

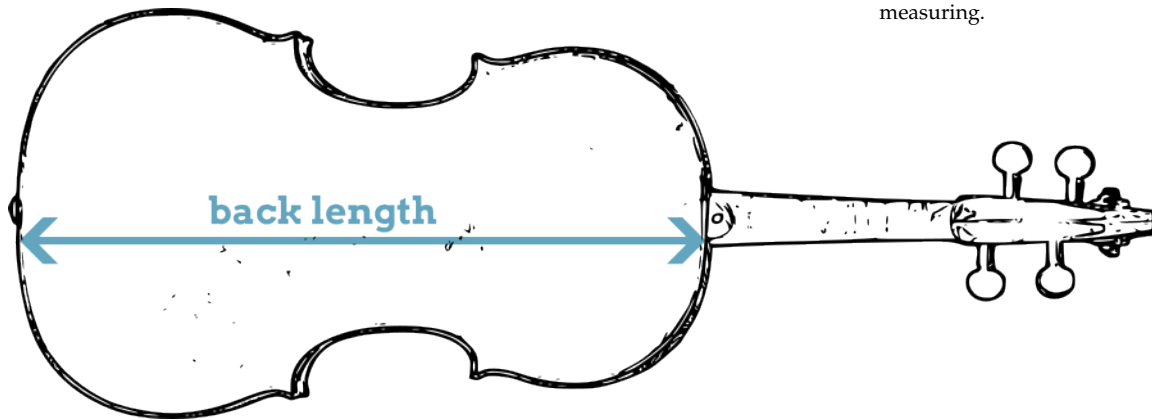
The Viola Survey

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Violas & Size

Most violins are—more or less—the same size and shape¹. Violas, however, vary widely. Two things are going on here. First, a violin scaled up proportionally to match the lower range of the viola would be too large to comfortably play. Second, the resulting “imperfection” of this mismatch between physics and playability contributes to the viola’s characteristic darker, more growly, timbre. There’s a bit more to the story, including historical developments and changes in string technology, but that’s the basic idea. The upshot is that there is no single “correct” way to make a viola. Instead there are many options.

There are many design parameters that can vary between violas, for example string length, rib height, arching shape, etc. However, when talking about violas players, makers and dealers all tend to only focus on back length. A viola’s “size” is universally taken to mean its back length. This is not because back length is the most important of, or even because it’s a particularly good proxy for, everything that might matter. The best that can be said for it is that it’s one part of what might matter, it’s relatively easy to measure², can be compared between instruments, and—more than anything—by convention it’s the one metric that almost everyone pays attention to.



However, precisely because back length is such a poor metric, discussions about the range and differences between violas, and how they might impact players, are often vague and frustrating. Instrument makers want to meet the needs of players, both out of professional duty and economic necessity. There is a widespread, though anecdotal, sense that players use “size” as a proxy for some or all of those needs when searching for and choosing a viola. Knowing more about how players actually interact with the concept of “size” would potentially be helpful to everyone involved.

¹ This doesn’t mean they all sound the same!

² Which is to say it’s easy to get a measurement. Because of edge wear, asymmetry, and arching the same instrument can often yield different results depending on who is doing the measuring.

The survey

To get insight into how viola players relate to the concept of “size”³ I created an online survey and publicized it on relevant Facebook groups, Instagram, online ads, and through my professional network as a luthier. The survey received 1,225 responses from 85 countries over the course of 3 months in 2018. I can’t promise that the results are representative of the viola playing population as a whole, or even that the self reported information is always accurate, but hopefully it’s a good start ... or at least good fun. At the end I’ll share some thoughts about how the survey could be improved for potential future editions.

³ I will use “size” and “back length” interchangeably from here on.

What sizes are there?

There is no set standard of what constitutes a “big” viola vs. a “small” viola. The most direct way to get a handle on this is to look at what people are actually using⁴. The mean of the reported viola sizes in the survey was 15.92” (40.45 cm), with the median and mode both 16” (40.6 cm), with a more or less symmetrical distribution above and below that point.

⁴ The survey gave respondents a drop down menu with ¼ inch increments to report their viola’s size

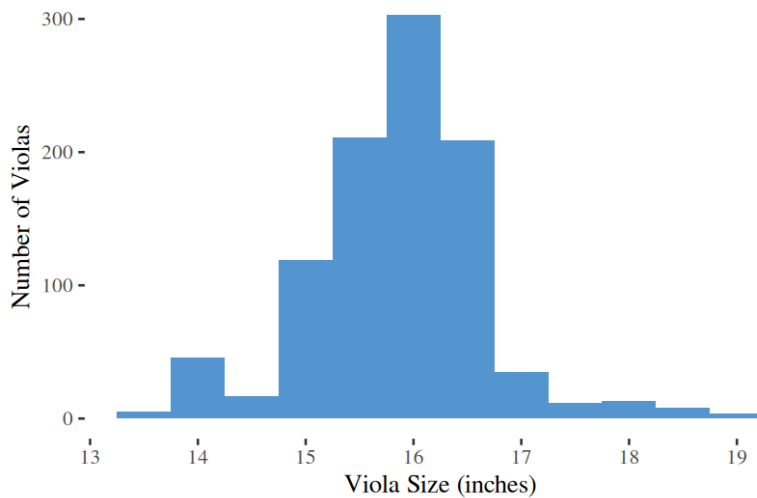


Figure 1: The distribution of viola sizes in the survey sample.

To get a sense of what small vs. big means in practice for players, we can divide our responses into approximate thirds to get ranges for small, medium, and big. This is admittedly somewhat arbitrary, but hews close to common usage and is a useful way of grounding our conception of viola size.

“small”	“medium”	“big”
≤ 15.5”	15.75” – 16.25”	≥ 16.5”
≤ 39.4 cm	40 cm – 41.3 cm	≥ 41.9 cm
339 (34.5%)	362 (37%)	281 (28.5%)

Table 1: Number of violas in the survey of each category

An important takeaway from this is that despite the large range

of possible sizes for violas—the survey includes responses from 13.5" (34.3 cm) to 19" (48.3 cm)—most players are using violas around 16" (40.6 cm).

Who has what?

But saying “most players are using violas around 16" (40.6 cm)” doesn’t take into account differences between types of players.

Professional vs. Amateur

The most pronounced and persistent difference in the survey sample is between professional and amateur players.

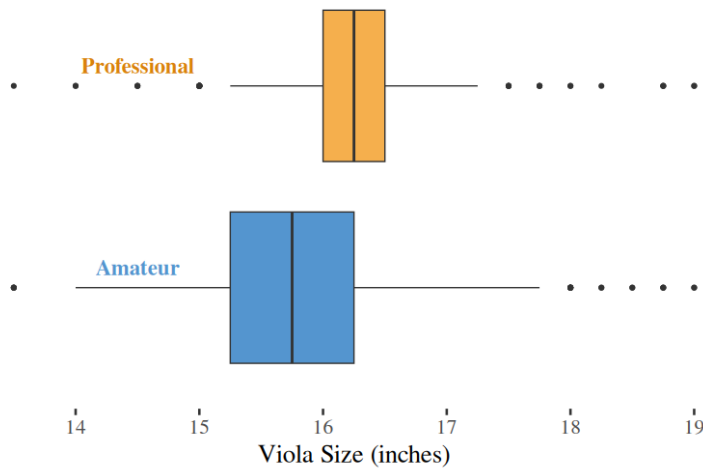


Figure 2: Distribution of viola size for professional vs. amateurs in the survey.

Professionals play, on average, slightly larger violas and this difference is statistically significant⁵.

<i>Amateur</i>	<i>Professional</i>
15.74" (39.99 cm)	16.22" (41.20 cm)

⁵ Welch t-test: $p < .001$

Table 2: Average viola size of professional vs. amateur players in the survey. The 95% confidence interval for the difference is 0.38" – 0.58" (0.97 cm – 1.47 cm).

One possible explanation for this could be that the amateur group includes many young new players using particularly small instruments. Unfortunately the survey did not include a question about age or whether this was their “forever” instrument vs. something that will be upgraded in the future. I used two proxies to try to address this. First I filtered out rented vs. owned instruments, and second I filtered out players who had been playing for fewer than 5 years. Both raised the average viola size used by amateurs slightly, but the difference between amateur and professional persisted and remained statistically significant.

Another difference between professionals and amateurs is that professionals tend to have more expensive instruments. While unsurprising, this provides a little bit of reassurance that the survey results reflect the real world.

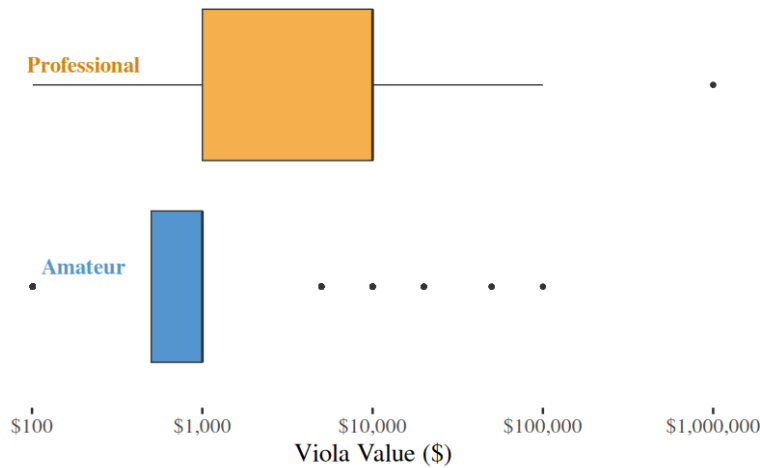


Figure 3: Distribution of viola values for professional vs. amateurs in the survey. Note: values are in U.S. dollars and are shown on a logarithmic scale.

Regional Differences

Then I looked at potential regional differences. Even though the survey contains responses from all around the globe, the only regions with enough responses to make a comparison are North America and Europe⁶. At first glance it looked like European viola players are using much larger instruments than their North American counterparts [16.19" (41.11 cm) vs. 15.83" (40.21 cm)]. However, this is misleading! The survey sample contains a significantly higher percentage of professionals among the European respondents than those from North America. I suspect that this is an artifact of how the survey was publicized online and shared via professional networks. Separating out professional vs. amateurs we see that professionals in both regions have a similar distribution of viola sizes.

⁶ I used the 7 regions as defined in the World Bank Development Indicators.

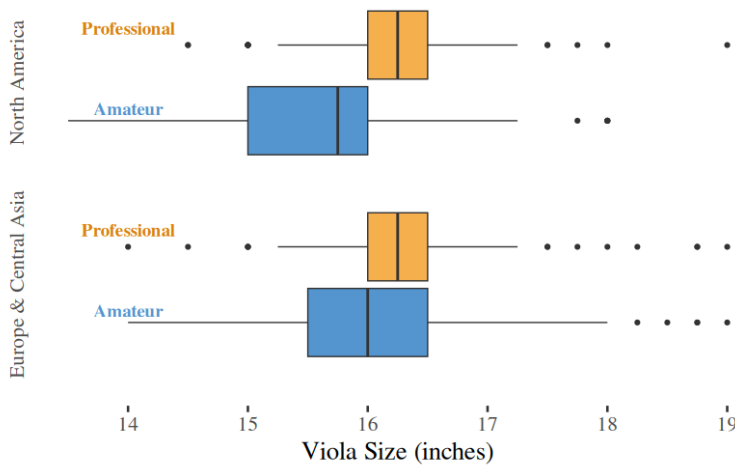


Figure 4: Distribution of viola size for professional vs. amateurs in North America and Europe.

Interestingly, while professionals on both sides of the Atlantic seem to be using similarly sized violas, the European amateurs in the survey sample are playing slightly larger violas on average than those in North America [16.03" (40.72 cm) vs. 15.63" (39.69 cm)] and this difference is statistically significant⁷. However, I'm hesitant to read too much into this. Given the large difference in the ratio of professionals to amateurs between the regions in the survey sample I suspect that other sampling errors might be skewing the differences between the region. But it's definitely something that would be worth exploring more in the future.

⁷ Welch t-test: $p < .001$ and the 95% confidence interval for the difference is 0.20" – 0.61".

A Look at Strings

The last "who has what?" question I examined was strings. I had hoped to see different strings being used for different sized instruments. At first glance that appears to be the case.

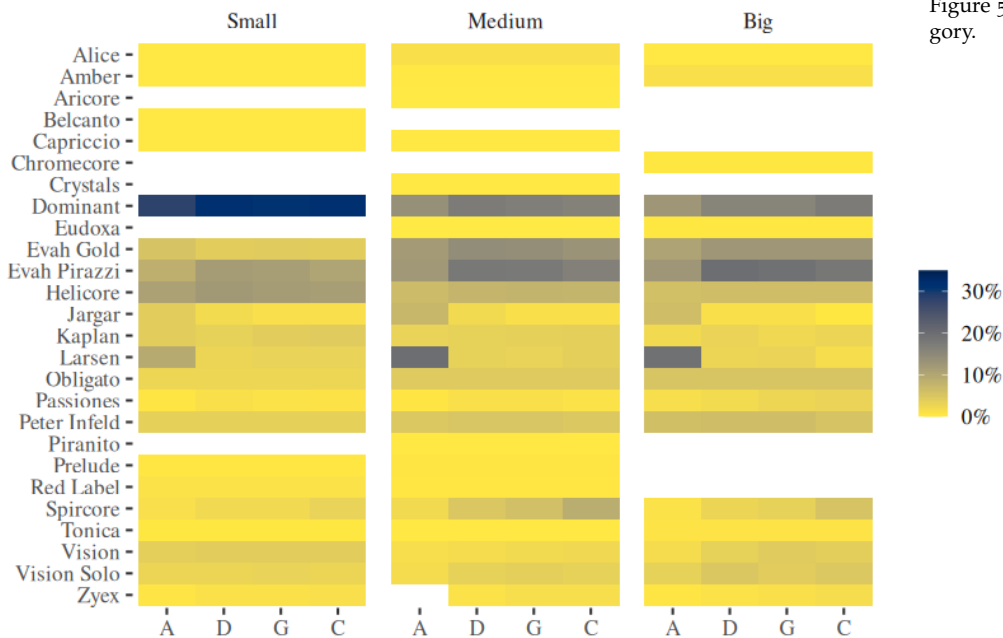


Figure 5: Strings used, by size category.

However, as with regional differences the underlying distribution of amateur vs. professional instruments needs to be taken into account. Looking across size categories for each type of player it becomes apparent that amateurs and professionals are fairly self similar to themselves, regardless of instrument size, and dissimilar to each other.

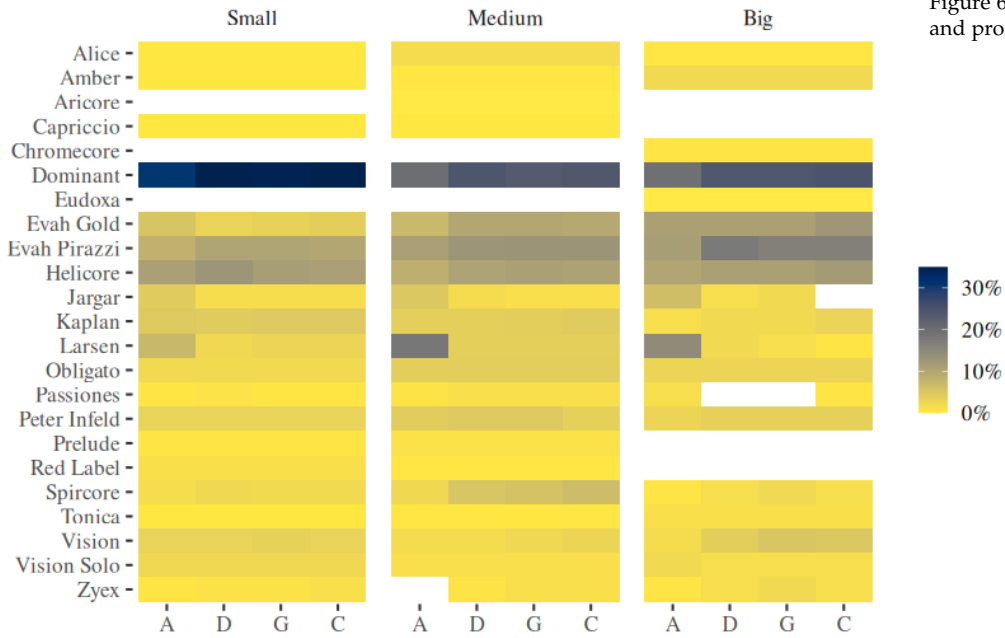
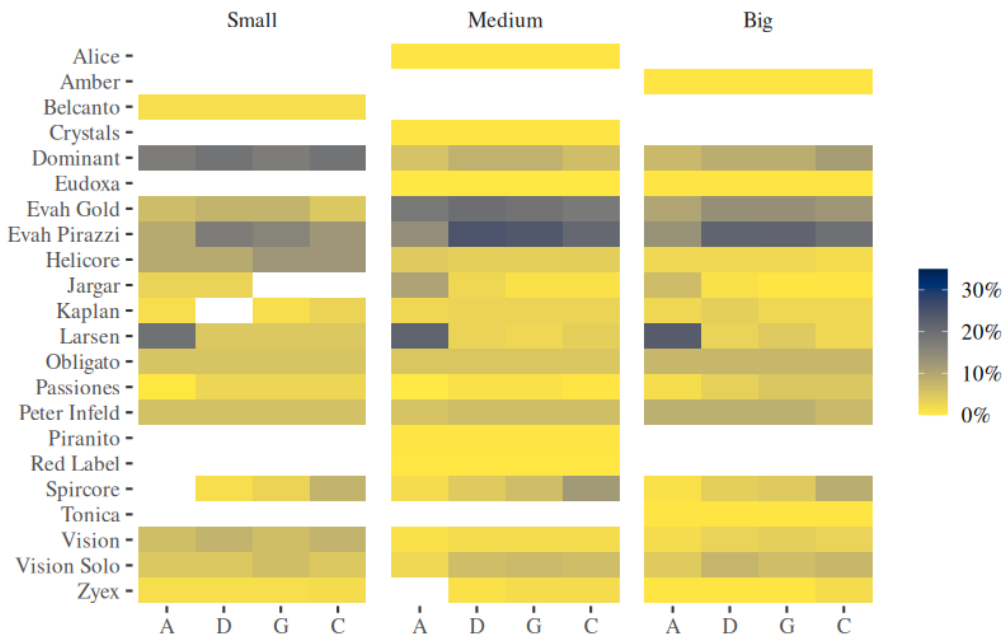


Figure 6: Strings used by amateur (a) and professional (b) by size category.

(a) Amateur



(b) Professional

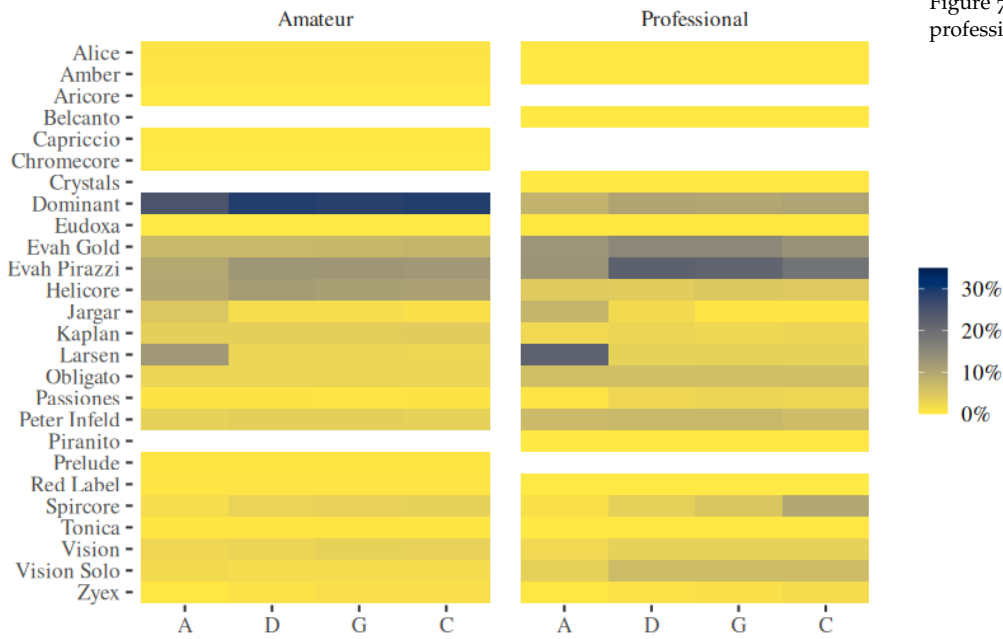


Figure 7: Strings used by amateurs vs. professionals.

So instead of looking at string choice by size it is more informative to look at string choice by player type. The big thing that jumps out is that amateurs hew to Dominants (and to a lesser extent Helicores) a lot more than the professionals, while professionals somewhat favor Evahs (both regular and gold). The other thing to note is that professionals are more likely to use broken sets, especially different A strings (usually Larsen) and sometimes also C (often Spircore).

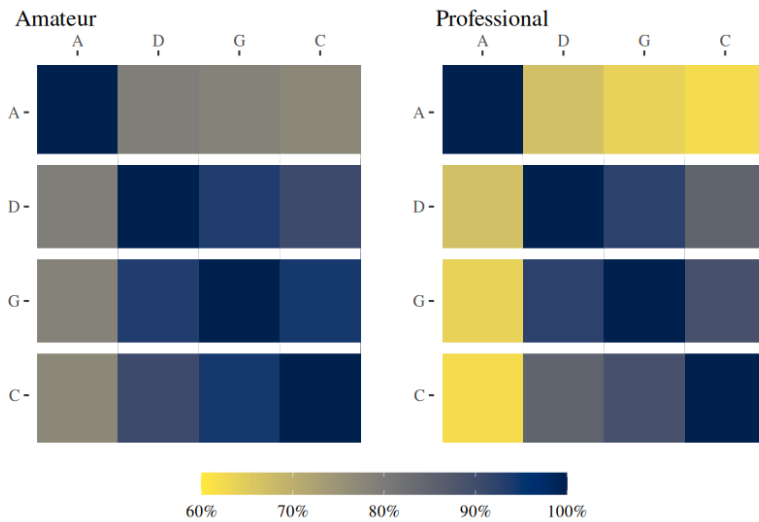


Figure 8: Percent of the time that a string is of the same set as each of the other strings for amateurs and professionals.

It is important to keep in mind, however, this data is somewhat old (from 2018) and new strings have come out in the mean time. It would be interesting to get updated data to see how string choices have changed.

Does size matter?

Do players even notice size?

Makers and dealers often believe that players care about the size of their violas, but it’s not clear how true this is. Players do seem to be aware of size as a relevant metric for violas. When asked whether they knew—off the top of their head—the back length of their violas the vast majority responded that they did, either exactly or at least approximately. By comparison, when asked the same thing about the string length of their viola most did not know.

	Know exactly	Know approximately	Don't know
Back length	71%	23%	6%
String length	14%	26%	61%

Table 3: Responses to “Do you know, without checking, what the [size / string length] of your viola is?”

But that doesn’t mean that players necessarily *care* about size. Maybe it’s just that everyone—especially makers and dealers—keep asking about it so players have learned to answer, but they don’t actually attach much weight to the question themselves.

What is important to players?

I asked three questions to explore this. First, I asked them to score the importance of 9 different characteristics when choosing a new viola. We can see that there is something to the truism that “everything is important” . . . except perhaps year and location made.

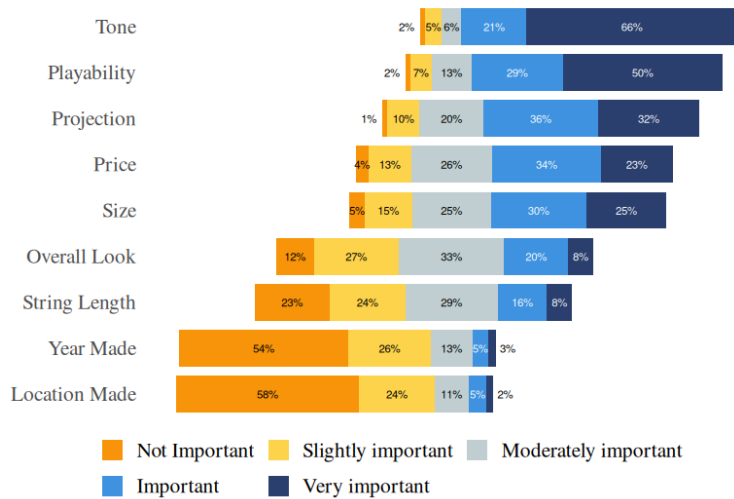


Figure 9: Responses to “When choosing a viola how important to you are each of the following?”

But, not everything is equally important. Tone is clearly generally given the most weight by players. When it comes to size, a majority (55%) of players consider it to be either “important” or very “important”, but that is less than playability and projection. Also of note is that string length, while not entirely discounted like year or location made, does not seem to be of high important consideration for most players.

Second, I asked them to rank those characteristics by order of importance. I was hoping to look beyond the scenario where “everything is important” and to be able to see bigger differences between the characteristics. Here tone really jumps out as the most important of the characteristics I asked about for many player. Interestingly, even though projection was overall considered somewhat less important than playability in the previous question, when asking players to rank the characteristics the importance of projection and playability look much more comparable. Size continues to be something that is in mix, but not at the top of the list for most players.

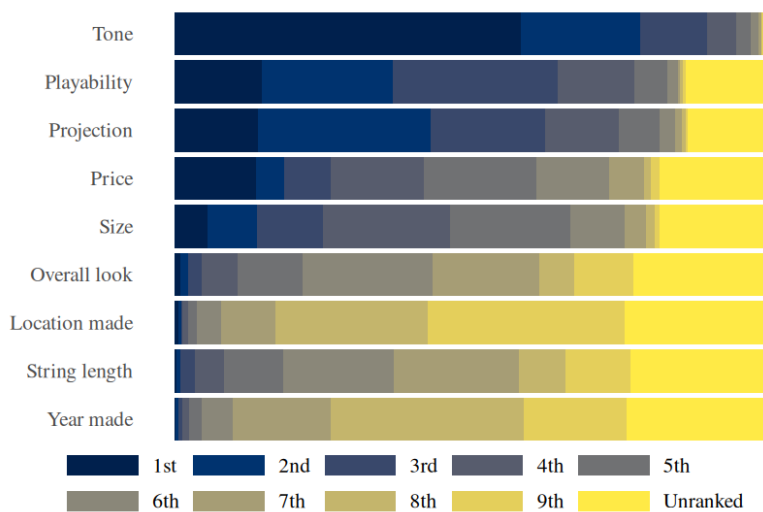


Figure 10: Cumulative relative ranking of the 9 characteristics.

Does size ever matter?

And, third, I asked those who had searched for an instrument within the past year (including currently searching) whether their search included a specific size range. 66% of those with a recent or current search said yes, they did have a specific size range in mind⁸.

Furthermore, those who had a specific size range in mind during their search did tend to give greater importance to size compared to those who did not search for a specific size range, but this was still generally less than the importance given to tone, playability, or projection.

When it came to the other characteristics, the importance those who searched with a size range in mind gave to string length and projection was also somewhat greater, though the difference was much smaller than for size. Their responses for the other characteristics were not different with any statistical significance.

The responses to all three questions together show that that players are often paying attention to size, but that it’s only part of what matters and usually not the most important characteristic to them.

⁸ There was *no* statistically significant difference between amateur and professionals. Pearson’s Chi-squared test $p = .39$

Characteristic	<i>p</i> - value
Size	<u>< .001</u>
String Length	<u>.006</u>
Projection	<u>.03</u>
Playability	.06
Tone	.13
Overall Look	.13
Year Made	.65
Price	.70
Location Made	.93

Table 4: T test comparing the distribution of importance scores between players who had recently searched for an instrument with and without a specific size in mind.

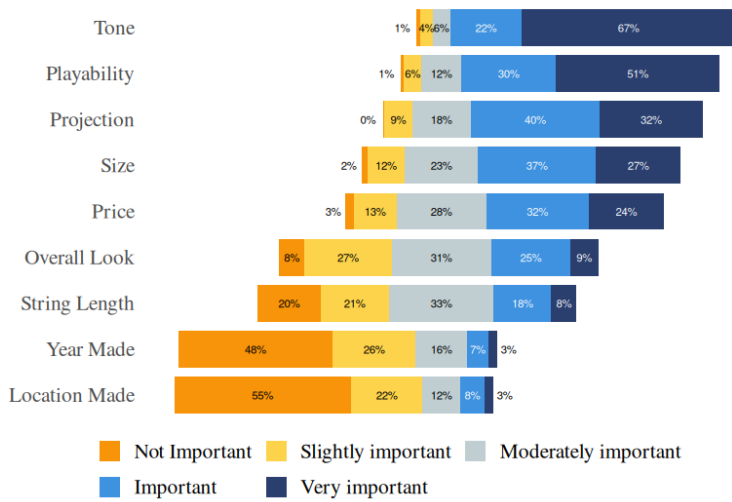


Figure 11: Responses to “When choosing a viola how important to you are each of the following?” for those who recently searched for a viola with a specific size in mind.

What size were they looking for?

I asked those who had a size in mind during their recent or current search what the minimum and maximum size that they considered was. The first thing to note is that 47% of the ranges given spanned less than or equal to 0.5” (1.27 cm) and another 37% spanned up to and including 1” (2.54 cm), which gives further insight into how players think about size. Interestingly, the average size searched for was slightly smaller than the average size of the instruments being played in the survey sample, and this difference was statistically significant⁹.

<i>Searched for</i>	<i>Played</i>
15.75” (40.00 cm)	15.92” (40.44 cm)

⁹ Welch t-test: $p < .001$

Table 5: Average searched for size vs. played in the survey. The 95% confidence interval for the difference is 0.07” – 0.27” (0.18 cm – 0.69 cm).

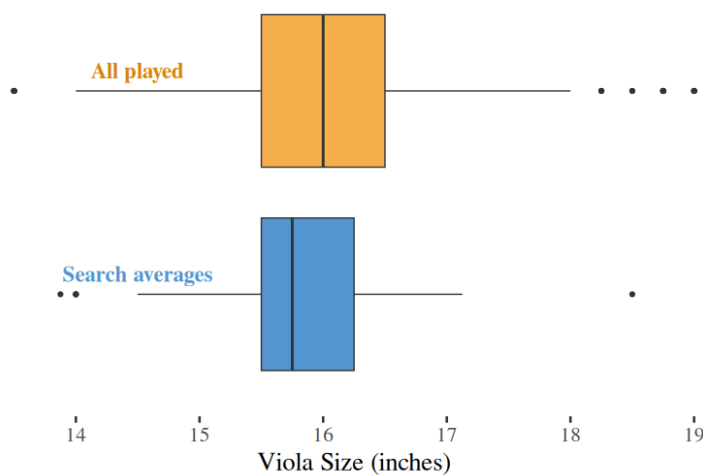


Figure 12: Distribution of viola sizes played vs searched for in the survey sample.

It looks like when players care about, and go looking for, a specific size of instrument, what they have in mind is often an instrument smaller than “usual”. However, the range of their searches is

often much larger than that slight difference so it would be a mistake to read too much into this. Still, at the very least, the notion some makers and dealers have that all players are on the hunt for large violas is not borne out in the data from this survey.

If not size, then what?

Last thing about searches

Before zooming back out and looking at how players think about violas in general, there is one more search related question I want to touch on. I asked those who had recently or were currently searching for a new instrument whether their search criteria had changed during their search. Most said there had been no change. But the comments from those for whom there had been a change are revealing.

No	A little	A lot
73%	21%	6%

Table 6: Responses to “Over the course of your search did any of these criteria, or their relative importance, change?”

Of course, there were many different experiences. But two sentiments stood out as particularly common. First were the people for whom tone became more important as they searched, often at the expense of the importance of price. For example:

“I’ve realized the importance of tone, and how that is a big priority in my instrument selection.”

“The tone became more important as my ear developed.”

“I focused less on price and more on tone.”

“Price became less important compared to finding a suitable instrument.”

Second was an increased focus on playability, with the interest in size and string length becoming reframed through that lens. For example:

“Size became less important as I played more instruments and realized that some larger instruments are still pretty easy to play.”

“Size became more important to stay within the limits of my physical frame due to health issues developed while playing.”

“I realized playability matters a lot more than I thought.”

“Size wasn’t as important, string length is what really matters physically”

There is no way to know whether the subset of players who changed their criteria during their search are those who were particularly thoughtful and reflexive, or those who began with particularly unrealistic expectations. Presumably a mixture of both. But, either way, their comments point to potential room for dialog and education between players on the one hand and makers and dealers on the other.

The ideal tone

Lastly, I asked all participants to describe the tone of their ideal viola. Part of the beauty of violas is their diversity. It would be a mistake to go searching for “this is what a viola should sound like.” On top of that, sound is very difficult to describe. People may use similar words to mean different things, and vice versa. With those caveats in mind, here are how often the top 13 tonal characteristics were used by players when describing their ideal tone.

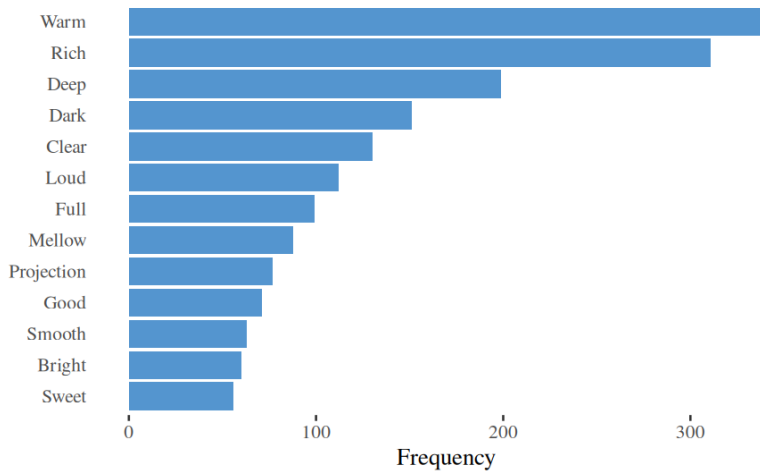


Figure 13: Frequency of key words in description of players' ideal tone. In addition to removing common English stop words, words immediately following “not” or “not too” were treated as a single unit with the negation so as to separate out negative from positive characteristics.

The first thing to note is that even the most used term, “warm”, was used by only 29% of respondents. That’s a lot, but not an overwhelming consensus as to what an ideal viola should be. At the same time there is some semantic overlap between the terms. For example, “loud” and “projection”, and “warm” and “dark”. Without more research we can’t know exactly what players mean. For now, I would propose the following subjective, but hopefully not too controversial, groupings. I have given them the names *color*, *volume*, *size*, and *texture* purely for convenience.

<i>Color</i>	<i>Size</i>	<i>Texture</i>	<i>Volume</i>
Warm	Rich	Mellow	Projection
Deep	Full	Smooth	Loud
Dark		Sweet	

Table 7: Proposed grouping of common descriptors.

Because some people may have used more than one term from the same group we cannot just sum their frequencies. Instead the question becomes how many people used at least one term from each.

Putting the frequency for each grouping alongside the frequencies of each term on its own, the dominance of the four color terms becomes even more apparent. In fact, 50% of respondents mentioned at least one of them, while 31% used at least one size term, and 16% at least one of the volume terms, and 16% again one of the texture terms.

These groupings are not an attempt to create a true ranking of

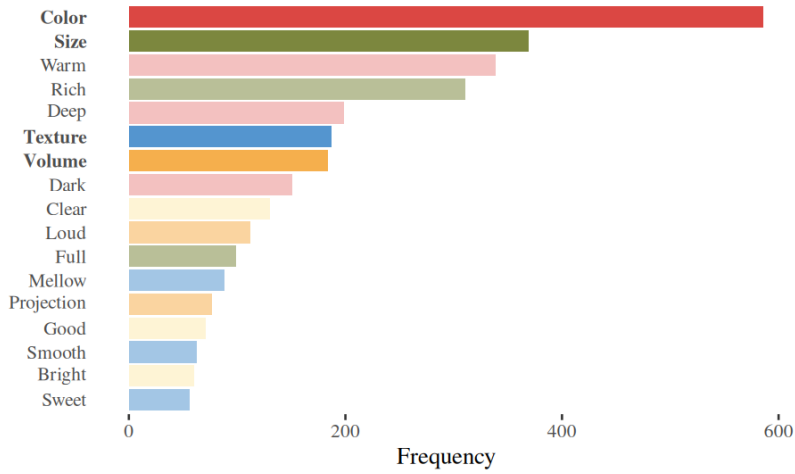


Figure 14: Color, volume, and texture are the frequency of a description using one or more terms from that grouping.

preferences or to define or discover the ideal viola. They are just another lens through which to look at the responses. At the end of the day, what matters is finding the one specific viola that works well for each individual player. At most, these kind of aggregates give further context to the insights from the previous questions about importance. Taken together they can help ground our understanding of what players are looking for from, and how they think about, their instruments.

And lastly, partly just for fun, one more way to look at the descriptions of ideal tone is a network graph that shows how often terms were used together by the same person.

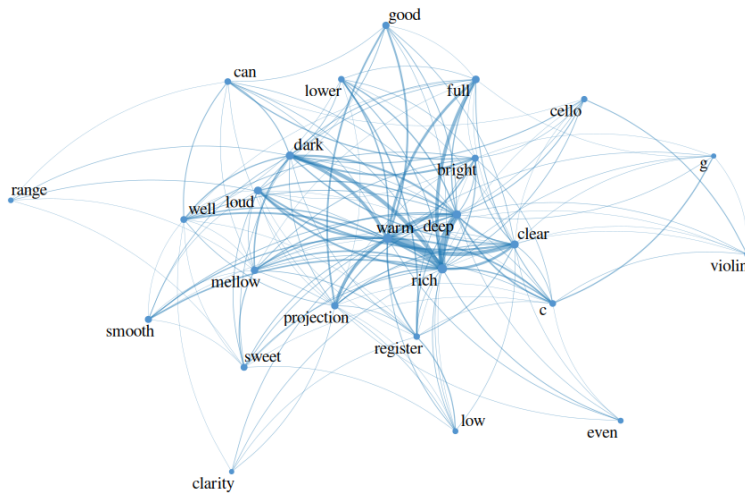


Figure 15: Network map of ideal tone descriptions.

Wrapping it up and looking ahead

What did we learn?

This was not a rigorous academic study. But there are some things we can learn from it. For me the top four takeaways are:

1. We now have a better sense of what an “average” sized viola actually is, and also the range of variation that is common. This can help serve as a touchstone for discussions about size.
2. The results sensitize us to the importance of the differences between amateur and professional players, both when it comes to size and string choice.
3. The survey contributes to a better understanding how that size is often *a* factor that players are aware of, but rarely *the* factor they find most important, when choosing an instrument.
4. And we have gained some insight into how players think about the sound they want from their instruments.

What about next time?

I don't know if there will be a second edition of the The Viola Survey. But, if there ever is there are three things I would want to see:

1. I would want to ask players their height, to see whether that has any correlation with instrument size. And, I would be interested to ask them what length to them is a small, medium, large viola to get a sense of their perceptions.
2. Since so many new strings have been introduced since 2018 it would be interesting to see whether string choices have changed.
3. I would want there to be better sample of European players to address the over representation of professionals from there and clear up what's going on with amateurs possibly tending towards larger instruments in Europe.