Perspectives from the Trenches: An Analysis of How the Workforce is Currently Utilized to Train the Next Generation of Genetic Counselors

Master’s Thesis

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in
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by
Ashley Barnes

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ABSTRACT

Perspectives from the Trenches: An Analysis of How the Workforce is Currently Utilized to Train the Next Generation of Genetic Counselors

A thesis presented to the Graduate Program in Genetic Counseling

Graduate School of Arts and Sciences
Brandeis University
Waltham, Massachusetts

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The demand for qualified individuals to provide genetic services is rapidly increasing, creating an explosion of jobs within the field of genetic counseling. Training additional genetic counselors would help address the emergent demands for genetic services, but the availability of clinical supervision to train students is a rate-limiting factor. This study aimed to evaluate experiences and the perspectives of patient-facing genetic counselors on the clinical training of genetic counseling students. Four hundred fifteen patient-facing genetic counselors belonging to either the NSGC or ABGC completed an anonymous online survey. Approximately half of participants provided clinical supervision in 2017 and these participants represented 98% of accredited programs in the United States in Canada. The demographics were consistent with the 2016 NSGC Professional Status Survey. The majority of participants (94.3%) perceived the training of additional students as either extremely important or very important. Approximately 55% of participants indicated that they could train additional students per year, with 34.1% of those participants reporting the ability to train an additional 3-5 students yearly. Participants that reported that there was no genetic counseling program within 60 miles of their clinic were more
likely to report that they could train more students. Workload, patient volume, number of additional professional responsibilities, age, and NSGC region were not found to be associated with participants’ capacity to train more students. Inclusion of telemedicine cases and expansion of internship opportunities outside direct patient care were ranked as the most effective ways to train additional students. These findings illustrate that patient-facing genetic counselors not only endorse the training of additional genetic counseling students, but also have the ability to provide additional clinical supervision. The utilization of clinical sites located further from existing training programs, potentially using telemedicine or travel stipends, as well as the incorporation of internship experiences in industry, research, and laboratories may allow more students to be trained.

**Keywords:** Genetic Counseling; Supervision; Genetic Counseling Training; Workforce Expansion; Workforce Utilization
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INTRODUCTION

The demand for qualified individuals to provide genetic services is rapidly increasing, creating an explosion of jobs within the field of genetic counseling. According to the 2016 National Society of Genetic Counselors (NSGC), there are currently more than 4,000 certified genetic counselors, which demonstrates an 88% growth from 2006 (NSGC, 2016). Between 2013 and 2016, the number of NSGC job listings for certified genetic counselors increased by 20% yearly (Hoskovec et al., 2018). The increase of jobs within the field is anticipated to continue, as the United States Department of Labor projects a 29% growth rate in the field between 2014 and 2024 (Bureau of Labor Statistics, 2015).

Genetic counselors work in a variety of clinical areas including cancer, prenatal, cardiac, metabolic, neurogenetics, and infertility (NSGC, 2016). Genetic counseling services are also expanding into non-clinical areas such as the direct-to-consumer testing market, testing laboratories, research, and public health services (Christian et al., 2012; Harris et al., 2013; Powell et al., 2010). Despite the overall high satisfaction genetic counselors have with their jobs, the landscape of genetic counseling is shifting away from predominantly patient-facing roles (Cohen & Tucker, 2018). In fact, between 2002 and 2016, the number of genetic counselors employed by university medical centers decreased, while the number of genetic counselors employed by diagnostic laboratories increased (Schulz, 2017). Hoskovec and colleagues estimated that the number of certified genetic counselors in direct patient care would drop from 65% to 60% between 2016 and 2026 (Hoskovec et al., 2018).
Despite the growing demand, there is a finite number of qualified individuals to provide genetic services. Between 2014 and 2015, most genetic counselors reported a noticeable increase in patient volume but observed no change or a decrease in the number of office staffing (NSGC, 2016). This discrepancy may be the result of limited access to resources, namely certified genetic counselors. The number of genetic counselors graduating each year from accredited programs is not increasing at a fast-enough rate to keep up with growing workforce (Office of Biotechnology Activities, 2011). One possible way to address the emergent demands for genetic services is to increase the efficiency of existing training. Identifying and addressing barriers to workforce expansion is addressed in NSGC’s strategic plan (NSGC, 2017).

Clinical supervision is an essential component of training genetic counseling students. In order to take the ABGC certification exam, genetic counseling students are required to see a minimum of 50 core cases under the supervision of a board-certified genetic counselor or medical geneticist by the end of their training (ABGC, 2017). The breakdown of these cases should reflect the most recent ABGC Practice Analysis, which was approximately 40% prenatal, 25% cancer, 25% pediatric, and 10% adult in 2011 (ABGC, 2017). There are many barriers associated with the expansion of genetic counseling training programs, and the availability of clinical supervision is frequently considered the main rate-limiting step. Pan et al. (2016) surveyed genetic counseling program directors to understand the barriers that are impeding the growth of genetic counseling programs and found that program directors perceived access to clinical sites as the main challenge in expanding programs.

Previous research has focused on the genetic counselors that have not participated in the training of students. Reasons not to become a supervisor include lack of supervision training opportunities and uncertainty regarding one’s own ability to supervise (Atzinger et al., 2014;
Eubanks Higgins et al., 2013). Additionally, having a student is a great time commitment given their current workload (Berg et al., 2017; Hendrickson et al., 2002; Lindh et al., 2003). Genetic counselors are more prone to experience burnout than other providers of genetic services, thus the addition of training a student to an already demanding work environment may contribute to genetic counselors’ experience of this phenomenon (Bernhardt et al., 2009).

In 2017, Berg et al. examined barriers to supervision as perceived by supervisors, non-supervisors, and program directors. The results of their study suggested that genetic counselors that provided supervision were interested in increasing the amount of time they spent supervising genetic counseling students. However, supervisors noted barriers such as a lack of time, balancing other responsibilities, being short staffed, heavy patient volume in the clinic, and supervisor burnout. Non-supervisors reported the primary reasons for not supervising as being a recent graduate, not being located near a program, never being asked to supervise, and not seeing that count toward student logbooks (Berg et al., 2017). The authors suggested an evaluation of the efficiency of current training models, utilizing genetic counselors in roles such as laboratory, industry, and telemedicine in the training of students, and redefining countable log book cases.

Despite the concern over the limited availability and accessibility of clinical sites, the ACGC has worked to accredit additional genetic counseling training programs. As of 2017, there are 43 accredited training programs in the United States and Canada, and four additional programs that have submitted letters of intent (ACGC, 2017). While it goes uncontested that clinical supervisors provide a critical and irreplaceable component of the training process, it is unclear how the genetic counseling workforce is being utilized in the training of genetic counseling students. Therefore, this study aimed to understand how patient-facing genetic counselors are utilized to train genetic counseling students as well as their capacity to train
additional students as genetic counseling training programs expand.
METHODS

This study was deemed exempt from full review by the Brandeis University Institution Review Board (IRB) in November of 2017.

Participants:

In order to be eligible for this study, participants had to be an ABGC or CAGC certified genetic counselor and had to see patients as part of their current position.

Instrumentation:

An anonymous online survey was created through Qualtrics. The survey consisted of 38 multiple choice, Likert-scale, and open-ended questions. The survey was further broken down into four main sections to assess: (1) workplace demographics, (2) utilization of the workforce in the training of genetic counseling students, (3) the supervision experience, and (4) perceptions of practicing genetic counselors on the expansion of genetic counseling training programs. Demographic data including age, specialty area, ethnicity, gender, and NSGC region was collected. Information collected about the participants’ workplace included patient volume, number of genetic counseling colleagues, composition of medical trainees, and workload. To assess workload, participants were asked to complete the Quantitative Workload Inventory (QWI), a validated scale that assesses quantity of work (Spector & Jax, 1998).

To determine how the workforce is utilized to train students, participants were asked about the quantity, length, number of logged cases, and associated training programs in 2017. Participants were also asked if they could host more students and if so, how many more. Using the results of previous studies, two lists containing reasons a genetic counselor would choose to
supervisor or not supervise were generated (Atzinger et al., 2014; Berg et al., 2017; Eubanks Higgins et al., 2013; Hendrickson, 2002; Lindh, 2003). Participants were asked to rank their top three reasons to supervise and the top three barriers to having a student. Additional questions investigating the supervision experience asked participants how they have been recognized for supervising, their satisfaction with how they have been recognized, and suggestions for better ways to recognize supervisors in the future.

The final block of questions examined participants’ perceptions on the expansion of genetic counseling training programs. One question asked participants to rank the effectiveness of training additional students using a variety of methods, such as decreasing each student’s clinic time, using hired actors/actresses to simulate a genetic counseling session, and changing the number of cases required by the ABGC. Additional questions in this section asked participants about changing the breakdown of cases required by the ABGC and their perception of the importance of training more genetic counseling students. The complete survey is included in Appendix A.

Procedures:

An e-blast containing the recruitment notice was sent to all individuals who were members of either the ABGC or NSGC listserv. The NSGC recruitment notice was forwarded to the Association of Genetic Counseling Program Directors’ listserv asking them to send the survey to all clinical genetic counselors who provide supervision to genetic counseling students in their respective programs. Approximately one month after the initial recruitment e-blasts were sent, both the ABGC and NSGC sent a reminder through their listservs. The recruitment notices are included in Appendix B. At the end of the survey, participants had the option to enter a random drawing for one of two $50 Amazon gift cards. If participants selected this option, the
survey directed them to a separate online Qualtrics survey to provide their e-mail address. Participants’ contact information was not linked to their survey responses. Raffle winners were randomly selected after the survey had closed.

Data Analysis:

Quantitative analysis was conducted using IBM SPSS Statistics Version 24. Both descriptive and frequency statistics were calculated for as appropriate. Descriptive and frequency statistics were first calculated to assess the data. To determine relationships between variables, paired T-tests, linear regression analyses, and other multivariate analyses were performed as appropriate. Statistical significance was based on a level of $p < 0.05$ for all associations. Open ended responses were manually imported into Microsoft Excel for coding and thematic analysis.
RESULTS

Demographics

There was a total of 477 responses. Sixty-two responses were excluded from analysis as they either did not meet inclusion criteria or failed to complete more than the first two questions which assessed participant eligibility, leaving 415 responses for analysis. The demographics of participants was representative of the NSGC membership (Table 1; NSGC, 2016). With the exception of the University of Oklahoma Health Science Center, clinical supervisors for all accredited programs in the United States and Canada were represented.

On average, participants reported 4 additional activities in conjunction with their primary role, with responses ranging from 1 to 16. The majority of participants (72.5%) reported involvement in teaching, educating, and supervising. Participants’ responses to the QWI were scored. Scores for each of the 5 items on the QWI ranged from 1, indicating less than once per month, to 5, indicating several times per day. Responses for each item were summed, with possible scores ranging from 5 to 25, with higher scores indicating an increased workload compared to lower scores (Spector & Jax, 1998). A total of 391 participants completed the QWI. The average workload score was 17.67, with a range from 6 to 25.

Utilization of the Workforce in the Training of Genetic Counseling Students

Approximately half of participants were the primary supervisor for at least one genetic counseling student in 2017 (Table 2). The majority of participants (182/330, 55%) indicated that it was possible for them to train more students (Figure 1). Roughly one third of participants
(62/182, 34.1%) who reported they could train more students indicated they could train an additional 3-5 students per year (Table 3).

Table 1: Participant demographics were reflective of the NSGC PSS

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>%</th>
<th>Mean</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Region</td>
<td>333</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I: CT, MA, ME, NH, RI, VT, Canadian Maritime Provinces</td>
<td>23</td>
<td>6.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>II: DC, DE, MD, NJ, NY, PA, WV, Quebec, Puerto Rico, Virgin Islands</td>
<td>69</td>
<td>20.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>III: AL, FL, GA, KY, LA, MS, NC, SC, TN</td>
<td>32</td>
<td>9.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IV: AR, IA, IL, IN, KS, MI, MN, MO, ND, NE, OH, OK, SD, WI, Ontario</td>
<td>120</td>
<td>36.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V: AZ, CO, MT, NM, TX, UT, WY, Alberta, Manitoba, Saskatchewan</td>
<td>41</td>
<td>12.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VI: AK, CA, HI, NV, OR, WA, British Columbia</td>
<td>46</td>
<td>13.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>0.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specialty Area*</td>
<td>379</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prenatal</td>
<td>129</td>
<td>34.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pediatrics</td>
<td>102</td>
<td>26.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cancer</td>
<td>159</td>
<td>42.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adult</td>
<td>46</td>
<td>12.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>General</td>
<td>54</td>
<td>14.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neurogenetics</td>
<td>27</td>
<td>7.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cardiac</td>
<td>35</td>
<td>9.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metabolic</td>
<td>20</td>
<td>5.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>30</td>
<td>7.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work Setting</td>
<td>414</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>University Medical Center</td>
<td>199</td>
<td>48.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public Hospital</td>
<td>97</td>
<td>23.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private Hospital</td>
<td>82</td>
<td>19.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diagnostic Laboratory</td>
<td>10</td>
<td>2.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physician's Private Practice</td>
<td>13</td>
<td>3.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>13</td>
<td>3.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hours Worked Per Week</td>
<td>410</td>
<td></td>
<td>40</td>
<td>0-80</td>
</tr>
<tr>
<td>Age</td>
<td>275</td>
<td></td>
<td>32</td>
<td>24-60</td>
</tr>
<tr>
<td>Year Graduated from Genetic Counseling Program</td>
<td>321</td>
<td>2010</td>
<td>1976-2017</td>
<td></td>
</tr>
<tr>
<td>Ethnicity</td>
<td>332</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td>7</td>
<td>2.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian Indian</td>
<td>5</td>
<td>1.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black or African American</td>
<td>3</td>
<td>0.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White or Caucasian</td>
<td>300</td>
<td>90.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>8</td>
<td>2.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prefer not to answer</td>
<td>9</td>
<td>2.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>329</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>13</td>
<td>4.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>313</td>
<td>95.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prefer not to answer</td>
<td>3</td>
<td>0.9</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Respondents could choose multiple options
Table 2: Number of students that participants had been the primary supervisor for from January 2017-December 2017 (n = 346).

<table>
<thead>
<tr>
<th>Number of Students</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>47.1</td>
</tr>
<tr>
<td>1</td>
<td>15.0</td>
</tr>
<tr>
<td>2</td>
<td>15.0</td>
</tr>
<tr>
<td>3</td>
<td>6.6</td>
</tr>
<tr>
<td>4</td>
<td>5.2</td>
</tr>
<tr>
<td>5</td>
<td>3.8</td>
</tr>
<tr>
<td>Other</td>
<td>7.2</td>
</tr>
</tbody>
</table>

Figure 1: Participants’ responses to whether or not they could supervise additional genetic counseling students. There was a total of 330 participants (Yes, n = 182; No, n = 74; Unsure, n = 74).

Table 3: The number of additional genetic counseling students that participants could supervise per year. Only participants who indicated that they could train additional students were asked this question (n = 182).

<table>
<thead>
<tr>
<th>Number of Additional Students</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-2</td>
<td>63.2%</td>
</tr>
<tr>
<td>3-5</td>
<td>34.1%</td>
</tr>
<tr>
<td>6-8</td>
<td>3.3%</td>
</tr>
<tr>
<td>9-11</td>
<td>0.5%</td>
</tr>
</tbody>
</table>
Approximately 30% of participants reported that zero programs are currently within 60 miles of their clinic. A complete breakdown of responses is reported in Figure 2.

![Number of Genetic Counseling Programs Within 60 Miles of Clinic](image)

**Figure 2:** The number of genetic counseling programs reported by participants to reside within 60 miles of their clinic (n = 345).

A total of 129 (37.6%, N=343) participants reported a program in development within 60 miles of their clinic, 150 (43.7%) reported no programs in development, and 64 (18.7%) were unsure. Participants that reported that there was no genetic counseling program within 60 miles of their clinic were more likely to report that they could train more genetic counseling students (p = .001). Similarly, participants who reported that there was a genetic counseling program within their institution were more likely to report that they could not train additional genetic counseling students per year (p = .000). There was no relationship between whether or not a respondent could train more students and the number of programs in development within 60 miles of their clinic. Likewise, factors such as workload, number of patients seen per day, number of additional activities, age, and NSGC region were not found to be associated with participants’ capacity to train more students.


Supervision Experience

The most frequently ranked reasons for choosing to supervise a student were giving back to the field (234/369), enjoyment from teaching (183/369), and professional development (107/369). The most frequently ranked barriers to supervising a student were lack of time (225/371), scheduling difficulties (152/371), and other students in clinic (143/371).

Approximately 30% of participants (118/399) reported that they did not receive any recognition from genetic counseling programs for clinical supervision (Figure 3). Of those who were recognized by genetic counseling programs, most frequently reported activities were receiving a thank you card (99/395), professional activity credits (87/395), and attendance at an educational event (64/395). A total of 45 out of the 331 participants (13.6%) reported being somewhat dissatisfied or extremely dissatisfied with their recognition, while 44.7% were neither satisfied or dissatisfied (Figure 4). Supervisors who received financial compensation were the most satisfied with their recognition while supervisors who did not receive any recognition were the least satisfied.

Figure 3: Types of recognition that participants received from genetic counseling programs for supervising students (n = 395). *Participants were allowed to select more than one choice.
When asked how genetic counseling programs could better recognize supervisors, the most common themes that arose from the 90 total responses were that programs should provide monetary compensation, compensation for professional activities, or faculty appointments to supervisors. Other suggestions to improve the recognition of supervisors were attendance to a social event, offering supervision training, more involvement in teaching classes, and thank you calls and notes.

Perceptions on Expansion of Training Programs

Participants perceived the training of additional genetic counseling students to be either extremely important (234/340, 68.8%) or very important (85/340, 25.5%), shown in Table 4.

**Figure 4**: Participants’ satisfaction for how they were recognized for supervising a student. The total number of participants was 331 (Extremely satisfied, $n = 49$; Somewhat satisfied, $n = 89$; Neither Satisfied nor Dissatisfied, $n = 148$; Somewhat dissatisfied, $n = 38$; Extremely dissatisfied, $n = 7$).
Factors such as the presence of a genetic counseling program or a program under development within 60 miles of a clinic, workload, number of patients seen per day, age, and NSGC region were not found to be associated with the perceived importance of training additional genetic counseling students. There was a positive correlation between supervisor satisfaction with recognition and perceived importance of training additional genetic counseling students that approached statistical significance (r = .103, p = .07).

**Table 4:** Participants’ perceived importance of training additional genetic counseling students (n =340).

<table>
<thead>
<tr>
<th>Importance Rating</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extremely Important</td>
<td>68.8%</td>
</tr>
<tr>
<td>Very Important</td>
<td>25.0%</td>
</tr>
<tr>
<td>Moderately Important</td>
<td>4.1%</td>
</tr>
<tr>
<td>Slightly Important</td>
<td>1.5%</td>
</tr>
<tr>
<td>Not at all Important</td>
<td>0.6%</td>
</tr>
</tbody>
</table>

When asked to rate the effectiveness of a variety of training methods to increase spots for genetic counseling students, a total of 58.7% (193/330) of participants indicated that the inclusion of telemedicine cases would be extremely effective or very effective in increasing training spots for students. Additionally, 50.3% (166/330) of participants perceived the expansion of internship opportunities as extremely effective or very effective (Figure 5). Conversely, 74.5% of participants (245/329) perceived decreasing clinic time as slightly effective or not at all effective.

When asked their opinion as to the best way to increase the number of training spots, the most common themes were inclusion of research, industry, and telegenetics rotations, providing travel stipends to students so that they could travel to utilize different rotation sites, implement e-learning, and encouraging more genetic counselors to be supervisors. Additionally, analysis of
open-ended questions revealed concern regarding quality and quantity of new graduates. While participants acknowledged the workforce shortage, several cautioned that the training of additional genetic counseling students should not be done at the expense of the quality of students produced by training programs.

Figure 5: The effectiveness of a variety alternative training methods in the training of genetic counseling students.
DISCUSSION

To our knowledge, this is the first study to explore patient-facing genetic counselors’ opinions on how to maximize training opportunities for genetic counseling students. This study also investigated how the genetic counseling workforce is being utilized in the training of genetic counseling students, genetic counselors’ experience with the supervision of students, and the perception of the genetic counseling workforce on the expansion of genetic counseling programs. Based on the large number of participants and higher than usual free response rates, it appears that this research is important and relevant to practicing genetic counselors. The demographics gathered in this study such as NSGC practice region, gender, ethnicity, and practice area are reflective of the 2016 PSS (NSGC, 2016) suggesting that these results may be reflective of the opinions of the larger genetic counseling population.

Utilization of the Workforce in the Training of Genetic Counseling Students

The majority of participants (72.5%) indicated some involvement in teaching, educating and supervising, which is reflective of the PSS (NSGC, 2016). More than half of participants indicated that it was possible for them to train more students, with more than a third indicating they could train 3-5 more students. Interestingly, a study by Pan et al. (2016) found that program directors perceived limited availability of clinical sites as a main challenge in the expansion of programs. The findings from the current study suggests that there are a respectable number of clinical sites that are underutilized in the training of genetic counseling students. This discrepancy could be due to the fact that genetic counseling programs are repeatedly utilizing the same clinical sites and therefore, the same genetic counselors are providing supervision to
students each year. Additionally, competition for the same clinical sites between geographically close training programs can stretch the availability of genetic counselors willing to provide supervision for a particular region. Genetic counselors who provide constant supervision may be more likely to desire a break from students, which could contribute to the perceived limited availability of clinical sites observed by program directors (Pan et al., 2016).

Although there are clinical sites available to train more students, it is possible that these sites reside further away from training programs than students are able and/or willing to travel. Approximately one-third of participants indicated that there was no training program within a 60-mile radius of their clinic, and those participants were more likely to report that they had the resources to train additional genetic counseling students. In conjunction with the findings by Pan et al. (2016), these results are reflective of the fact that current training programs are located in cities that are saturated with students and trainees. Expanding the size of existing programs is not going to alleviate the concern over the limited availability of clinical supervisors. However, creating programs in proximity to underutilized sites, such as those areas rich in genetic counselors but distant from existing training programs, may be a better way to train additional genetic counseling students. However, this study did not find a statistically significant relationship between those who could train more students and those participants who reported a program in development within 60-miles of their institution.

**Barriers to Supervision**

When participants were asked to identify reasons why they supervised genetic counseling students, giving back to the field, enjoyment from teaching, and aiding in professional development were cited as the main reasons. These results are not unsurprising as they mirror the results of previous research by Hendrickson et al. (2002) and Lindh et al. (2003).
Participants reported lack of time, scheduling difficulties, and other students in clinic as the main reasons to not host a student, which parallels the findings of prior research by Berg et al. (2017), Hendrickson et al. (2002), and Lindh et al. (2003). However, based on participants responses to the QWI, there was no statistically significant association between workload and ability to train more students identified. Additionally, there was no association between the capacity to supervise more students and the number of patients per day or additional activities that in which participants were involved. These findings were unexpected since workload was reported as a perceived barrier to supervision in the current study and has been reported as a perceived barrier in several prior studies (Berg et al., 2017; Hendrickson et al., 2002; Lindh et al., 2003). Innate individual differences amongst genetic counselors could explain differences in perception versus reality. Some genetic counselors may perceive supervision as an additional burden, whereas others may enjoy mentoring students regardless of their workload. Experience could also influence perception. Genetic counselors who have not hosted a student before may have more anxiety about supervising and perceive it as a greater time commitment than someone with more supervision experience.

*Recognition of Supervisors*

Clinical supervisors are a critical and irreplaceable component of the training process. In addition to their daily tasks, genetic counselors who choose to supervise students take on numerous additional responsibilities to ensure the patient receives quality care and the student receives feedback to improve their performance and promote their professional development (Lindh et al., 2003). Providing support with technical knowledge and case preparation, helping students assess psychosocial skills, and providing constructive feedback is a tremendous time commitment (Borders et al., 2006). Just over one-quarter of participants indicated that they did
not receive any recognition for supervising students, although the majority of participants expressed that they were satisfied with the recognition they received. Participants who reported increased satisfaction with recognition tended to perceive the training of additional genetic counseling students as more important. Genetic counselors who find the training of additional genetic counseling students to be important may find the training of genetic counseling students more enjoyable. In order to grow the workforce, more genetic counselors need to provide supervision. Satisfaction with recognition is an integral component of recruiting supervisors. Therefore, finding a better way to recognize supervisors is essential for the expansion of the profession. This is relevant to the majority of the field, as more than 70% of participants indicated some involvement in teaching, which is consistent with the PSS (NSGC, 2016).

Qualitative data analysis revealed that the majority of genetic counselors felt that monetary compensation would improve their satisfaction with regards to recognition for their commitment to supervision. Hosting a student takes time away from fulfilling job requirements, thus monetary compensation for the additional time needed to perform these duties could alleviate some burden. Another popular suggestion was providing compensation for professional activities, such as membership fees to professional societies and the cost of a CEU event such as a national conference.

Several participants noted that they had reservations about training students because they were not confident in their supervision skills and that supervision workshops would encourage them to be more involved. Two participants noted that genetic counseling programs could host supervision training sessions for CEU credits to recognize supervisors. This is an interesting idea, as it recognizes and compensates supervisors for their time, while aiding in their professional development and continued learning. Formal supervision training and supervision
experience have also been found to positively impact supervisors’ perceived competence (Atzinger et al., 2014; Finley et al., 2016). Yet, research has repeatedly found that genetic counselors express a strong interest in supervision training yet the development of such workshops and seminars are lacking (Atzinger et al., 2014; Eubanks Higgins et al., 2013; Finley et al., 2016; Lindh et al., 2003). Therefore, introducing more opportunities to receive formal supervision training could encourage more genetic counselors to host students and thereby increasing access to clinical sites. Supervision training could begin during graduate education, with programs incorporating supervision and feedback training into their curriculum to encourage new graduates to apply their genetic counseling skillset to providing supervision.

**Increasing the Availability of Training Spots**

Participants ranked “decreasing clinic time” as the least favorable way to increase the number of training spots and favored the inclusion of alternative service delivery models and expanded GC roles as ways to expand training spots. The use of telemedicine could potentially incorporate genetic counselors in areas that are not in proximity to genetic counseling programs into the training of students. As the role of genetic counselors continues to evolve, the number of genetic counselors involved in direct patient care is decreasing and the number of genetic counselors employed diagnostic laboratories and industry continue to grow (Hoskovec et al., 2018; Schulz et al., 2017). Our findings suggest that genetic counselors are supportive of evolving our training models with our profession. Currently, the types of countable cases characterized by the ABGC does not include industry or research experiences (ABGC, 2017). As a result, many programs do not utilize genetic counselors in these roles in the supervision of their students. However, genetic counselors outside of direct patient care utilize counseling skills in numerous situations to facilitate their clients’ understanding in regards to ordering
appropriate testing and interpretation of testing results (Goodenberger, Thomas, & Wain, 2014). Contracting and establishing rapport are applied in phone calls with clients in a laboratory setting similarly to how they are utilized in patient encounters in a clinic. Techniques such as rephrasing, reflecting, and reframing are used to clarify client concerns, gather additional information, and encourage clients to anticipate possible results (Goodenberger, Thomas, & Wain, 2014). In addition, genetic counselors not involved in direct patient care offer a unique opportunity to aid in student’s professional development, increase exposure to different career opportunities, and provide a more well-rounded educational experience. Utilizing genetic counselors in these roles would increase the number of supervisors, thereby increasing the number of training sites available to students (Goodenberger, Thomas, & Wain, 2014).

Several participants brought up the idea of providing travel stipends to students and utilizing e-learning as a way to encourage the use of clinical sites that are not in close proximity to a training program. While the majority of participants were able to supervise more students 30.4% indicated that there were no training programs within 60 miles of their clinic. If students could financially afford to travel to more remote sites, it could potentially alleviate some supervision burden off of sites nearby training programs and utilize unique training opportunities offered by alternative sites.

While there is undoubtedly a workforce shortage, training additional genetic counseling students to account for the shortage should not be done at the expense of the quality of students produced by programs. Genetic counseling programs aim to train proficient, knowledgeable, and well-rounded professionals. This is largely accomplished through a competitive application process and access to capable and competent clinical supervisors. Participants expressed concern that an increase in training spots could dilute the quality of training and supervision. It
is important for programs to continue accepting qualified candidate and maintaining a rigorous curriculum. Additionally, careful consideration must be given to the availability of clinical supervisors prior to the development of additional programs or expansion of previously existing programs.

Study Limitations

Although the participants’ demographics reflected those presented in the PSS, it is impossible to determine whether the responses of those who participated would differ significantly from those who did not participate (NSGC 2016). Involvement in this study was voluntary. As such, it is possible that a selection biased occurred such that individuals who were more interested in student training and program expansion may have been more likely to participate. Additionally, participants may have experienced a recall bias when reflecting upon the supervision of past students.

Practice Implications

Supervision is an essential component in the training of future generation of genetic counselors. In the era of genomic medicine, the need for qualified individuals to provide genetic services is growing and as a result, genetic counseling training programs are expanding. The need to recruit genetic counselors to provide supervision is pertinent now more than ever. Providing supervisors with appropriate compensation for the time and energy they spend in training students may encourage more genetic counselors to become involved in supervision. Offering accessibly supervision training to genetic counselors could increase supervisors’ confidence and encourage more genetic counselors to become involved in supervising students. Additionally, expanding internship opportunities into areas such as research, industry, and telemedicine would create more training sites for students while simultaneously aiding in their
professional development. Finally, consideration should be given to developing training programs in areas that have a high population of genetic counselors but no training programs nearby.

*Future Research*

Future research should focus on the perspectives of genetic counselors who have a research, industry, or telegenetics role. Genetic counselors not involved in direct patient care offer a unique experience that can build upon fundamental genetic counseling skills, therefore it is important to know more about the opportunities these sites have for students. A future study could explore how these sites are currently being used by students, their proximity to genetic counseling programs, the resources these sites have available to host students, and the unique opportunity they can offer to trainees.
Conclusion

This study revealed that there are many underutilized genetic counselors in the training of genetic counseling students. Overall, it is encouraging that the portion of the workforce essential for expansion supports the training of additional students. Some genetic counseling programs have already incorporated internship experiences outside of direct patient care, and this study supports continued evolution of genetic counseling training in this manner. While the availability of clinical supervisors is often considered the rate-limiting step in the training of additional students, this study found that more than half of participants could host additional students. Genetic counselors who indicated that they were not located near a genetic counseling program were more likely to report that they had the resources to train more students. Therefore, continued efforts should be made to utilize these counselors either through remote training, travel stipends, or the development of genetic counseling programs in these areas. As the role of genetic counselors in the workforce continues to evolve, the training of students must too. It is the responsibility of the profession to continue to produce competent and qualified individuals to provide genetic services and that starts with improving the training of the next generation of genetic counselors.
REFERENCES:


Pan, V., Yashar, B. M., Pothast, R., & Wicklund, C. (2016). Expanding the genetic counseling workforce: program directors' views on increasing the size of genetic counseling graduate programs. *Genet Med, 18*(8), 842-849. doi:10.1038/gim.2015.179


APPENDICES

APPENDIX A: STUDY INSTRUMENT

Genetic Counselors’ Perspectives on Training Opportunities for Genetic Counseling Students

Q1. The purpose of this study is to understand how the genetic counseling workforce is utilized to train genetic counseling students during their clinical internships. In order to be eligible to participate in this study, you must be an ABGC or CAGC certified genetic counselor who see patients.

Participation in this study is voluntary. You may skip any question and may exit the survey at any time. All responses will remain anonymous. No identifying information will be asked or required for the completion of this survey. This survey is estimated to take approximately 15 minutes to complete. Please only complete this survey once.

Participants may benefit from feeling like they are contributing novel ideas to address key workforce challenges and therefore improving the field of genetic counseling. There are minimal risks to participants.

All participants who complete this survey may enter a drawing for one of two $50 Amazon gift cards. If you enter the drawing, you will be directed to a separate survey and asked to provide contact information. The contact information you provide will not be linked to your survey responses.

This study was reviewed and approved by the Institutional Review Board of Brandeis University of Waltham, MA. If you have any questions about this study, please contact Ashley Barnes (a.barnes1217@brandeis.edu) or the Principal Investigator, Lauren Lichten, MS CGC, at laurlic@brandeis.edu. For questions or concerns regarding your rights as a research participant, please contact the Brandeis IRB at 781-736-8133 or IRB@Brandeis.edu.

By clicking the "Next" button, you are acknowledging that you have read the information above and you consent to participate in this survey.

☐ Next

☐ I do not want to participate

Skip To: End of Survey If The purpose of this study is to understand how the genetic counseling workforce is utilized to tr... = I do not want to participate

Start of Block: Workplace Demographics
Q2. Does your job require you to see patients?

○ Yes

○ No

Skip To: End of Survey If Does your job require you to see patients? = No

Q3. Which best describes your current work setting?

○ University medical center

○ Public hospital/medical facility

○ Private hospital/medical facility

○ Diagnostic laboratory

○ Physician's private practice

○ Other ____________________________________________

Q4. Is there a genetic counseling training program located within your institution?

○ Yes

○ No

Q5. On average, approximately how many hours do you work per week?

__________________________________________________________

Q6 How many genetic counselors (full and part time) work in your department?

Full time genetic counselors: ______
Part time genetic counselors: ______
Total: ________
Q7. Please indicate how frequently you experience each of the following:

<table>
<thead>
<tr>
<th>How often does your job require you to work very fast? (1)</th>
<th>Less than once per month or never (1)</th>
<th>Once or twice per month (2)</th>
<th>Once or twice per week (3)</th>
<th>Once or twice per day (4)</th>
<th>Several times per day (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>How often does your job require you to work very hard? (2)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>How often does your job leave you with little time to get things done? (3)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>How often is there a great deal to be done? (4)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>How often do you have to do more work than you can do well? (5)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>
Q8. What types of students and trainees does your department host? Please select all that apply.

☐ Fellows

☐ Genetic counseling

☐ Medical school

☐ Nursing

☐ Physician assistant

☐ Residents

☐ Undergraduate

☐ Other ________________________________

☐ None

Skip To: End of Block If What types of students and trainees does your department host? Please select all that apply. = None

Carry Forward Selected Choices from "What types of students and trainees does your department host? Please select all that apply."
Q9. What roles do your students and trainees have during their internship with you?

<table>
<thead>
<tr>
<th>Participate in Sessions</th>
<th>Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fellows</td>
<td>☐</td>
</tr>
<tr>
<td>Genetic counseling</td>
<td>☐</td>
</tr>
<tr>
<td>Medical school</td>
<td>☐</td>
</tr>
<tr>
<td>Nursing</td>
<td>☐</td>
</tr>
<tr>
<td>Physician assistant</td>
<td>☐</td>
</tr>
<tr>
<td>Residents</td>
<td>☐</td>
</tr>
<tr>
<td>Undergraduate</td>
<td>☐</td>
</tr>
<tr>
<td>Other</td>
<td>☐</td>
</tr>
<tr>
<td>None</td>
<td>☐</td>
</tr>
</tbody>
</table>

Q10. On average, how often are students or trainees of any type in the clinic per week?

<table>
<thead>
<tr>
<th>During the Summer</th>
<th>0 days/week</th>
<th>1 day/week</th>
<th>2 days/week</th>
<th>3 days/week</th>
<th>4 days/week</th>
<th>5 days/week</th>
</tr>
</thead>
<tbody>
<tr>
<td>During the Academic Year</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
Q11. How frequently are two or more of each type of student or trainee in your clinic?

<table>
<thead>
<tr>
<th></th>
<th>Always</th>
<th>Sometimes</th>
<th>Rarely</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fellows</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Genetic counseling</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical school</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nursing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physician assistant</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residents</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undergraduate</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

End of Block: Workplace Demographics

Start of Block: Work load
Q12. Please indicate your primary practice area. You may select more than one.

☐ Prenatal
☐ Pediatric
☐ Cancer
☐ Adult
☐ General
☐ Neurogenetics
☐ Cardiac
☐ Metabolic
☐ Other __________________________________________
Q13. Genetic counselors often take on other responsibilities on top of their primary role(s). Please select all additional activities in which you participate.

☐ Clinical coordination

☐ Teaching/educating/supervising students

☐ Research/study coordinator

☐ Clinical management

☐ Laboratory support

☐ Customer liaison

☐ Clerical

☐ Project management

☐ Advocacy

☐ IRB/regulatory marketing

☐ Business development

☐ Recruiting/hiring

☐ Grant management/writing

☐ Sales

☐ Healthcare administration

☐ Financial/contract/budget development or management

☐ Public policy

☐ Other ____________________________
Q14. On average, approximately how many patients do you see per week?

________________________________________________________________

Q15. Please rank the top 3 factors in your decision to host a student, with 1 indicating your primary reason for hosting a student.

_____ It is a way to give back to the field
_____ Professional development
_____ Required by institution
_____ Compensation
_____ To obtain a promotion
_____ Enjoy teaching
_____ Encourages me to keep current
_____ Allows me to network with future colleagues
_____ Creates interest in otherwise routine days
_____ Attended the program that often sends students
_____ Faculty at a genetic counseling program
_____ Students can absorb some of my workload
_____ Pace of clinic is ideal for students
_____ Student could potentially be hired by my clinic after graduation
_____ Personal characteristics of students
_____ Encourages me to reflect on my own practice
_____ Clinic offers students a unique learning opportunity
_____ It makes me a better genetic counselor
_____ Other
Q16. Please rank the top 3 factors in your decision not to host a student, with 1 indicating your primary reason for not hosting a student.

______ Lack of time
______ Other responsibilities
______ Intensive nature
______ Desire breaks
______ Institutional barriers
______ Lack of training
______ Heavy patient volume
______ Scheduling difficulties
______ Compromises patient care
______ Affiliation agreements
______ Other students in the clinic
______ Unfilled positions
______ Administration
______ Intensive nature
______ Too far away
______ Supervisor burnout
______ Never been asked
______ Desire to counsel on own
______ Student knowledge
______ Prefer not to supervise
______ Low patient volume
______ Other
Q17. In 2017, how were you recognized by genetic counseling programs for supervising students? Please select all that apply.

☐ Faculty appointment

☐ Professional activity credits

☐ Attendance at an education event (conference, workshop) that can be used for CEUs

☐ Monetary compensation

☐ Compensation for professional activities (conference registration, books, etc.)

☐ Attendance at a social event (dinner, party, etc.)

☐ Thank you card

☐ Not recognized

☐ Other ________________________________

Q18. How satisfied are you with how you are recognized?

☐ Extremely satisfied

☐ Somewhat satisfied

☐ Neither satisfied nor dissatisfied

☐ Somewhat dissatisfied

☐ Extremely dissatisfied

Q19. What would be a better way to recognize supervisors?

________________________________________________________________

________________________________________________________________

________________________________________________________________
Q20. How many genetic counseling students have you been the primary supervisor for in the last year (January 2017-December 2017)?

- 0
- 1
- 2
- 3
- 4
- 5
- Other ________________________________

Q21. In days, approximately how long did you supervise your last genetic counseling student for?

______________________________________________________________

Q22. In 2017, approximately how many cases did each student obtain during an internship with you?

______________________________________________________________

______________________________________________________________
Q23. How many genetic counseling programs are within 60 miles of your clinic?

○ 0
○ 1
○ 2
○ 3
○ 4
○ Other __________________________________________
○ Unsure

Q24. Please list the names of genetic counseling programs that your department has hosted students from in 2017.
________________________________________________________________
________________________________________________________________

Q25. Are there any genetic counseling programs in development within 60 miles of your clinic?

○ Yes
○ No
○ Unsure

Q26. How important is it for more genetic counseling students to be trained?

○ Extremely important
○ Very important
○ Moderately important
○ Slightly important
○ Not at all important
Q27. In your opinion, how would you rate the effectiveness of the following methods to increase training spots for genetic counseling students?

<table>
<thead>
<tr>
<th>Method</th>
<th>Extremely effective (1)</th>
<th>Very effective (2)</th>
<th>Moderately effective (3)</th>
<th>Slightly effective (4)</th>
<th>Not effective at all (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decrease each individual student's time in clinic (1)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Patient simulation with hired actors/actresses (2)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Increase the supervisor/student ratio (3)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Mock sessions with classmates and faculty members (4)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Change in number of cases required by ACGC (5)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Allow individuals who are not certified genetic counselors or clinical geneticists to oversee cases that count towards ACGC requirements (6)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Student participation in telemedicine cases (7)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Expansion of internship opportunities outside of patient care (8)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
Q28. In your opinion, what is the best way to increase the number of training spots for genetic counseling students?

________________________________________________________________

________________________________________________________________

Q29. According to ACGC requirements, genetic counseling students are required to see a minimum of 50 core cases under the supervision of a board-certified genetic counselor or medical geneticist by the end of their training. The breakdown of these cases should reflect the most recent ABGC Practice Analysis, which was approximately 40% prenatal, 25% cancer, 25% pediatric, and 10% adult in 2011. In your opinion, is there a particular number and/or breakdown of cases students should obtain to demonstrate proficiency?

________________________________________________________________

________________________________________________________________

Q30. In your opinion, what is the ideal number of patient contact days per rotation for a genetic counseling student to have a meaningful experience?

________________________________________________________________

________________________________________________________________

Q31. Is it possible for you to train more genetic counseling students?

○ Yes

○ No

○ Unsure

Skip To: Q32 If Is it possible for you to train more genetic counseling students? = Yes
Skip To: Q33 If Is it possible for you to train more genetic counseling students? = No
Skip To: End of Block If Is it possible for you to train more genetic counseling students? = Unsure
Q32. How many additional genetic counseling students could you train per year?

- 0-2
- 3-5
- 6-8
- 9-11
- 12+

Q33. Why can't you train more genetic counseling students?

________________________________________________________________________
________________________________________________________________________

End of Block: Supervision Questions

Start of Block: Demographics

Q34. How old are you?

______________________________
Q35. Within which NSGC region do you currently practice?

- Region I: CT, MA, ME, NH, RI, VT, Canadian Maritime Provinces
- Region II: DC, DE, MD, NJ, NY, PA, VA, WV, Quebec, Puerto Rico, Virgin Islands
- Region III: AL, FL, GA, KY, LA, MS, NC, SC, TN
- Region IV: AR, IA, IL, IN, KS, MI, MN, MO, ND, NE, OH, OK, SD, WI, Ontario
- Region V: AZ, CO, MT, NM, TX, UT, WY, Alberta, Manitoba, Saskatchewan
- Region VI: AK, CA, HI, NV, OR, WA, British Columbia
- Other ________________________________

Q36. In what year did you graduate from a genetic counseling program?

__________________________________________________________________________

Q37. What race do you most strongly identify with?

- American Indian or Alaskan Native
- Asian
- Asian Indian
- Black or African American
- Native Hawaiian or other Pacific Islander
- White or Caucasian
- Other ________________________________
- I prefer not to answer
Q38. What is your gender?

- Male
- Female
- Prefer not to say
- Other

Q39. Please use this space to add any additional comments you have about the workforce expansion or the training of genetic counseling students.

________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________

End of Block: Demographics
APPENDIX B: RECRUITMENT NOTICES

NSGC E-BLAST

Seeking Perspectives from the Trenches: Genetic Counselors’ Perspectives on Training Opportunities for Genetic Counseling Students

You are invited to participate in an anonymous online survey to understand how the genetic counseling workforce is being utilized to train genetic counseling during their clinical internships.

Here are some important things to know about this study:

- This study is open to all ABGC and CAGC certified genetic counselors who see patients as part of their job.
- The survey will take approximately 15 minutes to complete.
- Participation is voluntary. You can skip any question(s) you are not comfortable answering and may exit the survey at any time.
- All participants who complete the survey will have the option to enter a drawing for one of two $50 Amazon gift cards. If you choose to enter the drawing, you will be redirected to separate survey and asked to provide contact information. Your contact information will not be connected to your survey responses.

This study was reviewed and approved by the Brandeis University Institutional Review Board. If you have any questions about this study, please do not hesitate to contact Ashley Barnes at abarnes1217@brandeis.edu or the Principal Investigator, Lauren Lichten, MS CGC, at laurlic@brandeis.edu. For questions or concerns regarding your rights as a research participant, please contact the Brandeis IRB at 781-736-8133 or IRB@Brandeis.edu.

If you wish to participate in the study, please click on the link below. Thank you in advance for your time and participation.

https://brandeis.qualtrics.com/jfe/form/SV_ekBSQNni5ZlpQh

Sincerely,

Ashley Barnes
Master’s in Genetic Counseling Candidate
Class of 2018
Brandeis University

Lauren Lichten, MS CGC
Licensed Genetic Counselor
Associate Director, Genetic Counseling Program
Brandeis University

**ABGC E-BLAST**

**Seeking Perspectives from the Trenches: Genetic Counselors’ Perspectives on Training Opportunities for Genetic Counseling Students**

You are being asked to take part in a research study to address genetic counselors' perspectives on training opportunities for genetic counseling students. This study is being conducted by Ashley Barnes, a second year genetic counseling student at Brandeis University.

If you decide to take part in the study, you will be asked to fill out an online survey. There is no direct benefit to you in participating in this study. However, your input may enhance our understanding of how the genetic counseling workforce is being utilized to train genetic counseling students during their clinical internships.

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- This survey will close on January 31, 2018
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Thank you for your consideration.

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Brandeis University
abarnes1217@brandeis.edu

Lauren Lichten, MS CGC
Licensed Genetic Counselor
Associate Director, Genetic Counseling Program
Brandeis University
laurlic@brandeis.edu
Hi everyone,

Can you please forward this invitation to participate in a research study to all of your supervisors that you utilize (or plan on utilizing) for clinical and non-clinical placements? If the supervisor already filled out the survey, there is no need to fill it out again!

Thank you!
Lauren Lichten

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Master’s in Genetic Counseling Candidate Class of 2018 Brandeis University

Lauren Lichten, MS CGC Licensed Genetic Counselor Associate Director, Genetic Counseling Program Brandeis University
NSGC REMINDER E-BLAST

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Class of 2018
Brandeis University

Lauren Lichten, MS CGC
Licensed Genetic Counselor
Associate Director, Genetic Counseling Program
Brandeis University
ABGC REMINDER E-BLAST

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