

Impact of Optometric Residency Training on Future Career Paths: A Survey of Perceptions of Optometry Students, Residents and Alumni

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Abstract

Background: Knowledge regarding the perceived impact of optometric residency training on a future career path is limited. **Methods:** Fourth-year optometry students, residents and alumni from the New England College of Optometry were surveyed regarding perceived benefits of residency training and career path.

Results: Students and residents shared similar reasons for pursuing residency training and preferred similar modes of practice to residency-trained alumni. The mode of practice chosen and degree of participation in professional activities differs between alumni who completed residency training and those who did not.

Conclusions: Survey respondents shared similar views regarding the perceived benefits of residency training and its impact on a future career.

Key Words: optometry residency, optometric education, mode of practice

Background

An optometric residency program is defined by the Accreditation Council on Optometric Education (ACOE) as a “planned program of post-OD clinical education that is designed to advance significantly the optometric graduate’s preparation as a provider of patient care services beyond entry level practice.”¹ Approximately 20% of graduating optometrists participate in residency programs.^{2,3} Participation in such programs may enhance clinical skills, widen breadth of knowledge and increase clinical confidence.^{4,5} In addition, certain modes of practice, including hospital-based optometry and optometric education, may look favorably on residency training when considering individuals for employment.^{1,6,7} It has been suggested that the impact of residency training on the optometric profession can be judged by the measurement of post-training placement and participation in professional activities.⁷ However, there is limited information available regarding these outcomes for residency programs.⁶

Although acquisition of advanced or specialty clinical skills is commonly stated as the objective for residency programs, many programs also believe that their graduates will acquire skills during residency training that are necessary to facilitate other professional contributions. These contributions include, but are not limited to, actively participating in optometric organizations, performing research and becoming involved in optometric education. Surveys of residents completing a Veterans Affairs Medical Center-affiliated residency⁸ and a Pediatric Residency⁹ indicate that most individuals completing these residencies were satisfied with their residency experience and have contributed to the optometric profession through clinical, academic and research accomplishments after completion of their residency. However, the effect of residency training on professional and leadership activities has not been adequately addressed.⁶

Despite the potential benefits of residency training, a majority of graduating optometrists do not complete a residency program and thus choose to enter the optometric workforce directly

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upon graduation. These individuals may have different career objectives compared to those who complete a residency, or perhaps these individuals feel they can achieve the same goals as residency-trained optometrists without completing a residency. Personal and financial considerations may also play a role in the decision to pursue residency training.³

Another barrier to obtaining residency training is that the number of residency programs available is less than the total number of optometry students graduating each year. Currently, there are approximately 400 residency positions that are accredited by the ACOE, which equates to approximately 20% of optometry school graduates participating in a residency program.¹ Therefore, it is likely that some individuals who apply to residency programs are not matched with a program.

The purpose of this study is twofold:

1. To determine whether there is agreement among the perceptions of fourth-year optometry students, residents and alumni in regard to the perceived benefits of completing an optometric residency program.
2. To compare the career paths and professional contributions of optometry school graduates who completed a residency with those who did not complete a residency program.

Methods

Separate surveys, conducted on Zoomerang, were utilized in this study. The surveys were designed by the investigators and were reviewed and approved by the New England College of Optometry (NECO) Institutional Review Board. One survey was distributed to alumni from NECO graduating between 1995 and 2011. Alumni received an email with a letter introducing the survey via Constant Contact with the assistance of the NECO Office of Institutional Advancement. Additional surveys were distributed by email to 104 fourth-year students enrolled at NECO who were expected to graduate in May 2012 and 33 residents enrolled in NECO-affiliated optometric residency programs between July 2011 and June

2012. Questions pertaining specifically to each of these subsets of individuals were asked and can be found in **Appendices 1 and 2**. The surveys were conducted in February 2012. All survey responses were collected on March 1, 2012, which was before the optometry residency match date. Responses to both surveys were anonymous.

Results

The surveys were distributed to a total of 104 fourth-year students and 33 residents. The survey response rates for fourth-year students and residents were 43% (n=45) and 49% (n=16), respectively. Seventy percent (n=31) of fourth-year students responding to the survey indicated that they were considering residency training. A total of 270 NECO alumni responded to the survey. Forty-two percent (n=114) of the respondents reported having completed an optometric residency, and 58% (n=156) of the respondents reported having not completed a residency. The number of years in practice for the alumni respondents is presented in **Table 1**.

Perceived benefits of completing a residency program

Both fourth-year students considering residency training and residents responding to the survey believed that the following factors were most important in their decision to pursue residency training: improving clinical skills (students (S) 84%, residents (R) 81%), improving confidence as a clinician (S 84%, R 81%) and obtaining clinical training in an optometric subspecialty (S 56%, R 56%). Additional factors that motivated responding optometry students and residents to pursue residency training were networking opportunities (S 47%, R 50%) and that

residency was required for their preferred mode of future practice (S 43%, R 38%).

Alumni survey respondents that completed a residency perceived that residency training impacted their career in the following ways: improved confidence in clinical skills (97%) and patient management (94%), expanded employment opportunities (87%), provided networking opportunities (73%) and established an identity in an optometric subspecialty (57%).

Reasons for not selecting residency programs

The most common factors that impacted the fourth-year student respondents' decision not to pursue residency training included the perception that the financial burden of residency training was not equal to financial compensation (71%), that four years of optometry school adequately prepared them to be an optometric provider (50%) and that residency training was not perceived to be advantageous for the geographic location where they planned to practice optometry (50%). Seventy percent indicated that they would be more likely to complete an optometric residency if residents were financially compensated to a higher degree.

Prior knowledge of residency programs

A majority of students and residents responding to the survey (S 80%, R 62%) reported that they had been educated on residency programs prior to applying for residency and completing this survey. Information about residency programs was obtained both formally through residency information sessions and informally through discussions with residency directors and residency-trained optometrists.

Table 1
Years in Practice of Alumni Respondents

Years in Practice	Residency Trained, N (%)	Non-Residency Trained, N (%)
0-2	23 (20.17)	38 (24.51)
3-5	34 (29.82)	33 (21.29)
6-10	36 (31.58)	39 (25.16)
11-15	21 (18.42)	45 (29.03)

Professional and leadership activities

All three surveys (to alumni, residents and fourth-year students) queried professional and leadership activities that optometrists may participate in. The activities surveyed were presenting a poster, preparing a manuscript, attaining fellowship in a professional organization, participating in didactic or clinical teaching, leadership or involvement in optometry-related organizations, and clinical research. Student and resident respondents identified activities perceived to be most important to their professional development, while alumni identified which of these activities they participated in during their career. Students and residents viewed becoming a fellow in professional organizations, lecturing to colleagues, clinical precepting and presenting posters at professional conferences to be important activities related to professional development. Alumni who completed residency training were more likely to participate in these activities than those who did not complete residency training. Other activities that were more commonly performed by residency-trained respondents than by non-residency-trained respondents were preparing manuscripts, didactic teaching and research. Alumni respondents who did not complete residency training were more likely to become involved in political aspects of optometry than residency-trained respondents. Both groups were equally likely to hold leadership positions in optometric organizations (**Table 2**).

Preferred modes of practice

Group private practice was the preferred practice modality for a majority of fourth-year students (**Figure 1**) and resident respondents (**Figure 2**). Neither solo private practice nor commercial practice was chosen as the preferred modality by any respondent to the student and resident surveys. The current mode of practice for both residency-trained and non-residency-trained alumni was surveyed (**Figures 3 and 4**). The most common mode of practice for both groups was group private practice. Residency-trained respondents were more likely to work in hospitals (21%) and optometric education (10%). Alumni who did not complete a residency were more likely to work in

Table 2
Alumni Professional and Leadership Activities

Activities	Residency Trained	Non-residency Trained
Presented Poster	90%	26%
Prepared a Manuscript	47%	10%
Fellowship in Professional Organization	54%	10%
Lecturing to Colleagues/Community	81%	46%
Clinical Precepting	89%	35%
Didactic Teaching of Students	50%	12%
Political Aspects	28%	38%
Leadership in Professional Organizations	22%	22%
Clinical Research	45%	26%

Figure 1
Fourth-Year Students' Preferred Modes of Practice

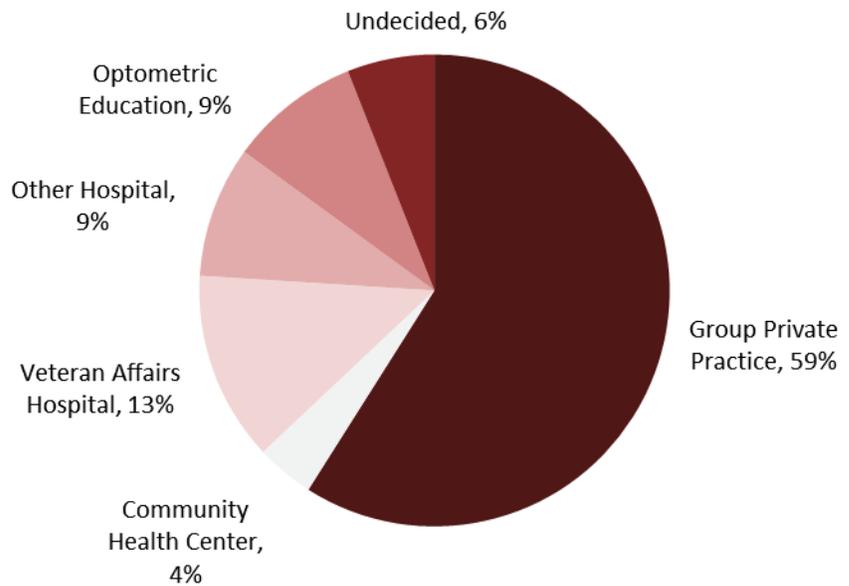
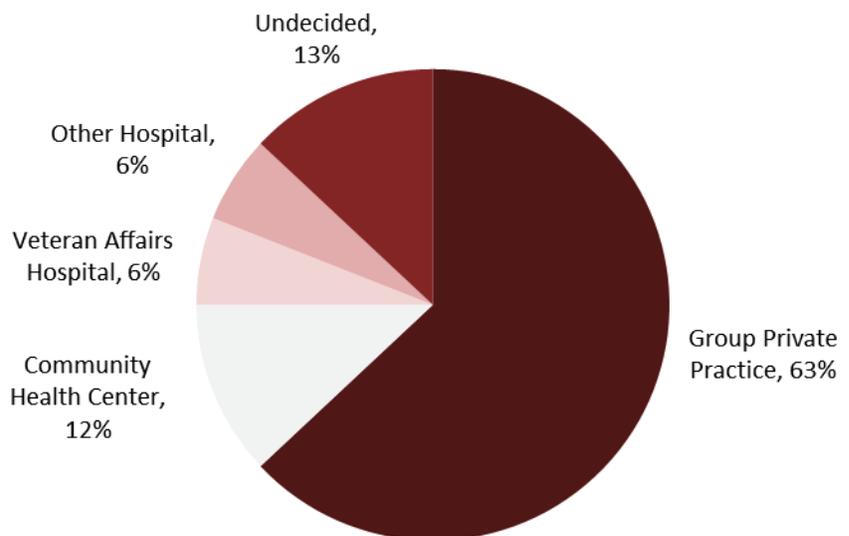


Figure 2
Current Residents' Preferred Modes of Practice



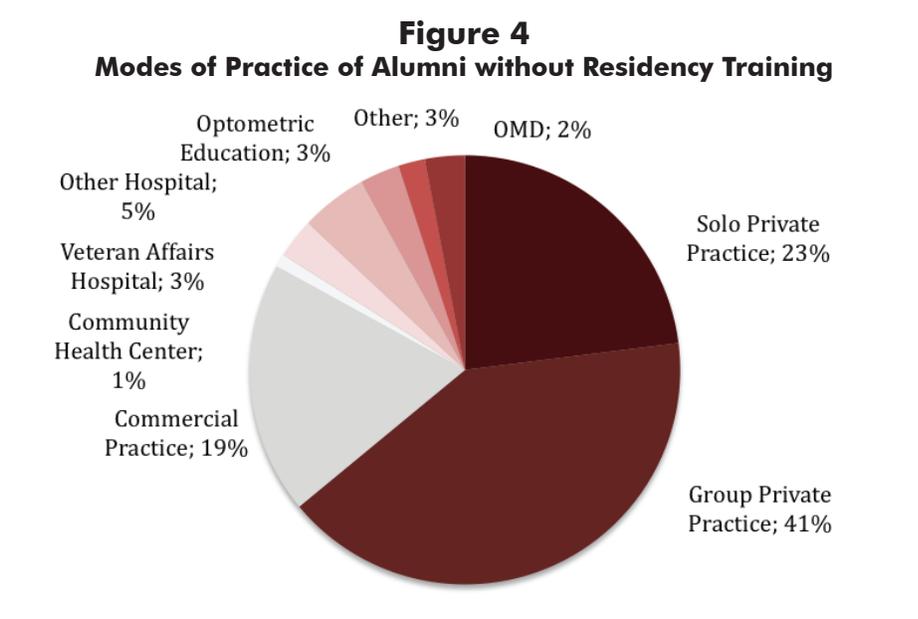
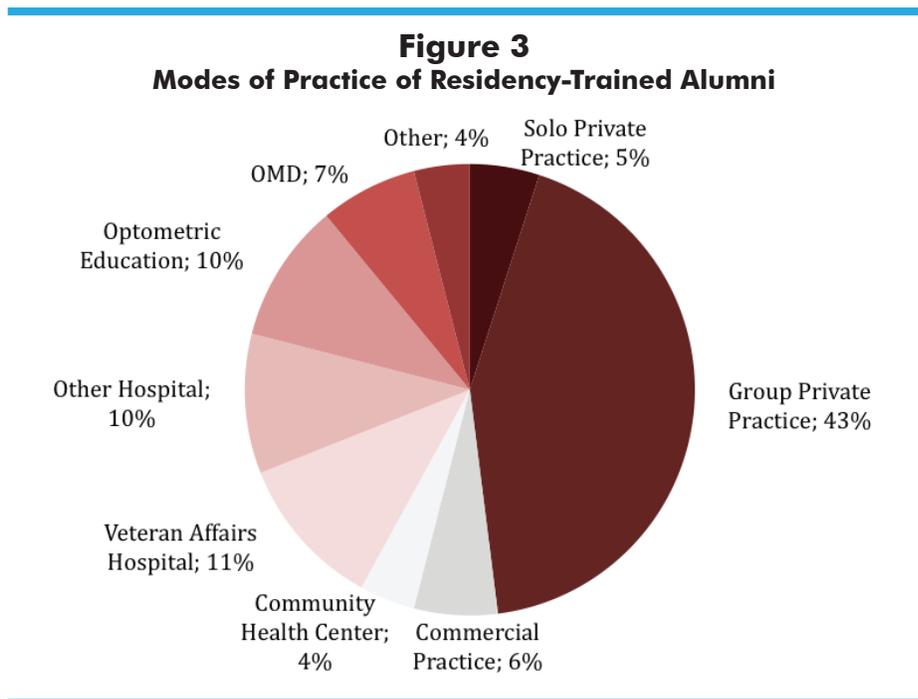
solo private practice (23%) or commercial settings (19%). The alumni who responded “other” most commonly indicated that they were employed in research, industry or multiple venues. Fifty percent of residency-trained respondents reported being currently employed in a setting that recommends or requires residency training; whereas, 3.2% of non-residency-trained respondents report working in this type of setting.

All of the residents responding to the survey and 96% of residency-trained alumni believed that residency has provided them with the opportunity to achieve their goals, and that their expectations were met by the program they completed. Approximately 95% of both groups would complete a residency program again and would recommend optometric residency training to current optometry students. Thirty-seven percent of alumni respondents who did not complete residency training would recommend optometric residency training to current optometry students. These respondents stated that completing a residency may increase employment opportunities in areas such as optometric education and hospital-based modes of practice and facilitate board certification and subspecialization within optometry.

Discussion

The results of this survey indicate that fourth-year students and residents share similar perceptions regarding the benefits of residency training, including improved clinical skills and confidence and subspecialization. Alumni respondents who completed residency training perceive that their residency impacted their career in a manner that is congruent with the expectations expressed by the students and residents completing the survey. This indicates that it is likely that the students and residents pursuing residency training have realistic expectations of the benefits they will gain from completing a residency. Similar motivating factors were identified in other surveys of residents,^{3,4} indicating that these perceptions are consistent among individuals surveyed from different educational institutions and over time.

A majority of survey respondents had received information about residency



programs before responding to this survey. This is consistent with findings of previous surveys indicating that optometry students receive information regarding residency programs early in their education.³ It is possible that these educational experiences, which are provided annually in many venues such as individual optometry schools, the American Academy of Optometry and American Optometric Association meetings, may contribute to the agreement between students’ expectations and actual residency experience. The agreement about the perceived benefits of residency training between students, residents and alumni suggest that the

findings of this survey could be used to educate current optometry students regarding these perceptions.

Residents and residency-trained alumni responding to the survey were nearly unanimous in their belief that completing residency training effectively allowed them to accomplish their career goals and would recommend residency training to current optometry students. These findings indicate that the benefits of residency training were perceived to be valuable both at the time of residency training and throughout an optometric career, which is also in agreement with previous surveys.⁵

Concern regarding financial compensation for optometric residents is a barrier to pursuing residency training for a majority of students responding to our survey. Similar concerns were noted in previous surveys.^{3,8} Despite these concerns, one survey found that school loan debt was similar between students pursuing residency training and those who were not.³ The concern about financial compensation may be greater for current optometry students, due to the increasing debt load accrued over the past decade. Further study is required to elucidate whether increasing residency stipends would encourage a stronger applicant pool for residency positions.

Both student and resident respondents felt that obtaining residency training would improve their ability to successfully participate in certain professional and leadership activities throughout their career. The activities queried included presenting a poster, preparing a manuscript, attaining fellowship in a professional organization, participating in didactic or clinical teaching, leadership or involvement in optometry-related organizations, and clinical research. Alumni respondents who completed residencies were more likely to be involved in the professional activities perceived to be valuable by students and residents than those who did not; these activities included clinical precepting, obtaining fellowship in an optometric organization, presenting posters at professional meetings, and lecturing to colleagues and/or members of the community. The almost universal reporting of participation in the surveyed professional activities by residency-trained respondents may reflect their exposure to certain types of scholarly and leadership activities during residency training. Additional research is needed to identify which types of activities continue to be performed as an optometrist moves through his/her career.

Differences in career paths between residency-trained alumni and those who did not complete a residency were identified through the survey. The distribution of practice modalities in this sample of residency-trained alumni is similar to the desired modes of practice of surveyed optometry students and residents at NECO. The residency-trained alumni reported higher rates of

employment in hospital-based settings and optometric education. This indicates that obtaining residency training may increase the likelihood of obtaining employment in certain modes of practice that are appealing to students and residents, most notably the hospital setting, community health centers and optometric education. Similar trends have been presented in other surveys of employment placement after completion of residency training.^{5,6,8}

Half of the residency-trained alumni responding to this survey reported practicing in settings that recommended or required residency training. A survey of alumni of the Southern California College of Optometry's residency programs indicated that 65.6% practiced in settings that recommend or require residency training.⁶ Those graduating from "college clinic-based" programs, which provided specialty training in pediatric and cornea and contact lens, were most likely to practice in such specialty settings. In our survey, the respondents were not asked to specify the type of residency in which they participated. However, residency-trained NECO alumni were more likely to be practicing in hospital-based clinics and participating in optometric education, which are settings that are reported to consider residency training a prerequisite for employment.

Potential limitations of this project are that the majority of fourth-year students who responded to the survey indicated that they were considering residency training at the time that they completed the survey. This may have created bias in their responses. In addition, the alumni survey did not query the precise timing of the professional activities in which they have participated, or the frequency of participation. This makes it more challenging to define the depth of the impact residency training has on an individual's tendency to continue the activities throughout his or her career.

Conclusion

Fourth-year students and residents at NECO share similar motivating factors for pursuing residency training and perceive that completing a residency program will impact their ability to accomplish their career goals. These perceptions are consistent with those

of alumni respondents who completed residency programs. The results of this study's surveys suggest that there are differences in mode of practice and involvement in professional activities between alumni who completed an optometric residency program and those who did not. This information can be used to help educate current optometry students on the possible impact of residency training on their future career. It also forms a foundation for future areas of research, including further delineation of the timing of professional contributions in optometrists' careers and the depth of participation in professional and leadership activities

Note: For a copy of the survey, please contact Nicole Quinn, OD, at QuinnN@neco.edu.

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Appendix 1 Alumni Survey Questions

1. Did you complete an optometric residency?
 - a. Yes
 - b. No
2. Was completion of a residency program recommended or required to attain employment in your current practice setting?
 - a. Yes, required
 - b. Yes, recommended
 - c. No
3. What is your current practice setting?
 - a. Solo private practice
 - b. Group private practice
 - c. Commercial practice
 - d. Veterans Affairs hospital
 - e. Community health center
 - f. Other hospital setting
 - g. Optometric education
 - h. Other (please specify)
4. Do you plan to change to a different practice setting in the future?
 - a. Yes
 - b. No
 - c. Unsure
5. How many years have you been in practice?
 - a. 0-2
 - b. 3-5
 - c. 6-10
 - d. 10-15

If you have completed a residency, please answer questions 6-12; if not, please skip to question 13.

6. Have you ever participated in any of the following professional activities? Select all that apply.
 - a. Presented a poster at a professional conference
 - b. Prepared a manuscript
 - c. Become a fellow of AAO, COVD or other professional organization
 - d. Lectured to colleagues or members of your community
 - e. Served as a clinical preceptor for optometry students
 - f. Lectured or taught labs at an optometric institution
 - g. Become involved in the political aspects of optometry (e.g., policy initiatives, professional organizations)
 - h. Held leadership positions in optometry related organizations (e.g., served on committees in MSO, AOA)
 - i. Participated in clinical research
 - j. Other (please specify)
7. If you have presented a poster or prepared a publication, when?
 - a. As a student
 - b. While a resident
 - c. 1-2 years post residency
 - d. 3-5 years post residency
 - e. 6-15 years post residency
8. If you currently hold any professional leadership positions, please describe them.
9. How do you feel your residency impacted your career? Select all that apply.
 - a. Improved confidence in clinical skill execution
 - b. Improved efficiency in unique clinical skills

- c. Improved ability to correctly diagnose and treat patients
 - d. Increased time efficiency in completing eye exams
 - e. Established an identity within a specialty area of optometry (e.g., pediatrics, contact lens, low vision, etc.)
 - f. Expanded potential employment opportunities
 - g. Provided networking opportunities with colleagues and members of the optometric community
 - h. Introduced research opportunities
 - i. Other (please specify)
10. Would you do the residency again?
- a. Yes
 - b. No
 - c. If no, why?
 - d. No, but I would do a different optometric residency program
11. Would you recommend completing a residency to current optometry students?
- a. Yes
 - b. No
 - c. If no, why?
12. Do you feel your expectations prior to completing a residency were met by your residency program?
- a. Yes
 - b. No
 - c. If no, why?

Graduates who did not complete a residency:

13. Have you ever participated in any of the following professional activities? Select all that apply.
- a. Presented a poster at a professional conference
 - b. Prepared a manuscript
 - c. Become a fellow of AAO, COVD or other professional organization
 - d. Lectured to colleagues or members of your community
 - e. Served as a clinical preceptor for optometry students
 - f. Lectured or taught labs at an optometric institution
 - g. Become involved in the political aspects of optometry (e.g., policy initiatives, professional organizations)
 - h. Held leadership positions in optometry related organizations (e.g., served on committees in MSO, AOA)
 - i. Participated in clinical research
 - j. Other (please specify)
14. If you have presented a poster or prepared a publication, when?
- a. As a student
 - b. 1-2 years post graduation
 - c. 3-5 years post graduation
 - d. 6-15 years post graduation
15. If you currently hold any professional leadership positions, please describe them.
16. Do you feel that your professional goals and expectations have been met thus far in your career?
- a. Yes
 - b. No
17. Do you plan to complete an optometric residency in the future?
- a. Yes
 - b. No
 - c. Unsure
18. Would you recommend the completion of a residency to current optometry students?
- a. Yes
 - b. No
 - c. If yes, why?

Appendix 2

Fourth-Year Students Survey

1. Are you considering doing a residency?
 - a. Yes (Please answer question 1a)
 - b. No (Please answer question 1b)
- 1a. If Yes, why are considering doing a residency?
 - a. Improve clinical skills
 - b. Improve confidence as a clinician
 - c. Residency is required for my future mode of practice
 - d. In order to stay in a particular geographical location
 - e. Specialize in an optometric subspecialty (e.g., pediatrics, contact lens, etc.)
 - f. To network within the optometric community (e.g., to gain/work with a mentor)
 - g. Other (please specify)
- 1b. If No, why are you not considering doing a residency?
 - a. Feel adequately prepared to be an optometric provider with 4 years of optometry school education
 - b. Residency not required for my interested mode of practice
 - c. No perceived benefit for residency training in the geographical location I would like to live (e.g., Canada)
 - d. Financial burden too great for resident's salary
 - e. Value of residency not equal to the financial compensation
 - f. Personal circumstances not related to finances
 - g. Other (please specify)
2. Have you attended any residency specific events or residency information sessions? (e.g., AAO-Residency Networking Luncheon, NECO residency information session, spoke to residency directors or people who have previously completed residencies)
 - a. Yes
 - b. No
3. Which of the following do you feel would be an important accomplishment toward your professional development? Select all that apply.
 - a. Presenting a poster at a professional conference
 - b. Publishing a manuscript
 - c. Becoming fellow of AAO, COVD or other professional organization
 - d. Lecturing to colleagues or members of the community
 - e. Serving as a preceptor for optometry students
 - f. Lecturing or teaching labs at an optometric institution
 - g. Becoming involved in the political aspect of optometry (e.g., policy initiatives, professional organizations)
 - h. Holding leadership positions in optometry-related organizations (e.g., serve on committees in MSO, AOA)
 - i. Participating in clinical research
6. What is your estimation of the likelihood of accomplishing one or more of the above having completed a residency?
1=Extremely unlikely 2=Somewhat unlikely 3=No impact 4=Somewhat likely 5=Extremely likely
 - a. 1
 - b. 2
 - c. 3
 - d. 4
 - e. 5
7. What is your estimation of the likelihood of accomplishing one or more of the above without completing a residency?
1=Extremely unlikely 2=Somewhat unlikely 3=No impact 4=Somewhat likely 5=Extremely likely
 - a. 1
 - b. 2
 - c. 3
 - d. 4
 - e. 5
8. In what ways do you think a residency may impact a student's future career path?
 - a. Improve confidence in clinical skill execution
 - b. Improve efficiency in unique clinical skills
 - c. Improve ability to correctly diagnosis and manage patients
 - d. Increase time efficiency in completing eye examinations

- e. Expand potential employment opportunities
 - f. Increase long-term salary
 - g. Increase networking opportunities with other members of the optometric community
 - h. Allow you to establish an identity within a specialty area of optometry (e.g., pediatrics, contact lens, low vision)
 - i. Introduce research opportunities
 - j. None of the above
 - k. Other (please specify)
9. If residents were financially compensated to a higher degree than they currently are, would you be more likely to do a residency?
- a. Yes
 - b. No
 - c. If yes, what is the minimum compensation that you would accept?
10. What type of setting is your desired mode of practice after graduation or completion of a residency program?
- a. Solo private practice
 - b. Group private practice
 - c. Commercial practice
 - d. Community health center
 - e. Veterans Affairs hospital
 - f. Other hospital
 - g. Optometric education
 - h. Other (please specify)

Current Residents Questionnaire

1. Why did you decide to do a residency?
- a. Improve clinical skills
 - b. Improve confidence as a clinician
 - c. Residency is required for my future mode of practice
 - d. In order to stay in a particular geographical location
 - e. Specialize in an optometric subspecialty (e.g., pediatrics, contact lens, etc.)
 - f. To network within the optometric community (e.g., to gain/work with a mentor)
 - g. Other (please specify)
2. Which of the following were included in your decision to pursue a residency? Rank in order of importance.
- a. Increase confidence in clinical skill execution
 - b. Become more efficient in unique clinical skills
 - c. Improve ability to correctly diagnosis and manage patients
 - d. Increase time efficiency in completing eye examinations
 - e. Establishing an identity within a specialty area of optometry (e.g., pediatrics, contact lens, low vision, etc.)
 - f. Expand future employment opportunities
 - g. Increase long-term salary
 - h. Networking opportunities with other members of the optometric community
 - i. Other (please specify)
3. Do you think your residency has been effective in helping you to accomplish your goals?
- a. Yes
 - b. No
 - c. If no, why?
4. Prior to your residency, did you attend any residency events or residency information sessions? (e.g., AAO Resident's Networking Luncheon, NECO residency information session, spoke to residency directors)
- a. Yes
 - b. No
5. Which of the following do you feel is an important accomplishment toward your professional development?
- a. Presenting a poster at a professional conference
 - b. Publishing a manuscript
 - c. Become fellow of AAO, COVD or other professional organization
 - d. Lecture to colleagues or members of the community
 - e. Serve as a preceptor for optometric students
 - f. Teach lectures or labs at an optometric institution
 - g. Become involved in the political aspect of optometry (e.g., policy initiatives, professional organizations)
 - h. Hold leadership positions in optometry-related organizations (e.g., serve on committees in MSO, AOA)

- i. Participate in clinical research
6. What is your estimation of the likelihood of accomplishing one or more of the above with having completed a residency?
1=Extremely unlikely 2=Somewhat unlikely 3=No impact 4=Somewhat likely 5=Extremely likely
- a. 1
 - b. 2
 - c. 3
 - d. 4
 - e. 5
7. What is your estimation of the likelihood of accomplishing one or more of the above without having completed a residency?
1=Extremely unlikely 2=Somewhat unlikely 3=No impact 4=Somewhat likely 5=Extremely likely
- a. 1
 - b. 2
 - c. 3
 - d. 4
 - e. 5
8. What type of setting are you considering to be your mode of practice after completion of your residency?
- a. Solo private practice
 - b. Group private practice
 - c. Commercial practice
 - d. Community health center
 - e. Veterans Affairs hospital
 - f. Other hospital
 - g. Optometric education
9. Do you believe that completing a residency creates more employment opportunities?
- a. Yes
 - b. No
10. If you were to choose again, would you complete a residency program?
- a. Yes
 - b. No
 - c. If no, why?
11. Would you recommend a residency program to current optometric students?
- a. Yes
 - b. No
 - c. If no, why?