A survey of musicians: Their expectations of optometrists

Viktoria L. Davis
Pacific University

Dawn A. Dunford
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A survey of musicians: Their expectations of optometrists

Abstract
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Methods: Surveys were sent to the music department at one hundred colleges and universities in the United States.

Results: Ninety-seven musicians replied to the survey. A majority of the musicians expected their eye doctor to be familiar with the specific visual demands of a musician. Over half of the respondents would be willing to pay more for an exam specially tailored to musicians. The respondents were very interested in vision enhancement techniques.

Conclusions: Optometrists may be meeting the Standard of Care for their musically-inclined patients. However, eyecare practitioners are not meeting the expectations of these patients, either in the exam or in the dispensary.

Degree Type
Thesis

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A SURVEY OF MUSICIANS:
THEIR EXPECTATIONS OF OPTOMETRISTS

By

VIKTORIA L. DAVIS
DAWN A. DUNFORD
JENNIFER L. SLEBOS

A thesis submitted to the faculty of the
College of Optometry
Pacific University
Forest Grove, Oregon
for the degree of
Doctor of Optometry
May, 1998

Advisor:
Karl Citek, O.D., Ph.D., F.A.A.O.
A SURVEY OF MUSICIANS:
THEIR EXPECTATIONS OF OPTOMETRISTS

Viktoria L. Davis, B.A.
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Assistant Professor, Pacific University College of Optometry
Acknowledgements

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We would like to thank Steven Davis for helping with technical and computer support. We would also like to thank all of the musicians who took the time to complete and return the surveys.

We are also grateful for the financial support that we received from Beta Sigma Kappa.
About the Authors

Viktoria L. Davis began her college career in 1992 at Gustavus Adolphus College in St. Peter, Minnesota. In 1996, she earned her Bachelor of Arts *magna cum laude* in Biology with a minor in music. She will graduate from Pacific University College of Optometry with a Doctor of Optometry in May 1999. After graduation, she hopes to practice in Western Pennsylvania.

Viktoria has studied trombone for fourteen years and violin for six years. She played trombone and violin in the Gustavus Adolphus Symphony Orchestra, the Adolphus Band, and several chamber ensembles.

Dawn A. Dunford began her college career in 1991 at the University of Manitoba in Winnipeg, Manitoba. She earned her Bachelor of Science with majors in biology and zoology. Dawn will graduate from Pacific University College of Optometry with a Doctor of Optometry in May 1998. After graduation, she hopes to practice in Canada.

Dawn has studied voice and piano for twenty years. She has accompanied and sung with numerous choral ensembles, including the Pacific University Chamber Singers.

Jennifer L. Slebos began her college career in 1991 at Luther College in Decorah, Iowa. In 1995, she earned her Bachelor of Arts *magna cum laude* in Biology with a minor in Chemistry. Jennifer will graduate from Pacific University College of Optometry with a Doctor of Optometry in May 1999. After graduation, she hopes to practice in Colorado.

Jennifer has played the viola for seventeen years. She was active in the Luther College Symphony Orchestra and chamber ensembles.

Viktoria and Jennifer currently play together in the B Street Strings chamber ensemble in Forest Grove, Oregon.
Abstract

Introduction: Musicians have a specialized visual environment. It is up to optometrists to meet their unique visual demands. These demands include, but are not limited to, unusual working distances, poor lighting, and uncommon ergonomic demands. Our study reveals what musicians expect of their eyecare practitioners.

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Conclusions: Optometrists may be meeting the Standard of Care for their musically-inclined patients. However, eyecare practitioners are not meeting the expectations of these patients, either in the exam or in the dispensary.

Introduction

What do musicians expect of their optometrists? Are you meeting the visual needs of your musical patients? Do you know what a musician's visual environment is like? You should know the answers to these questions to better serve your patients. Your patients may be professionals, educators, student musicians, or music may simply be a hobby. Whether amateurs, professionals, or in between; vision is essential to performance.

Basic Background on visual environment

Consider for a moment how important and involved a musician's visual world is. The position of the music stand creates an unusually long nearpoint working distance. The stand positioning and music height also require presbyopic musicians to play through an elevated near
The need to see a conductor and the music clearly makes vision at distance and near essential. The process of going from one distance to the other involves accommodative facility, vergence facility, and vertical saccades. Horizontal saccades are incorporated in actually reading the music.

Musicians often find themselves in less than ideal lighting conditions. Often, a single stand light is the only illumination source. In addition to poor lighting, unusual body posturing, limited space, and holding musical instruments for extended periods of time all create unusual ergonomic demands.

There have been few studies investigating the multiple visual demands of musicians. Schmidt found that there are differences in the eye movements of novice and expert musicians, although there was no measurable difference in the eye movements of equal caliber musicians who played different instruments. Larson and Robinson discovered that there were significant differences in the eye movements of musicians when reading text versus reading music. They showed that reading music requires many more saccades, fixations, and microregressions than does reading text. The music literature also agrees with the premise that reading music is very different from reading text. Sloboda has done extensive research in the area of perception and music. He has determined that the more experienced musicians depend more on the general "shape," "form," or "feel" of the music than to each note individually. Some musicians, such as keyboard musicians, are also quite effective at dividing their attention between two lines of music at the same time. He concluded that a global approach to music perception, rather than a note-by-note, "top-down" approach, was more common among skilled musicians. Sloboda also showed that musicians are much better at remembering musical notes presented for a brief period of time than non-musicians are. Rainbow and Herrick investigated which parts of the brain process information about rhythm and pitch in musicians and non-musicians. They concluded that the two groups processed this information in very different parts of the brain. Non-musicians processed rhythm and pitch in only the right hemisphere, while musicians utilized a bilateral approach.
Summary and Goals

Are optometrists providing the vision care that musicians require? To help answer this question, the results of surveys sent to musicians will be presented. The goal of our research is to present the musician's expectations and educate optometrists. This will enable us to give better care during the exam and in the dispensary.

Methods

Surveys were mailed to the music departments of one hundred colleges and universities. Two colleges from each state were selected from the 1996 Peterson's Guide to Colleges and Universities. Those with National Music Educator's Association (NMEA) certification were given priority. The researchers believed that NMEA-certified schools were more likely to have a well-established music program, and thus be more likely to respond to our survey. Each school was sent a cover letter and three copies of the survey. The letter encouraged the school to photocopy the survey as many times as needed and distribute to students and faculty. Each letter also included a business reply mail envelope.

The survey sent to the musicians included nineteen questions divided into several areas: vision examination history, expectations of a musician's vision examination, vision-related areas of interest, and demographics (Appendix A).

Results

Demographic Data

Of the 97 surveys returned, 46 (47.4%) were from women; 48 (49.5%) were from men, and three musicians (3.1%) did not indicate their gender. Twenty respondents (20.8%) were under 20 years of age; 26 (27.1%) were 21-40; 44 (45.8%) were 41-60; and 6 (6.3%) were over 60.

When asked what they considered their primary instrument, 29 (30.2%) reported voice; 26 (27.1%) in the keyboard family (piano, organ, accordion, keyboard, harpsichord); 19 (19.8%)
in the woodwinds family (flute, clarinet, saxophone, oboe, recorder, bassoon); nine (9.4%) in the brass family (trumpet, horn, trombone, euphonium, tuba); seven (7.3%) in the strings family (violin, viola, 'cello, string bass, guitar); three (3.1%) in the percussion family (percussion and handbells), and two respondents (2.1%) listed conducting as their primary instrument (see Figure 1). The above categories were decided upon by the researchers after the survey results were collected. For secondary instrument, respondents were invited to list more than one instrument. Utilizing the above general instrument categories, 13 (13.5%) people listed voice as a secondary instrument; 30 (31.3%) people listed a member of the woodwinds family; seven (7.3%) a brass instrument; fourteen (14.6%) a string instrument; two (2.1%) percussion; and eight (8.3%) were conductors.

Number of years playing the primary instrument ranged from three to sixty years, with a median of 30 years. Fifty-five respondents (56.7%) indicated that they considered themselves to be professional musicians. Students were represented by 33 (34.0%) respondents. Sixty-six of the musicians (68.0%) were music teachers, and two (2.1%) musicians selected “other.” Respondents did frequently select more than one category, perhaps reflecting the fact that many members of music faculties at universities also play in local ensembles as professional musicians.

![Figure 1: Primary Instrument](image)

**Past Experiences**

Almost half (48.5%) of all respondents indicated their last eye exam was less than one year ago. Most of the remainder (42.3%) had an eye exam 1-3 years ago, and 6.2% last had an eye exam over three years ago. Only 3.1% of the respondents had never had an eye exam. Of
those who had had an eye examination before, 59.8% had seen an optometrist and 30.4% had seen an ophthalmologist. The remainder, 9.8%, did not know if they had seen an optometrist or an ophthalmologist.

The survey asked several questions about the most recent eye examination the musician had. Two-thirds of the respondents indicated that the eye care practitioner knew that they were a musician. Only 40.2% thought that the eye doctor seemed interested in their music. Only 22.7% indicated that the doctor asked how the musician used their eyes when playing. The eye doctor asked 73.2% about their past or present vision problems. Only 10.3% of the respondents said that the doctor suggested special glasses for playing only.

The musicians were asked about what correction (if any) they currently use when playing. Many respondents commonly wore more than one type of correction when playing their instrument, and listed all forms of correction that they wear. Prescription glasses were worn by 51.5% of the respondents and contact lenses by 30.9%. Nearly one in five (18.6%) respondents did not wear any type of correction. Some type of near correction (bifocals, progressives, drug store readers, or trifocals) were worn by 32% of the respondents. Three musicians (3.1%) wore some other form of correction. The results are listed in Table 1.

Table 1: Type of correction worn.

<table>
<thead>
<tr>
<th>TYPE OF CORRECTION</th>
<th>NUMBER OF MUSICIANS</th>
<th>PERCENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prescription glasses</td>
<td>50</td>
<td>51.5</td>
</tr>
<tr>
<td>Contact lenses</td>
<td>30</td>
<td>30.9</td>
</tr>
<tr>
<td>None</td>
<td>18</td>
<td>18.6</td>
</tr>
<tr>
<td>Bifocals</td>
<td>11</td>
<td>11.3</td>
</tr>
<tr>
<td>Progressives</td>
<td>10</td>
<td>10.3</td>
</tr>
<tr>
<td>Drug Store Readers</td>
<td>7</td>
<td>7.2</td>
</tr>
<tr>
<td>Trifocals</td>
<td>3</td>
<td>3.1</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
<td>3.1</td>
</tr>
</tbody>
</table>
Ten people (10.3%) indicated that they had been prescribed glasses for playing only, but they did not work well. Five of these (50%) indicated they had problems with a bifocal (either the add was set incorrectly or the line was a problem). Three respondents (30%) found that they could not read music well without an intermediate prescription (between their habitual distance and near corrections). Two people (20%) had difficulty with a progressive addition lens.

**Musician’s Expectations**

The musicians were asked about their expectations of an eye care practitioner. Seventy people (72.1%) expected them to understand the importance of good vision for musicians. Understanding of how musicians use their eyes was expected by 61 respondents (62.9%). Half of the respondents (51.5%) expected doctors to recommend more appropriate corrective lenses/eyewear for musicians. Seventeen musicians (17.5%) expect eye care practitioners to be familiar with stage or pit layouts and lighting. Nine people (9.3%) expect them to understand the different requirements of different instruments. Finally, only 8 people (8.2%) expected none of the above of their eye care practitioner. The musicians were also asked if they expected an eye exam for a musician to be the same or different from that of a non-musician. Two-thirds of the respondents expected the exam to be the same. However, when asked if any of a series of eye skills should be tested more extensively for a musician than a non-musician, only 14.9% of the respondents indicated that none of the skills should be tested more extensively for a musician. Other results are summarized in Table 2.

**Table 2: Skills Expected to be Tested More Thoroughly for a Musician than a Non-Musician.**

<table>
<thead>
<tr>
<th>Eye Skill</th>
<th>Number of “Yes” Responses</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focusing ability</td>
<td>68</td>
<td>73.1</td>
</tr>
<tr>
<td>Eye Movements</td>
<td>51</td>
<td>54.3</td>
</tr>
<tr>
<td>Hand-eye coordination</td>
<td>44</td>
<td>46.8</td>
</tr>
<tr>
<td>Coordinated use of both eyes together</td>
<td>44</td>
<td>46.8</td>
</tr>
<tr>
<td>Near vision skills</td>
<td>42</td>
<td>44.7</td>
</tr>
<tr>
<td>Peripheral vision (fields)</td>
<td>35</td>
<td>37.2</td>
</tr>
</tbody>
</table>
Respondents were also asked if they would be willing to pay more for the additional tests listed if they were not included in a standard non-musician vision exam. Four people did not respond to the question. Fifty musicians (51.5%) would be willing to pay more for the additional testing. 30 of these (60%) were professional musicians. The median length of time musicians expect a complete vision examinations to take was 30 minutes. The average length of time was 38.0 minutes, with a standard deviation of 14.6 minutes. Responses ranged from ten minutes to sixty minutes.

**Vision-related Issues of Interest to Musicians**

The musicians were also asked what vision-related problems might bring them in to see an eye care provider. Updating current contact lenses or glasses was the most commonly selected reason (79 respondents, or 81.4%). Seventy-five musicians (77.3%) would come in for a general eye health check-up. Sixty-two respondents (63.9%) would see an eye doctor to enhance or improve their vision. Sixty-one musicians (62.9%) would go to an eye care provider if they had trouble focusing. Thirty-five musicians (36.1%) indicated that they would see an eye care practitioner to get appropriate high-quality glasses for playing their instrument. Nine people (9.3%) would visit for other reasons (ranging from tearing a contact lens to other stuff). One respondent (1.0%) would not go for any reason. One person (1.0%) did not respond to the question.

Respondents were also asked to rank several issues regarding eye care in order of interest, with 10 being most interesting and 1 being least interesting. As a whole; musicians were most interested in learning about vision enhancement techniques ($\bar{x} = 8.03, \sigma = 1.5$), followed by the
lighting and ergonomic design of their music station ($\bar{x} = 7.34, \sigma = 1.9$). Contact lenses ($\bar{x} = 5.87, \sigma = 2.6$), color vision ($\bar{x} = 5.86, \sigma = 2.5$), and glaucoma ($\bar{x} = 5.83, \sigma = 2.5$) were all reported as being moderately interesting. Bifocals, trifocals, and no-line bifocals ($\bar{x} = 5.25 \sigma = 3.0$) were followed by cataracts and cataract surgery ($\bar{x} = 4.93 \sigma = 2.9$). The least interesting was the difference between an optometrist and an ophthalmologist, although the average score received for that option was still 4.37 ($\sigma = 3.2$).

Conclusions

The surveys utilized in this study questioned a random sampling of musicians on their eye care needs and desires. It was determined that musicians are interested in vision enhancement, although many do not think of going to an eye care practitioner when they are having trouble with music. We found that more than half of the musicians surveyed would be willing to pay more for special services for musicians only. They expect their eye doctors to know about the specific visual needs of musicians and to think about those needs during the exam. They expect the doctor to suggest special glasses for playing if needed. We found that only about one-fourth of the musicians surveyed were asked by their eye care practitioner how they used their eyes when playing.

We can conclude that although optometrists are meeting the Standard of Care for their musical patients, many are not meeting the expectations of these patients. These patients expect eye doctors to know about their specific needs and to ask them about them. They expect their exam to be different, and they are willing to pay for this difference. They are interested in vision enhancement, which many practitioners do not address. Finally, we are not meeting their needs in the dispensary. They expect their doctors to suggest special “music glasses.” Many eye doctors feel that patients will always be reluctant to get an additional pair of glasses: we found that patients expect this possibility to be suggested.
Appendix A

PLEASE REMEMBER TO COMPLETE THE FRONT AND BACK PAGES. DO NOT WRITE YOUR NAME ON THIS SURVEY AS ALL INFORMATION IS KEPT ANONYMOUS. YOUR HELP IS GREATLY APPRECIATED.

1. When was the last time you had a complete vision exam performed by an eye doctor?
   - Less than 1 year ago
   - 1-3 years ago
   - More than 3 years ago
   - Never → skip to question 4

2. Was the exam done by an:
   - Optometrist
   - Ophthalmologist
   - Unknown

3. At your last complete vision exam, did the eye doctor: (circle the appropriate answer)
   a. Know that you are a musician? yes no unknown
   b. Seem interested in your music? yes no unknown
   c. Ask how you use your eyes when playing? yes no unknown
   d. Listen to your past or present vision problems? yes no unknown
   e. Suggest special glasses for playing only? yes no unknown

4. Which of the following do you currently use when playing?
   - Prescription glasses
   - No-line bifocals (progressives)
   - Contact lenses
   - Trifocal prescription glasses
   - Bifocal prescription glasses
   - Drug store reading glasses
   - Other: ____________________________
   - None of the above

5. Have you ever been prescribed glasses or contact lenses which were intended to be used for playing music, but did not work well?
   - Yes (please explain)________________________

6. Do you expect an eye exam for a musician to be the same or different than an eye exam for a non-musician?
   - Same
   - Different (please explain)________________________

7. How long do you expect a complete eye exam to take? (Estimate)________________________

8. Which of the following do you expect to be tested more extensively for a musician than for a non-musician? (Mark all that apply)
   - Eye disease check
   - Eye movements
   - Focusing ability
   - Peripheral Vision (fields)
   - Glare testing
   - Coordinated use of both eyes together
   - Visual Acuity (20/20)
   - Near vision skills
   - Hand-Eye coordination
   - Depth perception testing
   - None

9. Would you be willing to pay extra for these additional tests (see question #8) if they are not included in a standard non-musician vision exam?
   - Yes
   - No

→ Continued
10. Which of the following do you expect of an eye doctor?
   □ To understand the importance of good vision for musicians?
   □ To understand how musicians use their eyes?
   □ To recommend more appropriate corrective lens/eyewear for musicians?
   □ To be familiar with stage/pit layouts and lighting?
   □ To understand the different requirements of different instruments?
   □ None of the above

11. Why might you go to an eye doctor? (Mark all that apply)
   □ To update contact lenses or glasses that you currently use
   □ To enhance or improve your vision
   □ For a general eye health check-up
   □ To get appropriate high-quality glasses for playing your instrument
   □ If you have had trouble focusing
   □ Other: __________________________________________________________
   □ None

12. Assign numbers to these in the order you would be most interested in learning more about
( #1 is “most interested” )
   ___ Color vision
   ___ Vision enhancement techniques
   ___ Contact lenses
   ___ Glaucoma
   ___ Cataracts, cataract surgery
   ___ Bifocals, trifocals, no-line bifocals
   ___ Lighting and Ergonomic Design of your music station
   ___ The difference between an optometrist and an ophthalmologist
   ___ Other: _________________________________________________________

The following information will be used only for the purpose of sorting the surveys.

13. Are you an:  □ Optometrist □ Ophthalmologist □ Optician □ None of these

14. What is your gender?  □ Male  □ Female

15. What is your age range?  □ Under 20 □ 21-40 years □ 41-60 years □ 61+ years

16. What is your primary instrument? _______________________________________

17. What is/are your secondary instrument(s)? ________________________________

18. How long have you been playing your primary instrument? _______ Years

19. Are you a: (mark all that apply)
   □ Professional musician   □ Music teacher   □ Student   □ Other

Thank you for participating!

If you have any specific questions or concerns regarding this survey, please attach a separate sheet of paper with your name and address included so that we may respond directly to you.
Appendix B

1. When was the last time you had a complete vision exam performed by an eye doctor?
   47 Less than 1 year ago
   41 1-3 years ago
   6 More than 3 years ago
   3 Never

2. Was the exam done by an:
   55 Optometrist
   28 Ophthalmologist
   5 Unknown
   9 No response

3. At your last complete vision exam, did the eye doctor:
   a. Know that you are a musician?
      64 yes
      26 no
      4 unknown
      3 no response
   b. Seem interested in your music?
      39 yes
      31 no
      22 unknown
      5 no response
   c. Ask how you use your eyes when playing?
      22 yes
      65 no
      6 unknown
      4 no response
   d. Listen to your past or present vision problems?
      71 yes
      15 no
      5 unknown
      6 no response
   e. Suggest special glasses for playing only?
      10 yes
      80 no
      3 unknown
      4 no response

4. Which of the following do you currently use when playing?
   51 Prescription glasses
   30 Contact lenses
   11 Bifocal prescription glasses
   10 No-line bifocals (progressives)
   3 Trifocal prescription glasses
   7 Drug store reading glasses
   3 Other
   15 None of the Above

5. Have you ever been prescribed glasses or contact lenses which were intended to be used for playing music, but did not work well?
   87 No
   10 Yes

6. Do you expect an eye exam for a musician to be the same or different than an eye exam for a non-musician?
   67 Same
   30 Different

7. How long do you expect a complete vision exam to take? (Estimate)
   $\bar{x} = 38.0$ min. $\sigma = 14.6$ min. Max: 60 min. Min: 10 min. Median: 30 min.

8. Which of the following do you expect to be tested more extensively for a musician than for a non-musician? (Mark all that apply)
   68 Focusing ability
   51 Eye movements
   44 Hand-Eye coordination
   44 Coordinated use of both eyes together
   42 Near vision skills
   35 Peripheral Vision (fields)
   34 Glare testing
   33 Visual Acuity (20/20)
   20 Depth perception testing
   13 Eye disease check
   2 Other
   14 None
9. Would you be willing to pay extra for these additional tests (see question #8) if they are not included in a standard non-musician vision exam?

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>47</td>
</tr>
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</table>

10. Which of the following do you expect of an eye doctor?

<table>
<thead>
<tr>
<th>70</th>
<th>To understand the importance of good vision for musicians?</th>
</tr>
</thead>
<tbody>
<tr>
<td>61</td>
<td>To understand how musicians use their eyes?</td>
</tr>
<tr>
<td>50</td>
<td>To recommend more appropriate corrective lens/eyewear for musicians?</td>
</tr>
<tr>
<td>17</td>
<td>To be familiar with stage/pit layouts and lighting?</td>
</tr>
<tr>
<td>9</td>
<td>To understand the different requirements of different instruments?</td>
</tr>
<tr>
<td>8</td>
<td>None of the above</td>
</tr>
</tbody>
</table>

11. Why might you go to an eye doctor? (Mark all that apply)

<table>
<thead>
<tr>
<th>79</th>
<th>To update contact lenses or glasses that you currently use</th>
</tr>
</thead>
<tbody>
<tr>
<td>62</td>
<td>To enhance or improve your vision</td>
</tr>
<tr>
<td>75</td>
<td>For a general eye health check-up</td>
</tr>
<tr>
<td>35</td>
<td>To get appropriate high-quality glasses for playing your instrument</td>
</tr>
<tr>
<td>61</td>
<td>If you have had trouble focusing</td>
</tr>
<tr>
<td>9</td>
<td>Other</td>
</tr>
<tr>
<td>1</td>
<td>None</td>
</tr>
</tbody>
</table>

12. Assign numbers to these in the order you would be most interested in learning more about (#1 is “most interested”)

<table>
<thead>
<tr>
<th>4.14</th>
<th>Color vision</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.97</td>
<td>Vision enhancement techniques</td>
</tr>
<tr>
<td>4.13</td>
<td>Contact lenses</td>
</tr>
<tr>
<td>4.17</td>
<td>Glaucoma</td>
</tr>
<tr>
<td>5.07</td>
<td>Cataracts, cataract surgery</td>
</tr>
<tr>
<td>4.75</td>
<td>Bifocals, trifocals, no-line bifocals</td>
</tr>
<tr>
<td>2.66</td>
<td>Lighting and Ergonomic Design of your music station</td>
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<tr>
<td>5.63</td>
<td>The difference between an optometrist and an ophthalmologist</td>
</tr>
<tr>
<td>2.25</td>
<td>Other</td>
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</tbody>
</table>

13. Are you an

<table>
<thead>
<tr>
<th>0</th>
<th>Optometrist</th>
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14. What is your gender?

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<tr>
<td>48</td>
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15. What is your age range?

<table>
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<tr>
<th>20</th>
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<tbody>
<tr>
<td>26</td>
<td>21-40 years</td>
</tr>
<tr>
<td>44</td>
<td>41-60 years</td>
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<tr>
<td>6</td>
<td>61+ years</td>
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</table>
16. What is your primary instrument? What is/are your secondary instrument(s)?

<table>
<thead>
<tr>
<th>Category</th>
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<th>Secondary</th>
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</thead>
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<td>29</td>
<td>13</td>
</tr>
<tr>
<td>Keyboard</td>
<td>26</td>
<td>48</td>
</tr>
<tr>
<td>Woodwinds</td>
<td>19</td>
<td>30</td>
</tr>
<tr>
<td>Brass</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>Strings</td>
<td>7</td>
<td>14</td>
</tr>
<tr>
<td>Percussion</td>
<td>3</td>
<td>2</td>
</tr>
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<td>Conducting</td>
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18. How long have you been playing your primary instrument?

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<th>9yrs</th>
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<th>18yrs</th>
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19. Are you a: (mark all that apply)

- Professional musician: 55
- Student: 33
- Music teacher: 66
- Music teacher: 66
- Other: 2
REFERENCES


