Persona, Scenario and Flow

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Assignment IND-03, Group 3

Table of Contents

Introduction

With the goal of understanding Spotify users, our group conducted interviews and distributed a survey. After gathering and analyzing this data, we defined user groups based on listener behaviors and attitudes. Some listen all day, others use it sparingly. Others' streaming habits are linked to specific contexts. Qualitative analysis, K-Means Clustering, and review of our interview notes revealed the various motivations and frustrations of Spotify users.
Using trends and patterns found in our data, we sought to understand user groups and their needs and goals by creating personas, scenarios and user flow diagrams. Analyzing data to gain specific insight into user behavior led to a series of actionable adjustments that would make streaming on Spotify a better experience for these user groups.

Methodology

To understand Spotify listener motivations and redefine user groups based on data, we discussed our interviews and pooled our survey responses. Collectively, we interviewed 9 people and surveyed 163 people.

Qualitative Analysis

Assessing the survey responses, we identified the question 'When and where do you listen to music?' as indicative of the behaviours and attitudes belonging to Spotify user groups. We separately reviewed the responses to that question, and performed a simple qualitative analysis. In this type of qualitative analysis, the responses are first scanned as a whole to determine trending concepts or themes, and then each response is coded according to those themes. Table 1 below lists the themes that each teammate identified, full coding is available in Appendix A. As is shown in Table 1, there was a strong consensus regarding what themes should be coded from the data. Appendix B covers how many responses were assigned per theme by each teammate.

Table 1. Themes Identified in Spotify Use Data

Jennifer Bochenek	Emilia Edwards	Aishwarya Mundhe
Background/Atmosphere	Constant/Background	Chores/Background
	Chores/House	Distraction
Commute/Traveling	Commute	Commute
Exercise/Motivate	Exercise/Motivate	Workout
Mood/Emotional	Mood/Emotions	Emotional/Mood
Focus/Work/School	Focus/Work	Focus
Relax/Destress	Relax	Relax
Fun/Enjoyment	Enjoy music	Fun
All the Time		All the time
At Home		
In Car		
At Work		Work

Qualitative analysis prompted a reformulation of our identified Spotify user groups. We found that the categories we had previously described, the ‘Casual User’, the ‘Music Professional’, the ‘Tune-out’, and the ‘Motivator’ were inaccurate because, according to survey responses, each user could fall into any of these groups at various times. Spotify users are not any one type of listener, but rather each user behaves differently based on context. Our coded data from survey responses revealed alternative user groups that more accurately describe the variety of situations and attitudes as they change for each listener.

From survey responses, it became clear that those who use Spotify while commuting or traveling (public transit, walking, etc.) comprise an important category, yielding the highest number of coded answers. Jennifer Bochenek also interviewed a person who had some complaints about how the car interface works or doesn’t work. Additionally, we identified several other important themes based on self-reported listening behavior. The first is the user who streams music continually because of their job, business, or particular needs. Emilia Edwards interviewed a music professional who streams Spotify ‘constantly’ for a variety of reasons including motivation, background, job, and discovery. Another type of user only listens to Spotify during specific activities, or only consumes a particular type of content. We encountered people exhibiting these listening behaviors during interviews with representative

users. One interview participant reported to Aishwarya Mundhe that they only use the streaming service to listen to podcasts. We also discovered that a third additional user group only uses the free subscription tier and has a separate set of issues and experiences because of this distinction.

K-Means Clustering

We also looked at how these themes could classify our survey data by using a type of machine learning called K-Means Clustering, which finds 'clusters' of like data based on input variables. Specifically, it randomly seeds k number of centroids (the center of a cluster), then iteratively calculates to optimize the position of the centroid. It finishes when the centroids no longer need to move to capture data or if a defined number of iterations have completed (Garbade, 2018).

For the purposes of this analysis, we selected Jennifer Bochenek's coding scheme. Using only the identified theme and frequency of music streaming as criterion variables, we ran several K-means analyses with different numbers of k groups. A model with 8 user groups had the highest level of discriminant ability. That is, it was able to clearly identify different user groups. In addition to the results in Figure 4, Table 3 provides a written summary of each cluster in Appendix C. These results gave us key insights and provided information to develop personas.

Proposed User Groups

Through qualitative analysis and K-Means Clustering, we formulated a representative set of Spotify user groups. It is important to note that this list is not exhaustive, rather it highlights some key groups that may benefit from actionable suggestions. We have organized them in Table 2 under larger group affinities, with example subtypes under each.

Table 2. User Groups and Subtypes

User Group	Commuter	Heavy User	Free User	Situational User
Subtypes	Public Transit Driver Walker Biker	Sleeper Small Business Owner Exercise Instructor Retail Manager	Low Income Teen Cost Conscious Boomerang	Focuser Exerciser Cleaner Podcast Listener

The most common answer to the survey question about listening context was that respondents listen to Spotify while commuting and traveling (coded data in Appendix B, Bochenek: 50, Mundhe: 51, Edwards: 59; clusters 2 and 4 in Appendix C). This user group, the 'Commuter', can be further defined into subtypes including walkers, drivers, bikers, and those who stream Spotify on public transit. In January of 2019, Spotify introduced 'Car View', a

function where the app, upon detection of a car's bluetooth signal, switches to a user interface with larger icons and buttons (Spotify, n.d.). It is impossible to manually switch on 'Car View' preventing users with older vehicles from navigating the app safely while driving. Spotify is compatible with Apple CarPlay, Android Auto, and car media systems including Chevrolet, Cadillac, and Tesla.

In our research, users commented that, despite these developments, the menus are still difficult to navigate while driving, especially when typing to search for something specific. One interview mentioned this issue, with the participant stating that though he has the car app he prefers to connect his phone over bluetooth to control Spotify from his phone while commuting. He does this understanding the personal risks of distracted driving. These personal risks include involvement in car accidents or receiving citations. In New Jersey, tickets for using a mobile device while driving are $200 for the first offense, $400 for a second offense, $600 for a third offense with points added to the driver's record. Each of these has an additional fine of $200 if issued in a safety zone (N.J.S.A 39:4-97.3). These concerns affect users who listen to Spotify specifically during car commutes. An alternate navigation system that does not require typing to search for an artist or album would provide a better experience for drivers. Recommendations tied to location would offer commuters an intuitive way to find their desired content on the move.

The second user group identified through analysis of survey responses and interview notes is the 'Heavy User' (clusters 3, 5 and 6 in Appendix C). This user group listens to Spotify many hours per day, every day. These users either listen while sleeping, or have jobs, such as exercise instructors and small business owners, that entail playing music for extended periods of time. All have in common that they listen to a certain type of music most of the day as part of their job or habits at work (or while sleeping) and then want to listen to very different music at other times of day. This user group faces difficulties because the majority of their usage is specific to their job and Spotify builds suggested playlists from these habits. In order to listen to their preferred music away from work they have to deliberately navigate away from their suggested content to find what they want to listen to. Revisions to Spotify to better serve this user group could include content suggestions based on listening history nested within time of day. With this adjustment, the 'Heavy User' would have the content they want when they want it, according to their daily schedule, reducing time spent searching for desired songs, playlists, or podcasts.

Open ended survey questions revealed a distinct user group who exclusively listens to the free tier of Spotify. These users have a different set of challenges than paid users. Subtypes within this category include low income, cost conscious, very young, and boomerang users. Boomerang users cycle through music streaming apps, paying for Spotify intermittently. 'Free

Users' enjoy Spotify but prefer to stick to the free version. They listen to music on shuffle and curate playlists without feeling the need to pay for additional features. The free version of Spotify is supported by advertising, so these users complain about interruptions after every few songs. The 'Free User' can only play in shuffle mode and cannot play a single song from a playlist. One modification that would give these users more options is a flexible or customizable subscription so they can pay for the only features they want to use. To support both advertising revenue and user concerns, advertisements could still be present, but offer a choice to skip after a few seconds.

The 'Situational User' is a listener who uses Spotify under specific circumstances or to access a certain type of content (clusters 0 and 7 in appendix C). Subtypes of this user group include focusers, or people who use music to concentrate, exercisers, and house cleaners who use the music as motivation to complete tasks. The podcast listener is an example of someone who uses Spotify for a narrow subset of the available content. "Situational Users' use different Spotify features according to their requirements, habits, and preferences. Difficulties vary by subtype, for example, in one interview, the user mentioned that they tried Spotify but chose not to continue using it because the algorithms (Ciocca, 2017) took too long to learn his preferences. In the absence of targeted information for him, Spotify suggested popular content that had little or nothing to do with his desired content. A suggestion for this type of user when they first use Spotify could be to have an initial short survey about their music/content likes and dislikes. This ensures that their content of choice displayed on the homepage is later improved by the algorithms. Additionally, for the podcast listener, the recommendations and navigation can be improved based on subgenre. In a different interview, a user suggested reorganizing the way that podcasts are collected to facilitate finding other podcasts that they might like but are not currently listening to. The podcast listener may want recommendations within certain genre of podcast but, because podcasts are their own subcategory of content, the available suggestions feature podcasts across all subjects.

Persona, Scenario & Flow

Using the user group 'Situation User' which includes users using Spotify while doing a certain activity or only for a certain reason, I have created a persona for the subtype Podcast Listener. The Podcast Listener uses Spotify only to listen to podcasts and only during certain periods during his day. The subtype Podcast Listener are a dedicated group of users whose favourite feature on Spotify is podcasts, a not so common use of Spotify.

Spotify has a library of podcasts with thousand shows (Spotify Podcasts). Spotify claims to have recommendations and featured shows with the option to play offline (Spotify Podcasts). According to an interview, Spotify's algorithm for recommending songs has a much greater

accuracy than recommending Podcasts. Even though podcasts is one of Spotify's integral features, navigating to the podcasts is not the smoothest experience.

Persona

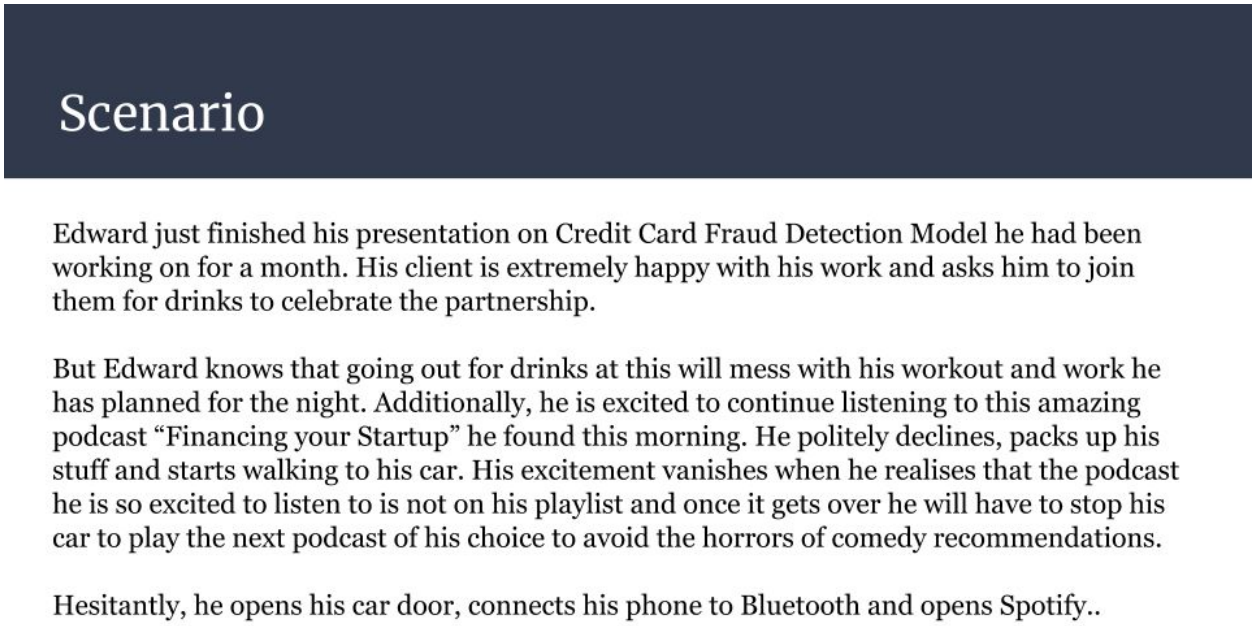
This engaging persona (Rikki Dam, 2019) captures Podcast Listener user group. This user, Edward is career driven and dedicated to making a mark in the business world. He is laser focussed on his goals and works hard everyday to stay on track. He uses Spotify for podcasts which will inform and motivate him. He looks for inspiration, ideas and guidance from the podcasts. Once he gets in the grove of the show, the recommendation algorithm just drops in a completely absurd subgenre podcast which completely ruins his stride.

Edward wants a better recommendation system for his podcasts. He also wants his podcasts all in one place under one icon instead of having to take a longer path through search. This is how this persona helps in the redesigning of Spotify. This persona also helps in understanding this sub user group on a deeper level.

Using this persona, an assumption could be made of this subgroup that these users are busy people. They have a specific schedule they like living by. They like to stick to their type of

podcast and are not interested in exploring other genres. They like their podcasts well organized and easy to find. A persona gives the designer a clear user's perspective.

Scenario

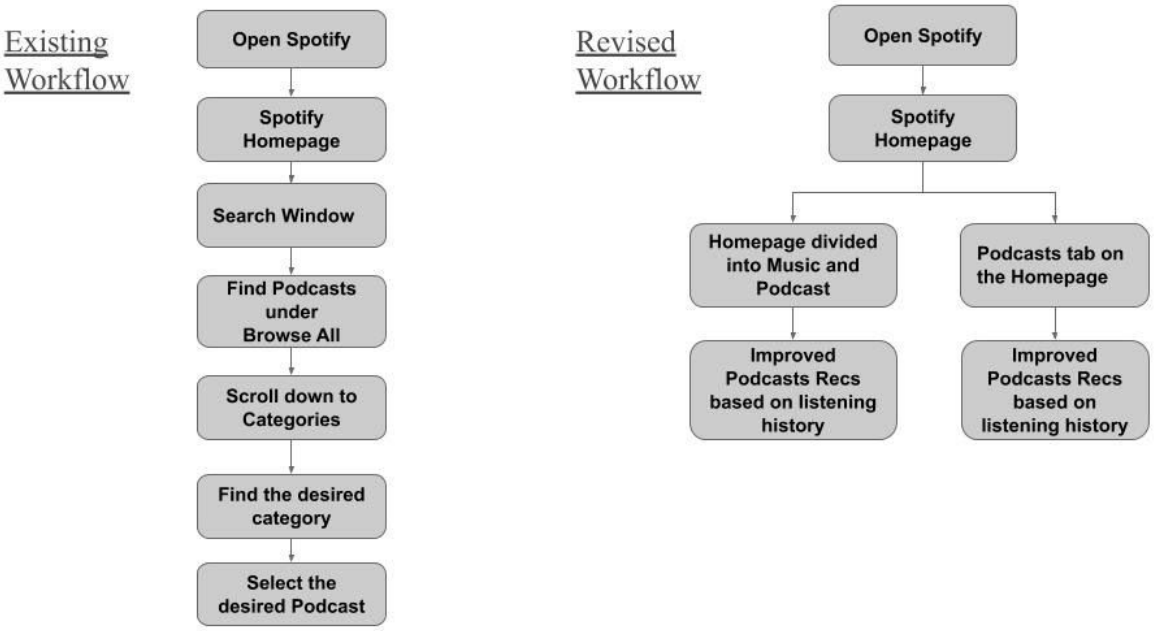


This scenario shows just how dedicated Edward is to this schedule by avoiding tempting offers and sticking to his plan. He wants to listen to his podcasts on his way back home like he always does.

The scenario shows the context in which these user group will use Spotify. Well, one of the many different scenarios. The task based scenario shows how these user groups are sure of when they want to the application. Once the activity starts, Spotify opens out of habit.

Flow

The Podcast Listener being a Situational User, uses Spotify only for a certain period of time. Which shows that this specific subtype users' priority after opening the application would be to directly play podcasts. For these users, there can be much simpler path to find their podcasts in one place. The flows are shown below,



In this workflow, I have given two options for a revised workflow i.e two different ways of accomplishing all of the user's goals. Both the options help him find his desired content faster and asks for better recommendation so he does not need to visit the categories everytime he wants to explore new podcasts similar to his interests. The recommended podcasts will be suggested on the podcasts window/homepage and so he can find more podcasts of his choice. Screenshots are attached in Appendix D to show the current user workflow.

Conclusions and Implications

Redefining user groups by identifying key insights from the data collected by conducting surveys and interviews helped in understanding the users of the application. By redefining the Spotify user groups, we were able to focus on the different users based on how and why they use Spotify. The persona, scenario and flow gave a deeper insight into the interaction between the user and the application. We were able to find more focused redesigning options which comply with the user groups.

The persona gave a deeper understanding of The Podcast Listener, a sub-group of The Situational User. The Podcast User faces issues with the poor podcast recommendations and the path he has to take to find the content he always uses. It is frustrating for this user to work the app every time an unwanted podcast plays while on auto recommendation feature, which happens very often.

The suggestions for this user group is make they required content easily available on the home page. Since the user's primary reason to use Spotify is, he shouldn't need to navigate to multiple windows and scroll just to find the same content again and again. The Podcasts recommendations also need to be thoroughly improved.

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Appendices

Appendix A

For full dataset of survey responses, see attached spreadsheet titled combined data.xlsx

For coding results, see attached spreadsheet titled coding.xlsx

Appendix B

Survey Data Coding Results

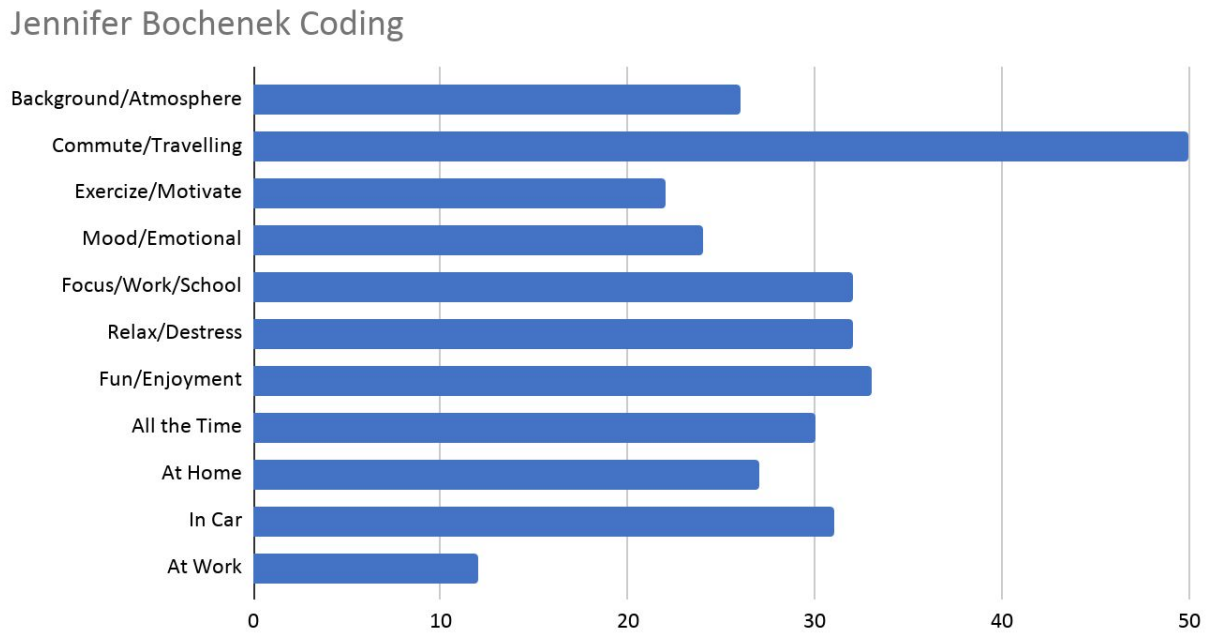


Figure 1.

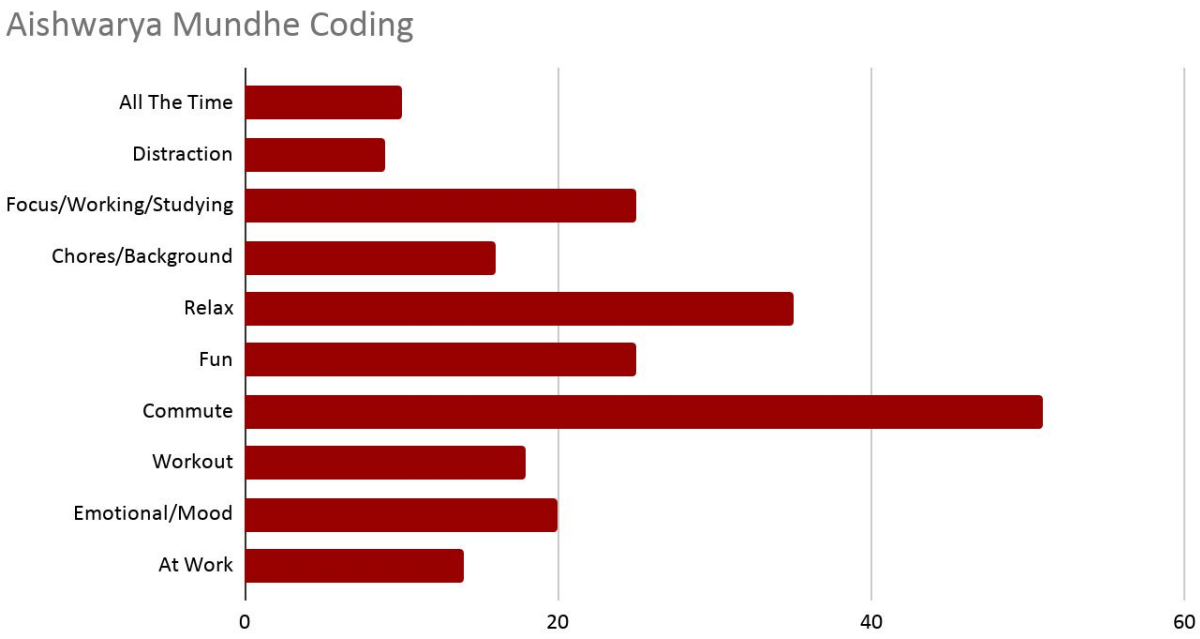


Figure 2.

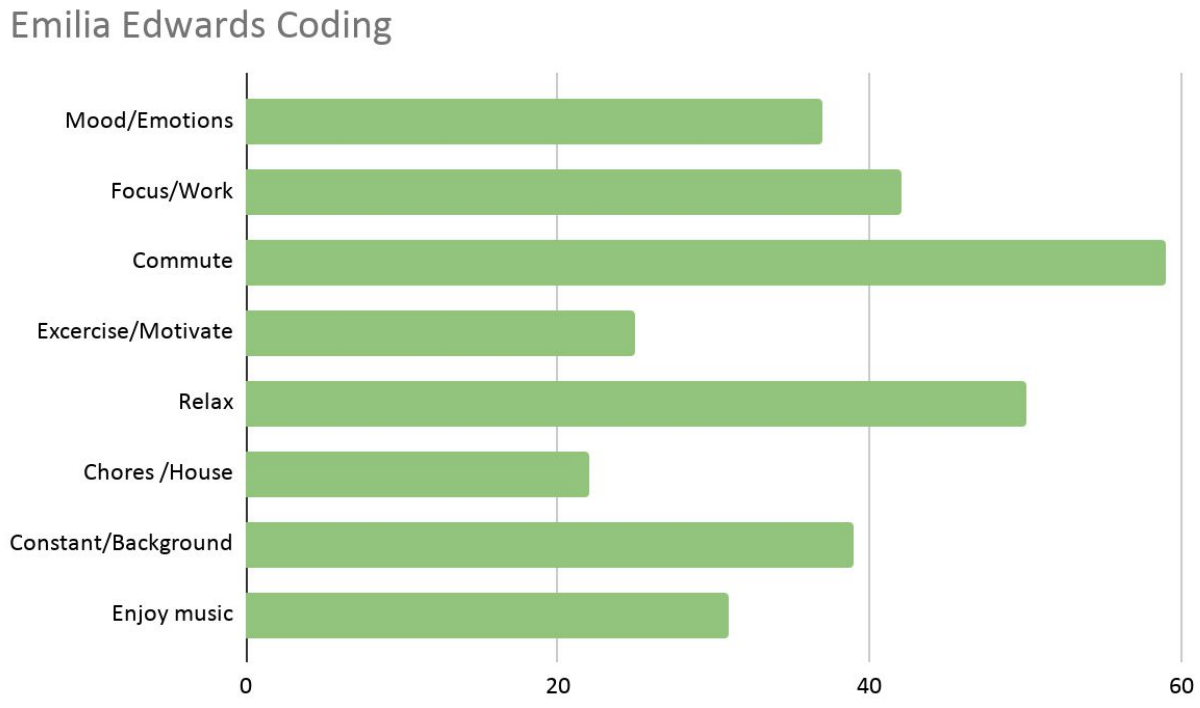


Figure 3.

Appendix C

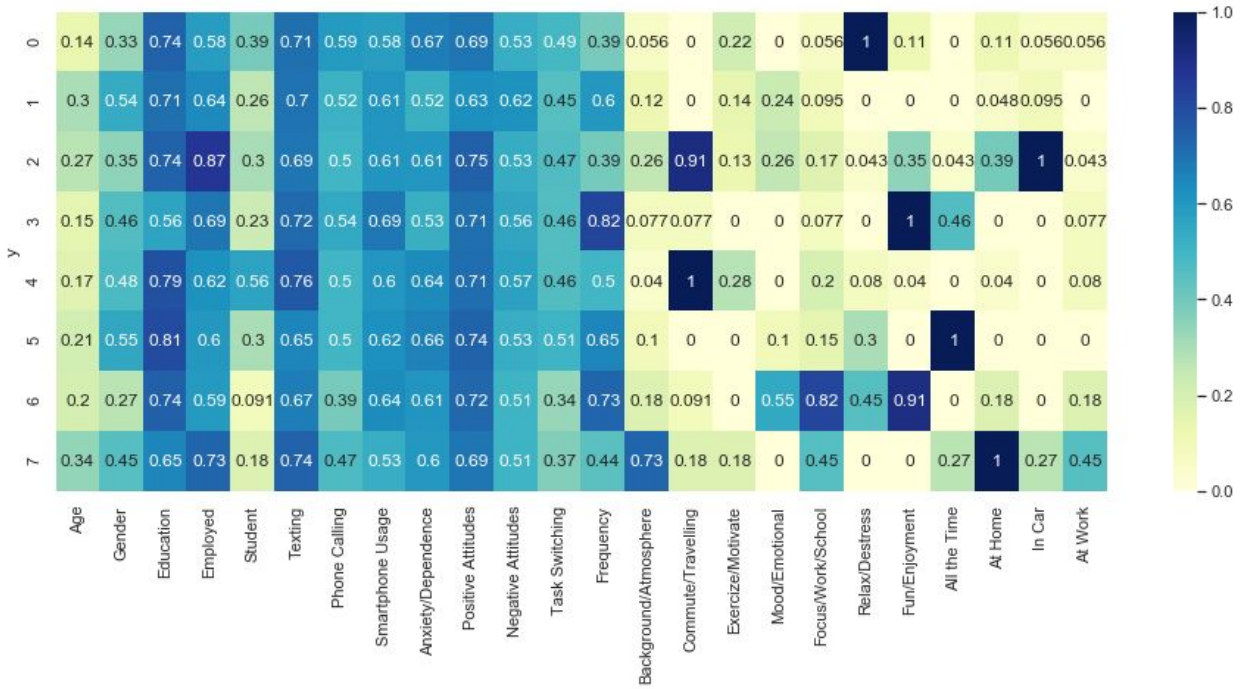


Figure 4. K-Means Clustering using themes. Y is the cluster that each loaded onto, the values within heat-map cells are the average values. For Student, Employed, and all the themes the original values were dichotomous so the value show the proportion of each in the cell. Otherwise, excluding Gender, a higher value shows that the average value for that cluster for that variable is higher for whatever that variable means. So higher values for age indicate an older population, and a higher frequency means they listen to music more often. For Gender, Female was coded at 0, prefer not to say at .5 and Male at 1, so it shows the proportion of Males in each cluster.

Table 3. Descriptions of clusters

Cluster	Characteristics
0	Youngest age group, 33% male, 58% employed, 39% student, average level of interest in texting (M = 5.9, SD = 1.7), but highest level of phone calling (M = 5.1, SD = 1.5) but low levels of smartphone usage (M = 5.1, SD = 1.4), they also have the highest level of dependence on technology and highest level of anxiety if technology is not available (M =3.7, SD = 0.6), they have low levels of positive attitudes about technology (M = 3.9, SD =0.7), but also lower levels of negative attitudes about technology (M = 3.1, SD = 0.8), they have nearly the highest level of task switching preference (M = 3.0, SD = 0.9), but aren't frequent users of music

	streaming, 22% use music for exercise or motivation to exercise, but 100% use it to relax, and destress.
1	Second oldest age group, 54% male, 64% employed, and 26% students. They are low to average overall on technology attitudes (Texting, M = 5.9, SD = 1.6; Phone Calling, M = 4.6, SD = 1.8; Smartphone Usage, M = 5.3, SD = 1.4; Task Switching, M = 2.8, SD = 1.0) except are the lowest in Anxiety/Dependence (M = 3.1, SD = 0.8), lowest on positive attitudes (M = 3.6, SD = 0.8) and highest on negative attitudes (M = 3.5, SD = 1.0). They use music streaming with average frequency. This is the cluster that did not align particularly strongly with any of the identified themes (12% on Background/Atmospheric, 14% on Exercise/Motivate, and 24% on Mood/Emotional) which suggests that there is another theme that we were not able to identify in our data that defines this group.
2	Average age group, 35% male, 87% employed the highest in any cluster, and technology usage and attitudes are average (Texting, M = 5.9, SD = 1.6; Phone Calling, M = 4.5, SD = 1.8; Smartphone Usage, M = 5.2, SD = 1.0; Anxiety/Dependence, M = 3.4, SD = 1.3; Negative Attitudes, M = 3.1, SD = 1.0; Task Switching, M = 2.9, SD = 1.0) except this cluster has the highest positive attitudes (M = 3.5, SD = 0.5). This group has a lower frequency of music streaming usage, and associated with commuting (91%) and listening in the car (100%). The cluster also loads onto listening to music as background/atmospheric music and for mood/emotional reasons (26% each), 35% listen for fun/enjoyment and also 39% at home. 17% listen to focus at work or school, and 13% listen for exercise and motivations.
3	Second youngest group, 46% male, 69% employed, and 23% are students. This cluster had the lowest level of education. This cluster has higher levels of texting (M = 6.0, SD = 1.4), phone calling (M = 4.8, SD = 1.6) and the highest levels of smartphone usage (M = 5.8, SD = 0.7), while having the lowest levels of anxiety/dependence on technology (M = 3.1, SD = 1.0). Positive and negative attitudes were average (M = 3.9, SD = 0.6; M = 3.2, SD = 1.0) as was task switching (M = 2.8, SD = 0.9). This cluster had the highest frequency of listening to streaming music, and mostly loaded onto listening for enjoyment (100%) and listening ‘all the time’ (46%).
4	Average age group, 48% male, 62% employed, while 56% are students, which is the highest percentage of students in any cluster. This cluster shows average scores for most of the technology usage and attitude (Phone Calling, M = 4.5, SD = 1.6; Smartphone Usage, M = 5.2, SD = 1.0; Positive Attitudes, M = 3.9, SD = 0.7; Task Switching, M = 2.9, SD = 0.9) but has the highest usage of texting (M = 6.3, SD = 1.4) and moderately high levels of anxiety/dependence (M = 3.6, SD = 0.9) and negative attitudes (M = 3.3, SD = 1.0). This group had average music listening frequency and loaded strongly onto listening while commuting or travelling (100%). 28% also listened for motivation to exercise and 20% listened to focus on work or

	school.
5	Average age group, 55% male, 60% employed and 30% are students. This cluster also had the highest level of education. This group has the lowest levels of texting (M = 5.6, SD = 1.7) but also high levels of anxiety/dependence (M = 3.6, SD = 1.0), positive attitudes (M = 4.0, SD = 0.8) and preference for task switching (M = 3.0, SD = 0.8). The remaining scales are average (Phone Calling, M = 4.5, SD = 1.2; Smartphone Usage, M = 5.4, SD = 1.1; Negative Attitudes, M = 3.1, SD = 1.0). This group had an average frequency of listening, but actually 100% said that they listened 'all the time'. 30% listened to relax and destress, 15% listen to focus on work and school.
6	Average age group, 27% male, 59% employed and only 9% are students, the lowest in any cluster. This group had lower scores in most of the technology usage and attitudes scale (Texting, M = 5.7, SD = 2.2; Phone Calling, M = 3.7, SD = 2.0; Negative Attitudes, M = 3.0, SD = 1.1; Task Switching, M = 2.3, SD = 1.2) but average scores on smartphone usage (M = 5.4, SD = 1.3), anxiety/dependence (M = 3.4, SD = 1.1) and positive attitudes (M = 4.0, SD = 0.6). This group had an above average frequency of listening to music, and loaded on a variety of reasons across the board. 91% listen for fun/enjoyment, 82% listen to focus on work or school, 55% listen for mood/emotional reasons, and 45% listen to relax or destress. 18% listen at home and also 18% listen at work, and 18% listen to have music in the background. There seems to be a sort of grab bag nature to this group, where they professed a variety of overlapping usages and could be indicative of heavy usage despite not claiming to listen to music all the time.
7	Oldest group identified, 45% male, 73% employed and 18% are students. This group was mostly low on the scores for technology usage and attitudes except having the second highest texting score (M = 6.2, SD = 1.8). Everything else is either on the low side of average (Anxiety/Dependence, M = 3.4, SD = 0.7; Positive Attitudes, M = 3.9, SD = 0.7) while the rest are low (Phone Calling, M = 4.3, SD = 1.3; Smartphone Usage, M = 4.7, SD = 1.7; Negative Attitudes, M = 3.0, SD = 0.8; Task Switching, M = 2.5, SD = 0.9). This group listens to music with a slightly below average frequency, and 100% listen at home. 73% claim they listen to have it as background/atmosphere while 45% listen to help focus on work or school. 45% listen at work as well.

Table 4. Counts and Percentages of Education Levels within Clusters

Cluster	Education	Count	% within Cluster
0	Less than high school	1	6%
	Graduated high school/high school equivalency	1	6%

	Some college, no degree	1	6%
	Associate degree	3	17%
	Bachelor's degree	7	39%
	Advanced degree (Master's, Ph.D., M.D.)	5	28%
1	Graduated high school/high school equivalency	6	14%
	Some college, no degree	5	12%
	Trade/technical school	1	2%
	Associate degree	1	2%
	Bachelor's degree	19	45%
	Advanced degree (Master's, Ph.D., M.D.)	10	24%
2	Graduated high school/high school equivalency	1	4%
	Some college, no degree	4	17%
	Associate degree	2	9%
	Bachelor's degree	11	48%
	Advanced degree (Master's, Ph.D., M.D.)	5	22%
3	Graduated high school/high school equivalency	2	15%
	Some college, no degree	5	38%
	Bachelor's degree	4	31%
	Advanced degree (Master's, Ph.D., M.D.)	2	15%
4	Graduated high school/high school equivalency	1	4%
	Some college, no degree	3	12%
	Associate degree	1	4%
	Bachelor's degree	13	52%
	Advanced degree (Master's, Ph.D., M.D.)	7	28%
5	Graduated high school/high school equivalency	1	5%

	Some college, no degree	1	5%
	Associate degree	4	20%
	Bachelor's degree	6	30%
	Advanced degree (Master's, Ph.D., M.D.)	8	40%
6	Some college, no degree	3	27%
	Associate degree	1	9%
	Bachelor's degree	3	27%
	Advanced degree (Master's, Ph.D., M.D.)	4	36%
7	Graduated high school/high school equivalency	1	9%
	Some college, no degree	3	27%
	Associate degree	2	18%
	Bachelor's degree	2	18%
	Advanced degree (Master's, Ph.D., M.D.)	3	27%

Table 5. Means and Standard Deviations for Media and Technology Usage and Attitudes Scale

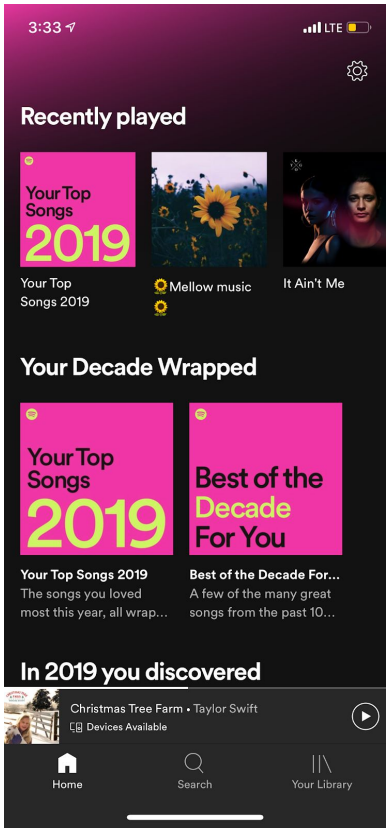
Scale	Stat	Cluster								
		0	1	2	3	4	5	6	7	Grand Total
Texting	Mean	5.9	5.9	5.8	6.0	6.3	5.6	5.7	6.2	5.9
	SD	1.7	1.6	1.6	1.4	1.4	1.7	2.2	1.8	1.6
Phone Calling	Mean	5.1	4.6	4.5	4.8	4.5	4.5	3.7	4.3	4.6
	SD	1.5	1.8	1.8	1.6	1.6	1.2	2.0	1.3	1.6
Smartphone Usage	Mean	5.1	5.3	5.2	5.8	5.2	5.4	5.4	4.7	5.3
	SD	1.4	1.4	1.0	0.7	1.0	1.1	1.3	1.7	1.2
Anxiety/Dependence	Mean	3.7	3.1	3.4	3.1	3.6	3.6	3.4	3.4	3.4

	SD	0.6	1.1	1.3	1.0	0.9	1.0	1.1	0.7	1.0
Positive Attitudes	Mean	3.9	3.6	4.1	3.9	3.9	4.0	4.0	3.9	3.9
	SD	0.7	0.8	0.5	0.6	0.7	0.8	0.6	0.7	0.7
Negative Attitudes	Mean	3.1	3.5	3.1	3.2	3.3	3.1	3.0	3.0	3.2
	SD	0.8	1.0	1.0	1.0	1.0	1.0	1.1	0.8	1.0
Task Switching	Mean	3.0	2.8	2.9	2.8	2.9	3.0	2.3	2.5	2.8
	SD	0.9	1.0	1.0	0.9	0.9	0.8	1.2	0.9	1.0

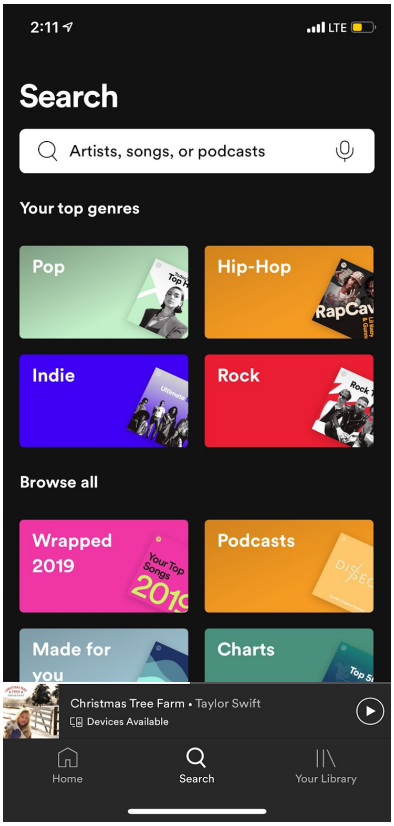
Appendix D

Current workflow to find desired podcast.

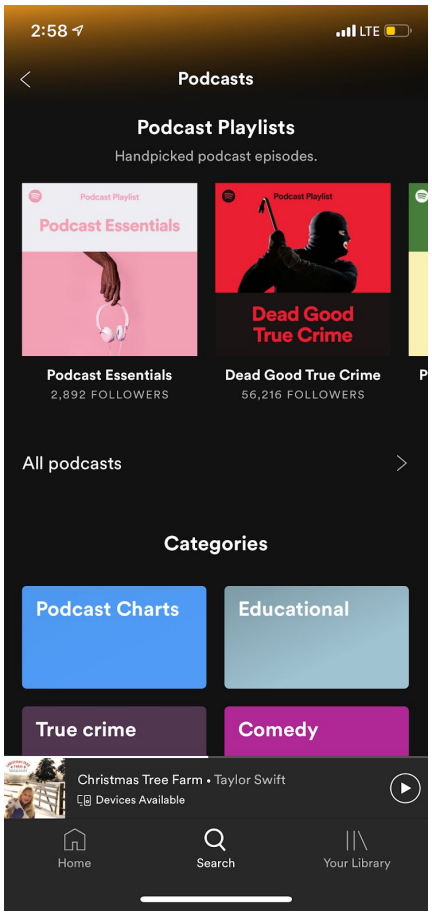
1. Homepage



2. Search Window



3. Podcasts tab selected from Browse all



4. Scroll to Categories and find desired category.