

The Future Runs Downstream:  
The Evolution of Digital Music Services and Music Streaming

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**Abstract**

The music business has evolved from one that was uniform and direct to one that is truly fluid and diverse. When digital music downloading first began, it took the world by storm. Now we are facing a similar situation, wondering if the declining number of physical record sales will one day correlate with a decline in digital downloads as streaming increases. Music streaming services like Pandora, Spotify, and Apple Music are just some of the companies battling to cut into the permanent digital download revenue. This paper suggests that more and more digital music consumers are getting their content through streaming sites. Some entities like Spotify and Apple Music show more promise than others like Pandora because of their ability to convert free subscribers into paid subscribers- a statistic indicative of long-term success.

## The Future Runs Downstream

### The Evolution of Digital Music Services and Music Streaming

#### **Introduction**

Although music streaming is indeed the new kid on the digital music block, it has made a bold statement already and has proved it is here to stay. Though the 2014 revenue figures for digital music streaming were undoubtedly impressive, a 23% growth in streaming revenue through the first half of 2015 shows an even more profound success this year. The first half of 2015 saw streaming revenue surpass \$1 billion for the first time in history, up from \$834 million in the first half of 2014 (RIAA, 2015). These early statistics may certainly be a harbinger for another deep transformation of the music industry. The shift beginning to occur in the music industry could be vastly more impactful on our economy and our society than one may hypothesize.

The streaming industry may one day approach a point where permanent downloads become a figment of the past. In this situation, an online music consumer can only deny technological advances for so long. Today's exponentially quick moving society dictates that consumers who choose not to adopt new technologies will eventually be left behind the times. Late adopters will no longer be contributing economically to the music industry because of their resistance to new music entities like streaming services. Furthermore they will be unable to participate in the necessary conversations that occur between consumers in order to share information about new technologies. Without conversations between consumers and companies, companies are unable to improve their products based on customer needs, which in turn limits how much a company can innovate and put back into the music business economy. If companies

are unable to innovate because consumers are lagging on past technologies, the music business economy cannot grow and become more technologically advanced. Soon enough these consumers will be using technologies that are severely outdated. Therefore, it is necessary to remain knowledgeable on certain topics that dictate the success and scope of the industry.

The purpose of this paper is to analyze multiple key aspects of the music industry that function as a cohesive unit to please the consumer and the companies. Firstly, I will address the background of music consumption. One must have a grasp of where the industry and its technologies have evolved from in order to properly understand how powerful the industry and its players have become. Secondly, I will detail the largest and most dominant players in the music-streaming atmosphere today, including Spotify, Pandora, and Apple Music. These are some of the primary entities that have turned streaming into the \$1.28 billion business it is today (RIAA, 2015). Next I will discuss the ethical and economical issues of streaming and digital downloads in general. Using statistical royalty breakdowns and legal battles from successful artists, we can analyze the effects of digital music on the music business economy. Each of these pieces works in harmony to create a functional and exciting industry that generated \$2.3 billion in wholesale revenue through the first half of 2015 (RIAA, 2015). These numbers are indicative of a thriving system that will continue to be massively profitable regardless of the changing platforms through which music is distributed and consumed.

### **History and Evolution of Music Consumption**

Although we know the phonograph was the first device that let listeners physically consume recorded music, the modern day record industry dates its history back to the days of vinyl (The Vinyl Factory, 2015). Pioneered in 1948, vinyl boomed with record companies, as it was the easiest way to distribute music at the time. The invention of the cassette in 1963 further

enhanced the music consumption process. Something often overlooked about cassettes is that they were the first physical means by which one could listen to music from a device small enough to transport in your pocket. Courtesy of their small size, cassettes enabled the exchange of tapes between friends, sparking some positive outcomes like mixtape creation, remixes, and the ability to easily discover new music, as well as some negatives including piracy and the illegal ripping of audio tapes (The Vinyl Factory, 2015).

Twenty years later, music consumption was once again permanently changed with the invention of the compact disc (CD) in 1982 (Morton, 2015). Naturally a new form of listening brought better audio quality with it. Listeners noticed, and the CD soon pushed out the cassette to become the primary means by which music was consumed. Although the CD was slow to catch on due to high prices of the player itself, success came after the cost dropped from around \$2,000 to a much more manageable \$150. The drop in price of a personal CD player allowed people to consume music outside of their home and anywhere that an individual could bring the small device. More than simply allowing listening to occur, mobilizing music sparked more interest in music consumption than ever before, which contributed to the steady growth of the music business economy as a whole (Morton, 2015).

The first inklings of digital music came from Germany in 1991 at the Fraunhofer Institute when the MP3 file was invented. File compression allowed music to be digitally placed into individual files. Armed with the ability to create, share, and distribute files without a physical platform, the digital download revolution began (British Phonographic Institute, 2015). The timeline of digital downloads dates back to 1997 with the creation of the online-based service MP3.com. This was the first time users could access music online. MP3.com did come with a catch: in order to access music online, one had to provide valid proof that they were the verified

copyright owner of the work. Although seemingly tedious, this verification step was an excellent way to prevent digital piracy and the illegal downloading that came later with peer-to-peer file sharing networks. Although MP3.com was online and did technically allow users to download music, it was not the first official online music service that was open to all users because of its verification of copyright feature. A service called eMusic was the first true digital download entity. Launched in 1998, eMusic was the first subscription-based website that offered MP3 downloads for all users (British Phonographic Institute, 2015).

In 1999, another complication was thrown into the mix. A teenager named Shawn Fanning turned the music business world upside down, whether he intended to or not. The invention of Napster paved the way for downloadable files for users, though the legality of the service was immediately thrown into question. People were elated by the myriad of music that was now available to them at just one click of a mouse. The consequences of pirating content through peer-to-peer file sharing were a second thought to free music. Fervently, as expected, record companies sought to immediately shut down the service for copyright infringement. Armed with a very legitimate argument, the RIAA spearheaded the lawsuit against Napster. After a long legal battle that included a six-month appeal (*A&M Records, Inc. v. Napster, Inc.*), Napster was forced to shut down its servers for good on July 1<sup>st</sup>, 2001 (Nieva, 2013). Today, as a society we are much more aware of the copyright infringement and piracy problem in the digital world, and we can credit the Napster case for providing a benchmark of what is legal and illegal in the digital music world. Napster cemented its place in history as the first entity that acted as an enabler to illegal digital downloading and peer-to-peer file sharing.

Apple's iTunes grew from an idea to the largest music retailer on the planet in just seven years (Griggs & Leopold, 2013). By 2013, the service had provided content to over 435 million

people in 119 countries, and had distributed upwards of 25 billion songs across the globe. Many of the features of iTunes have been added and retracted throughout the course of 12 different interface and software renovations (Goldman & Pepitone, 2013). iTunes struggled gaining traction initially in versions 1-3 of the software because it was not compatible with Microsoft operating systems. Without Microsoft compatibility, iTunes was cutting itself off from all PC and non-Macintosh users around the globe. Once iTunes 4 was unveiled with compatibility for Microsoft devices, its popularity grew immensely because it was now compatible with over 90% of PC users. Additionally, iTunes 4 was the first version to have the iTunes Store. Unbeknownst at the time, it would go on to revolutionize how music is purchased and consumed forever.

Whether intended or unintended, the iTunes Store is directly responsible for ushering in the downfall of whole-album sales (Griggs & Leopold, 2013). Prior to the iTunes store, users had no legal way of purchasing individual singles. Buying an entire CD was the only option prior to the invention of the iTunes store, and when given the option to pick only the songs they wanted, consumers took advantage. As a consumer, common sense tells one to simply pick out the few songs on an album that one truly enjoys rather than having to pay the extra money to buy an entire album that includes some songs that one may not actually care for. Modern society craves for the option to choose, and the ability to purchase singles perfectly catered the consumers' desire to save money and pinpoint exactly which songs they desired in their library.

Figure 1 of the Appendix illustrates how the creation and debut of the iTunes store in 2003 triggered the rise of single sales and sparked a decline in physical CD sales (Silverman, 2014).

Additionally, the iTunes store enabled the consumer purchase content much faster than they could before (Griggs & Leopold, 2013). Prior to the iTunes store, one had to physically

drive to a record store or CD retailer after hearing a song that they enjoyed in order to purchase it. Even if they could find a store that carried the particular CD one was searching for, there was no guarantee that the store would have it in stock. Conversely, the iTunes store provided the consumer with instant satisfaction. If you wanted a song, it was yours within 5 seconds as long as you knew the song title (Griggs & Leopold, 2013). Though iTunes will not be going out of business anytime soon, music streaming is certainly making an impact in the industry by cutting into the revenue of permanent downloads.

The concept of music streaming has existed for some time, but it was never done successfully until major entities like Spotify, Pandora, and Apple perfected the process. Early streaming services failed to catch on and make an impact in the industry because high prices couldn't compete with the mere 99 cents it took to permanently own a song from the iTunes store.

### **Main Music Streaming Entities**

Valued at \$6.9 billion, the digital music business has asserted its prominence in the global economy (International Federation of the Phonographic Industry, 2015). Now with over 400 digital music services worldwide, there are more ways to access music than ever before. The most powerful entities in the streaming industry include Spotify, Pandora, and Apple Music. Each of these companies is successful in their own way. Below I will analyze the origins and creation of each company, as well as their economic model for consumers and the industry. From these two factors we can gather the pros and cons from each of the major corporations.

#### **Spotify**

Prior to its official founding in 2006, Spotify was simply a thought bounced around between the Swedish duo of Daniel Ek and Martin Lorentzon (Crook & Tepper, 2015). The beta

version of the program was released in Spring 2007, followed promptly by a Mac version in the summer of the same year. Soon after, the idea of in-app advertising came about and was first put into use in 2008. In-app advertising- including pop-ups and pre song advertisements that cannot be skipped- added an entirely different revenue stream to Spotify and created an entirely new tier of customers. By creating a free version of the service, Spotify made themselves available to consumers who were not yet entirely sold on the concept of streaming. These users could try out the service for free (while Spotify is still getting revenue from advertisers) in the hopes that an enjoyable experience would lead the individual to become a paying customer. A key in Spotify's early development is that the founders were very careful to avoid creating a detrimental amount of debt in the early stages of the company. Knowing they would be dealing with licensing fees and other associated costs of using recorded music, Lorentzon and Ek were able to gather nearly \$75 million in two different investment series. By frontloading the investments, Spotify had the funds readily available to put into use as soon as record companies, publishing companies, and artists themselves wanted to see some proof of payment. The company was able to use the large amount of money as leverage and prove that they would be able to disperse this money to the entities deserving of it as soon as the proper licenses and negotiations were finalized (Crook & Tepper, 2015).

With the approval of major label catalogues, Spotify began to develop itself as more than just a personal computer platform. In 2009, the iOS and Android applications for Spotify became available. But, as of 2009, Spotify was still simply a European entity, with no real presence in the United States. Sean Parker, famously known for being the first president of Facebook and co-founder of Napster, saw an opportunity for investment (Stone, 2015). Acquainted with the laws of intellectual property and digital music delivery from the Napster ordeal, Parker saw a lucrative

business opportunity to get back into the digital music business. Within one year of contacting Ek and Lorentzon, Parker had invested \$15 million into Spotify. He used his connections in the United States to ignite conversation between the Swedish duo and major music labels like Warner and Universal. With over 1,000,000 international subscribers, Spotify finally had finally gained enough International market traction and the right contacts to launch in the United States in the summer of 2011 (Crook & Tepper, 2015).

The lesser-known but more controversial side of Spotify and all of the major streaming entities is one that deals with the artists, record companies, and music publishers. One of the biggest concerns with Spotify was the fact that it was contributing to the end of permanent digital downloads and was lessening the amount of money coming into the music industry. In actuality, studies have shown that Spotify is actually “revenue neutral” to the music business (Kafka, 2015). As Spotify cuts into the revenue that would have otherwise been spent on digital downloads, the money is pooled back into the music business by declining the amount of music piracy. The revenue gained by declining piracy rates in countries that have Spotify equals the amount of money that is taken away from digital downloads (Kafka, 2015). This statistic is one that Spotify is very quick to publish, as it is great public relations for them (Spotify, 2015). By painting the service as a “piracy-fighter” Spotify wishes to distract critics from the certainly controversial royalty system that is employed to pay artists.

Another aspect that all streaming services must address is artist royalties and compensation. The official Spotify website explains that 70% of the revenue brought in is cycled back to what they call “rights holders” (Spotify, 2015). These rights holders include everyone on the musical side of the operation, including the publishing company, record label, distributors, and in cases of independent artists, themselves (Spotify, 2015).

Figure 2 illustrates how Spotify pays out royalties to each of its artists (Spotify, 2015).

Before the artist will see any money or revenue from a Spotify stream, a formula will be put in to play. A common misconception about Spotify royalties is that each artist is being paid per individual stream. As illustrated by the figure provided by Spotify, this assumption is clearly inaccurate. The Huffington Post has discussed in detail why Spotify is actually causing some artists to lose money (Huffington Post, 2015). To explain, one must understand that the number of streams being played has surpassed the rate at which consumers are signing up for Spotify. Therefore, the fixed \$9.99 per month rate for Spotify is being spread more thinly between artists because their song is being listened to more times. Because the number of plays is increasing faster than the amount of revenue coming in, artists are receiving less money per song, and need more streams played to make the same amount of money as they were before. On average, Spotify artists are now receiving only \$.0011 per play because of this prevalent problem. Taylor Swift was the first major artist who took a stand against Spotify's tactics by having all of her content removed from the service in November of 2014. It will be interesting to see if any future artists take after her in an attempt to combat this system that clearly favors the streaming provider and leaves the artist needing more exposure to receive the same amount of money.

### **Pandora**

In 2000, Tim Westergren and Will Glaser aimed to create a new kind of radio. They sought to design a service that would provide users with only the music they truly desired with none of the content they disliked (Pandora, 2015). For this project-- one that would be called the "Music Genome Project"-- Westergren and Glaser needed to find a team that could break down each element of a song to its music core. To accomplish this monumental task, they recruited a team of musical analysts that broke down up to 450 unique elements of every song in the

Pandora server, one that now has over 1 million pieces of content including music and comedy (Pandora, 2015). Something surely working against Pandora though, is that it is only available in three countries around the world: the United States, New Zealand, and Australia (Pandora, 2015).

Something extremely distinct about Pandora is that it is defined as a non-interactive streaming interface. Unlike Spotify and Apple Music in which the user gets to actively select each song they listen to, Pandora allows a user to either “like” or “dislike” each song that is played. By referencing each users “likes” and “dislikes” Pandora uses the Music Genome Project to further distinguish which exact type of songs that the user enjoys in order to play more songs from the database that match the exact preferences of the user.

In comparison to its competitors, Pandora is at a disadvantage for several reasons. Firstly, it only has roughly just over 1 million songs in its library, compared to the 30 million that Spotify and Apple Music both possess. Secondly, an area of concern for Pandora is its inability to convert free listeners to paid listeners. Unlike Spotify, which has 20 million paid subscribers out of 75 million total subscribers, less than 5% of Pandora’s 81.5 million active listeners are paid subscribers (Triton Digital, 2015). Additionally, although talks of an available offline setting are in the works, Pandora currently does not have an offline feature (Hof, 2015). The lack of an offline feature completely disables consumers from using the service in any place without a cellular connection or Wi-Fi, while competitors Spotify and Apple Music both have an offline feature. Furthermore, Pandora simply has been unable to remain on amicable terms with the record companies and publishing companies through the years. Just one month ago in October 2015, it was announced that Pandora would have to pay \$90 million to five major record labels including Sony Music Entertainment, Warner Music Group, and Universal Music Group for

copyright infringement (Brait, 2015). There is no federal copyright law on songs created before 1972; rather the copyright law differs between each state. Pandora was found guilty of copyright infringement on the songs on its servers created before 1972, as the company was not paying royalties to the rightful owners. Pandora has also come under fire for controversially attempting to pay lower royalty rates to performance rights organizations such as Broadcast Music Inc. (BMI) and American Society of Composers and Publishers (ASCAP) by purchasing a terrestrial radio station in South Dakota (Sandoval, 2013). While it seems innocent in nature, Pandora attempted to prove that it was being overcharged or webcasting with high royalty rates while terrestrial over-the-air radio stations do not pay any royalties at all. Although Pandora is a very unique service compared to the other major streaming entities available, its model seems to be struggling as shown with its lack of paying subscribers. We may see the end of Pandora in the future if the company cannot manage to stay out of the court system against all of the Recording Industry Association of America (RIAA) backed publishing and record associations.

### **Apple Music**

Apple Music is extremely new in the streaming world, so its measurements of success are somewhat limited but still extremely intriguing. Launched on June 30<sup>th</sup>, 2015, Apple Music immediately became available to every consumer with an iPhone, iPad, iPod touch, Mac, and PC in over 100 different countries (Ilas, 2015). Apple does have a competitive advantage against other streaming services in that their Apple Music application is automatically downloaded on any device that uses an iOS operating system, while competing apps like Spotify and Pandora must be downloaded through the app store and are not automatically installed on millions of devices. New users have the option of completing a 3-month free trial to test out the service and become familiar with it in the hopes that they will convert to a full-time \$9.99 per month

membership once the free trial comes to an end. Apple Music does have a family plan option, priced at \$14.99 per month for up to 6 people. The service boasts a similar catalogue to Spotify, with 30 million songs available for streaming.

Because Apple Music is so new to the streaming game, it is hard to predict the impact it will have in the long run. However, early numbers indicate moderate success. During the first three months of its existence, Apple Music was able to sign up 11 million individuals for the free trial though the month of August (Graham, 2015). Three months from the release date was a telling day, as it was the first indication of how many people converted their free trial memberships into paying ones. As of October 2015, 6.5 million people have converted their free trial membership into a paid one, and a total of 15 million people (combined free and paid) are using the service (Graham 2015). Apple CEO Tim Cook has said he is pleased with the results of the first wave of subscribers as currently 60% of people who signed up for the free version are converting to a paid month-to-month membership.

Figure 3 illustrates how Apple Music has a much higher ratio of paid subscribers to total subscribers, although Spotify does in fact have more than 3 times the amount of total users Apple Music does (Graham, 2015).

Furthermore, certain demographics appear to be using Apple Music more than others (Elmer-Dewitt, 2015). As seen in Figure 4, younger consumers are more likely to sign up for the service, but those aged 65 or over are more likely to convert their memberships from free to pay. The graph illustrates that over 50% of users age 65 or over have converted their membership into a paid subscription, while only around 30% of users aged 18-25 have done the same (Elmer-Dewitt, 2015).

Initially, Apple Music planned to pay rights holders nothing during the three month free trial which would be legal since they technically are not making a profit off of the service (Luckerson, 2015). But after pressure from independent labels and big-name celebrities like Taylor Swift, Apple has decided to pay record labels .2 cents per stream and publishers .047 cents per stream. Apple's plan after the 3-month free trial of each user ends is to pay the rights holders- the record company, publisher, and artist- 71.5% of every \$9.99 per month subscription that the service receives. This rate would be slightly higher than Spotify, which pays rights holders 70% of its revenue each month. Apple Music seems to have made a respectable entrance in the music-streaming world so far. One must continue to analyze the conversion rate of free-trial users into paid subscribers in order to judge whether or not Apple's competing service will be a true threat to Spotify and Pandora in the future.

### **Royalty Battles**

As seen in every main streaming entity, there will be a constant battle between the rights holders and the streaming service. Naturally, both parties feel that they deserve to be compensated more than the other side does. In reality, the two need each to work symbiotically and function off of each other so that both can profit. The toughest aspect of this conundrum is to find a middle ground in which both sides are comfortable with and can both profit from.

Royalty arguments are in no way unique to streaming services though. They have been a controversial issue since the beginning of the digital download days. One of the most prominent musicians of all time, Marshall Mathers, also known as Eminem, found himself in the middle of a royalty battle with Universal Music Group (UMG) in the late 2000's (Sisario, 2011). Eminem's producers sued UMG on his behalf because they believed that the purchase of his songs online warranted of a licensing payment, in which case Eminem could collect 50% of the royalties,

rather than a sale, in which case Eminem could only collect 12% of the royalties. While it seems like only a fraction of a dollar difference, when it is multiplied by the millions of singles and albums Eminem has sold, the amount he potentially is owed soars to near \$20 million. The suit came to a close in 2011 when the U.S. Supreme Court denied the hearing of an appeal from UMG after a lower court ruled against them (Sisario, 2011). Thanks to this case, all record contracts now state that digital music sales are treated as sales rather than a license so that in the future no record companies are forced to deal with a situation like Eminem's.

Another example of artists lacking the royalties that they earned and deserve is being solved through a new feature from the American Music Rights Association (AMRA) (Granados, 2015.) A deal has been struck between the AMRA and YouTube that will forever overhaul artists' inability to properly collect all of their rightful royalties from Youtube. Currently, artists and publishers have to go through years of work contacting hundreds of collection societies across the globe in order to collect all of the royalties they are due from sites like YouTube because of how many places a song can appear without the knowledge of the artist, record company, and publisher. AMRA CEO Tomas Ericsson claims that using technology from its parent company Kobalt, the AMRA will be able to "identify YouTube videos that feature songs from its clients. When the videos are played, royalties will accrue automatically, updating a dashboard in an app that a songwriter or publisher can see from any mobile device" (Granados, 2011). If successful, artists could begin to see huge payments due to how many uses of their songs go undetected because they are simply so difficult to find. Ericsson estimates that artists could gain up to 50% more royalties across all streaming formats than they are currently receiving. Artists have been battling over royalties have been a battle since the beginning of the

digital music era, but technologies like this one shed hope that one day artists will truly be compensated for all of the work they create.

### **Discussion**

While some may predict that permanent digital downloads are going to be eradicated just like CD's were when digital downloads arrived, there is no reason to believe this will ever come to fruition. Unless Apple's iTunes, the largest music retailer in the world, eliminated the option to permanently download tracks, streaming will never organically eradicate downloads because of how many people oppose streaming industries and what they are doing to artists. Apple has no reason to discontinue the digital download option because the revenue that they are making from these downloads is still massively significant. Many people enjoy purchasing single songs, especially those who are musicians themselves or have personal relations with musicians.

The topic of this paper is extremely important because there is certainly a way that streaming services could make it near impossible for independent artists to make a living. The music industry is already difficult enough to create a name for oneself in. By making it even harder for young or new artists to make a living, streaming services are illogically restricting the flow of creativity and content that new artists can put out. The equation is simple enough: if an artist cannot live off of their work, society will never have a chance to enjoy his or her content because he or she will stop creating it. Permanent digital downloads at 99 cents per song cater to the artist much more than a streaming play does. One can only hope that consumers will be knowledgeable enough to realize some streaming services are truly scamming the artists for their work, and that these models are only profitable for one side of the equation in the long run.

Each streaming entity is unique in its own way because of its features, but they all have one thing in common at the base of their business model. None of them have the best interest of the artist at heart. So far from the little that we do know about Apple Music, I am impressed with the way they have treated the artist, giving them more per stream than any of the other entities, and a higher cut of the total revenue to rights holders than Spotify and Pandora. Spotify may very well lose more and more major artists now that Taylor Swift has set the precedent. It is extremely easy to see why she would remove her content from the service when you realize that the system in which artists are paid from Spotify is truly wrong. An artist should be rewarded each and every time that their song is played. In no circumstance should a successful artist have to earn less money per stream simply because Spotify cannot cause enough people to join their service fast enough. The bigger the service becomes, the less each Spotify artist is paid per stream; this startling fact is enough to drive any sensible artist away.

Although I am personally a fan of Pandora and their service, I am unsure how long they will be able to keep their servers on with the rate at which they are losing money. With less than 5% of active listeners being paying subscribers, it seems as though it will be quite difficult for them to establish any future dominance in the industry, especially with a competitor in Apple Music that is backed by one of the largest companies on the planet. I think the only possible solution for Pandora is to redo their user interface and add a myriad of additional features. One of the reasons that people seem to be unhappy with Pandora and choose other services is the freedom to select. We live in a day and age in which everyone wants to pick and choose exactly what they want and have it available to them immediately. Although some people like myself may enjoy Pandora for the element of surprise and not knowing what song will be next, the majority of people simply want to listen to their hand picked songs. Whether it be a playlist of

five songs or five hundred songs, the perk of discovering new music potentially each time a song ends is not enough of a selling point to keep paid subscribers using Pandora.

The diversity and complexity of the music business make it truly like no other. I have yet to find a business with so many moving parts that can be traced back to one simple core value: passion. What makes the music business so attractive is that no one is attempting to trick someone into buying a good or a product simply for the money, rather every musician and every person who represents a musician wants to spread the word and talent of the artist. Passion is what drives the entire music industry, and for that reason it will live on forever.

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Appendix

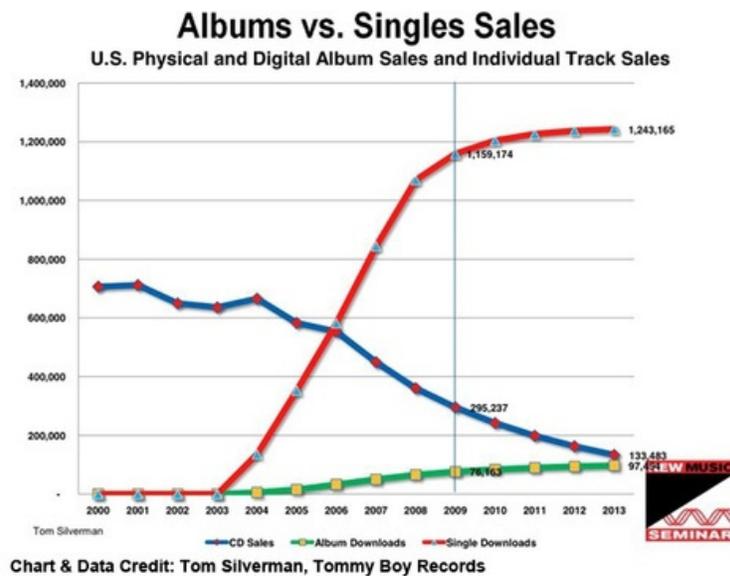


Figure 1. The creation of the iTunes store in 2003 sparked a rise in digital download singles, and a decline in physical CD sales.



Figure 2. Spotify uses a mathematical formula rather than a per-stream rate to determine how much an artist will be paid per month. Taken from Spotify.com.

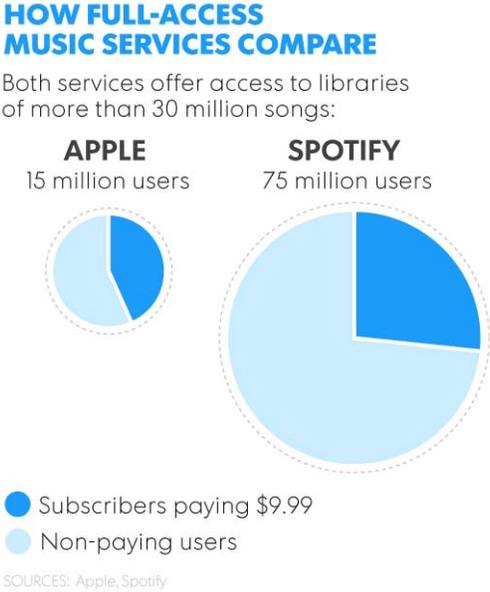


Figure 3. Just over 25% of Spotify’s customer are paying subscribers, while approxiamtely 45% of Apple Music’s are.

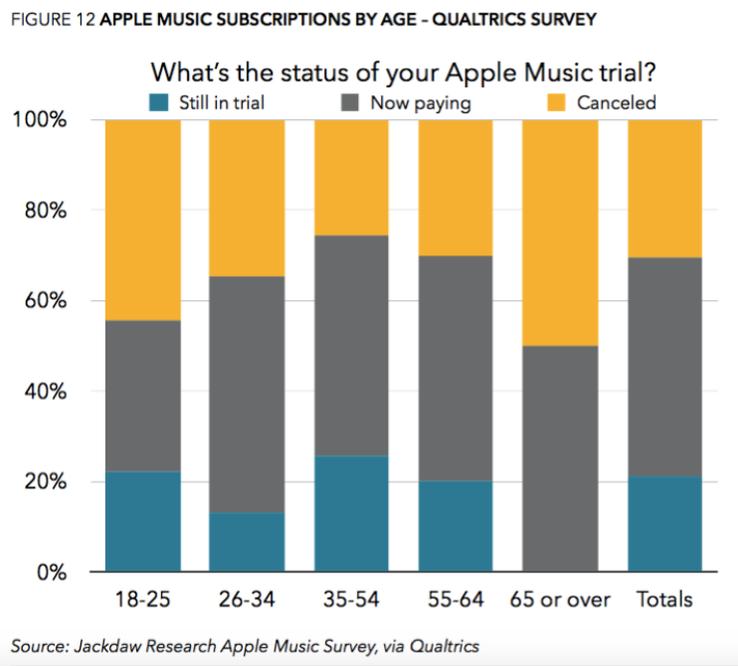


Figure 4. The percentage of people paying for Apple Music is over 50% in people aged 65 and over, and only around 25% for people aged 18-25.