

Introduction

For my assignment, I've chosen to narrow down the "social entertainment" industry to more specifically examine the music streaming application industry. The primary purpose of this industry is to provide users with an application (app) that allows them to access and listen to music. Given the competitive nature of this industry, a proper understanding of the market is essential to earn market share and develop a strong user base.

To better understand the market, I've been tasked to conduct a market segmentation analysis. Through this analysis, I will aim to develop 360-degree, actionable segments that will ultimately enable any competitor in this space to understand how characteristics relevant to the streaming music category differ among potential customers. 360-degree measurements consider various characteristics of the consumer including behaviors, attitudes, beliefs, emotions, opinions, values, lifestyles, needs, wants, and desires. Each of these characteristics will allow us to more deeply understand the market we are trying to reach which will allow marketing strategies to be tailored towards the correct people and segment(s). Arguably the most important part of creating 360-degree segments is the development of proper questions that will be used to examine each of the characteristics listed above (i.e. behaviors, attitudes, etc.). This analysis is unique in that the questions and responses have been provided before the industry was selected, an issue that will be discussed later on in this report. However, for the purpose of this assignment, I will use the provided data and identify which questions and variables will be used to build segments for the streaming music category. I will examine how these variables help with the development of 360-degree segments and observe what could be done differently to more effectively capture these segments.

To develop these segments, I chose to analyze the data within R using the k-means clustering method. Before beginning analysis, I conducted EDA to better understand the data and identify any potential shortcomings in the data. When performing a segmentation analysis with Likert scales, we typically want the distribution of each variable to be skewed one way or the other, as skewed data indicates a clear preference among respondents. In this dataset, it was observed that many of the variables had a skewed distribution. Additionally, the identification of missing values and outliers is imperative to effectively analyze the data. Because most of variables were selected from a pre-defined list, outliers cannot be as easily identified. A few variables did contain missing values and were ultimately dealt with by removing any row featuring a missing value from the dataset entirely. After the initial exploratory data analysis was conducted, the next step in the process was to identify which variable(s) should be used for segmentation. Because my goal is to develop 360-degree segments, a variety of characteristics must be considered to ensure the whole consumer is examined and understood by this analysis. Before diving into variable selection, please note that the full-list of variables included for segmentation has been included in the appendix (Table 1).

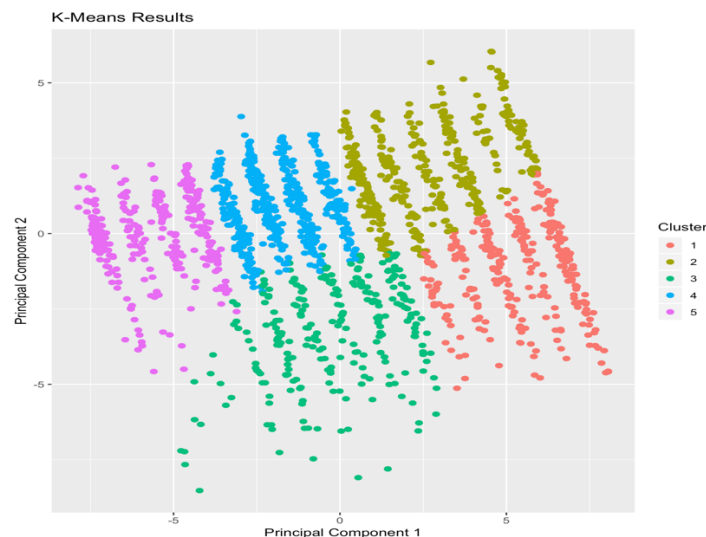
The first characteristic to observe when developing 360-degree segments is consumer behavior. Behavior is the manifestation of each of the other characteristics – behavior ultimately looks at how consumers act within the marketplace. For the streaming music category, behavior will primarily consist of how the consumers utilize apps and enjoy/purchase music. Within this survey, I identified three questions that help identify consumer behavior as it relates to my category. The first two questions examine behavior surrounding the utilization of applications. UseMusicApps was a variable created which indicates if the respondent currently has a music-based application on their phone (i.e. Pandora, Vevo, etc.). This behavior can help identify if the respondent would be likely to find use from our application based on their current app use. By observing the number of apps that the respondent currently has on their device (AppCount), I can gauge their likelihood to download additional applications. Respondents with fewer apps on their phone would appear less likely to download additional apps, and vice versa. Finally, in addition to serving many of the same purposes that the UseMusicApps variable serves, MusicID will help identify whether or not the respondent listens to music and whether or not they use their phone to enhance their music listening. While other variables examine consumer behavior, these questions seemed to best meet the needs for my category.

To address Attitudes/Beliefs/Emotions, I identified one question that addressed the music streaming category. The question titled "Important" asks respondents whether or not music is an important part of their life. This attitude towards music will ultimately help identify the respondents' level of affinity towards music. Respondents with a negative or neutral view of music would appear less likely to download a music-based

application. While no questions addressed the respondents' needs/wants/desires as they relate to music, I was able to identify one question that addressed these characteristics as they relate to app use. CantGetEnough looks at each respondent's need for phone applications. Although this variable did not drill down to measure music-specific needs, the need for applications can assist with identifying respondents who may be more likely to give our application a chance. I will explore additional questions that can assist with identifying these characteristics later in the assignment.

Finally, a variety of variables examined the opinions/values/lifestyles of potential customers. Because music and technology use are the primary focuses of streaming music, some demographic variables can help understand the respondent's lifestyle as it relates to the category. Specifically, I chose to include income and age as demographic variables to assist with segmentation. Income may help with identifying likelihood of purchasing a phone application while age can help identify the likelihood that technology is an important part of the respondent's lifestyle. In addition to these two variables, I included FreeApps in the analysis to help measure the values of the respondent as they relate to application acquisition and spending patterns. Finally, I measured the attitude of each respondent towards this category by including the "Entertainment" question in the analysis. This question observes what purpose the respondent believes their phone plays in their life. Respondents who believe their phone to be a source of entertainment appear more likely to download a music-based application. The usefulness of these characteristics will be discussed in the application portion of this assignment.

Through this analysis, I developed five segments that can be used to better understand the market for a streaming music application: 1) Technologically Simplistic, 2) Intentional Music Lovers, 3) Technologically Indifferent, 4) Economical Music Lovers, and 5) Casual Music Fans. As previously mentioned, these segments were developed using the k-means clustering method. K-means clustering was chosen at the suggestion of the professor based on the global popularity and effectiveness of the method. In any clustering method, deciding how many segments to proceed with is extremely important. In my analysis, I ultimately divided the market into five segments. While metrics such as r-squared and the silhouette of the clusters indicated strong results for the k-means clustering with five segments, these measures only make up part of the equation when choosing the number of clusters to proceed with. Within the music streaming category, there are two key components that must be considered as indicated by my selected questions: technology use and affinity for music. Knowing how distinctly important these two characteristics were for this segmentation, I decided to proceed with no fewer than four segments so to divide these two characteristics into distinct groups. Additionally, once the number of clusters exceeded five, clusters began to intermingle far more than I was comfortable with. This left me to decide between four and five segments. Ultimately, five segments were decided upon because the r-square value improved significantly with the addition of the fifth segment and clear distinctions existed between all five segments based on the graph of the clusters. As anticipated, the principal components by which the segments were divided were centered around affinity for music (principal component 1) and technology use (principal component 2). I've included a brief description of each segment below; a more detailed description of each segment can be found in the appendix (Table 2). The graphic below shows the clusters that were formed through this analysis.



Segment 1 (Technologically Simplistic): While music interest appears to be high among this segment, technology use is limited – likely due to the older average age of this segment (45-49).

Segment 2 (Intentional Music Lovers): This segment loves music and does not let much, including money, get in the way of this enjoyment. This group is young, well educated, and is very likely to use their phone for music and other entertainment.

Segment 3 (Technologically Indifferent): Among the groups, this segment is the least likely to enjoy music and is also not very technologically inclined – again, likely due to their average age, which is the oldest among all segments.

Segment 4 (Economical Music Lovers): While this group loves music, they are less affluent and thus less likely to spend money to enjoy music. This diverse segment is more likely to have a higher percentage of free apps on their device.

Segment 5 (Casual Music Fans): Although this group uses music apps, music is not as important to them as it is to other clusters. This group is far younger than any other segment which explains their inferior spending power.

These segments can provide value across the category in a variety of ways. First, these segments can allow any company competing in this space to identify potential targets who will be more likely to purchase their application. For instance, across my segments, the likelihood of anyone from segments 1 and 3 utilizing the application is minimal due to their technological tendencies. Knowing that these segments are less likely to utilize apps in general, it may be fruitless to focus marketing and promotional efforts towards these segments. Similarly, segments 3 and 5 are not overly interested in music which makes their likelihood of downloading the application small. However, given the tendencies displayed by segments 2 and 4, it can be reasoned that these groups make ideal targets for a company in this industry due to their technological inclination and affinity for music.

In addition to helping identify targets, these segments can show what different segments value which can help with developing a pricing model. While further research would likely be needed, knowing the consumer's values and behaviors, particularly from a financial standpoint, can help determine the most effective way to bring the product to the market. For instance, if a company were to choose to focus on segment 2, a pay to download pricing model may make the most sense because they are not as concerned with the cost of enjoying music. However, if it is decided that segment 4 makes more sense to target, the company may choose to seek out advertisers to foot the bill, as segment 4 prefers free apps and is not as affluent as segment 2.

By developing these segments and the accompanying profiles, I now have an adequate understanding of the type of people who make up each segment. Through this knowledge, a company can decide what type of promotions may best influence the segment. For instance, the strategies deployed to target a segment that is older and less diverse will differ greatly from the strategies for a segment that is young and diverse. For an older generation, more traditional media (i.e. television, radio, etc.) may be leveraged to build brand awareness while younger generations may be targeted by more contemporary media (i.e. video game consoles, social media, etc.). This type of information is invaluable when attempting to build brand awareness and develop a following. Without the development of segments, the company would be forced to embrace a one-size-fits-all approach to marketing which would likely result in inefficient and unsuccessful efforts.

A final use for these segments is the ability to gauge potential brand loyalty. Through these segments, I now know how interested in music targets are and how they are currently engaging with music on their devices. While an ideal target may be a person who has many applications and uses them to listen to music, these consumers may have already developed loyalty towards another application. This information can also drive strategy and help decide which segments to target in the market. If my application does not provide any noticeable benefits compared to the tested applications, it may make sense to target segments who are less likely to currently use competitive applications.

One shortcoming of the variable selection process is the broad-nature of the questionnaire. The questionnaire was designed to address the “social entertainment” industry which, based on interpretation, can mean many things. Because the survey was so broad, many of the questions included were irrelevant to the more specific category I sought to analyze. In addition to featuring many questions that were not useful for my study, the survey also did not include questions that would have allowed my formation of 360-degree segments to be more effective. Appendix 2 details additional questions I would have included in order to more effectively

segment the market for the streaming music category. Overall, the study lacked questions from each quadrant used to gauge 360-degree segments. To better understand the behaviors of respondents as they pertain to the streaming music industry, I would have included another question or two about the respondents' listening patterns. While the questions about applications are beneficial, it would be helpful to know how often the applications are being used and where they are being used. With this being said, I would include a question asking how frequently the respondent listens to music and where they listen to music through the applications most frequently. The frequency question would add another layer of music affinity while the setting-based question may provide additional information by which to profile the respondent and formulate a marketing strategy.

The next quadrant of 360-degree segmentation, which covered attitudes/beliefs/emotions, did not have very many questions that were useful for segmenting the market for my category. Many of the questions that assessed attitudes towards technology did not address the topic as I likely would have with this more specific category in mind. Personally, I would have focused this section almost entirely on the music portion of my segmentation and examined the technology use in the other sections of the survey. The question about the importance of music in the respondent's life was very impactful in formulating my segments, but attitudes towards music applications specifically were absent. For instance, knowing whether or not users of current streaming music applications feel the applications are too commercialized could be beneficial in deciding how to proceed with the pricing model for the application and dictate whether or not advertisements are part of that strategy. Additionally, it could be beneficial to gauge the respondents' attitudes towards their current music streaming application. By measuring this, I could identify consumers who have these applications but don't feel strongly about them and target these users with the new application to fill their current void.

Similar to the quadrant discussed in the previous paragraph, I only found one question in the survey sufficient to summarize the respondent's needs/wants/desires as they relate to the streaming music industry. The only question included examines the use of phone applications more generally, rather than any specific needs/wants/desires related to music or the utilization of music-related apps. With many streaming music applications, the way in which music is played can be different. For instance, Pandora allows users to choose an artist, song, or genre, and plays songs related to the selected station without allowing the user to choose the song while Spotify allows music to be played unlimitedly through the paid version of the application. Gauging how consumers desire to play and organize their music could be done through the survey and provide useful information for product development. The survey could even drill down to music preference to help developers decide which genres to focus on making assessable through the application. Similarly, desire for alternative media such as podcasts or radio accessibility could be examined to help determine if the app should consider making this media available.

Lastly, I believe that the survey did a good job of asking many questions related to opinions/values/lifestyles. I included a few demographic-related questions in this section (age, income) as I believe they provide valuable insight into the lifestyle of each respondent. Also included was a question about free apps vs. paid apps and a question that examined respondents' opinion on the purpose of their phone. Given the quality of the original questions that were included in my segmentation along with the added questions mentioned from the last few paragraphs (detailed questions included in appendix), I do not think that additional questions for this section were necessary.

When adding these additional questions to the segmentation, my inclination would be to weight variables related to music more heavily than variables that examined application use. So long as the user has a device with some applications, I think that convincing music-lovers to download a new app will be easier, regardless of whether or not they are inclined to have a lot of apps, than convincing someone who has a lot of apps but doesn't like music to download a music app. For this reason, I would plan to focus more heavily on segments that over-index for music affinity. I'm not certain what the ratios of the weightings would be, but I would plan to weight the music-related variables more heavily.

In addition to the streaming music category, the data from the wider survey could be used for a variety of categories. Other subcategories within the social entertainment industry that could be studied with this data include music, television, movies, concerts, social media, messaging, technology (i.e. newest trends), shopping, and retail. Similar to the music streaming category, the survey would need to be supplemented with additional questions to develop 360-degree segments for each of these categories, but questions are in place such that any of the aforementioned categories could at least be studied on a surface level. Some of the questions included for

my segmentation could be used across each of these categories, while others would need to be replaced by questions more specific to the chosen category. The segments I developed here would really only be useful for applications related to music in some form. Other examples of categories that could use the segments that I developed for this assignment are apps focused on: distribution of concert information, storage of music videos, publication of the Billboard Top 100 lists, social networking based on music taste, assistance with determining genre preference, and music/sound recognition, among other ideas.

When conducting this analysis, one key consideration is how replicable the segmentation and classification can be. While this assignment does not require a detailed summary of how classification would be performed on new data moving forward, I believe the best option to classify future results would be to conduct either LDA or QDA using the analyzed data as the training dataset. Using this data and the knowledge of which segments each observation was assigned to would allow future observations with the same data to be assigned to segments. The validity of this approach could be tested by dividing the original dataset into a training and test dataset, which would increase confidence in the model. Without any analysis, we can gauge expected characteristics of respondents by following key trends noticed during the original analysis. For instance, older respondents are more likely to fall into segments 1 and 3 and be less technologically advanced than other respondents. Similarly, those who currently use music apps and indicate that music is an important part of their lives are more likely to fall into groups 2 and 4. Once the new data have been partitioned, the developed profiles and associated recommendations can be assigned and acted upon.

In conclusion, the k-means clustering method returned five distinct segments that allow us to understand key characteristics about potential customers in the streaming music application industry. Each of these segments were analyzed and profiled to identify how good of target individuals within the segment would be for a company in this space. The two principal components by which the segments were divided were affinity for music and their attitudes towards technology. Ideally, companies within this space will target those individuals falling within segments 2 and 4, as these segments tend to combine individuals that both enjoy music and are technologically inclined. While these two groups are clear targets, differences in recommended approach exist based on their respective profiles. While group 2 tends to be more affluent and thus less influenced by money in their music consumption, group 4 is more middle-of-the-road financially which makes them less likely to dedicate money towards their musical consumption. These distinctions indicate that companies targeting individuals in segments 2 may choose to adopt a pay-to-download strategy, while companies targeting segment 4 may choose to sell advertisements to fund the app and lessen the burden on their customers. This insight demonstrates the type of takeaways that can be garnered from a segmentation analysis and show why these analyses can be so useful across a majority of industries. To close, the reason this analysis was so successful is because characteristics contributing to a 360-degree view of the consumer were considered. By looking not only at behavior but also attitudes, opinions, and values, among many other characteristics, we were able to develop a more holistic profile of each segment. Using these detailed profiles, potential strategies for reaching the developed segments, along with suggestions around which segments should be targeted, were discussed. However, improvements could certainly be made to a second round of this project by more strategically formulating questions related to the industry at hand and by condensing the survey to relevant questions only. If I were to conduct this analysis again in the future, the survey questions would be the first update made, as asking proper questions can make or break the segments that are developed.

Appendix 1

Table 1: Variables Included for Segmentation

| |
|--|
| <p style="text-align: center;">Behaviors</p> <p>UseMusicApps (Q#): UseMusicApps observes whether or not the respondent currently uses any of the following apps: Pandora, Vevo, AOL Radio, Last.fm, Yahoo Entertainment and Music.</p> <p>AppCount (Q#): AppCount examines how many apps the respondent currently has on their device.</p> <p>MusicID: MusicID indicates whether or not the respondent claims to use Music and Sound Identification applications.</p> |
| <p style="text-align: center;">Attitudes/Beliefs/Emotions</p> <p>Important: Important looks at how much the respondent agrees with the statement “Music is an important part of my life”.</p> |
| <p style="text-align: center;">Needs/Wants/Desires</p> <p>CantGetEnough: This variable indicates how much the respondent agrees with the statement “I can’t get enough apps”.</p> |
| <p style="text-align: center;">Opinions/Values/Lifestyles/Others</p> <p>FreeApps: FreeApps measures what percentage of the respondent’s current apps were free when downloaded.</p> <p>Income: Income reports the range (on a 14-point scale) that best describes the respondent’s income.</p> <p>Age: Age reports the range (on a 12-point scale) that best describes the respondent’s age.</p> <p>Entertainment: Entertainment indicates how much the respondent agrees with the statement “Above all else, I think of my mobile phone as a source of entertainment”.</p> |

Table 2: Profile Key

MusicID: Low = Less likely to have Music ID app on device, High = More likely
 UseMusicApps: Low = Less likely to have Music app(s) on device, High = More likely
 Important: Low = More likely to agree that music is an important part of life, High = More likely to disagree
 CantGetEnough: Low = More likely to agree that they can’t get enough apps, High = Disagree
 Entertainment: Low = More likely to agree that they use their device for entertainment, High = Disagree
 Free: Low = Lower percentage of apps were free, High = Higher percentage of apps were free
 AppCount: Low = Fewer apps, High = More apps (Note: 5 = Don’t Know, 6 = None)
 Income: Low = Lower income, High = Higher income
 Age: Low = Younger, High = Older
 Gender: Low = More likely to be male, High = More likely to be female
 Education: Low = Less educated, High = More educated

Marital: Low = More likely to be married, High = Less likely to be married

Race: Low = More likely to be white, High = Less likely to be white

Hispanic: Low = More likely to be of Hispanic descent, High = Less likely

Segment 1: Technologically Simplistic

Summary: Technologically Simplistic respondents enjoy music and use music identification apps but are less likely to use actual streaming applications. This segment skews older with an average age between 45-49 and is the most affluent of the five segments. Technologically Simplistic consumers tend to be less diverse than any other segment. This segment is unlikely to use their device for entertainment purposes which helps explain why they an average number of applications on their device.

| Summary of Variables | | | | |
|----------------------|----------------|----------------|----------------|---------------|
| MusicID | UseMusicApps | Important | CantGetEnough | Entertainment |
| 0.727 (High) | 0.283 (Low) | 2.07 (Average) | 3.96 (Low) | 3.1 (Lowest) |
| Free | AppCount | Income | Age | Gender |
| 4.29 (51-75%) | 3.24 (Average) | 12.5 (Highest) | 7.28 (45-49) | 1.49 (Split) |
| Education | Marital | Race | Hispanic | |
| 4.17 (Highest) | 1.52 (Lowest) | 1.42 (Lowest) | 1.92 (Highest) | |

Segment 2: Intentional Music Lovers

Summary: Intentional Music Lovers appreciate music greatly and are the most likely out of all segments to use music streaming applications. In addition to being music aficionados, this segment is more likely to both pay for apps and use their device for entertainment purposes. Demographically, this segment is young, wealthy, and well educated. This segment is also more likely to skew female, be married, and be diverse.

| Summary of Variables | | | | |
|----------------------|-----------------|----------------|----------------|---------------|
| MusicID | UseMusicApps | Important | CantGetEnough | Entertainment |
| 0.729 (High) | 0.546 (Highest) | 1.89 (Highest) | 2.99 (Highest) | 2.35 (High) |
| Free | AppCount | Income | Age | Gender |
| 3.99 (25-50%) | 3.26 (Average) | 11.05 (High) | 3.39 (25-29) | 1.6 (Female) |
| Education | Marital | Race | Hispanic | |
| 3.86 (High) | 1.73 (Low) | 1.67 (Average) | 1.82 (Average) | |

Segment 3: Technologically Indifferent

Summary: Technologically Indifferent respondents are the least likely to enjoy music and also have the fewest number of apps on their device. This segment is the oldest across all segments and is unlikely to use their device for entertainment purposes. This segment is older with an average income, is not diverse, and is less likely to be married. Technology Indifferent respondents are most likely to be male.

| Summary of Variables | | | | |
|----------------------|--------------|----------------|---------------|---------------|
| MusicID | UseMusicApps | Important | CantGetEnough | Entertainment |
| 0.582 (Lowest) | 0.367 (Low) | 2.24 (Lowest) | 3.77 (Low) | 2.86 (Low) |
| Free | AppCount | Income | Age | Gender |
| 4.43 (51-75%%) | 2.9 (Lowest) | 6.57 (Average) | 7.60 (45-49) | 1.38 (Male) |
| Education | Marital | Race | Hispanic | |
| 3.44 (Low) | 2.14 (High) | 1.48 (Low) | 1.90 (High) | |

Segment 4: Economical Music Lovers

Summary: Similar to segment 2, this group is very passionate about music. While very into music, this group is not as technologically inclined as segment 2 based on the number of apps on their devices. In addition to having fewer apps on their device, a high percentage of their apps are free. Despite having fewer apps, they do indicate that their phone is used for entertainment and they have music apps on their device. Demographically, this group is more diverse racially and skews female.

| Summary of Variables | | | | |
|----------------------|----------------|---------------|----------------|----------------|
| MusicID | UseMusicApps | Important | CantGetEnough | Entertainment |
| 0.71 (High) | 0.51 (High) | 2.05 (High) | 3.03 (High) | 2.35 (Highest) |
| Free | AppCount | Income | Age | Gender |
| 4.18 (51-75%) | 3.03 (Low) | 6.4 (Average) | 3.13 (25-29) | 1.55 (Female) |
| Education | Marital | Race | Hispanic | |
| 3.47 (Low) | 1.94 (Average) | 1.79 (High) | 1.83 (Average) | |

Segment 5: Casual Music Fans

Summary: Although this group uses music applications, music is not very important to them. This group has fewer than average applications and has a higher number of free apps than some other groups. This group is the youngest among the five segments which helps explain the inferior spending power compared to the other groups. This group is very diverse.

| Summary of Variables | | | | |
|----------------------|----------------|----------------|---------------|---------------|
| MusicID | UseMusicApps | Important | CantGetEnough | Entertainment |
| 0.70 (Average) | 0.49 (High) | 2.22 (Low) | 2.99 (High) | 2.35 (High) |
| Free | AppCount | Income | Age | Gender |
| 4.30 (51-75%) | 2.92 (Low) | 2.57 (Lowest) | 2.82 (18-24) | 1.52 (Split) |
| Education | Marital | Race | Hispanic | |
| 2.92 (Lowest) | 2.17 (Highest) | 2.19 (Highest) | 1.77 (Lowest) | |

Appendix 2: Additional Questions

Question: How many hours per week do you listen to music?

- 0
- 1-3
- 3-6
- 6-9
- 9-12
- 12+

[If answer to above question is > 0] Question: Where/when do you listen to music? (Check all that apply)

- Work
- Exercising
- Leisure
- Driving
- Other: (Free Response)

If subscribing to a streaming music application (i.e. Spotify, Pandora, etc.), would you pay for the app to avoid advertisements within the app?

- Yes

- No

[If respondent uses any streaming music app from q13] How would you rate your satisfaction with your current streaming music application?

- Very Satisfied
- Satisfied
- Neutral
- Unsatisfied
- Very Unsatisfied

What features do you expect from your streaming music application?

- Commercial-free play
- Artist/song suggestions
- Social networking capabilities
- Information about my favorite artists (i.e. trivia, tour schedule, etc.)
- Other: (Free Response)

What genre(s) of music do you currently listen to?

- Hip Hop/R&B
- Rock
- Blues
- Country
- Top 100
- Jazz
- Classical
- Electronic
- Folk
- Other

In addition to streaming music, which of the following media do you consume?

- Podcasts
- Radio
- Audio Books
- Other: (Free Response)