What is the relationship between time and the music that I listen to?

In this application, we will explore how time affects our music listening habits by visualizing an export of personal Spotify data.

To see the raw data we gathered from the provided streaming history file and the Spotify API or the merged data, which is the join of the separate raw data tables, click these check boxes.

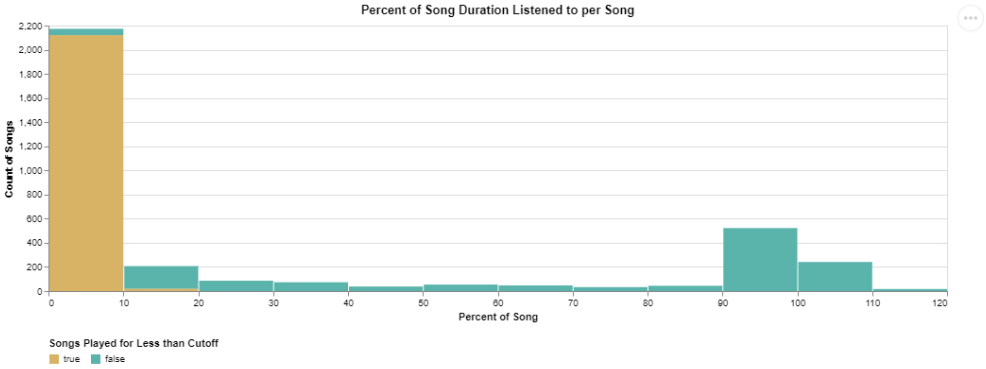
☐ Show Raw Data

☑ Show Merged Data

	endTime	artistName	trackName	msPlayed	endTime_utc	endTime_loc	day_of_week	weekday
0	2019-02-13 06:25:00	Ludwig van Beethoven	Piano Sonata No. 17 In…	5827	2019-02-13 06:25:00+00…	2019-02-12 22:25:00-08…	Tuesday	
1	2019-02-13 06:26:00	Ludwig van Beethoven	Piano Sonata No. 17 In…	2069	2019-02-13 06:26:00+00…	2019-02-12 22:26:00-08…	Tuesday	
2	2019-02-13 06:26:00	Ludwig van Beethoven	Piano Sonata No. 14 in…	12975	2019-02-13 06:26:00+00…	2019-02-12 22:26:00-08…	Tuesday	
3	2019-02-13 06:30:00	Ludwig van Beethoven	Beethoven: Symphony No…	237475	2019-02-13 06:30:00+00…	2019-02-12 22:30:00-08…	Tuesday	
4	2019-02-15 05:49:00	Ludwig van Beethoven	Beethoven: Symphony No…	237479	2019-02-15 05:49:00+00…	2019-02-14 21:49:00-08…	Thursday	
5	2019-02-15 05:45:00	Ludwig van Beethoven	Symphony No. 5 in C Mi…	5645	2019-02-15 05:45:00+00…	2019-02-14 21:45:00-08…	Thursday	
6	2019-02-13 06:26:00	Danney Alkana	Beethoven: "Symphony N…	6574	2019-02-13 06:26:00+00…	2019-02-12 22:26:00-08…	Tuesday	
7	2019-02-13 06:33:00	Antonín Dvořák	Songs My Mother Taught…	175731	2019-02-13 06:33:00+00…	2019-02-12 22:33:00-08…	Tuesday	
8	2019-02-13 07:34:00	Frederick Delius	Two Aquarelles (1987 R…	49225	2019-02-13 07:34:00+00…	2019-02-12 23:34:00-08…	Tuesday	
9	2019-02-15 06:54:00	Frederick Delius	Florida Suite: IV. At …	311301	2019-02-15 06:54:00+00…	2019-02-14 22:54:00-08…	Thursday	
10	2019-02-15 05:18:00	Depeche Mode	Enjoy the Silence - Si…	255246	2019-02-15 05:18:00+00…	2019-02-14 21:18:00-08…	Thursday	

When I listen to music, do I listen to the whole song?

In our exploratory analysis, we discovered that there are many songs that are not listened all the way through. These are most likely songs that were unintentionaly listened to: skipped over in a playlist or clicked by mistake. There are also some songs that have been played for more than their duration, likely because the user rewound the song. You can use the slider to explore the relationship between the number of seconds, the proportion of the song that was listened to, and the distribution of the proportions in the data. The tooltip provides the exact count of songs in the bar being hovered over. To improve the quality of the data analyzed, in allowing following charts we filter out songs that were listened to for less than 20 seconds.

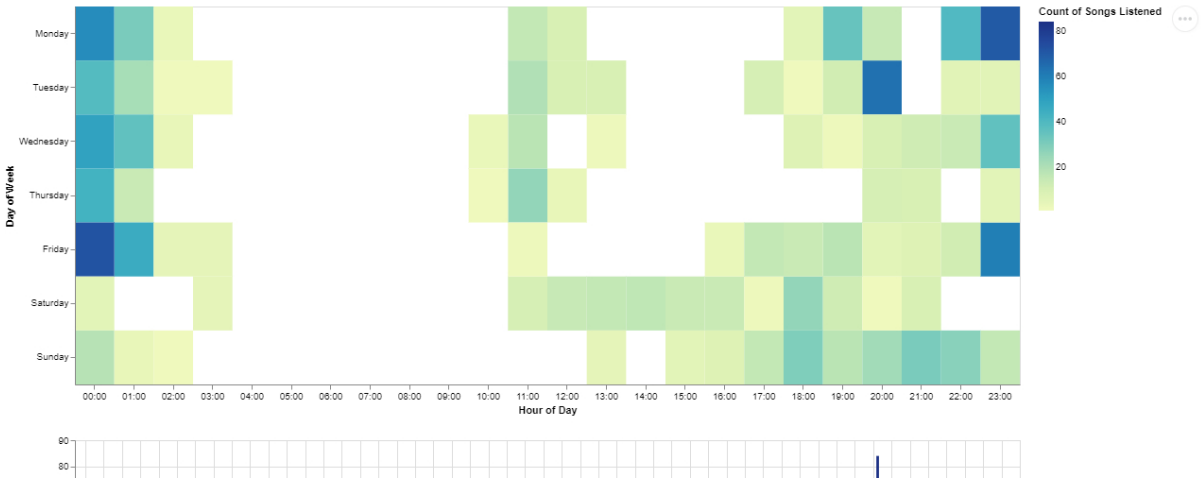


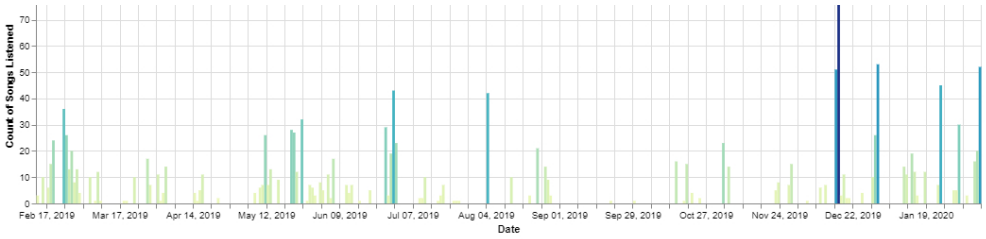
Cutoff (seconds): 20

What are my weekly and daily listening patterns?

To explore how consistently Spotify is being used to listen to music, and if there are clear seasonal, weekly, and daily patterns we designed a heat map whose x-axis represents the hour in the day and whose y-axis represents the day of the week, which is augmented by a histogram with dates on the x-axis and count of songs listened on the y-axis. Selecting an interval of time in the bottom chart filters the data being displayed in the top chart. Both charts are color-coded with the count of songs listened to and the tooltip also specifies the count of songs listened to, which is useful when the difference between two colors is difficult to quantify. We observed that the data is somewhat sparse, and there are some listening sessions that are much greater than others. We also observed that when looking at all the data, songs were primarily listened to during the 20:00 to 22:00 hour segments on the weekdays, but when looking at specific time periods, listening occurs at many different hour segments.

Use the bottom chart to narrow down a region of time to investigate on the top chart.

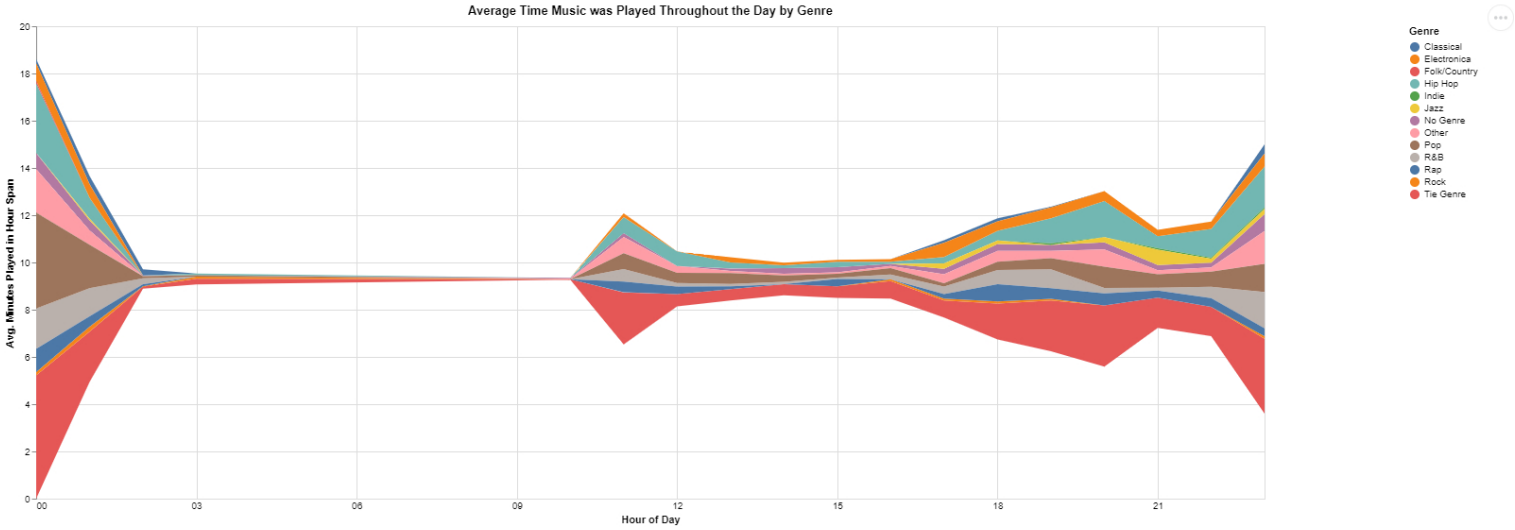


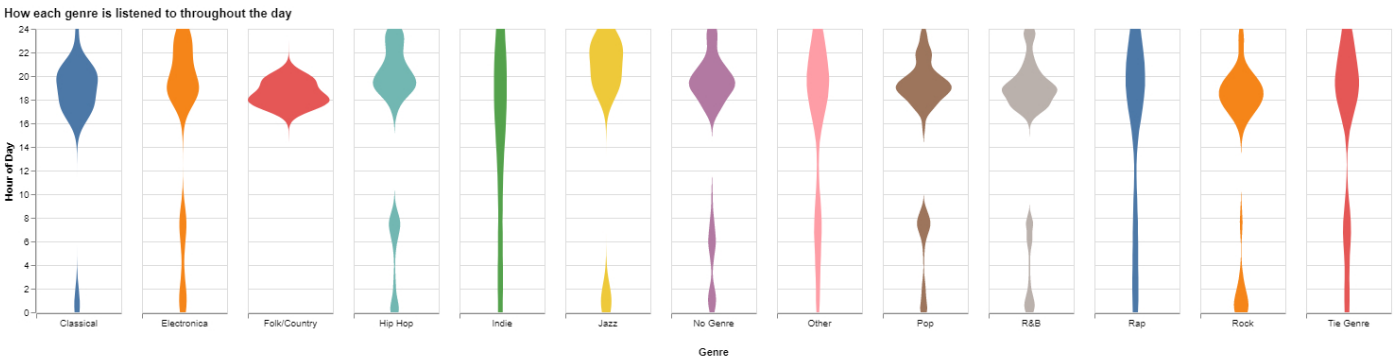


How much time do I spend listening to each genre? How do my listening habits compare across genres?

Spotify provides a list of genres for most artists. These genres are very specific such as "norwegian pop" or "thai indie rock". There were 501 unique genre names in our dataset. In order to perform analyisis we clustered these specific genres into broad genres such as "Pop", "Rock", or "Classical". We used keywords to match each specific genre to broad genre. In the charts below you can see each genre and how they were listened to throughout the day. Some artists did not have genre information from Spotify leading to a "No Genre" categorization. If two or more broad genres seemed equally apt, we categorized the artist as "Tie Genre". "Other" was used when no keywords matched the specific genre to broad genre.

Use the plots below to understand how much music is listened to during the average day. Then investigate how each genre is listened to throughout the day. Notice that some genres are evenly distributed while most are concentrated in the morning and evening. Please note that each genre in the violin plot has equal total density despite some being listened to more frequently. This violin plot if for comparing the listening habits for each genre. Tooltip over both plots to see the average number of minutes played for a particular genre in that hour (streamgraph) or the density measurement of minutes played for a particular genre in that hour (violin plot)





What are the characteristics of the music that I listen to? Are there any patterns across genre and time of day?

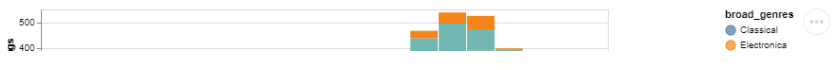
The Spotify API provides music metrics about each track, which quantify different characteristics of the track, and are used internally by Spotify. We chose a subset of these metrics to compare across genres and across the time in a day: danceability, energy, valence, instrumentalness, speechiness, and acousticness. The danceability, energy and valence (positivity) metrics have somewhat similar distributions and the instrumentalness, speechiness, and acousticness (non-electric) metrics have somewhat similar distributions. All the metrics that we chose have domains from 0.0 to 1.0. Descriptions of the music metrics are provided courtesy of Spotify API Reference: https://developer.spotify.com/documentation/web-api/reference/

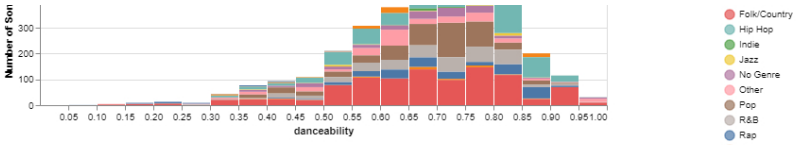
Use the music metric dropdown (above the charts) to select the metric that will be presented in the charts. Use the broad genre dropdown (below the charts) to view only the data of that genre. Click and drag to select a subset of points in the scatter plot and view their music metric distribution in the histogram. Use tooltip to see the artist name and track (song) name for a particular data point.

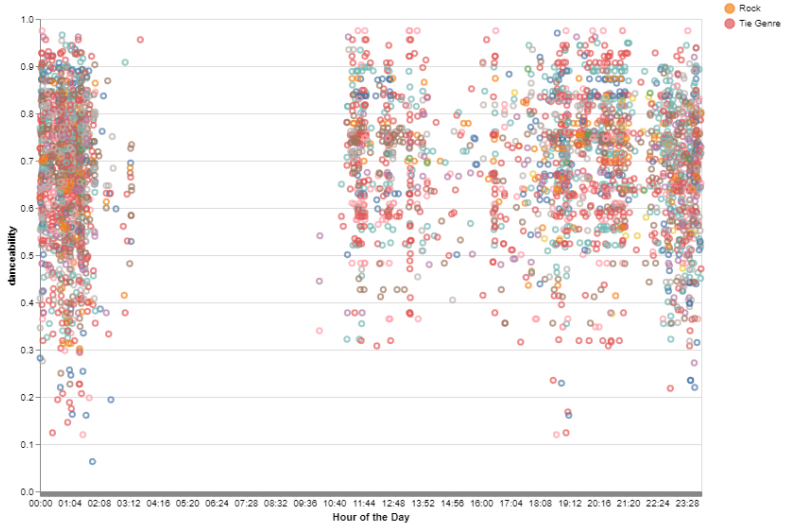
Music Metric:

danceability

Danceability describes how suitable a track is for dancing based on a combination of musical elements including tempo, rhythm stability, beat strength, and overall regularity. A value of 0.0 is least danceable and 1.0 is most danceable.







Broad Genre: Classical