Data

We found our data from a study done by Khac Phuoc Le on the difference between how songwriters use different instruments (https://rpubs.com/iPhuoc/musical_data?fbclid=IwAR3Jasx3a-HwOJwykpDzL57t_GKchvitMIppT3DmCpttjBwpLf_fZg3dL3E) . In the study, Le looks at the chords used in songs to compare what chords are used by pianists and guitarists. The dataset used in this study is provided by the McGill Billboard Project (http://ddmal.music.mcgill.ca/research/billboard). This dataset contains expansive details such as title, artist, weeks on chart, and chords in pop/rock songs that charted on the Billboard Top 100s list from 1958 to 1991. We were able to access a much more simplified and parsed through dataset from Le's study providing the most popular chords and chord progressions and the amount of occurrences throughout the data for each.

In addition to this data, we looked at the data for finger positions of each chord. (https://data.world/dataremixed/guitar-chord-finger-positioning) that also provided what note was being held on the fretboard. On our csv file, we manually combined the data so that our complete dataset would contain the chords, the number of occurrences for each chord, and the individual notes held down on the fretboard to play each chord.

Design

The first guitar fret exists to give viewers unfamiliar to guitar chords background on how a chord might be played, in order to contextualize our visualization. The second guitar fret is our actual visualization of the data we found. Our design rationale for the guitar was to simulate the actual structure of the guitar fret for easier and more comprehensible visualization. The colors we used for the guitar itself both compliments the colors we chose for the chord visualization and also replicates actual guitar colors. In opting for this highly thematic visualization we traded-off the more familiar visualization styles that could allow for easier comprehension as not everyone may be familiar with a guitar fretboard. However, to counter this potential loss of clarity we added the first guitar fret visualization as a way to make sure that the purpose of the data can be understood.

We used a color scale from light grey to red to show the frequencies of each note, where light grey represented less frequently used and red represented most frequently used notes. Our rationale for this was to not only make the frequencies intuitive with the color, but also to make a more clear scale with no confusion of mixing colors (which was suggested by many during the demo as well as by the professor). We centered all the visualizations for a professional-look and indication of importance. For the bar graph, we graphed frequency against progression of chords. We used a linear scale for the axis since it made the most sense with the data we had. The frequencies were not too large for us to need a log scale, and they were within a understandable range for us to rationalize the use of a linear scale.

Story

Our visualization tells the viewers frequency at which each note on the fretboard is held down, which is directly related to the position of the fingers. By visualizing this data we wanted to give possible beginner guitarists insights to where the most frequent finger positions were. This is to assist in recognizing where their fingers would most likely and most frequently be to help understand how to play guitar chords and potentially inform more efficient guitar fingerings. The bar graph, which shows the 10 most frequently used chord progressions, was to give

insights to beginners about which chord progressions they might want to prioritize practicing first or play around with as many popular songs share a common formula of chord progressions.

While looking at the note frequency data, it was surprising to see that although some notes would be used at a higher frequency all of the notes were being used frequently, which meant that the chords being used were quite varied and all used pretty frequently. This was different than what we saw on the bar graph of chord progression frequencies where there seemed to be larger drop-offs in specific chord progression usage, which shows higher concentration in the same chord progressions being used frequently. While the chords themselves have much variability in use, the specific order in which the chords are played (the progression) seems to have less variability.