

April 2019



2019 CAS Social Media Campaign
#ActuariesinMUSIC

Actuaries in Music

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PRESENTING: ACTUARIES IN MUSIC MONTH!

04/03/2019 —



Have you ever noticed the close relationship between math and music? Many CAS members are talented musicians, be it singers, instrumentalists or composers! To highlight our talented members and celebrate the link between math and music, the CAS is launching our very own Actuaries in Music Month!

Throughout the month of April, we will be sharing some of the best moments featuring CAS members and music on our [Facebook](#) and [Twitter](#) platforms using the hashtag #ActuariesinMUSIC. We also encourage members to keep an eye on the [CAS Roundtable Blog](#) for blog posts about the campaign!

Stay tuned the entire month while we highlight:

- Original CAS Musicals from the 1990's with songs like "Cut My Rate" and "How to Succeed as an Actuary"
- CAS members who play piano, guitar and violin
- A CAS member who is an award-winning vocalist
- The intricate relationship between math and music
- and more examples of actuaries in music!

It's not too late for you to be involved! If you have a relationship with music, join in the conversation on Twitter with #ActuariesinMUSIC, or email socialmedia@casact.org to be featured in the campaign. We hope you will join us in celebrating #ActuariesinMUSIC!

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Exploring the Complex Relationship Between Math and Music

Posted on April 30, 2019 by Brian Fannin



Music is expressive, it is simultaneously immediate and timeless, diverse yet universal. Music can lift us to a higher form of communication. (Think of humans and aliens learning to communicate at the end of "Close Encounters.") And – like most human experience – music is also very mathematical. A caveat- there is a danger in associating music and math. For starters, it's a bit on the nose for an actuary to make the comparison; am I an actuary who loves music, or am I a music lover who just happens to be an actuary? Does it matter? There's also the (clearly crazy) idea that equating music and math is somehow a disservice to music. When we identify and explore the quantitative structure of sound, are we dehumanizing it, robbing it of its expressive power?

Here's the thing: the mathematics exists, however we choose to feel about it. We can barely talk about music without invoking numbers. Musical intervals happen in thirds, fourths and fifths (and more). Music in three time gets you a waltz. Four? That's a foxtrot. And, of course, once a song gets to 100 beats per minute, it's disco. Eleven is a prime number, and also the name of a song by the Grateful Dead; a fantastic piece of music with 11 beats per measure ($3 \times 3 + 2$). Dave Brubeck has an album called "Take Five," whose title track is one of the most well-known compositions in jazz. (Though I prefer "Blue Rondo a la Turk", which is an amazing thing in 9/8 time.)

A twelve-bar blues has a repeatable structure – it's very simple, but it's structure all the same – just like an equation. We can change the values we plug into the parameters and get a dazzling array of composition. Don't let the "blues" in twelve-bar blues distract you. It can mean anything from Howlin' Wolf's "Killing Floor," "Can't Buy Me Love" from the Beatles, "Rehab" by Amy Winehouse, Pink Floyd's "Money," U2's "Where the Streets Have No Name" and so on. I can never think about linear models without thinking of twelve-bar blues. It's a simple thing that means so much.

“We can barely talk about music without invoking numbers. Musical intervals happen in thirds, fourths and fifths (and more). Music in three time gets you a waltz. Four? That's a foxtrot.”

Math is about rules and what we can and can't do within that system. When we need to, we break the rules or make new ones. It took a while, but we eventually got imaginary numbers, division by zero, the infinity of spaces between numbers. Music does the same thing. Schoenberg, Webern and others threw out the idea of a tonal center, giving equal weight to 12 tones. John Cage challenged the very definition of music in his avant-garde composition "4' 33". No instruments are played. The audience hears the ambient environment in which the piece is performed. Neither musician nor composer has control over what the listener will experience. Both Cage and Karlheinz Stockhausen were proponents of aleatoric music, composition which encompasses randomness. Imagine that, actuaries: stochastic music.

Aleatoric music isn't the only time that music has taken cues from math. Charles Dodge began with data from the Earth for his piece "The Earth's Magnetic Field." Sonification of data permits us to listen to fractals. There's an entire genre called "math rock," whose bands draw from minimalists like Steve Reich and Phillip Glass. Is it music or math? Can it be both? What's the difference between art and math? They're both beautiful manifestations of the universe.

I can't close this without acknowledging something. I don't yet know how to play an instrument, but I have performed music in public. I'm a shameless karaoke singer (is there another kind?) and more than a few former work colleagues have witnessed me in action. Some lucky members of the pricing team at CNA Re got to see my version of "Mack the Knife" in Chicago one night. Across the Atlantic, the CRO of Munich Re talked me and another colleague into singing that same song in both English and the original German ("Mackie Messer"). At another offsite work function, someone had the wisdom to rent an actual karaoke machine. I was first in line with my take on the Ramones' "I Wanna Be Sedated." A colleague and I gave a heartfelt duet on some Beastie Boys later that evening.

I'll be in New Orleans (birthplace of jazz!) in a few weeks. They probably have a few karaoke bars. Maybe I'll see you there.

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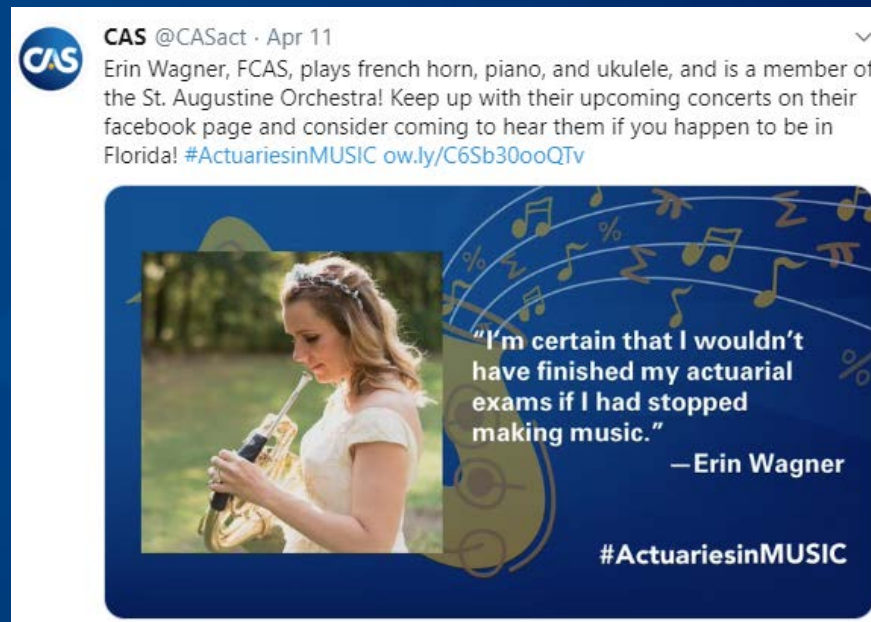
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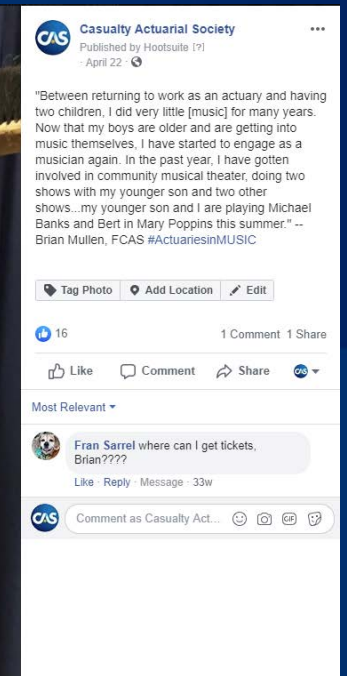
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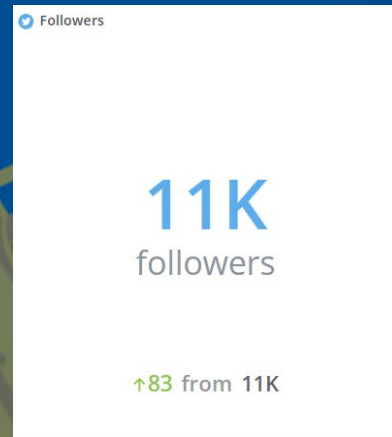
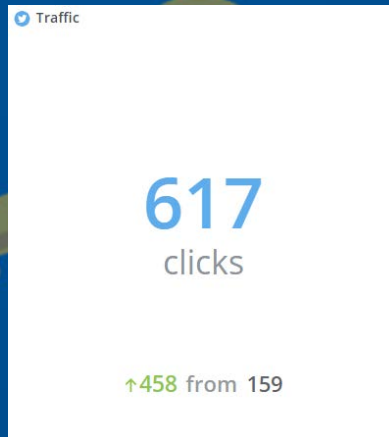
Jonathan Laux, FCAS, The “Raptuary”



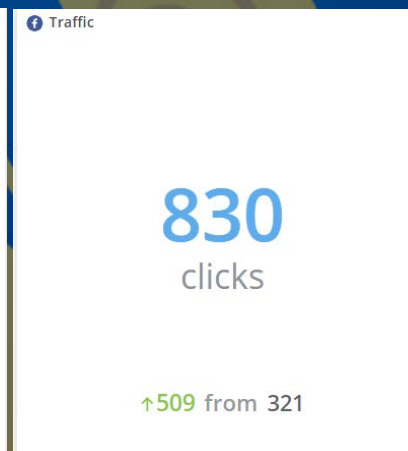
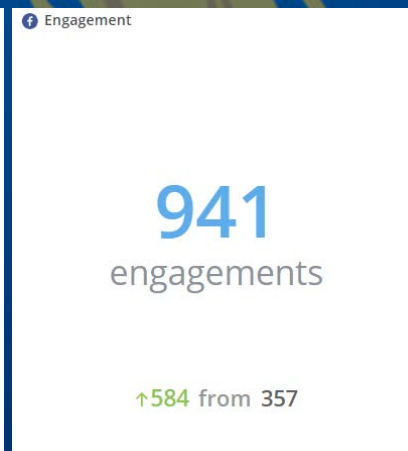
Jeanne Crowell, FCAS, singing “Loch Lomond”



Jon Eshelman, FCAS, playing on “Blues for a Cure”



Twitter Data



Facebook Data

Post-Event

Data compares to
April of previous year



Post-Event

Data compares to
April of previous year

- **163% increase** in Facebook engagement
- **158% increase** in Facebook traffic
- **288% increase** in Twitter traffic
- **30** unique member submissions

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