

AN OBJECTIVE SURVEY COMPARISON OF THE EXPERIENCE OF FIRST YEAR
OPTOMETRISTS IN RESIDENCIES AND OTHER MODES OF PRACTICE

by

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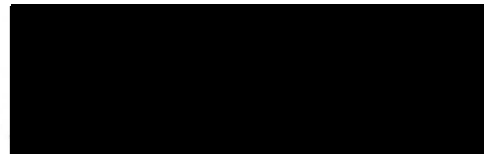


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Doctor of Optometry Senior Paper
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ABSTRACT

Background: This Research will be used to compare the first year optometrist's experience to provide information to third and fourth year optometry students. *Methods:* Optometrists (O.D.s) from the class of 2015 who have recently completed a residency program or who have worked as an optometrist for one year completed the survey. The O.D. simply answered yes or no questions on whether they have seen and/or treated certain ocular conditions, such as ocular disease conditions, binocular vision disorders, and if they have fit certain contact lens modalities, as well as if they work with certain instrumentation, if they obtained jobs in their desired modes of practices, and their starting salaries. Differing types of residencies and modes of practice were compared to one another. *Results:* The amount of clinicians in each mode of practice that have completed each optometric item were compared, and statistical analysis was performed to see if they are statistically significant. *Conclusions:* Though this study is not intended to persuade optometry students to choose any particular career path, conclusions may be drawn that those who choose residencies are exposed to more ocular conditions, make less money during residency and slightly more after, are less confident upon graduation, are equally as confident after one year of doctoral experience, and have many similar experiences as those of non-resident first year optometrists.

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CHAPTER 1

INTRODUCTION OF OPTOMETRIC RESIDENCIES

During the fourth year of optometry school, students must choose whether to apply for a residency. Residencies in optometry are optional, as they are not required for licensing or for most optometry positions. Reasons to complete the optional residency include gaining specialized experience in a specific area, teaching students, working with other optometrists, honing specific skills, gaining an extra year's worth of confidence before being on their own, and opening the option to work in certain practice settings that require completion of a residency such as the Veteran's Health Administration, academia, or some ophthalmology-optometry practices ¹. For these reasons many optometrists choose to complete a residency upon graduation, in fact there are 235 residency programs accredited by the Accreditation Council on Optometric Education (ACOE), with up to 435 available positions to fill. These positions include a variety of 11 different areas of specialization not including combinations of the specialties. The specialties are family practice optometry, primary eye care, cornea and contact lenses, geriatric optometry, pediatric optometry, low vision rehabilitation, vision therapy and rehabilitation, ocular disease, refractive and ocular surgery, community health optometry, and brain injury vision rehabilitation ¹.

Despite many benefits of completing optometric residencies, many optometrists choose to decline applying for residency and jump into the job field instead. One of the top reasons students state for not completing a residency is the salary. Optometry residents make anywhere from \$31,000 to \$42,000 for the duration of their residency, while non-resident first year optometrists make an average of \$95,000 as of 2011 ^{2,3,4}. Considering the wage difference, and that the majority of optometrist positions don't require a residency, only 20% of optometric graduates complete residencies ⁵.

Whether or not to complete a residency is a big decision for a fourth year optometry student, and there are many resources providing information to help with this decision. Many of these resources give the subjective experience of optometrists that are residency-trained, and include reference to the experienced increase in confidence and exposure to ocular conditions compared to the confidence and experience the optometrist had upon graduation. This experiment compares objective measures from optometrists of the same graduating class, contrasting results from optometrists that completed residencies to those that did not.

CHAPTER 2

METHODS FOR DATA COLLECTION

For collection of data, two web-based surveys were created. One survey was intended for optometrists that completed residencies and the other was for optometrists that didn't complete a residency and instead worked for a complete year as an optometrist. The survey was only completed by optometry graduates from the class of 2015. This group was chosen because they had each just completed either residency or their first year of work. Also, the residency-trained optometrists obtained positions as non-resident optometrist by that time.

Each survey ranged from 15 to 17 questions and took approximately five minutes to complete. The questions were nearly identical between the two groups. Differences included wording and an additional question to residency-trained optometrists to ask what category their residency was.

To obtain objective data, there were no open-ended questions, except for one allowing any comments. The surveys included "yes or no" questions, drop down boxes with limited answer choices, and questions which required surveyors to select all items that applied. Responses were collected from graduates of numerous optometry schools.

Both surveys were sent to optometrists from the class of 2015 with instructions to either complete the survey for residency-trained optometrists or non-residency-trained optometrists.

CHAPTER 3

RESULTS

Of the 40 residency-trained optometrist respondents, 17 completed disease residencies, 11 completed pediatric/binocular vision/ low vision residencies, 7 completed contact lens or a combination of contact lens and anterior segment disease residencies, and 5 completed primary care residencies (see Table 1 below).

Table 1: Optometric Residency Category

Answer Choices	Responses
primary care	12.50% 5
contact lenses (or contact lenses and anterior segment disease)	17.50% 7
disease	42.50% 17
pediatrics/binocular vision/ low vision	27.50% 11
Total	40

Both groups were asked what practice setting they were currently working in as non-resident optometrists. Responses included private practice, corporate, ophthalmology-optometry practices, academia, Veterans Health Administration hospitals, research, and other. Results for post-residency graduates are shown in Figure 1, and responses from non-residency trained optometrists are shown in Figure 2.

Figure 1: Practice Settings of Residency-Trained O.D.s

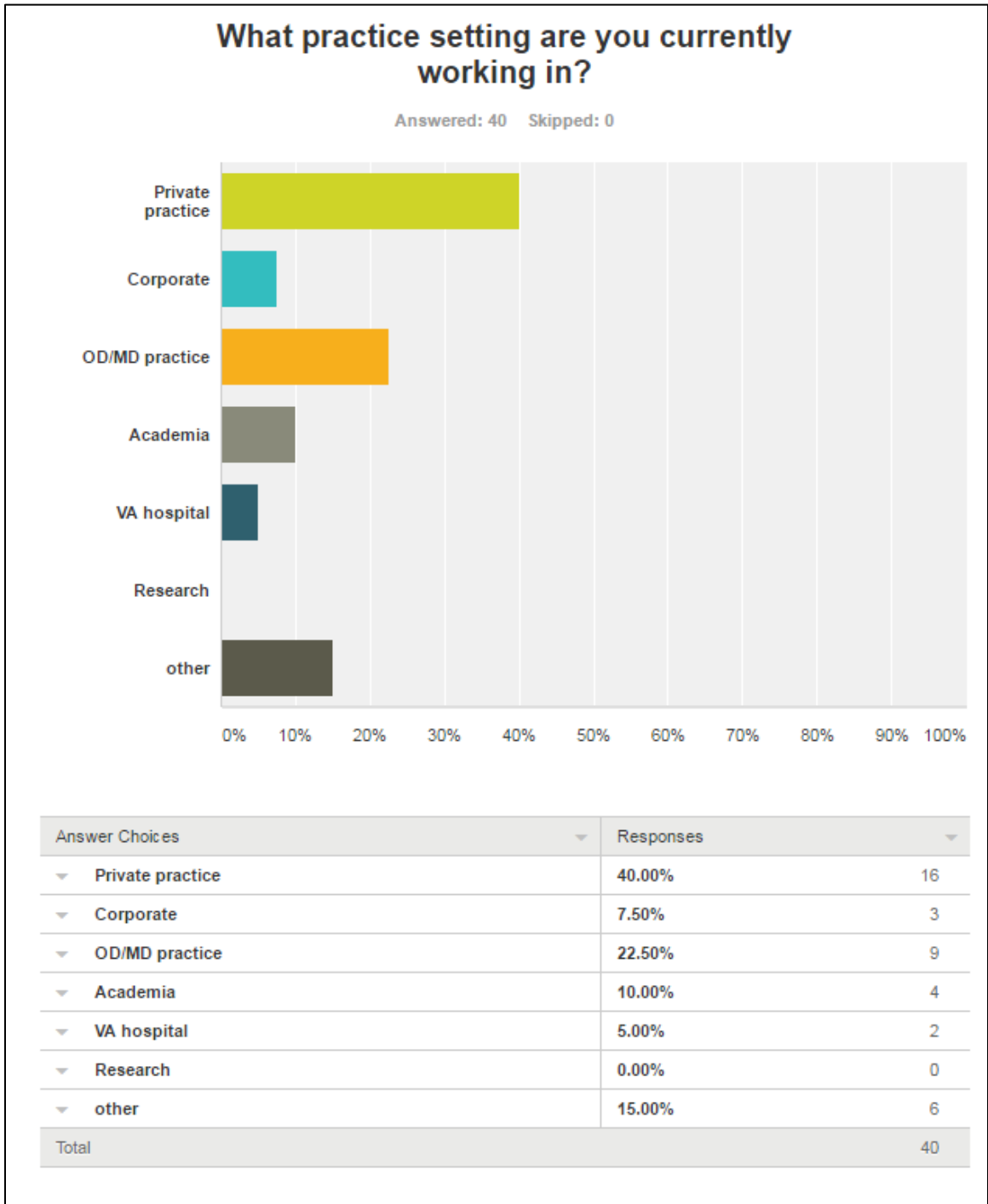
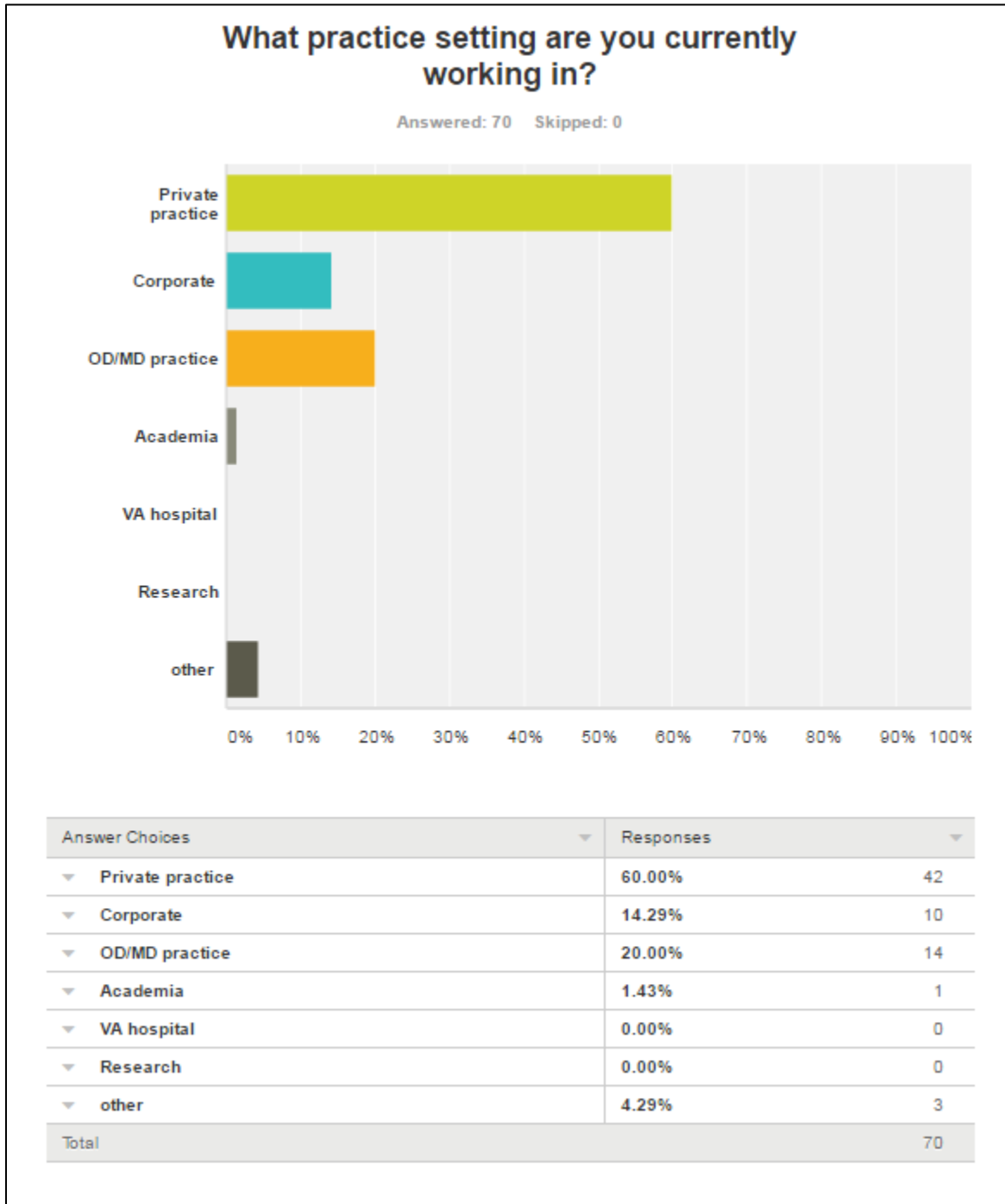


Figure 2: Practice Settings of Non-Residency-Trained O.D.s



Both groups were asked if they ended up in the practice setting they desired upon graduation. Results for the residency group are shown in Table 2, results for non-residency trained optometrists are shown in Table 3. T-test results determined that the difference between the two groups was not significant at the 0.05 alpha level.

Table 2: Percentage of Residency-Trained O.D.s in Desired Practice Setting

Did you end up in the practice setting you desired after graduation/ before residency?		
Answered: 38 Skipped: 2		
Answer Choices	Responses	
yes	68.42%	26
no	31.58%	12
Total		38

Table 3: Percentage of Non-Residency-Trained O.D.s in Desired Practice Setting

Did you end up in the practice setting you desired prior to graduation?		
Answered: 70 Skipped: 0		
Answer Choices	Responses	
yes	74.29%	52
no	25.71%	18
Total		70

Both Groups were asked about their current salaries. For the residency group, this number represents the estimated salary for their first year of post-residency work. The average salary for the residency group was \$112,000. The average salary for the non-

residency group was \$103,716. Results for the residency group are shown in Table 4, results for non-residency trained optometrists are shown in Table 5.

Table 4: Salary of Residency-trained O.D.s

What is your salary/ how much money will you make after one full year of work? (post-residency)

Answered: 40 Skipped: 0

Answer Choices	Responses	
< \$80,000	2.50%	1
\$80,000- \$100,000	20.00%	8
\$100,000- \$120,000	52.50%	21
\$120,000 - \$140,000	17.50%	7
\$140,000 - \$160,000	5.00%	2
> \$160,000	2.50%	1
Total		40

Table 5: Salary of Non-Residency-Trained O.D.s

What is your salary/ how much money did you make after one full year of work?

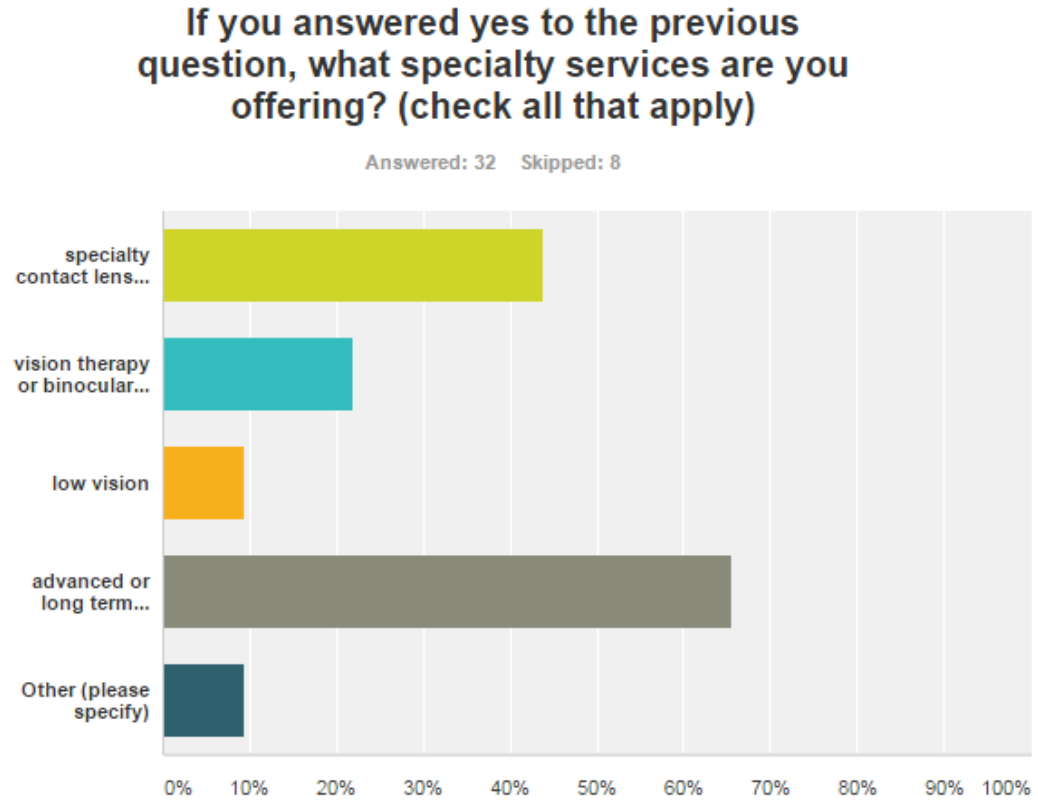
Answered: 70 Skipped: 0

Answer Choices	Responses	
< \$80,000	4.29%	3
\$80,000- \$100,000	45.71%	32
\$100,000- \$120,000	37.14%	26
\$120,000 - \$140,000	7.14%	5
\$140,000 - \$160,000	1.43%	1
> \$160,000	4.29%	3
Total		70

Optometrists in both groups were polled on whether or not they offered any specialty services at their existing jobs. Of those who completed a residency, 80% stated that they offered specialty services in the field that their residency was completed in. 60% of the non-residency O.D.s also offered specialty services of some form. When asked

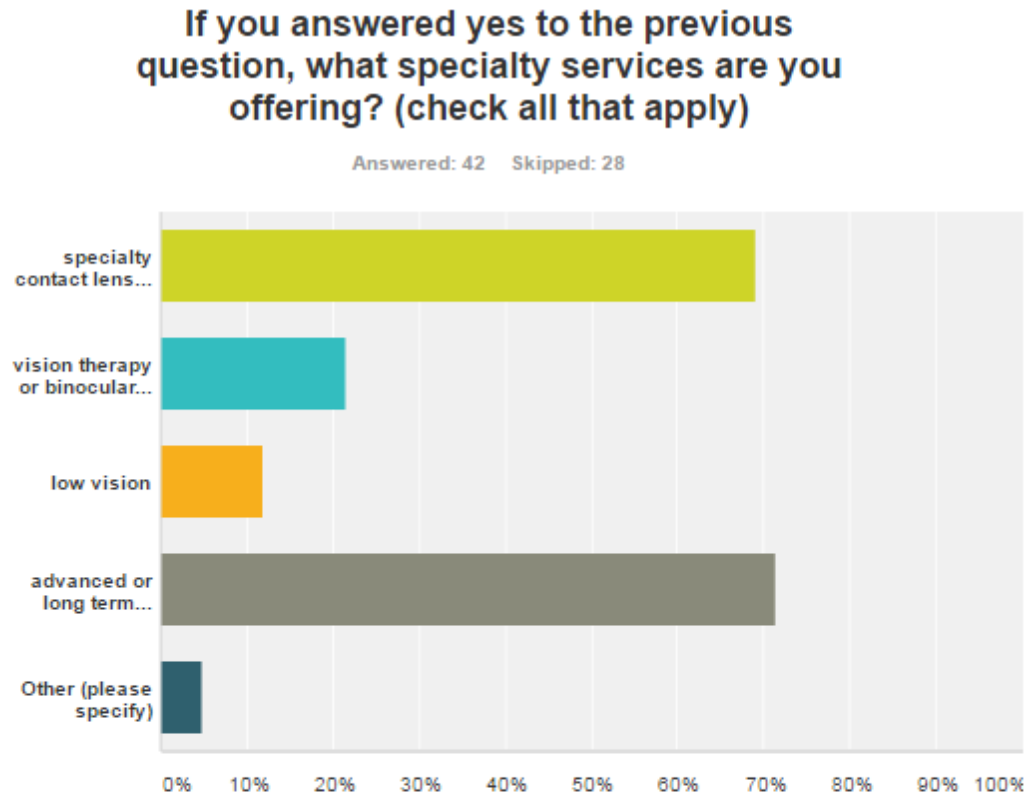
about the types of services provided, both groups had options of specialty contact lens fitting, Vision Therapy (VT) treatment, low vision rehabilitation, advanced or long term ocular disease care, and other. Results can be found below in figures 3 and 4.

Figure 3: Specialty services offered (residents)



Answer Choices	Responses
specialty contact lens fitting	43.75% 14
vision therapy or binocular vision disorder treatment	21.88% 7
low vision	9.38% 3
advanced or long term ocular disease care	65.63% 21
Other (please specify) Responses	9.38% 3
Total Respondents: 32	

Figure 4: Specialty services offered (non-residents)



Answer Choices	Responses
specialty contact lens fitting	69.05% 29
vision therapy or binocular vision disorder treatment	21.43% 9
low vision	11.90% 5
advanced or long term ocular disease care	71.43% 30
Other (please specify)	4.76% 2
Total Respondents: 42	

Both groups were asked about the average time that an annual primary care exam took. Fifteen-minute blocks were given as options for the respondents. Over 75% of non-residency doctors stated that exams took between 15 and 30 minutes to complete, while the majority of resident trained O.D.s took roughly 45 minutes to complete a primary care exam. Results are found in figures 5 and 6. The exact average for residency-trained

doctors to complete an exam was 37.2 minutes, compared to 24.6 minutes for non-resident doctors.

Figure 5: Average time to complete annual exam (Residents)

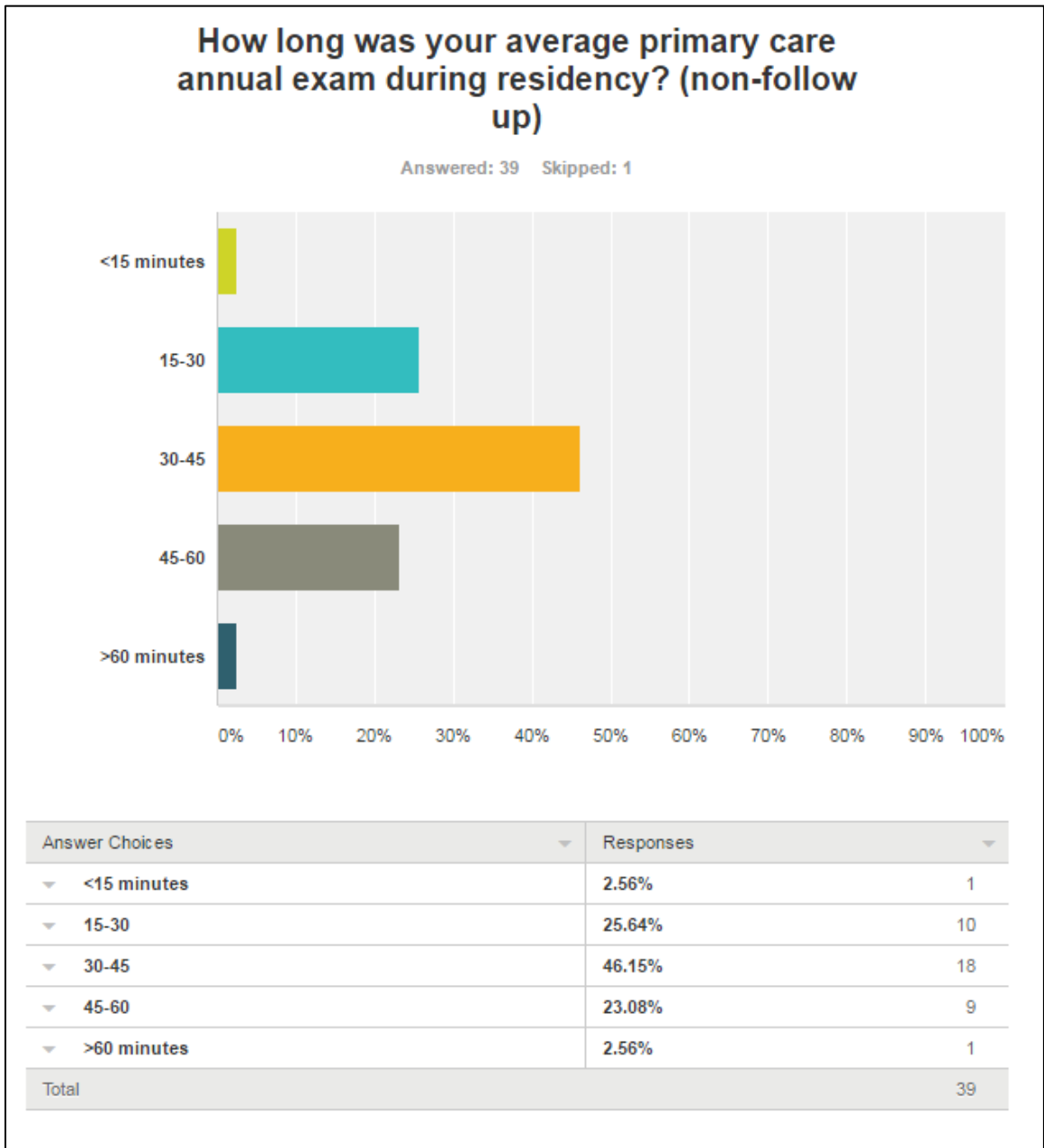
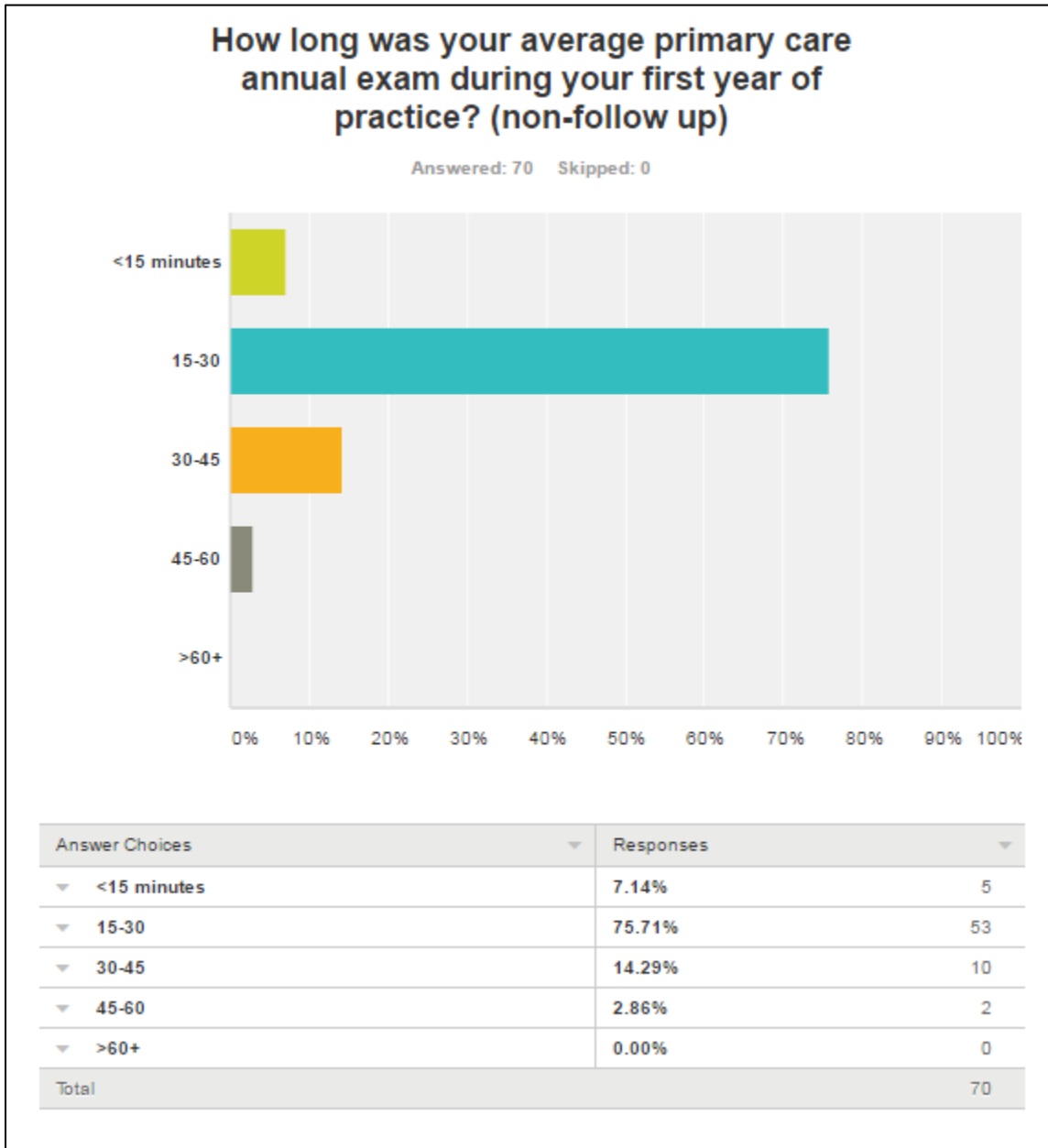


Figure 6: Average time to complete annual exam (Non-Residents)



When residents were asked about dilating their patients, results from both groups varied. Non-residency trained doctors tended to dilate their patients less often than residency trained doctors. 10% of the non-residency responses stated that they dilate their patients 0%-25% of the time. 90% of residency trained O.D.s dilate their patients 75%-100% of the time, while nearly 41% of non-residency trained O.D.s dilate their patients

75% to 100% of the time. Results can be found in figures 7 and 8. The average Residency trained doctor dilated 87.8% of their patient while the average non-residency O.D. dilated 62.7% of patients.

Figure 7: Percentage of primary care patients dilated (Residents)

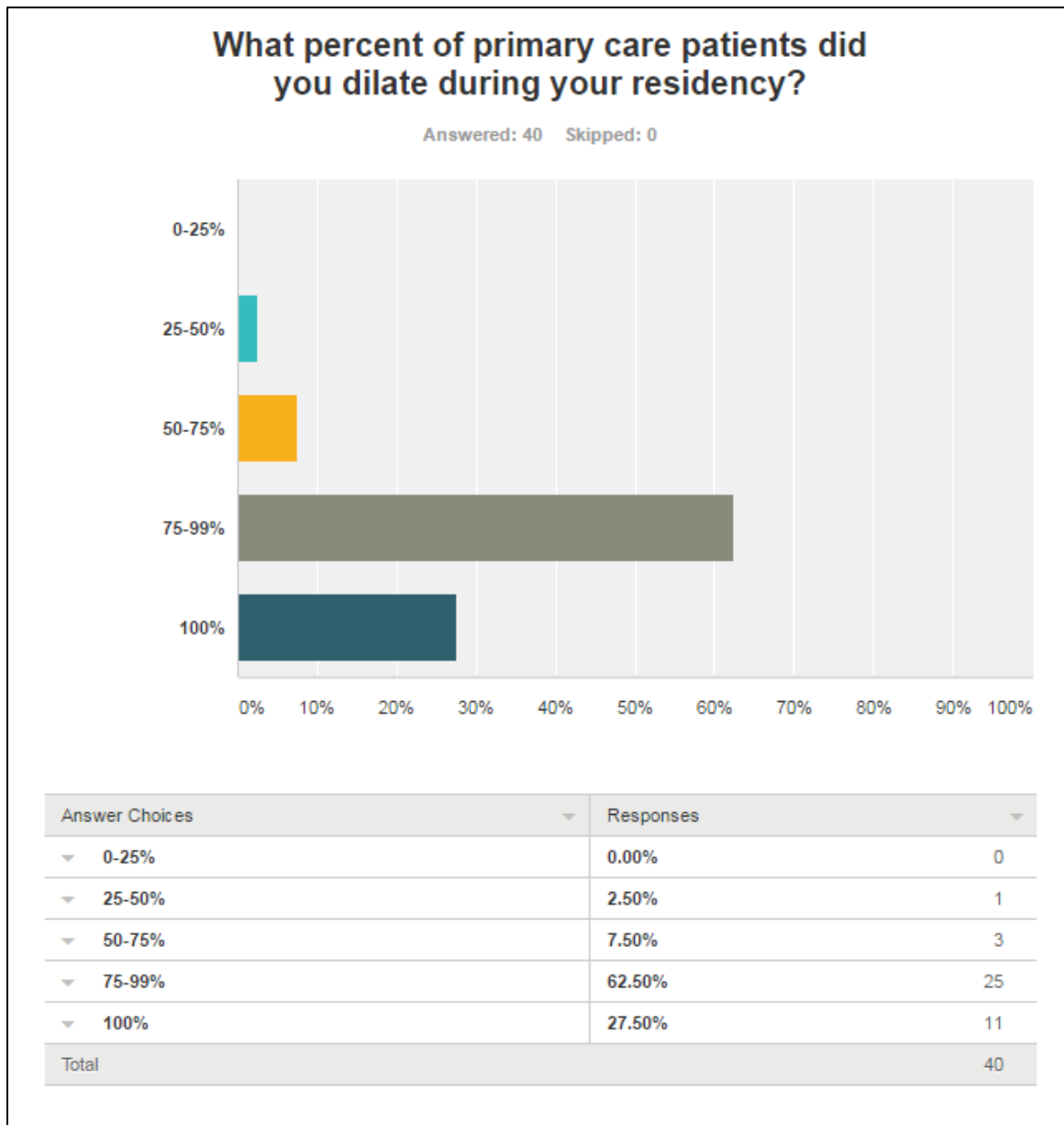
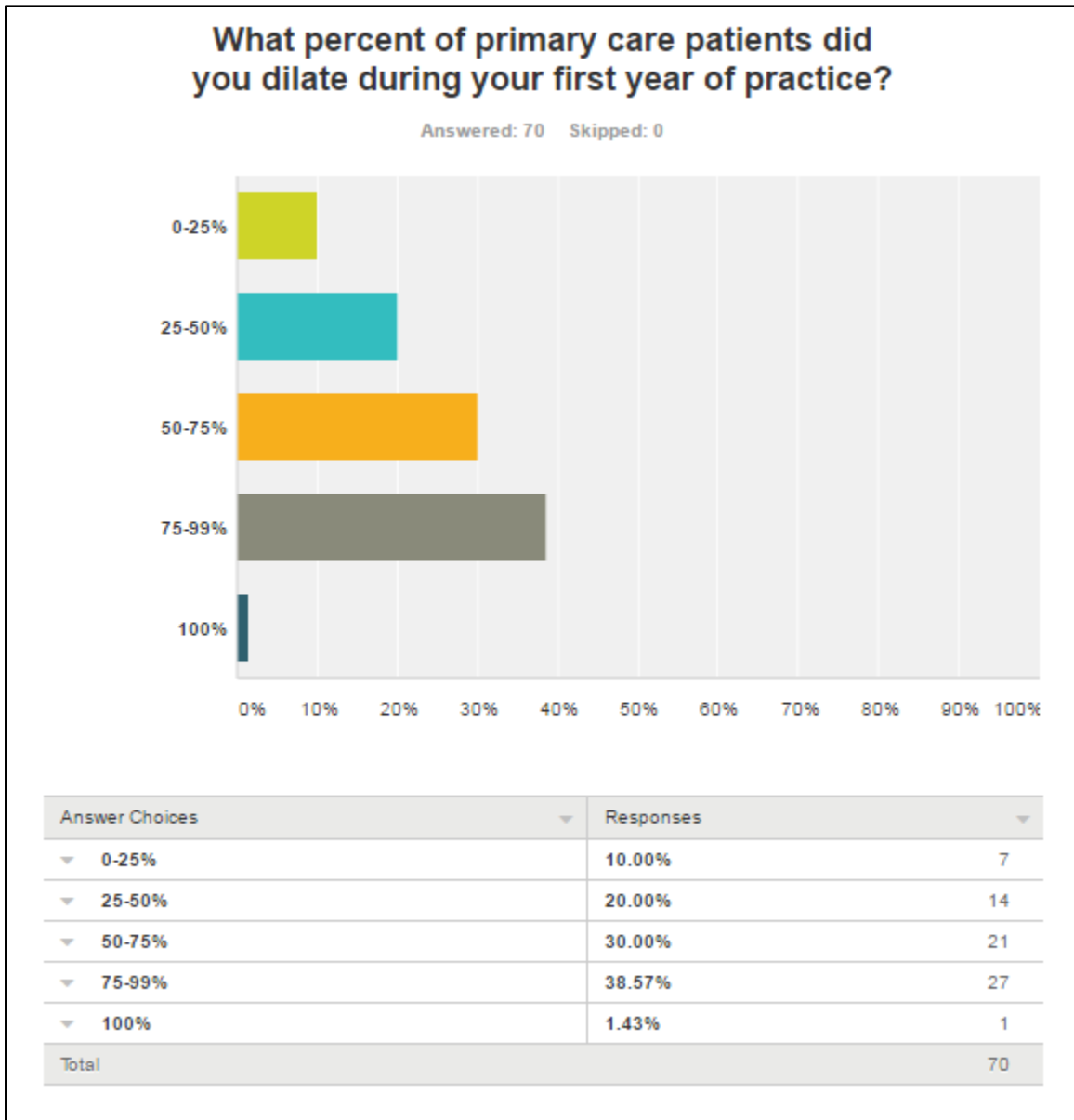


Figure 8: Percent of primary care patients dilated (Non-Residents)



Both groups were asked what special testing instruments they had access to during their first year as an O.D. The residents question applied to instrumentation available during their residency while the non-resident group was asked about instruments available their first year of practice. Results for the residency group can be found in Table 6 and in Table 7 for the non-residency group.

Table 6: Resident Access to Instruments

Did you have access to these instruments during your residency? (check all that apply)

Answered: 40 Skipped: 0

Answer Choices	Responses
Threshold visual field	100.00% 40
OCT	95.00% 38
Fundus camera	97.50% 39
Topographer	80.00% 32
Wavefront aberrometer	35.00% 14
Electrodiagnostics (VEP/EOG/ERG)	45.00% 18
Total Respondents: 40	

Table 7: Non-Resident Access to Instruments

Did you have access to these instruments during your first year of practice? (check all that apply)

Answered: 65 Skipped: 5

Answer Choices	Responses
Threshold visual field	93.85% 61
OCT	69.23% 45
Fundus camera	89.23% 58
Topographer	63.08% 41
Wavefront aberrometer	6.15% 4
Electrodiagnostics (VEP/EOG/ERG)	9.23% 6
Total Respondents: 65	

Both groups were asked which contact lens modalities they successfully fit in their first year as a doctor, with the residency group as residents. Results for the residency group can be found in Figure 9 and in Figure 10 for the non-residency group.

Figure 9: Contact Lens Fittings by Residents

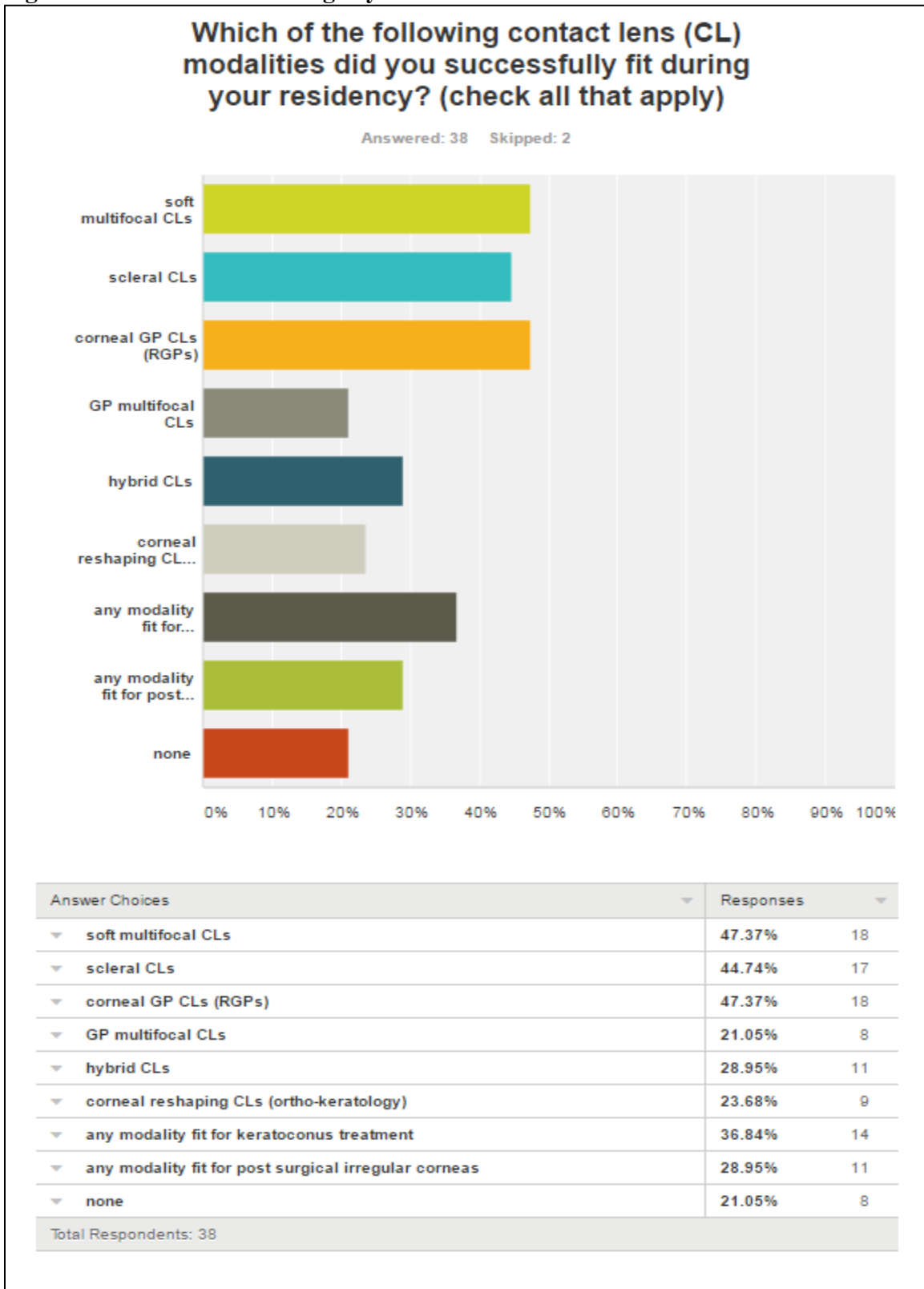
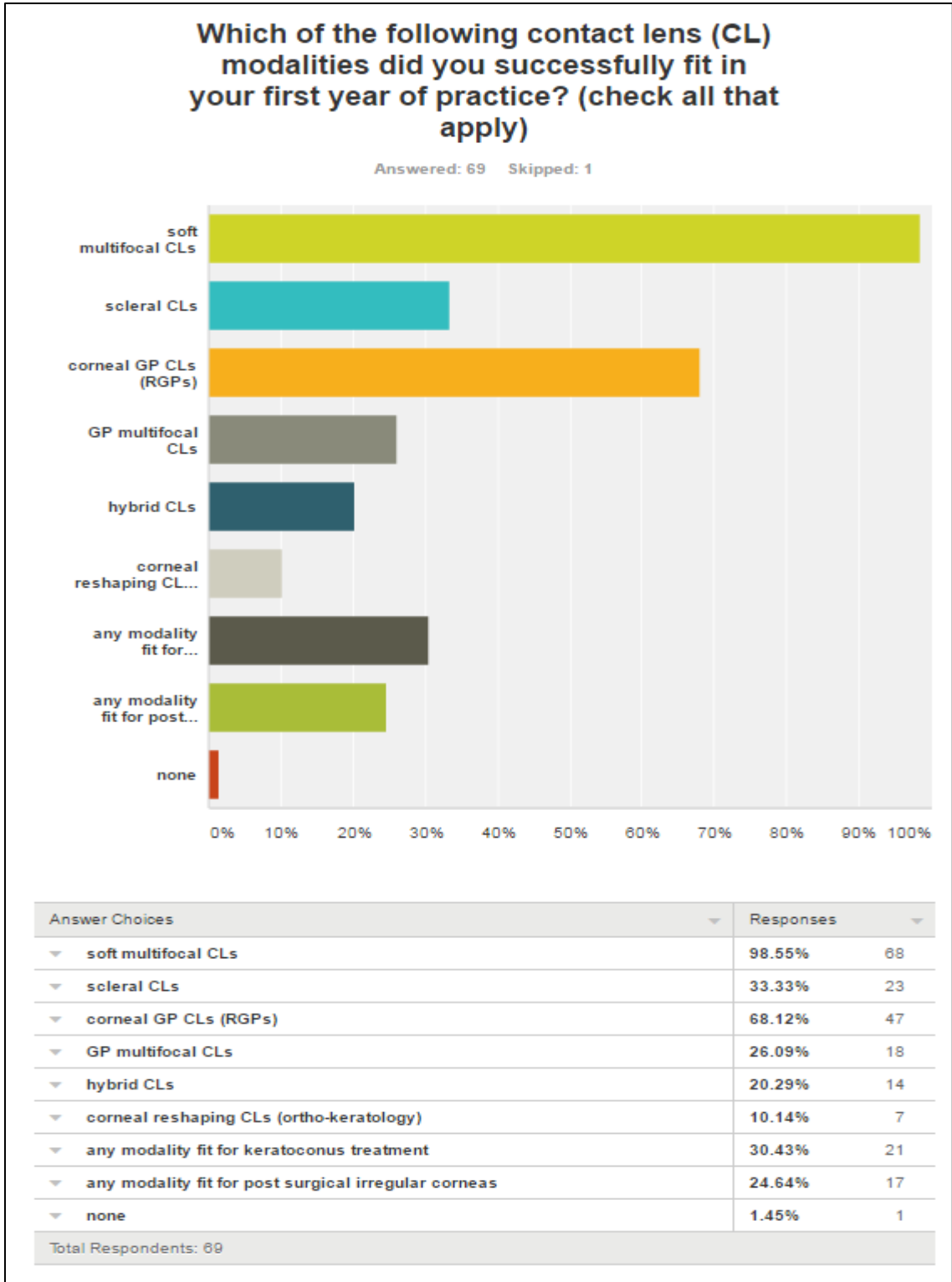


Figure 10: Contact Lens Fittings by Non-Residency Trained First Year O.D.s



Both groups were asked which binocular vision conditions they treated in their first year as an O.D. and if they provided low vision care, with the residency group as residents. Results for the residency group can be found in Table 8 and Table 9 for the non-residency group.

Table 8: Binocular Vision Conditions Treated by Residents

Which of the following binocular vision conditions did you treat (with or without vision therapy) during your residency? (check all that apply)

Answered: 36 Skipped: 4

Answer Choices	Responses
convergence insufficiency (CI)	69.44% 25
convergence excess (CE)	38.89% 14
divergence excess (DE)	30.56% 11
accomodative insufficiency	63.89% 23
accomodative excess	38.89% 14
accomodative infacility	38.89% 14
saccadic dificiency	33.33% 12
persistent reflexes	13.89% 5
traumatic brain injury related BV issues	52.78% 19
strabismus	63.89% 23
strabismic amblyopia	52.78% 19
refractive amblyopia	61.11% 22
eccentric fixation or abnormal correspondance	27.78% 10
have you provided low vision/vision rehab services to low vision patients	50.00% 18
none	11.11% 4
Total Respondents: 36	

Table 9: Binocular Vision Conditions Treated by Non-Resident First Year O.D.s

Which of the following binocular vision conditions did you treat (with or without vision therapy) during your first year of practice? (check all that apply)

Answered: 69 Skipped: 1

Answer Choices	Responses
convergence insufficiency (CI)	68.12% 47
convergence excess (CE)	24.64% 17
divergence excess (DE)	11.59% 8
accomodative insufficiency	76.81% 53
accomodative excess	39.13% 27
accomodative infacility	40.58% 28
saccadic dificiency	8.70% 6
persistent reflexes	2.90% 2
traumatic brain injury related BV issues	14.49% 10
strabismus	52.17% 36
strabismic amblyopia	66.67% 46
refractive amblyopia	92.75% 64
eccentric fixation or abnormal correspondance	4.35% 3
have you provided low vision/vision rehab services to low vision patients	10.14% 7
none	1.45% 1
Total Respondents: 69	

Both groups were given a list of ocular conditions and instructed to check all that they had seen clinically, and then all that they had confidently treated or monitored more before referral in their first year as an O.D. Results from both groups can be found in Table 10.

Table 10: Conditions Seen Clinically and Confidently Treated/Monitored by First Year O.D.s

Condition	Residents (%) Seen Condition	Non-Residents (%) Seen Condition	Residents (%) treat or monitor	Non-Resident (%) treat or Monitor
Keratoconus	90	92.86	69.23	68.57
Corneal Edema	90	87.14	76.92	80
Corneal Ulcer	87.5	90	82.05	88.57
Corneal Neovascularization	87.5	92.86	58.97	71.43
Herpetic Corneal Ulcer	72.5	52.86	66.67	42.86
Corneal transplant	75	60	38.46	20
Giant Papillary Conjunctivitis	72.5	88.57	64.10	82.86
Corneal Dystrophies	75	80	46.15	42.86
Glaucoma (primary)	97.5	100	92.31	80
Secondary Glaucoma	72.5	48.57	46.15	28.57
Neovascular Glaucoma	55	22.86	15.38	2.86
Congenital Cataracts	52.5	65.71	33.33	38.57
Vitritis	52.5	27.14	12.82	5.71
Vitreomacular Traction	80	65.71	61.54	41.43
Macular Hole	85	64.29	46.15	24.29
Anterior Uveitis	92.5	82.86	87.18	75.71
Posterior Uveitis	40	18.57	7.69	7.14
Endophthalmitis	40	10	0	0
Papilledema	65	77.14	17.95	14.29
NAION	50	24.29	30.77	8.57
AAION	22.5	4.29	7.69	1.43
Cystoid Macular Edema	75	61.43	53.85	30
Clinically significant Mac. Edema	75	75.71	33.33	20
Exudative Age related Macular Degeneration	82.5	62.86	25.64	14.29
Proliferative Diabetic Retinopathy	82.5	65.71	25.64	14.29
Retinal Detachment	72.5	68.57	20.51	12.86
Retinoschisis	60	32.86	38.46	12.86
BRVO or CRVO	75	61.43	48.72	21.43
BRAO or CRAO	55	25.71	30.77	10
Demyelinating Optic Neuritis	40	22.86	17.95	7.14
Ocular Melanoma	22.5	15.71	7.69	1.43
Malignant Growth of ocular Adnexa	32.5	12.86	17.95	2.86
Horner's Syndrome	35	20	20.51	7.14
Adie's tonic Pupil	42.5	20	23.08	12.86
Cranial Nerve III Palsy	47.5	22.86	23.08	11.43
Thyroid Ophthalmopathy	47.5	32.86	30.77	15.71
Central Serous Chorioretinopathy	57.5	54.29	46.15	31.43

Choroidal Neovascular Membrane	62.5	38.57	17.95	5.71
Hyphema	37.5	20	23.08	11.43
Macular Dystrophies	55	44.29	30.77	17.14
Retinitis Pigmentosa	60	45.71	41.03	25.71
Retinopathy of Prematurity	32.5	21.43	12.82	11.43

Both groups were asked to rate their Confidence in being able to handle any patient that walks into their office upon graduation and then also after one year of being an O.D., resident or non-resident O.D. The scale was zero to 100, with zero being no confidence and 100 being fully confident in any situation. The residency group had a confidence level of 53 after graduating, before starting residency, and a confidence level of 87 post-residency. The non-residency first year O.D. group had a confidence level of 69 upon graduating before working as a doctor and a confidence level of 89 after working for one year.

Both groups were asked if they had to remake the decision of whether or not to choose a residency if they would make the same choice. Of 40 surveyed in the residency group, all 40 chose that they would make the choice to complete a residency again. Of 70 surveyed in the non-residency first year O.D. group, 63 said they would make the same decision again to not do a residency, and 7 would've chosen to complete a residency instead.

Chapter 4

Discussion

The purpose of this study was to obtain objective data comparing first year work experiences of first year optometrists who have completed residencies and those who have not. The intention of this study is to provide future optometry students with better information as to if a residency is necessary to obtain a successful career post-graduation. This study involved responses from forty optometric residents from the class of 2015, and seventy non-resident optometrists from the class of 2015.

When considering the practice settings of each group surveyed, private practice was the most popular setting worked at in both groups. 40% of resident trained O.D.s currently hold jobs in private practice, while 60% of non-resident trained O.D.s hold positions in private practice. OD/MD practices were the second most common practice setting with corporate optometry positions falling third respectively in both groups. With the data collected, it does not seem to matter if an optometrist completed a residency or not, private practice settings are the most popular mode of practice to land a job, which was the goal of a majority of the sample. The majority of both groups of optometrists were able to land jobs in the practice setting that they desired. Nearly 69% of resident trained O.D.s landed jobs in the practice setting that they desired prior to graduation, while nearly 75% of non-resident O.D.s landed the job of their desire. When comparing the two groups' responses, a conclusion can be drawn that it does not mean that a residency has to be completed in order to obtain a job in the practice setting you want. One resident O.D. commented on why they did not obtain a job in the setting they desired

and they responded by saying, “Although I completed a residency I did not get a job in the practice setting I wanted. I believe that this is the case because of where I wanted to move post completion of my residency. Had I chose a more populated area there may have been better options for jobs.” With that being said a total of 15% combined resident trained O.D.s ended up in academic or VA hospital settings compared to 1.4% of non-resident O.D.s.

When the optometrists were polled about their wages Resident trained O.D.s averaged \$112,000 and non-resident trained O.D.s averaged \$103,716 per year. This is around an \$8,000 difference in annual income. This could lead one to assume that a residency could offer up greater opportunities to make money upon completion.

When groups were asked if they offered specialty services at their place of business, 80% of residency optometrists stated that they did, while 60% of non-resident trained O.D.s offered specialty services. Although a lower proportion of non-resident trained doctors offered specialty services, the breakdown between the two groups was very similar. Advanced or long term ocular disease care was the most prevalent type of specialty service offered in both groups, with specialty contact lens fitting being the second most common type of service offered.

Both groups were polled on average time of completion of a primary care examination. The resident group was asked the time it took to complete an exam during their residencies specifically, while non-resident O.D.s were asked the exam times based

on their current jobs. The average time for residents to complete an examination was 37.2 minutes, while non-resident O.D.s took 24.6 minutes. Different people may view either group as having an advantage in this category. On one hand resident O.D.s may have needed more time to see patients due to the difficulty of care needed, however a smaller number of patients could be seen in a day. On the other hand non-resident O.D.s could have an advantage because they could see a larger number of patients per day, and may not have to tools necessary to provide extensive care, requiring referrals.

In their first year as a doctor post-graduation, optometrists in their residencies dilated on average 87.8% of their patients, while non-resident optometrists dilated 62.7% of their patients. The mode for each group was 75-99% of patients dilated. While residents were able to dilate a higher proportion of their patients, the non-resident doctors appear to have the option to dilate their patients if needed. This still allows a non-resident O.D. to practice the way they want.

Of the conditions listed in Table 10, residents saw the average condition at a frequency of 62.0% compared to non-residents average of 49.6%. Residents treated or clinically monitored the average condition at a frequency of 36.9% of the time compared to 26.7% of the time for non-residents. This meant that of the conditions encountered, residents treated or monitored 59.5% of those conditions compared to 53.9% for the non-resident group. This suggests that residents were exposed to more interesting clinical scenarios than non-residents, but each group treated or monitored a similar percentage of those patients.

When asked about equipment available to the O.D.s it appears that resident trained optometrists had more access to equipment compared to non-resident trained O.D.s. This could help explain the increased average examination time in the resident group. Threshold visual field machines and fundus cameras were the most prevalent instrument available to both groups and differed the least in availability between the groups. 100% of residents had access to threshold visual field machines, while 94% of non-residents had the same piece of equipment. 97.5% of residents had access to fundus cameras, while 90% of non-residents had access to fundus cameras.

Both groups of doctors were asked about their confidence in being able to handle anything that walked into their office upon graduation. The confidence level on a scale of 1 to 100 (100 being highly confident) for residents was 53, and 87 post residency. The non-resident group's confidence was 69 upon graduation, and 89 after working for a year. These numbers show that residency groups had a lower confidence level post-graduation, but caught up to the non-resident group one year after residency completion. This leads one to the conclusion that a residency may be helpful to those who may need another year of schooling to feel confident in treating conditions in clinical settings.

Finally, when both groups were asked if they would make the same decision again on whether to complete a residency or just start working upon graduation all forty resident trained O.D.s would have made the same choice again to complete their residency training. The non-resident group had 63 of 70 responders that would make the

same decision. This data shows that of students who choose to complete a residency every single person is grateful for the fact that they did.

References

1. FAQs About Residencies. Association of Schools and Colleges of Optometry. Available at: <http://www.opted.org/about-optometric-education/residency-programs/faqs-about-residencies>
2. Everything You Need to Know About Optometric Residencies. Opted, provided by Residency Affairs Committee Association of Schools and Colleges of Optometry. Available at: <http://www.opted.org/about-optometric-education/residency-programs/faqs-about-residencies>
3. Optometry Resident Salaries. Glassdoor. Available at <http://www.opted.org/about-optometric-education/residency-programs/faqs-about-residencies>
4. Income from Optometry 2012 Executive Summary. American Optometric Association November 2012. Available at: http://www.aoa.org/documents/optometrists/income_from_optometry-2012_executive_summary.pdf
5. Residency Program Opportunities. American Optometric Association. Available at: <http://www.aoa.org/optometrists/for-educators/classroom-tools/residency-program-opportunities?sso=y>

APPENDIX H

IRB APPROVAL FORM

FERRIS STATE UNIVERSITY

Institutional Review Board for Human Subjects in Research

Office of Research & Sponsored Programs, 1010 Campus Drive, FLITE 412F · Big Rapids, MI 49307

Date: November 21, 2016

To: Dr. David Durkee, Edwin Gay and Matt Hulst
From: Dr. Gregory Wellman, IRB Chair
Re: IRB Application for Review

The Ferris State University Institutional Review Board (IRB) has reviewed your application for using human subjects in the study, *"An Objective Survey Comparison of the Experiences of First Year Optometrists in Residencies and other Modes of Practice"* and determined that it does not meet the Federal Definition of research on human subjects, as defined by the Department of Health and Human Services or the Food and Drug Administration. As such, approval by the Ferris IRB is not required for the proposed project.

This determination applies only to the activities described in the submission; it does not apply should changes be made. If changes are made and there are questions about whether these activities are research involving human subjects, submit a new request to the IRB for determination. This letter only applies to Ferris IRB Review; it is your responsibility to ensure all necessary institutional permissions are obtained and policies are met prior to beginning the project, such as documentation of institutional or department support. Note that quality improvement project findings may be published, but any findings presented or published should be clearly identified as part of a quality improvement initiative and not as research.

Your project will remain on file with the Ferris IRB for purposes of tracking research efforts at Ferris. Should you have any questions regarding the determination of this letter, please contact the IRB.

Regards,



Ferris State University Institutional Review Board
Office of Research and Sponsored Programs