year and number of programs applied to. eg. Fall 2014: 2, Fall 2013: 5 etc.)

_____

4 For each of the application cycles you participated in, how many interviews were you offered during each cycle?

4.1 Fall 2024

_____

4.2 Fall 2023

_____

4.3 Fall 2022

_____

4.4 Fall 2021

_____

4.5 Fall 2020

_____

6 Fall 2019

_____

4.7 Fall 2018

_____

4.8 Fall 2017

_____

4.9 Fall 2016

_____

4.91 Fall 2015

_____

4.92 Prior to Fall 2015 (specify the year and number of interviews offered. eg. Fall 2014: 2, Fall 2013: 5 etc.)

_____

For each of the application cycles you participated in, how many interviews did you accept during each cycle?

5.1 Fall 2024

_____

5.2 Fall 2023

_____

5.3 Fall 2022

_____

5.4 Fall 2021

_____

5.5 Fall 2020

_____

5.6 Fall 2019

_____

5.7 Fall 2018

_____

5.8 Fall 2017

_____

5.9 Fall 2016

_____

5.91 Fall 2015

_____

5.92 Prior to Fall 2015 (specify the year and number of interviews accepted. eg. Fall 2014: 2, Fall 2013: 5 etc.)

_____

6	What factors influenced the number of schools applied to during each application cycle? Check all that apply. If factors are not included in the list, select "Other".	☐ Ability to travel to programs for interviews ☐ Applied to as many programs as possible to maximize the potential for an interview ☐ Cost of individual applications ☐ Cost of living where programs are located ☐ Cost of tuition ☐ Familiarity with genetic counseling training programs ☐ Online program availability ☐ Outside advice ☐ Specific program requirements (e.g., prerequisites, shadowing requirements, etc.) ☐ Time/effort for application ☐ Other
6.1	Please specify:	_____

Part II Instructions:

The second part of the survey will ask about your experience of applying to GC program(s) in North America for Fall 2018-Fall 2024 admission. Please answer these questions based on your experience with all GC application cycles that you participated in.

7 Please indicate which factors you considered to be important when making your decision about which genetic counseling program(s) to apply to across all application cycles that you participated in. Check all that apply. If factors are not included in the list, select "Other".

- ☐ Ability to keep current job
- ☐ Ability to live at home
- ☐ Ability to live near family/partner/friends
- ☐ Availability of additional financial support (scholarships, grants, etc.)
- ☐ Availability of online coursework
- ☐ Availability of part time work
- ☐ Availability of rotation/fieldwork options
- ☐ Board pass rate
- ☐ Campus/program facilities
- ☐ Clinical observation(s) offered prior to beginning rotations
- ☐ Cost of living in the area
- ☐ Cost of tuition
- ☐ Courses consist of students from various training programs
- ☐ Courses restricted to genetic counseling students
- ☐ Diversity within faculty
- ☐ Diversity within patient population
- ☐ Diversity within students
- ☐ Faculty member(s) reputation(s)
- ☐ Faculty:student ratio
- ☐ Interaction with alumni
- ☐ Interaction with current students
- ☐ Interaction with Program Director/faculty
- ☐ Job placement rate
- ☐ A master's thesis was not required by the program (i.e., A Capstone or other project was required)
- ☐ A master's thesis was required by the program
- ☐ Politics of the state where the program is located
- ☐ Preference for a specific geographic area
- ☐ Program size (number of students per cohort)
- ☐ Program website
- ☐ Program's disability-related curriculum focus
- ☐ Program's psychosocial-related curriculum focus
- ☐ Program's science-related curriculum focus
- ☐ Program's values/philosophy/culture
- ☐ Rotation/fieldwork schedule
- ☐ The school was not part of a medical center
- ☐ The school was part of a medical center
- ☐ Other

7.1 Please specify other factor:

_____

8 Of the factors you selected as important in making your decision about which genetic counseling program(s) to apply to in question 7, please rank your top three factors by their importance in your decision. Use the drop down menus below to rank your top three factors in order of importance, where factor #1 is the most important factor among those you selected.

Factor #1: _____ Most Important
Factor #2: _____
Factor #3: _____ Least important

9 In considering the most influential factor in your decision (i.e., the factor that you indicated as #1 above), what about this factor made it the most important to you? For example, if you ranked "rotation/fieldwork options" as #1, what aspect of rotation/fieldwork options did you consider when making your decision (e.g., specialty clinic availability, travel time/distance to rotations sites, industry-based options, etc.)?

_____

10 From the following list, please select factors that you felt created a barrier in the genetic counseling application process. Base your selection(s) on all application cycles that you participated in. Check all that apply. If factors are not included in the list, select "other".

- ☐ Anxiety associated with the Match ranking process/anxiety associated with the Match process
- ☐ Costs associated with exams such as the GRE or TOEFL/IELTS and the sending of test scores
- ☐ Costs associated with individual program applications
- ☐ Costs associated with interview(s), including travel, food and lodging, attire etc.
- ☐ Costs associated with sending transcripts
- ☐ Costs associated with the GRE and sending of test scores
- ☐ Costs associated with the National Matching Service
- ☐ Exam scores (e.g. GRE, TOEFL/IELTS etc.)
- ☐ Lack of diversity in individual programs
- ☐ Lack of diversity in the field of genetic counseling
- ☐ Lack of information and resources about the application process
- ☐ Lack of knowledge about the application process
- ☐ Lack of programs in your current geographical area/geographic location of programs are not desirable
- ☐ Necessity to take time off of work/school to attend interview(s)
- ☐ Obtaining advocacy experience
- ☐ Obtaining crisis counseling experience
- ☐ Obtaining observation/shadowing experience
- ☐ Obtaining other volunteer experience that is not described here
- ☐ Obtaining relevant letters of recommendation
- ☐ Obtaining research experience
- ☐ Overall likelihood of acceptance into a program
- ☐ Prerequisite coursework requirements
- ☐ Pressure of competition
- ☐ Requirement to travel for interview(s)
- ☐ Time commitment in filling out different applications for each program
- ☐ Undergraduate GPA
- ☐ Other

10.1 Please specify:

_____

11 Which one of the factors selected in question 10 presented the greatest barrier in the application process?

- ◯ Anxiety associated with the Match ranking process/anxiety associated with the Match process
- ◯ Costs associated with exams such as the GRE or TOEFL/IELTS and the sending of test scores
- ◯ Costs associated with individual program applications
- ◯ Costs associated with interview(s), including travel, food and lodging, attire etc.
- ◯ Costs associated with sending transcripts
- ◯ Costs associated with the GRE and sending of test scores
- ◯ Costs associated with the National Matching Service
- ◯ Exam scores (e.g. GRE, TOEFL/IELTS etc.)
- ◯ Lack of diversity in individual programs
- ◯ Lack of diversity in the field of genetic counseling
- ◯ Lack of information and resources about the application process
- ◯ Lack of knowledge about the application process
- ◯ Lack of programs in your current geographical area/geographic location of programs are not desirable
- ◯ Necessity to take time off of work/school to attend interview(s)
- ◯ Obtaining advocacy experience
- ◯ Obtaining crisis counseling experience
- ◯ Obtaining observation/shadowing experience
- ◯ Obtaining other volunteer experience that is not described here
- ◯ Obtaining relevant letters of recommendation
- ◯ Obtaining research experience
- ◯ Overall likelihood of acceptance into a program
- ◯ Prerequisite coursework requirements
- ◯ Pressure of competition
- ◯ Requirement to travel for interview(s)
- ◯ Time commitment in filling out different applications for each program
- ◯ Undergraduate GPA
- ◯ Other

12 Please explain how the factor(s) you selected in question 10 presented a barrier in the application process. For example, if you selected "obtaining observation experience", explain how this was a barrier (e.g., lack of genetic counselors in your area to shadow, lack of scheduling availability for genetic counselors to accept students, unable to take time off of work to shadow, etc.).

_____

13 If you feel willing to share, what do you think might be effective in reducing or eliminating the barriers experienced during the genetic counseling application process?

_____

14 From the following list, please select factors that you felt had the greatest overall influence on your experience during the genetic counseling application process. Base your selection(s) on all application cycles that you participated in. Check all that apply. If factors are not included in the list, select "Other".

- ☐ Costs associated with sending transcripts
- ☐ Costs associated with exams such as the GRE or TOEFL/IELTS and the sending of test scores
- ☐ Costs associated with the National Matching Service
- ☐ Costs associated with interview(s), including travel, food and lodging, attire etc.
- ☐ Costs associated with individual program applications
- ☐ Information and resources about the application process
- ☐ Interaction with alumni
- ☐ Interaction with current students
- ☐ Interaction with program faculty
- ☐ Knowledge about the application process
- ☐ Lack of diversity in individual programs
- ☐ Lack of diversity in the field of genetic counseling
- ☐ The Match ranking process/the Match process overall
- ☐ Overall likelihood of acceptance into a program
- ☐ Program website
- ☐ Requirement to travel for interview(s)
- ☐ Taking time off of work/school to attend interview(s)
- ☐ Time commitment in filling out different applications for each program
- ☐ Other

14.1 Please specify:

_____

15 Which one of the factors selected in question 14 had the greatest impact on your overall application experience?

- ◯ Costs associated with sending transcripts
- ◯ Costs associated with exams such as the GRE or TOEFL/IELTS and the sending of test scores
- ◯ Costs associated with the National Matching Service
- ◯ Costs associated with interview(s), including travel, food and lodging, attire etc.
- ◯ Costs associated with individual program applications
- ◯ Information and resources about the application process
- ◯ Interaction with alumni
- ◯ Interaction with current students
- ◯ Interaction with program faculty
- ◯ Knowledge about the application process
- ◯ Lack of diversity in individual programs
- ◯ Lack of diversity in the field of genetic counseling
- ◯ The Match ranking process/the Match process overall
- ◯ Overall likelihood of acceptance into a program
- ◯ Program website
- ◯ Requirement to travel for interview(s)
- ◯ Taking time off of work/school to attend interview(s)
- ◯ Time commitment in filling out different applications for each program
- ◯ Other

16 Please explain how the factor(s) you selected in question 14 impacted your application experience. For example, if you selected "interaction with program faculty", explain how this affected your application experience (e.g. being engaged with program faculty throughout the application cycle made me feel more supported during the application process, etc.).

_____

17 What was/is your age at the time of your last application cycle?

_____

18 With which gender identity do you identify?

- ◯ Man
- ◯ Woman
- ◯ Non-binary / third gender
- ◯ Prefer not to say

19 Did you identify as being part of the LGBTQ2IA+ community at the time of your last application cycle?

- ◯ Yes
- ◯ No
- ◯ Prefer not to say

20 Did you identify as having a disability at the time of your last application cycle?

- ◯ Yes
- ◯ No
- ◯ Prefer not to say

21 What best describes your racial/ethnic background? (Check all that apply)

- ☐ Black/African American
- ☐ East Asian: Chinese, Japanese, Korean, Okinawan, Taiwanese, Tibetan
- ☐ Hispanic
- ☐ Native American/Alaskan Native/First Nations
- ☐ Native Hawaiian/Pacific Islander
- ☐ South Asian: Bangladeshi, Bhutanese, Indian, Maldivians, Nepali, Pakistani, Sri Lankan
- ☐ Southeast Asian: Bruneian, Burmese, Cambodian, Filipin, Hmong, Indonesian, Laotian, Malaysian, Mien, Singaporean, Timorese, Thai, Vietnamese
- ☐ West Asian/Middle Eastern/North African
- ☐ White/Caucasian
- ☐ Not listed
- ☐ Prefer not to say

21.1 Please specify:

_____

22 Were you fluent in any language(s) other than English at the time of your last application cycle?

- ◯ Yes
- ◯ No

22.1 Please indicate language(s) spoken:

_____

23 What was your relationship status at the time of your last application cycle?

- ◯ Single
- ◯ Engaged
- ◯ Long-term relationship
- ◯ Married or in a domestic partnership
- ◯ Divorced/separated
- ◯ Widowed
- ◯ Prefer not to say
- ◯ Other

24	How many children did you have at the time of your last application cycle?	◯ 0 ◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 or more
25	Excluding children, were you a caregiver for another person at the time of your last application cycle?	◯ Yes ◯ No
26	Do you identify as a first-generation college student?	◯ Yes ◯ No
27	When did you first learn about genetic counseling as a profession?	◯ Younger than 10 years old ◯ 10-15 years old ◯ 16-20 years old ◯ 21-25 years old ◯ 26-30 years old ◯ Older than 30 years old
28	How did you first learn about genetic counseling as a profession?	◯ Career counselor ◯ Career fair ◯ Clinical encounter with genetic counselor ◯ Friend/family member ◯ High school teacher ◯ Internet search ◯ Mentor ◯ Other school related experience ◯ Undergraduate course ◯ Work experience ◯ Other
28.1	Please specify:	_____
29	How did you find out about this survey?	◯ Discord ◯ Email invitation ◯ Genetic counseling special interest group ◯ Instagram ◯ LinkedIn ◯ Program faculty/program email ◯ Reddit ◯ Twitter ◯ Other
29.1	Please specify:	_____

APPENDIX C: NSGC Student/New Grad SIG and NSGC Research SIG Grant Awards Decision Letters

Re: Student/New Grad Special Interest Group Grant Award Application

Courtney Cook <courtney.cook@bcchr.ca>
Sat 10/7/2023 7:46 PM
To:Lem, Taylor <talem@hs.uci.edu>

1 attachments (16 KB)
SNG SIG Grant Award Progress Report Template.docx;

Hi Taylor,

On behalf of the Student/New Grad (SNG) SIG I am very happy to inform you that you have been selected as **a recipient of the 2023 SNG SIG Grant Award!** We are able to offer you your full requested amount of **$150 USD** in funding support.

If you would like to accept this award please reply to me by email with your full name and mailing address, no later than Friday October 13th. We will be mailing you the award amount directly. By confirming that you are accepting the award you are also agreeing to the following expectations.

- Submit receipts, bills, or invoices regarding the costs of the study with a financial summary of how the funds were spent to the SNG co-chair by June 30th of the year following.
- Return any funds that remain unused by June 30th to the SNG SIG co-chair.
- Submit a short progress report for the project by June 30th (template attached).
- Present the project outcome to the members of the SNG SIG via online webinar, typically in the fall following the awardee's graduation from their genetic counseling program.
- Any publications or presentations arising from the research should acknowledge the SNG SIG grant award

The members of our grant review committee were very impressed by your proposal and look forward to hearing more about your research!

Please don't hesitate to reach out if you have any questions.

All the best,
Courtney

Courtney Cook, MSc, CGC (she/her)
Research Genetic Counsellor, GenCOUNSEL Project
UBC Department of Medical Genetics
Clinical Support Building V3-319
Email: courtney.cook@bcchr.ca
Tel: 604-875-2000 x6333

I acknowledge my place of work is on the unceded traditional and ancestral territories of the Musqueam, Squamish and Tsleil-Waututh Nations. These nations have agency over the land.

NSGC Research SIG Grant Award Decision

Ruth Lehan <ruth.lehan@duke.edu>
Wed 9/13/2023 9:57 AM
To:Lem, Taylor <talem@hs.uci.edu>

Dear Taylor,

Congratulations! Your proposal "Assessing the Factors and Barriers that Affect the Experiences of Applicants Participating in the National Matching Services (NMS) Genetic Counseling Match Program" has been selected for partial funding as a 2023 National Society of Genetic Counselors Research Special Interest Group Grant Award (RSGA). Your project will be funded in the amount of USD $350.23.

Acceptance of the award includes an understanding that the project must be completed in a timely fashion and that funds will be used as outlined in your submitted budget. Should you encounter unexpected expenses towards which you would like to use the grant funding, please email me to request committee approval. A check for USD $350.23 will be mailed to you upon receipt of a copy of your IRB/REB approval notice. The IRB/REB approval notice can be emailed to me at ruth.lehan@duke.edu.

Additionally:

- Funds must be spent by June 30, 2024, and a financial summary of how the funds were spent (including receipts/invoices) must be submitted to the RSGA chairperson and the Research SIG co-chairs at that time. The current Research SIG co-chairs are Jessica Goehringer (jgoehringer@geisinger.edu) and Zack Salvati (zsalvati@geisinger.edu)
- Any publications arising from your research are expected to acknowledge the National Society of Genetic Counselors Research Special Interest Group grant award.

The Award Committee was very enthusiastic about your project. We are excited about your goal to explore factors and barriers that differ between individuals who match and do not match through the NMS Genetic counseling match program! Very interesting, well written proposal on a very important topic. Congratulations again!

Sincerely,

Ruth Lehan, MS, CGC
Chair, Research SIG Grant Award Committee
Ruth.lehan@duke.edu

APPENDIX D: Recruitment Email Invitation

SUBJECT LINE: RESEARCH OPPORTUNITY SENT ON BEHALF OF TAYLOR LEM AT THE UNIVERSITY OF CALIFORNIA, IRVINE: ASSESSING THE FACTORS AND BARRIERS THAT AFFECT THE EXPERIENCES OF APPLICANTS PARTICIPATING IN THE NATIONAL MATCHING SERVICES (NMS) GENETIC COUNSELING MATCH PROGRAM

Lead Researcher Taylor Lem and researchers from the Division of Genetics and Genomics at the University of California, Irvine are recruiting participants for a research study about the **factors and barriers affecting the experiences of genetic counseling graduate program applicants**. Developing a more comprehensive understanding of the factors and barriers affecting ALL applicants' experiences will provide valuable data that could support the improvement of the application process and promote greater equity and diversity in the applicant pool.

You are eligible to participate in this study if you are at least 18 years of age or older and have enrolled in the National Matching Services (NMS) Genetic Counseling Match program during the 2018-2024 match cycles (the academic term for which you applied to BEGIN the program, NOT the year in which you submitted the application materials), regardless of the outcome of your application(s).

As part of participating, you will be asked to complete an anonymous survey which is estimated to take approximately 15-20 minutes.

You may provide your email address in a separate survey (linked here) to enter a draw for one of 100, $5 gift cards to an online retailer of your choice (ie. Amazon, Target, Starbucks). Your email address will NOT be tied to your survey responses. Study participation is not required to enter the draw.

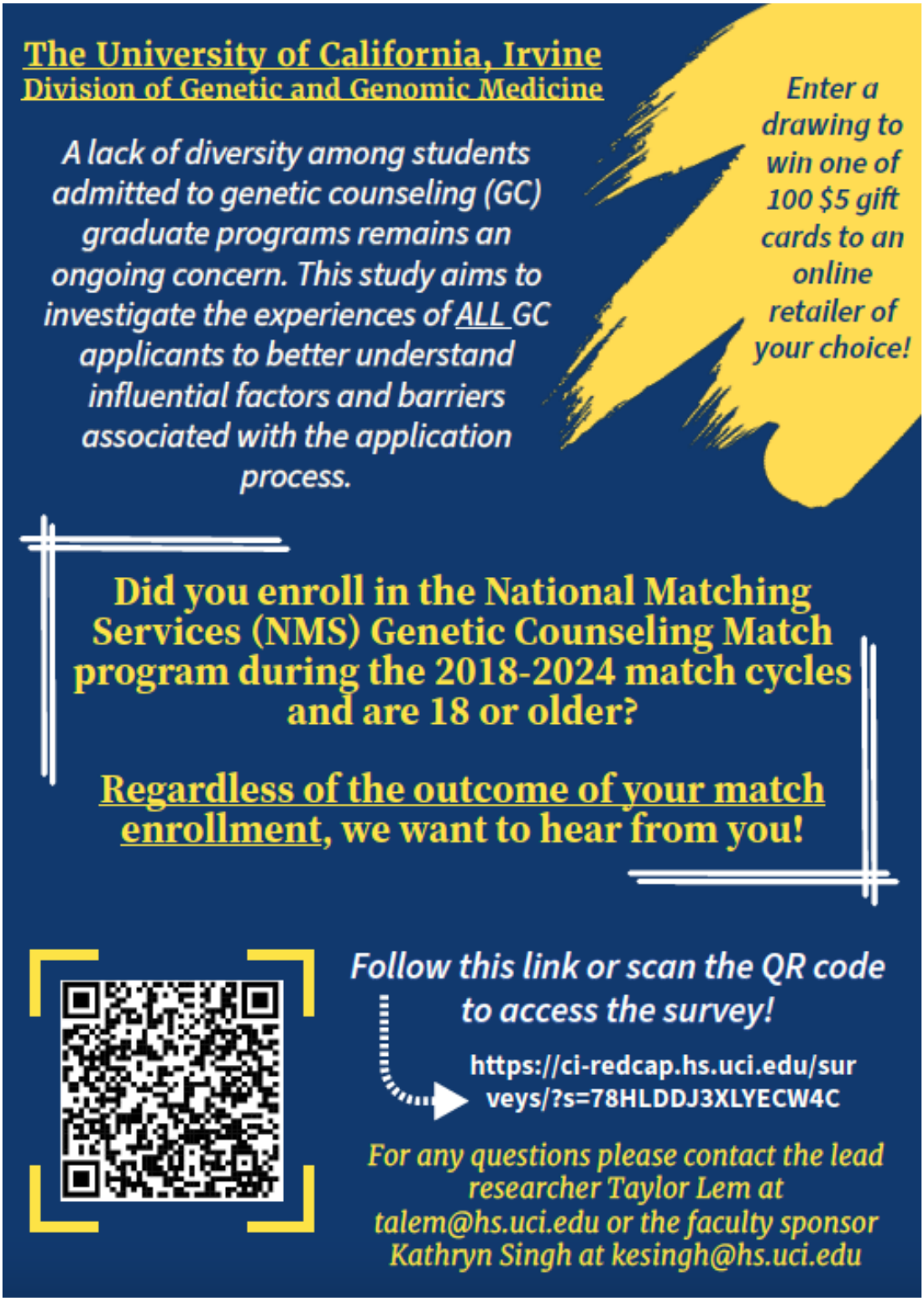
If you are interested in participating in this study, please visit the link below to access the study information sheet and survey. For any questions, please contact the lead researcher, Taylor Lem at talem@hs.uci.edu or the faculty sponsor, Kathryn Singh at kesingh@hs.uci.edu.

Survey Link*:* ***https://ci-redcap.hs.uci.edu/surveys/?s=78HLDDJ3XLYECW4C***

Thank you very much for your time.

PLEASE NOTE: GCEA reviewed the research request from Taylor Lem at the University of California Irvine and determined it was consistent with the terms of the applicant match agreement for registrants from 2022-2024 to receive this invitation

APPENDIX E: Recruitment Flyer



APPENDIX F: List of "Other" Factors Affecting Program Selection

(Free Text Responses)

Frequencies of "other" factors influencing the selection of programs for all participants.

Factor*	N=377	Percent (%)
Disability accommodations and services	2	0.3
GRE score requirement	2	0.5
Likelihood of acceptance	1	0.3
National ranking of the program	1	0.3
Prerequisite course requirements	1	0.3
Requirement to travel for rotations/fieldwork	2	0.3
Support for international students	1	0.3
Undergraduate GPA requirements	1	0.3

*Participants could select more than one factor

APPENDIX G: List of "Other" Barriers in the Application Process

(Free Text Responses)

Frequencies of "other" barriers in the application process for all participants.

Barrier*	N=377	Percent (%)
Acceptance of international students	1	0.3
Anxiety associated with the GRE	1	0.3
Availability of online programs	1	0.3
Ease of use and accessibility of program websites	3	0.8
Gap between undergraduate degree and applying to GCGPs	1	0.3
International time differences for interviews	2	0.5
Lack of diversity within the applicant pool	2	0.5
Personal health or requirement for medical accommodations	2	0.3
Reputation of undergraduate institution	1	0.3

*Participants could select more than one factor

APPENDIX H: List of "Other" Factors Affecting the Overall Application Experience

(Free Text Responses)

Frequencies of "other" factors affecting the overall application experience for all participants.

Factor*	N=377	Percent (%)
Accessibility of applications	1	0.3
Available resources from undergraduate institution	1	0.3
Interaction with other prospective students	2	0.5
Limited ability to determine which programs were a "good fit" through virtual interviews	1	0.3
Obtaining shadowing experience	2	0.5
Only able to apply to programs within a specific geographic area	1	0.3
Personal interest in and passion for a program	1	0.3
Prerequisite courses	1	0.3
Receiving interview feedback	1	0.3
Virtual open houses/information sessions	1	0.3

*Participants could select more than one factor