How Have Music Format Revenues Evolved Over Time?

Question: The question I sought to ask from this dataset is how the revenue distribution across different music formats has changed over the years. In addition to exploring the new graphs I was introduced to, I wanted to understand the trends, shifts, and patterns in consumer preferences and industry dynamics within the music market.

Visualization Approaches and Techniques:
　　First, the most intuitive approach for comparing two quantitative factors was to use a simple line graph. This was my initial visualization of choice because it is a data visualization that everyone is familiar with, serving as a good foundation to compare with others. I used a line chart to visualize the trend of revenue over time for each music format. Each line differentiated by colors represents a different music format, with the x-axis representing the years and the y-axis representing the revenue. By encoding revenue data as the y-coordinate of each point on the line, we can easily compare the overall revenue trends across the many formats and over a period of time.
　　Next, the second visualization I chose was to use a steam graph. The stream graph is a variation of the stacked area chart that visualizes the evolution of the distribution of revenue among different music formats over time. It is known for its suitability in visualizing time series data, correlations, and proportions. Each stream represents a music format, and the width of the stream at a point in time corresponds to the revenue generated by that format. In accordance with Tufte's "Grand Principales" and the split attention theory, I chose to integrate all elements of the visualization while maintaining a distinguishable aspect, eliminating the need for a legend. Overall, I chose this technique because it allows us to see how the distribution of revenue among formats changes over time in an extremely straightforward manner.
　　Lastly, I selected a bump chart which is a specialized form of a line chart that emphasizes rank changes over time. At first glance, the setup of the visualization closely resembles the steam graph. I intentionally kept the same colors for each category of music to better evaluate the nuanced differences. Specifically, we can use it to visualize the rank changes of music formats in terms of revenue over the years. The chunking principle of arranging the music formats in a ranked order allows for a quick comparison of revenue performance against one another. By arranging the lines based on their ranks in each year, we can easily identify which formats have gained or lost prominence over time.

Insights Gained:
　　To answer the overarching question, different time periods bring in new and innovative forms of music formats, generally indicating the end of a previous music format. For instance, the decline of discs was met with the emergence of streaming services. While the data ends at the year 2020, from the previous music format trends, we can expect it to continue rising in revenue until it reaches a peak, then falling back down. Personally, the most helpful visualization for recognizing this pattern is the line graph. Since the other two visualizations depicted a silhouette for the streams' vertical alignment, they were not as helpful in noticing this change.

Comparative Analysis:
　　Each visualization technique offers unique insights into the evolution of music format revenues. The line chart provides a clear overview of revenue trends for individual formats but

may not capture changes in the relative distribution of revenue among formats. In addition, the stream graph offers a comprehensive view of revenue distribution dynamics, but it may be more challenging to interpret due to overlapping streams; the general layout of the visual can make the grasp of sizing a bit more confusing. Lastly, the bump chart effectively highlights rank changes over time but may not provide as much detail about revenue magnitude as the other techniques. However, the disadvantages can be less important depending on the author's goal. For example, if a person's sole purpose is to emphasize the rise and fall in the ranks of a music format, the bump chart's drawbacks are mitigated.

Improvements and Next Steps:
      To improve the understanding of the data and the leading question, I could explore additional visualizations such as bar charts to compare revenue across formats in specific years or scatter plots to analyze relationships between revenue and other variables. Additionally, I can also look into other forms of visualizations even though they may not be ideal for some variable types. The next steps could include conducting further analysis to identify underlying factors driving revenue trends and making informed business decisions based on these insights. Ultimately, a visualization is never "done," so there are always improvements that can be made.